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[redacted]

From: [redacted]
Sent: Thursday, 30 October 2008 8:14 AM
To: [redacted]
Cc: [redacted]
Subject: Majura Parkway- IA information
Attachments: Prioritisation proforma IA - App C - Appraisal - Key results and assumptions_Majura Parkway Stage 2.doc; Prioritisation proforma IA - App F - Appraisal - Key results and assumptions_Majura Parkway Stage 2.doc; IA report on Majura Parkway_October 2008.doc; Prioritisation proforma IA - App E - Appraisal - Key results and assumptions_Majura Parkway Stage 2.doc; Attachment 1_ Revised BCR Majura Parkway.pdf

[redacted]

I will send down to you today a hard copy of relevant reports on the Majura Parkway to go with this information

Regards

[redacted]
Roads ACT
30/10/08

Majura Parkway connecting the Monaro and Federal Highways

Proposal

The ACT Government proposes that Infrastructure Australia consider the potential for Majura Parkway, the proposed road upgrade that connects the Federal and the Monaro Highways to be a project of national significance. These roads in the vicinity of the Canberra airport play an important role for the ACT economy, the surrounding New South Wales (NSW) region and nationally given the importance of both the Federal and the Monaro Highways as well-used freight routes and being part of the national road network.

Background

Both the National Capital and Canberra Spatial Plans identify the airport as a major employment node and describe the importance of considering the Majura Parkway as a future major road. In a regional planning context the road plan provides improved access from and to Queanbeyan and the wider NSW region via the Monaro Highway. In terms of the National road network, constructing the Majura Parkway will provide better connections with the Federal Highway. The road improvement plan has a strategic context and is very important to support the current and the future economic development of Canberra and the surrounding NSW region.

The feasibility of this project was first studied in detail February 2007 by the ACT Government and further analysis has reaffirmed the need for the major road improvement to proceed. The most recent economic assessment study of November 2007 has been carried out by an independent consultant, and has returned a positive outcome in terms of its Net Present Value (NPV) and its Cost Benefit Ratio (CBR).

The project has been recommended as one which will significantly improve traffic conditions in and around the local district, whilst at the same time provide a positive outcome to the economics of the region primarily by improvement to the capacity and access for freight traffic from and to the national road network but also in terms of eco and snow tourist based industries that have developed along the Monaro Highway.

From a national perspective there are a number of key stakeholders who will benefit from the proposed road improvement. These include:

- The Canberra Airport Group
- The ACT Government
- The Department of Defence
- RTA & Queanbeyan City Council
- Department of Infrastructure Transport & Regional Services
- National Capital Authority

Whilst each of these stakeholders will be looking for a different outcome, there is one common thread which binds them all – linking the Federal and Monaro Highways in an efficient manner with sufficient capacity to accommodate freight traffic from the national road network to the Monaro Highway an important regional road. There is a pressing need to address the current bottleneck and improve a good level of access to Canberra airport.

There are two over riding issues with this project:

1. **Regional and National Freight Routes**

   The existing road network is being used more to transport freight into Region via the Monaro Highway and nationally on the Federal/Hume Highways

   This use has grown significantly over the past few years, creating a traffic bottleneck locally in and around the Pialligo Avenue as trucks compete for space with private motor vehicles which are the result of residential and business growth in the area.

   The freight task nationally is forecast to double by 2020and the current national transport reforms being promoted by the Standing Committee on Transport and the National Transport Commission focus on the provision of infrastructure which makes transporting freight more efficient and productive.

   The extension of the Higher Mass Limited routes and the introduction of performance based standards for commercial vehicles are promoting efficiency and increased load carrying capacity while not neglecting the importance of asset maintenance and protection

   Commercial traffic on the Monaro Highway and the current Majura Road represent some 16% of the total traffic presently with the connection between the Monaro Highway, Majura Road and the Federal Highway. These figures confirm this as an important freight route within the ACT but also for regional NSW and nationally with the connections into the Hume Highway.

2. **Airport Freight Hub**

   There is potential for the redevelopment of the Canberra Airport into a 'freight-hub', allowing for the redirection of significant freight cargo into the airport, and for this to be transferred onto trucks for dispatch to various centres within the region.

   The airport has expanded significantly since 2002 and now has more than 6000 people working in the airport precinct. By 2020 some 15,000 people may work at the airport which will become a regional hub for both passenger and freight air traffic.

Canberra Airport is progressing major terminal and runway redevelopment works and have invested some $270 million in supporting infrastructure to date.

Stakeholders

As well as being utilized by several groups of road users, the considered road network is of interest to several stakeholder organizations at different levels. The table below demonstrates the potential beneficiaries to any improvements occurring for this road network.

Road Users (Beneficiaries)	Organisations ((Beneficiaries)	Level
Canberra Airport Traffic (passengers)	Canberra Airport Group	Local
Canberra Airport Traffic (freight)	Canberra Airport Group	Local
Canberra Airport Traffic (employees)	Canberra Airport Group	Local
Canberra Airport Traffic (passengers)	ACT Government	Local
Canberra Airport Traffic (freight)	ACT Government	Local
Canberra Airport Traffic (employees)	ACT Government	Local
Gungahlin Commuter Traffic	ACT Government (Land Sales)	Local
Traffic related to Headquarters Joint Operational Command	Department of Defence	Local
Queanbeyan through traffic	RTA & Queanbeyan City Council	Regional
Better Connections with the Federal Highway	Department of Infrastructure Transport & Regional Services (Auslink)	Federal
Politicians, Parliament Members & Canberra Visitors	National Capital Authority	Federal

Financial Benefits

The results of the cost benefit analysis show that the road upgrade can be considered as economically feasible. This is based on the two obtained key performance indicators namely the Net Present Value (NPV) and the Benefit Cost Ratio (BCR). The considered option produces an NPV equating to ~ $358 million over the 25 years span life of the project at a 7% discount rate. The estimated BCR for this option is ~2.8 using a 7% discount rate.

Modelling was used to demonstrate the severity of the current peak traffic congestion problems and the expected further deterioration of the traffic conditions in this network. The modelling was also used to obtain key performance indicators including the number of vehicle kilometres travelled as well as number of vehicle hours travelled both for the existing road network as well as for the considered option in the years 2006, 2016 and 2031. These were used in accordance with RTA Economic Analysis Manual to estimate travel-related costs for each option, and included the costs of the following:

Travel related Costs

- Vehicle operation
- Travel time
- Accidents

Construction Costs

- Capital construction
- Contingencies
- Design
- Supervision
- Annual and cyclic maintenance

The travel benefits for the considered option were determined by subtracting the travel related costs of the improvement option from those travel related costs of the do nothing scenario i.e. the existing road network staying as it is with no future intervention.

Current works underway to address the local traffic congestion conditions are being funded by the ACT and Federal Governments with the Canberra Airport making a financial contribution as well. These are necessary works in advance of the construction of the Majura Parkway.

Construction Cost

The anticipated project cost for the Majura Parkway project will be approximately $250.0 Million. This project cost was established in the Preliminary design report prepared in July 2008.

Supporting Documentation

The '*Majura Parkway / Pialligo Avenue Economic Analysis Report'*, SMEC Australia Pty Limited (21 November 2007).

Preliminary Sketch plan design and report- SMEC, July 2008

ACT Government Submission to Infrastructure Australia

Federal Highway Link to Monaro Highway Majura Parkway

Supplementary Information

JANUARY 2009

~~[ACT Government Logo]~~

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1. Background

The ACT Government had submitted a proposal for consideration by Infrastructure Australia (IA) for the construction of an efficient link between the Federal Highway and the Monaro Highway.

Following its initial appraisal, IA has sough further information and clarification. This paper provides summary of key information relating to the project, as well as response to specific questions and issues raised by IA.

2. The Proposal

The ACT is seeking funding to create an efficient freight transport, business travel and personal travel link between the Federal Highway and the Monaro Highway.

The joining of these national highways will provide a vital transport link relevant to a significant population and geographic region of Australia — from the south eastern coast, through the snowy mountains, the Nation's capital and further north to either side of the Great Divide.

In essence, the project will 'complete' the Federal Highway by linking the regions north and south of the Australian Capital Territory, as well as providing a highway bypass to Canberra.~~.~~

The proposed Majura Parkway will also form part of the Territory's arterial road network, improving north-south transit, particularly to the Airport, and eastwards towards Queanbeyan.

The projects involves the construction of around 11 km of dual carriageway and 7 bridges.~~[length of road, bridges etc.]~~

Appendix A provides an aerial view showing ~~terrain map of~~ the proposed link.

3. Benefits and Costs

3.1 Cost Estimates and Economic Analysis

Construction staging and cost estimates have been updated by SMEC Australia from a previous study undertaken in 2007. The capital cost of the project is estimated at $250 million over a three year construction period.

Economic appraisal of the project (also undertaken by SMEC Australia) has been updated to address feedback comments from IA. This ~~(also undertaken by SMEC Australia)~~ is provided at **Appendix B**.

3.2 Approach to Analysis

The economic analysis is based on strategic and micro traffic modelling to estimate the effects of the proposed improvements.

Micro-simulation modelling was, validated by traffic counts., ~~was used for traffic analysis.~~ The Paramics model was calibrated by adjusting the default parameters in the standard behavioural models to local conditions. This relied mainly on the RTA ~~default Paramics input files~~guidelines. The model validation is in line with the best practice minimum fits.

The total expected benefits are estimated by calculating the savings from the proposed option as compared to the base option ('do nothing') in terms of travel time, vehicle operating costs, accident costs, and environmental costs.

The 'generated traffic' in the study refers to the traffic diverted from elsewhere in the transport network – no ~~additional~~ induced~~overall~~ demand is ~~incorporated~~assumed[1].

The approach and the parameters used in the analysis are in accordance with the relevant guidelines.

3.3 Benefit to Cost Ratio

The economic analysis indicates a Benefit to Cost Ratio (BCR) of 4.05 over 30 years at 7 per cent discount rate. The analysis also provides BCR at discount rates of 4 per cent and 10 percent. The BCR is greater than 2.75 under all discount rates.

The Net Present Value (NPV) of benefits is estimated around $637 million. The benefits largely arise from a reduction in travel time (captured through decrease in vehicle operating costs in the analysis), and accident costs.

Traffic modelling highlights significant increase in traffic congestion, and consequently, increase in transit times under a 'do nothing' scenario. This is considerably alleviated through the construction of this link.

The micro-simulation modelling was also used to estimate changes in key performance indicators. Those are summarised in the economic analysis report. In general, the level of service improves from F under 'do nothing' scenario to B. Average speed on North-South transit is projected to increase from 18km/hr to 77km/hr, and travel time in AM peak hour is projected to reduce from 40 minutes under 'do nothing' scenario to less than 9 minutes in 2031.

In summary, the project will significantly alleviate congestion and reduce transit costs.

3.4 Overall ACT Treasury Assessment

The overall approach and methodology appears reasonable. The BCR estimates appear robust, and are likely to be understated, as externality benefits for the rest of the network have not been estimated. Those are likely to be significant given that the proposed link would provide a more efficient link for freight traffic which is currently using the main thoroughfare, hence reducing congestion on Northbourne Avenue.

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[1] In the analysis, the 'study area' refers to the project road. Freight carriers (and other traffic) diverted from, for example, Northbourne Avenue because of a quicker link between the highways is referred to as the traffic originated from outside the study area.

4. Related Studies and Project Readiness

The project has been developed to Preliminary Sketch Plan (PSP) stage. **Appendices C and D** provide PSP documentation and the detailed plans, respectively.

A detailed Environmental Impact Study (EIS) is currently underway. A draft of the EIS will be ready in March and the final EIS in April 2009.

~~The EIS report will be available in March 2009.~~

Initial consultation was undertaken during the initial design stage. The alignment and PSPs incorporate input from the stakeholders. Further consultation is now being undertaken as part of the statutory process.

5. Related Projects

A number of other projects have been completed, or are currently underway, that are linked to this project in terms of traffic flows. Those are:

- Single eastbound bypass lane at Dairy Road/Morshead Drive roundabout;
- Duplication of Morshead Drive between Dairy Road and Monaro Highway;
- Three phase traffic signals at Monaro Highway/Morshead Drive;
- Widening of Morsehead Drive between Pialligo Avenue and Fairbairn Avenue;
- Duplication of Fairbairn Avenue between Morshead Drive and Pialligo Avenue (including a new bridge over Woolshed Creek);
- Duplication of Pialligo Avenue between Morshead Dr and Fairbairn Avenue (including a new bridge at Woolshed Creek and signalised intersection at Fairbairn Avenue); and
- Duplication of Pialligo Avenue between Fairbairn Avenue/Beltana Road intersection and a new airport access (currently at Ulinga Place).

For the purposes of this economic analysis, it has been assumed that all of the above works will be completed prior to construction of the Majura Parkway.

The micro-simulation with updated traffic count information has highlighted that the performance of the proposed Federal Highway/Monaro Highway link could be improved further by removing emergent 'pinch points' at three roundabouts on the east~~s~~-west transit. Without these improvements, the project has a negative impact on these parts of the east-west link. The improvements have not been included in the project scope at this stage. Further work is required to develop design solutions and cost estimates.

6. Response to Infrastructure Australia's Feedback

6.1 Profiling Against IA's Strategic Priorities

More information required to justify ratings. In particular no information was provided against strategic priorities 'Diversify Australia's economic capabilities and build Australia's global competitive advantages'.

Ratings against strategic priorities have been completed and provided in **Appendix E**.

Analysis based on Australian Bureau of Statistics' national accounts data indicates that productivity of the transport and storage industry in the ACT has been declining. Had productivity in the transport and storage industry ~~improved at the national rate~~remained stable, the value added by this industry in 2007-08 would have been an additional $158~~422~~ million.

The deteriorating performance of the transport and storage industry in the ACT adversely affects not just the ACT but south eastern New South Wales[2]. The project has significant benefits for the national freight transit system, essentially by providing a highway bypass to Canberra and improving the level of access to the Airport. The reduced costs of freight transit will potentially ~~by reducing costs, and thereby~~ improve~~ing~~ competitiveness of Australian exports. A short paper summarising this analysis is at **Appendix F**.

6.2 Cost Benefit Analysis

Project mentions different stages, focuses on Stage 2. This raises two questions:

- *Need information on other stages to be clear that costs and benefits have been correctly apportioned to this stage and not hidden/taken from other stages where ther are mutually dependent.*
- *Need BCR information specifically applying to this stage, not other stages (some info seems to come from Stage 1).*

As mentioned above in Section 5, from the ACT Government's perspective, the project forms part of a range of works around Airport, and hence was referred to as Stage 2. Reference to stages has now been removed to avoid confusion.

Undoubtedly, improvements at one point or part of the transport network have flow on effects on other parts of the network. For the purpose of this analysis, however, all the modelling assumes that those works have been completed, and that no costs or benefits from those works are attributed to this project.

- *Three flaws in the methodology – all likely to increase slightly the BCR: time period of evaluation short (24 vs 30 years); no residual value included; and no externalities assessed.*

[2] It is noteworthy that the national accounts attribute a proportion of the transit costs of freight passing through Canberra to the ACT.

Time period of evaluation has been extended to 30 years. The analysis also includes BCR over 40 years for reference. This has been included given that a significant part of the project involves bridges which have an economic life of 40 years.

Residual value has been included in the analysis. Residual value at the end of the appraisal period of 30 years is estimated as the present value of benefits for the remaining life of the asset for the remaining 10 years of the assumed 40 year economic life, in accordance with the *National Guidelines for Transport System Management in Australia, Volume 3 (Appraisal of Initiatives)* by the Australian Transport Council (ATC).

The economic analysis includes an assessment of externality benefits, albeit, partially.

6.3 Delivery

- *Cost and fund sharing arrangements not shown in the submission. Clarification sought on maintenance costs – unlike Auslink BAF does not include maintenance.*
- *Capital cost – clarification required – cost benefit analysis contains a capital cost of $125 million while the submission refers to a preliminary design figure of $250 million – require copy of report and any supporting analysis.*

The capital cost ~~of~~estimated for the project in July 2008 was $242 million (excluding GST), as in Appendix C, Chapter 20. This has been escalated by 3 per cent to ~~the project is~~ $250 million. The final cost of the project is likely to be higher subject to further cost escalation to tender time.

The ACT has already received funding commitment for $30 million from the Commonwealth Government under its Building Australia Program for works around the Airport precinct. Those works are an integral part of the proposed link project.

The funding being sought is therefore $220 million. As mentioned above, this does not include the cost of works required to address the impact of this project on east-west transit.

~~, and this is the funding being sought.~~ Maintenance costs, while included in the economic analysis, do not form part of the $250 million figure.

Risks – need more detail

In essence, the PSP report covers a number of the risks flagged by IA, and responds how these are being addressed. The report contains some useful information including environmental and cultural heritage assessments, geotechnical investigations, transport planning backgrounds and a progress on the public consultation and discussion with leaseholders and or key stakeholders to date.

In addition to the PSP report, there have been number of actions to address a number of project risks.

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- An extended meeting with the Department of Defence in September 2008 to discuss the impact of the proposal on Defence lands and activities. A formal approach to the Department of Defence is now being prepared to acquire necessary land.
- A workshop in December with Senior Environmental Managers from the ACT Government's Parks Conservation and Lands and the ACT Commissioner for Sustainability and the Environment to identify a management strategy to protect high value native grasslands and areas of Yellow Box Gums.
- A request to the project team to prepare a project target out turn cost using the recently released *Best Practice manual in cost estimation for public road and rail infrastructure projects* by Evans and Peck prepared for the Federal Department of Infrastructure.
- The full EIS is now underway and includes a statutory consultation component - a draft of the EIS will be ready in March and the final EIS in April 2009.

The target is to be in a position to go out for a construction tender in July 2009.

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6.4 Infrastructure Australia's Minimum Requirements Template

This has been completed and provided at **Appendix G**.

~~improved at the national rate 970 million rather than $544 million — an additional $158422 million. The cumulative loss over the 18 years since 1989-90 is estimated at $412 $1.5 million billion~~

[redacted]

From: [redacted]
Sent: Tuesday, 17 February 2009 11:21 AM
To: [redacted]
Subject: IA and Majura

[redacted]

Attached below are electronic copies of documents sent to IA. These documents were sent in a series of emails from [redacted] but I don't have access to that email correspondence.
Would you like me to get [redacted] to forward you the actual emails he sent to IA?

[redacted]

MAJURA 'AY RISK MANAGE

Table 1 — eliverability Asses

Appendix B — Majura Parkway Ec.

Appendix C.doc

Appendix E.doc

Appendix F.doc

Appendix G —IA Minimum Informa..

Executive mmary 15 Januar

Table 1: Deliverability Assessment Information

Criteria	Descriptors	Response
1. Need for Commonwealth funding	Key questions: • Does the project deliver an effective and efficient response to addressing an identified funding need? • Has the project taken into account the relevant market structure and pricing mechanism? • Can the private sector partially or fully fund the project in return for the revenues? • Why should the Commonwealth government rather than State or Council government fund the project – what is the national interest? • What is the proposed State / Council funding contribution for the project? • What other sources of Commonwealth funding are being provided for the project? • Where a balance of funding sources is envisaged, does the balance reflect the respective interests of the funders? Information / documents likely to be required: • Analysis of future revenue streams; • Analysis of whether revenue streams can be created if no prices are currently charged; and • Data on national impact and justification for public rather than private funds and justification for Commonwealth funds in addition to State / Council funds.	There is a demonstrated need and significant net benefit in linking the Federal Highway with the Monaro Highway. The project also provides an efficient link to the Canberra International Airport. The project delivers an effective and efficient linking of these national highways. It is appropriate for this missing link in the national highway network to be funded by the Commonwealth government. The ACT Government has undertaken a number of projects to improve access to the Airport and more generally, along the east-west transit link to the proposed road. Those are listed in Appendix E, Summary of Initiative Profiling. It would be inappropriate for this extension of the Federal Highway to be funded by way of a tollway.

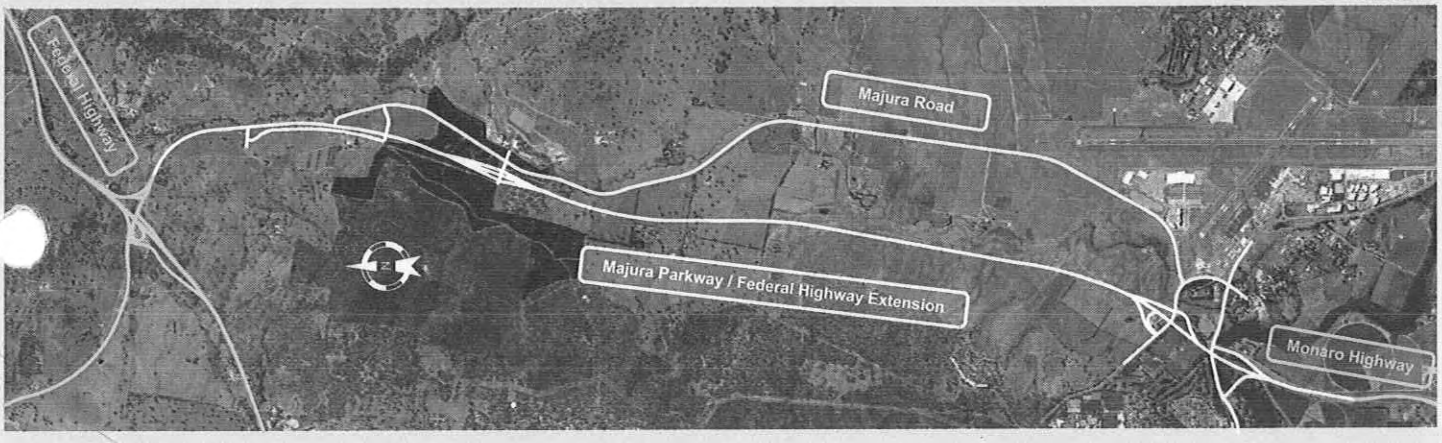
2. Construction risks and budgetary implications	Key questions: • Does the project pose particular construction risks due to the nature of the engineering, location, geography or geology? • What scale of financial risks do these pose? • Have those risks been adequately assessed in the construction costs assessment? • Can the project be staged to reduce risks / improve manageability? • Is there sufficient capacity to ensure the delivery of the project and realisation of benefits including relevant skills and expertise both during and post construction? Information / documents likely to be required: • Detailed engineering report by reputable agency or consultant; and • Descriptive information re project staging plans or potential.	There are no unusual construction risks. N/A N/A N/A Yes. Detailed design is underway and will include a comprehensive report and staging plans. Some information is available in the concept report.

3. Consequential construction risks	Key questions: • Have any consequential risks to the wide network been identified? • Will delivery require associated works to enable new project to succeed in practical terms? (NB such information should technically form part of the CBA) • What is the scale of likely works? Have these been costed? • Has consideration been given to the requirements that will need to be addressed prior to construction of the project including relevant approvals, land acquisition and planning? • Has the project identified how the infrastructure will be operated and maintained following construction? Information / documents likely to be required: • Technical report / operations report; and • Information provided in CBA.	No. No. All required works are encapsulated in one package. However, the performance could be improved by undertaking some works at three points along the east-west transit. Yes. Scope of works is clearly defined. Yes. The planning and approval process is underway. Yes. The Department of Territory and Municipal Services will be charged with operation and maintenance activities.
4. Financing risks where private finance is involved and scale of potential public sector exposure	Key questions: • What is the scale of private capital required? • Is a competitive market for the provision of private capital likely given the location and type of project? • Have risks been allocated appropriately? • Is patronage risk a major unknown and if so will private financing offer value for money? Information / documents likely to be required: • Financial advisor report if available; and • Preliminary analysis of funding scale required. •	There is no private capital required for this public highway linkage. The 11 kilometre link between the Federal Highway and the Monaro Highway is proposed to be publicly funded.

5. Environment risks	Key questions: • Have any major environmental impacts or risks been highlighted in the project Cost Benefit Analysis? • What is the potential scale of impact? • Has a mitigation strategy been described? Information / documents likely to be required: • Environmental consultants report; and • Environmental Impact Assessment.	A detailed analysis of environmental issues was undertaken during the preparation of the Majura Parkway Concept Evaluation Report (SMEC, 2006). This Report is contained as Appendix E in the Preliminary Sketch Report provided to IA. There are no major environmental impacts or risks related to the project. An ecology investigation is currently underway. An Environmental Impact Statement (EIS) is currently being prepared. The EIS will include consultation with all relevant environmental and heritage departments. The draft EIS Report will be available in March 2009 and the final EIS Report will be released in April 2009.
6. Social and other risks	Key questions: • Have any major social impacts or risks been highlighted in the Cost Benefit Analysis? • What is the potential scale of impact? • Has there been community engagement / consultation? • Has a mitigation strategy been described? • Have political risks been identified and assessed? • Have any other risks been identified and assessed? Information / documents likely to be required: • Environmental consultants report (noise, amenity etc); and • Community report / evidence of community engagement / consultation.	There are no major social impacts or risks associated with this project. Consultation with the current lessees along the length of Majura Parkway corridor has been undertaken. The lessees comprised private rural lessees and land held or managed by the Commonwealth and ACT Government agencies including the Department of Defence. The ACT Emergency Services were also consulted to ensure that all parameters and issues were identified and understood for the evaluation process and decision making. The private leaseholders do not oppose the parkway construction. Most of them would like to see it happen as quickly as possible to relieve the current pressure on Majura Road. Details of community consultation are contained in Section 21 of the Preliminary Sketch Report provided to IA.

7. **Governance model**	Key questions: • Is a Governance model specified? • Does the model create the right incentives on all parties? • Does the model allocate risks to those best placed and incentivised to manage them? • Are all relevant parties included or are key players excluded? • What is the proposed ownership or leasing structure? • Does ownership / leasing align with risks and incentives? • Does the ownership structure drive delivery and operational efficiencies? Information / documents likely to be required: • Governance plan or Ownership strategy (including any plans for changing ownership during the lifetime); and • Evidence in other documents that these issues have been considered.	Public funded public infrastructure. The ACT Government will have the ownership of the asset, and the associated obligations, such as, annual and cyclic maintenance.

SMEC



MAJURA PARKWAY / FEDERAL HIGHWAY EXTENSION ECONOMIC ANALYSIS REPORT

14th January 2009

AUSTRALASIA | ASIA | MIDDLE EAST | AFRICA | PACIFIC

Document / Report Control Form

Project Name: **Majura Parkway Economic Analysis**

Project number: **3002180**

Report for: **ACT Procurement Solutions**

PREPARATION, REVIEW AND AUTHORISATION

Revision	Date	Prepared by	Reviewed by	Approval for Issue
0	20/09/2007	Khaled Abbas	Craig Sutton	Tim Hahn
1	27/09/2007	Khaled Abbas	Craig Sutton	Tim Hahn
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3	12/01/2009	Josh Everett Jerome Catbagan	Jerome Catbagan Khaled Abbas	Craig Sutton
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Executive Summary

Introduction

The roads in the vicinity of the airport play an important role for the ACT economy, the surrounding New South Wales (NSW) region and nationally given the importance of the Monaro Highway as a freight route connection to the Federal Highway. Traffic in the vicinity of the Canberra airport has increased over the last few years with the continuing growth in Gungahlin and increased employment at the airport.

This report presents the findings of assessing the implementation of the Majura Parkway to improve traffic flows on the road network in the Majura Valley.

Majura Parkway

The Majura Parkway is proposed to be constructed in the Majura Valley on the east side of Canberra. As well as its metropolitan functions, the Majura Parkway is important in enabling traffic from Sydney and other northern destinations to the Monaro region to bypass Canberra.

In selecting a route for the Parkway, several considerations where taken into account:

- To protect the important natural and cultural heritage features of the Majura Valley;
- To provide access to all the existing and future development in the Majura Valley from Majura Road;
- To make provision for a possible future very high speed train (VHST);
- To avoid major constraints on potentially important long-term land uses, such as the upgrading of facilities at Canberra International Airport;
- To provide for a future Northcott Drive connection to the Central National Area while limiting traffic volumes on Fairbairn Avenue through Campbell;
- To limit the impacts on other existing land uses where practicable; and
- To construct the road at a realistic cost to the community

It comprises a number of ramps, interchanges, and structures, with several major bridges. The total length is about 11 km of dual carriageway linking the Monaro Highway and the Federal Highway.

Objective

The main objective of this study is to update the previous economic analysis which was undertaken as part of the Pialligo Avenue Options review (Nov. 2007) of alignment options and determine the economic feasibility of constructing the Majura Parkway. This revised study reflects up to date construction staging and construction cost estimates.

Results

Micro-simulation runs for the years 2009, 2012, 2021 and 2031 were conducted using the Paramics model for the existing road network as well as for the considered network improvement option. The overall network performance indicators for each of the micro-simulation runs are displayed. These include the amount of released vehicles and their percentage relative to demand volumes, vehicle hours travelled and vehicles kilometres travelled. The output results look logical with a reduced proportion of demand being released in future years.

Currently, most of the traffic demand can enter into the network without causing spill over to neighbouring roads. However, such traffic is operating within the network at low level of service i.e. F. If the current network remains without any intervention, it is expected that with increasing traffic demands, there will be queues at the entry points to the network and spill over to neighbouring roads. This will result into peak spreading and delays to a larger number of vehicles. This will be also accompanied by very low Level of Service (LOS) performance of traffic using the Pialligo network.

The proposed road network improvement is expected to avoid the occurrence of the first problem, namely the spill-over of traffic congestion into neighbouring roads as well as the prolonging of the peak traffic hour.

SMEC identified the following stakeholders as potential beneficiaries to the project:

- Canberra Airport Group
- ACT Government
- ACT Government (Land Sales)
- Department of Defence
- RTA & Queanbeyan City Council
- Department of Transport & Regional Services (Auslink)
- National Capital Authority

In order to assess and compare the considered option, an economic analysis of the costs and benefits of this option compared to maintaining the existing road network without future interventions ('do nothing' scenario) was undertaken over a 30 year period. An estimate of construction, annual and cyclic maintenance costs for the considered option was conducted. Benefits resulting as savings in Vehicle Operation Costs, Travel Time Costs, and Accident Costs were estimated for each option. Additionally, benefits derived from the generated or 'diverted' traffic, environmental cost savings, and the project's residual value after 30 years have also been considered. The Net Present Value (NPV) and Benefit Cost Ratio (BCR) were then computed for each of the three options using three different discount rates namely 4, 7%, and 10%.

Conclusions

The results of the cost-benefit analysis show that the construction of Majura Parkway can be considered as economically feasible. This is based on the two obtained key performance indicators namely the Net Present Value (NPV) and the Benefit Cost Ratio (BCR). The upgraded network produces a NPV equating to over $636 million after 30 years at a 7% discount rate. The estimated BCR is 4.05 assuming the same appraisal period and discount rate.

1 Introduction

The roads in the vicinity of the airport play an important role for the ACT economy, the surrounding New South Wales (NSW) region and nationally given the importance of the Monaro Highway as a freight route connection to the Federal Highway. Traffic in the vicinity of the Canberra airport has increased over the last few years with the continuing growth in Gungahlin and increased employment at the airport.

This report presents the findings of assessing the implementation of the Majura Parkway to improve traffic flows on the road network in the area between Duntroon and the Canberra Airport. At this location five major arterials converge namely Majura Road, Pialligo Avenue, Monaro Highway, Fairbairn Avenue and Morshead Drive. The affected area also extends North up to the Federal Highway to the north as the proposed Majura Parkway runs parallel to the west of the existing Majura Road.

In addition, further increase in traffic volumes is expected when Gungahlin is fully established, further development has taken place in the surrounding NSW region and the employment at the airport reaches levels as outlined in its master plan. In this context, the provision of relieving measures for the increased traffic in the vicinity of the airport and the Majura Valley is an important initiative that will benefit the region.

Figure 1 – Southern portion of the study area showing the convergence of main arterial roads

1.1 Majura Parkway

The Majura Parkway is proposed to be constructed in the Majura Valley on the east side of Canberra. As well as its metropolitan functions, the Majura Parkway is important in enabling traffic from Sydney and other northern destinations to the Monaro region to bypass Canberra.

In selecting a route for the Parkway, several considerations where taken into account:

- To protect the important natural and cultural heritage features of the Majura Valley;
- To provide access to all the existing and future development in the Majura Valley from Majura Road;

- To make provision for a possible future very high speed train (VHST);
- To avoid major constraints on potentially important long-term land uses, such as the upgrading of facilities at Canberra International Airport;
- To provide for a future Northcott Drive connection to the Central National Area while limiting traffic volumes on Fairbairn Avenue through Campbell;
- To limit the impacts on other existing land uses where practicable; and
- To construct the road at a realistic cost to the community

The Majura Parkway comprises a number of ramps, interchanges, and structures. The total length is about 11 km of dual carriageway linking the Monaro Highway and the Federal Highway. For each carriageway, cross sections of 2 x 3.5 m traffic lanes 2.5 m roadside shoulder and 1.0 m offside shoulder are provided for.

At the southern end from the Monaro Highway to Fairbairn Avenue, the cross section is chosen to suit the narrow road corridor available between Oval No. 1 and RMC Duntroon, and to restrict the impact on the existing trees in the vicinity. A cross section of 4 x 3.5 m traffic lanes (2 in each direction) and 2 m or 2.5 m shoulders with kerbing either side and with no central median is proposed. This is the only section of the Monaro Highway and Majura Parkway with a median barrier. This would reflect the short section between intersections and the more developed nature of this section of road. The shoulders are suitable for on road cycling. Progressing north from Fairbairn Avenue a cross section comprising dual carriageways of 2 x 3.5 m traffic lanes with 2 m outer and 1 m inner shoulders and a wide central median is proposed. The central median width varies. Again the shoulder will be suitable for on road cycling.

Major bridges included in the Majura Parkway are as follows:

- Majura Parkway Twin Bridges over Molonglo River
- Hopkins Drive Underpass
- Fairbairn Avenue Overbridge
- Woolshed Creek Structures (at Approx Stn 3500)
- Property Access Underpass at Stn 6900
- Twin Access Road Overbridges
- Access Road Overbridge

1.2 Background

Prior to this analysis, SMEC Australia was commissioned by the ACT Government to design the following roadworks:

- Duplication of Morshead Drive from Dairy Road to Pialligo Avenue; and
- Duplication of Pialligo Avenue from Morshead Drive to Ulinga Place.

During execution of the above works, SMEC was also commissioned to conduct an economic analysis for the considered road network improvement.

During the Preliminary Sketch Plan (PSP) phase of this project, traffic modelling suggested that an alternative scope of works would result in a greater alleviation of traffic congestion for the region. A Preliminary Sketch Plan submission was subsequently completed for this alternative scope of works which included:

- Single eastbound bypass lane at Dairy Road/Morshead Drive roundabout, thus enhancing the capacity of the roundabout. This will be accompanied (in its ultimate configuration) by part time signals at the roundabout;
- Duplication Morshead Drive between Dairy Road and Monaro Highway;
- Three phase traffic signals at Monaro Highway/Morshead Drive with banned right turns from Morshead to Monaro and from Pialligo to Morshead. This will replace the current roundabout;
- Widening of Morsehead Drive between Pialligo Ave and Fairbairn Ave;
- Duplication of Fairbairn Avenue between Morshead Drive and Pialligo Ave (including a new bridge over Woolshed Creek.
- Duplication of Pialligo Ave between Morshead Dr and Fairbairn Ave (including a new bridge at Woolshed Ck and signalised intersection at Fairbairn Ave)

A separate project being undertaken by Hughes Trueman relates to this work and includes:

- Duplication of Pialligo Ave between Fairbairn Ave/Beltana Road intersection and a new airport access (Currently at Ulinga Place)

For the purposes of this economic analysis, it has been assumed that all of the above works will be completed prior to construction of the Majura Parkway.

After completion of the PSP design, a number of events occurred that have instigated the need to re-assess the priority and scope of works to be undertaken in the study area. These events include:

- Further development of the design of the proposed Majura Parkway
- An increase in traffic due to developments occurring at the Canberra Airport and Gungahlin; and
- Working Group Meeting in September 2006

1.3 Objective

The main objective of this study is to update the previous economic analysis which was undertaken as part of the Pialligo Avenue Options review (Nov. 2007) of alignment options and determine the economic feasibility of constructing the Majura Parkway. This revised study reflects up to date construction staging and construction cost estimates.

1.4 Scope

This study documents an economic analysis of the considered option for the area. In agreement with ACT Procurement Solutions one option was assessed relative to the continuation of the existing condition. The following presents both the 'do nothing' base option as well as the Ultimate Majura Parkway option.

1. **Base Case ('Do Nothing'; Without Majura Parkway)**: The existing road network to be taken as the Base to which comparisons will be made, shown below in Figure 2.

Figure 2 – Existing Road Network

2. **Upgraded Network Case (With Ultimate Majura Parkway)**: The upgraded road network with the ultimate configuration of the proposed Majura Parkway (green), as shown in Figure 3.

Figure 3 – Upgraded Road Network

2 Traffic Modelling

2.1 Introduction

Both strategic transport modelling (using TransCAD) and traffic micro-simulation modelling (using Paramics) were undertaken by SMEC for this analysis. The results of the modelling exercises were used as input into the economic analysis to assist in estimating the Net Present Value and Benefit Cost Ratio for the considered option compared to the existing network.

A description of the traffic modelling is presented below.

2.2 Model Calibration

The existing Paramics model was calibrated by adjusting the default parameters in the standard behavioural models contained in the micro-simulation software to local conditions. This relied mainly on the RTA default Paramics input files.

2.3 Matrix Estimation

In order to estimate future travel time and vehicle operating cost benefits for each of the improvement options, origin/destination (OD) matrices for traffic flows for 2009, 2012, 2021 and 2031 were taken from SMEC's TransCAD model of Canberra.

2.4 Model Validation

The resulting OD matrices produced flows that were a close fit to the traffic counts, and is in line with traffic engineering best practice of at least 85% of the counts having a GEH of less than 5, and 100% of the counts having a GEH of less than 10. The GEH Statistic is a formula used in traffic engineering, traffic forecasting, and traffic modelling to compare two sets of traffic volumes. The GEH Statistic gets its name from Geoffrey E. Havers, who invented it in the 1970s while working as a transport planner in London, England. Although its mathematical form is similar to a chi-squared test, is not a true statistical test. Rather, it is an empirical formula that has proven useful for a variety of traffic analysis purposes. The formula for the "GEH Statistic" is:

$$GEH = \sqrt{\frac{(M-C)^2}{(0.5\times(M+C))}}$$

where M is the traffic volume from the traffic model (or new count) and C is the real-world traffic count (or the old count).

2.5 Micro-simulation in Paramics

Assignment runs were conducted for the existing road network and the considered network option as listed in Table 2-1. Network layouts are shown in Figure 2 and Figure 3.

Table 2-1 – Paramics Runs

	2009	2012	2021	2031
Existing Network	✓	✓	✓	✓
Ultimate Majura Parkway		✓	✓	✓

2.6 Paramics Modelling Results (Performance Indicators)

Micro-simulation runs for the years 2012, 2021, 2031 and 2038 were conducted using the Paramics model for the existing road network as well as for the considered network improvement option. The overall network performance indicators for each of the micro-simulation runs are displayed in Table 2-2 and Table 2-4. These include the amount of released vehicles and their percentage

relative to demand volumes, vehicle hours travelled and vehicles kilometres travelled. The output shows that the network in its current configuration is not sufficient to accommodate all of the future traffic. As expected, the demand in future years increases leading to an increase in congestion, higher average travel times and hence an increase in vehicle hours travelled.

Table 2-2 – Micro-simulation measured performance factors (Entire Network)

Model	Released Vehicles				Vehicle Hours Travelled				Vehicle Kilometres Travelled			
	2009	2012	2021	2031	2009	2012	2021	2031	2009	2012	2021	2031
Base Case (Without Parkway)	9498 (97%)	10165 (90%)	10685 (70%)	10458 (65%)	834	984	1843	2767	36983	39946	54515	59522
Upgrade Option (With Parkway)	-	10387 (93%)	12609 (81%)	13073 (78%)	-	723	1108	1257	-	41184	55678	60316
Total Demand	9794	11170	15400	16300	-	-	-	-	-	-	-	-

(*) Percentage of Demand Met Within Peak Hour = Released Vehicles/Demand Volumes
Paramics model is constrained by capacity of modelled network. In this context, the Paramics model is not able to release demand flows that are in excess of the road network capacity during the peak modelled hour.

The percentage of 'released vehicles' is simply the proportion of the total demand that was able to come out the zone generators of the micro-simulation model. Table 2-3 shows a comparison of performance factors (similar to the ones shown in Table 2-2) between the North-South and East-West corridors of the study network. Travel time and average speed improvements resulting from implementing the Majura Parkway are primarily felt by travellers in the North-South corridor. Traffic operation improvements in the East-West direction will not be nearly as significant, unless the adjacent, major intersections (Majura Road – Fairbairn Avenue and Morshead Drive – Dairy Road/Majura Parkway) are upgraded.

Table 2-3 – Traffic Released from North and East

Model	Released Vehicles (From North)				Released Vehicles (From East)			
	2009	2012	2021	2031	2009	2012	2021	2031
Base Case (Without Parkway)	1566 (100%)	1754 (100%)	2070 (78%)	1595 (56%)	2091 (100%)	2471 (100%)	2603 (70%)	2245 (59%)
Upgrade Option (With Parkway)	-	1975 (100%)	3161 (100%)	3812 (100%)	-	2492 (100%)	3024 (79%)	3066 (79%)
Base Case Demand	1566	1754	2641	2842	2091	2471	3698	3836
Upgrade Option Demand	-	1975	3161	3828		2492	3821	3868

From Table 2-3, the percentage of released vehicles coming from the North is 100% for all the future scenarios, with 2,217 extra vehicles released in 2031. Traffic coming from the East did not see much change in the proportion of released vehicles with only 421 additional released vehicles in 2021 and 821 extra in 2031. This highlights the fact that the benefits of the Majura Parkway can primarily be felt along the North-South corridor and not much on the East-West. If the full benefit

of this upgrade is to be maximised, additional improvements and upgrades along the East-West corridor of the study area should also be done, particularly on the major intersections.

Table 2-4 – Micro-simulation calculated performance (Entire Network)

Model	Average Vehicle Travel Time [min]				Average Vehicle Speed [km/h]			
	2009	2012	2021	2031	2009	2012	2021	2031
Base Case (Without Parkway)	5.85	6.69	12.40	15.76	40.0	32.8	16.2	11.2
Upgrade Option (With Parkway)	-	5.97	10.27	11.41	-	43.1	28.5	28.0

2.6.1 Traffic Issues

In terms of traffic, two issues are considered:

1. Ability of traffic demand to enter the network without being delayed and hence causing spill over of delay to surrounding roads and entry points.
2. Once traffic entered into the network, the ability of the current network configuration to accommodate traffic with an acceptable level of service.

2.6.2 Existing Condition

Currently, most of the traffic demand can enter into the network without causing spill over to neighbouring roads. If the current network remains without any intervention, it is expected that with increasing traffic demands, there will be queues at the entry points to the network and spill over to neighbouring roads. This will result into peak spreading and delays to a larger number of vehicles. This will be also accompanied by very low Level of Service (LOS) performance of traffic using the Majura Valley network.

2.6.3 Expected Effect of Proposed Improvement

The proposed improvement is expected to avoid, or at least significantly reduce the effect of the occurrence of the first problem, namely the spill-over of traffic congestion into neighbouring roads as well as the prolonging of the peak traffic hour. The Majura Parkway implementation results in a substantial improvement in each year of operation, in terms of the number of vehicles being able to enter the network during the peak hour as well as in terms of the large reductions in vehicle hours travelled demonstrating significant time savings.

2.6.4 Assessment of Network Performance in the Study Area

SMEC identified two main urban arterial journeys within the Pialligo network. These are as follows:

- North-South direction starting from the intersection of Majura Road and the Federal Highway and finishing on the Monaro Highway South of Pialligo Avenue
- East-West movement starting from East of the intersection of Pialligo Avenue and Fairbairn Avenue and finishing Morshead drive between Dairy Road and Plant Road

To assess the performance of the network on these two main arterial journeys, average travel times and average journey speeds were calculated for both the base case ('do nothing') and the upgrade (Ultimate Majura Parkway) options for the forecast years 2009, 2012, 2021 and 2031. The differences between these traffic flow attributes provide great insight on the effects (i.e. benefits) of constructing the Majura Parkway on the study area road network. Table 2-5 and Table 2-6 show the calculated travel times and speeds for the North-South and East-West directions, respectively. The comparisons between these performance indicators are shown in Table 2-6 and Table 2-7.

Table 2-5 – Micro-simulation Average Travel Time and Average Speed (North-South Direction)

Model	North to South (~12000m) Average Vehicle Travel Time [minutes]				North to South (~12000m) Average Vehicle Speed [km/h]			
	2009	2012	2021	2031	2009	2012	2021	2031
Base Case (Without Parkway)	14.9	14.2	20.1	39.9	48.7	51.3	36.1	18.2
Upgrade Option (With Parkway)	-	6.7	7.2	8.6	-	99.1	92.3	77.0

Table 2-6 – Micro-simulation Average Travel Time and Average Speed (East-West direction)

Model	East to West (~1800m) Average Vehicle Travel Time [minutes]				East to West (~1800m) Average Vehicle Speed [km/h]			
	2009	2012	2021	2031	2009	2012	2021	2031
Base Case (Without Parkway)	2.5	3.6	7.8	9.1	38.8	30.2	14.1	12.0
Upgrade Option (With Parkway)	-	2.5	6.9	7.1	-	42.0	15.8	15.1

Table 2-7 – Comparison for North-South Direction (Base Case versus Upgrade Option)

	North-South Direction					
	Base Case (Without Parkway)		Upgrade Option (With Parkway)		Difference	
Year	Travel Time (AM Peak)	Average Speed (AM Peak)	Travel Time (AM Peak)	Average Speed (AM Peak)	Reduction in Travel Time (Minutes)	Increase in Average Speed (km/h)
2009	14.9	48.7	-	-	-	-
2012	14.2	51.3	6.7	99.1	7.5	47.8
2021	20.1	36.1	7.2	92.3	12.9	56.2
2031	39.9	18.2	8.6	77.0	31.3	58.8

Table 2-8 – Comparison for East-West Direction (Base Case versus Upgrade Option)

	East-West Direction					
	Base Case (Without Parkway)		Upgrade Option (With Parkway)		Difference	
Year	Travel Time (AM Peak)	Average Speed (AM Peak)	Travel Time (AM Peak)	Average Speed (AM Peak)	Reduction in Travel Time (Minutes)	Increase in Average Speed (km/h)
2009	2.5	38.8	-	-	-	-
2012	3.6	30.2	2.5	42.0	1.1	11.8
2021	7.8	14.1	6.9	15.8	0.9	1.7
2031	9.1	12.0	7.1	15.1	2.0	3.1

The results demonstrate the significant expected future improvement in LOS for the North-South direction, where significant improvements in average speed and travel times are observed in years 2021 and 2031. The East-West corridor also benefits from Majura Parkway, although not as significant as it is in the North-South direction, especially in the medium to long term.

2.7 Intersection LOS Assessment

The performance in the AM peak period for the following intersections was analysed:

- Majura Rd and Fairbairn Ave

- Pialligo Ave and Monaro Hwy (in the Upgrade Option, this intersection is the Southbound on-ramp to the Monaro Hwy)
- Morshead Dr and Dairy Rd (in the Upgrade Option, this intersection is the Northbound off-ramp from the Monaro Hwy)

The performances for the two scenarios (with and without the Majura Parkway) are shown in Table 2-8, Table 2-10 and Table 2-11.

Table 2-9 – Intersection of Majura Rd and Fairbairn Avenue

	Majura Rd / Fairbairn Ave				
	Base Case (Without Parkway)		Upgrade Option (With Parkway)		Reduction in Delay (Seconds)
Year	Average Delay (Seconds)	Level of Service	Average Delay (Seconds)	Level of Service	
2009	23.1	C	-	-	-
2012	30.1	D	16.2	B	13.9
2021	68.5	E	16.2	B	52.3
2031	105.3	F	16.9	B	88.4

Table 2-10 – Intersection of Pialligo Ave and Monaro Hwy

	Pialligo Ave / Monaro Hwy				
	Base Case (Without Parkway)		Upgrade Option (With Parkway)		Reduction in Delay (Seconds)
Year	Average Delay (Seconds)	Level of Service	Average Delay (Seconds)	Level of Service	
2009	68.0	E	-	-	-
2012	190.2	F	10.8	B	179.4
2021	569.0	F	18.3	B	550.7
2031	637.2	F	23.6	C	613.6

Table 2-11 - Intersection of Morshead Dr and Dairy Rd/Majura Pkwy NB Off-Ramp

	Morshead Dr / Dairy Rd				
	Base Case (Without Parkway)		Upgrade Option (With Parkway)		Reduction in Delay (Seconds)
Year	Average Delay (Seconds)	Level of Service	Average Delay (Seconds)	Level of Service	
2009	67.8	E	-	-	-
2012	127.5	F	136.7	F	-9.2
2021	456.4	F	467.0	F	-10.6
2031	509.5	F	517.6	F	-8.6

3 Potential Beneficiaries to Road Network Improvements

Both the National Capital and Canberra Spatial Plans identify the airport as a major employment node and describe the importance of considering the Majura Parkway as a future major road. In a regional planning context the road plan provides improved access from and to Queanbeyan and the wider NSW region via the Monaro Highway. In terms of the National road network, constructing the Majura Parkway will provide better connections with the Federal Highway. In summary, the road plan presented has a strategic context and is important to support the current and the future development of Canberra and the surrounding NSW region.

The considered road network as well as being utilized by several groups of road users is of interest to several stakeholder organizations at different levels. Table 3-1, demonstrates the potential beneficiaries to any improvements occurring for this road network.

Table 3-1 – Beneficiaries from Road Network Improvements

Road Users (Beneficiaries)	Organisations (Beneficiaries)	Level
Canberra Airport Traffic (Passengers)	Canberra Airport Group ACT and Australian Government	Local
Canberra Airport Traffic (Freight)	Canberra Airport Group	Local
Canberra Airport Traffic (Employees)	Canberra Airport Group	Local
Canberra Airport Traffic (Passengers)	ACT Government	Local
Canberra Airport Traffic (Freight)	ACT Government	Local
Canberra Airport Traffic (Employees)	ACT Government	Local
	Department of Defence (Brindabella Park)	Federal
Gungahlin Commuter Traffic	ACT Government (Land Sales)	Local
Traffic Related to Headquarters Joint Operational Command	Department of Defence	Federal
Queanbeyan Through Traffic*	RTA & Queanbeyan City Council	Regional
Better Connections with the Federal Highway**	Department of Transport & Regional Services (Auslink)	Federal
Politicians, Parliament Members & Canberra Visitors	National Capital Authority	Federal

** Regional traffic from NSW either on Pialligo Avenue and or the Federal Highway represent a high proportion of daily travel on the roads in the vicinity of the airport particularly on the section of Pialligo Avenue past the airport where almost 90% is generated in Queanbeyan and the surrounding NSW regions.*

*** Commercial traffic on the Monaro Highway and Majura Road represent some 16% of the total traffic presently with the connection between the Monaro Highway, Majura Road and the Federal Highway an important freight route within the ACT but also for regional NSW.*

4 Construction Cost

The capital cost estimated for the project in July 2008 was $242 million (excluding GST). This has been escalated by 3 per cent to $250 million. The final cost of the project is likely to be higher subject to further cost escalation to tender time.

5 Economic Analysis

5.1 Introduction

In order to assess the economic feasibility of constructing the Majura Parkway, an analysis of the costs and benefits of the project against the 'do nothing' scenario was undertaken over a 30 year period. Through this process the Net Present Value (NPV) and Benefit Cost Ratio (BCR), associated with the full implementation of the Majura Parkway design and construction in the first 3 years of the analysis period, were estimated. The Australia Transport Council (ATC) *National Guidelines for Transport System Management in Australia* recommends a 30 year life for road projects and a 'much longer life' for bridges. The Majura Parkway has several major bridges and therefore the economic life of the project has been assumed to be 40 years, which still leaves it with a 10 year residual value after the 30 year evaluation period.

5.2 Construction and Maintenance Costs

Capital construction costs and maintenance life costs were estimated relating to the implementation of the Ultimate Majura Parkway.

Table 5-1 below indicates an initial approximate estimate of the project design and construction costs. Although the estimate is still subject to further detailed design, it provides a broad overview of the magnitude of costs, which is considered appropriate for economic analysis purposes at this stage.

Table 5-1 – Initial Project Costs (ex GST)

	Project Cost
Base Case (Without Parkway)	$0
Upgrade Option (With Parkway)	$250 million

A simplified maintenance cost was also calculated for the analysis. The cyclic maintenance was assumed to occur every 5 years from the year of work completion and opening to traffic. The cyclic maintenance cost was estimated as 0.5% of the construction cost for the first application and then for the remaining 3 applications was estimated as a 1% of the construction cost. Similarly for annual maintenance, its cost was estimated as 0.125% of the construction cost for the initial years of application prior to the first cyclic maintenance, and this is raised to 0.25% of the construction cost in the succeeding years of application. In years that cyclic maintenance is applied, the annual maintenance cost is assumed to be $0.

5.3 Travel Related Costs

Several indicators of travel are obtained as output from the Paramics runs in the AM peak, namely the number of Vehicle Kilometres Travelled (VKT), the number of Vehicle Hours Travelled (VHT) as well as the mean speed. These are obtained for the years 2009, 2012, 2021 and 2031. The annual stream of VKT and VHT were estimated over a 40 year period with annual values interpolated between modelled values in 2009, 2012, 2021 and 2031. The growth between 2021 and 2031 was used to extrapolate values for 2038 and 2048. These are used to estimate the benefits for the existing condition continuing as well as for the upgraded network option. For each, the following travel related costs were estimated:

- Vehicle Operating Cost (VOC): - this is dependent on the number of Vehicle-Kilometres Travelled (VKT) as well as on the Vehicle Operating Cost per km (VOC/km) obtained from the RTA Economic Analysis Manual
- Time Cost (TC): - this is dependent on the Vehicle-Hours Travelled (VHT) as well as on the vehicle composition, average vehicle occupancy and value of travel time obtained from the RTA Economic Analysis Manual

- Accident Cost (AC): - this is dependent on the VKT as well as on the accident rate per Million Vehicle-Kilometres Travelled (MVKT) obtained from the RTA Economic Analysis Manual

The following sections detail the exact methodology used for estimating each of these costs:

5.3.1 Vehicle Operating Cost

Vehicle operating cost (VOC) is a function of kilometres travelled and VOC/km. From the most recent update of road user cost (RUC) values (June 2007) by Austroads, the equation to estimate vehicle operating cost is given by:

$$c = A + \frac{B}{V} + C \cdot V + D \cdot V^2$$

where:

c = vehicle operating cost (cents/km)
A, B, C, D = model coefficients
V = all day average link speed

This study considers four types of vehicles, namely private cars, business cars, light commercial vehicles and articulated trucks. Vehicle composition is calculated from the total estimated demand based on the proportions suggested by the *Economic Analysis Manual* of the RTA, as shown in Table 5-2. The proportions used for this study are figures for peak hours.

Table 5-2 – Vehicle Fleet Composition (*Economic Analysis Manual, RTA*)

	Private Car	Business Car	Light Commercial	Articulated Truck
Peak Hours	80	5	11	4
Business Hours	63	22	10	5
Other Hours	85	5	7	3

The annual VOC per vehicle type are calculated by getting the product of the total VKT each year and the estimated VOC per kilometre. The VKT for each vehicle type are calculated by multiplying the total VKT by the proportion of each vehicle type. The VOC per kilometre of each vehicle type is estimated by applying the corresponding model coefficients, given in Table 5-3 (Freeways) and Table 5-4 (At-Grade Roads), to the abovementioned equation.

Table 5-3 – Estimated VOC Parameters for Freeways

VOC Model Coefficients (Freeways)				
Vehicle Type	**A**	**B**	**C**	**D**
Cars	-16.262 (-16.262)	3929.78 (1553.78)	0.23531 (0.23531)	0.0000501 (0.0000501)
LCV	-30.00 (-30.00)	5167.74 (3396.74)	0.25629 (0.25629)	0.001262 (0.001262)
HCV + Buses	-30.00 (-30.00)	12255.38 (8544.38)	0.01850 (0.01850)	0.006029 (0.006029)

Note: Values in brackets are estimated parameters for VOC only specification, while estimated parameter values outside brackets are for VOC plus person time costs (commercial, freight and private time)
Source: Austroads (2007) Update of RYC Unit Values to June 2007

Table 5-4 – Estimated VOC Parameters for All At-Grade Roads

VOC Model Coefficients (At-Grade Roads)				
Vehicle Type	**A**	**B**	**C**	**D**
Cars	2.185 (2.185)	3352.21 (976.21)	0.05711 (0.05711)	0.0005795 (0.0005795)

LCV	-3.096 (-3.096)	3863.48 (2092.48)	0.19609 (0.19609)	0.0005658 (0.0005658)
HCV + Buses	5.885 (5.885)	9182.53 (5471.53)	0.58625 (0.58625)	0.0002108 (0.0002108)

Note: Values in brackets are estimated parameters for VOC only specification, while estimated parameter values outside brackets are for VOC plus person time costs (commercial, freight and private time)

Source: Austroads (2007) Update of RYC Unit Values to June 2007

Travel time costs are already incorporated in the estimated VOCs, so the benefits derived from reduced travel times are included in the VOC savings.

5.3.2 Accident Costs

The expected number of accidents by type is a function of kilometres travelled. It is a known phenomenon that the more travelling, the more is the propensity of getting involved in an accident. Table 5-5 shows the average cost of accidents per Million VKT by road type. The existing road network is assumed to be Arterial while the Majura Parkway is assumed to be Freeway.

Table 5-5 – Adopted Accident Rates and Costs

Road Type	Average Crash Cost ($/MVKT)
Arterial	45,800
Freeway	14,300

The Accident Costs (AC) is a summation of all the costs expected to be incurred as a result of occurrence of different types of accidents. The formulation for this computation is as follows:

$$AC_{option} = \left(\frac{Cost}{MVKT_{(Arterial)}} \times MVKT_{(Arterial)}\right) + \left(\frac{Cost}{MVKT_{(Freeway)}} \times MVKT_{(Freeway)}\right)$$

5.3.3 Annualisation Factor

An annual expansion factor of 1825 was applied to the AM peak VOC, TTC and AC in order to estimate the annual incurred costs over the evaluation period. The expansion factor is estimated by applying the existing peak hour to daily flow ratio. Recent 24 hour traffic count data collected for Canberra Airport Group along Majura Road provides a basis for estimating the peak hour to daily traffic flow ratio.

$$AnnualCosts_{option} = \left(VOC_{(option)} + TTC_{(option)} + AC_{(option)}\right) \times 1825$$

5.4 Generated Traffic

From the *National Guidelines for Transport System Management in Australia, Volume 3 (Appraisal of Initiatives)* published by the Australian Transport Council (ATC), 'existing traffic' is traffic that uses the infrastructure affected in both the base and upgrade scenarios. Traffic demand in excess of this that results from the implementation of the infrastructure improvement is considered 'diverted' or 'generated' traffic. This simply means that this demand came from somewhere outside the study area, and is *not* new demand induced by the upgrade.

After the Majura Parkway is implemented, it has been forecasted that some traffic from the external network (i.e. outside the modelled study area) will go through the study area because of improved traffic operations. The benefits derived due to this generated traffic can be calculated by estimating the consumers' surplus gain, given by:

$$CSG = \frac{1}{2}(P_1 - P_2) \cdot (Q_2 + Q_1)$$

where:

CSG = consumers' surplus gain

P_1 = perceived price (assumed to be the sum of *VOC* and *AC*) for the base case

P_2 = perceived price (assumed to be the sum of *VOC* and *AC*) for the upgrade case

Q_1 = demand (converted to *VKT*) for the base case

Q_2 = demand (converted to *VKT*) for the upgrade case

5.5 Residual Value

A road construction project is expected to have no residual value (*RV*) left by the end of its economic life. For the Majura Parkway option, the economic life of the project is assumed to be 40 years. The residual value at the end of the appraisal period of 30 years is estimated as the present value of benefits for the remaining life of the asset for the remaining 10 years of the assumed 40-year economic life. This procedure for calculating the residual value is suggested by the *National Guidelines for Transport System Management in Australia, Volume 3 (Appraisal of Initiatives)* published by the Australian Transport Council (ATC). At the end of 30 years, the project is expected to have a residual value of around $186 million using this approach.

5.6 Environmental Externalities

The RTA Manual includes monetary values for environmental externalities (noise, air pollution, water pollution, etc) and these are mainly shown as functions of VKT. Environmental externalities (*EE*) are known to be functions not only of kilometres travelled but also of traffic operating speed (i.e. it increases with kilometres travelled and reduces with the increase in operating speeds). The Majura Parkway (upgraded network) option is expected to increase the operating speed for the expected traffic as well as to increase the number of vehicle kilometres travelled. In this context the RTA values are not sufficient to compare and assess the full impact of the environmental externalities.

However, some partial benefit may be estimated from the generated traffic outside the study area. This is mainly that portion of the future demand that will not have passed through the study area without the Majura Parkway. These are assumed to be traffic that are diverted from the external network (i.e. road networks outside the study area), which are then subsequently assumed to be more highly urbanised than the areas surrounding the Majura Parkway. With these assumptions, the environmental costs caused by these 'redirected' traffic should then be reduced once they opt to go through the Majura Parkway, which is in a more 'rural' setting than their original route choices. In other words, environmental impacts at or near the City Centre are reduced through the diversion of this demand to the Majura Parkway. The RTA costs for environmental externalities are classified according to urban and rural settings, as shown in Table 5-6. The *EE* benefits (albeit partial) can then be estimated by getting the difference between the environmental costs of the diverted traffic in an urban and rural setting.

Table 5-6 – Environmental Externality Values per VKT for Passenger Cars and Buses (*Economic Analysis Manual, RTA*)

Environmental Externality	Passenger Vehicles (cents/veh-km)		Buses (cents/veh-km)	
	Urban	Rural	Urban	Rural
Noise	0.83	0.00	2.03	0.00
Air Pollution	2.58	0.03	29.08	0.00
Water Pollution	0.39	0.04	4.36	0.04
Greenhouse	2.03	2.03	11.98	11.98
Nature and Landscape	0.05	0.48	0.13	1.32
Urban Separation	0.60	0.00	1.92	0.00
Upstream & Downstream Costs	3.48	3.48	17.97	17.97

5.7 Majura Parkway Benefits

The total expected benefits to be derived from constructing the Majura Parkway are estimated by calculating the savings of the upgrade option (Ultimate Majura Parkway) as compared to the base option ('do nothing') in terms of *VOC* savings, *TTC* savings, *AC* savings, the residual value (*RV*) after the 30-year appraisal period, and the environmental cost savings (*EE*). Values of such savings for each option are depicted in **Appendix A**. The formulation for this computation is as follows:

$$Benefits = \left(VOC_{Upgrade} - VOC_{Base}\right) + \left(TTC_{Upgrade} - TTC_{Base}\right) + \left(AC_{Upgrade} - AC_{Base}\right) + CSG + RV + EE$$

5.8 Benefit Cost Ratio

In order to compare the costs and benefits of the proposed option relative to the existing road network over the evaluation period, the change in monetary values over time needs to be accounted for. This is achieved by discounting the annual costs and benefits of the project to the present year using a range of discount rates (4%, 7%, and 10%). The normal indicators of the worth of a project, the NPV and BCR for each option are estimated for each of these discount rates. The analysis results are summarised in Table 5-7.

Table 5-7 – Results of Economic Analysis

	Considered Option	
Discount Rates	**NPV in 2038 (000)**	**BCR**
4%	$1,212,473	6.26
7%	$636,615	4.05
10%	$334,289	2.76

If the discounted present value of the benefits exceeds the discounted present value of the costs, then the project is worthwhile. This is equivalent to the condition that the net benefit must be positive. Another equivalent condition is that the ratio of the present value of the benefits to the present value of the costs must be greater than one. In this context, it can be seen from the table that all of the assumed discount rates produce positive NPVs as well as BCRs > 1. A detailed spreadsheet of the output of the cost benefit analysis is included in **Appendix A**.

6 Conclusions

Micro-simulation modelling was used to demonstrate the severity of the current peak traffic congestion problems and the expected future further deterioration of the traffic conditions in this network for both the 'do nothing' case and with the implementation of Majura Parkway. The results showed significant improvements in terms of average travel speed and travel time for the North-South direction, with the East-West corridor also benefiting although not as significantly.

The micro-simulation modelling was also used to obtain key performance indicators including number of vehicle kilometres travelled as well as number of vehicle hours travelled both for the existing road network as well as for the considered option in the years 2009, 2012, 2021 and 2031. These were used in accordance with RTA economic Analysis Manual to estimate travel-related costs for each option including Vehicle Operation Costs. Travel Time Costs and Accident Costs. Capital construction costs, contingency, design, supervision costs were also estimated for each option, including Annual and Cyclic maintenance costs.

Travel benefits associated with the implementation of Majura Parkway were determined by subtracting the travel related costs of the upgraded option from those travel related costs of the 'do nothing' scenario (i.e. the existing road network staying as it is with no future intervention). Additional benefits include the generated traffic benefits, residual value of the project after the 30 year appraisal period and environmental cost savings.

The results of the cost-benefit analysis show that the construction of Majura Parkway can be considered as economically feasible. This is based on the two obtained key performance indicators namely the Net Present Value (NPV) and the Benefit Cost Ratio (BCR). The upgraded network produces a NPV equating to over $636 million after 30 years at a 7% discount rate. The estimated BCR is 4.05 assuming the same appraisal period and discount rate.

Appendix A Economic Analysis

A.1 With Majura Parkway vs Without Majura Parkway (30 years)

YEAR	COSTS (shown as -ve) *Current Prices* CAPITAL COSTS ($'000)	ADDITIONAL Annual Maintenance ($'000)	ADDITIONAL Cyclic Maintenance ($'000)	BENEFITS (shown as +ve) *Current Prices* Vehicle Operating Cost Savings ($'000)	Accident Cost Savings ($'000)	Generated Traffic Benefits ($'000)	Environmental Benefits ($'000)	Residual Value ($'000)	TOTALS *Current Prices* ($'000)
2009	($25,000)	$0	$0	$0	$0	$0	$0	$0	*($25,000)*
2010	($25,000)	$0	$0	$0	$0	$0	$0	$0	*($25,000)*
2011	($100,000)	$0	$0	$0	$0	$0	$0	$0	*($100,000)*
2012	($100,000)	$0	$0	$0	$0	$0	$0	$0	*($100,000)*
2013	$0	($250)	$0	$31,040	$1,654	$3,107	$421	$0	*$35,972*
2014	$0	($250)	$0	$35,049	$1,712	$3,533	$464	$0	*$40,508*
2015	$0	($250)	$0	$39,243	$1,773	$4,018	$511	$0	*$45,295*
2016	$0	($250)	$0	$43,628	$1,836	$4,569	$563	$0	*$50,346*
2017	$0	$0	($1,000)	$48,213	$1,901	$5,196	$621	$0	*$54,931*
2018	$0	($500)	$0	$53,005	$1,969	$5,909	$684	$0	*$61,067*
2019	$0	($500)	$0	$58,014	$2,038	$6,720	$754	$0	*$67,026*
2020	$0	($500)	$0	$63,246	$2,111	$7,642	$831	$0	*$73,330*
2021	$0	($500)	$0	$68,712	$2,185	$8,690	$916	$0	*$80,004*
2022	$0	$0	($2,000)	$73,929	$2,210	$9,490	$936	$0	*$84,566*
2023	$0	($500)	$0	$79,320	$2,235	$10,363	$957	$0	*$92,375*
2024	$0	($500)	$0	$84,891	$2,260	$11,317	$978	$0	*$98,945*
2025	$0	($500)	$0	$90,646	$2,285	$12,358	$1,000	$0	*$105,789*
2026	$0	($500)	$0	$96,591	$2,310	$13,496	$1,022	$0	*$112,919*
2027	$0	$0	($2,000)	$102,733	$2,336	$14,738	$1,045	$0	*$118,851*
2028	$0	($500)	$0	$109,077	$2,362	$16,094	$1,068	$0	*$128,101*
2029	$0	($500)	$0	$115,631	$2,388	$17,575	$1,092	$0	*$136,185*
2030	$0	($500)	$0	$122,399	$2,415	$19,192	$1,116	$0	*$144,622*
2031	$0	($500)	$0	$129,390	$2,441	$20,958	$1,141	$0	*$153,430*
2032	$0	$0	($2,000)	$136,609	$2,469	$22,887	$1,166	$0	*$161,130*
2033	$0	($500)	$0	$144,065	$2,496	$24,993	$1,192	$0	*$172,245*
2034	$0	($500)	$0	$151,764	$2,523	$27,292	$1,218	$0	*$182,298*
2035	$0	($500)	$0	$159,713	$2,551	$29,804	$1,245	$0	*$192,814*
2036	$0	($500)	$0	$167,922	$2,580	$32,547	$1,273	$0	*$203,821*
2037	$0	$0	($2,000)	$176,397	$2,608	$35,542	$1,301	$0	*$213,848*
2038	$0	($500)	$0	$185,147	$2,637	$38,812	$1,330	$182,631	*$410,057*
Total	($250,000)	($9,000)	($9,000)	$2,566,374	$58,284	$409,571	$24,844	$182,631	*$2,973,704*
PRESENT VALUES									
PV @ 7%	($203,120)	($3,026)	($2,548)	$695,219	$18,965	$99,761	$7,438	$23,992	*$636,615*
PV @ 4%	($221,532)	($4,668)	($4,228)	$1,169,864	$29,507	$175,374	$12,003	$56,309	*$1,212,473*
PV @ 10%	($186,821)	($2,051)	($1,607)	$436,638	$12,828	$60,011	$4,854	$10,466	*$334,289*

Discount Rate	**4.0%**	**7.0%**	**10.0%**
NPV ('000)	$1,212,473	$636,615	$334,289
BCR	6.26	4.05	2.76

A.2 With Majura Parkway vs Without Majura Parkway (40 years)

YEAR	COSTS (shown as -ve) *Current Prices* CAPITAL COSTS ($'000)	ADDITIONAL Annual Maintenance ($'000)	ADDITIONAL Cyclic Maintenance ($'000)	BENEFITS (shown as +ve) *Current Prices* Vehicle Operating Cost Savings ($'000)	Accident Cost Savings ($'000)	Generated Traffic Benefits ($'000)	Environmental Benefits ($'000)	Residual Value ($'000)	TOTALS *Current Prices ($'000)*
2009	($25,000)	$0	$0	$0	$0	$0	$0	$0	*($25,000)*
2010	($25,000)	$0	$0	$0	$0	$0	$0	$0	*($25,000)*
2011	($100,000)	$0	$0	$0	$0	$0	$0	$0	*($100,000)*
2012	($100,000)	$0	$0	$0	$0	$0	$0	$0	*($100,000)*
2013	$0	($250)	$0	$31,040	$1,654	$3,107	$421	$0	*$35,972*
2014	$0	($250)	$0	$35,049	$1,712	$3,533	$464	$0	*$40,508*
2015	$0	($250)	$0	$39,243	$1,773	$4,018	$511	$0	*$45,295*
2016	$0	($250)	$0	$43,628	$1,836	$4,569	$563	$0	*$50,346*
2017	$0	$0	($1,000)	$48,213	$1,901	$5,196	$621	$0	*$54,931*
2018	$0	($500)	$0	$53,005	$1,969	$5,909	$684	$0	*$61,067*
2019	$0	($500)	$0	$58,014	$2,038	$6,720	$754	$0	*$67,026*
2020	$0	($500)	$0	$63,246	$2,111	$7,642	$831	$0	*$73,330*
2021	$0	($500)	$0	$68,712	$2,185	$8,690	$916	$0	*$80,004*
2022	$0	$0	($2,000)	$73,929	$2,210	$9,490	$936	$0	*$84,566*
2023	$0	($500)	$0	$79,320	$2,235	$10,363	$957	$0	*$92,375*
2024	$0	($500)	$0	$84,891	$2,260	$11,317	$978	$0	*$98,945*
2025	$0	($500)	$0	$90,646	$2,285	$12,358	$1,000	$0	*$105,789*
2026	$0	($500)	$0	$96,591	$2,310	$13,496	$1,022	$0	*$112,919*
2027	$0	$0	($2,000)	$102,733	$2,336	$14,738	$1,045	$0	*$118,851*
2028	$0	($500)	$0	$109,077	$2,362	$16,094	$1,068	$0	*$128,101*
2029	$0	($500)	$0	$115,631	$2,388	$17,575	$1,092	$0	*$136,185*
2030	$0	($500)	$0	$122,399	$2,415	$19,192	$1,116	$0	*$144,622*
2031	$0	($500)	$0	$129,390	$2,441	$20,958	$1,141	$0	*$153,430*
2032	$0	$0	($2,000)	$136,609	$2,469	$22,887	$1,166	$0	*$161,130*
2033	$0	($500)	$0	$144,065	$2,496	$24,993	$1,192	$0	*$172,245*
2034	$0	($500)	$0	$151,764	$2,523	$27,292	$1,218	$0	*$182,298*
2035	$0	($500)	$0	$159,713	$2,551	$29,804	$1,245	$0	*$192,814*
2036	$0	($500)	$0	$167,922	$2,580	$32,547	$1,273	$0	*$203,821*
2037	$0	$0	($2,000)	$176,397	$2,608	$35,542	$1,301	$0	*$213,848*
2038	$0	($500)	$0	$185,147	$2,637	$38,812	$1,330	$0	*$227,426*
2039	$0	($500)	$0	$197,244	$2,666	$42,384	$1,360	$0	*$243,153*
2040	$0	($500)	$0	$210,131	$2,696	$46,284	$1,390	$0	*$260,000*
2041	$0	($500)	$0	$223,860	$2,726	$50,543	$1,421	$0	*$278,049*
2042	$0	$0	($2,000)	$238,486	$2,756	$55,194	$1,452	$0	*$295,888*
2043	$0	($500)	$0	$254,068	$2,787	$60,273	$1,484	$0	*$318,112*
2044	$0	($500)	$0	$270,667	$2,818	$65,819	$1,517	$0	*$340,322*
2045	$0	($500)	$0	$288,352	$2,849	$71,876	$1,551	$0	*$364,128*
2046	$0	($500)	$0	$307,191	$2,881	$78,490	$1,585	$0	*$389,648*
2047	$0	$0	($2,000)	$327,262	$2,913	$85,713	$1,621	$0	*$415,509*
2048	$0	($500)		$348,644	$2,946	$93,601	$1,657	$0	*$446,347*
Total	($250,000)	($13,500)	($13,000)	$5,232,279	$86,323	$1,057,016	$39,882	$0	*$6,139,000*
PRESENT VALUES									
PV @ 7%	($203,120)	($3,467)	($2,891)	$932,686	$21,536	$156,890	$8,809	$0	*$910,442*
PV @ 4%	($221,532)	($5,833)	($5,189)	$1,823,065	$36,493	$333,432	$15,737	$0	*$1,976,172*
PV @ 10%	($186,821)	($2,224)	($1,734)	$525,986	$13,807	$81,385	$5,374	$0	*$435,774*

Discount Rate	**4.0%**	**7.0%**	**10.0%**
NPV ('000)	$1,976,172	$910,442	$435,774
BCR	9.50	5.35	3.28

Appendix C – Summary of Initiative Profiling

Part A - Overview

Title of Initiative – Federal Highway link to Monaro Highway

Summary of Initiative – The ACT is seeking funding to create an efficient 11 kilometre dual carriageway freight transport, business travel and personal travel link between the Federal Highway and the Monaro Highway.

The joining of these national highways will provide a vital transport link relevant to a significant population and geographic region of Australia — from the south eastern coast, through the snowy mountains, the Nation's capital and further north to either side of the Great Divide.

In essence, the project will 'complete' the Federal Highway by linking the regions north and south of the Australian Capital Territory.

The proposed Majura Parkway will also form part of the Territory's arterial road network, improving north-south transit, particularly to the Airport, and eastwards towards Queanbeyan.

Part B – Rating and Justification

Item	**Expand Australia's productive capacity**	**Increase Australia's productivity**	**Diversify Australia's economic capabilities**	**Build on Australia's global competitive advantages**	**Develop our cities and/or regions**	**Reduce greenhouse gas emissions**	**Improve social equity, and quality of life, in our cities and our regions**	**Linkages**
Rating	Highly beneficial	Highly beneficial	Neutral	Neutral	Highly beneficial	Highly beneficial	Moderately beneficial	
How does the imitative meet/does not meet the strategic priority	An efficient link between the Federal Highway and the Monaro Highway will increase the productive capacity of south eastern NSW by facilitating freight movements and the inputs and outputs of businesses in the region.	The initiative will address an apparent decline in productivity in the transport and storage industry in the ACT. Improved transportation through the ACT will reduce input cost for businesses in south east NSW and improve their productivity.	Improved transportation between Canberra and the surrounding region can support diversified economic opportunities including high technology industries	Linking the Federal and the Monaro highway will have only a slight impact on Australia's global competitive advantage. By facilitating the movement of business inputs and outputs in the south eastern region it will have a positive impact on Australia's global competitive advantage.	Linking the Federal and Monaro highways will in turn link the residential growth area of the ACT — the northern region named Gungahlin — with employment areas and the airport.	The project will divert heavy vehicles from the City Centre, and residential and employment areas. The improved efficiency of the passage of such vehicles through the ACT will reduce greenhouse emissions, particularly in close proximity to densely populated and employment areas.	Canberra's existing arterial roadwork is in appropriate for handling large freight vehicles. The passage of such vehicles on inappropriate suburban road has a negative impact on the quality of life for ACT residents and for visitors to the Nations capital.	

Provide data and evidence of how the initiative meets/does not meet the strategic priority	ABS national accounts data show that the output of the transport and storage industry in the ACT is declining — in contrast to increasing output in all other jurisdictions.	ABS national accounts and labour force data indicate that productivity in the transport and storage industry in the ACT is declining — in contrast to increasing productivity in all other jurisdictions.	Furthermore, Canberra's strategic land use planning document, ACT Spatial Plan, identifies a future diversified industrial and commercial employment corridor — the Eastern Broadacre development — for which a link between the Federal and Monaro highway is the key enabler.	There is a significant presence of foreign embassies and consulates in the ACT and the goods and services consumed by these embassies totalled around $100 million in 2007-08. It is in Australia's 'diplomatic' interest to have the necessary freight links to service these foreign embassies efficiently.	The project will link the residential growth area of the ACT with the other three established districts of the ACT. The residential land supply of the three established districts is now highly limited. Hence, Gungahlin is the major source for the ACT to meet its pressing need for housing and to stimulate ACT's (land development based) economy			

Provide an outline of how the initiative is dependent on policy, regulatory, demand, pricing, efficiency and/or capital investment initiatives	Micro-simulation with updated traffic count information has highlighted that the performance of the proposed Federal Highway/Monaro Highway link could be improved further by removing emergent 'pinch points' at three roundabouts on the eats-west transit. Further work is required to develop design solutions and cost estimates.							

Appendix E – Summary of Initiative Profiling

Part A - Overview

Title of Initiative – Federal Highway link to Monaro Highway – Majura Parkway

Summary of Initiative – The ACT is seeking funding to create an efficient 11 kilometre dual carriageway freight transport, business travel and personal travel link between the Federal Highway and the Monaro Highway.

The joining of these national highways will provide a vital transport link relevant to a significant population and geographic region of Australia — from the south eastern coast, through the snowy mountains, the Nation's capital and further north to either side of the Great Divide.

In essence, the project will 'complete' the Federal Highway by linking the regions north and south of the Australian Capital Territory.

The proposed Majura Parkway will also form part of the Territory's arterial road network, improving north-south transit, particularly to the Airport, and eastwards towards Queanbeyan.

Broadly, the project involves the construction of 11km dual carriageway with 7 bridges.

Part B – Rating and Justification

Item	Expand Australia's productive capacity	Increase Australia's productivity	Diversify Australia's economic capabilities	Build on Australia's global competitive advantages	Develop our cities and/or regions	Reduce greenhouse gas emissions	Improve social equity, and quality of life, in our cities and our regions	Linkages
Rating	Highly beneficial	Highly beneficial	Neutral	Moderately beneficial	Highly beneficial	Moderately beneficial	Moderately beneficial	
How does the imitative meet/does not meet the strategic priority	An efficient link between the Federal Highway and the Monaro Highway will increase the productive capacity of south eastern NSW by reducing freight transport costs.	The initiative will address an apparent decline in productivity in the transport and storage industry in the ACT. Improved transportation through the ACT will reduce input cost for businesses in south east NSW and improve their productivity.	Improved transportation between Canberra and the surrounding region can support diversified economic opportunities including high technology industries	Linking the Federal and the Monaro highway will reduce freight costs and enhance the competitiveness of exporters in the south eastern region of NSW.	Linking the Federal and Monaro highways will in turn link the residential growth area of the ACT — the northern region named Gungahlin — with employment areas and the airport.	The project will reduce vehicle travel time and divert heavy vehicles from the City Centre, and residential and employment areas. The improved efficiency of the passage of such vehicles through the ACT will reduce greenhouse emissions, particularly in close proximity to densely populated and employment areas.	The project will improve access from the residential growth area of Canberra to centres of employment and other areas of social activity. Canberra's existing arterial roadwork is inappropriate for handling large freight vehicles. The passage of such vehicles on inappropriate suburban road has a negative impact on the quality of life for ACT residents and for visitors to the Nations capital.	The project will complete a missing link in National Highway networks. The project will also provide an efficient link to the Canberra Airport.
Provide data and evidence of how the initiative meets/does not meet the strategic priority	Economic analysis by SMEC Australia shows a 50 per cent reduction in total vehicle operating costs (including travel time) by 2031. Average speed on North-South transit is projected to increase from 18km/hr to 77km/hr, and travel time in AM peak hour is projected to reduce from 40 minutes under 'do nothing' scenario to less than 9 minutes in 2031. The significant reduction in vehicle operating costs will reduce freight transport costs and increase the productive capacity of south eastern NSW. Reduced travel time for car passengers will increase the time available for marketable economic production.	ABS national accounts and labour force data indicate that productivity in the transport and storage industry in the ACT is declining — in contrast to increasing productivity in all other jurisdictions. The estimated 50 per cent reduction in vehicle operating costs will reduce input costs for businesses in south east NSW and thereby improve their productivity.	Canberra's strategic land use planning document, ACT Spatial Plan, identifies a future diversified industrial and commercial employment corridor — the Eastern Broadacre development — for which a link between the Federal and Monaro highway is the key enabler.	The estimated 50 per cent reduction in vehicle operating costs will reduce input costs for exporting businesses in south east NSW and thereby improve Australia's global competitive advantage.	The project will link the residential growth area of the ACT with the other three established districts of the ACT. The residential land supply of the three established districts is now highly limited. Hence, Gungahlin is the major source for the ACT to meet its pressing need for housing and to stimulate ACT's (land development based) economy.	Economic analysis by SMEC Australia shows the present value of the environmental benefits over 30 years is $24 million (using a discount rate of 7 per cent).	Economic analysis by SMEC Australia shows a 50 per cent reduction in total vehicle operating costs (including travel time) by 2031. The economic analysis also shows the present value of the accident cost saving over 30 years is $19 million (using a discount rate of 7 per cent).	

Provide an outline of how the initiative is dependent on policy, regulatory, demand, pricing, efficiency and/or capital investment initiatives	As highlighted in the Executive Summary, a number of other projects have been completed, or are currently underway, that are linked to this project in terms of traffic flows. These projects are: • Single eastbound bypass lane at Dairy Road/Morshead Drive roundabout; • Duplication of Morshead Drive between Dairy Road and Monaro Highway; • Three phase traffic signals at Monaro Highway/Morshead Drive; • Widening of Morsehead Drive between Pialligo Avenue and Fairbairn Avenue; • Duplication of Fairbairn Avenue between Morshead Drive and Pialligo Avenue (including a new bridge over Woolshed Creek); • Duplication of Pialligo Avenue between Morshead Dr and Fairbairn Avenue (including a new bridge at Woolshed Creek and signalised intersection at Fairbairn Avenue); and • Duplication of Pialligo Avenue between Fairbairn Avenue/Beltana Road intersection and a new airport access (currently at Ulinga Place). For the purposes of the economic analysis, it has been assumed that all of the above works will be completed prior to construction of the Federal Highway/Monaro Highway link. Micro-simulation with updated traffic count information has highlighted that the performance of the proposed Federal Highway/Monaro Highway link could be improved further by removing emergent 'pinch points' at three roundabouts on the eats-west transit. Further work is required to develop design solutions and cost estimates.

Appendix F —Transport and Storage Industry Productivity Analysis

The ACT's largest industry is public administration and defence. The ACT produces these public administration and defence services to the benefit of the Nation. As a predominately service producing economy, most goods are transported into the ACT.

Efficient freight transport links into and through the ACT are vital to the efficient functioning of such an economy.

The Australian Bureau of Statistics State Account data show that, in 2007-08, the ACT's State Final Demand (SFD) exceeded its Gross State Product (GSP) by $15.4 billion or 66 per cent. This imbalance largely reflects the significance of the importation of goods into the ACT.

However, freight transport in the ACT relates not only to residents of the ACT — the ACT also serves as an important regional centre and freight hub for south eastern New South Wales.

Given the importance of freight transport links to the nation's capital, it is a matter of concern that the productivity of the transport and storage industry in the ACT is declining. This pattern of decline is in sharp contrast to a pattern of improved productivity in all other jurisdictions (Chart 1). ABS data show that over the 18 years from 1989-90 to 2007-08 the average annual rate of productivity improvement in other jurisdictions ranged from a low of 1.2 per cent in the Northern Territory up to a high of 4.2 per cent in Tasmania. The ACT was the only jurisdiction to record a decline (-0.5 per cent).

Had productivity in the transport and storage industry not declined and remained at around the average level of the early 1990s then, assuming the same number of people employed, the value added by this industry in 2007-08 would have been $702 million rather than $544 million — an additional $158 million. The cumulative loss over the 18 years since 1989-90 is estimated at $412 million in today's dollars.

The deteriorating performance of the transport and storage industry in the ACT most likely reflects the fact that the ACT has not had the capacity to enhance freight routes to accommodate growth in the local and regional economy.

The deteriorating performance of the transport and storage industry in the ACT adversely affects not just the ACT but south eastern New South Wales.

The proposed project will significantly increase traffic speed, and reduce freight transit times. It will also result in the Canberra Airport being within a kilometre or so of a north – south freight transit link. This coalescence can be expected to have significant economic output and productivity benefits for the south eastern region of Australia.

Passenger numbers through Canberra airport are already the highest per capita of any airport — and not withstanding that Canberra airport is largely a domestic airport with limited international flights. In part, the relatively large traffic flow at the airport

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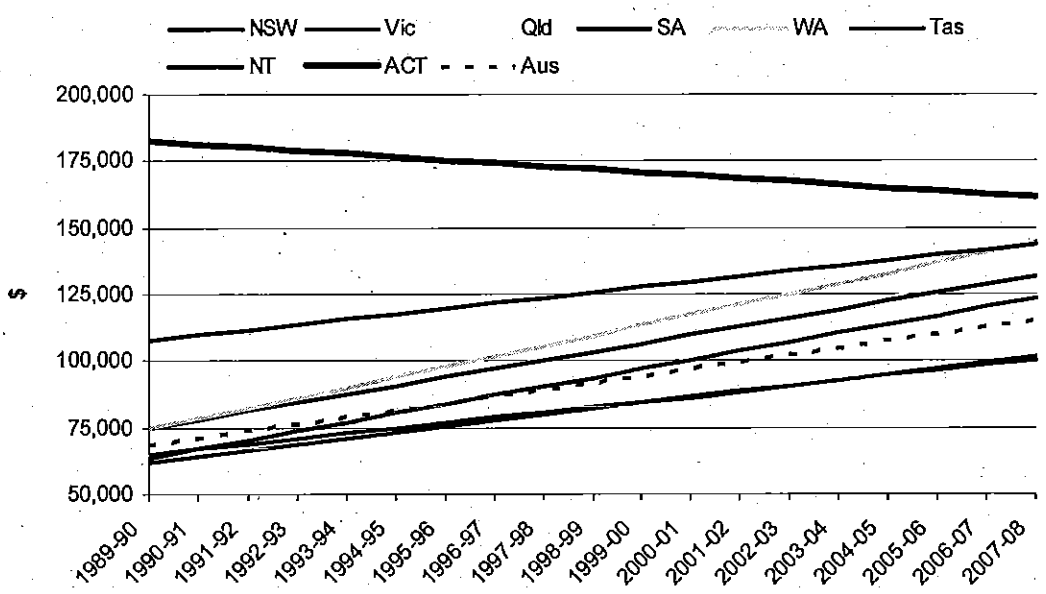
reflects a high proportion of business travel and Canberra's increasing role as a freight hub.

Chart 1 Transport and Storage Industry Productivity[(1)] by State and Territory Gross product per full-time equivalent employee, Chain volume measure, Linear trend



(1) The Productivity measure used is the total dollar value of gross product for the transport and storage industry divided by the full-time equivalent number of persons per employed in that industry

Source: ABS State Accounts (Cat. no. 5220.0) and Labour Force, Australia, Detailed Quarterly (6291.0.55.001).

[redacted]

From: [redacted]
Sent: Thursday, 7 May 2009 8:31 AM
To: [redacted]
Cc: [redacted]
Subject: Majura Parkway

Flag Status: Flagged

[redacted]

I understand the letter to Federal Minister for Defence regarding the land acquisition at Duntroon has not been signed off as yet and is still with the Chief Minister. He has arranged a meeting with me on 18 May to discuss this along with aspects of another Federal Road Program.

As you know the activity of acquiring land from Defence is the critical action in terms of timing and our ability to progress either the first stage of the project or an expanded project should funding be announced by IA.

The letter seeks to trigger the formal process of land acquisition which our advice can take between 3-6 months to complete so the sooner we start the ball rolling the better.

In relation to the EIS, it will be formally lodged with ACT PLA on tomorrow and I will confirm this when it has taken place.

Regards

[redacted]
Roads ACT
7/5/09

[redacted]

From: [redacted]
Sent: Wednesday, 13 May 2009 4:02 PM
To: [redacted]
Cc:
Subject: FW: Budget Letter - Minister Albanese to ACT Chief Minister [SEC=UNCLASSIFIED]

Flag Status: Flagged

Well - we weren't expecting that sort of response! We won't take it up in any bottomline update.

From: [redacted]
Sent: Wednesday, May 13, 2009 3:58 PM
To: [redacted]
Cc: [redacted]
Subject: RE: Budget Letter - Minister Albanese to ACT Chief Minister [SEC=UNCLASSIFIED]

I have been informed by the Feds that the ACT has been used as balancing column in table 2.91. The surplus amounts of $19.6m and $20.0m in 10-11 and 11-12 respectively, relate to unallocated Heavy Vehicle Safety funding. As these are unallocated in the forward estimates they took the view that best place to park the money was in the ACT (apparently we don't read the Budget Papers) – go figure! N.

From: [redacted]
Sent: Wednesday, 13 May 2009 12:20 PM
To: [redacted]
Cc: [redacted]
Subject: FW: Budget Letter - Minister Albanese to ACT Chief Minister [SEC=UNCLASSIFIED]

Tony/Paul

RE – Roads Funding in Commonwealth Budget Papers

Federal Budget Papers available at www.budget.gov.au – Budget Paper 3

A snapshot of TAMS view of the roads funding:

	09-10	10-11	11-12	12-13
Majura	20	10		
Lanyon	3.5	4		
Roads to Recovery	5.6	5.6	5.6	5.6
Black Spot	1.9	0.96	0.96	0.96
National Highway	0.47	0.47	0.47	0.47
Total (TAMS)	31.5	21.1	7.1	7.1
Total (Feds table 2.91)	31.5	40.6	27.0	7.1
Difference	0	**19.5**	**19.9**	0

Note that Kings Highway ($7m) has been accounted separately in table 2.98 page 88, FIRS ($0.3m ongoing) accounted for separately in table 2.95 page 87.

There is around $20m in 10-11 and 11-12 that is unaccounted for!! Unfortunately the attached advice from Albanese does not shed any light - as per Neil's request below, can you talk to your contacts in the Feds who deal with RtR, Black Spots etc and see if they know what's going on? Thanks Nick

From: [redacted]
Sent: Wednesday, 13 May 2009 11:55 AM
To: [redacted]
Cc: [redacted]
Subject: FW: Budget Letter - Minister Albanese to ACT Chief Minister [SEC=UNCLASSIFIED]

Nick
I don't think this helps! Can you talk to your contacts in the Feds who deal with RtR, Black Spots etc and see if they know what's going on
ta

From: [redacted] [mailto:[redacted]@infrastructure.gov.au]
Sent: Wednesday, May 13, 2009 11:47 AM
To: [redacted]
Subject: Budget Letter - Minister Albanese to ACT Chief Minister [SEC=UNCLASSIFIED] [redacted]

Hello [redacted] and [redacted],

As discussed this morning and last night respectively, attached is a pdf of Minister Albanese's letter to the Chief Minister. Please let me know if you need any clarification or need to discuss.

Regards

[redacted]

[redacted]

[redacted]

General Manager
Nation Building-Infrastructure Investment Division
Department of Infrastructure, Transport,
Regional Development and Local Government
GPO Box 594
CANBERRA ACT 2601

Telephone: 02 6274 8222(W)
[redacted]

[redacted]

From: [redacted]
Sent: Thursday, 21 May 2009 9:01 AM
To: [redacted]
Subject: RE: Meeting invitation with Infrastructure Australia [SEC=UNCLASSIFIED] [redacted]

Flag Status: Flagged

[redacted]

Thanks for the feedback, [redacted], I'll make sure the Treasurer sees it.

[redacted]

From: [redacted]
Sent: Wednesday, 20 May 2009 7:24 PM
To: [redacted]
Cc: [redacted]
Subject: RE: Meeting invitation with Infrastructure Australia [SEC=UNCLASSIFIED]

[redacted]

A quick note on the feedback after our meeting with Michael Deegan and the IA officers. Dan Stewart from CMD also attended the debrief.

No issues or arguments around the BCR or the business case. They advised that the business case was strong, and well presented, and the IA had recommended the project to the Federal Government. They particularly recognised the linkages with the freight transport system. They indicated that the project received quite strong support from the infrastructure Minister as well. Ultimately, however, it was the Government's decision.

The project will remain on their list, and we have undertaken to keep providing them with any updated information as it becomes available.

Obviously, prospects of funding would depend on the Federal Government's decisions, however, they indicated that IA would be proposing to apply the same framework to Auslink funding, and that would be an avenue for this project.

Majura Parkway is identified in their list of priority projects (issued this month) under the national Freight Network priorities along with four other projects.

[redacted]ppy to provide you with more detail if required.

Regards

[redacted] | Executive Director | Policy Coordination and Development Division | ACT Treasury
Phone: (02) 6207 0228 | [redacted]

From: [redacted]
Sent: Tuesday, 12 May 2009 1:10 PM
To: [redacted]
Cc: [redacted]
Subject: FW: Meeting invitation with Infrastructure Australia [SEC=UNCLASSIFIED]

[redacted]

Please note invitation for debrief. Would be useful to gauge avenues for the future rounds.

Dan: I assume you would be attending from CMD? I was hoping to go after our estimates coming Monday.

[redacted] | Executive Director | Policy Coordination and Development Division | ACT Treasury
Phone: (02) 6207 0228 | [redacted]

From: [redacted] [mailto:[redacted]@infrastructure.gov.au]
Sent: Tuesday, 12 May 2009 9:10 AM
To: [redacted]
Subject: Meeting invitation with Infrastructure Australia [SEC=UNCLASSIFIED]

Dear Mr [redacted]

With the Commonwealth Budget to be delivered tonight I would like to offer you a debrief on the proposals presented by your jurisdiction and to discuss the way ahead.

Please contact Rachael Black on 02 8114 1912 to discuss a suitable time for these meetings. The meetings will be scheduled in our Sydney office. .

[redacted]
Infrastructure Coordinator

[redacted]

From: [redacted]
Sent: Thursday, 21 May 2009 7:33 AM
To: [redacted]
/O=ACTGOV/OU=CALLAM/CN=RECIPIENTS/CN=[redacted]
Cc: [redacted]
Subject: RE: Meeting invitation with Infrastructure Australia [SEC=UNCLASSIFIED]

Flag Status: Flagged

Thanks for the update [redacted] - fingers crossed for next time!!

[redacted]

From: [redacted]
Sent: Wednesday, 20 May 2009 7:24 PM
To: [redacted]
Cc: [redacted]
Subject: RE: Meeting invitation with Infrastructure Australia [SEC=UNCLASSIFIED]

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[redacted]
Infrastructure Coordinator

Australian Government
Infrastructure Australia

COPY

12 June 2009

Mr Khalid Ahmed
Executive Director
ACT Treasury
GPO Box 158
Canberra ACT 2601

Dear Mr Ahmed,

I refer to our recent debrief session on the 20 May 2009 regarding your Government's submissions to Infrastructure Australia. I would like to extend my gratitude to your government for the continued engagement during Infrastructure Australia's prioritisation process. We look forward to continuing our productive working relationship.

As you would be aware, Infrastructure Australia recently released its National Infrastructure Priorities report. The purpose of the report was to provide advice to government on projects that were ready to proceed. A number of projects submitted by governments were identified as a priority infrastructure pipeline projects with real potential. We are keen to continue to work with governments to determine readiness of these and other initiatives.

As discussed during our recent debrief, this letter is to further outline the key issues and the next steps in Infrastructure Australia's development of the priority pipeline.

Infrastructure Australia's national approach to decision making uses a robust, 'top-down', seven step analytical framework to identifying solutions to Australia's infrastructure needs. The framework seeks the clear articulation of the problems and challenges facing Australia, before governments identify and assess various options or solutions to those problems. To assist governments in their further work, Infrastructure Australia proposes to undertake a series of workshops with each state and territory to detail the critical elements of the framework.

We propose the following timeline over the coming six months:

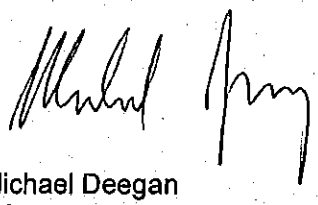
- July 2009 – August 2009 - Workshops to explain in full Infrastructure Australia's seven step analytical framework. The workshops will also seek to further Infrastructure Australia's understanding of the first step in this framework process. Therefore we will be seeking to discuss your jurisdiction's approach to integrated planning for infrastructure networks and how initiatives respond to wider issues identified in Infrastructure Australia's "A report to the Council of Australian Governments", issued December 2008.

Infrastructure Australia
GPO Box 594, Canberra ACT 2601 Australia
Telephone (02) 8114 1900 facsimile (02) 8114 1932
www.infrastructure.gov.au

- August 2009 – October 2009 – on-going collaboration on the development of Initiatives following the stages set out in the seven step analytical framework.
- End October 2009 – New submissions to be received for Infrastructure Australia to carry out assessment and evaluation for the national infrastructure pipeline and possible budget considerations.

Infrastructure Australia looks forward to working with your government to progress both the list of pipeline projects, potential other projects and wider issues affecting the efficiency and effectiveness of our nation's infrastructure.

Yours sincerely



Michael Deegan
Infrastructure Coordinator

[redacted]

From: [redacted]
Sent: Monday, 31 August 2009 9:17 PM
To: [redacted]
([redacted]@actew.com.au)'; Papps, David
Cc: [redacted]
Subject: FW: Notes from mtg with Infrastructure Australia

Importance: High

Flag Status: Flagged

Andrew, Neil, Gary, David.

Pls find [redacted] notes to the IA meeting/de-brief held by IA and our agencies last week. [pls note this is an informal information note].

Mark - I have included you due to the water/energy "theme".

The main issue for us is that IA is undertaking a further funding round, and we need to identify some appropriate projects. Please note also that I understand they have a desire to move away from the transport focus of the past round.

I can confirm that, unfortunately, we don't appear to have received the letter that informed us that IA was undertaking a further round of bidding sent in July. We now have a copy.

[redacted] will get something more formal out on this, but in the meantime, be good if you can get your people to get their thinking caps on. Proposals are due by the end of October.

Regards

[redacted]

From: [redacted]
Sent: Saturday, 29 August 2009 3:12 PM
To: [redacted]
Cc: [redacted]
Subject: RE: Notes from mtg with Infrastructure Australia

this is relevant to my previous email

http://www.infrastructureaustralia.gov.au/files/National_Infrastructure_Priorities.pdf

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From: [redacted]
Sent: Saturday, August 29, 2009 3:12 PM
To: [redacted]
Cc: [redacted]
Subject: Notes from mtg with Infrastructure Australia

- Reps from Tsy, CMD and DECCEW meet with [redacted] and [redacted] from IA yesterday. IA wanted to recap infrastructure prioritisation process last year, discuss their approach to the next proposals round and affirm a more collaborative approach moving forward.
- Proposals from jurisdictions are due by the end of October. (Advice had not been received advising the ACT of this timing).

- Fiscal context for all jurisdictions significantly different to last round. All funding in the Building Australia Fund has been allocated. Cwealth has yet to indicate what [redacted] may be available in future.
- IA has a focus this time on Demand Management and Reform agendas (eg transport pricing linked to use [redacted] Included in this better or more optimal use of existing assets.
- Strong focus on next round is better linking [redacted] projects. "What is the problem that the project seeks to be the solution for?"
- Linkage and focus needs to be on the 7 themes published by IA in its May 09 report:

1. A national broadband network: developing a more extensive, globally competitive broadband system;

2. Creation of a true national energy market: more extensive national energy grids to enable greater flexibility and competition in the nation's electricity and gas systems, whilst creating opportunities for the development of renewable energy sources;

3. Competitive international gateways: developing more effective ports and associated la[redacted]systems to more efficiently cope with imports and exports;

4. A national rail freight network: development of our rail networks so that more freight can be moved by rail;

5. Transforming our cities: increasing public transport capacity in our cities and making better use of existing transport infrastructure;

6. Providing essential Indigenous infrastructure: improved services for Indigenous communities; and

7. Adaptable and secure water supplies: more adaptable and resilient water systems to cope with climate change.

[redacted]

- IA with circulate a guidance note in the next few weeks regarding its proposed more collaborative approach with jurisdictions. It should be noted that collaboration does not man approval or prioritisation of proposals.
- IA interested in scenario planning for projects eg looking forward how might projects be [redacted] sensitive to climate change, fuel pricing, demographic changes.
- IA looking for smaller number of "richer" projects; better quality; supported by robust CBAs; clear focus on outcomes.
- IA seeking to encourage non transport options (last round, 95% of projects put forward were transport related). IA mentioned interest in water, telecoms and electricity.
- Interestingly, IA indicated [redacted] en its capital costs, the ACT's low urban density and CBA". [redacted]

<u>Way Forward</u>

We need to work through which projects would be updated (eg Majura) or proposed and start some work/coordination. I think some of this work could be linked to the Sustainable Transport Plan but for future rounds, not this one...

[redacted]S | EXECUTIVE DIRECTOR | FINANCE AND BUDGET DIVISION | ACT TREASURY
PH: 6207 0264 | FAX: 6207 0298 | [redacted]

[redacted]

[redacted]

From: [redacted]
Sent: Friday, 4 September 2009 8:42 AM
To: [redacted] (@actew.com.au); Papps, David [redacted]
Cc: [redacted]
Subject: RE: Notes from mtg with Infrastructure Australia

Flag Status: Flagged

Thanks for the update [redacted]
Given the energy and water theme, I was wondering if with all the work we are doing to increase the sustainability and adaptation for East Lake and Molonglo, if there is an opportunity to put forward alternative energy, water and waste delivery, management and collection systems for these areas?
I also would like to strengthen our case for a rapid transit system that does not focus so much on light rail, but as had been planned four years ago, can be designed to adapt for that over time as densities increase in line with our strategic plans and land use policies?
Cheers
[redacted]

From: [redacted]
Sent: Monday, 31 August 2009 9:17 PM
To: [redacted] (@actew.com.au); [redacted]
Cc: [redacted]
Subject: FW: Notes from mtg with Infrastructure Australia
Importance: High

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- IA has a focus this time on Demand Management and Reform agendas (eg transport pricing linked to use or congestion; capacity management through technology). Included in this better or more optimal use of existing assets.
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[redacted]nal broadband ne[redacted]

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3. Competitive international gateways: developing more effective ports and associated land transport systems to more efficiently cope with imports and exports;

4. A national rail freight network: development of our rail networks so that more freight can be moved by rail;

5. Transforming our cities: increasing public transport capacity in our cities and making better use of existing transport infrastructure;

6. Providing essential Indigenous infrastructure: improved services for Indigenous communities; and

7. Adaptable and secure water supplies: more adaptable and resilient water systems to cope with climate change.

- IA with circulate a guidance note in the next few weeks regarding its proposed more collaborative approach with jurisdictions. It should be noted that collaboration does not man approval or prioritisation of proposals.
- IA interested in scenario planning for projects eg looking forward how might projects be sensitive to climate change, fuel pricing, demographic changes.
- IA looking for smaller number of "richer" projects; better quality; supported by robust CBAs; clear focus on outcomes.
- IA seeking to encourage non transport options (last round, 95% of projects put forward were transport related). IA mentioned interest in water, telecoms and electricit[redacted]
- Interestingly, IA indicated that the ACT's Light Rail project "would always struggle" given its capital costs, the ACT's lo[redacted]

Way Forward

We need to work through which projects would be updated (eg Majura) or proposed and start some work/coordination. I think some of this work could be linked to the Sustainable Transport Plan but for future rounds, not this one...

[redacted] | EXECUTIVE DIRECTOR | FINANCE AND BUDGET DIVISION | ACT TREASURY
PH: 6207 0264 | FAX: 6207 0298 | [redacted]

TRANSPORT AND INFRASTRUCTURE DIVISION

Mr Alex Foulds
General Manger NSW/ACT
Department of Infrastructure, Transport,
Regional Development and Local Government
GPO Box 594
CANBERRA ACT 2601

Dear Alex

I refer to our meeting of 8 October 2009 regarding a number of issues associated with roads at the Airport precinct covered by the Federal Government's Nation Building program.

The key element of the Federal Government's election commitment was to improve roads in the Airport precinct and as such the focus to date has been the planning and design issues associated with the Majura Parkway (the Parkway).

The environmental impact assessment for this project is well advanced and a formal request has been submitted to the Department of Defence to acquire land necessary to progress the Parkway.

A recent review of the economic and environmental issues associated with the Majura Parkway has confirmed it to be a very robust project with a strong economic benefit/cost ratio in excess of 3.0.

The review and subsequent environmental assessment has highlighted the difficulty in staging the project. Some of the major difficulties include:

1) Given the high ecological values in the Majura Valley Corridor and the presence of a number of endangered species such as the legless lizard and earless dragon, it is not possible to stage the work and link back across to Majura Road without having a significant impact on the habitat of these endangered species.

2) The transport benefits of staged works are very marginal with individual stages not cost effective in their own right.

3) The negotiations with the Department of Defence regarding land acquisition has progressed more slowly than anticipated which has impacted on the program and staging options that could be considered in the short term.

Roads ACT
Macarthur House • 12 Wattle Street Lyneham ACT 2602
Locked Bag 2000, CIVIC SQUARE ACT 2608 • Telephone (02) 6207 6588 • Facsimile (02) 6207 6872

Copies of the relevant consultant reports underpinning these views are included as Attachments 1 and 2 with this letter.

On the basis of this advice, Roads ACT has explored a number of options to best utilise the $30 million available and deliver on the Federal Government's election commitments under the Building Australia Program (2009-14).

These options have included the construction of the Majura Parkway over a number of stages; progressing the Majura Parkway in one stage only; and the option of completing associated work along the Monaro Highway in the first instance.

On balance, Roads ACT consider the following is the best strategy to deliver on the Federal Government's election commitments:

(1) complete the environmental assessment, planning and design work for the full Majura Parkway project;

(2) complete the land acquisition from the Department of Defence to enable the Majura Parkway to be progressed;

(3) for the ACT and Federal Government to commence negotiations on the funding of the Majura Parkway to enable it to be constructed in one stage;

(4) for the balance of available funds to be used to complete the duplication of the Monaro Highway through Fyshwick and on works on Fairbairn Avenue, Morshead Drive and Majura Road that would be necessary as part of the Majura Parkway.

A copy of a report confirming the economic case to duplicate the section of Monaro Highway in Fyshwick is included with this letter at Attachment 3.

In summary, the above proposal is consistent with the Federal Government's election commitment is to fund roads in the vicinity of the Canberra Airport precinct.

Roads ACT consider this election commitment is best delivered by progressing the Majura Parkway project in the longer term and in the short term, progressing all the necessary planning; environmental and land acquisition requirements that will enable this to happen when a project funding arrangement has been finalised between the ACT and Federal Government.

In the interim, as well as completing the pre-construction activities for the Majura Parkway, the completion of the duplication of the Monaro Highway is consistent with improving the Majura Parkway/Monaro Highway as an important freight route and is a good investment of public funds. A copy of a plan showing the links between the Federal Highway; Majura Parkway and Monaro Highway is included at Attachment 4 to assist your understanding on this matter. Roads ACT will be in a position to deliver works forming part of this proposal with the ACT funding approved under the BAP (2009-14).

I also seek your advice on the administrative requirements to modify the current funding agreement and any views you may have on how best to deliver on the election commitments by the Federal Government in this instance.

Yours sincerely

Tony Gill
Director
Roads ACT

October 2009

Majura Parkway
Construction Cost $250M

YEAR	COSTS (shown as -ve) *Current Prices* CAPITAL COSTS ($'000)	ADDITIONAL Annual Maintenance ($'000)	ADDITIONAL Cyclic ($'000)	BENEFITS (shown as +ve) *Current Prices* Vehicle Operating Cost Savings ($'000)	Travel Time Savings ($'000)	Accident Cost Savings ($'000)	TOTALS *Current Prices* *($'000)*
2008	$0	$0	$0	$0	$0	$0	$0
2009	($50,000)	$0	$0	$761	$14,365	$164	($34,710)
2010	$0	$0	$0	$1,025	$19,342	$167	$20,534
2011	($100,000)	$0	$0	$1,324	$24,989	$170	($73,517)
2012	($100,000)	($250)	$0	$1,663	$31,386	$173	($67,028)
2013	$0	($625)	$0	$2,047	$38,625	$175	$40,223
2014	$0	($625)	$0	$2,480	$46,808	$178	$48,842
2015	$0	($625)	$0	$2,970	$56,049	$181	$58,575
2016	$0	$0	($2,500)	$3,523	$66,474	$184	$67,680
2017	$0	($625)	$0	$3,528	$66,572	$186	$69,660
2018	$0	($625)	$0	$3,533	$66,670	$187	$69,765
2019	$0	($625)	$0	$3,538	$66,768	$188	$69,870
2020	$0	($625)	$0	$3,543	$66,867	$190	$69,975
2021	$0	$0	($2,500)	$3,549	$66,965	$191	$68,205
2022	$0	($625)	$0	$3,554	$67,064	$193	$70,186
2023	$0	($625)	$0	$3,559	$67,163	$194	$70,291
2024	$0	($625)	$0	$3,564	$67,262	$196	$70,397
2025	$0	($625)	$0	$3,570	$67,361	$197	$70,503
2026	$0	$0	($2,500)	$3,575	$67,460	$199	$68,734
2027	$0	($625)	$0	$3,580	$67,560	$200	$70,715
2028	$0	($625)	$0	$3,585	$67,659	$202	$70,821
2029	$0	($625)	$0	$3,591	$67,759	$203	$70,928
2030	$0	($625)	$0	$3,596	$67,859	$204	$71,034
2031	$0	($625)	$0	$3,601	$67,959	$206	$71,141
Total	($250,000)	($10,250)	($7,500)	$69,258.7	$1,306,987.1	$4,327.6	$1,112,823.3
PRESENT VALUES							
PV @ 7%	($191,260)	($4,029)	($3,021)	$27,877	$526,063	$1,926	$357,556
PV @ 4%	($213,901)	($5,856)	($4,387)	$40,075	$756,261	$2,643	$574,836
PV @ 10%	($171,716)	($2,870)	($2,127)	$20,112	$379,544	$1,460	$224,404

Discount Rate	**4.0%**	**7.0%**	**10.0%**
NPV ('000)	$574,836	$357,556	$224,404
BCR	3.56	2.80	2.27

Majura Parkway
Construction Cost $300M

YEAR	COSTS (shown as -ve) *Current Prices* CAPITAL COSTS ($'000)	ADDITIONAL Annual Maintenance ($'000)	ADDITIONAL Cyclic ($'000)	BENEFITS (shown as +ve) *Current Prices* Vehicle Operating Cost Savings ($'000)	Travel Time Savings ($'000)	Accident Cost Savings ($'000)	TOTALS *Current Prices* *($'000)*
2008	$0	$0	$0	$0	$0	$0	$0
2009	($50,000)	$0	$0	$761	$14,365	$164	($34,710)
2010	$0	$0	$0	$1,025	$19,342	$167	$20,534
2011	($150,000)	$0	$0	$1,324	$24,989	$170	($123,517)
2012	($150,000)	($375)	$0	$1,663	$31,386	$173	($117,153)
2013	$0	($875)	$0	$2,047	$38,625	$175	$39,973
2014	$0	($875)	$0	$2,480	$46,808	$178	$48,592
2015	$0	($875)	$0	$2,970	$56,049	$181	$58,325
2016	$0	$0	($3,500)	$3,523	$66,474	$184	$66,680
2017	$0	($875)	$0	$3,528	$66,572	$186	$69,410
2018	$0	($875)	$0	$3,533	$66,670	$187	$69,515
2019	$0	($875)	$0	$3,538	$66,768	$188	$69,620
2020	$0	($875)	$0	$3,543	$66,867	$190	$69,725
2021	$0	$0	($3,500)	$3,549	$66,965	$191	$67,205
2022	$0	($875)	$0	$3,554	$67,064	$193	$69,936
2023	$0	($875)	$0	$3,559	$67,163	$194	$70,041
2024	$0	($875)	$0	$3,564	$67,262	$196	$70,147
2025	$0	($875)	$0	$3,570	$67,361	$197	$70,253
2026	$0	$0	($3,500)	$3,575	$67,460	$199	$67,734
2027	$0	($875)	$0	$3,580	$67,560	$200	$70,465
2028	$0	($875)	$0	$3,585	$67,659	$202	$70,571
2029	$0	($875)	$0	$3,591	$67,759	$203	$70,678
2030	$0	($875)	$0	$3,596	$67,859	$204	$70,784
2031	$0	($875)	$0	$3,601	$67,959	$206	$70,891
Total	($350,000)	($14,375)	($10,500)	$69,258.7	$1,306,987.1	$4,327.6	$1,005,698.3
PRESENT VALUES							
PV @ 7%	($265,054)	($5,658)	($4,229)	$27,877	$526,063	$1,926	$280,924
PV @ 4%	($297,738)	($8,219)	($6,141)	$40,075	$756,261	$2,643	$486,882
PV @ 10%	($236,913)	($4,033)	($2,978)	$20,112	$379,544	$1,460	$157,193

	Discount Rate	4.0%	7.0%	10.0%
	NPV ('000)	$486,882	$280,924	$157,193
	BCR	2.56	2.02	1.64

Department of Treasury

Our File No:
Your File No:

Mr Michael Deegan
Infrastructure Coordinator
Infrastructure Australia
Level 21, Deutsche Bank Building
126 Phillip Street
SYDNEY NSW 2000

Dear Mr Deegan

I am writing in response to your letters of 14 August and 23 September 2008 in which you sought further information to support the ACT's submission to the National Infrastructure Audit which is currently being undertaken by Infrastructure Australia (IA).

I would like to take this opportunity to reiterate our position regarding the projects which the ACT has put forward. These are a mix of projects which are current and prospective which materially impact on economic productivity and growth of the ACT and the surrounding region.

In line with the ACT's original audit input, I am pleased to provide further information, including:

- the ACT's Jurisdictional and Sectoral Analysis to support the project solutions identified in our submission;
- individual Proposal Overviews and Summaries;
- more detailed Project Plans and Business Cases, where available; and
- the individual project self-assessment audits (as requested by IA), for those projects that are well-developed solutions (however, some projects are seeking funding to pursue further solution development).

I trust this information will assist IA in identifying both the problem and solution assessment of the ACT's nominated priority infrastructure projects.

Attachment A provides a summary of all the additional information provided to support further assessment of the projects by Infrastructure Australia.

It should be noted, however, that while IA asked for project solutions that are well developed and can immediately response to Australia's challenges and contribute to national productivity, some of the projects identified fall into the planning category, and whilst further work is required, funding assistance is sought to progress these projects through the development phase.

ACT Department of Treasury
Canberra Nara Centre 1 Constitution Avenue Canberra ACT 2601
GPO Box 158 Canberra ACT 2601
T 13 22 81
http://www.treasury.act.gov.au/

[redacted]

In support of our Submission, I have also provided a courtesy copy of '*An infrastructure plan for the ACT*' released in September 2008. This document represents an important first step towards the development of a detailed ACT Infrastructure Plan, which will be released annually and establish ACT infrastructure priorities for the coming decade and beyond, including major investments that could be achieved in partnership with the Commonwealth once Infrastructure Australia has investigated projects of national significance.

If you require any further information or clarification please do not hesitate to contact [redacted] **(02) 6207 0264** or [redacted]**@act.gov.au.**

Yours sincerely

Megan Smithies
Under Treasurer
3 November 2008

Attachment A

NATION INFRASTRUCTURE AUDIT
SUMMARY OF ACT SUBMISSION

Nationally Significant Infrastructure Projects Identified for Consideration

PROJECT	DESCRIPTION	NATIONAL SIGNIFICANCE	Indicative Cost ($ million)	ADDITIONAL INFORMATION	SELF-ASSESSMENT AUDIT
TRANSPORT					
Majura Parkway	The Majura Parkway will connect the Monaro Highway, an important regional road in the ACT and NSW, with the Federal Highway which is part of the National Road Network, also providing opportunity for the development of a freight hub at the Canberra Airport with the upgrade of the existing freight route.	Links two National Highways, and provides significant transport and freight linkages between Sydney /Canberra	~$250 million (Stage 2 – Majura Parkway)	• Project Overview • A detailed study titled *"Majura Parkway and Pialligo Avenue Economic Analysis Report"* this study was completed on 21 November 2007. • Detailed project plan and report completed June 2008.	Yes

[redacted]

From: [redacted]
Sent: Monday, 3 November 2008 10:00 AM
To: [redacted]
Subject: RE: Transport Summary

[redacted]

The information in Table 2 is based on a revised CBA assessment last week covering the overall Majura Parkway project and should be used for the IA submission- the earlier advice related to stage 1 construction only.

Regards

[redacted]

From: [redacted]
Sent: Monday, 3 November 2008 9:52 AM
To: [redacted]
Subject: Transport Summary

[redacted]

I have provided a snippet from the Transport Sector Summary which outlines some cost savings (benefits) associated with the construction of the Majura Parkway. These figures differ from the table provided in the Audit Summary for the Majura Parkway, which I have also provided below.

[redacted]

Could someone please advise which are correct??

[redacted]

Thanks

[redacted]

The ACT's car reliance also has negative environmental and social consequences:

- Greenhouse emissions from the transport sector represented about 23 per cent of the ACT's emissions in 2005, a significantly higher proportion than the national average of around 14 per cent. The ACT's car related emission cost is estimated around $64 million per annum.
- An economic assessment of constructing the Majura Parkway compared to a do nothing situation estimated travel time savings in excess of $500 million, $70 million in terms of reduced vehicle operating costs and $16 million in terns of road safety savings.

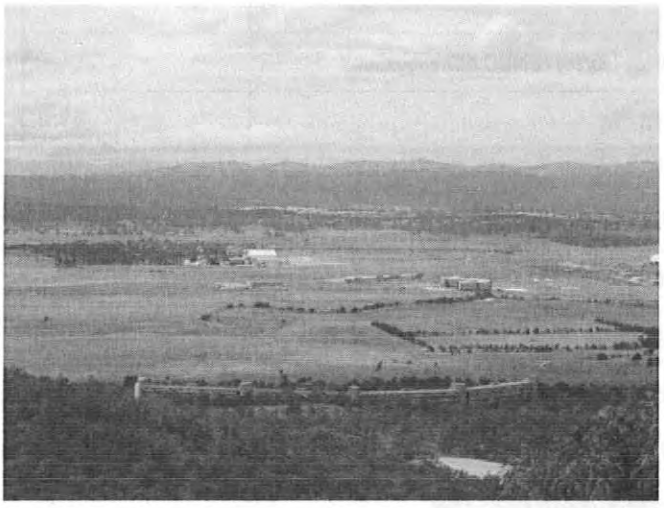
[redacted]

TABLE 2 – MONETISED BENEFITS AND COSTS ($m, 2008 dollars)

Monetised costs/benefits	Cost	
COSTS		
Capital Cost	$250 m	
Operating Cost	$17.75 m	
Etc		
	Value	Percentage
BENEFITS		
Vehicle operating costs	$70.0m	5.0%
Travel Time savings	$1,300.0m	94.7%
Accident cost savings	$5.0m	0.3%
		100%

Majura Parkway
Economic Analysis –

Ultimate Configuration Options



12th October 2009

Client: ACTPS\Roads ACT

Project Name:	Majura Parkway
Project Number:	3002180
Report for:	ACTPS / Roads ACT

PREPARATION, REVIEW AND AUTHORISATION

Revision #	Date	Prepared by	Reviewed by	Approved for Issue by
1	29-09-2009	Josh Everett Jerome Catbagan	Craig Sutton	Craig Sutton
2	30-09-2009	Josh Everett Jerome Catbagan	Craig Sutton	Craig Sutton
4	09-10-2009	Josh Everett Jerome Catbagan	Craig Sutton	Craig Sutton

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SMEC Project File:		

SMEC COMPANY DETAILS

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Email: **craig.sutton@smec.com**

www.smec.com

Majura Parkway Economic Analysis - Ultimate Configuration Options

For: ACTPS / Roads ACT

12TH OCTOBER 2009

EXECUTIVE SUMMARY

SMEC was commissioned by the ACT Government to update the economic analysis of Majura Parkway, considering the ultimate configuration. This study is an update of a similar exercise done in January 2009 but with two additional options to be evaluated. The following alignment alternatives were assessed:

- **Option 5 (current preferred alignment)**: similar alignment to the one evaluated in January 2009.
- **Option 6**: re-aligned Option 5 to reduce impacts on Majura Pines.
- **Option 7**: Upgrade of Majura Road, ie no direct impact on Majura Pines; at-grade intersection near the AFP facility; 90km/h design speed.

The most recent land use assumptions and updated modelling parameters, provided by the ACT Government, were used in the transport modelling process to provide a more accurate projection of future traffic demand. Thus, the old modelling assumptions, used in the January 2009 Economic Analysis Report, are no longer valid (*Refer detailed discussion in Chapter 2).*

Construction costs for Options 5, 6 and 7 were estimated as *$250 million*, *$260 million* and *$245 million*, respectively. Appropriate maintenance costs (both annual and cyclic) were also estimated as a function of the corresponding construction costs of each option.

Model runs were conducted for the years 2011, 2021 and 2031 for all scenarios, including the base ('do nothing') case. Vehicle Operating Costs (VOC) and Vehicle Kilometres Travelled (VKT) were extracted from the model outputs and were used to determine the benefits associated with each option.

Benefits derived from the construction of Majura Parkway were estimated by calculating the cost savings for each option. These savings were mainly the differences between travel related costs associated with the 'do nothing' scenario and those associated with the upgrade cases (i.e. Majura Parkway). In addition to these travel cost savings, other benefits that were estimated include the generated traffic benefits, residual value of the project (in 30 years), and environmental cost savings.

The economic assessment results show that all 3 options are economically feasible, given that all produced positive NPVs and BCRs greater than 1. The estimated economic indicators for each option are summarised in the following table:

Discount Rate	NPV ($,000)			BCR		
	Option 5	Option 6	Option 7	Option 5	Option 6	Option 7
4%	912,467	881,065	466,227	4.96	4.67	3.06
7%	484,285	457,205	261,040	3.32	3.11	2.28
10%	258,468	236,071	140,834	2.36	2.19	1.75

As expected, Option 7's performance is relatively poor when compared against the other two alternatives, having a lower speed limit and incorporating an at-grade intersection at the northern portion of the alignment near the AFP facility. This contributed heavily to the reduced travel cost savings, particularly in the future years when demand nears the network's capacity. Another disadvantage of Option 7 is the increased accident cost, which produces a negative benefit around 4 years after project completion, this due to the poorer standard of geometric alignment.

Option 5 (the preferred option) produced the best economic indicators, with an NPV over $484 million and a BCR of 3.32 at a 7% discount rate. It is therefore considered the best option among the three. In terms of traffic operations, it performs very similarly with Option 6 since the only difference between the two alignments is that section near Majura Pines. Option 6 however costs $10 million more than Option 4, hence the lower NPV and BCR.

In light of recent announcements by the Canberra Airport to develop a 24hr Freight Hub, a sensitivity of the economic indicators to the proportion of heavy vehicle percentage was also tested using three additional HV% scenarios – 6%, 10% and 12% (current analysis being based on 8%). The estimated NPVs and BCRs increased at 6% and 10% heavy vehicles, while economic indicators were found to decrease at 12% heavy vehicles. The reductions in NPV and BCR at 12% HV (50% increase from the reference scenario of 8% HV) in Option 5 at a 7% discount rate were estimated at 71.07 million (14.7% of NPV at 8% HV) and 0.34, respectively. Even with a 50% increase in heavy vehicles during the AM peak hour, the project still appears to be economically feasible.

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APPENDIX A: Economic Analysis Spreadsheets

1 INTRODUCTION

1.1 Majura Parkway

The Majura Parkway is proposed to be constructed in the Majura Valley on the east side of Canberra. As well as its metropolitan functions, the Majura Parkway is important in enabling traffic from Sydney and other northern destinations to the Monaro region to bypass Canberra. In selecting a route for the Parkway, several considerations were taken into account:

- To protect the important natural and cultural heritage features of the Majura Valley;
- To provide access to all the existing and future development in the Majura Valley from Majura Road;
- To make provision for a possible future very high speed train (VHST);
- To avoid major constraints on potentially important long-term land uses, such as the upgrading of facilities at Canberra International Airport;
- To limit the impacts on other existing land uses where practicable; and
- To construct the road at a realistic cost to the community

The Majura Parkway comprises a number of ramps, interchanges, and structures. The total length is about 11 km of dual carriageway linking the Monaro Highway and the Federal Highway. For each carriageway, cross sections of 2 x 3.5 m traffic lanes, 2.5 m roadside shoulder and 1.0 m offside shoulder are provided.

Public and Stakeholder comments received during the environmental planning process identified the need to investigate 2 x additional alignment options (Option 6 and 7) in the northern part of the project which reduced impact upon the Majura Pines and made more use of the existing Majura road. A separate report has been prepared which analyses the advantages and disadvantages of these options (*refer "Review of Environmental Factors - Majura Parkway – Option 6 & Option 7, SMEC August 2009*). This economic analysis report does not intend to duplicate the previous information and focuses on economic analysis only. There is however a summary of alignment options impacts included in Chapter 4

1.2 Objective

The main objective of this study is to update the economic assessment conducted for the Majura Parkway Ultimate Configuration (*SMEC, Jan 2009*) and to evaluate 2 x additional alignment options. The current analysis involves the economic evaluation of three options, which are as follows:

- ***Option 5 (the current preferred option)***: very similar to the one presented in January 2009, but with some changes in interchange design. (*Figure 2*)
- ***Option 6***: also very similar to the preferred option but with some minor changes in alignment and interchange layout in the northern portion of the parkway which reduce the impacts upon Majura Pines. (*Figure 3.*)
- ***Option 7***: Essentially an upgrade of Majura Road in the northern part of the site, merging of the parkway to the existing alignment of Majura Road, with an at-grade intersection at the junction between Majura Parkway and the AFP Access Road. This option also reduces the impacts upon Majura Pine. (*Figure 4.*)

These were assessed relative to the traffic operational conditions if the existing condition is continued (or a 'do nothing' scenario) (*Figure 1*)

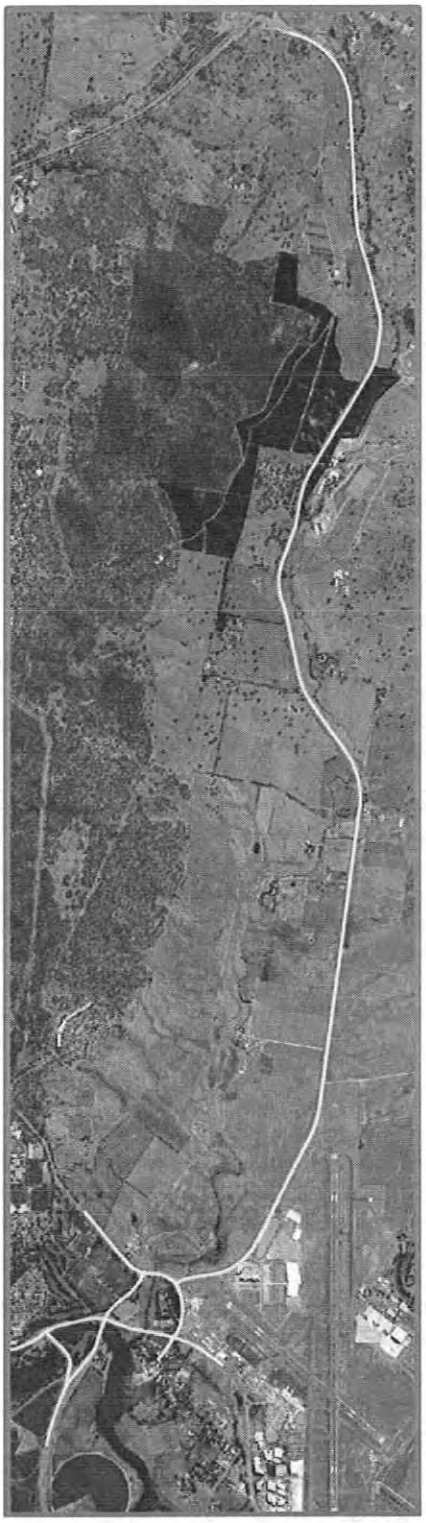

Figure 1: Majura Rd Existing Conditions

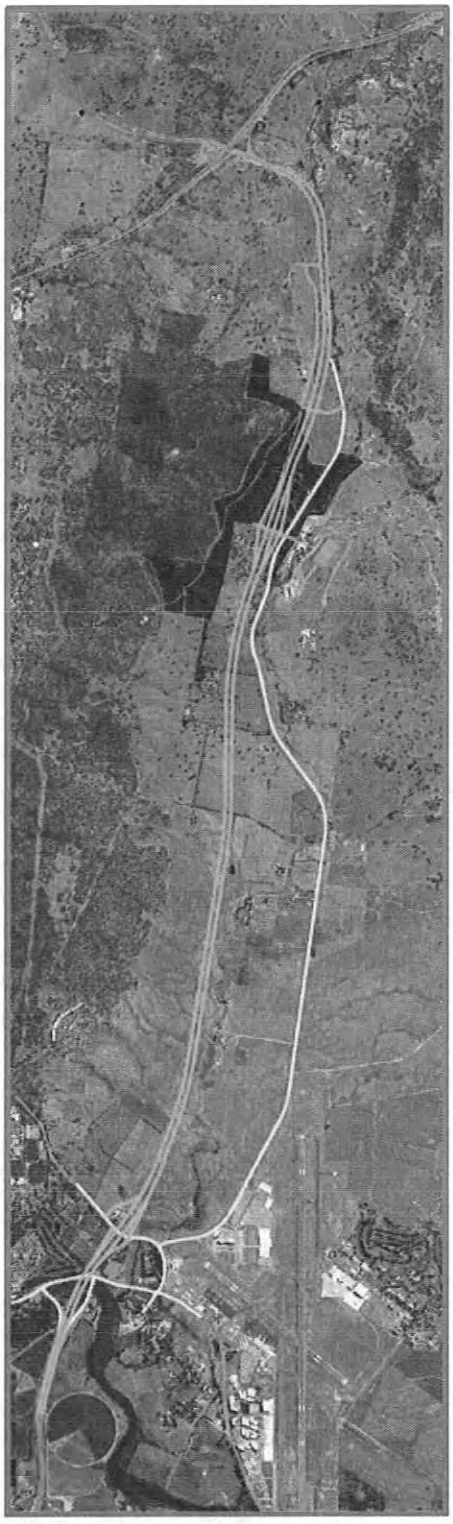

Figure 2: Majura Parkway – Option 5

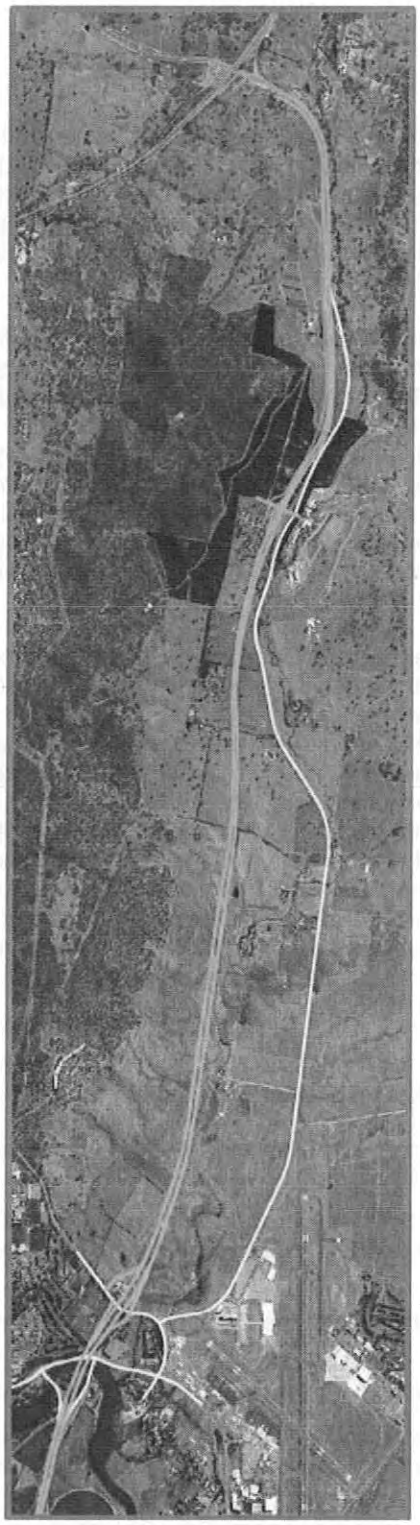

Figure 3: Majura Parkway – Option 6

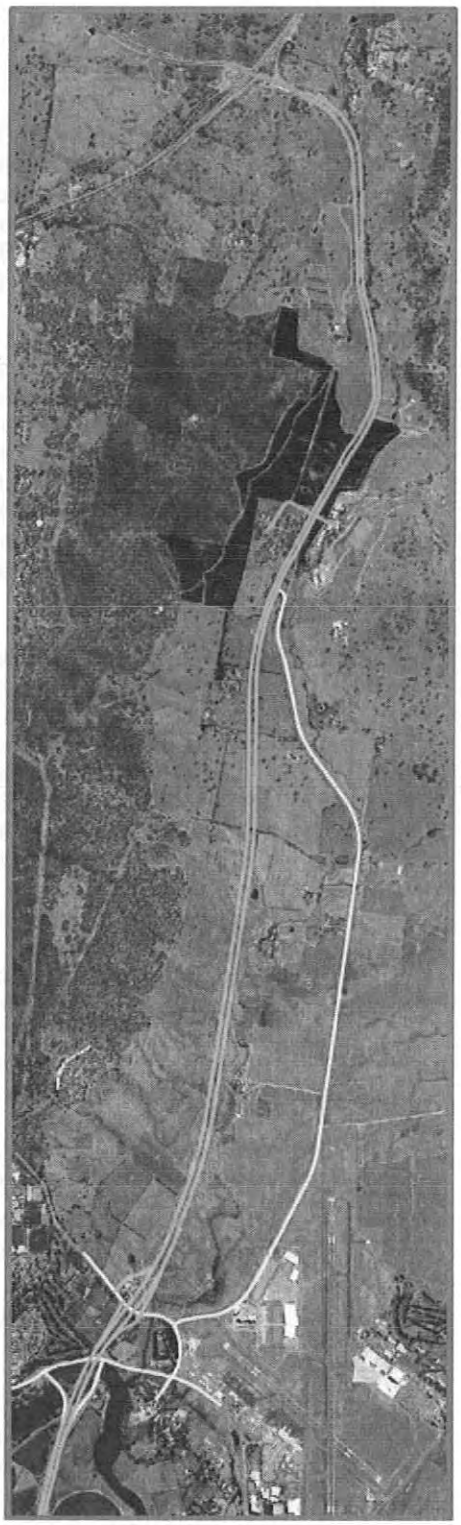

Figure 4: Majura Parkway – Option 7

2 TRAFFIC MODELLING

Strategic transport modelling (in TransCAD) was initially conducted to produce the demand matrix used for micro-simulation modelling (in Paramics). The modelling results are then used as inputs for the economic assessment, which aims to produce the economic indicators to determine the feasibility of each considered option. This process is similar to the one conducted by SMEC in January 2009, which evaluated the economic feasibility of the preferred option (Option 5).

For this study however, the most recent land use assumptions provided by the ACT Government were used in the modelling process to provide a more accurate projection of future traffic demand. The models used in the January 2009 report not only used the old land use assumptions, but also a different set of modelling parameters (e.g. trip generation rates, generalised cost function, trip distribution equation, etc). In May 2009, SMEC was provided a new set of modelling parameters by the ACT Government, which was mainly based on the Traffic Modelling and Analysis – Study Report by MRC (February 2009). Furthermore, the land use assumptions have been recently updated (September 2009), particularly the population and employment projections, and these were also provided to SMEC.

SMEC found it appropriate to use the updated parameters and assumptions in conducting the economic assessments and comparisons of the three options for the Majura Parkway Ultimate Configuration – Options 5 (the preferred option), 6 and 7. Using the old assumptions (as used in the January 2009 Economic Analysis Report) is no longer valid. SMEC understands that the purpose of the current economic assessments for Options 6 and 7 is to compare the economic indicators of these options with those of the preferred option as evaluated in January 2009. To be able to do this properly, all the modelling parameters and assumptions used, and all the common elements in the design of the three alternatives should exactly be the same. Given that the main differences between the three options lie in the northern portion of the alignment, the southern half of Majura Parkway should be the same for all options to be assessed. However, the alignment used in the January 2009 report still had the off-ramp loop at Fairbairn Avenue, which has since been changed into a diamond interchange.

The comparison of economic assessment results between the three options can therefore be only achieved by doing either of the following procedures:

1. Use the January 2009 assumptions and (southern) alignment as the reference point in making all the options 'comparable':
   - Re-configure the southern half of both Options 6 and 7 to match that of the alignment used in the January 2009 analysis, and use this as the basis for traffic modelling.
   - Apply the old land use assumptions used in the January 2009 traffic modelling and analysis.
   - Apply the old traffic modelling parameters used in the January 2009 analysis.
2. Use the most recent land use and modelling assumptions, as well as the updated alignment of the preferred option, as the reference point in making all the options 'comparable':
   - Use the updated alignments for all options as the basis for traffic modelling.
   - Apply the most recent land use assumptions and traffic modelling parameters provided by the ACT Government.

SMEC has decided to adopt the second procedure mainly because:

- This will utilise the most recent information applied in the modelling process and therefore would produce the more valid results.
- The first procedure will only provide the relative differences of the assessment results between the options, but the actual values of the economic indicators (i.e. NPV, BCR) will no longer be valid. In the end, the second procedure will most likely have to be conducted anyway, in order to provide the more valid results based on the updated parameters and assumptions.

2.1 Model Calibration

The existing Paramics model was calibrated by adjusting the default parameters in the standard behavioural models contained in the micro-simulation software to local conditions. This relied mainly on the RTA default Paramics input files.

2.2 Matrix Estimation

Origin-Destination (OD) matrices for forecast years 2006, 2011, 2021 and 2031 were obtained from SMEC's strategic transport model of the ACT. As mentioned earlier, these outputs were then used as the demand inputs for the subsequent micro-simulation modelling done in Paramics.

2.3 Micro-Simulation In Paramics

Assignment runs were conducted for the existing road network and the considered network option as listed in *Table 1*. Network layouts are shown in Figures 1 through 4. It should be noted that although Majura Parkway is still assumed to be under construction in 2011, a model run for this year was necessary to determine the benefits for the years 2012 to 2020 (through interpolation).

Table 1: Paramics Runs

	2006 AM	2011 AM	2021 AM	2031 AM
Do Nothing	✓	✓	✓	✓
Option 5 (Preferred)	-	✓	✓	✓
Option 6	-	✓	✓	✓
Option 7	-	✓	✓	✓

3 ECONOMIC ANALYSIS

In order to assess the economic feasibility of constructing the Majura Parkway, an analysis of the costs and benefits of the project against the 'do nothing' scenario was undertaken over a 30 year period. Through this process the Net Present Value (NPV) and Benefit Cost Ratio (BCR), associated with the full implementation of the Majura Parkway design and construction in the first 3 years of the analysis period, were estimated. The Australia Transport Council (ATC) *National Guidelines for Transport System Management in Australia* recommends a 30 year life for road projects and a 'much longer life' for bridges. The Majura Parkway has several major bridges and therefore the economic life of the project has been assumed to be 40 years, which still leaves it with a 10 year residual value after the 30 year evaluation period.

3.1 Construction And Maintenance Costs

Capital construction costs and maintenance life costs were estimated relating to the implementation of the Ultimate Majura Parkway.

Table **2** below indicates an initial approximate estimate of the project design and construction costs. Although the estimate is still subject to further detailed design, it provides a broad overview of the magnitude of costs, which is considered appropriate for economic analysis purposes at this stage.

Table 2: Initial Project Costs

Option	Project Cost ($,000)
Do Nothing	0
Option 5 (Preferred)	250,000
Option 6	260,000
Option 7	245,000

A simplified maintenance cost was also calculated for the analysis. The cyclic maintenance was assumed to occur every 5 years from the year of work completion and opening to traffic. The cyclic maintenance cost was estimated as 0.5% of the construction cost for the first application and then for the remaining 3 applications was estimated as a 1% of the construction cost. Similarly for annual maintenance, its cost was estimated as 0.125% of the construction cost for the initial years of application prior to the first cyclic maintenance, and this is raised to 0.25% of the construction cost in the succeeding years of application. In years that cyclic maintenance is applied, the annual maintenance cost is assumed to be $0.

3.2 Travel Related Costs

Several indicators of travel were obtained as output from the Paramics runs in the AM peak, namely the number of Vehicle Kilometres Travelled (VKT), the number of Vehicle Hours Travelled (VHT) as well as the mean speed. These were obtained for the years 2006, 2011, 2021 and 2031. The annual stream of VKT and VHT was estimated over a 30 year period with annual values interpolated between modelled values in 2006, 2011, 2021 and 2031. The growth between 2021 and 2031 was used to extrapolate values for 2038. These were used to estimate the benefits for the existing condition continuing as

well as for the upgraded network option. For each, the following travel related costs was estimated:

- Vehicle Operating Cost (VOC): this is dependent on the number of Vehicle-Kilometres Travelled (VKT) as well as on the Vehicle Operating Cost per km (VOC/km) obtained from the Austroads RUC Update to 2007 Manual. These costs include road user time costs.
- Accident Cost (AC): this is dependent on the VKT as well as on the accident rate per Million Vehicle-Kilometres Travelled (MVKT) obtained from the RTA Economic Analysis Manual
- Environmental Cost (EC): this is dependent on the VKT as well as on the environmental externalities cost per Vehicle-Kilometres Travelled (VKT) obtained from the RTA Economic Analysis Manual
- Consumer Surplus Gain: This is based on the difference in VKT between the Base and Option and reflects the diversion of existing traffic from outside the study area onto the new facilities.

The following sections detail the exact methodology used for estimating each of these costs:

3.2.1 Vehicle Operating Cost

Vehicle operating cost (VOC) is a function of kilometres travelled and VOC/km. From the most recent update of road user cost (RUC) values (to June 2007) by Austroads, the equation to estimate vehicle operating cost is given by:

$$c = A + \frac{B}{V} + C \cdot V + D \cdot V^2$$

where:

c = vehicle operating cost (cents/km)

A, B, C, D = model coefficients

V = all day average link speed

This study considers four types of vehicles, namely private cars, business cars, light commercial vehicles and articulated trucks. Vehicle composition is calculated from the actual counts conducted by Datacol in 2007, and is shown in *Table 3*. The proportions used for this study are figures for peak hours.

Table 3: Vehicle Fleet Composition

	Car	Light Commercial	Articulated Truck	Total HV
Peak Hour	92%	5%	3%	8%

The annual VOC per vehicle type are calculated by getting the product of the total VKT each year and the estimated VOC per kilometre. The VKT for each vehicle type are calculated by multiplying the total VKT by the proportion of each vehicle type. The VOC per kilometre of each vehicle type is estimated by applying the corresponding model coefficients, given in *Table 4* (At-Grade Roads), to the abovementioned equation.

Table 4: Estimated VOC Parameters for All At-Grade Roads (Austroads 2007)

VOC Model Coefficient (At-Grade Roads)				
Vehicle Type	**A**	**B**	**C**	**D**
Cars	2.185 (2.185)	3352.21 (976.21)	0.05711 (0.05711)	0.0005795 (0.0005795)
LCV	-3.096 (-3.096)	3863.48 (2092.48)	0.19609 (0.19609)	0.0005658 (0.0005658)
HCV + Buses	5.885 (5.885)	9182.53 (5471.53)	0.58625 (0.58625)	0.0002108 (0.0002108)

Note: Values in brackets are estimated parameters for VOC only specification, while estimated parameter values outside brackets are for VOC plus person time costs (commercial, freight and private time)

Travel time costs are already incorporated in the estimated VOCs, so the benefits derived from reduced travel times are included in the VOC savings.

3.2.2 Accident Costs

The expected number of accidents by type is a function of kilometres travelled. It is a known phenomenon that the more travelling, the more is the propensity of getting involved in an accident. *Table* ***5*** shows the average cost of accidents per Million VKT by road type. For the Option cases, the proportion of VKT travelled on each road type was calculated. The majority of the road network in the study area is assumed to be Arterial. Majura Parkway is assumed to be Freeway. However, for Option 7, the northern part of Majura Parkway contains a signalised intersection so it is assumed to be Arterial in this area.

For the Base Case, accident records for Majura Rd for the period 01/01/2003 to 30/09/2008 were obtained. From these records, using the RTA average cost for each type of accident (Property Only, Injury and Fatal) the average crash cost per MVKT was found to be $50,587.87. This is higher than the average arterial cost per MVKT.

Table 5: Adopted Accident Rates and Costs

Road Type	Average Crash Cost ($/MVKM)
Arterial	45,800
Freeway	14,300
Majura Rd (Existing)	50,588

The Accident Costs (AC) is a summation of all the costs expected to be incurred as a result of occurrence of different types of accidents. The formulation for this computation is as follows:

$$AC_{option} = \left(\frac{Cost}{MVKT_{(Arterial)}} \times MVKT_{(Arterial)} \right)$$

3.2.3 Annualisation Factor

An annualisation factor was calculated based on Roads ACT counts. This was applied to the AM peak VOC and AC in order to estimate the annual incurred costs over the evaluation period. The expansion factor was estimated by applying the existing peak hour to daily flow ratio.

$$AnnualCosts_{option} = \left(VOC_{(option)} + AC_{(option)}\right) \times AnnualisationFactor$$

3.3 Generated Traffic

From the *National Guidelines for Transport System Management in Australia, Volume 3 (Appraisal of Initiatives)* published by the Australian Transport Council (ATC), 'existing traffic' is traffic that uses the infrastructure affected in both the base and upgrade scenarios. Traffic demand in excess of this that results from the implementation of the infrastructure improvement is considered 'diverted' or 'generated' traffic. This simply means that this demand came from somewhere outside the study area, and is *not* new demand induced by the upgrade.

After the Majura Parkway is implemented, it is expected that some traffic from the external network (i.e. outside the modelled study area) will go through the study area because of improved traffic operations. The benefits derived due to this generated traffic can be calculated by estimating the consumers' surplus gain, given by:

$$GTB = \frac{1}{2}(P_1 - P_2) \cdot (Q_2 - Q_1)$$

where:

GTB	= generated traffic benefit
P_1	= perceived price (assumed to be the sum of *VOC* and *AC*) for the base case
P_2	= perceived price (assumed to be the sum of *VOC* and *AC*) for the upgrade case
Q_1	= demand (converted to *VKT*) for the base case
Q_2	= demand (converted to *VKT*) for the upgrade case

3.4 Residual Value

A road construction project is expected to have no residual value (*RV*) left by the end of its economic life. For the Majura Parkway option, the economic life of the project is assumed to be 40 years. The residual value at the end of the appraisal period of 30 years is estimated as the present value of benefits for the remaining life of the asset for the remaining 10 years of the assumed 40-year economic life. This procedure for calculating

the residual value is suggested by the *National Guidelines for Transport System Management in Australia, Volume 3 (Appraisal of Initiatives)* published by the Australian Transport Council (ATC). The residual values of the project at the end of 30 years (value at year 2038), for each of the options considered, are shown in ***Table 6***.

Table 6: Project Residual Values

Option	Residual Value ($,000)
Base Case	0
Option 5	611,778
Option 6	642,185
Option 7	61,903

3.5 Environmental Externalities

The RTA Manual includes monetary values for environmental externalities (noise, air pollution, water pollution, etc) and these are mainly shown as functions of VKT. Environmental externalities (*EE*) are known to be functions not only of kilometres travelled but also of traffic operating speed (i.e. it increases with kilometres travelled and reduces with the increase in operating speeds). The Majura Parkway (upgraded network) option is expected to increase the operating speed for the expected traffic as well as to increase the number of vehicle kilometres travelled. In this context the RTA values are not sufficient to compare and assess the full impact of the environmental externalities.

However, some partial benefit may be estimated from the generated traffic outside the study area. This is mainly that portion of the future demand that will not have passed through the study area without the Majura Parkway. These are assumed to be traffic that are diverted from the external network (i.e. road networks outside the study area), which are then subsequently assumed to be more highly urbanised than the areas surrounding the Majura Parkway. With these assumptions, the environmental costs caused by these 'redirected' traffic should then be reduced once they opt to go through the Majura Parkway, which is in a more 'rural' setting than their original route choices. In other words, environmental impacts at or near the City Centre are reduced through the diversion of this demand to the Majura Parkway. The RTA costs for environmental externalities are classified according to urban and rural settings, as shown in *Table 7*. The *EE* benefits (albeit partial), or environmental cost savings (*ECS*), can then be estimated by getting the difference between the environmental costs of the diverted traffic from an urban to a rural setting.

Table 7: Environmental Externality Values per Veh-km for Passenger Cars and Buses (Economic Analysis Manual, RTA)

Environmental Externality	Passenger Vehicles (cents/veh-km)		Buses (cents/veh-km)	
	Urban	Rural	Urban	Rural
Noise	0.83	0.00	2.03	0.00
Air Pollution	2.58	0.03	29.08	0.00
Water Pollution	0.39	0.04	4.36	0.04
Greenhouse	2.03	2.03	11.98	11.98
Nature and Landscape	0.05	0.48	0.13	1.32
Urban Separation	0.60	0.00	1.92	0.00

3.6 Majura Parkway Benefits

The total expected benefits to be derived from constructing the Majura Parkway are estimated by calculating the savings of the upgrade option (Ultimate Majura Parkway) as compared to the base option ('do nothing') in terms of *VOC* savings, *TTC* savings, *AC* savings, the residual value (*RV*) after the 30-year appraisal period, and the environmental cost savings (*ECS*). Values of such savings for each option are depicted in *Table 8*. The formulation for this computation is as follows:

$$Benefits = \left(VOC_{Upgrade} - VOC_{Base}\right) + \left(AC_{Upgrade} - AC_{Base}\right) + GTB + RV + ECS$$

3.7 Benefit Cost Ratio

In order to compare the costs and benefits of the proposed option relative to the existing road network over the evaluation period, the change in monetary values over time needs to be accounted for. This is achieved by discounting the annual costs and benefits of the project to the present year using a range of discount rates (4%, 7%, and 10%). The normal indicators of the worth of a project, the NPV and BCR, for each option were estimated for each of these discount rates.

If the discounted present value of the benefits exceeds the discounted present value of the costs, then the project is worthwhile. This is equivalent to the condition that the net benefit must be positive. Another equivalent condition is that the ratio of the present value of the benefits to the present value of the costs must be greater than one

The results of the economic analysis of implementing the Majura Parkway considering three different options, in varying discount rates, are shown in the succeeding tables. *Table 8* outlines the present values of costs and benefits for each of the considered options while *Table 9* summarises the resulting NPVs and BCRs for the three scenarios.

Table 8 : Present Values of Costs and Benefits

Discount Rate	PV of Costs ($,000)			PV of Benefits ($,000)		
	Option 5	Option 6	Option 7	Option 5	Option 6	Option 7
4%	230,583	239,755	225,998	1,143,051	1,120,820	692,225
7%	208,760	216,938	204,671	693,044	674,142	465,711
10%	190,508	197,864	186,830	258,468	433,935	327,664

Table 9: Resulting Economic Indicators

Discount Rate	NPV ($,000)			BCR		
	Option 5	Option 6	Option 7	Option 5	Option 6	Option 7
4%	912,467	881,065	466,227	4.96	4.67	3.06
7%	484,285	457,205	261,040	3.32	3.11	2.28
10%	258,468	236,071	140,834	2.36	2.19	1.75

All options produced positive NPVs and BCRs greater than 1. Option 7's indicators however are considerably lower than the other two alternatives mainly because of the reduced VOC savings in future years, as well as significant differences in accident cost savings.

Detailed spreadsheets of the cost benefit analysis outputs are included in Appendix A.

3.7.1 Sensitivity of Results to Airport Freight Hub

The Canberra Airport Master Plan has been approved recently and this involves the implementation of a 24-hour freight hub. Although this is expected to increase the total amount of total daily traffic, this does not necessarily mean that heavy vehicle traffic will increase during peak hours. In fact, extending the hours of freight operations in the airport could potentially spread freight demand throughout a single day, possibly even reducing heavy vehicle traffic during peak hours (if freight traffic going to and coming from the airport is managed accordingly).

Changing the proportion of heavy vehicle traffic can either have a positive or a negative effect on the economic indicators. Reducing truck traffic is expected to result in better overall network performance (i.e. higher average speeds, etc), thus also reducing travel costs. Intuitively, increasing the heavy vehicle percentage should then mean a decrease in NPV and BCR. However, if increase in trucks does not significantly affect network performance and remains relatively similar to the reference scenario (in this case, 8% heavy vehicles), then an increase in benefits may also be achieved. This is mainly due to the higher travel costs associated with commercial/heavy vehicles. The reduction in economic indicators will only occur if the amount of increase in heavy vehicle proportion is high enough to significantly contribute to the deterioration of overall network performance.

To test the sensitivity of the economic indicators to the variation in heavy vehicle proportions, additional cost-benefit analyses were performed assuming varying levels of

heavy vehicles travelling to and from Canberra International Airport. The percentage of heavy vehicles on this route is 8% (5% Light Commercial and 3% Articulated Trucks) in the current model, as indicated in *Table **3** (data derived from recent traffic counts on Majura Road)*. This was changed to 6%, 10% and 12% to test the sensitivity of the results and the results are presented in *Table **10***, *Table **11*** and *Table **12***, respectively.

At 6%, the estimated NPVs and BCRs increased, which can be attributed to higher average speeds due to reduced truck volumes. At 10%, the resulting NPVs and BCRs still improved if compared to the 8% heavy vehicle scenario. In this case, the impact of the increased truck volumes are not yet high enough to offset the additional travel cost savings associated with the higher number of heavy vehicles. Having 12% heavy vehicles however resulted in reduced economic indicators, as shown in *Table **12***.

Table 10: Economic Indicators Assuming 6% Heavy Vehicles on Pialligo Ave

Discount Rate	NPV ($,000)			BCR		
	Option 5	Option 6	Option 7	Option 5	Option 6	Option 7
4%	1,143,914	986,923	582,624	5.96	5.12	3.58
7%	590,243	506,503	306,176	3.83	3.33	2.50
10%	307,050	258,645	155,202	2.61	2.31	1.83

Table 11: Economic Indicators Assuming 10% Heavy Vehicles on Pialligo Ave

Discount Rate	NPV ($,000)			BCR		
	Option 5	Option 6	Option 7	Option 5	Option 6	Option 7
4%	1,033,376	921,812	593,770	5.48	4.84	3.63
7%	517,147	466,801	304,707	3.48	3.15	2.49
10%	256,421	233,143	149,900	2.35	2.18	1.80

Table 12: Economic Indicators Assuming 12% Heavy Vehicles on Pialligo Ave

Discount Rate	NPV ($,000)			BCR		
	Option 5	Option 6	Option 7	Option 5	Option 6	Option 7
4%	786,972	954,650	466,467	4.41	4.98	3.06
7%	413,217	489,726	247,030	2.98	3.26	2.21
10%	213,287	248,832	122,699	2.12	2.26	1.66

4 SUMMARY OF ALIGNMENT IMPLICATIONS

Option Name (Description of alignment or portion)	Efficient functioning of road network	Parkway geometry & design speed	Compatibility with VHST corridor	Engineering considerations & constructability	Land use	Ecological impacts	Heritage impacts	Amenity	Resource efficiency	Public safety	Social	Value for money
Preferred Alignment (Option 5)	✓	✓	✓	✓	Fragments winery block.Removes 30% of MTB trails	✓	✓	Noise at guides.	✓	Close to guides.	✓	✓
Options 6 (between preferred and existing – reduces fragmentation of pines)	✓	✓	Greater construction cost as the train alignment will be required to cross the road at two locations	The alignment has moved down the slope resulting in less cut to fill available. Requires 240000 m^3 more imported fill.	Better for winery, guides, housing block Worse for AFP, PCL	Avoids Yellow box stand in vineyard, all else same.	Same as preferred	Increased noise at AFP. Further away from guides and winery	Longer service roads so have to travel further to turn around	Further from guides, overall neutral.	Slight improvement for Majura Pines fragmentation.	$10million more than preferred
Option 7 (Upgrade and Duplicate Existing)	Disruption to traffic during construction, greatly reduced overall level of service	Posted speed 80km/h due to more intersections off road	Greater construction cost as the train alignment will be required to cross the road at two locations	Minimal earthworks required for northbound carriageway. Southbound carriageway is on top of creek and requires imported fill.	Better for winery, guides, housing, Worse for AFP	Will avoid woodland near guides but still slightly impact Box Gum Woodland. Some realignment of creek	Will impact Child's Grave on block 696. Rated as highly significant	More air and noise pollution at AFP from signalised intersection. Further from guides and winery	The reduced posted speed and disruption at the intersections will result in higher operating costs for transport	Further from guides, but at grade intersections increase hazard	Less impact upon Majura Pines, but poorer standard of road to the public.	$5million less than preferred

5 CONCLUSIONS

Future demand and traffic operational conditions were modelled to determine the difference in network performance between the three considered options. The most recent land use assumptions for the years 2011, 2021 and 2031, provided by the ACT Government, were used as inputs during the modelling process, and updated modelling parameters were utilised as well.

Benefits derived from the construction of Majura Parkway were estimated by calculating the cost savings for each option. These savings were mainly the differences between travel related costs associated with the 'do nothing' scenario and those associated with the upgrade cases (i.e. Majura Parkway). In addition to these travel cost savings, other benefits that were estimated include the generated traffic benefits, residual value of the project (in 30 years), and environmental cost savings.

The economic assessment results show that any of the three options can be considered economically feasible, given that all produced positive NPVs and BCRs greater than 1.

As expected, Option 7's performance is relatively poor when compared against the other two alternatives, having a lower speed limit and incorporating an at-grade intersection at the northern portion of the alignment near the AFP facility. This contributed heavily to the reduced travel cost savings, particularly in the future years when demand nears the network's capacity. Another disadvantage of Option 7 is the increased accident cost, which produces a negative benefit around 4 years after project completion, this due to the poorer standard of geometric alignment.

Option 5 (the preferred option) produced the best economic indicators, with an NPV over $484 million and a BCR of 3.32 at a 7% discount rate. It is therefore considered the best option among the three. In terms of traffic operations, it performs very similarly with Option 6 since the only difference between the two alignments is that section near Majura Pines. Option 6 however costs $10 million more than Option 5, hence the lower NPV and BCR.

The sensitivity of the economic indicators to the proportion of heavy vehicle percentage was also tested using three additional HV% scenarios – 6%, 10% and 12%. The estimated NPVs and BCRs increased at 6% and 10% heavy vehicles, while economic indicators were found to decrease at 12% heavy vehicles. The reductions in NPV and BCR at 12% HV (50% increase from the reference scenario of 8% HV) in Option 5 at a 7% discount rate were estimated at 71.07 million (14.7% of NPV at 8% HV) and 0.34, respectively. Even with a 50% increase in heavy vehicles during the AM peak hour, the project still appears to be economically feasible.

APPENDIX A: ECONOMIC ANALYSIS SPREADSHEETS

Base Vs Option 5									
YEAR	COSTS (shown as -ve) *Current Prices*			BENEFITS (shown as +ve) *Current Prices*					TOTALS
	CAPITAL COSTS ($'000)	ADDITIONAL Maintenance Annual ($'000)	Cyclic ($'000)	Vehicle Operating Cost Savings ($,000)	Accident Cost Savings ($,000)	Generated Traffic Benefit ($,000)	Environmental Cost Savings ($,000)	Residual Value ($,000)	*Current Prices ($'000)*
2009	($25,000)	$0	$0	$0	$0	$0	$0	$0	($25,000)
2010	($25,000)	$0	$0	$0	$0	$0	$0	$0	($25,000)
2011	($100,000)	$0	$0	$0	$0	$0	$0	$0	($100,000)
2012	($100,000)	$0	$0	$0	$0	$0	$0	$0	($100,000)
2013	$0	($250)	$0	$41,711	$712	$10,059	$976	$0	$53,208
2014	$0	($250)	$0	$42,788	$712	$10,339	$1,022	$0	$54,612
2015	$0	($250)	$0	$44,030	$712	$10,627	$1,070	$0	$56,190
2016	$0	($250)	$0	$45,471	$711	$10,923	$1,120	$0	$57,976
2017	$0	$0	($1,000)	$47,151	$709	$11,227	$1,173	$0	$59,261
2018	$0	($500)	$0	$49,119	$706	$11,540	$1,228	$0	$62,094
2019	$0	($500)	$0	$51,434	$703	$11,861	$1,286	$0	$64,784
2020	$0	($500)	$0	$54,167	$698	$12,192	$1,347	$0	$67,904
2021	$0	($500)	$0	$57,405	$693	$12,531	$1,410	$0	$71,539
2022	$0	$0	($2,000)	$57,614	$681	$12,782	$1,477	$0	$70,554
2023	$0	($500)	$0	$57,855	$669	$13,038	$1,546	$0	$72,608
2024	$0	($500)	$0	$58,127	$656	$13,300	$1,619	$0	$73,202
2025	$0	($500)	$0	$58,432	$644	$13,566	$1,695	$0	$73,837
2026	$0	($500)	$0	$58,770	$631	$13,838	$1,775	$0	$74,514
2027	$0	$0	($2,000)	$59,144	$617	$14,115	$1,859	$0	$73,735
2028	$0	($500)	$0	$59,553	$604	$14,398	$1,946	$0	$76,001
2029	$0	($500)	$0	$59,999	$590	$14,686	$2,038	$0	$76,813
2030	$0	($500)	$0	$60,484	$575	$14,980	$2,134	$0	$77,674
2031	$0	($500)	$0	$61,008	$561	$15,280	$2,054	$0	$78,403
2032	$0	$0	($2,000)	$61,573	$546	$15,587	$2,132	$0	$77,838
2033	$0	($500)	$0	$62,180	$530	$15,899	$2,214	$0	$80,324
2034	$0	($500)	$0	$62,831	$515	$16,217	$2,299	$0	$81,362
2035	$0	($500)	$0	$63,527	$499	$16,542	$2,387	$0	$82,454
2036	$0	($500)	$0	$64,269	$482	$16,874	$2,478	$0	$83,603
2037	$0	$0	($2,000)	$65,059	$465	$17,212	$2,573	$0	$83,309
2038	$0	($500)	$0	$65,899	$448	$17,556	$2,672	$611,778	$697,853
Total	**($250,000)**	**($9,500)**	**($9,000)**	**$1,469,599**	**$16,067**	**$357,172**	**$45,533**	**$611,778**	**$2,231,649**
PRESENT VALUES									
PV @ 4%	($221,532)	($4,823)	($4,228)	$744,758	$8,765	$178,970	$21,935	$188,623	$912,467
PV @ 7%	($203,120)	($3,092)	($2,548)	$478,810	$5,922	$114,332	$13,613	$80,367	$484,285
PV @ 10%	($186,821)	($2,080)	($1,607)	$323,826	$4,184	$76,982	$8,923	$35,060	$258,468

Discount Rate	4%	7%	10%
NPV ('000)	$912,467	$484,285	$258,468
BCR	4.96	3.32	2.36

Base Vs Option 6									
YEAR	COSTS (shown as -ve) *Current Prices*			BENEFITS (shown as +ve) *Current Prices*					TOTALS
	CAPITAL COSTS ($'000)	ADDITIONAL Maintenance Annual ($'000)	ADDITIONAL Maintenance Cyclic ($'000)	Vehicle Operating Cost Savings ($,000)	Accident Cost Savings ($,000)	Generated Traffic Benefit ($,000)	Environmental Cost Savings ($,000)	Residual Value ($,000)	*Current Prices ($'000)*
2009	($25,000)	$0	$0	$0	$0	$0	$0	$0	($25,000)
2010	($25,000)	$0	$0	$0	$0	$0	$0	$0	($25,000)
2011	($105,000)	$0	$0	$0	$0	$0	$0	$0	($105,000)
2012	($105,000)	$0	$0	$0	$0	$0	$0	$0	($105,000)
2013	$0	($263)	$0	$41,534	$789	$8,680	$846	$0	$51,586
2014	$0	($263)	$0	$42,335	$792	$8,888	$888	$0	$52,640
2015	$0	($263)	$0	$43,285	$794	$9,102	$932	$0	$53,850
2016	$0	($263)	$0	$44,415	$796	$9,320	$979	$0	$55,246
2017	$0	$0	($1,050)	$45,759	$796	$9,544	$1,027	$0	$56,077
2018	$0	($525)	$0	$47,362	$796	$9,773	$1,079	$0	$58,485
2019	$0	($525)	$0	$49,274	$796	$10,008	$1,132	$0	$60,685
2020	$0	($525)	$0	$51,556	$794	$10,248	$1,189	$0	$63,262
2021	$0	($525)	$0	$54,282	$792	$10,495	$1,248	$0	$66,291
2022	$0	$0	($2,100)	$54,938	$791	$10,707	$1,310	$0	$65,646
2023	$0	($525)	$0	$55,633	$789	$10,924	$1,376	$0	$68,196
2024	$0	($525)	$0	$56,366	$788	$11,145	$1,444	$0	$69,218
2025	$0	($525)	$0	$57,140	$787	$11,370	$1,516	$0	$70,288
2026	$0	($525)	$0	$57,956	$786	$11,600	$1,592	$0	$71,409
2027	$0	$0	($2,100)	$58,818	$784	$11,835	$1,672	$0	$71,009
2028	$0	($525)	$0	$59,727	$783	$12,074	$1,755	$0	$73,814
2029	$0	($525)	$0	$60,684	$781	$12,318	$1,842	$0	$75,102
2030	$0	($525)	$0	$61,694	$780	$12,568	$1,934	$0	$76,450
2031	$0	($525)	$0	$62,757	$778	$12,822	$1,676	$0	$77,508
2032	$0	$0	($2,100)	$63,876	$776	$13,081	$1,726	$0	$77,360
2033	$0	($525)	$0	$65,055	$774	$13,346	$1,778	$0	$80,429
2034	$0	($525)	$0	$66,296	$773	$13,616	$1,831	$0	$81,991
2035	$0	($525)	$0	$67,602	$771	$13,891	$1,886	$0	$83,625
2036	$0	($525)	$0	$68,976	$768	$14,172	$1,943	$0	$85,334
2037	$0	$0	($2,100)	$70,421	$766	$14,459	$2,001	$0	$85,547
2038	$0	($525)	$0	$71,940	$764	$14,752	$2,061	$642,185	$731,177
Total	**($260,000)**	**($9,975)**	**($9,450)**	**$1,479,679**	**$20,384**	**$300,739**	**$38,664**	**$642,185**	**$2,202,226**
PRESENT VALUES									
PV @ 4%	($230,251)	($5,064)	($4,440)	$742,294	$10,746	$150,948	$18,833	$197,998	$881,065
PV @ 7%	($211,016)	($3,247)	($2,675)	$474,335	$7,111	$96,571	$11,764	$84,362	$457,205
PV @ 10%	($193,993)	($2,183)	($1,687)	$319,322	$4,939	$65,122	$7,749	$36,803	$236,071

Discount Rate	4%	7%	10%
NPV ('000)	$881,065	$457,205	$236,071
BCR	4.67	3.11	2.19

Base Vs Option 7									
YEAR	COSTS (shown as -ve) *Current Prices*			BENEFITS (shown as +ve) *Current Prices*					TOTALS
	CAPITAL COSTS ($'000)	ADDITIONAL Maintenance Annual ($'000)	Cyclic ($'000)	Vehicle Operating Cost Savings ($,000)	Accident Cost Savings ($,000)	Generated Traffic Benefit ($,000)	Environmental Cost Savings ($,000)	Residual Value ($,000)	*Current Prices* *($'000)*
2009	($25,000)	$0	$0	$0	$0	$0	$0	$0	($25,000)
2010	($25,000)	$0	$0	$0	$0	$0	$0	$0	($25,000)
2011	($97,500)	$0	$0	$0	$0	$0	$0	$0	($97,500)
2012	($97,500)	$0	$0	$0	$0	$0	$0	$0	($97,500)
2013	$0	($244)	$0	$41,087	$46	$8,861	$874	$0	$50,624
2014	$0	($244)	$0	$41,758	$25	$8,974	$910	$0	$51,424
2015	$0	($244)	$0	$42,574	$4	$9,089	$948	$0	$52,371
2016	$0	($244)	$0	$43,563	($19)	$9,206	$988	$0	$53,494
2017	$0	$0	($975)	$44,759	($43)	$9,324	$1,029	$0	$54,094
2018	$0	($488)	$0	$46,202	($69)	$9,444	$1,072	$0	$56,162
2019	$0	($488)	$0	$47,942	($96)	$9,565	$1,116	$0	$58,040
2020	$0	($488)	$0	$50,035	($125)	$9,688	$1,163	$0	$60,273
2021	$0	($488)	$0	$52,551	($156)	$9,812	$1,211	$0	$62,931
2022	$0	$0	($1,950)	$49,960	($147)	$9,160	$1,262	$0	$58,285
2023	$0	($488)	$0	$47,520	($138)	$8,550	$1,314	$0	$56,760
2024	$0	($488)	$0	$45,222	($129)	$7,982	$1,369	$0	$53,957
2025	$0	($488)	$0	$43,056	($120)	$7,451	$1,426	$0	$51,326
2026	$0	($488)	$0	$41,015	($110)	$6,955	$1,486	$0	$48,858
2027	$0	$0	($1,950)	$39,091	($101)	$6,493	$1,548	$0	$45,080
2028	$0	($488)	$0	$37,276	($91)	$6,061	$1,612	$0	$44,370
2029	$0	($488)	$0	$35,564	($82)	$5,658	$1,680	$0	$42,332
2030	$0	($488)	$0	$33,949	($72)	$5,282	$1,750	$0	$40,421
2031	$0	($488)	$0	$32,425	($62)	$4,930	$1,244	$0	$38,049
2032	$0	$0	($1,950)	$30,986	($53)	$4,602	$1,247	$0	$34,833
2033	$0	($488)	$0	$29,627	($43)	$4,296	$1,251	$0	$34,644
2034	$0	($488)	$0	$28,343	($33)	$4,011	$1,254	$0	$33,088
2035	$0	($488)	$0	$27,130	($22)	$3,744	$1,257	$0	$31,622
2036	$0	($488)	$0	$25,984	($12)	$3,495	$1,261	$0	$30,240
2037	$0	$0	($1,950)	$24,900	($2)	$3,262	$1,264	$0	$27,474
2038	$0	($488)	$0	$23,874	$9	$3,045	$1,268	$61,903	$89,611
Total	**($245,000)**	**($9,263)**	**($8,775)**	**$1,006,393**	**($1,641)**	**$178,942**	**$32,803**	**$61,903**	**$1,015,363**
PRESENT VALUES									
PV @ 4%	($217,173)	($4,702)	($4,123)	$554,800	($850)	$102,517	$16,672	$19,086	$466,227
PV @ 7%	($199,172)	($3,015)	($2,484)	$376,194	($534)	$71,214	$10,705	$8,132	$261,040
PV @ 10%	($183,235)	($2,028)	($1,567)	$265,882	($342)	$51,360	$7,216	$3,548	$140,834

Discount Rate	**4%**	**7%**	**10%**
NPV ('000)	$466,227	$261,040	$140,834
BCR	3.06	2.28	1.75

[redacted]

From: [redacted]
Sent: Tuesday, 24 November 2009 11:26 AM
To: [redacted]
Cc: [redacted]
Subject: Submission to IA - Fed Hway Link
Attachments: IA Reform Investment Framework Stages 1 to 6 - Fed Hway Link.doc; Submission_Coversheet - Fed Hway Link.doc; Fed Hway Link - Supp Info.doc; Ultimate Majura Parkway Economic Analysis - Rev4a — 15 October 2009.pdf

Neil

Please see attached the Submission to Infrastructure Australia for the Federal Highway Link to Monaro Highway, which has been cleared by [redacted].

Regards

[redacted]

[redacted] | POLICY OFFICER | POLICY COORDINATION AND DEVELOPMENT | ACT TREASURY | PH: 02 6207 0198

SUBMISSION COVERSHEET

This coversheet should be included with all submissions to Infrastructure Australia. Please complete all fields.

Organisation: ACT Government **Date: November 2009**

Submission title: Federal Highway Link to Monaro Highway

Author(s):

Contact person: Khalid Ahmed Position: Executive Director, Policy Coordination and Development Division, ACT Department of Treasury

Postal address: PO Box 158, Canberra ACT 2601

State: ACT Postcode: 2601

Email address: khalid.ahmed@act.gov.au Telephone: 02 6207 0228

Two (2) hard copies (one marked as the original), plus one (1) CD/DVD of the submission must be provided to:

SUBMISSIONS
Infrastructure Australia
Level 21, 126 Phillip St
Sydney NSW 2000
Ph: 02 8114 1900

CONFIDENTIALITY

If this submission contains material which you believe is **confidential,** this material should marked as **confidential** on this coversheet and the **reason** for claiming confidentiality must be provided. **The** material must also be marked as **confidential** in the body of the submission. Infrastructure Australia may review claims of confidentiality with the proponent.

Document	Reason

ACKNOWLEDGEMENT

Please acknowledge the following submission guidelines:

- This submission conforms with Infrastructure Australia's requirements as set out in *Better Infrastructure Decision-Making: Guidelines for making submissions to Infrastructure Australia's infrastructure planning process, through Infrastructure Australia's Reform and Investment Framework* (available at www.infrastructureaustralia.gov.au).
- Where any third party material has been incorporated into the submission, the appropriate rights to use this material have been obtained.
- Infrastructure Australia may review claims of confidentiality with the proponent.
- I have included (please tick √):
  - ☐ 2 hard copies and 1 CD/DVD of this submission
  - ☐ List of documents included in this submission (please complete page 2 of this coversheet)
  - ☐ Completed templates
  - ☐ GIS data
  - ☐ Other, please state:

Signed

Name (please print)

Position

List of documents contained in this submission

Item	Document Title	Related initiative	Version (if applicable)	Author	Date
1	Majura Parkway Economic Analysis			SMEC	12/10/09
2	Federal Highway Link to Monaro Highway – Supplementary Information			ACT Government	January 2009
3					

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INFRASTRUCTURE AUSTRALIA

REFORM AND INVESTMENT FRAMEWORK TEMPLATES FOR USE BY PROPONENTS

(To be read in conjunction with Infrastructure Australia's *Better Infrastructure Decision-Making*)

Summary Template

and

Templates for Stages 1-6

October 2009

Proposal Summary (2 pages, excluding maps)

Initiative Name:	Federal Highway Link to Monaro Highway
Location (State/Region(or City)/ Locality):	Canberra, ACT
Name of Proponent Entity:	ACT Government
Contact (Name, Position, phone/e-mail):	Khalid Ahmed, Executive Director, Policy Coordination and Development, ACT Treasury, 02 6207 0228.

Project Description:

- Provide a 2-3 paragraph description of the initiative and the capability it will provide. The description needs to provide a concise, but clear description of the initiative's scope.

The ACT is seeking funding to create an efficient 11 kilometre dual carriageway freight transport, business travel and personal travel link between the Federal Highway and the Monaro Highway. Broadly, the project involves the construction of 11km dual carriageway with 7 bridges.

The joining of these national highways will provide a vital transport link relevant to a significant population and geographic region of Australia. In essence, the project will 'complete' the Federal Highway by linking the regions north and south of the Australian Capital Territory. The proposed Majura Parkway will also form part of the Territory's arterial road network, improving north-south transit, particularly to the Airport, and eastwards towards Queanbeyan.

- Include two maps (in pdf format) showing the location of the proposal, one showing the broader area within which the initiative sits, and one showing the initiative in more detail.

See attached Economic Analysis.

- As part of the submission, attach Geographic Information System data for the initiative (either in Mapinfo tab or mif format, or ESRI shape file or geo-database format), where available.

Theme alignment

- With reference to Infrastructure Australia's themes, describe the strategic planning or decision-making task for which assessment against the Reform and Investment Framework is being undertaken eg. Transforming [City X], Water Security for [ ], Developing the national energy market through [ ].

Improving the national freight network by linking the Federal Highway to the Monaro Highway.

- Outline how the initiative could contribute to these themes and create national benefits

The initiative will address an apparent decline in productivity in the transport and storage industry in the ACT and surrounding regional NSW.

The deteriorating performance of the transport and storage industry in the ACT adversely affects not just the ACT but south eastern New South Wales. The project has significant benefits for the national freight transit system, essentially by providing a highway bypass to Canberra and improving the level of access to the Airport.

Capital Cost of Initiative by Proponent ($M, nominal, undiscounted):	Thee current estimated total cost is $250 million.

Commonwealth contribution sought by Proponent, and cash flow in financial years ($M, nominal, undiscounted):	The ACT has already received funding commitment for $30 million from the Commonwealth Government under its Building Australia Program for works around the Airport precinct. Those works are an integral part of the proposed link project. The funding being sought is therefore $220 million.
Other funding (source/amount/cash flow) ($M, nominal, undiscounted):	0
BCR by Proponent excluding Wider Economic Benefits	3.32 at a discount rate of 7 per cent over 30 years
High level development and implementation program	
• Show key steps, eg planning, project development, business case consideration, environmental approvals, procurement, and construction, with expected start and end dates.	
Confidentiality	
• Indicate which part(s) of the submission have been submitted to Infrastructure Australia on a confidential basis, and provide a brief explanation of the reason(s) for the confidentiality request.	

Templates for Individual Stages in the Reform and Investment Framework

Stage 1: Goal Definition	
Goal Statements	*List the goal(s) that the initiative is seeking to address:* Increase Australia's productivity Expand Australia's productive capacity Develop our cities and/or regions *List and provide sources for the higher and/or lower order goals such as those of a National/State/Regional/City/Location specific focus with reference back to existing plans and strategies:* Increase the Capital Region's productivity Expand the Capital Region's productive capacity Develop the Capital Region

Stage 1: Goal Definition	
	The ACT Government's Capital Development Plan states that Airports are a crucial part of the infrastructure of a modern economy. The primary economic function and wider social importance of airports is to facilitate the efficient movement of people and freight in and out of the regions they serve, improving inbound tourism and trade. The ACT Government recognizes the significant role that Canberra International Airport plays as a regional gateway and a generator of investment and employment. The ACT Government has committed to upgrading the road infrastructure around the airport to assist the flow of traffic and maximise transport opportunities. The ACT Chief Minister's Department in February 2008 commissioned the Report *"The ACT and its Region: economic relationships and key drivers of economic growth"* to support the preparation of the ACT's economic policy framework (Capital Development), and to inform policy deliberations and decision making by ACT Government agencies and businesses. The report examines economic activity and linkages in the ACT and its region, the outlook and structure of the ACT economy, and the economic opportunities and risks facing the ACT. The Report identified Majura Road (the focus of this initiative) as insufficient to meet needs as a Canberra bypass for freight. Majura Road is part of the "National Highway 23", and forms the connecting link between the Federal and Monaro Highways, meaning it is a significant link in the route between Sydney and the Snowy Mountains, as well as the truck freight bypass of Canberra. The Report also noted the inadequacy of the current link will increase as development of the airport at the southern end continues.
Objective Statements	*List the objective(s) that the initiative is aiming to meet:* The proposed project will significantly increase traffic speed, and reduce freight transit times. It will also result in the Canberra Airport being within a kilometre or so of a north – south freight transit link. This coalescence can be expected to have significant economic output and productivity benefits for the south eastern region of Australia. *List the higher and/or lower order objectives such as those of a National/State/Regional/City/Location specific focus:* The project will have wider implications by improving north – south links along the eastern seaboard, and more broadly by completing a link in the National highway system. *Where available, outline the targets against these objectives, with references back to the documents where they originate from, eg 'State plans', planning strategies:* Some draft targets/performance measures could include reduced freight delivery times, increased number of freight vehicles, higher activity at the airport and a rise in tourism to the capital.

Stage 1: Goal Definition	
Goal and Objective Alignment	*Outline how the proponent's goals and objectives for the initiative align with higher and/or lower order goals and objectives of others.* *Outline how the proponent's goals and objectives align with* Infrastructure Australia's *strategic priorities.* Expand Australia's productive capacity, and Increase Australia's productivity – The highway link should reduce the cost of freight and storage, and improve the competitiveness of Australian exports. Develop our cities and/or regions - The joining of these national highways will provide a vital transport link relevant to a significant population and geographic region of Australia. *Outline other goals and objectives not directly relevant to the task which may be affected.*

Stage 2: Problem Identification

Problem Identification: Current issues	*List those current problems, issues or challenges that the proponent considers will limit the ability to achieve the goals and objectives identified in Stage 1:* *This could be accessibility, availability, prices/cost, capacity, emissions, safety etc. Identification should be based on empirical observations and could be generated based on surveys, interviews or studies from a wide range of sources.* The ACT's largest industry is public administration and defence. The ACT produces these public administration and defence services to the benefit of the Nation. As a predominately service producing economy, most goods are transported into the ACT. Efficient freight transport links into and through the ACT are vital to the efficient functioning of such an economy. The Australian Bureau of Statistics State Account data show that, in 2007-08, the ACT's Sta Final Demand (SFD) exceeded its Gross State Product (GSP) by $15.4 billion or 66 per cent. This imbalance largely reflects the significance of the importation of goods into the ACT. However, freight transport in the ACT relates not only to residents of the ACT — the ACT also serves as an important regional centre and freight hub for south eastern New South Wales. Given the importance of freight transport links to the nation's capital, it is a matter of concern that the productivity of the transport and storage industry in the ACT is declining. This pattern of decline is in sharp contrast to a pattern of improved productivity in all other jurisdictions. ABS data show that over the 18 years from 1989-90 to 2007-08 the average annual rate of productivity improvement in other jurisdictions ranged from a low of 1.2 per cent in the Northern Territory up to a high of 4.2 per cent in Tasmania. The ACT was the only jurisdiction to record a decline (-0.5 per cent). Had productivity in the transport and storage industry not declined and remained at around the average level of the early 1990s then, assuming the same number of people employed, the value added by this industry in 2007-08 would have been $702 million rather than $544 million — an additional $158 million. The cumulative loss over the 18 years since 1989-90 is estimated at $412 million in today's dollars. The deteriorating performance of the transport and storage industry in the ACT most likely reflects the fact that the ACT has not had the capacity to enhance freight routes to accommodate growth in the local and regional economy. The deteriorating performance of the transport and storage industry in the ACT adversely affects not just the ACT but south eastern New South Wales. The proposed project will significantly increase traffic speed, and reduce freight transit times. It will also result in the Canberra Airport being within a kilometre or so of a north – south freight transit link. This coalescence can be expected to have significant economic output and productivity benefits for the south eastern region of Australia. Passenger numbers through Canberra airport are already the highest per capita of any airport — and not withstanding that Canberra airport is largely a domestic airport with limited international flights. In part, the relatively large traffic flow at the airport reflects a high

	proportion of business travel and Canberra's increasing role as a freight hub.
Problem identification: Future scenarios	*Outline the 'drivers of change' that are likely to have the greatest impact on the relevant infrastructure network(s), for example:* • *Socio-demographic change* • *Economic change* • *Energy prices* • *Climate change* • *Technological change* • *Governance change* The drivers with the greatest impact are likely to be economic and demographic growth and, in particular, growth of the Canberra Airport in terms of freight and passenger movements. *What are the uncertainties around these 'drivers'?* There are negligible uncertainties as the National Capital, Canberra and the Capital Region can be expected to continue to grow. *Outline any scenarios that have been generated from the drivers of change, i.e. High-oil prices scenario, High-population scenario etc – detailing the horizon year, data sets, models used, outcomes)*
	List potential <u>future</u> problems or challenges from the scenarios. Are they same as the current problems? Have some problems disappeared? Would new problems arise under some scenarios? *This could be accessibility, availability, prices/cost, capacity, emissions, safety etc. Identification should be based on empirical observations and could be generated based on surveys, interviews or foundation studies from a wide range of sources.* Future challenges related to this project could include environmental restrictions, land use parameters, geotechnical and heritage investigations, impact on Defence activities and negotiation with leaseholders.

Stage 3: Problem Assessment	
Problem assessment	*To what extent does (or will) the problem impacts upon the goals and objectives?*
Current problems	*How is the problem currently affecting the nation/ state/ region (city)/ locality?* *Quantify the extent to which the problems may affect the attainment of the goals/objectives.* *List the data and evidence is available to support the quantification.*
Future problems	*How is the problem likely to affect the nation/ state/ region/ city/corridor?* *Quantify the extent to which the problems may affect the attainment of the goals/objectives.* *List the available data and evidence to support the quantification.*
Problem Prioritisation	*Identify which are the most pressing problems – i.e. demonstrate which problems are most likely to hinder the achievement of goals and objectives.*

Stage 4: Problem Analysis	
Problem analysis	*Outline the underlying causes of the problem.* *Give the policy argument explaining the genesis of the problem (e.g. market failure, incorrect pricing, lack of investment signals, governance).* *Provide data and other evidence to back up the policy arguments.*
Identify fundamental cause, not symptoms, of the problem	*Focus on the fundamental cause of the problem, e.g. the root cause of road congestion should not simply be claimed as a "lack of capacity" – what has caused the lack of capacity?* *It may, for example, be a demand/supply mismatch caused by incorrect pricing and excess demand, or a lack of supply side investment due to the absence of price signals or targeted revenue streams.*

Stage 5: Option Generation	
REFORM (ESSENTIALLY NON-CAPITAL INVESTMENT) OPTIONS	
Option 1	*Short description of the option, and how it is likely to achieve the goals/objectives.*
Option 2	*Short description of the option, and how it is likely to achieve the goals/objectives.*
Option 3	*Short description, etc.*
INVESTMENT OPTIONS	
Option 1	(Option 5 in the SMEC report). Construct 11 km of dual carriageway linking the Federal Highway and the Monaro Highway. Work includes cross sections of 2 x 3.5m traffic lanes, 2.5m roadside shoulder and 1.0m offside shoulder, as well as associated ramps, interchanges and bridges.
Option 2	(Option 6 in the SMEC report). Similar to Option 1 but with some changes to alignment and interchanges layout in the northern part of the parkway which will reduce the impact on Majura Pines.
Option 3	(Option 7 in the SMEC report). Upgrade Majura Road in the northern part of the site, merge the parkway to the existing alignment of Majura Road with an at-grade intersection at the junction between Majura Parkway and the AFP Access Road.

Stage 6: Options Assessment	
Infrastructure Australia is not mandating a particular process for moving from a long list of potential options to a short list of lead candidates. The following three-step process is an indicative guide.	
Long list	Explain how an original full list ('long list') of options was initially narrowed down to an interim list. Summarise the results of this process, for instance the scores from a high level Multi Criteria Analysis process. Where possible, explain how this process incorporated different scenarios. Option 1 is the current preferred option, which is similar to the previous preferred option presented in January 2009 but with some changes to the interchange design. This option was assessed against two additional alignment options. All three options were also assessed relative to the traffic operational conditions if the existing condition is continued (ie: a "do nothing" scenario). Strategic transport modelling was conducted to produce the demand matrix used for micro-simulation modelling. The modelling results were used as inputs for the economic assessment, which aims to produce the economic indicators to determine the feasibility of each option. The economic analysis considered construction and maintenance costs, travel related costs such as vehicle operating cost and accident cost, generated traffic flows, residual values, environmental externalities and other relevant factors.
Interim list	Explain how the interim list of options was then narrowed down to a short list. Summarise the results of this process, for instance the scores from a detailed Multi Criteria Analysis process and the headline results of Rapid Economic Appraisals. Where possible, explain how this process incorporated different scenarios. As above.
Short list	Explain how the interim list of options was finally narrowed down to a lead option. Summarise the results of this process, for instance the scores from a detailed Multi Criteria Analysis process and the main results from a detailed economic appraisal of two or three lead contenders (presenting, for instance, the Appraisal Summary Table for each lead option). Where possible, explain how this process incorporated different scenarios. The economic analysis shows that all options could be considered economically feasible, with positive NPVs and BCRs greater than one. Option 1 is the preferred option, with the best economic results of a NPV over $484 million and a BCR of 3.32 at a 7 per cent discount rate.

Stage 6: Options Assessment	

ACT Government Submission to Infrastructure Australia

Federal Highway Link to Monaro Highway Majura Parkway

Supplementary Information

JANUARY 2009

1. Background

The ACT Government had submitted a proposal for consideration by Infrastructure Australia (IA) for the construction of an efficient link between the Federal Highway and the Monaro Highway.

Following its initial appraisal, IA has sough further information and clarification. This paper provides summary of key information relating to the project, as well as response to specific questions and issues raised by IA.

2. The Proposal

The ACT is seeking funding to create an efficient freight transport, business travel and personal travel link between the Federal Highway and the Monaro Highway.

The joining of these national highways will provide a vital transport link relevant to a significant population and geographic region of Australia — from the south eastern coast, through the snowy mountains, the Nation's capital and further north to either side of the Great Divide.

In essence, the project will 'complete' the Federal Highway by linking the regions north and south of the Australian Capital Territory, as well as providing a highway bypass to Canberra.

The proposed Majura Parkway will also form part of the Territory's arterial road network, improving north-south transit, particularly to the Airport, and eastwards towards Queanbeyan.

The projects involves the construction of around 11 km of dual carriageway and 7 bridges.

Appendix A provides an aerial view showing the proposed link.

3. Benefits and Costs

3.1 Cost Estimates and Economic Analysis

Construction staging and cost estimates have been updated by SMEC Australia from a previous study undertaken in 2007. The capital cost of the project is estimated at $250 million over a three year construction period.

Economic appraisal of the project (also undertaken by SMEC Australia) has been updated to address feedback comments from IA. This is provided at **Appendix B.**

3.2 Approach to Analysis

The economic analysis is based on strategic and micro traffic modelling to estimate the effects of the proposed improvements.

Micro-simulation modelling was validated by traffic counts. The Paramics model was calibrated by adjusting the default parameters in the standard behavioural models to local conditions. This relied mainly on the RTA guidelines. The model validation is in line with the best practice minimum fits.

The total expected benefits are estimated by calculating the savings from the proposed option as compared to the base option ('do nothing') in terms of travel time, vehicle operating costs, accident costs, and environmental costs.

The 'generated traffic' in the study refers to the traffic diverted from elsewhere in the transport network – no induced demand is assumed[1].

The approach and the parameters used in the analysis are in accordance with the relevant guidelines.

3.3 Benefit to Cost Ratio

The economic analysis indicates a Benefit to Cost Ratio (BCR) of 4.05 over 30 years at 7 per cent discount rate. The analysis also provides BCR at discount rates of 4 per cent and 10 percent. The BCR is greater than 2.75 under all discount rates.

The Net Present Value (NPV) of benefits is estimated around $637 million. The benefits largely arise from a reduction in travel time (captured through decrease in vehicle operating costs in the analysis), and accident costs.

Traffic modelling highlights significant increase in traffic congestion, and consequently, increase in transit times under a 'do nothing' scenario. This is considerably alleviated through the construction of this link.

The micro-simulation modelling was also used to estimate changes in key performance indicators. Those are summarised in the economic analysis report. In general, the level of service improves from F under 'do nothing' scenario to B. Average speed on North-South transit is projected to increase from 18km/hr to 77km/hr, and travel time in AM peak hour is projected to reduce from 40 minutes under 'do nothing' scenario to less than 9 minutes in 2031.

In summary, the project will significantly alleviate congestion and reduce transit costs.

3.4 Overall ACT Treasury Assessment

The overall approach and methodology appears reasonable. The BCR estimates appear robust, and are likely to be understated, as externality benefits for the rest of the network have not been estimated. Those are likely to be significant given that the proposed link would provide a more efficient link for freight traffic which is currently using the main thoroughfare, hence reducing congestion on Northbourne Avenue.

[1] In the analysis, the 'study area' refers to the project road. Freight carriers (and other traffic) diverted from, for example, Northbourne Avenue because of a quicker link between the highways is referred to as the traffic originated from outside the study area.

4. Related Studies and Project Readiness

The project has been developed to Preliminary Sketch Plan (PSP) stage. **Appendices C and D** provide PSP documentation and the detailed plans, respectively.

A detailed Environmental Impact Study (EIS) is currently underway. A draft of the EIS will be ready in March and the final EIS in April 2009.

Initial consultation was undertaken during the initial design stage. The alignment and PSPs incorporate input from the stakeholders. Further consultation is now being undertaken as part of the statutory process.

5. Related Projects

A number of other projects have been completed, or are currently underway, that are linked to this project in terms of traffic flows. Those are:

- Single eastbound bypass lane at Dairy Road/Morshead Drive roundabout;
- Duplication of Morshead Drive between Dairy Road and Monaro Highway;
- Three phase traffic signals at Monaro Highway/Morshead Drive;
- Widening of Morsehead Drive between Pialligo Avenue and Fairbairn Avenue;
- Duplication of Fairbairn Avenue between Morshead Drive and Pialligo Avenue (including a new bridge over Woolshed Creek);
- Duplication of Pialligo Avenue between Morshead Dr and Fairbairn Avenue (including a new bridge at Woolshed Creek and signalised intersection at Fairbairn Avenue); and
- Duplication of Pialligo Avenue between Fairbairn Avenue/Beltana Road intersection and a new airport access (currently at Ulinga Place).

For the purposes of this economic analysis, it has been assumed that all of the above works will be completed prior to construction of the Majura Parkway.

The micro-simulation with updated traffic count information has highlighted that the performance of the proposed Federal Highway/Monaro Highway link could be improved further by removing emergent 'pinch points' at three roundabouts on the east-west transit. Without these improvements, the project has a negative impact on these parts of the east-west link. The improvements have not been included in the project scope at this stage. Further work is required to develop design solutions and cost estimates.

6. Response to Infrastructure Australia's Feedback[2]

6.1 Profiling Against IA's Strategic Priorities

More information required to justify ratings. In particular no information was provided against strategic priorities 'Diversify Australia's economic capabilities and build Australia's global competitive advantages'.

Ratings against strategic priorities have been completed and provided in **Appendix E**.

Analysis based on Australian Bureau of Statistics' national accounts data indicates that productivity of the transport and storage industry in the ACT has been declining. Had productivity in the transport and storage industry remained stable, the value added by this industry in 2007-08 would have been an additional $158 million.

The deteriorating performance of the transport and storage industry in the ACT adversely affects not just the ACT but south eastern New South Wales[3]. The project has significant benefits for the national freight transit system, essentially by providing a highway bypass to Canberra and improving the level of access to the Airport. The reduced costs of freight transit will potentially improve competitiveness of Australian exports. A short paper summarising this analysis is at **Appendix F**.

6.2 Cost Benefit Analysis

Project mentions different stages, focuses on Stage 2. This raises two questions:

- *Need information on other stages to be clear that costs and benefits have been correctly apportioned to this stage and not hidden/taken from other stages where ther are mutually dependent.*
- *Need BCR information specifically applying to this stage, not other stages (some info seems to come from Stage 1).*

As mentioned above in Section 5, from the ACT Government's perspective, the project forms part of a range of works around Airport, and hence was referred to as Stage 2. Reference to stages has now been removed to avoid confusion.

Undoubtedly, improvements at one point or part of the transport network have flow on effects on other parts of the network. For the purpose of this analysis, however, all the modelling assumes that those works have been completed, and that no costs or benefits from those works are attributed to this project.

- *Three flaws in the methodology – all likely to increase slightly the BCR: time period of evaluation short (24 vs 30 years); no residual value included; and no externalities assessed.*

[2] In this section, IA's feedback comments appear in italics.
[3] It is noteworthy that the national accounts attribute a proportion of the transit costs of freight passing through Canberra to the ACT.

Time period of evaluation has been extended to 30 years. The analysis also includes BCR over 40 years for reference. This has been included given that a significant part of the project involves bridges which have much longer economic life.

Residual value has been included in the analysis. Residual value at the end of the appraisal period of 30 years is estimated as the present value of benefits for the remaining life of the asset for the remaining 10 years of the assumed 40 year economic life, in accordance with the *National Guidelines for Transport System Management in Australia, Volume 3 (Appraisal of Initiatives)* by the Australian Transport Council (ATC).

The economic analysis includes an assessment of externality benefits, albeit, partially.

6.3 Delivery

- *Cost and fund sharing arrangements not shown in the submission. Clarification sought on maintenance costs – unlike Auslink BAF does not include maintenance.*
- *Capital cost – clarification required – cost benefit analysis contains a capital cost of $125 million while the submission refers to a preliminary design figure of $250 million – require copy of report and any supporting analysis.*

The capital cost estimated for the project in July 2008 was $242 million (excluding GST), as in Appendix C, Chapter 20. This has been escalated by 3 per cent to $250 million. The final cost of the project is likely to be higher subject to further cost escalation to tender time.

The ACT has already received funding commitment for $30 million from the Commonwealth Government under its Building Australia Program for works around the Airport precinct. Those works are an integral part of the proposed link project.

The funding being sought is therefore $220 million. As mentioned above, this does not include the cost of works required to address the impact of this project on east-west transit.

Maintenance costs, while included in the economic analysis, do not form part of the $250 million figure.

Risks – need more detail

In essence, the PSP report covers a number of the risks flagged by IA, and responds how these are being addressed. The report contains some useful information including environmental and cultural heritage assessments, geotechnical investigations, transport planning backgrounds and a progress on the public consultation and discussion with leaseholders and or key stakeholders to date.

In addition to the PSP report, there have been number of actions to address a number of project risks.

- An extended meeting with the Department of Defence in September 2008 to discuss the impact of the proposal on Defence lands and activities. A formal

approach to the Department of Defence is now being prepared to acquire necessary land

- A workshop in December with Senior Environmental Managers from the ACT Government's Parks Conservation and Lands and the ACT Commissioner for Sustainability and the Environment to identify a management strategy to protect high value native grasslands and areas of Yellow Box Gums.
- A request to the project team to prepare a project target out turn cost using the recently released *Best Practice manual in cost estimation for public road and rail infrastructure projects* by Evans and Peck prepared for the Federal Department of Infrastructure.
- The full EIS is now underway and includes a statutory consultation component - a draft of the EIS will be ready in March and the final EIS in April 2009.

The target is to be in a position to go out for a construction tender in July 2009.

6.4 Infrastructure Australia's Minimum Requirements Template

This has been completed and provided at **Appendix G.**

Appendix List and Transmission Mode

Appendix A: Aerial view showing the proposed link (hard copy; courier)
Appendix B: Updated Economic Appraisal (electronic)
Appendix C: Preliminary Sketch Plan Documentation (hard copy; courier)
Appendix D: Preliminary Sketch Plan (detailed plans) (CD ROM; hard copy; courier)
Appendix E: Rating Against Strategic Priorities (electronic)
Appendix F: Transport and Storage Industry Productivity Analysis (electronic)
Appendix G: Minimum Information Requirement Template (electronic)

SMEC

Majura Parkway
Economic Analysis –

Ultimate Configuration Options

12th October 2009

Client: ACTPS\Roads ACT

Project Name:	Majura Parkway
Project Number:	3002180
Report for:	ACTPS / Roads ACT

PREPARATION, REVIEW AND AUTHORISATION

Revision #	Date	Prepared by	Reviewed by	Approved for Issue by
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Majura Parkway Economic Analysis - Ultimate Configuration Options

For: ACTPS / Roads ACT

12TH OCTOBER 2009

EXECUTIVE SUMMARY

SMEC was commissioned by the ACT Government to update the economic analysis of Majura Parkway, considering the ultimate configuration. This study is an update of a similar exercise done in January 2009 but with two additional options to be evaluated. The following alignment alternatives were assessed:

- **Option 5 (current preferred alignment)**: similar alignment to the one evaluated in January 2009.
- **Option 6**: re-aligned Option 5 to reduce impacts on Majura Pines.
- **Option 7**: Upgrade of Majura Road, ie no direct impact on Majura Pines; at-grade intersection near the AFP facility; 90km/h design speed.

The most recent land use assumptions and updated modelling parameters, provided by the ACT Government, were used in the transport modelling process to provide a more accurate projection of future traffic demand. Thus, the old modelling assumptions, used in the January 2009 Economic Analysis Report, are no longer valid (*Refer detailed discussion in Chapter 2).*

Construction costs for Options 5, 6 and 7 were estimated as *$250 million*, *$260 million* and *$245 million*, respectively. Appropriate maintenance costs (both annual and cyclic) were also estimated as a function of the corresponding construction costs of each option.

Model runs were conducted for the years 2011, 2021 and 2031 for all scenarios, including the base ('do nothing') case. Vehicle Operating Costs (VOC) and Vehicle Kilometres Travelled (VKT) were extracted from the model outputs and were used to determine the benefits associated with each option.

Benefits derived from the construction of Majura Parkway were estimated by calculating the cost savings for each option. These savings were mainly the differences between travel related costs associated with the 'do nothing' scenario and those associated with the upgrade cases (i.e. Majura Parkway). In addition to these travel cost savings, other benefits that were estimated include the generated traffic benefits, residual value of the project (in 30 years), and environmental cost savings.

The economic assessment results show that all 3 options are economically feasible, given that all produced positive NPVs and BCRs greater than 1. The estimated economic indicators for each option are summarised in the following table:

Discount Rate	NPV ($,000)			BCR		
	Option 5	Option 6	Option 7	Option 5	Option 6	Option 7
4%	912,467	881,065	466,227	4.96	4.67	3.06
7%	484,285	457,205	261,040	3.32	3.11	2.28
10%	258,468	236,071	140,834	2.36	2.19	1.75

As expected, Option 7's performance is relatively poor when compared against the other two alternatives, having a lower speed limit and incorporating an at-grade intersection at the northern portion of the alignment near the AFP facility. This contributed heavily to the reduced travel cost savings, particularly in the future years when demand nears the network's capacity. Another disadvantage of Option 7 is the increased accident cost, which produces a negative benefit around 4 years after project completion, this due to the poorer standard of geometric alignment.

Option 5 (the preferred option) produced the best economic indicators, with an NPV over $484 million and a BCR of 3.32 at a 7% discount rate. It is therefore considered the best option among the three. In terms of traffic operations, it performs very similarly with Option 6 since the only difference between the two alignments is that section near Majura Pines. Option 6 however costs $10 million more than Option 4, hence the lower NPV and BCR.

In light of recent announcements by the Canberra Airport to develop a 24hr Freight Hub, a sensitivity of the economic indicators to the proportion of heavy vehicle percentage was also tested using three additional HV% scenarios – 6%, 10% and 12% (current analysis being based on 8%). The estimated NPVs and BCRs increased at 6% and 10% heavy vehicles, while economic indicators were found to decrease at 12% heavy vehicles. The reductions in NPV and BCR at 12% HV (50% increase from the reference scenario of 8% HV) in Option 5 at a 7% discount rate were estimated at 71.07 million (14.7% of NPV at 8% HV) and 0.34, respectively. Even with a 50% increase in heavy vehicles during the AM peak hour, the project still appears to be economically feasible.

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APPENDIX A: Economic Analysis Spreadsheets

1 INTRODUCTION

1.1 Majura Parkway

The Majura Parkway is proposed to be constructed in the Majura Valley on the east side of Canberra. As well as its metropolitan functions, the Majura Parkway is important in enabling traffic from Sydney and other northern destinations to the Monaro region to bypass Canberra. In selecting a route for the Parkway, several considerations were taken into account:

- To protect the important natural and cultural heritage features of the Majura Valley;
- To provide access to all the existing and future development in the Majura Valley from Majura Road;
- To make provision for a possible future very high speed train (VHST);
- To avoid major constraints on potentially important long-term land uses, such as the upgrading of facilities at Canberra International Airport;
- To limit the impacts on other existing land uses where practicable; and
- To construct the road at a realistic cost to the community

The Majura Parkway comprises a number of ramps, interchanges, and structures. The total length is about 11 km of dual carriageway linking the Monaro Highway and the Federal Highway. For each carriageway, cross sections of 2 x 3.5 m traffic lanes, 2.5 m roadside shoulder and 1.0 m offside shoulder are provided.

Public and Stakeholder comments received during the environmental planning process identified the need to investigate 2 x additional alignment options (Option 6 and 7) in the northern part of the project which reduced impact upon the Majura Pines and made more use of the existing Majura road. A separate report has been prepared which analyses the advantages and disadvantages of these options (*refer "Review of Environmental Factors - Majura Parkway – Option 6 & Option 7, SMEC August 2009*). This economic analysis report does not intend to duplicate the previous information and focuses on economic analysis only. There is however a summary of alignment options impacts included in Chapter 4

1.2 Objective

The main objective of this study is to update the economic assessment conducted for the Majura Parkway Ultimate Configuration (*SMEC, Jan 2009*) and to evaluate 2 x additional alignment options. The current analysis involves the economic evaluation of three options, which are as follows:

- ***Option 5 (the current preferred option)***: very similar to the one presented in January 2009, but with some changes in interchange design. (*Figure 2*)
- ***Option 6***: also very similar to the preferred option but with some minor changes in alignment and interchange layout in the northern portion of the parkway which reduce the impacts upon Majura Pines. (*Figure 3.*)
- ***Option 7***: Essentially an upgrade of Majura Road in the northern part of the site, merging of the parkway to the existing alignment of Majura Road, with an at-grade intersection at the junction between Majura Parkway and the AFP Access Road. This option also reduces the impacts upon Majura Pine. (*Figure 4.*)

These were assessed relative to the traffic operational conditions if the existing condition is continued (or a 'do nothing' scenario) (*Figure 1*)

Figure 1: Majura Rd Existing Conditions

Figure 2: Majura Parkway – Option 5

Figure 3: Majura Parkway – Option 6

Figure 4: Majura Parkway – Option 7

2 TRAFFIC MODELLING

Strategic transport modelling (in TransCAD) was initially conducted to produce the demand matrix used for micro-simulation modelling (in Paramics). The modelling results are then used as inputs for the economic assessment, which aims to produce the economic indicators to determine the feasibility of each considered option. This process is similar to the one conducted by SMEC in January 2009, which evaluated the economic feasibility of the preferred option (Option 5).

For this study however, the most recent land use assumptions provided by the ACT Government were used in the modelling process to provide a more accurate projection of future traffic demand. The models used in the January 2009 report not only used the old land use assumptions, but also a different set of modelling parameters (e.g. trip generation rates, generalised cost function, trip distribution equation, etc). In May 2009, SMEC was provided a new set of modelling parameters by the ACT Government, which was mainly based on the Traffic Modelling and Analysis – Study Report by MRC (February 2009). Furthermore, the land use assumptions have been recently updated (September 2009), particularly the population and employment projections, and these were also provided to SMEC.

SMEC found it appropriate to use the updated parameters and assumptions in conducting the economic assessments and comparisons of the three options for the Majura Parkway Ultimate Configuration – Options 5 (the preferred option), 6 and 7. Using the old assumptions (as used in the January 2009 Economic Analysis Report) is no longer valid. SMEC understands that the purpose of the current economic assessments for Options 6 and 7 is to compare the economic indicators of these options with those of the preferred option as evaluated in January 2009. To be able to do this properly, all the modelling parameters and assumptions used, and all the common elements in the design of the three alternatives should exactly be the same. Given that the main differences between the three options lie in the northern portion of the alignment, the southern half of Majura Parkway should be the same for all options to be assessed. However, the alignment used in the January 2009 report still had the off-ramp loop at Fairbairn Avenue, which has since been changed into a diamond interchange.

The comparison of economic assessment results between the three options can therefore be only achieved by doing either of the following procedures:

1. Use the January 2009 assumptions and (southern) alignment as the reference point in making all the options 'comparable':

   - Re-configure the southern half of both Options 6 and 7 to match that of the alignment used in the January 2009 analysis, and use this as the basis for traffic modelling.

   - Apply the old land use assumptions used in the January 2009 traffic modelling and analysis.

   - Apply the old traffic modelling parameters used in the January 2009 analysis.

2. Use the most recent land use and modelling assumptions, as well as the updated alignment of the preferred option, as the reference point in making all the options 'comparable':

   - Use the updated alignments for all options as the basis for traffic modelling.

   - Apply the most recent land use assumptions and traffic modelling parameters provided by the ACT Government.

SMEC has decided to adopt the second procedure mainly because:

- This will utilise the most recent information applied in the modelling process and therefore would produce the more valid results.
- The first procedure will only provide the relative differences of the assessment results between the options, but the actual values of the economic indicators (i.e. NPV, BCR) will no longer be valid. In the end, the second procedure will most likely have to be conducted anyway, in order to provide the more valid results based on the updated parameters and assumptions.

2.1 Model Calibration

The existing Paramics model was calibrated by adjusting the default parameters in the standard behavioural models contained in the micro-simulation software to local conditions. This relied mainly on the RTA default Paramics input files.

2.2 Matrix Estimation

Origin-Destination (OD) matrices for forecast years 2006, 2011, 2021 and 2031 were obtained from SMEC's strategic transport model of the ACT. As mentioned earlier, these outputs were then used as the demand inputs for the subsequent micro-simulation modelling done in Paramics.

2.3 Micro-Simulation In Paramics

Assignment runs were conducted for the existing road network and the considered network option as listed in *Table 1*. Network layouts are shown in Figures 1 through 4. It should be noted that although Majura Parkway is still assumed to be under construction in 2011, a model run for this year was necessary to determine the benefits for the years 2012 to 2020 (through interpolation).

Table 1: Paramics Runs

	2006 AM	2011 AM	2021 AM	2031 AM
Do Nothing	✓	✓	✓	✓
Option 5 (Preferred)	-	✓	✓	✓
Option 6	-	✓	✓	✓
Option 7	-	✓	✓	✓

3 ECONOMIC ANALYSIS

In order to assess the economic feasibility of constructing the Majura Parkway, an analysis of the costs and benefits of the project against the 'do nothing' scenario was undertaken over a 30 year period. Through this process the Net Present Value (NPV) and Benefit Cost Ratio (BCR), associated with the full implementation of the Majura Parkway design and construction in the first 3 years of the analysis period, were estimated. The Australia Transport Council (ATC) *National Guidelines for Transport System Management in Australia* recommends a 30 year life for road projects and a 'much longer life' for bridges. The Majura Parkway has several major bridges and therefore the economic life of the project has been assumed to be 40 years, which still leaves it with a 10 year residual value after the 30 year evaluation period.

3.1 Construction And Maintenance Costs

Capital construction costs and maintenance life costs were estimated relating to the implementation of the Ultimate Majura Parkway.

Table **2** below indicates an initial approximate estimate of the project design and construction costs. Although the estimate is still subject to further detailed design, it provides a broad overview of the magnitude of costs, which is considered appropriate for economic analysis purposes at this stage.

Table 2: Initial Project Costs

Option	Project Cost ($,000)
Do Nothing	0
Option 5 (Preferred)	250,000
Option 6	260,000
Option 7	245,000

A simplified maintenance cost was also calculated for the analysis. The cyclic maintenance was assumed to occur every 5 years from the year of work completion and opening to traffic. The cyclic maintenance cost was estimated as 0.5% of the construction cost for the first application and then for the remaining 3 applications was estimated as a 1% of the construction cost. Similarly for annual maintenance, its cost was estimated as 0.125% of the construction cost for the initial years of application prior to the first cyclic maintenance, and this is raised to 0.25% of the construction cost in the succeeding years of application. In years that cyclic maintenance is applied, the annual maintenance cost is assumed to be $0.

3.2 Travel Related Costs

Several indicators of travel were obtained as output from the Paramics runs in the AM peak, namely the number of Vehicle Kilometres Travelled (VKT), the number of Vehicle Hours Travelled (VHT) as well as the mean speed. These were obtained for the years 2006, 2011, 2021 and 2031. The annual stream of VKT and VHT was estimated over a 30 year period with annual values interpolated between modelled values in 2006, 2011, 2021 and 2031. The growth between 2021 and 2031 was used to extrapolate values for 2038. These were used to estimate the benefits for the existing condition continuing as

well as for the upgraded network option. For each, the following travel related costs was estimated:

- Vehicle Operating Cost (VOC): this is dependent on the number of Vehicle-Kilometres Travelled (VKT) as well as on the Vehicle Operating Cost per km (VOC/km) obtained from the Austroads RUC Update to 2007 Manual. These costs include road user time costs.
- Accident Cost (AC): this is dependent on the VKT as well as on the accident rate per Million Vehicle-Kilometres Travelled (MVKT) obtained from the RTA Economic Analysis Manual
- Environmental Cost (EC): this is dependent on the VKT as well as on the environmental externalities cost per Vehicle-Kilometres Travelled (VKT) obtained from the RTA Economic Analysis Manual
- Consumer Surplus Gain: This is based on the difference in VKT between the Base and Option and reflects the diversion of existing traffic from outside the study area onto the new facilities.

The following sections detail the exact methodology used for estimating each of these costs:

3.2.1 Vehicle Operating Cost

Vehicle operating cost (VOC) is a function of kilometres travelled and VOC/km. From the most recent update of road user cost (RUC) values (to June 2007) by Austroads, the equation to estimate vehicle operating cost is given by:

$$c = A + \frac{B}{V} + C \cdot V + D \cdot V^2$$

where:

c = vehicle operating cost (cents/km)

A, B, C, D = model coefficients

V = all day average link speed

This study considers four types of vehicles, namely private cars, business cars, light commercial vehicles and articulated trucks. Vehicle composition is calculated from the actual counts conducted by Datacol in 2007, and is shown in *Table 3*. The proportions used for this study are figures for peak hours.

Table 3: Vehicle Fleet Composition

	Car	Light Commercial	Articulated Truck	Total HV
Peak Hour	92%	5%	3%	8%

The annual VOC per vehicle type are calculated by getting the product of the total VKT each year and the estimated VOC per kilometre. The VKT for each vehicle type are calculated by multiplying the total VKT by the proportion of each vehicle type. The VOC per kilometre of each vehicle type is estimated by applying the corresponding model coefficients, given in *Table 4* (At-Grade Roads), to the abovementioned equation.

Table 4: Estimated VOC Parameters for All At-Grade Roads (Austroads 2007)

VOC Model Coefficient (At-Grade Roads)				
Vehicle Type	**A**	**B**	**C**	**D**
Cars	2.185 (2.185)	3352.21 (976.21)	0.05711 (0.05711)	0.0005795 (0.0005795)
LCV	-3.096 (-3.096)	3863.48 (2092.48)	0.19609 (0.19609)	0.0005658 (0.0005658)
HCV + Buses	5.885 (5.885)	9182.53 (5471.53)	0.58625 (0.58625)	0.0002108 (0.0002108)

Note: Values in brackets are estimated parameters for VOC only specification, while estimated parameter values outside brackets are for VOC plus person time costs (commercial, freight and private time)

Travel time costs are already incorporated in the estimated VOCs, so the benefits derived from reduced travel times are included in the VOC savings.

3.2.2 Accident Costs

The expected number of accidents by type is a function of kilometres travelled. It is a known phenomenon that the more travelling, the more is the propensity of getting involved in an accident. *Table 5* shows the average cost of accidents per Million VKT by road type. For the Option cases, the proportion of VKT travelled on each road type was calculated. The majority of the road network in the study area is assumed to be Arterial. Majura Parkway is assumed to be Freeway. However, for Option 7, the northern part of Majura Parkway contains a signalised intersection so it is assumed to be Arterial in this area.

For the Base Case, accident records for Majura Rd for the period 01/01/2003 to 30/09/2008 were obtained. From these records, using the RTA average cost for each type of accident (Property Only, Injury and Fatal) the average crash cost per MVKT was found to be $50,587.87. This is higher than the average arterial cost per MVKT.

Table 5: Adopted Accident Rates and Costs

Road Type	Average Crash Cost ($/MVKM)
Arterial	45,800
Freeway	14,300
Majura Rd (Existing)	50,588

The Accident Costs (AC) is a summation of all the costs expected to be incurred as a result of occurrence of different types of accidents. The formulation for this computation is as follows:

$$AC_{option} = \left(\frac{Cost}{MVKT_{(Arterial)}} \times MVKT_{(Arterial)} \right)$$

3.2.3 Annualisation Factor

An annualisation factor was calculated based on Roads ACT counts. This was applied to the AM peak VOC and AC in order to estimate the annual incurred costs over the evaluation period. The expansion factor was estimated by applying the existing peak hour to daily flow ratio.

$$AnnualCosts_{option} = \left(VOC_{(option)} + AC_{(option)}\right) \times AnnualisationFactor$$

3.3 Generated Traffic

From the *National Guidelines for Transport System Management in Australia, Volume 3 (Appraisal of Initiatives)* published by the Australian Transport Council (ATC), 'existing traffic' is traffic that uses the infrastructure affected in both the base and upgrade scenarios. Traffic demand in excess of this that results from the implementation of the infrastructure improvement is considered 'diverted' or 'generated' traffic. This simply means that this demand came from somewhere outside the study area, and is *not* new demand induced by the upgrade.

After the Majura Parkway is implemented, it is expected that some traffic from the external network (i.e. outside the modelled study area) will go through the study area because of improved traffic operations. The benefits derived due to this generated traffic can be calculated by estimating the consumers' surplus gain, given by:

$$GTB = \frac{1}{2}(P_1 - P_2) \cdot (Q_2 - Q_1)$$

where:

GTB	= generated traffic benefit
P_1	= perceived price (assumed to be the sum of *VOC* and *AC*) for the base case
P_2	= perceived price (assumed to be the sum of *VOC* and *AC*) for the upgrade case
Q_1	= demand (converted to *VKT*) for the base case
Q_2	= demand (converted to *VKT*) for the upgrade case

3.4 Residual Value

A road construction project is expected to have no residual value (*RV*) left by the end of its economic life. For the Majura Parkway option, the economic life of the project is assumed to be 40 years. The residual value at the end of the appraisal period of 30 years is estimated as the present value of benefits for the remaining life of the asset for the remaining 10 years of the assumed 40-year economic life. This procedure for calculating

the residual value is suggested by the *National Guidelines for Transport System Management in Australia, Volume 3 (Appraisal of Initiatives)* published by the Australian Transport Council (ATC). The residual values of the project at the end of 30 years (value at year 2038), for each of the options considered, are shown in ***Table 6***.

Table 6: Project Residual Values

Option	Residual Value ($,000)
Base Case	0
Option 5	611,778
Option 6	642,185
Option 7	61,903

3.5 Environmental Externalities

The RTA Manual includes monetary values for environmental externalities (noise, air pollution, water pollution, etc) and these are mainly shown as functions of VKT. Environmental externalities (*EE*) are known to be functions not only of kilometres travelled but also of traffic operating speed (i.e. it increases with kilometres travelled and reduces with the increase in operating speeds). The Majura Parkway (upgraded network) option is expected to increase the operating speed for the expected traffic as well as to increase the number of vehicle kilometres travelled. In this context the RTA values are not sufficient to compare and assess the full impact of the environmental externalities.

However, some partial benefit may be estimated from the generated traffic outside the study area. This is mainly that portion of the future demand that will not have passed through the study area without the Majura Parkway. These are assumed to be traffic that are diverted from the external network (i.e. road networks outside the study area), which are then subsequently assumed to be more highly urbanised than the areas surrounding the Majura Parkway. With these assumptions, the environmental costs caused by these 'redirected' traffic should then be reduced once they opt to go through the Majura Parkway, which is in a more 'rural' setting than their original route choices. In other words, environmental impacts at or near the City Centre are reduced through the diversion of this demand to the Majura Parkway. The RTA costs for environmental externalities are classified according to urban and rural settings, as shown in *Table 7*. The *EE* benefits (albeit partial), or environmental cost savings (*ECS*), can then be estimated by getting the difference between the environmental costs of the diverted traffic from an urban to a rural setting.

Table 7: Environmental Externality Values per Veh-km for Passenger Cars and Buses (Economic Analysis Manual, RTA)

Environmental Externality	Passenger Vehicles (cents/veh-km)		Buses (cents/veh-km)	
	Urban	Rural	Urban	Rural
Noise	0.83	0.00	2.03	0.00
Air Pollution	2.58	0.03	29.08	0.00
Water Pollution	0.39	0.04	4.36	0.04
Greenhouse	2.03	2.03	11.98	11.98
Nature and Landscape	0.05	0.48	0.13	1.32
Urban Separation	0.60	0.00	1.92	0.00

3.6 Majura Parkway Benefits

The total expected benefits to be derived from constructing the Majura Parkway are estimated by calculating the savings of the upgrade option (Ultimate Majura Parkway) as compared to the base option ('do nothing') in terms of *VOC* savings, *TTC* savings, *AC* savings, the residual value (*RV*) after the 30-year appraisal period, and the environmental cost savings (*ECS*). Values of such savings for each option are depicted in *Table 8*. The formulation for this computation is as follows:

$$Benefits = \left(VOC_{Upgrade} - VOC_{Base}\right) + \left(AC_{Upgrade} - AC_{Base}\right) + GTB + RV + ECS$$

3.7 Benefit Cost Ratio

In order to compare the costs and benefits of the proposed option relative to the existing road network over the evaluation period, the change in monetary values over time needs to be accounted for. This is achieved by discounting the annual costs and benefits of the project to the present year using a range of discount rates (4%, 7%, and 10%). The normal indicators of the worth of a project, the NPV and BCR, for each option were estimated for each of these discount rates.

If the discounted present value of the benefits exceeds the discounted present value of the costs, then the project is worthwhile. This is equivalent to the condition that the net benefit must be positive. Another equivalent condition is that the ratio of the present value of the benefits to the present value of the costs must be greater than one

The results of the economic analysis of implementing the Majura Parkway considering three different options, in varying discount rates, are shown in the succeeding tables. *Table 8* outlines the present values of costs and benefits for each of the considered options while *Table 9* summarises the resulting NPVs and BCRs for the three scenarios.

Table 8 : Present Values of Costs and Benefits

Discount Rate	PV of Costs ($,000)			PV of Benefits ($,000)		
	Option 5	Option 6	Option 7	Option 5	Option 6	Option 7
4%	230,583	239,755	225,998	1,143,051	1,120,820	692,225
7%	208,760	216,938	204,671	693,044	674,142	465,711
10%	190,508	197,864	186,830	258,468	433,935	327,664

Table 9: Resulting Economic Indicators

Discount Rate	NPV ($,000)			BCR		
	Option 5	Option 6	Option 7	Option 5	Option 6	Option 7
4%	912,467	881,065	466,227	4.96	4.67	3.06
7%	484,285	457,205	261,040	3.32	3.11	2.28
10%	258,468	236,071	140,834	2.36	2.19	1.75

All options produced positive NPVs and BCRs greater than 1. Option 7's indicators however are considerably lower than the other two alternatives mainly because of the reduced VOC savings in future years, as well as significant differences in accident cost savings.

Detailed spreadsheets of the cost benefit analysis outputs are included in Appendix A.

3.7.1 Sensitivity of Results to Airport Freight Hub

The Canberra Airport Master Plan has been approved recently and this involves the implementation of a 24-hour freight hub. Although this is expected to increase the total amount of total daily traffic, this does not necessarily mean that heavy vehicle traffic will increase during peak hours. In fact, extending the hours of freight operations in the airport could potentially spread freight demand throughout a single day, possibly even reducing heavy vehicle traffic during peak hours (if freight traffic going to and coming from the airport is managed accordingly).

Changing the proportion of heavy vehicle traffic can either have a positive or a negative effect on the economic indicators. Reducing truck traffic is expected to result in better overall network performance (i.e. higher average speeds, etc), thus also reducing travel costs. Intuitively, increasing the heavy vehicle percentage should then mean a decrease in NPV and BCR. However, if increase in trucks does not significantly affect network performance and remains relatively similar to the reference scenario (in this case, 8% heavy vehicles), then an increase in benefits may also be achieved. This is mainly due to the higher travel costs associated with commercial/heavy vehicles. The reduction in economic indicators will only occur if the amount of increase in heavy vehicle proportion is high enough to significantly contribute to the deterioration of overall network performance.

To test the sensitivity of the economic indicators to the variation in heavy vehicle proportions, additional cost-benefit analyses were performed assuming varying levels of

heavy vehicles travelling to and from Canberra International Airport. The percentage of heavy vehicles on this route is 8% (5% Light Commercial and 3% Articulated Trucks) in the current model, as indicated in *Table **3** (data derived from recent traffic counts on Majura Road)*. This was changed to 6%, 10% and 12% to test the sensitivity of the results and the results are presented in *Table **10***, *Table **11*** and *Table **12***, respectively.

At 6%, the estimated NPVs and BCRs increased, which can be attributed to higher average speeds due to reduced truck volumes. At 10%, the resulting NPVs and BCRs still improved if compared to the 8% heavy vehicle scenario. In this case, the impact of the increased truck volumes are not yet high enough to offset the additional travel cost savings associated with the higher number of heavy vehicles. Having 12% heavy vehicles however resulted in reduced economic indicators, as shown in *Table **12***.

Table 10: Economic Indicators Assuming 6% Heavy Vehicles on Pialligo Ave

Discount Rate	NPV ($,000)			BCR		
	Option 5	Option 6	Option 7	Option 5	Option 6	Option 7
4%	1,143,914	986,923	582,624	5.96	5.12	3.58
7%	590,243	506,503	306,176	3.83	3.33	2.50
10%	307,050	258,645	155,202	2.61	2.31	1.83

Table 11: Economic Indicators Assuming 10% Heavy Vehicles on Pialligo Ave

Discount Rate	NPV ($,000)			BCR		
	Option 5	Option 6	Option 7	Option 5	Option 6	Option 7
4%	1,033,376	921,812	593,770	5.48	4.84	3.63
7%	517,147	466,801	304,707	3.48	3.15	2.49
10%	256,421	233,143	149,900	2.35	2.18	1.80

Table 12: Economic Indicators Assuming 12% Heavy Vehicles on Pialligo Ave

Discount Rate	NPV ($,000)			BCR		
	Option 5	Option 6	Option 7	Option 5	Option 6	Option 7
4%	786,972	954,650	466,467	4.41	4.98	3.06
7%	413,217	489,726	247,030	2.98	3.26	2.21
10%	213,287	248,832	122,699	2.12	2.26	1.66

4 SUMMARY OF ALIGNMENT IMPLICATIONS

Option Name (Description of alignment or portion)	Efficient functioning of road network	Parkway geometry & design speed	Compatibility with VHST corridor	Engineering considerations & constructability	Land use	Ecological impacts	Heritage impacts	Amenity	Resource efficiency	Public safety	Social	Value for money
Preferred Alignment (Option 5)	✓	✓	✓	✓	Fragments winery block.Removes 30% of MTB trails	✓	✓	Noise at guides.	✓	Close to guides.	✓	✓
Options 6 (between preferred and existing – reduces fragmentation of pines)	✓	✓	Greater construction cost as the train alignment will be required to cross the road at two locations	The alignment has moved down the slope resulting in less cut to fill available. Requires 240000 m^3 more imported fill.	Better for winery, guides, housing block Worse for AFP, PCL	Avoids Yellow box stand in vineyard, all else same.	Same as preferred	Increased noise at AFP. Further away from guides and winery	Longer service roads so have to travel further to turn around	Further from guides, overall neutral.	Slight improvement for Majura Pines fragmentation.	$10million more than preferred
Option 7 (Upgrade and Duplicate Existing)	Disruption to traffic during construction, greatly reduced overall level of service	Posted speed 80km/h due to more intersections off road	Greater construction cost as the train alignment will be required to cross the road at two locations	Minimal earthworks required for northbound carriageway. Southbound carriageway is on top of creek and requires imported fill.	Better for winery, guides, housing, Worse for AFP	Will avoid woodland near guides but still slightly impact Box Gum Woodland. Some realignment of creek	Will impact Child's Grave on block 696. Rated as highly significant	More air and noise pollution at AFP from signalised intersection. Further from guides and winery	The reduced posted speed and disruption at the intersections will result in higher operating costs for transport	Further from guides, but at grade intersections increase hazard	Less impact upon Majura Pines, but poorer standard of road to the public.	$5million less than preferred

5 CONCLUSIONS

Future demand and traffic operational conditions were modelled to determine the difference in network performance between the three considered options. The most recent land use assumptions for the years 2011, 2021 and 2031, provided by the ACT Government, were used as inputs during the modelling process, and updated modelling parameters were utilised as well.

Benefits derived from the construction of Majura Parkway were estimated by calculating the cost savings for each option. These savings were mainly the differences between travel related costs associated with the 'do nothing' scenario and those associated with the upgrade cases (i.e. Majura Parkway). In addition to these travel cost savings, other benefits that were estimated include the generated traffic benefits, residual value of the project (in 30 years), and environmental cost savings.

The economic assessment results show that any of the three options can be considered economically feasible, given that all produced positive NPVs and BCRs greater than 1.

As expected, Option 7's performance is relatively poor when compared against the other two alternatives, having a lower speed limit and incorporating an at-grade intersection at the northern portion of the alignment near the AFP facility. This contributed heavily to the reduced travel cost savings, particularly in the future years when demand nears the network's capacity. Another disadvantage of Option 7 is the increased accident cost, which produces a negative benefit around 4 years after project completion, this due to the poorer standard of geometric alignment.

Option 5 (the preferred option) produced the best economic indicators, with an NPV over $484 million and a BCR of 3.32 at a 7% discount rate. It is therefore considered the best option among the three. In terms of traffic operations, it performs very similarly with Option 6 since the only difference between the two alignments is that section near Majura Pines. Option 6 however costs $10 million more than Option 5, hence the lower NPV and BCR.

The sensitivity of the economic indicators to the proportion of heavy vehicle percentage was also tested using three additional HV% scenarios – 6%, 10% and 12%. The estimated NPVs and BCRs increased at 6% and 10% heavy vehicles, while economic indicators were found to decrease at 12% heavy vehicles. The reductions in NPV and BCR at 12% HV (50% increase from the reference scenario of 8% HV) in Option 5 at a 7% discount rate were estimated at 71.07 million (14.7% of NPV at 8% HV) and 0.34, respectively. Even with a 50% increase in heavy vehicles during the AM peak hour, the project still appears to be economically feasible.

APPENDIX A: ECONOMIC ANALYSIS SPREADSHEETS

Base Vs Option 5									
YEAR	COSTS (shown as -ve) *Current Prices* CAPITAL COSTS ($'000)	ADDITIONAL Maintenance Annual ($'000)	Cyclic ($'000)	BENEFITS (shown as +ve) *Current Prices* Vehicle Operating Cost Savings ($,000)	Accident Cost Savings ($,000)	Generated Traffic Benefit ($,000)	Environmental Cost Savings ($,000)	Residual Value ($,000)	TOTALS *Current Prices* *($'000)*
2009	($25,000)	$0	$0	$0	$0	$0	$0	$0	($25,000)
2010	($25,000)	$0	$0	$0	$0	$0	$0	$0	($25,000)
2011	($100,000)	$0	$0	$0	$0	$0	$0	$0	($100,000)
2012	($100,000)	$0	$0	$0	$0	$0	$0	$0	($100,000)
2013	$0	($250)	$0	$41,711	$712	$10,059	$976	$0	$53,208
2014	$0	($250)	$0	$42,788	$712	$10,339	$1,022	$0	$54,612
2015	$0	($250)	$0	$44,030	$712	$10,627	$1,070	$0	$56,190
2016	$0	($250)	$0	$45,471	$711	$10,923	$1,120	$0	$57,976
2017	$0	$0	($1,000)	$47,151	$709	$11,227	$1,173	$0	$59,261
2018	$0	($500)	$0	$49,119	$706	$11,540	$1,228	$0	$62,094
2019	$0	($500)	$0	$51,434	$703	$11,861	$1,286	$0	$64,784
2020	$0	($500)	$0	$54,167	$698	$12,192	$1,347	$0	$67,904
2021	$0	($500)	$0	$57,405	$693	$12,531	$1,410	$0	$71,539
2022	$0	$0	($2,000)	$57,614	$681	$12,782	$1,477	$0	$70,554
2023	$0	($500)	$0	$57,855	$669	$13,038	$1,546	$0	$72,608
2024	$0	($500)	$0	$58,127	$656	$13,300	$1,619	$0	$73,202
2025	$0	($500)	$0	$58,432	$644	$13,566	$1,695	$0	$73,837
2026	$0	($500)	$0	$58,770	$631	$13,838	$1,775	$0	$74,514
2027	$0	$0	($2,000)	$59,144	$617	$14,115	$1,859	$0	$73,735
2028	$0	($500)	$0	$59,553	$604	$14,398	$1,946	$0	$76,001
2029	$0	($500)	$0	$59,999	$590	$14,686	$2,038	$0	$76,813
2030	$0	($500)	$0	$60,484	$575	$14,980	$2,134	$0	$77,674
2031	$0	($500)	$0	$61,008	$561	$15,280	$2,054	$0	$78,403
2032	$0	$0	($2,000)	$61,573	$546	$15,587	$2,132	$0	$77,838
2033	$0	($500)	$0	$62,180	$530	$15,899	$2,214	$0	$80,324
2034	$0	($500)	$0	$62,831	$515	$16,217	$2,299	$0	$81,362
2035	$0	($500)	$0	$63,527	$499	$16,542	$2,387	$0	$82,454
2036	$0	($500)	$0	$64,269	$482	$16,874	$2,478	$0	$83,603
2037	$0	$0	($2,000)	$65,059	$465	$17,212	$2,573	$0	$83,309
2038	$0	($500)	$0	$65,899	$448	$17,556	$2,672	$611,778	$697,853
Total	**($250,000)**	**($9,500)**	**($9,000)**	**$1,469,599**	**$16,067**	**$357,172**	**$45,533**	**$611,778**	**$2,231,649**
PRESENT VALUES									
PV @ 4%	($221,532)	($4,823)	($4,228)	$744,758	$8,765	$178,970	$21,935	$188,623	$912,467
PV @ 7%	($203,120)	($3,092)	($2,548)	$478,810	$5,922	$114,332	$13,613	$80,367	$484,285
PV @ 10%	($186,821)	($2,080)	($1,607)	$323,826	$4,184	$76,982	$8,923	$35,060	$258,468

Discount Rate	**4%**	**7%**	**10%**
NPV ('000)	$912,467	$484,285	$258,468
BCR	4.96	3.32	2.36

Base Vs Option 6									
YEAR	COSTS (shown as -ve) *Current Prices*			BENEFITS (shown as +ve) *Current Prices*					TOTALS
	CAPITAL COSTS ($'000)	ADDITIONAL Maintenance Annual ($'000)	ADDITIONAL Maintenance Cyclic ($'000)	Vehicle Operating Cost Savings ($,000)	Accident Cost Savings ($,000)	Generated Traffic Benefit ($,000)	Environmental Cost Savings ($,000)	Residual Value ($,000)	*Current Prices ($'000)*
2009	($25,000)	$0	$0	$0	$0	$0	$0	$0	($25,000)
2010	($25,000)	$0	$0	$0	$0	$0	$0	$0	($25,000)
2011	($105,000)	$0	$0	$0	$0	$0	$0	$0	($105,000)
2012	($105,000)	$0	$0	$0	$0	$0	$0	$0	($105,000)
2013	$0	($263)	$0	$41,534	$789	$8,680	$846	$0	$51,586
2014	$0	($263)	$0	$42,335	$792	$8,888	$888	$0	$52,640
2015	$0	($263)	$0	$43,285	$794	$9,102	$932	$0	$53,850
2016	$0	($263)	$0	$44,415	$796	$9,320	$979	$0	$55,246
2017	$0	$0	($1,050)	$45,759	$796	$9,544	$1,027	$0	$56,077
2018	$0	($525)	$0	$47,362	$796	$9,773	$1,079	$0	$58,485
2019	$0	($525)	$0	$49,274	$796	$10,008	$1,132	$0	$60,685
2020	$0	($525)	$0	$51,556	$794	$10,248	$1,189	$0	$63,262
2021	$0	($525)	$0	$54,282	$792	$10,495	$1,248	$0	$66,291
2022	$0	$0	($2,100)	$54,938	$791	$10,707	$1,310	$0	$65,646
2023	$0	($525)	$0	$55,633	$789	$10,924	$1,376	$0	$68,196
2024	$0	($525)	$0	$56,366	$788	$11,145	$1,444	$0	$69,218
2025	$0	($525)	$0	$57,140	$787	$11,370	$1,516	$0	$70,288
2026	$0	($525)	$0	$57,956	$786	$11,600	$1,592	$0	$71,409
2027	$0	$0	($2,100)	$58,818	$784	$11,835	$1,672	$0	$71,009
2028	$0	($525)	$0	$59,727	$783	$12,074	$1,755	$0	$73,814
2029	$0	($525)	$0	$60,684	$781	$12,318	$1,842	$0	$75,102
2030	$0	($525)	$0	$61,694	$780	$12,568	$1,934	$0	$76,450
2031	$0	($525)	$0	$62,757	$778	$12,822	$1,676	$0	$77,508
2032	$0	$0	($2,100)	$63,876	$776	$13,081	$1,726	$0	$77,360
2033	$0	($525)	$0	$65,055	$774	$13,346	$1,778	$0	$80,429
2034	$0	($525)	$0	$66,296	$773	$13,616	$1,831	$0	$81,991
2035	$0	($525)	$0	$67,602	$771	$13,891	$1,886	$0	$83,625
2036	$0	($525)	$0	$68,976	$768	$14,172	$1,943	$0	$85,334
2037	$0	$0	($2,100)	$70,421	$766	$14,459	$2,001	$0	$85,547
2038	$0	($525)	$0	$71,940	$764	$14,752	$2,061	$642,185	$731,177
Total	**($260,000)**	**($9,975)**	**($9,450)**	**$1,479,679**	**$20,384**	**$300,739**	**$38,664**	**$642,185**	**$2,202,226**
PRESENT VALUES									
PV @ 4%	($230,251)	($5,064)	($4,440)	$742,294	$10,746	$150,948	$18,833	$197,998	$881,065
PV @ 7%	($211,016)	($3,247)	($2,675)	$474,335	$7,111	$96,571	$11,764	$84,362	$457,205
PV @ 10%	($193,993)	($2,183)	($1,687)	$319,322	$4,939	$65,122	$7,749	$36,803	$236,071

Discount Rate	**4%**	**7%**	**10%**
NPV ('000)	$881,065	$457,205	$236,071
BCR	4.67	3.11	2.19

Base Vs Option 7									
YEAR	COSTS (shown as -ve) *Current Prices*			BENEFITS (shown as +ve) *Current Prices*					TOTALS
	CAPITAL COSTS ($'000)	ADDITIONAL Maintenance Annual ($'000)	Cyclic ($'000)	Vehicle Operating Cost Savings ($,000)	Accident Cost Savings ($,000)	Generated Traffic Benefit ($,000)	Environmental Cost Savings ($,000)	Residual Value ($,000)	*Current Prices ($'000)*
2009	($25,000)	$0	$0	$0	$0	$0	$0	$0	($25,000)
2010	($25,000)	$0	$0	$0	$0	$0	$0	$0	($25,000)
2011	($97,500)	$0	$0	$0	$0	$0	$0	$0	($97,500)
2012	($97,500)	$0	$0	$0	$0	$0	$0	$0	($97,500)
2013	$0	($244)	$0	$41,087	$46	$8,861	$874	$0	$50,624
2014	$0	($244)	$0	$41,758	$25	$8,974	$910	$0	$51,424
2015	$0	($244)	$0	$42,574	$4	$9,089	$948	$0	$52,371
2016	$0	($244)	$0	$43,563	($19)	$9,206	$988	$0	$53,494
2017	$0	$0	($975)	$44,759	($43)	$9,324	$1,029	$0	$54,094
2018	$0	($488)	$0	$46,202	($69)	$9,444	$1,072	$0	$56,162
2019	$0	($488)	$0	$47,942	($96)	$9,565	$1,116	$0	$58,040
2020	$0	($488)	$0	$50,035	($125)	$9,688	$1,163	$0	$60,273
2021	$0	($488)	$0	$52,551	($156)	$9,812	$1,211	$0	$62,931
2022	$0	$0	($1,950)	$49,960	($147)	$9,160	$1,262	$0	$58,285
2023	$0	($488)	$0	$47,520	($138)	$8,550	$1,314	$0	$56,760
2024	$0	($488)	$0	$45,222	($129)	$7,982	$1,369	$0	$53,957
2025	$0	($488)	$0	$43,056	($120)	$7,451	$1,426	$0	$51,326
2026	$0	($488)	$0	$41,015	($110)	$6,955	$1,486	$0	$48,858
2027	$0	$0	($1,950)	$39,091	($101)	$6,493	$1,548	$0	$45,080
2028	$0	($488)	$0	$37,276	($91)	$6,061	$1,612	$0	$44,370
2029	$0	($488)	$0	$35,564	($82)	$5,658	$1,680	$0	$42,332
2030	$0	($488)	$0	$33,949	($72)	$5,282	$1,750	$0	$40,421
2031	$0	($488)	$0	$32,425	($62)	$4,930	$1,244	$0	$38,049
2032	$0	$0	($1,950)	$30,986	($53)	$4,602	$1,247	$0	$34,833
2033	$0	($488)	$0	$29,627	($43)	$4,296	$1,251	$0	$34,644
2034	$0	($488)	$0	$28,343	($33)	$4,011	$1,254	$0	$33,088
2035	$0	($488)	$0	$27,130	($22)	$3,744	$1,257	$0	$31,622
2036	$0	($488)	$0	$25,984	($12)	$3,495	$1,261	$0	$30,240
2037	$0	$0	($1,950)	$24,900	($2)	$3,262	$1,264	$0	$27,474
2038	$0	($488)	$0	$23,874	$9	$3,045	$1,268	$61,903	$89,611
Total	**($245,000)**	**($9,263)**	**($8,775)**	**$1,006,393**	**($1,641)**	**$178,942**	**$32,803**	**$61,903**	**$1,015,363**
PRESENT VALUES									
PV @ 4%	($217,173)	($4,702)	($4,123)	$554,800	($850)	$102,517	$16,672	$19,086	$466,227
PV @ 7%	($199,172)	($3,015)	($2,484)	$376,194	($534)	$71,214	$10,705	$8,132	$261,040
PV @ 10%	($183,235)	($2,028)	($1,567)	$265,882	($342)	$51,360	$7,216	$3,548	$140,834

Discount Rate	**4%**	**7%**	**10%**
NPV ('000)	$466,227	$261,040	$140,834
BCR	3.06	2.28	1.75

Katy Gallagher MLA

DEPUTY CHIEF MINISTER
TREASURER
MINISTER FOR HEALTH
MINISTER FOR INDUSTRIAL RELATIONS

MEMBER FOR MOLONGLO

Mr Michael Deegan
Infrastructure Coordinator
Infrastructure Australia
Level 21, Deutsche Bank Building
126 Phillip Street
SYDNEY NSW 2000

Dear ~~Mr~~ Michael Deegan

I am writing in response to your letter of 12 June 2009 to the Department of Treasury, in which you sought new submissions to carry out assessment and evaluation for the national infrastructure pipeline.

I appreciate Infrastructure Australia's (IA) consideration of these Submissions.

Further to earlier advice to Infrastructure Australia listing the projects identified for inclusion by the ACT, please find attached the ACT submissions for the national infrastructure pipeline for consideration. I have provided a brief summary of each individual project at Attachment A.

Please note that a number of these projects have been previously submitted to IA, and were included in its list of projects for further development. Where applicable, the submissions have been updated or revised for any additional information and analysis available since that time.

The submissions provide for stages 1-6 of the Reform and Investment Framework. The Stage 7 – Solution Prioritisation component of the submission will be provided to IA by Treasury as they are considered.

If you require any further information or clarification please do not hesitate to contact Mr Neil Bulless, Executive Director – Finance and Budget Division, on (02) 6207 0264 or neil.bulless@act.gov.au.

Yours sincerely

Katy Gallagher

Katy Gallagher
Treasurer
21 December 2009

ACT LEGISLATIVE ASSEMBLY

London Circuit, Canberra ACT 2601 GPO Box 1020, Canberra ACT 2601
Phone (02) 6205 0840 Fax (02) 6205 3030 Email: gallagher@act.gov.au

Summary of Australian Capital Territory projects for consideration by Infrastructure Australia

Projects 1-5 summarised below were submitted to IA previously. Significant further work has been undertaken in these areas including cost benefit analysis, economic evaluations and feasibility studies. The outcome of this further work is incorporated in the project submissions.

1. Federal Highway Link to Monaro Highway – Majura Parkway

The Majura Parkway will connect the Monaro Highway, an important regional transport corridor for the ACT and NSW, with the Federal Highway which is part of the National Road Network. The Parkway would also provide an opportunity for the further development of the Canberra Airport, noting the Federal Government's approval for the Airport's Master Plan including the establishment of a 24 hour freight hub.

The project is of national significance as it links two National Highways, and provides significant transport and freight linkages between Sydney, Canberra and regional south-eastern NSW.

[redacted]

From: [redacted]
Sent: Friday, 22 January 2010 3:52 PM
To: [redacted]
Cc: [redacted]
Subject: Infrastructure Australia Submission on Majura Parkway - Stage 7 Template
Attachments: IA Submission Coversheet - Fed Hway Link.doc; IA Reform Investment Framework Stages 1 to 6 - Fed Hway Link.doc; Fed Hway Link - Supp Info.doc; IA Template Stage 7.doc

Hi [redacted]

As you would be aware, the ACT prepared a submission for Infrastructure Australia (IA) about the Federal Highway Link to the Monaro Highway. In light of recent media about freight linkages and Aust Govt infrastructure plans, it would be timely to strengthen our submission.

I have attached what we have submitted to date which includes the cover sheet, Stages 1-6 template and supporting information. I would appreciate your assistance with completing the Stage 7 template which I have also attached.

Thanks for your help, and happy to be of assistance where possible.

Regards
[redacted]

[redacted] | POLICY OFFICER | POLICY COORDINATION AND DEVELOPMENT | ACT TREASURY | PH: 02 6207 0198

ACT Government Submission to Infrastructure Australia

Federal Highway Link to Monaro Highway Majura Parkway

Supplementary Information

JANUARY 2009

1. Background

The ACT Government had submitted a proposal for consideration by Infrastructure Australia (IA) for the construction of an efficient link between the Federal Highway and the Monaro Highway.

Following its initial appraisal, IA has sough further information and clarification. This paper provides summary of key information relating to the project, as well as response to specific questions and issues raised by IA.

2. The Proposal

The ACT is seeking funding to create an efficient freight transport, business travel and personal travel link between the Federal Highway and the Monaro Highway.

The joining of these national highways will provide a vital transport link relevant to a significant population and geographic region of Australia — from the south eastern coast, through the snowy mountains, the Nation's capital and further north to either side of the Great Divide.

In essence, the project will 'complete' the Federal Highway by linking the regions north and south of the Australian Capital Territory, as well as providing a highway bypass to Canberra.

The proposed Majura Parkway will also form part of the Territory's arterial road network, improving north-south transit, particularly to the Airport, and eastwards towards Queanbeyan.

The projects involves the construction of around 11 km of dual carriageway and 7 bridges.

Appendix A provides an aerial view showing the proposed link.

3. Benefits and Costs

3.1 Cost Estimates and Economic Analysis

Construction staging and cost estimates have been updated by SMEC Australia from a previous study undertaken in 2007. The capital cost of the project is estimated at $250 million over a three year construction period.

Economic appraisal of the project (also undertaken by SMEC Australia) has been updated to address feedback comments from IA. This is provided at **Appendix B.**

3.2 Approach to Analysis

The economic analysis is based on strategic and micro traffic modelling to estimate the effects of the proposed improvements.

Micro-simulation modelling was validated by traffic counts. The Paramics model was calibrated by adjusting the default parameters in the standard behavioural models to local conditions. This relied mainly on the RTA guidelines. The model validation is in line with the best practice minimum fits.

The total expected benefits are estimated by calculating the savings from the proposed option as compared to the base option ('do nothing') in terms of travel time, vehicle operating costs, accident costs, and environmental costs.

The 'generated traffic' in the study refers to the traffic diverted from elsewhere in the transport network – no induced demand is assumed[1].

The approach and the parameters used in the analysis are in accordance with the relevant guidelines.

3.3 Benefit to Cost Ratio

The economic analysis indicates a Benefit to Cost Ratio (BCR) of 4.05 over 30 years at 7 per cent discount rate. The analysis also provides BCR at discount rates of 4 per cent and 10 percent. The BCR is greater than 2.75 under all discount rates.

The Net Present Value (NPV) of benefits is estimated around $637 million. The benefits largely arise from a reduction in travel time (captured through decrease in vehicle operating costs in the analysis), and accident costs.

Traffic modelling highlights significant increase in traffic congestion, and consequently, increase in transit times under a 'do nothing' scenario. This is considerably alleviated through the construction of this link.

The micro-simulation modelling was also used to estimate changes in key performance indicators. Those are summarised in the economic analysis report. In general, the level of service improves from F under 'do nothing' scenario to B. Average speed on North-South transit is projected to increase from 18km/hr to 77km/hr, and travel time in AM peak hour is projected to reduce from 40 minutes under 'do nothing' scenario to less than 9 minutes in 2031.

In summary, the project will significantly alleviate congestion and reduce transit costs.

3.4 Overall ACT Treasury Assessment

The overall approach and methodology appears reasonable. The BCR estimates appear robust, and are likely to be understated, as externality benefits for the rest of the network have not been estimated. Those are likely to be significant given that the proposed link would provide a more efficient link for freight traffic which is currently using the main thoroughfare, hence reducing congestion on Northbourne Avenue.

[1] In the analysis, the 'study area' refers to the project road. Freight carriers (and other traffic) diverted from, for example, Northbourne Avenue because of a quicker link between the highways is referred to as the traffic originated from outside the study area.

4. Related Studies and Project Readiness

The project has been developed to Preliminary Sketch Plan (PSP) stage. **Appendices C and D** provide PSP documentation and the detailed plans, respectively.

A detailed Environmental Impact Study (EIS) is currently underway. A draft of the EIS will be ready in March and the final EIS in April 2009.

Initial consultation was undertaken during the initial design stage. The alignment and PSPs incorporate input from the stakeholders. Further consultation is now being undertaken as part of the statutory process.

5. Related Projects

A number of other projects have been completed, or are currently underway, that are linked to this project in terms of traffic flows. Those are:

- Single eastbound bypass lane at Dairy Road/Morshead Drive roundabout;
- Duplication of Morshead Drive between Dairy Road and Monaro Highway;
- Three phase traffic signals at Monaro Highway/Morshead Drive;
- Widening of Morsehead Drive between Pialligo Avenue and Fairbairn Avenue;
- Duplication of Fairbairn Avenue between Morshead Drive and Pialligo Avenue (including a new bridge over Woolshed Creek);
- Duplication of Pialligo Avenue between Morshead Dr and Fairbairn Avenue (including a new bridge at Woolshed Creek and signalised intersection at Fairbairn Avenue); and
- Duplication of Pialligo Avenue between Fairbairn Avenue/Beltana Road intersection and a new airport access (currently at Ulinga Place).

For the purposes of this economic analysis, it has been assumed that all of the above works will be completed prior to construction of the Majura Parkway.

The micro-simulation with updated traffic count information has highlighted that the performance of the proposed Federal Highway/Monaro Highway link could be improved further by removing emergent 'pinch points' at three roundabouts on the east-west transit. Without these improvements, the project has a negative impact on these parts of the east-west link. The improvements have not been included in the project scope at this stage. Further work is required to develop design solutions and cost estimates.

6. Response to Infrastructure Australia's Feedback[2]

6.1 Profiling Against IA's Strategic Priorities

More information required to justify ratings. In particular no information was provided against strategic priorities 'Diversify Australia's economic capabilities and build Australia's global competitive advantages'.

Ratings against strategic priorities have been completed and provided in **Appendix E.**

Analysis based on Australian Bureau of Statistics' national accounts data indicates that productivity of the transport and storage industry in the ACT has been declining. Had productivity in the transport and storage industry remained stable, the value added by this industry in 2007-08 would have been an additional $158 million.

The deteriorating performance of the transport and storage industry in the ACT adversely affects not just the ACT but south eastern New South Wales[3]. The project has significant benefits for the national freight transit system, essentially by providing a highway bypass to Canberra and improving the level of access to the Airport. The reduced costs of freight transit will potentially improve competitiveness of Australian exports. A short paper summarising this analysis is at **Appendix F.**

6.2 Cost Benefit Analysis

Project mentions different stages, focuses on Stage 2. This raises two questions:

- *Need information on other stages to be clear that costs and benefits have been correctly apportioned to this stage and not hidden/taken from other stages where ther are mutually dependent.*
- *Need BCR information specifically applying to this stage, not other stages (some info seems to come from Stage 1).*

As mentioned above in Section 5, from the ACT Government's perspective, the project forms part of a range of works around Airport, and hence was referred to as Stage 2. Reference to stages has now been removed to avoid confusion.

Undoubtedly, improvements at one point or part of the transport network have flow on effects on other parts of the network. For the purpose of this analysis, however, all the modelling assumes that those works have been completed, and that no costs or benefits from those works are attributed to this project.

- *Three flaws in the methodology – all likely to increase slightly the BCR: time period of evaluation short (24 vs 30 years); no residual value included; and no externalities assessed.*

[2] In this section, IA's feedback comments appear in italics.
[3] It is noteworthy that the national accounts attribute a proportion of the transit costs of freight passing through Canberra to the ACT.

Time period of evaluation has been extended to 30 years. The analysis also includes BCR over 40 years for reference. This has been included given that a significant part of the project involves bridges which have much longer economic life.

Residual value has been included in the analysis. Residual value at the end of the appraisal period of 30 years is estimated as the present value of benefits for the remaining life of the asset for the remaining 10 years of the assumed 40 year economic life, in accordance with the *National Guidelines for Transport System Management in Australia, Volume 3 (Appraisal of Initiatives)* by the Australian Transport Council (ATC).

The economic analysis includes an assessment of externality benefits, albeit, partially.

6.3 Delivery

- *Cost and fund sharing arrangements not shown in the submission. Clarification sought on maintenance costs – unlike Auslink BAF does not include maintenance.*
- *Capital cost – clarification required – cost benefit analysis contains a capital cost of $125 million while the submission refers to a preliminary design figure of $250 million – require copy of report and any supporting analysis.*

The capital cost estimated for the project in July 2008 was $242 million (excluding GST), as in Appendix C, Chapter 20. This has been escalated by 3 per cent to $250 million. The final cost of the project is likely to be higher subject to further cost escalation to tender time.

The ACT has already received funding commitment for $30 million from the Commonwealth Government under its Building Australia Program for works around the Airport precinct. Those works are an integral part of the proposed link project.

The funding being sought is therefore $220 million. As mentioned above, this does not include the cost of works required to address the impact of this project on east-west transit.

Maintenance costs, while included in the economic analysis, do not form part of the $250 million figure.

Risks – need more detail

In essence, the PSP report covers a number of the risks flagged by IA, and responds how these are being addressed. The report contains some useful information including environmental and cultural heritage assessments, geotechnical investigations, transport planning backgrounds and a progress on the public consultation and discussion with leaseholders and or key stakeholders to date.

In addition to the PSP report, there have been number of actions to address a number of project risks.

- An extended meeting with the Department of Defence in September 2008 to discuss the impact of the proposal on Defence lands and activities. A formal

approach to the Department of Defence is now being prepared to acquire necessary land

- A workshop in December with Senior Environmental Managers from the ACT Government's Parks Conservation and Lands and the ACT Commissioner for Sustainability and the Environment to identify a management strategy to protect high value native grasslands and areas of Yellow Box Gums.
- A request to the project team to prepare a project target out turn cost using the recently released *Best Practice manual in cost estimation for public road and rail infrastructure projects* by Evans and Peck prepared for the Federal Department of Infrastructure.
- The full EIS is now underway and includes a statutory consultation component - a draft of the EIS will be ready in March and the final EIS in April 2009.

The target is to be in a position to go out for a construction tender in July 2009.

6.4 Infrastructure Australia's Minimum Requirements Template

This has been completed and provided at **Appendix G.**

Appendix List and Transmission Mode

Appendix A: Aerial view showing the proposed link (hard copy; courier)
Appendix B: Updated Economic Appraisal (electronic)
Appendix C: Preliminary Sketch Plan Documentation (hard copy; courier)
Appendix D: Preliminary Sketch Plan (detailed plans) (CD ROM; hard copy; courier)
Appendix E: Rating Against Strategic Priorities (electronic)
Appendix F: Transport and Storage Industry Productivity Analysis (electronic)
Appendix G: Minimum Information Requirement Template (electronic)

INFRASTRUCTURE AUSTRALIA

REFORM AND INVESTMENT FRAMEWORK TEMPLATES FOR USE BY PROPONENTS

(To be read in conjunction with Infrastructure Australia's *Better Infrastructure Decision-Making*)

Summary Template

and

Templates for Stages 1-6

December 2009

Proposal Summary (2 pages, excluding maps)

Initiative Name:	Federal Highway Link to Monaro Highway
Location (State/Region(or City)/ Locality):	Canberra, ACT
Name of Proponent Entity:	ACT Government
Contact (Name, Position, phone/e-mail):	Khalid Ahmed, Executive Director, Policy Coordination and Development, ACT Treasury p. 02 6207 0228 e. khalid.ahmed@act.gov.au

Project Description:

The ACT is seeking funding to create an efficient 11 kilometre dual carriageway freight transport, business travel and personal travel link between the Federal Highway and the Monaro Highway. Broadly, the project involves the construction of 11km dual carriageway with 7 bridges.

The joining of these national highways will provide a vital transport link relevant to a significant population and geographic region of Australia. In essence, the project will 'complete' the Federal Highway by linking the regions north and south of the Australian Capital Territory. The proposed Majura Parkway will also form part of the Territory's arterial road network, improving north-south transit, particularly to the Airport, and eastwards towards Queanbeyan.

The attached Economic Analysis paper includes maps showing the location of the proposed project.

Theme alignment

Once implemented this proposal will Improve the national freight network by linking the Federal Highway to the Monaro Highway.

The initiative will address an apparent decline in productivity in the transport and storage industry in the ACT and surrounding regional NSW.

The deteriorating performance of the transport and storage industry in the ACT adversely affects not just the ACT but south eastern New South Wales. The project has significant benefits for the national freight transit system, essentially by providing a highway bypass to Canberra and improving the level of access to the Airport.

Capital Cost of Initiative by Proponent ($M, nominal, undiscounted):	The current estimated total cost is $250 million.
Commonwealth contribution sought by Proponent, and cash flow in financial years ($M, nominal, undiscounted):	The ACT has already received funding commitment for $30 million from the Commonwealth Government under its Building Australia Program for works around the Airport precinct. Those works are an integral part of the proposed link project. The funding being sought is therefore $220 million.
Other funding (source/amount/cash flow) ($M, nominal, undiscounted):	0
BCR by Proponent excluding Wider Economic Benefits	3.32 at a discount rate of 7 per cent over 30 years.

Templates for Individual Stages in the Reform and Investment Framework

Stage 1: Goal Definition	
Goal Statements	The Goals this initiative is seeking to address are: • increase Australia's productivity; • expand Australia's productive capacity; and • develop our cities and/or regions. Higher and/or lower order goals with reference back to existing plans and strategies include: • increase the Capital Region's productivity; • expand the Capital Region's productive capacity; and • develop the Capital Region. The ACT Government's Capital Development Plan states that Airports are a crucial part of the infrastructure of a modern economy. The primary economic function and wider social importance of airports is to facilitate the efficient movement of people and freight in and out of the regions they serve, improving inbound tourism and trade. The ACT Government recognizes the significant role that Canberra International Airport plays as a regional gateway and a generator of investment and employment. The ACT Government has committed to upgrading the road infrastructure around the airport to assist the flow of traffic and maximise transport opportunities. The ACT Chief Minister's Department in February 2008 commissioned the Report *"The ACT and its Region: economic relationships and key drivers of economic growth"* to support the preparation of the ACT's economic policy framework (Capital Development), and to inform policy deliberations and decision making by ACT Government agencies and businesses. The report examines economic activity and linkages in the ACT and its region, the outlook and structure of the ACT economy, and the economic opportunities and risks facing the ACT. The Report identified Majura Road (the focus of this initiative) as insufficient to meet needs as a Canberra bypass for freight. Majura Road is part of the "National Highway 23", and forms the connecting link between the Federal and Monaro Highways, meaning it is a significant link in the route between Sydney and the Snowy Mountains, as well as the truck freight bypass of Canberra. The Report also noted the inadequacy of the current link will increase as development of the airport at the southern end continues.

Stage 1: Goal Definition	
Objective Statements	The proposed project will significantly increase traffic speed, and reduce freight transit times. It will also result in the Canberra Airport being within a kilometre or so of a north – south freight transit link. This coalescence can be expected to have significant economic output and productivity benefits for the south eastern region of Australia. The project will have wider implications by improving north – south links along the eastern seaboard, and more broadly by completing a link in the National highway system. Some draft targets/performance measures could include reduced freight delivery times, increased number of freight vehicles, higher activity at the airport and a rise in tourism to the capital.
Goal and Objective Alignment	Expand Australia's productive capacity, and Increase Australia's productivity – the highway link should reduce the cost of freight and storage, and improve the competitiveness of Australian exports. Develop our cities and/or regions – the joining of these national highways will provide a vital transport link relevant to a significant population and geographic region of Australia.

Stage 2: Problem Identification	
Problem Identification: Current issues	The ACT's largest industry is public administration and defence. The ACT produces these public administration and defence services to the benefit of the Nation. As a predominately service producing economy, most goods are transported into the ACT. Efficient freight transport links into and through the ACT are vital to the efficient functioning of such an economy. The Australian Bureau of Statistics State Account data show that, in 2007-08, the ACT's State Final Demand (SFD) exceeded its Gross State Product (GSP) by $15.4 billion or 66 per cent. This imbalance largely reflects the significance of the importation of goods into the ACT. However, freight transport in the ACT relates not only to residents of the ACT – the ACT also serves as an important regional centre and freight hub for south eastern New South Wales. Given the importance of freight transport links to the nation's capital, it is a matter of concern that the productivity of the transport and storage industry in the ACT is declining. This pattern of decline is in sharp contrast to a pattern of improved productivity in all other jurisdictions. ABS data show that over the 18 years from 1989-90 to 2007-08 the average annual rate of productivity improvement in other jurisdictions ranged from a low of 1.2 per cent in the Northern Territory up to a high of 4.2 per cent in Tasmania. The ACT was the only jurisdiction to record a decline (-0.5 per cent). Had productivity in the transport and storage industry not declined and remained at around the average level of the early 1990s then, assuming the same number of people employed, the value added by this industry in 2007-08 would have been $702 million rather than $544 million – an additional $158 million. The cumulative loss over the 18 years since 1989-90 is estimated at $412 million in today's dollars. The deteriorating performance of the transport and storage industry in the ACT most likely reflects the fact that the ACT has not had the capacity to enhance freight routes to accommodate growth in the local and regional economy. The deteriorating performance of the transport and storage industry in the ACT adversely affects not just the ACT but south eastern New South Wales. The proposed project will significantly increase traffic speed, and reduce freight transit times. It will also result in the Canberra Airport being within a kilometre or so of a north – south freight transit link. This coalescence can be expected to have significant economic output and productivity benefits for the south eastern region of Australia. Passenger numbers through Canberra airport are already the highest per capita of any airport – and not withstanding that Canberra airport is largely a domestic airport with limited international flights. In part, the relatively large traffic flow at the airport reflects a high proportion of business travel and Canberra's increasing role as a freight hub.
Problem identification: Future scenarios	The drivers with the greatest impact are likely to be economic and demographic growth and, in particular, growth of the Canberra Airport in terms of freight and passenger movements. There are negligible uncertainties regarding these drivers as the National Capital, Canberra and the Capital Region can be expected to continue to grow.

Stage 2: Problem Identification	
	Future challenges related to this project could include environmental restrictions, land use parameters, geotechnical and heritage investigations, impact on Defence activities and negotiation with leaseholders.

Stage 3: Problem Assessment	
Problem assessment	Relevant information provided in section 1 and 2 above.
Current problems	Relevant information provided in section 1 and 2 above.
Future problems	Relevant information provided in section 1 and 2 above.
Problem Prioritisation	Relevant information provided in section 1 and 2 above.

Stage 4: Problem Analysis	
Problem analysis	Relevant information provided in section 1 and 2 above.
Identify fundamental cause, not symptoms, of the problem	Relevant information provided in section 1 and 2 above.

Stage 5: Option Generation	
REFORM (ESSENTIALLY NON-CAPITAL INVESTMENT) OPTIONS	
Option 1	Not Applicable.
Option 2	Not Applicable.
Option 3	Not Applicable.
INVESTMENT OPTIONS	
Option 1	(Option 5 in the SMEC report). Construct 11 km of dual carriageway linking the Federal Highway and the Monaro Highway. Work includes cross sections of 2 x 3.5m traffic lanes, 2.5m roadside shoulder and 1.0m offside shoulder, as well as associated ramps, interchanges and bridges.
Option 2	(Option 6 in the SMEC report). Similar to Option 1 but with some changes to alignment and interchanges layout in the northern part of the parkway which will reduce the impact on Majura Pines.
Option 3	(Option 7 in the SMEC report). Upgrade Majura Road in the northern part of the site, merge the parkway to the existing alignment of Majura Road with an at-grade intersection at the junction between Majura Parkway and the AFP Access Road.

Stage 6: Options Assessment	
Infrastructure Australia is not mandating a particular process for moving from a long list of potential options to a short list of lead candidates. The following three-step process is an indicative guide.	
Long list	Option 1 is the current preferred option, which is similar to the previous preferred option presented in January 2009 but with some changes to the interchange design. This option was assessed against two additional alignment options. All three options were also assessed relative to the traffic operational conditions if the existing condition is continued (ie: a "do nothing" scenario). Strategic transport modelling was conducted to produce the demand matrix used for micro-simulation modelling. The modelling results were used as inputs for the economic assessment, which aims to produce the economic indicators to determine the feasibility of each option. The economic analysis considered construction and maintenance costs, travel related costs such as vehicle operating cost and accident cost, generated traffic flows, residual values, environmental externalities and other relevant factors.
Interim list	As above.
Short list	The economic analysis shows that all options could be considered economically feasible, with positive NPVs and BCRs greater than one. Option 1 is the preferred option, with the best economic results of a NPV over $484 million and a BCR of 3.32 at a 7 per cent discount rate.

ACT Government Submission to Infrastructure Australia

Federal Highway Link to Monaro Highway Majura Parkway

Supplementary Information

JANUARY 2009

1. Background

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Following its initial appraisal, IA has sough further information and clarification. This paper provides summary of key information relating to the project, as well as response to specific questions and issues raised by IA.

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The joining of these national highways will provide a vital transport link relevant to a significant population and geographic region of Australia — from the south eastern coast, through the snowy mountains, the Nation's capital and further north to either side of the Great Divide.

In essence, the project will 'complete' the Federal Highway by linking the regions north and south of the Australian Capital Territory, as well as providing a highway bypass to Canberra.

The proposed Majura Parkway will also form part of the Territory's arterial road network, improving north-south transit, particularly to the Airport, and eastwards towards Queanbeyan.

The projects involves the construction of around 11 km of dual carriageway and 7 bridges.

Appendix A provides an aerial view showing the proposed link.

3. Benefits and Costs

3.1 Cost Estimates and Economic Analysis

Construction staging and cost estimates have been updated by SMEC Australia from a previous study undertaken in 2007. The capital cost of the project is estimated at $250 million over a three year construction period.

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The 'generated traffic' in the study refers to the traffic diverted from elsewhere in the transport network – no induced demand is assumed[1].

The approach and the parameters used in the analysis are in accordance with the relevant guidelines.

3.3 Benefit to Cost Ratio

The economic analysis indicates a Benefit to Cost Ratio (BCR) of 4.05 over 30 years at 7 per cent discount rate. The analysis also provides BCR at discount rates of 4 per cent and 10 percent. The BCR is greater than 2.75 under all discount rates.

The Net Present Value (NPV) of benefits is estimated around $637 million. The benefits largely arise from a reduction in travel time (captured through decrease in vehicle operating costs in the analysis), and accident costs.

Traffic modelling highlights significant increase in traffic congestion, and consequently, increase in transit times under a 'do nothing' scenario. This is considerably alleviated through the construction of this link.

The micro-simulation modelling was also used to estimate changes in key performance indicators. Those are summarised in the economic analysis report. In general, the level of service improves from F under 'do nothing' scenario to B. Average speed on North-South transit is projected to increase from 18km/hr to 77km/hr, and travel time in AM peak hour is projected to reduce from 40 minutes under 'do nothing' scenario to less than 9 minutes in 2031.

In summary, the project will significantly alleviate congestion and reduce transit costs.

3.4 Overall ACT Treasury Assessment

The overall approach and methodology appears reasonable. The BCR estimates appear robust, and are likely to be understated, as externality benefits for the rest of the network have not been estimated. Those are likely to be significant given that the proposed link would provide a more efficient link for freight traffic which is currently using the main thoroughfare, hence reducing congestion on Northbourne Avenue.

[1] In the analysis, the 'study area' refers to the project road. Freight carriers (and other traffic) diverted from, for example, Northbourne Avenue because of a quicker link between the highways is referred to as the traffic originated from outside the study area.

4. Related Studies and Project Readiness

The project has been developed to Preliminary Sketch Plan (PSP) stage. **Appendices C and D** provide PSP documentation and the detailed plans, respectively.

A detailed Environmental Impact Study (EIS) is currently underway. A draft of the EIS will be ready in March and the final EIS in April 2009.

Initial consultation was undertaken during the initial design stage. The alignment and PSPs incorporate input from the stakeholders. Further consultation is now being undertaken as part of the statutory process.

5. Related Projects

A number of other projects have been completed, or are currently underway, that are linked to this project in terms of traffic flows. Those are:

- Single eastbound bypass lane at Dairy Road/Morshead Drive roundabout;
- Duplication of Morshead Drive between Dairy Road and Monaro Highway;
- Three phase traffic signals at Monaro Highway/Morshead Drive;
- Widening of Morsehead Drive between Pialligo Avenue and Fairbairn Avenue;
- Duplication of Fairbairn Avenue between Morshead Drive and Pialligo Avenue (including a new bridge over Woolshed Creek);
- Duplication of Pialligo Avenue between Morshead Dr and Fairbairn Avenue (including a new bridge at Woolshed Creek and signalised intersection at Fairbairn Avenue); and
- Duplication of Pialligo Avenue between Fairbairn Avenue/Beltana Road intersection and a new airport access (currently at Ulinga Place).

For the purposes of this economic analysis, it has been assumed that all of the above works will be completed prior to construction of the Majura Parkway.

The micro-simulation with updated traffic count information has highlighted that the performance of the proposed Federal Highway/Monaro Highway link could be improved further by removing emergent 'pinch points' at three roundabouts on the east-west transit. Without these improvements, the project has a negative impact on these parts of the east-west link. The improvements have not been included in the project scope at this stage. Further work is required to develop design solutions and cost estimates.

6. Response to Infrastructure Australia's Feedback[2]

6.1 Profiling Against IA's Strategic Priorities

More information required to justify ratings. In particular no information was provided against strategic priorities 'Diversify Australia's economic capabilities and build Australia's global competitive advantages'.

Ratings against strategic priorities have been completed and provided in **Appendix E.**

Analysis based on Australian Bureau of Statistics' national accounts data indicates that productivity of the transport and storage industry in the ACT has been declining. Had productivity in the transport and storage industry remained stable, the value added by this industry in 2007-08 would have been an additional $158 million.

The deteriorating performance of the transport and storage industry in the ACT adversely affects not just the ACT but south eastern New South Wales[3]. The project has significant benefits for the national freight transit system, essentially by providing a highway bypass to Canberra and improving the level of access to the Airport. The reduced costs of freight transit will potentially improve competitiveness of Australian exports. A short paper summarising this analysis is at **Appendix F.**

6.2 Cost Benefit Analysis

Project mentions different stages, focuses on Stage 2. This raises two questions:

- *Need information on other stages to be clear that costs and benefits have been correctly apportioned to this stage and not hidden/taken from other stages where ther are mutually dependent.*
- *Need BCR information specifically applying to this stage, not other stages (some info seems to come from Stage 1).*

As mentioned above in Section 5, from the ACT Government's perspective, the project forms part of a range of works around Airport, and hence was referred to as Stage 2. Reference to stages has now been removed to avoid confusion.

Undoubtedly, improvements at one point or part of the transport network have flow on effects on other parts of the network. For the purpose of this analysis, however, all the modelling assumes that those works have been completed, and that no costs or benefits from those works are attributed to this project.

- *Three flaws in the methodology – all likely to increase slightly the BCR: time period of evaluation short (24 vs 30 years); no residual value included; and no externalities assessed.*

[2] In this section, IA's feedback comments appear in italics.
[3] It is noteworthy that the national accounts attribute a proportion of the transit costs of freight passing through Canberra to the ACT.

Time period of evaluation has been extended to 30 years. The analysis also includes BCR over 40 years for reference. This has been included given that a significant part of the project involves bridges which have much longer economic life.

Residual value has been included in the analysis. Residual value at the end of the appraisal period of 30 years is estimated as the present value of benefits for the remaining life of the asset for the remaining 10 years of the assumed 40 year economic life, in accordance with the *National Guidelines for Transport System Management in Australia, Volume 3 (Appraisal of Initiatives)* by the Australian Transport Council (ATC).

The economic analysis includes an assessment of externality benefits, albeit, partially.

6.3 Delivery

- *Cost and fund sharing arrangements not shown in the submission. Clarification sought on maintenance costs – unlike Auslink BAF does not include maintenance.*
- *Capital cost – clarification required – cost benefit analysis contains a capital cost of $125 million while the submission refers to a preliminary design figure of $250 million – require copy of report and any supporting analysis.*

The capital cost estimated for the project in July 2008 was $242 million (excluding GST), as in Appendix C, Chapter 20. This has been escalated by 3 per cent to $250 million. The final cost of the project is likely to be higher subject to further cost escalation to tender time.

The ACT has already received funding commitment for $30 million from the Commonwealth Government under its Building Australia Program for works around the Airport precinct. Those works are an integral part of the proposed link project.

The funding being sought is therefore $220 million. As mentioned above, this does not include the cost of works required to address the impact of this project on east-west transit.

Maintenance costs, while included in the economic analysis, do not form part of the $250 million figure.

Risks – need more detail

In essence, the PSP report covers a number of the risks flagged by IA, and responds how these are being addressed. The report contains some useful information including environmental and cultural heritage assessments, geotechnical investigations, transport planning backgrounds and a progress on the public consultation and discussion with leaseholders and or key stakeholders to date.

In addition to the PSP report, there have been number of actions to address a number of project risks.

- An extended meeting with the Department of Defence in September 2008 to discuss the impact of the proposal on Defence lands and activities. A formal

approach to the Department of Defence is now being prepared to acquire necessary land

- A workshop in December with Senior Environmental Managers from the ACT Government's Parks Conservation and Lands and the ACT Commissioner for Sustainability and the Environment to identify a management strategy to protect high value native grasslands and areas of Yellow Box Gums.
- A request to the project team to prepare a project target out turn cost using the recently released *Best Practice manual in cost estimation for public road and rail infrastructure projects* by Evans and Peck prepared for the Federal Department of Infrastructure.
- The full EIS is now underway and includes a statutory consultation component - a draft of the EIS will be ready in March and the final EIS in April 2009.

The target is to be in a position to go out for a construction tender in July 2009.

6.4 Infrastructure Australia's Minimum Requirements Template

This has been completed and provided at **Appendix G**.

Appendix List and Transmission Mode

Appendix A: Aerial view showing the proposed link (hard copy; courier)
Appendix B: Updated Economic Appraisal (electronic)
Appendix C: Preliminary Sketch Plan Documentation (hard copy; courier)
Appendix D: Preliminary Sketch Plan (detailed plans) (CD ROM; hard copy; courier)
Appendix E: Rating Against Strategic Priorities (electronic)
Appendix F: Transport and Storage Industry Productivity Analysis (electronic)
Appendix G: Minimum Information Requirement Template (electronic)

INFRASTRUCTURE AUSTRALIA

REFORM AND INVESTMENT FRAMEWORK TEMPLATES FOR USE BY PROPONENTS

(To be read in conjunction with Infrastructure Australia's *Better Infrastructure Decision-Making*)

Templates for Stage 7

Stage 7: Solution Prioritisation

In Stage 7, Infrastructure Australia requires substantial supporting evidence to justify the proposal.

Supporting evidence for Infrastructure Australia's assessment of an initiative's strategic fit (the profiling step) will be drawn from information provided in the templates covering stages 1-6 of the Reform and Investment Framework.

Two pro-forma are provided here, for the appraisal and delivery steps of Infrastructure Australia's assessment.

DETAILED APPRAISAL

This section sets out Infrastructure Australia's requirements for detailed appraisal of transport options. Specific information on the appraisal of transport proposals is being set out here, as the vast majority of initiatives presented to Infrastructure Australia last year were in the transport sector.

For other sectors a similar level of detail should be provided using relevant sector practice, in particular those required by independent regulators.

Introduction

Infrastructure Australia will be using Benefit Cost Analysis (BCA) as a key tool in the solution prioritisation stage of the framework.

Infrastructure Australia will be working collaboratively with stakeholders to assist and guide them in preparing appraisals and presenting the key results and assumptions.

The following material provides guidance on:

- what costs and benefits to include in the appraisals;
- what assumptions and key variables should be used; and
- how to present the appraisal results and assumptions.

Infrastructure Australia expects that the information requested in the templates, and referred to in this guidance, should already be available in economic analyses which proponents will have had prepared (and considered) as part of their normal infrastructure planning processes. In other words, any credible economic appraisal would address the matters set out below and have considered the information required in the tables that follow.

Demand Forecasting

Levels of demand are crucial to the economic viability of infrastructure initiatives. Infrastructure Australia needs to understand the basis upon which demand estimates have been created. For each initiative, the following information should therefore be provided:

1. A comprehensive list of the detailed assumptions which drive demand, including the rate of population growth, employment growth, private vehicle demand, public transport demand; and how these change over the appraisal period;
2. The underlying justification for these assumptions and growth rates, particularly the benefit extrapolation approach used in the post forecast period, and sensitivity testing of core assumptions such as Gross Domestic Product (GDP) growth rates;

3. Detail of any changes in land use such as residential densification or Transport Orientated Developments (TODs) assumed in the demand modelling, including any commitments to rezoning or other planning law changes which would be necessary to facilitate those land use changes;

4. The methodology used to estimate demand – the nature of the transport model used and how 'knock-on' and wider network effects are calculated; plus an explanation of the independence of forecasts and the degree of external or independent scrutiny of the forecasts. This should include full details on how the model forecasts 'generated' and 'induced' demand; and

5. A detailed disaggregation - by year, date and user type - of the results of the demand modelling, including all the information set out in Appraisal Summary Table 2 below.

Typically, this information will be contained in a detailed transport modelling report, which will have been prepared for proponents for credible initiatives. Wherever possible, in addition to completing the tables included in Appraisal Summary Table 2, proponents must submit this report and then provide page references to the key sections containing this information.

Appraisal Methodology

The economic methodology used to conduct the appraisal is crucial in determining the economic viability of the project. Therefore, for each project, a detailed report of the economic methodology used, including all parameters and values used, assumptions, algorithms, real discount rates, sensitivities, etc, should be provided.

Detailed guidance on the methodology is provided in Appraisal Summary Tables 1 -4 below.

Monetised Benefits and Costs

The following table provides a list of the potential costs and benefits that Infrastructure Australia expects to be monetised and included in a BCA of any initiative.

Benefit / Cost	
Costs	**Economic benefit/cost** to ***non-users*:**
Capital costs	Changes in the cost of congestion
Operating costs	Crash costs
Residual value	Noise impacts
Economic benefit/cost to the ***user of the service***	Local air pollution
Changes in generalised trip cost	Carbon emissions
Changes in vehicle operating costs	Health / physical fitness
Changes in revenues / fare box	

Cost Estimation

The capital and operational costs of initiatives play a fundamental role in determining the economic viability of a proposal. It is therefore imperative that the capex and opex estimates used in the economic appraisal are robust.

Therefore, proponents should detail full year by year costs for the lifetime of the project to at least a P90 standard where appropriate. In addition, the basis for those costs, including specialist engineering and operations reports, should be provided.

Key Parameters

A BCA uses a number of key parameters, including the real discount rate, the appraisal period and the base case.

Literature on BCA contains a number of debates about the key parameters that should be used in different circumstances. For example, there are a range of views about the method that should be used to set the public sector's real discount rate for different asset types.

Infrastructure Australia will generally consider appraisals that have been prepared in accordance with Commonwealth, State and Territory guidelines. Infrastructure Australia will not be providing separate detailed technical guidelines on appraisal that will resolve all of these debates.

Assumptions and methodologies used in appraisals will be carefully scrutinised by Infrastructure Australia to prevent the overstatement of benefits or understatement of costs. Unrealistic or inappropriate assumptions will be discounted by Infrastructure Australia in its analysis.

In order to provide consistency of presentation of appraisals being prepared for Infrastructure Australia, stakeholders should follow the following advice for the selection of key parameters.

Base Case and Project Case

Appraisals compare the costs and benefits of doing something – the 'Project Case' (for example, building infrastructure), with a 'Base Case' (or the situation that would have occurred without the initiative, which is not, importantly, the same as a "do nothing" scenario).

Appraisal Summary Table 1 should include a clear and specific explanation of the base case, including reference to the key planning documents and transport plans which inform it.

Discount Rates

Summary results should be presented for the following real discount rates:

- 4 per cent;
- 7 per cent; and
- 10 per cent.

This is in accordance with the majority of national, state and territory guidelines on BCA. In cases where a different real discount rate is used in an appraisal, the Summary of Appraisal Key Results and Assumptions should specify the basis for doing so and stakeholders should contact Infrastructure Australia for specific advice in each case.

Appraisal Period and Residual Values

Appraisals of significant infrastructure should typically be conducted using a thirty (30) year timeframe. This timeframe is measured from the first full year in which benefits to the projects accrue.

In cases where a different appraisal period is used (such as a telecommunications initiative with a shorter asset life), the Summary of Appraisal Key Results and Assumptions should specify the basis for doing so, and stakeholders should contact Infrastructure Australia for specific advice in each case.

For infrastructure assets with a life of more than 30 years, a residual value should be included, where appropriate. Appraisal Summary Table 1 should list the residual value and the assumptions which underpin it.

Other Parameters

Where best practice & standard parameter values are available (e.g. Austroads report for road appraisals), their use is encouraged. Departures from standard parameters will not be accepted unless a clear case is made.

Sensitivity Testing

Sensitivity testing of the BCA is a key element of risk assessment. The purpose of the sensitivity analysis is to acknowledge that there is always a degree of uncertainty and ultimately risk surrounding an initiative. Typically there are four sources of uncertainty surrounding an initiative:

- Capital costs;
- Construction duration and therefore opening date;
- Operating (including maintenance) costs; and
- Under and over estimation of the benefits (typically demand for the service).

A risk assessment should be undertaken to estimate the typical variations around these inputs with the sensitivity testing undertaken based on the variations. In addition, the sensitivity tests should include:

- Changes in global oil prices;
- Fluctuations in carbon prices; and
- Different population growth/decline scenarios.

Outline of Approach to the Monetisation of Wider Economic Benefits

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 projects. 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 BCA. 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 benefit. The most significant is agglomeration, the notion that similar firms are drawn towards to the same location since 'proximity generates positive externality'.[1] 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 (using the most suitable data available) can add texture to the decision making process for certain projects. However, it is crucial to acknowledge that:

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[1] Head, Ries, Swenson, 1995, 'Agglomeration benefits and location choice: Evidence from Japanese manufacturing investment in the United States', *Journal of International Economics*, 38, pp. 223-247.

- Only certain projects, addressing a specific set of economic fundamentals, will generate WEBs;
- WEBs may be negative for some projects; and
- the availability of Australian specific data needed to calculated WEBs is currently sub-optimal.

Therefore, Infrastructure Australia will treat WEBs separately to the traditional BCA. It is recommended that any proponent seeking to calculate WEBs consults with Infrastructure Australia before proceeding. Any subsequent study should base the justification for inclusion of WEBs on the economic theory and applicability of this to the project'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, project 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.

The following links provide additional information on WEB and their calculation to assist those preparing economic appraisals:

- General guidance on wider economic benefits is included at the UK Department of Transport site: http://www.dft.gov.uk/pgr/economics/rdg/webia/
- Specific technical guidance on the calculation of wider economic benefits is in the UK Department of Transport document titled, Transport, Wider Economic Benefits and Impacts son GDP, June 2006, and The Wider Impacts Sub – Objective, April 2009, available at the following site: http://www.dft.gov.uk/webtag/webdocuments/doc_index.htm.

Equity and Distributional Impacts

Other important impacts, especially equity and distributional effects, should be assessed and reported separately from the above net benefit assessment.

No detailed guidance is provided here for undertaking equity and distributional analyses. Stakeholders should describe and assess as best as possible who the gainers and losers are as a result of the initiative. An indication of the scale of those effects is also desirable. This will be key information for assessing an initiative's performance.

Regeneration can be an important public policy goal. The economic benefits of regeneration are already captured in cost-benefit analysis, since such an approach appraises an initiative's economic costs and benefits. However, the specific spatial element is not fully described, and where this is a policy objective it may be appropriate to describe this impact qualitatively alongside the cost-benefit analysis.

Non-Monetised Benefits and Costs

The following are benefit and cost categories that are relevant to the determination of net benefits of an initiative, are not generally monetised.

Benefit / Cost
Visual / landscape
Social amenity, e.g. parklands
Social cohesion
Heritage or cultural impacts

These non-monetised benefits/costs should be discussed after the monetised BCA results. Refer to Appraisal Summary Table 4 for the required template.

Each non-monetised benefit/cost shall be rated using the rating scale in the table below. The descriptions in the following table will assist in making appropriate rating selections.

Rating Level	Description
Highly beneficial	Major positive impacts resulting in substantial and long-term improvements or enhancements of the existing environment.
Moderately beneficial	Moderate positive impact, possibly of short, medium or longer-term duration. Positive outcome may be in terms of new opportunities or outcomes which enhance or improve on current conditions.
Slightly beneficial	Minimal positive impact, possibly only lasting over the short-term. May be confined to a limited area.
Neutral	Neutral—no discernible or predicted positive or negative impact.
Slightly detrimental	Minimal negative impact, probably short-term, able to be managed or mitigated, and will not cause substantial detrimental effects. May be confined to a small area.
Moderately detrimental	Moderate negative impact. Impacts may be short, medium or long-term and impacts will most likely respond to management actions.
Highly detrimental	Major negative impacts with serious, long-term and possibly irreversible effects leading to serious damage, degradation or deterioration of the physical, economic or social environment. Requires a major re-scope of concept, design, location, justification, or requires major commitment to extensive management strategies to mitigate the effect.

The Use of Computable General Equilibrium (CGE) Models

The outputs of CGE (computable general equilibrium) models do not play a role in BCA. CGE models focus on 'economic activity impacts', which are not a measure of efficiency effects.

Infrastructure Australia does not encourage stakeholders to undertake CGE modelling. However, it recognises that some initiatives will have CGE information available which will be included in submissions to Infrastructure Australia.

Infrastructure Australia will primarily use BCA data for measuring the benefits of an initiative and will not consider CGE benefits as additive or complimentary to BCA benefits.

Reporting and Documentation

The results of the appraisal need to form a central element of the business case for each initiative submitted to Infrastructure Australia. The appraisal needs to comply with this guide. Proponents need to provide Infrastructure Australia with:

- Completed templates as set out in appraisal summary results Tables 1 -5 below;
- Full Business Cases; and
- Where available, a series of supporting documentation, including:
    - A detailed, independent, report setting out predicted demand and the basis/drivers for any changes in demand;
    - A detailed, independent specialist cost estimation report, which provides at least a P90 level cost estimation where appropriate; and
    - A detailed report of the economic appraisal methodology, including a full explanation of all parameters used and sensitivity tests applied.

Appraisal Summary Table 1

KEY ASSUMPTIONS UNDERPINNING THE DEMAND FORECASTING AND ECONOMIC MODELLING	
Criteria	Assumptions / inputs
1. Demand Modelling, assumptions and results	Outline the key drivers of demand, and describe the situation 'without' the initiative, i.e. the base case, including future works and associated capital, maintenance and operating costs.
2.Land use, population and employment forecasts	Describe and / or list the policy statements and plans which support the land use forecasts and existing commitments regarding any necessary re-zoning; and who undertook the land use forecasts? What is the ABS historical 5 year and 20 year employment and residential growth rate for the area in question? List the low, medium and high population and employment projections over the period for which forecasts are generated and which was used in the economic appraisal? What are the annual employment and residential growth rates implied by these land use forecasts? If relevant, have specific land use forecasts been undertaken for this project? If so, what is the difference in terms of number of jobs and residents compared to the base case land use in the last year the forecasts are produced for? Has there been any redistribution of jobs and residents and if so, what are the assumptions underpinning this redistribution?
3.Demand modelling outputs	What demand model was used to generate the forecasts and who undertook the demand modelling? What time period was modelled (for example a one hour AM peak on an average weekday, 24 hour period on an average weekday, etc.) What expansion factor was used to translate the period of the day modelled into a daily observation? (Note – this is not applicable if a 24 hour period was modelled). What sources informed this expansion factor? What expansion factor was used to translate the daily observation into an annual observation? What sources informed this expansion factor and / or what logic underpins it? Does the model calculate new or "generated" trips (as opposed to using a fixed trip matrix)? How does the demand model deal with the issues of induced demand?

KEY ASSUMPTIONS UNDERPINNING THE DEMAND FORECASTING AND ECONOMIC MODELLING	
Criteria	Assumptions / inputs
4.Economic model parameters - costs	First year of construction / Last year of construction. State real discount rates used (if not 4, 7 and 10%), and the basis for any variation from these standard DRs. State appraisal period in years, and basis for its selection. Remaining life of the initiative at the end of the appraisal period Describe the basis for estimating all capital costs (for both base and project cases). Confidence level: are the construction costs P50, P90, P95? What is the basis for this estimate? What is the magnitude of contingency included in capital cost estimates (as a % of total costs)? What rate of escalation has been assumed over the construction period? What is the profile of the capital cost spend, for example: year 1 – 10%, $year_n$ – X%. Who were the capital cost estimates prepared by? Have they been independently verified? Describe project outturn costs ($M, nominal, undiscounted)
	Economic costs: Describe and justify any adjustments made to the project outturn costs to generate an economic project cost. Economic cost - $M, real, undiscounted; and $M, real, discounted (using a real 7.0% discount rate) Residual value - State the size of the residual value, economic lives of the assets included in the residual value and the methodology used to generate it. Maintenance costs - Describe the basis for estimating all maintenance costs, including growth rates over time (for both base and project cases). Are the maintenance costs P50, P90, P95? What is the basis for this estimate and who were the maintenance cost estimates prepared by? Replacement - Is there a need to replace or refurbish major components of the infrastructure / rolling stock during the appraisal period? If so, how are these replacement or refurbishment costs captured? Operating costs - Describe the basis for estimating all operating costs, including growth rates over time (for both base and project cases). Who were the operating cost estimates prepared by? Have they been independently verified?

KEY ASSUMPTIONS UNDERPINNING THE DEMAND FORECASTING AND ECONOMIC MODELLING	
Criteria	Assumptions / inputs
5.Economic model parameters - benefits	Benefits ramp up - Describe how benefits ramp up over the construction period, ie year 1 – 35%,year$_n$ – X%. What source and/or assumptions inform this ramp up? Benefit components - Describe the basis for estimating each benefit component, including growth rates over time. Cost and benefit time streams - Attach an appendix showing the time stream for each benefit and cost component ($M, real, undiscounted). Generalised trip cost - has generalised trip cost (GTC) been calculated on an origin – destination (OD) basis within the demand model, or using aggregate outputs from the demand model?
	Value of travel time: Commuter travel - What is the value of travel time used for this project? Does this value differ between modes? Is this value based on resource cost or willingness to pay? Business travel - Has a specific value been applied to business travel? If so, what was this value? Growth - Has any rate of escalation been applied to these values? Source - What are the sources for the values used and any assumptions incorporated into the value of travel time?
	Weightings - Describe the weightings which have been used to calculate the generalised trip cost Wait / Access / Egress - What weighting has been applied to egress time? What is the source for this? Transfer - What transfer penalty has been applied? What is the source of this? Boarding penalty - Has a boarding penalty been applied during the demand modelling and / or economic appraisal? If so, what is the magnitude of this boarding penalty (minutes) and how does it differ between modes?
	Benefit parameters - List the value and source of all benefit parameters relevant to the appraisal. For example decongestion; Vehicle Operating Costs (for all classes of vehicles); Crash costs etc Related initiatives - Are the benefits and costs closely related to, dependent upon or potentially influenced by another initiative(s)? If so, explain how that has been accounted for in the BCR.

Appraisal Summary Table 2

MONETISED COST BENEFIT ANALYSIS RESULTS
Demand Model Outputs Please provide the following demand model outputs for the core option. (Please also state if whole-of-network modelling was not used.) Please provide, for the Year of opening and the Final forecast year, the model outputs: • Base Case • Option • % Change between the two figures Please provide this information for: • Number of trips. • Average journey time (total trips / total hours travelled) • PT mode share (where relevant to the initiative) • Freight mode share (where relevant to the initiative) • Public transport fare revenue • Number of kilometres travelled Please break results down where relevant, e.g.: car, bus, light commercial, heavy vehicle, heavy rail, and light rail.

Benefit Cost Analysis Result

Complete the following table:

	Real Discount Rate (%)		
	4%	7%	10%
BCR	....	....	....
NPV ($m, 2009) i.e. 'Net Benefit'	....	....	....
NPV / $	....	....	....
IRR	....	....	....

Monetised Cost and Benefits

Complete the following table:

- *Column 1 - List all cost and benefit elements that have been monetised*
- *Column 2 - State the $ value of each cost and benefit element ($M, real, discounted)*
- *Column 3 - Include the % contribution of each cost and benefit element – adding to a total of 100% across costs; and 100% across benefits*

Monetised Costs and Benefits	Value	Percentage
COSTS (broken down by element)...	...	...
Total	*(sum of above) ($, real, discounted)*	100%
BENEFITS (broken down by element)...	...	...
Total	*(sum of above) ($, real, discounted)*	100%

Detailed Monetised Benefits

($m, real, undiscounted)

Complete the following table and set out the value of each benefit for each forecast year. Please reproduce this table for all modes.

	Base Case			Option		
	20XX	*20XX*	*20XX*	*20XX*	*20XX*	*20XX*
Benefit 1 ($M, real, undiscounted)	....	....	....	....	....	....
Benefit *N* ($M,real, undiscounted)	....	....	....	....	....	....

*Complete the following table by providing full details on the methodology used to **calculate each benefit stream**. You should reproduce this table for each benefit item for one forecast year.*

Benefit 1, 2, 3 etc.	Base Case Forecast Year (*20XX*)	Option Forecast Year (*20XX*)
Demand model output(s)	*(e.g. wait time, IVT, VKTs etc)*	*(e.g. wait time, IVT, VKTs etc)*
Valuation parameter used and source	*e.g. VOC $/VKT, VOTT, Value of serious injury* *Source?*	*e.g. VOC $/VKT, VOTT, Value of serious injury* *Source?*
Algorithm used to calc. total benefit	*(combine model outputs and economic parameters to replicate benefit in the Monetised Cost Benefits Table)*	*(combine model outputs and economic parameters to replicate benefit in the Monetised Cost Benefits Table)*
$M (undiscounted)	....	....

Appraisal Summary Table 3

Benefit Cost Ratio Sensitivity Testing

Complete the following table for all core options as a summary of the results of the sensitivity testing undertaken. The Appraisal Guidelines refer to seven types of area of uncertainty to test:

- *Capital costs*
- *Construction duration and therefore opening date*
- *Operating (including maintenance) costs*
- *Under and over estimation of the benefits (typically demand for the service)*
- *Changes in global oil prices*
- *Fluctuations in carbon prices; and*
- *Different population growth/decline scenarios and set out the value of each benefit for each forecast year.*

Additional sensitivity tests are recommended on key parameters, such as the annualisation factors or the value of travel time adopted. Worst case scenarios should also be tested (costs +30%, benefits -30%).

Sensitivity test #	Variation	Benefit-Cast Ratio (BCR)
0	Starting result	....
1.	Discount rate 4%	....
2	Discount rate 10%	....
3	....	....
4	....	....
5	....	....
etc	Etc	....

Appraisal Summary Table 4

NON-MONETISED BENEFITS AND COSTS

Complete the following table:

- *List and briefly describe any "non-monetised" benefits and costs.*
- *Rate the size of each non-monetised cost and benefit element using the rating scale given in Appendix C.*

Cost/Benefit	Description	Rating
e.g. Visual Amenity		
e.g. Biodiversity		
Etc.		

Appraisal Summary Table 5

INFORMATION SOURCES

List and detail the sources of information used in this economic appraisal.

DELIVERABILITY ASSESSMENT

Criteria	Questions, Documentation and Responses

1. Is the risk being managed appropriately?	*Key questions on Risk Management:*
	• *Have risks been formally identified, assessed and addressed through a management strategy?*
	• *Can the project be staged to reduce risks / improve manageability?*
	
	Information and documentation to provide includes:
	• Risk assessment reports;
	• Risk management strategy;
	• Peer review of risk assessment and management strategy; and
	• Analysis of staging options.
	  o Factors taken into account – economies of scale (for procurement and usage)
	  o Best time to deliver relevant stages – taking into account future demand forecasts, flexibility for other stages of project.

	Key questions on Construction Risks:
	• *Does the project pose any significant construction risks due to its location, geology, design, etc?*
	• *Are those risks reflected in the construction cost estimate?*
	• *Is there sufficient capacity (including relevant skills and expertise) to ensure the delivery of the project and realisation of benefits?*
	• *Are there any significant consequential risks to the wider network?*
	• *Are those risks reflected in the project's cost estimate and cost/benefit analysis?*
	• *Will delivery require associated works to enable new project to succeed in practical terms?*
	  o What is the scale and cost of likely works?
	  o Who will fund the works?
	  o How will they be delivered?

DELIVERABILITY ASSESSMENT

- *How will interface risks with the project be managed?*
- *What requirements will need to be satisfied prior to construction of the project, including relevant planning and environmental approvals, land acquisition?*

Information and documentation to provide includes:

- Detailed engineering report;
- Peer review of engineering report;
- Detailed construction cost estimate, including probabilistic modelling, that reconciles with the risk assessment; and
- Independent review of construction cost estimate.

Key questions on Environmental Risks:

- *What are the significant environmental risks?*
- *Are they reflected in the project cost estimate?*
- *What community engagement/consultation have been undertaken?*
- *What land use/environmental/planning approvals need to be obtained?*
- *What approvals/licences have already been obtained?*

Information and documentation to provide includes:

- Environmental reports (noise, amenity, etc);
- Environmental impact statement; and
- Conditions of approval.

Key questions on Other Risks

- *Are there any significant social or political risks?*
- *Are there any significant risks posed by (or for) other levels of government?*
- *Are there any other significant risks?*
- *Are they reflected in the project cost estimate?*

DELIVERABILITY ASSESSMENT	
	Information and documentation to provide includes: • Political risk analysis; and • MOUs with other levels of government.
2.Is there a need for government funding?	*Key questions:* • *Does a market exist or can a market be introduced, ie, where users pay for services?* • *Can the private sector partially or fully fund the project in return for revenue from users or government?* • *Can the private sector add value by financing and delivering the infrastructure and related services?* • *If so, is private financing proposed?* • *Where private financing is envisaged, is a competitive market for the provision of private capital likely given the location and type of project?* • *If a mix of private and public financing is proposed, what are the market failures that require this?* • *If public financing is proposed, what are the public policy objectives being pursued or market failure being addressed?* *Information and documentation, eg a detailed business case including:* • *Analysis of scope for private sector financing (eg: feasibility of recovery of full or partial costs from users, potential for value add from private financing), information on market soundings undertaken;* • *Analysis of potential delivery models; and* • *Value for money assessment of the delivery model.*
3.Is there a need for Commonwealth funding?	*Key questions on the case for Commonwealth Funding:* • *Why should the Commonwealth rather than State/Territory or Council fund the project – what is the national interest?* • *Is Commonwealth funding likely to lead to a displacement of State/Territory infrastructure spending?* • *What is the proposed State/Territory/Council funding contribution for the project?*

DELIVERABILITY ASSESSMENT	
	• *What other sources of Commonwealth funding are being provided for the project?* • *Where a mix of funding sources is envisaged, does the mix reflect the respective interests of the funders and is risk allocated appropriately?* • *Outline the proposed timing of cashflows for each contributor and what the each contributor's funds will be used for (include details of the inflator used to derive nominal amounts)?* • *Where Commonwealth funding is being sought how is it envisaged that funding would be provided, e.g. grant, equity, loan?* *Information and documentation to provide includes:* • Where Commonwealth funding is sought, projected State infrastructure spending with and without Commonwealth funding; and • Financial model of the project's cashflows, including real, nominal and discounted dollars
4.Does the delivery strategy provide confidence that the project benefits will be delivered?	*Key questions on Delivery Strategy Issues:* • *What is the proposed delivery strategy, including source of finance, contract type and procurement process?* • *What is the proposed strategy for operations and maintenance of the infrastructure?* • *Does the delivery strategy effectively deal with the risks identified?* • *Does the delivery strategy introduce new risks, eg, design, construction or operation interfaces?* • *At what stage is the project in its development, eg, one option to address a need, preferred option, concept design, business case, committed funding, inclusion in Strategic Infrastructure Plan or similar, procurement.* • *What are the project's key milestones?* *Information and documentation to provide includes:* • Procurement strategy report, including analysis of options considered; and • Results of market soundings on: o Level of interest in the project

DELIVERABILITY ASSESSMENT	
	○ Proposed delivery strategy ○ Proposed financing/ownership model ○ Timing and staging of the project
5.Does the project governance model provide confidence that the project benefits will be delivered?	*Key questions on Project Governance include:* • *What are the proposed governance arrangements for the project? What has been used until now, and what is proposed between now and commitment to proceed, during procurement and delivery, during operations?* • *What role is envisaged (if any) for the Commonwealth if it contributes to the project?* • *Who are they key stakeholders and what role will they play in project governance?* • *Is the project subject to a Gateway or similar review process?* *Information and documentation to provide includes:* • Governance plan; • Independent review of governance plan; and • Reports from independent reviews of the project, e.g. gateway reviews.

Spending on freight transport 'a priority'

By Danielle Cronin
Political Correspondent

Prime Minister Kevin Rudd has flagged "substantial new investment" in infrastructure to meet the "truly staggering" need and to prevent the country falling behind in terms of productivity and living standards.

Freight transport would be the priority for federal, state and territory leaders this year, Mr Rudd said yesterday in a speech about investing in infrastructure.

He emphasised the need to lift productivity and overcome challenges posed by an ageing population.

Opposition infrastructure spokesman Ian Macfarlane said the Rudd Government had displayed "monumental failure" when it came to infrastructure spending.

"Despite a massive accumulation of \$[illegible] billion net debt, a mere \$[illegible] billion has been allocated for productivity building infrastructure in the next few years. The Rudd Government has failed to plan for capacity generating infrastructure, preferring, instead, to focus on school halls," Mr Macfarlane said.

Mr Rudd said investment in infrastructure – as a percentage of GDP – had decreased under the Howard government.

"If this trend continues, Australia will fall further behind other nations on productivity and in the long term on future growth and living standards," Mr Rudd said.

"Australia's shortfall on infrastructure investment has generated a yawning gap between the infrastructure we've got and the infrastructure [illegible] [illegible]

[illegible] modities around the country – was expected to triple by 2050.

"Meeting this task will require a massive effort. Companies will have to improve transport and logistics strategies and efficiencies and governments will have to undertake substantial new investment and policy reform," he said.

It has been estimated \$62.5 billion should be spent on infrastructure by 2050 – almost four times the spending level in 2008.

In its interim priority list, Infrastructure Australia had identified 40 road projects worth \$69 billion, eight freight rail projects worth \$16 billion and six port and airport projects worth \$6 billion.

Mr Rudd made the comments in the third in his series of speeches on Building Australia's Future delivered in the lead up to Australia Day.

In the first, he argued every Australian would be \$16,000 a year better off if productivity growth returned to 2 per cent a year by 2050.

In the second, he warned Australians to brace for some unpopular belt-tightening to repair the damage caused by the Howard government's spending.

Opposition frontbencher Nick Minchin said yesterday Mr Rudd's spurious attack was designed to mask the reckless spending that had marked his own [illegible] in office.

"Kevin Rudd has selective amnesia and totally ignores the fact that the former Howard government was left with a horrendous legacy of \$[illegible] billion of net Labor debt which took the Coalition the [illegible] to pay off but [illegible]," Senator Minchin said.

Opposition finance spokesman [illegible] [illegible]

It pays to shop

CHECKING [illegible]

Supermarket	[illegible]
Coles - [illegible]	[illegible]
Woolworths - Woden	[illegible]
Woolworths - [illegible]	[illegible]
Woolworths - Dickson	[illegible]
Woolworths - [illegible]	[illegible]
Woolworths - Gungahlin	[illegible]
Coles - [illegible]	[illegible]
Woolworths - Weston Creek	[illegible]
Woolworths - [illegible]	[illegible]
Woolworths - [illegible]	[illegible]
Woolworths - [illegible]	[illegible]
Woolworths - [illegible]	[illegible]
Coles - Manuka	[illegible]
Woolworths - [illegible]	[illegible]
Coles - [illegible]	[illegible]
Woolworths - Charnwood	[illegible]
Coles - [illegible]	[illegible]
Woolworths - Queanbeyan	[illegible]
Coles - Gungahlin	[illegible]
Coles - Woden	[illegible]
Supabarn - [illegible]	[illegible]
Supabarn - [illegible]	[illegible]
[illegible]	[illegible]
IGA - [illegible]	[illegible]
IGA - [illegible]	[illegible]
IGA - [illegible]	[illegible]
IGA - [illegible]	[illegible]
IGA - [illegible]	[illegible]
IGA - Hawker	[illegible]
IGA - [illegible]	[illegible]
IGA - [illegible]	[illegible]

Item Number	Item surveyed
1	[illegible] Apples p/kg
2	Bananas p/kg
3	[illegible]
4	Supermarket brand [illegible]
5	[illegible]
6	[illegible] 500ml
7	[illegible]
8	Supermarket brand [illegible]
9	[illegible]
10	Supermarket brand [illegible]
11	[illegible]
12	Supermarket brand [illegible]
13	[illegible]
14	[illegible]
15	[illegible]

From Page 1

[illegible] but Coles Manuka was [illegible] Coles Gungahlin and Woolworths Charnwood.

The report also found [illegible] a greater number of [illegible] [illegible]

[illegible] proximity to Aldi [illegible] charged by supermarkets [illegible] [illegible] said.

The report found [illegible] items [illegible] [illegible]

M Cawthorne
FYI
Kirst

TSY-909/23 446

COPY

CMD-508/539.

Australian Government
Infrastructure Australia

19 December 2008

Please send copy of letter to Megan.
- note ministerial under prep.

Mr Andrew Cappie-Wood
Chief Ministers Office
Level 5, Nara Building,
1 Constitutional Ave
CANBERRA CITY ACT 2601

Dear Mr Cappie-Wood,

Finalisation of Infrastructure Priority List

I am writing to thank your government for its submissions to Infrastructure Australia.

I also have pleasure in enclosing a copy of a report to COAG setting out Infrastructure Australia's conclusions following our first 'audit' of Australia's infrastructure. Amongst other things, the report identifies seven key themes that will serve to focus our efforts in the future. These themes cover the major areas where Australia's infrastructure planning, provision and regulation need to be improved.

Since its establishment in July this year, Infrastructure Australia's initial focus has been on three areas of work: an infrastructure 'audit', development of an interim Infrastructure Priority List, and the development of guidelines to facilitate infrastructure PPPs (recently endorsed by COAG).

Infrastructure Australia received over 1,000 project proposals from governments, industry, peak bodies and members of the public. We have completed an initial review of those proposals. In particular, we reviewed in detail 94 project proposals where proponents submitted minimum required information in relation to the project's 'fit' with Infrastructure Australia's published strategic priorities.

I have attached a copy of the letter from Infrastructure Australia's Chairman, Sir Rod Eddington to the Minister for Infrastructure, Transport, Regional Development and Local Government. The letter sets out our initial conclusions and observations concerning the project proposals.

Officials from Infrastructure Australia have been liaising with your government concerning projects in order to better understand the project's costs and benefits, 'strategic fit', and potential issues around deliverability.

Infrastructure Australia is looking to finalise its assessment of all project proposals. To assist us in this task, it is vital that we receive robust information about your government's project proposals as soon as possible. My office has provided your officials with detailed guidance on the minimum type and depth of information that we

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www.infrastructureaustralia.gov.au

seek in order to finalise our assessment. There is much to be done to improve our nation's infrastructure networks.

Infrastructure Australia looks forward to working with your government to progress both the list of projects that may be recommended for funding under the Building Australia Fund, and the wider issues identified in the attached report.

Yours sincerely.

Michael Deegan
Infrastructure Coordinator

Australian Government
Infrastructure Australia

COPY

5 December 2008

The Hon Anthony Albanese, MP
Minister for Infrastructure, Transport,
Regional Development and Local Government
PO Box 6022
Parliament House
CANBERRA ACT 2600

Dear Minister,

National Infrastructure

I am pleased to provide you with Infrastructure Australia's first national infrastructure audit.

This audit report is the initial outcome from our consideration of the numerous public submissions received by the Council and the consultations undertaken across Australia.

Australia faces significant economic, environmental and social challenges, and the development of our infrastructure networks is an essential part of addressing those challenges. Our work to date has concluded that Australia's infrastructure investments need to be directed towards the following broad themes:

1. Developing a more extensive, globally competitive broadband system;
2. Developing more effective ports and associated land transport systems to more efficiently cope with imports and exports;
3. Development of our rail networks so that more freight can be moved by rail;
4. Increasing public transport capacity in our cities;
5. More extensive national energy grids to enable greater flexibility and competition in the nation's power and gas systems, whilst creating opportunities for the development of renewable power sources;
6. More adaptable and resilient water systems to cope with climate change; and
7. Improved services for Indigenous communities.

These themes and related challenges are addressed in the audit.

Infrastructure Australia has been working to develop a program that addresses the themes mentioned above, and that might ultimately form part of a larger 'pipeline' of nationally significant infrastructure.

The intention is to establish an Infrastructure Australia 'rolling' project pipeline that assesses the projects and provides advice to Governments and the private sector and investment community on areas of priority investment and projects that meet national objectives. This pipeline of projects which have completed the assessment process would look beyond any current funding mechanisms such as the Building Australia Fund.

This project assessment process will also provide a vehicle for the Council identifying and providing advice to Governments on means of addressing any policy or regulatory barriers and obstacles to projects that meet our national objectives ie regulatory approval processes, access arrangements, pricing or regulatory constraints.
To date, we have drawn mainly upon project proposals submitted by the States and territories, industry and the public. However, our expectation is that the program will be a 'live' document, and that it will continue to evolve. I envisage proposals will come from Infrastructure Australia's further analysis of the nation's infrastructure needs.

As noted above, Infrastructure Australia invited the public, industry and state/territory governments to make submissions and to present project proposals. Almost 600 submissions, recommending over 1,000 projects, were received. Many submissions merely raised general statements of concern or advocated particular policy issues, e.g. investing in infrastructure to assist Australia adapt to climate change. Others made specific project suggestions.

A number of the parties that made submissions to Infrastructure Australia emphasised the importance of regulatory reform. Without reform in areas such as national energy markets and urban water pricing, we will not have maximised the contribution that infrastructure networks can make to Australia's development. We will not have made the best use of our existing networks; nor will we have maximised the contribution that the private sector can play in developing and operating Australia's infrastructure networks. Reform is vital if Australia is to make timely progress in many areas of public policy, e.g. strengthening Australia's economy, adapting to climate change and improving living conditions in our cities and regions.

The project proposals contained in submissions were striking for a number of reasons.

First, there were relatively few proposals that one might consider truly national in their scope. Some proposals, e.g. in the area of inter-state rail networks, fit that descriptor. However, on the whole, proposals tended to be jurisdictionally focussed. Of course, we recognise that specific projects in a particular locality can assist in pursuing various national priorities. Improvements to ports and their hinterland infrastructure are a case in point. That said it was striking that there were very few proposals that transcended state/territory boundaries.

Second, we received very few project proposals in the areas of energy, water and telecommunications infrastructure. This is disappointing and needs to be addressed. The vast majority of projects were in the transport sector. Infrastructure Australia will give further attention to the non-transport networks in the New Year.

Finally, the quality of submissions was variable, reflecting, in part, the fact that many of the proposals were at an early stage of development. A relatively small number of proposals were supported by both a strong economic appraisal and clear articulation of how the project might address national

concerns such as improving Australia's economic capacity, climate change and the sustainable development of our cities and regions. Most proposals had not completed any effective pre-feasibility study that provided enough detail on the problem being addressed or provided robust financial and project details for our evaluation. On the whole, the development and presentation of project proposals was disappointing. For example, the economic case for investment was either poorly presented or based on assumptions that may not withstand scrutiny. Importantly, this observation applies as much to the submissions from the states and territories as it does to submissions from industry and the public.

These observations need to be borne in mind in considering the attached list of projects. The list sets out 94 projects that have been evaluated by Infrastructure Australia.

Within this list of projects, the evaluation to date, which is subject to further consideration by the Infrastructure Australia Council, has identified two classes of projects that may be suitable for funding from the Building Australia Fund. There are 28 projects in these two classes. The estimated capital value of these projects, as estimated by the proponents, is approximately $40B.

The first class comprises 'priority projects' that address one or more of the seven themes mentioned above, and where the project's initial economic appraisal and alignment with key strategic priorities is generally well documented. Subject to some further engagement with project proponents over the next month or so (e.g. clarifying aspects of the economic appraisal and project timetable), our expectation is that these projects could proceed to be recommended for funding by Governments, including from the Building Australia Fund.

A second group of 'potential projects' includes initiatives that also address one or more of these strategic themes. However, in this second class, some aspect of a project's economic benefits or alignment with strategic priorities remain sufficiently in question that it cannot be presently recommended for immediate inclusion in such a program. A number of these projects are likely to progress to the point where they could be supported with funding from the Building Australia Fund.

In addition, having considered all of the submissions, Infrastructure Australia has identified other potential projects including a national road safety program, and the development of an intermodal freight terminal at Moorebank – that warrant closer consideration.

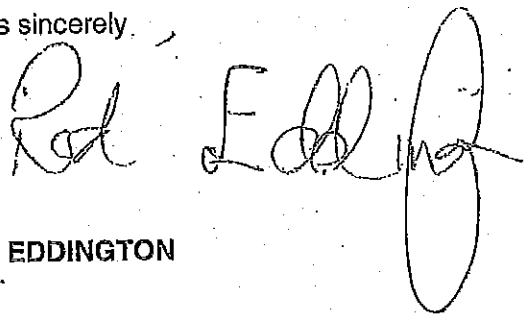
The projects are best viewed as examples of the types of projects Infrastructure Australia believes needs to be developed.

Our intention is to:

- Work with states and territories to resolve outstanding issues associated with projects and potential projects; and
- Work with infrastructure providers and regulators, especially in the areas of energy, water and telecommunications infrastructure, to bring together a national approach to planning these networks.

I would be happy to meet with you to brief you further.

Yours sincerely,



ROD EDDINGTON
Chair

Infrastructure Australia Priority List

Minimum information requirements

Infrastructure Australia (IA) has identified a list of infrastructure projects requiring further analysis before recommendations can be made about their suitability for BAF support and a prioritisation between projects can be undertaken. Those projects are identified in the list titled "Projects for further analysis" on page 68 of Infrastructure Australia's December 2008 Report to Council of Australian Governments, which was published on Friday 19 December.

For each project, States, Territories and other organizations have so far provided headline, summary or preliminary results and information to IA, covering the three pillars of IA's own assessment methodology:

1. Profiling – the fit with Infrastructure Australia's seven strategic priorities
2. Appraisal – the objective and quantified economic cost-benefit analysis; and
3. Deliverability - project risk, governance and timing.

To underpin its further analysis of these projects, Infrastructure Australia now requires comprehensive and detailed information on the appraisal and deliverability assessments, to provide robust evidence to support the headline or summary results so far presented.

This document outlines the type and depth of information sought by Infrastructure Australia.

It should be noted that this information will be readily available to organizations that have undertaken serious project development, in the form of the following of documents which are a fundamental part of major project development processes:

- "Strategic options" reports
- "Feasibility studies" including specialist engineering and environmental assessments and outline economic assessments
- Project "business cases", including demand modeling reports and economic methodology and results reports
- "Delivery" reports, including specific risk, governance and timing assessments.

1. Appraisal - Economic cost-benefit analysis

Organisations are requested to provide further information in two areas to underpin and explain the headline or summary results of the economic cost-benefit analysis (appendix E in the original methodology).

Demand modeling methodology, assumptions and results

Levels of demand are crucial to the viability of infrastructure projects. Infrastructure Australia needs to understand the basis upon which demand estimates have been created. For each project, the following information should therefore be provided:

- A comprehensive list of the detailed assumptions which drive demand, including the rate population growth, employment growth, private vehicle demand, public transport demand; and how these change over the appraisal period;
- Detail of any changes in land use such as residential densification or Transport Orientated Developments (TODs) assumed in the demand modeling;
- The underlying justification for these assumptions and growth rates, particularly the benefit extrapolation approach used in the post forecast period;
- The methodology used to estimate demand – the nature of the transport model used and how knock-on and wider network effects are calculated; plus an explanation of the independence of forecasts and the degree of external or independent scrutiny; and
- A detailed disaggregation - by year, date and user type - of the results of the demand modeling, *including all the information set out in tables 1 & 2 below.*

Typically, this information will usually be contained in a detailed transport modeling report that will have been prepared for State or Territory Governments or other organisations. Wherever possible, organizations should submit this report and then provide page references the key sections containing this information.

Table 1: Traffic modeling summary by forecast year

Reproduce this table for all modes	**Base Case**			**Option**		
	Forecast Year			**Forecast Year**		
	20XX	**20XX**	**20XX**	**20XX**	**20XX**	**20XX**
Trip number						
Observation (e.g. AADT, am peak 3-hr etc)						
Annualisation factor						
VHT (no.)						
Observation (e.g. AADT, am peak 3-hr etc)						
Annualisation factor						
VKT (no)						
Observation (e.g. AADT, am peak 3-hr etc)						
Annualisation factor						

Table 2: Traffic modeling summary – market segmentation

Reproduce this table for all modes		**Base Case**			**Option**		
		Forecast Year			**Forecast Year**		
		20XX	**20XX**	**20XX**	**20XX**	**20XX**	**20XX**
Trips (annual)	Existing						
	Diverted						
	Induced						
VHT (annual)	Existing						
	Diverted						
	Induced						
VKT (annual)	Existing						
	Diverted						
	Induced						

Economic appraisal methodology, assumptions and results

Infrastructure Australia also needs to understand the economic methodology used in the appraisal. For each project, the following information should therefore be provided:

- Detailed report of the economic methodology used, including all parameters and values used, assumptions, algorithms, population growth, discount rates, etc.;
- Full details of the costs of the project and the basis of costs, including specialist engineering and operations reports; and
- A detailed disaggregation of the results of economic modeling, including a detailed quantitative breakdown and qualitative explanation of each benefit type for each modeled year and the calculation used to derive that benefit, *including all the information set out in tables 3 & 4 below.*

Again, this information will usually be contained in a detailed economic methodology and results report that will have been prepared for State or Territory Governments or other organisations. Wherever possible, organizations should submit this report and then provide page references the key sections containing this information.

Table 3: Undiscounted benefits by item

Reproduce this table for all modes	**Base Case**			**Option**		
	Forecast Year			**Forecast Year**		
	20XX	**20XX**	**20XX**	**20XX**	**20XX**	**20XX**
Benefit 1 ($m undiscounted)						
Benefit 2 ($m undiscounted)						
Benefit 3 ($m undiscounted)						
Benefit *N* ($m undiscounted)						

Table 4: Calculation of undiscounted benefits by item

Reproduce this table for each benefit item for one forecast year	**Base Case**	**Option**
	Forecast Year	**Forecast Year**
	20XX	**20XX**
Benefit 1		
$ (million undiscounted)		
Valuation parameter used (e.g. VOC $/VKT, VOTT, Value of serious injury)		
Source of valuation parameters		
Algorithm used to calculate total benefit in 200X (combine traffic and economic parameters to replicate benefit in Table 3)		

2. Delivery – project risks, governance and timing

Organisations submitting project information were requested, via the published IA methodology, to complete Appendix F, which requests information in relation to:

- Deliverability – risks, acceptability, staging, governance model surrounding the project, ownership structure;
- Timing; and
- Packaging.

Further, in accordance with the transitional provisions of the Nation Building legislation, Infrastructure Australia is asked to provide advice to Government against interim evaluation criteria. The criteria include an assessment against:

- The Extent of efficiency and co-investment.
  a) Funding of the project by the Commonwealth may leverage other forms of funding including from the private sector and other levels of government.
  b) Projects should take account of relevant market structures and pricing mechanisms.
  c) Project delivers an effective and efficient response to addressing an identified infrastructure need.
- The Extent to which efficient planning and implementation has occurred.
  a) Project risks have been analysed.
  b) Consideration has been given to, where relevant, the requirements that will need to be addressed prior to construction of the project including relevant approvals, land acquisition and planning.

Provision of information

The information sought, including source documents, is outlined in the table below.

Organisations should provide references to the relevant sections of any underlying resource documents in any summary information provided. An outline of the likely timetable/handling strategy for addressing outstanding delivery issues should also be provided where a project is at an early stage of development.

Table 1: Deliverability Assessment Information

Criteria	Descriptors
1. Need for Commonwealth funding	Key questions: • Does the project deliver an effective and efficient response to addressing an identified funding need? • Has the project taken into account the relevant market structure and pricing mechanism? • Can the private sector partially or fully fund the project in return for the revenues? • Why should the Commonwealth government rather than State or Council government fund the project – what is the national interest? • What is the proposed State/Council funding contribution for the project? • What other sources of Commonwealth funding are being provided for the project? • Where a balance of funding sources is envisaged, does the balance reflect the respective interests of the funders? Information / documents likely to be required: • analysis of future revenue streams; • analysis of whether revenue streams can be created if no prices are currently charged; and • data on national impact and justification for public rather than private funds and justification for Commonwealth funds in addition to State/Council funds.
2. Construction risks and budgetary implications	Key questions: • Does the project pose particular construction risks due to nature of the engineering, location, geography or geology? • What scale of financial risks do these pose? • Have those risks been adequately assessed in the construction costs assessment? • Can the project be staged to reduce risks / improve manageability? • Is there sufficient capacity to ensure the delivery of the project and realisation of benefits including relevant skills and expertise both during and post construction? Information / documents likely to be required: • Detailed engineering report by reputable agency or consultant; and • Descriptive information re project staging plans or potential
3. Consequential construction risks	Key questions: • Have any consequential risks to the wider network been identified? • Will delivery require associated works to enable new project to succeed in practical terms? (NB such information should technically form part of the CBA) • What is the scale of likely works? Have these been costed? • Has consideration been given to the requirements that will need to be addressed prior to construction of the project including relevant approvals, land acquisition and planning? • Has the project identified how the infrastructure will be operated and maintained following construction? Information / documents likely to be required: • Technical report / operations report • Information provided in CBA

4. Financing risks where private finance is involved and scale of potential public sector exposure	Key questions: • What is the scale of private capital required? • Is a competitive market for the provision of private capital likely given the location and type of project? • Have risks been allocated appropriately? • Is patronage risk a major unknown and if so will private financing offer value for money Information / documents likely to be required: • Financial advisor report if available; and • Preliminary analysis of funding scale required
5. Environmental risks	Key questions: • Have any major environmental impacts or risks been highlighted in the project Cost Benefit Analysis? • What is the potential scale of impact? • Has a mitigation strategy been described? Information / documents likely to be required: • Environmental consultants report; and • Environmental Impact Assessment.
6. Social and other risks	Key questions: • Have any major social impacts or risks been highlighted in the Cost Benefit Analysis? • What is the potential scale of impact? • Has there been community engagement/consultation? • Has a mitigation strategy been described? • Have political risks been identified and assessed? • Have any other risks been identified and assessed? Information / documents likely to be required: • Environmental consultants report (noise, amenity etc); and • Community report / evidence of community engagement / consultation
7. Governance model	Key questions: • Is a Governance model specified? • Does the model create the right incentives on all parties? • Does the model allocate risks to those best placed and incentivised to manage them? • Are all relevant parties included or are key players excluded? • What is the proposed ownership or leasing structure? • Does ownership /leasing align with risks and incentives? • Does the ownership structure drive delivery and operational efficiencies? Information / documents likely to be required: • Governance plan or Ownership strategy (including any plans for changing ownership during the project lifetime); and • Evidence in other documents that these issues have been considered.

Office of the Infrastructure Co-ordinator

December 2008

[redacted]

From: [redacted]
Sent: Wednesday, 24 December 2008 9:35 AM
To: [redacted]
Cc: [redacted]
Subject: FW: Majura Parkway- Infrastructure Australia bid
Attachments: Majura Pky_test.xls

For info

[redacted] | Executive Director | Policy Coordination and Development Division | ACT Treasury
Phone: (02) 6207 0228 | Mob. 0438 286 215

From: [redacted] [mailto:[redacted]@bigpond.com]
Sent: Wednesday, 24 December 2008 12:09 AM
To: [redacted]
Cc: [redacted]; [redacted]; [redacted]; [redacted]@smec.com.au
Subject: Majura Parkway- Infrastructure Australia bid

[redacted]

Thanks for the meeting today, 22/12/08 with [redacted], myself, yourself, [redacted] and [redacted] to discuss the steps to progress the further information requested for the Majura Parkway project.

Appendix C- Profile against IA strategic Priorities

. Treasury will provide additional information to profile the project against the IA Strategic priorities as per the requirements in Appendix C of the application template

Appendix E- Cost Benefit Analysis

. In relation to the comments on the Cost Benefit analysis while I have provided some advice to you on this regarding the 3 "flaws" in the current methodology, it is important that the work we get SMEC to do from 5 -12 January 2009 focuses on an economic assessment of the ultimate Majura Parkway project and assumes the current works under construction are in place.

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I will copy you into the requirements I prepare for SMEC to do the economic assement work.

regards

Tony Gill
Roads ACT
22/12/08

Marla, pls file
D.

[redacted]

From: [redacted]
Sent: Wednesday, 24 December 2008 5:39 PM
To: [redacted]
Subject: FW: Infrastructure Australia
Importance: High
Sensitivity: Confidential
Attachments: IA Feedback.pdf

FYI.

From: [redacted]
Sent: Mon 22/12/2008 3:38 PM
To: [redacted]
Cc: [redacted]
Subject: Infrastructure Australia

Under Treasurer

I met with Michael Deegan on Friday shortly before the release of the report. [redacted] from CMD was also present. Main message and issues emerging from the meeting are summarised below.

1. Clear indication that Majura Parkway is the project likely to be considered for Round 1. [redacted]

2. Written comments for follow up discussions provided on Majura Parkway, [redacted] (attached for reference).

- The comments on Majura Parkway are quite encouraging, particularly the observation that the BCR is likely to be higher. The proposal needs to be framed against the IA's strategic priorities. Further information has been sought on various aspects (capital, maintenance, benefit attribution, consultation, EIS etc.).
- [redacted]
- [redacted]

3. Timing: the report indicates first round list to be announced in March. We gathered, however, that the Minister is keen on progressing it earlier. Accordingly, further information is to be provided by 15 January (only about 10 working days).

4. Moving forward:

- Suggest we focus on Majura Parkway at this stage. I have discussed with [redacted] on putting together the information, and any assistance required from Treasury. He is quite confident that we can address almost all the issues raised (with the exception of EIS, which is currently underway).
- [redacted]
- [redacted]

[redacted]

1. [redacted]

2. [redacted]

3. [redacted]

Regards

<<IA Feedback.pdf>>

[redacted] Executive Director | Policy Coordination and Development Division | ACT Treasury

P[redacted]: (02) 6207 0228 | Mob. [redacted]

ACT – Follow Up Discussions

Majura Parkway – Stage 2

Profiling against IA Strategic Priorities (Appendix C)

- More information required as way of data and evidence to justify ratings. In particular
  - No information was provided against strategic priorities – *Diversify Australia's economic capabilities* and *Build Australia's global competitive advantages.*

Cost Benefit Analysis (Appendix E)

BCR is 2.8. Methodology broadly looks robust with 3 exceptions that are likely to increase the BCR. But significantly more underlying information required to be sure. Demand modeling looks robust.

Particular issues:

Project mentions different stages, focuses on stage 2. This raises 2 questions:

- Need information on other stages to be clear that costs and benefits have been correctly apportioned to this stage and not hidden/taken from other stages where they are mutually dependent
- Need BCR information specifically applying to this stage, not other stages (some info seems to come from stage 1).
- 3 'flaws' in methodology – all likely to increase slightly the BCR: time period of evaluation short (24 v 30 years); no residual value included; and no externalities assessed

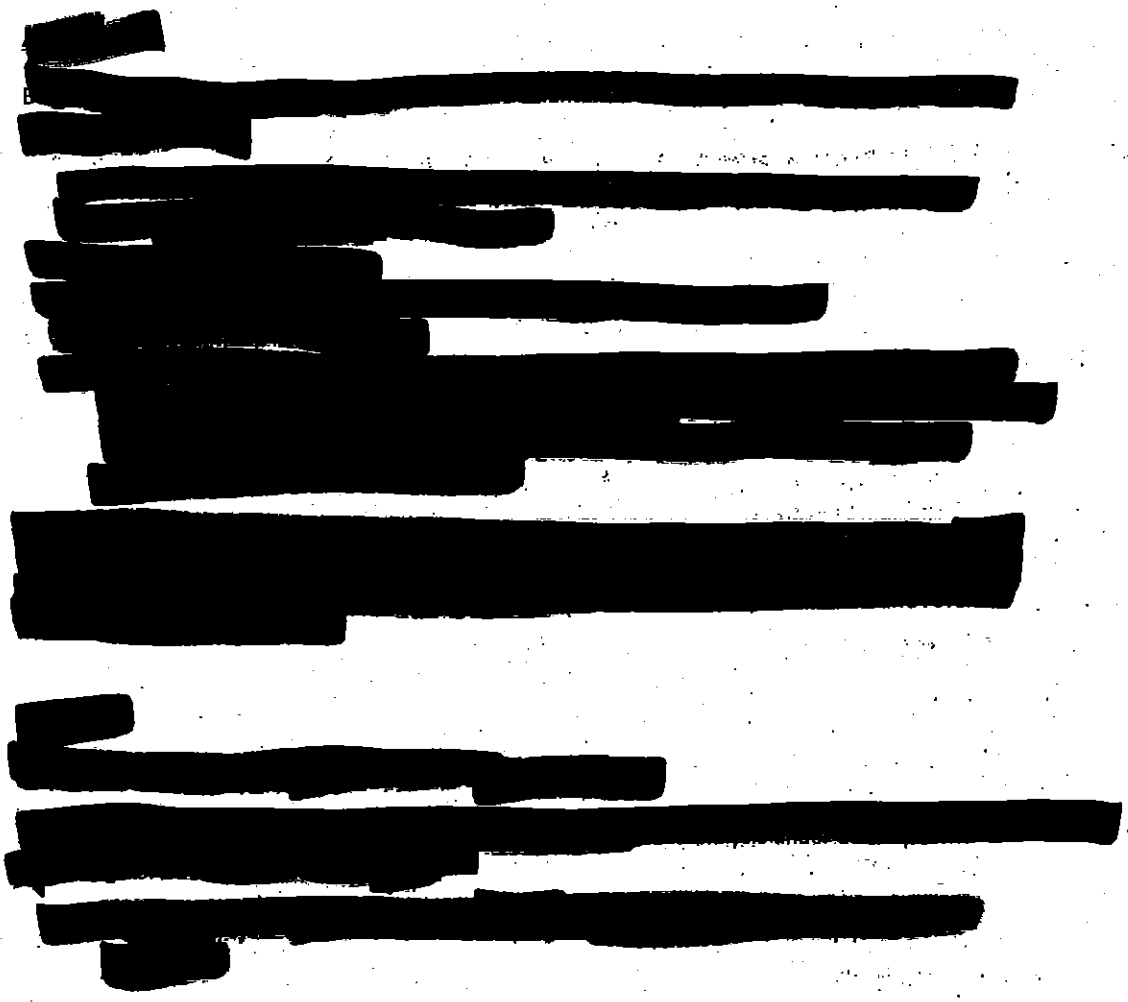
"While there is often insufficient information regarding the economic appraisal of this project, the November 2007 Report by SMEC (the consultants who conducted this economic appraisal) seems to be based on robust demand forecasts and based on a largely correct application of the RTA Guidelines. If the same methodology was used in Stage 2 of the project as was used in Stage 1 (which seems likely to be the case) it would appear that there is a sound basis for concluding that this project is economically viable. This is especially the case given the BCR is likely to be slightly understated due to the exclusion of a residual value and externality benefits and the time period of analysis being too short. All other flaws in the methodology are expected to have only a broadly neutral effect on the BCR."

Delivery (Appendix F)

Limited information provided against deliverability in order to make a reasonable assessment against the BAF evaluation criteria. In particular:

- Cost and fund sharing arrangements not shown in the submission. Clarification sought on maintenance costs – unlike Auslink BAF does not include maintenance.
- Capital cost – clarification required – cost benefit analysis contains a capital cost of $125m while submission refers to a Preliminary design report figure of $250m – require copy of report and any supporting analysis.

- Risks – need more detail –
  - submission refers to details that will need to resolved with stakeholders including Defence and other leaseholders along the route - what is the handling strategy for this?
  - Insufficient information on social impacts – have public consultations occurred etc.
  - Environmental Impact Statement – any preliminary information?



ACT Government Submission to Infrastructure Australia

Federal Highway Link to Monaro Highway Majura Parkway

Supplementary Information

JANUARY 2009

1. Background

The ACT Government had submitted a proposal for consideration by Infrastructure Australia (IA) for the construction of an efficient link between the Federal Highway and the Monaro Highway.

Following its initial appraisal, IA has sough further information and clarification. This paper provides summary of key information relating to the project, as well as response to specific questions and issues raised by IA.

2. The Proposal

The ACT is seeking funding to create an efficient freight transport, business travel and personal travel link between the Federal Highway and the Monaro Highway.

The joining of these national highways will provide a vital transport link relevant to a significant population and geographic region of Australia — from the south eastern coast, through the snowy mountains, the Nation's capital and further north to either side of the Great Divide.

In essence, the project will 'complete' the Federal Highway by linking the regions north and south of the Australian Capital Territory, as well as providing a highway bypass to Canberra.

The proposed Majura Parkway will also form part of the Territory's arterial road network, improving north-south transit, particularly to the Airport, and eastwards towards Queanbeyan.

The projects involves the construction of around 11 km of dual carriageway and 7 bridges.

Appendix A provides an aerial view showing the proposed link.

3. Benefits and Costs

3.1 Cost Estimates and Economic Analysis

Construction staging and cost estimates have been updated by SMEC Australia from a previous study undertaken in 2007. The capital cost of the project is estimated at $250 million over a three year construction period.

Economic appraisal of the project (also undertaken by SMEC Australia) has been updated to address feedback comments from IA. This is provided at **Appendix B**.

3.2 Approach to Analysis

The economic analysis is based on strategic and micro traffic modelling to estimate the effects of the proposed improvements.

Micro-simulation modelling was validated by traffic counts. The Paramics model was calibrated by adjusting the default parameters in the standard behavioural models to local conditions. This relied mainly on the RTA guidelines. The model validation is in line with the best practice minimum fits.

The total expected benefits are estimated by calculating the savings from the proposed option as compared to the base option ('do nothing') in terms of travel time, vehicle operating costs, accident costs, and environmental costs.

The 'generated traffic' in the study refers to the traffic diverted from elsewhere in the transport network – no induced demand is assumed[1].

The approach and the parameters used in the analysis are in accordance with the relevant guidelines.

3.3 Benefit to Cost Ratio

The economic analysis indicates a Benefit to Cost Ratio (BCR) of 4.05 over 30 years at 7 per cent discount rate. The analysis also provides BCR at discount rates of 4 per cent and 10 percent. The BCR is greater than 2.75 under all discount rates.

The Net Present Value (NPV) of benefits is estimated around $637 million. The benefits largely arise from a reduction in travel time (captured through decrease in vehicle operating costs in the analysis), and accident costs.

Traffic modelling highlights significant increase in traffic congestion, and consequently, increase in transit times under a 'do nothing' scenario. This is considerably alleviated through the construction of this link.

The micro-simulation modelling was also used to estimate changes in key performance indicators. Those are summarised in the economic analysis report. In general, the level of service improves from F under 'do nothing' scenario to B. Average speed on North-South transit is projected to increase from 18km/hr to 77km/hr, and travel time in AM peak hour is projected to reduce from 40 minutes under 'do nothing' scenario to less than 9 minutes in 2031.

In summary, the project will significantly alleviate congestion and reduce transit costs.

3.4 Overall ACT Treasury Assessment

The overall approach and methodology appears reasonable. The BCR estimates appear robust, and are likely to be understated, as externality benefits for the rest of the network have not been estimated. Those are likely to be significant given that the proposed link would provide a more efficient link for freight traffic which is currently using the main thoroughfare, hence reducing congestion on Northbourne Avenue.

[1] In the analysis, the 'study area' refers to the project road. Freight carriers (and other traffic) diverted from, for example, Northbourne Avenue because of a quicker link between the highways is referred to as the traffic originated from outside the study area.

4. Related Studies and Project Readiness

The project has been developed to Preliminary Sketch Plan (PSP) stage. **Appendices C and D** provide PSP documentation and the detailed plans, respectively.

A detailed Environmental Impact Study (EIS) is currently underway. A draft of the EIS will be ready in March and the final EIS in April 2009.

Initial consultation was undertaken during the initial design stage. The alignment and PSPs incorporate input from the stakeholders. Further consultation is now being undertaken as part of the statutory process.

5. Related Projects

A number of other projects have been completed, or are currently underway, that are linked to this project in terms of traffic flows. Those are:

- Single eastbound bypass lane at Dairy Road/Morshead Drive roundabout;
- Duplication of Morshead Drive between Dairy Road and Monaro Highway;
- Three phase traffic signals at Monaro Highway/Morshead Drive;
- Widening of Morsehead Drive between Pialligo Avenue and Fairbairn Avenue;
- Duplication of Fairbairn Avenue between Morshead Drive and Pialligo Avenue (including a new bridge over Woolshed Creek);
- Duplication of Pialligo Avenue between Morshead Dr and Fairbairn Avenue (including a new bridge at Woolshed Creek and signalised intersection at Fairbairn Avenue); and
- Duplication of Pialligo Avenue between Fairbairn Avenue/Beltana Road intersection and a new airport access (currently at Ulinga Place).

For the purposes of this economic analysis, it has been assumed that all of the above works will be completed prior to construction of the Majura Parkway.

The micro-simulation with updated traffic count information has highlighted that the performance of the proposed Federal Highway/Monaro Highway link could be improved further by removing emergent 'pinch points' at three roundabouts on the east-west transit. Without these improvements, the project has a negative impact on these parts of the east-west link. The improvements have not been included in the project scope at this stage. Further work is required to develop design solutions and cost estimates.

6. Response to Infrastructure Australia's Feedback[2]

6.1 Profiling Against IA's Strategic Priorities

More information required to justify ratings. In particular no information was provided against strategic priorities 'Diversify Australia's economic capabilities and build Australia's global competitive advantages'.

Ratings against strategic priorities have been completed and provided in **Appendix E**.

Analysis based on Australian Bureau of Statistics' national accounts data indicates that productivity of the transport and storage industry in the ACT has been declining. Had productivity in the transport and storage industry remained stable, the value added by this industry in 2007-08 would have been an additional $158 million.

The deteriorating performance of the transport and storage industry in the ACT adversely affects not just the ACT but south eastern New South Wales[3]. The project has significant benefits for the national freight transit system, essentially by providing a highway bypass to Canberra and improving the level of access to the Airport. The reduced costs of freight transit will potentially improve competitiveness of Australian exports. A short paper summarising this analysis is at **Appendix F**.

6.2 Cost Benefit Analysis

Project mentions different stages, focuses on Stage 2. This raises two questions:

- *Need information on other stages to be clear that costs and benefits have been correctly apportioned to this stage and not hidden/taken from other stages where ther are mutually dependent.*
- *Need BCR information specifically applying to this stage, not other stages (some info seems to come from Stage 1).*

As mentioned above in Section 5, from the ACT Government's perspective, the project forms part of a range of works around Airport, and hence was referred to as Stage 2. Reference to stages has now been removed to avoid confusion.

Undoubtedly, improvements at one point or part of the transport network have flow on effects on other parts of the network. For the purpose of this analysis, however, all the modelling assumes that those works have been completed, and that no costs or benefits from those works are attributed to this project.

- *Three flaws in the methodology – all likely to increase slightly the BCR: time period of evaluation short (24 vs 30 years); no residual value included; and no externalities assessed.*

[2] In this section, IA's feedback comments appear in italics.
[3] It is noteworthy that the national accounts attribute a proportion of the transit costs of freight passing through Canberra to the ACT.

Time period of evaluation has been extended to 30 years. The analysis also includes BCR over 40 years for reference. This has been included given that a significant part of the project involves bridges which have much longer economic life.

Residual value has been included in the analysis. Residual value at the end of the appraisal period of 30 years is estimated as the present value of benefits for the remaining life of the asset for the remaining 10 years of the assumed 40 year economic life, in accordance with the *National Guidelines for Transport System Management in Australia, Volume 3 (Appraisal of Initiatives)* by the Australian Transport Council (ATC).

The economic analysis includes an assessment of externality benefits, albeit, partially.

6.3 Delivery

- *Cost and fund sharing arrangements not shown in the submission. Clarification sought on maintenance costs – unlike Auslink BAF does not include maintenance.*
- *Capital cost – clarification required – cost benefit analysis contains a capital cost of $125 million while the submission refers to a preliminary design figure of $250 million – require copy of report and any supporting analysis.*

The capital cost estimated for the project in July 2008 was $242 million (excluding GST), as in Appendix C, Chapter 20. This has been escalated by 3 per cent to $250 million. The final cost of the project is likely to be higher subject to further cost escalation to tender time.

The ACT has already received funding commitment for $30 million from the Commonwealth Government under its Building Australia Program for works around the Airport precinct. Those works are an integral part of the proposed link project.

The funding being sought is therefore $220 million. As mentioned above, this does not include the cost of works required to address the impact of this project on east-west transit.

Maintenance costs, while included in the economic analysis, do not form part of the $250 million figure.

Risks – need more detail

In essence, the PSP report covers a number of the risks flagged by IA, and responds how these are being addressed. The report contains some useful information including environmental and cultural heritage assessments, geotechnical investigations, transport planning backgrounds and a progress on the public consultation and discussion with leaseholders and or key stakeholders to date.

In addition to the PSP report, there have been number of actions to address a number of project risks.

- An extended meeting with the Department of Defence in September 2008 to discuss the impact of the proposal on Defence lands and activities. A formal

approach to the Department of Defence is now being prepared to acquire necessary land

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- The full EIS is now underway and includes a statutory consultation component - a draft of the EIS will be ready in March and the final EIS in April 2009.

The target is to be in a position to go out for a construction tender in July 2009.

6.4 Infrastructure Australia's Minimum Requirements Template

This has been completed and provided at **Appendix G.**

Appendix List and Transmission Mode

Appendix A: Aerial view showing the proposed link (hard copy; courier)
Appendix B: Updated Economic Appraisal (electronic)
Appendix C: Preliminary Sketch Plan Documentation (hard copy; courier)
Appendix D: Preliminary Sketch Plan (detailed plans) (CD ROM; hard copy; courier)
Appendix E: Rating Against Strategic Priorities (electronic)
Appendix F: Transport and Storage Industry Productivity Analysis (electronic)
Appendix G: Minimum Information Requirement Template (electronic)

TS4-010/24

Australian Government
Infrastructure Australia

Ref: 09/087

13 January 2009

→ Marked for advice pls 14/1/10

Mr [redacted]
Executive Director
Finance and Budget Division
GPO Box 1020
Canberra ACT 2601

Dear Mr [redacted]

ACT Submissions

Thank you for your submission dated 21 December 2009 to Infrastructure Australia.

Your submissions will receive careful consideration during the next update of Infrastructure Australia's national long-term infrastructure pipeline.

Infrastructure Australia prefers that submissions be available for public consideration. If your submission contains material which you have marked as confidential, Infrastructure Australia may wish to discuss your reasons for seeking confidentiality with you further.

Yours sincerely

Michael Deegan
Infrastructure Coordinator

Infrastructure Australia
GPO Box 594, Canberra ACT 2601 Australia
Telephone (02) 8114 1900 facsimile (02) 8114 1932
www.infrastructure.gov.au

[redacted]

From: [redacted]
Sent: Thursday, 15 January 2009 11:07 AM
To: [redacted]
Cc: [redacted]n
Subject: FW: Majura Parkway- Infrastructure Australia bid
Attachments: Majura Pky_test.xls

Flag Status: Flagged

[redacted]

Kareen has just informed me that you still need further info regarding this project.
It seems to me that the items in question had been answered by Tony's email below (Highlighted in red).
I also understand that you have an electronic copy of the report which also covers some of the questions.
If you still require any further info please call me (on Tony's number) to discuss
[redacted]

From: [redacted][mailto:[redacted]@bigpond.com]
nt: Wednesday, 24 December 2008 12:09 AM
[redacted]
Cc: [redacted]
Subject: Majura Parkway- Infrastructure Australia bid

[redacted]

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I will copy you into the requirements I prepare for SMEC to do the economic assement work.

regards

[redacted]
Roads ACT
22/12/08

Majura Parkway Ultimate Configuration- Economic Analysis over 30 years

	Costs- $'000			Benefits- $'000				
Year	Cap Cost	Annual Maintenance	Cyclic Maintenance	VOC	Travel Time	Crash	Residual Value	Total
1							200,000	
2	50,000			761	14365	164		
3				1025	19342	167		
4	100,000			1324	24989	170		
5	100,000	250		1663	31386	173		
6		625		2047	38625	175		
7		625		2480	46808	178		
8		625		2970	56049	181		
9			2500	3523	66474	184		
10		625		3528	66572	186		
11		625		3533	66670	187		
12		625		3543	66768	188		
13		625		3549	66867	190		
14			2500	3554	66965	191		
15		625		3559	67064	193		
16		625		3564	67173	194		
17		625		3570	67262	196		
18		625		3575	67361	197		
19			2500	3580	67460	199		
20		625		3585	67560	200		
21		625		3591	67659	202		
22		625		3596	67759	203		
23		625		3601	67859	204		
24			2500	3606	67959	206		
25		625		3611	68059	208		
26		625		3616	68159	210		
27		625		3621	68259	212		
28		625		3626	68359	214		
29			2500	3631	68459	216		
30		625		3636	68559	218	80,000	
Total	**250000**	**12750**	**12500**	**91068**	**1716850**	**5606**	**80,000**	
PV@7%	**$191,260**	**$4,405**	**$3,865**	**$31,302**	**$590,238**	**$2,126**	**$10,509**	**$434,645**
NPV	**$434,645**							
B/C	**3.18**							

[redacted]

From: [redacted]
Sent: Thursday, 15 January 2009 11:21 AM
To: [redacted]
Cc: [redacted]
/O=ACTGOV/OU=CALLAM/CN=CMD/CN=[redacted]
Subject: RE: Majura Parkway Economic Analysis
Attachments: Comments and suggestions on Majura Parkway submission.doc

Flag Status: Flagged

[redacted]

As requested, I have attached my comments.

Amongst my comments, I would think the consistency and explanation of project life assumption is important. The executive summary does not talk about the project life of 40 years.

Other comments are included in the attached document. Happy to discuss, if required.

Regards

[redacted]

[redacted]
Manager, Transport Planning & Strategy
Office of Transport
Territory and Municipal Services

Phone: 61 (0)2 6207 1755 Fax: 61 (0)2 6207 6397

From: [redacted]
Sent: Wednesday, 14 January 2009 8:57 PM
To: [redacted]
Cc: [redacted]
Subject: FW: Majura Parkway Economic Analysis

[redacted]

Attached is the updated/revised economic analysis received from SMEC. We have short window of time tomorrow morning to provide any comment. Unfortunately, we need to provide it to IA by COB tomorrow. I would appreciate any observations/comments that you may have. Given the limited time, it may be useful to focus in the first instance on any glaring or vital omissions/errors/inconsistencies. Of course, feel free to make any drafting suggestions, if necessary.

[redacted]

Ditto, in case you log on.

[redacted] | Executive Director | Policy Coordination and Development Division | ACT Treasury
Phone: (02) 6207 0228 | [redacted]

From: [redacted] [mailto:[redacted]@smec.com]
Sent: Wednesday, 14 January 2009 7:30 PM

To: [redacted]
Cc: [redacted]
Subject: Majura Parkway Economic Analysis

Hi [redacted],

We apologise for the delay. Please find attached the updated economic analysis of the Majura Parkway. We've added benefits derived from the generated (or induced) traffic, environmental cost savings, and the residual value after 30 years (assuming a 40 year economic life), to come up with a BCR or 4.05.

Regards,

[redacted] | Senior Traffic Engineer
SMEC Australia Pty Ltd
Unit 2, 10 - 14 Wormald St , Symonston ACT 2609
T +61 2 6126 1958 | **F** +61 2 6126 1966 | **M** 0423 940 774
[redacted]@smec.com | www.smec.com

SMEC SNOWY MOUNTAINS ENGINEERING CORPORATION
High Quality Consulting and Development Solutions

Comments and suggestions on Majura Parkway submission

Comment: The report needs to provide strategic context for this major road development.

Suggestion:

Majura Parkway is a key eastern peripheral link that connects the airport, ACT's freight activities, and the ACT to NSW regions supporting their economic activities. The ACT's strategic transport plan identifies Majura Parkway as one of the two major peripheral links that is required to distribute traffic away from the Canberra Central. The Canberra Central is the Commonwealth employment hub. Traffic congestion within the Canberra Central adversely affects the productivity of the major Commonwealth employment centre.

Furthermore, Canberra's strategic land use planning document, ACT Spatial Plan, identifies future industrial and commercial employment corridor (Eastern Broadacre development) for which Majura Parkway is the key enabler. Consequently, the need for Majura Parkway is a vital component for both strategic freight movement and managing passenger transport.

Comment: Given the fact that assessors of IA are outside the ACT, reference to the vitality of Gungahlin development should be explained more.

Suggestion: Gungahlin is the newest district of the ACT that compliments the other three established districts of the ACT. The residential land supply of the three established districts is now highly limited. Hence, Gungahlin is the major source for the ACT to meet its pressing need for housing and to stimulate ACT's (land development based) economy.

Comment: The executive summary describes project life of 30 years. There is no reference of the analysis of 40 years within the executive summary. Also, the justification for assuming 40 years of project life needs to be explained.

Suggestion: The project involves with xx number of bridges and structures that have much longer engineering life. Moreover, the strategic nature of the link and the role it plays to support on going economic activities such as eastern broadacre development, the economic life of this major link needs to be far more than 30 years.

Comment: "Generated" traffic or "induced" traffic has negative connotation in assessment.

Suggestion: Change the phrases to more positive terminologies such as "increased transport access opportunities". In fact the additional consumer surplus is due to the following two reasons:

- the road is now enable more commercial/ industrial activities; and
- the external congestion is reduced, hence, provides ability to more trips that support additional activities.

Comment: I have noted the assessment is based on micro-simulation modelling. While I acknowledge its robustness for engineering assessments, for this particular submission "strategic transport modelling" would have been more appropriate. SMEC has the capability through TransCAD. Mainly because, the IA encourages quantification of wider network impacts. TransCAD modelling would have enabled to quantify wider network benefits and make it part of the cost-benefit analysis. This approach would have increased the BCR further.

[redacted]

From: [redacted]@infrastructure.gov.au]
Sent: Friday, 16 January 2009 10:23 AM
To: [redacted]
Cc: [redacted]
Subject: RE: ACT Government Submission [SEC=UNCLASSIFIED]

Flag Status: Flagged

Thanks [redacted]. As discussed, please email any outstanding information (including delivery table of minimum information requirements) through electronically to me and [redacted] by the end of today and courier relevant appendices to our office address below.

Regards

[redacted]
Infrastructure Australia
Level 21 Deutsche Bank Building
126 Phillip Street
SYDNEY NSW 2000
Telephone: (+612) 8114 1914
Fax: (+612) 8114 1932
Email: [redacted]@infrastructure.gov.au

From: [redacted] [mailto:[redacted]@act.gov.au]
Sent: Thursday, 15 January 2009 17:30
To: [redacted]
Cc: [redacted]
Subject: ACT Government Submission

Paul

Please see the attached updated material in support of the proposal to link the Federal Highway to the Monaro Highway – Majura Parkway.

The main word document should provide an executive summary of the project, response to the feedback from IA, and further information. The economic appraisal has been done again to address the issues raised in the feedback document provided before Christmas.

There are seven appendices, two of which are attached to this email as follows:

Appendix B: The Economic Analysis Report prepared by SMEC Australia;

Appendix G: Minimum Information Requirement Template

Three appendices (Appendix A, C and D) are rather large documents. Those are being sent through courier in CD and/or hard copy format.

Two appendices (Appendix E and F) will be forwarded in the morning through email. I apologise for the delay in sending these.

Thanks once again for your feedback and opportunity to provide further information. Please let me know if you require any further information or clarification.

[redacted] | Executive Director | Policy Coordination and Development Division | ACT Treasury

Phone: (02) 6207 0228 | [redacted]

<<Executive Summary 15 January 2009 — Final.doc>> <<Appendix B — Majura Parkway Economic Analysis Report 2009-01-15 rev 5a.pdf>> <<Appendix G —IA Minimum Information Requirements Template.pdf>>

[redacted]

From: [redacted]
Sent: Thursday, 15 January 2009 12:47 PM
To: [redacted]
Cc: [redacted]

Subject: RE: Majura Parkway Economic Analysis

Flag Status: Flagged

[redacted]

In addition to Kuga's comments of which I agree, one of IA concerns was that the Majura Parkway project was only a portion of the original economic analysis and it was difficult to ascertain and separate that component from the initial analysis

We have updated that analysis, but in glancing at this report (for those outside the ACT), it is still a little hard to identify actually what component is being put forward, the graphics still show the effects of all projects, and does not separately identify the Majura Parkway.

.. may be beneficial to separately identify those works completed (as detailed), and the additional Majura Parkway works and how these add value and compliment the existing roads upgrades. Obviously the Majura Parkway will also provide benefits to the completed works and existing road networks. Better figures and descriptions may be required to resolve this.

I note that IA actually wanted all projects assessed over the 30 year timeframe for comparability purposes, but including the 40 years is beneficial.

Other items that may need to addressed in our response is:

- Fund Sharing Arrangements (ie. Auslink) - I think we need to identify which component is seeking Auslink funding
- Project risks and consultation may also need to separately addressed, although environmental externalities were picked up, social and other risks are not.

I will continue to review in more detail - this just follows my initial cursory glance.

[redacted]

From: [redacted]
Sent: Thursday, 15 January 2009 11:21 AM
To: [redacted]
Cc: [redacted]
Subject: RE: Majura Parkway Economic Analysis

[redacted]

As requested, I have attached my comments.

Amongst my comments, I would think the consistency and explanation of project life assumption is important. The executive summary does not talk about the project life of 40 years.

Other comments are included in the attached document. Happy to discuss, if required.

Regards

[redacted]

[redacted]
Manager, Transport Planning & Strategy
Office of Transport
Territory and Municipal Services
[redacted]
Phone: 61 (0)2 6207 1755 Fax: 61 (0)2 6207 6397

From: [redacted]
Sent: Wednesday, 14 January 2009 8:57 PM
To: [redacted]
Cc: [redacted]
Subject: FW: Majura Parkway Economic Analysis

[redacted]

Attached is the updated/revised economic analysis received from SMEC. We have short window of time tomorrow morning to provide any comment. Unfortunately, we need to provide it to IA by COB tomorrow. I would appreciate any observations/comments that you may have. Given the limited time, it may be useful to focus in the first instance on any glaring or vital omissions/errors/inconsistencies. Of course, feel free to make any drafting suggestions, if necessary.

[redacted]

Ditto, in case you log on.

[redacted] | Executive Director | Policy Coordination and Development Division | ACT Treasury
Phone: (02) 6207 0228 | [redacted]

From: [redacted] [mailto:[redacted]@smec.com]
Sent: Wednesday, 14 January 2009 7:30 PM
To: [redacted]
Cc: [redacted]
Subject: Majura Parkway Economic Analysis

Hi [redacted]

We apologise for the delay. Please find attached the updated economic analysis of the Majura Parkway. We've added benefits derived from the generated (or induced) traffic, environmental cost savings, and the residual value after 30 years (assuming a 40 year economic life), to come up with a BCR or 4.05. [redacted]

Regards,

[redacted] | Senior Traffic Engineer
SMEC Australia Pty Ltd
Unit 2, 10 - 14 Wormald St , Symonston ACT 2609
T +61 2 6126 1958 | F +61 2 6126 1966 | M 0423 940 774
jerome.catbagan@smec.com | www.smec.com

SMEC SNOWY MOUNTAINS ENGINEERING CORPORATION
High Quality Consulting and Development Solutions

[redacted]

From: [redacted]
Sent: Thursday, 15 January 2009 6:41 PM
To: [redacted]
Cc: [redacted]
/O=ACTGOV/OU=CALLAM/CN=CMD/CN=[redacted]
Subject: RE: Executive Summary 15 January 2009.doc

Flag Status: Flagged

[redacted]

Thanks for your prompt and comprehensive reply. I understand your caution whilst agreeing with Tony's comment that tactically it may be prudent to submit for $250m. However, let's keep our fingers crossed that we get sufficient funds from the Commonwealth for the life of the project. I remain concerned that the ACT may be required to provide additional funds for this project at some stage, and it will be funds we can ill afford.

Regards

[redacted]

ecutive Director, Community and Infrastructure Services
Department of Territory and Municipal Services, ACT
Tel: (02) 6205 2483
Fax: (02) 6207 6034
[redacted]

From: [redacted]
Sent: Thursday, 15 January 2009 6:34 PM
To: [redacted]
Cc: [redacted]
Subject: RE: Executive Summary 15 January 2009.doc

[redacted]

Unfortunately, I had sent the response to IA before receiving your message. Of course, we could provide a change, t we do not think that it could be justified.

I understand an MOU was signed between the ACT and the Commonwealth in relation to the $30 million. While I have not been able to get a copy of the MOU, I have received a copy of the Federal Minister's media release in October 2007.

The media release specifically refers to a number of projects which are included in the project scope that we are putting forward now. This is clear from the description of the project and sketch plans. For example, grade separation of the Monaro Highway and Pialligo Avenue is included in the current proposal. The media release also refers to ACT Government contribution of $10 million for those projects, but we have not adjusted for that. Also see below (in blue) an extract from Tony Gill's email which alludes to reducing our bid.

It is worth noting the 2009/10 Federal budget will have $30 million for Airport Roads - Majura Parkway Stage 1 as part of the Building Australia Program with the Federal Minister recently confirming this by letter and the Chief Minister as Minister for Transport signing off on an MOU for this program over the next year 5 year period- technically we could limit our application to $220 million to the Building Australia Fund - tactically I doubt we would do this-

For reasons mentioned above, it is difficult to support the tactic of bidding for the full project amount when there is a clear indication that part of it has already received funding commitment. Further, I understand that some works that originally formed part of the project scope (and included in the original $242 million estimate) have now been removed following consultation and further design work. In effect, the total project cost should be further reduced by around $25 million.

I hope this clarifies the situation.

[redacted] Executive Director | Policy Coordination and Development Division | ACT Treasury
Phone: (02) 6207 0228 |[redacted]

-----Original Message-----
From: [redacted]
Sent: Thursday, [redacted]
To: [redacted]
Cc: [redacted]
Subject: FW: Executive Summary 15 January 2009.doc

[redacted]

My recollection of the $250m is that it is in addition to the $30m, which is for a separate and a separate is for a different section of the project around the airport roads. I think at this stage it would be propitious to include the $250m figure to be on the safe side. If IA believe they have already funded $30m of the $250m, I imagine they could quite quickly provide evidence to support that claim and we would be happy to reduce our request to $220m. I would suggest that we submit for $250m based on an understanding that the $30m is separate. It would be very hard for the ACT to find $30m to complete the project if we submit for $220 when we required $250. I understand we have a contingency in the $250m, but we need to keep that in tact for the myriad reasons we know cause major infrastructure projects to use their contingency.

Regards

[redacted]
Executive Director, Community and Infrastructure Services
Department of Territory and Municipal Services, ACT
Tel: (02) 6205 2483
Fax: (02) 6207 6034
[redacted]

-----Original Message-----
From: [redacted]
Sent: Thursday, 15 January 2009 4:21 PM
To: [redacted]
Subject: FW: Executive Summary 15 January 2009.doc

[redacted] could you let [redacted] know if you have any comments or are OK with the attached.

[redacted]

-----Original Message-----
From: [redacted]
Sent: Thursday, 15 January 2009 3:52 PM
To: [redacted]
Cc: [redacted]
Subject: Executive Summary 15 January 2009.doc

[redacted] Attached is the summary document as mentioned earlier. Would appreciate any quick comment/observation.

[redacted] have incorporated changes from our discussion eralier today. Any further comment?

[redacted]

[redacted]

From: [redacted]
Sent: Friday, 16 January 2009 1:36 PM
To: [redacted]
Cc: [redacted]
Subject: FW: ACT Government Submission
Attachments: Executive Summary 15 January 2009 — Final.doc; Appendix B — Majura Parkway Economic Analysis Report 2009-01-15 rev 5a.pdf; Appendix G —IA Minimum Information Requirements Template.pdf

[redacted]

Please see below for what we have sent to IA. The Executive Summary (word document) may be particularly useful for seeing how the project has been framed.

[redacted] | Executive Director | Policy Coordination and Development Division | ACT Treasury

Phone: (02) 6207 0228 | [redacted]

From: [redacted]
Sent: Thursday, 15 January 2009 5:30 PM
To: [redacted]@infrastructure.gov.au
Cc: [redacted]
Subject: ACT Government Submission

Paul

Please see the attached updated material in support of the proposal to link the Federal Highway to the Monaro Highway – Majura Parkway.

The main word document should provide an executive summary of the project, response to the feedback from IA, and further information. The economic appraisal has been done again to address the issues raised in the feedback document provided before Christmas.

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Thanks once again for your feedback and opportunity to provide further information. Please let me know if you require any further information or clarification.

[redacted] | Executive Director | Policy Coordination and Development Division | ACT Treasury

Phone: (02) 6207 0228 | [redacted]

<<...>> <<...>> <<...>>

ACT Government Submission to Infrastructure Australia

Federal Highway Link to Monaro Highway Majura Parkway

Supplementary Information

JANUARY 2009

1. Background

The ACT Government had submitted a proposal for consideration by Infrastructure Australia (IA) for the construction of an efficient link between the Federal Highway and the Monaro Highway.

Following its initial appraisal, IA has sough further information and clarification. This paper provides summary of key information relating to the project, as well as response to specific questions and issues raised by IA.

2. The Proposal

The ACT is seeking funding to create an efficient freight transport, business travel and personal travel link between the Federal Highway and the Monaro Highway.

The joining of these national highways will provide a vital transport link relevant to a significant population and geographic region of Australia — from the south eastern coast, through the snowy mountains, the Nation's capital and further north to either side of the Great Divide.

In essence, the project will 'complete' the Federal Highway by linking the regions north and south of the Australian Capital Territory, as well as providing a highway bypass to Canberra.

The proposed Majura Parkway will also form part of the Territory's arterial road network, improving north-south transit, particularly to the Airport, and eastwards towards Queanbeyan.

The projects involves the construction of around 11 km of dual carriageway and 7 bridges.

Appendix A provides an aerial view showing the proposed link.

3. Benefits and Costs

3.1 Cost Estimates and Economic Analysis

Construction staging and cost estimates have been updated by SMEC Australia from a previous study undertaken in 2007. The capital cost of the project is estimated at $250 million over a three year construction period.

Economic appraisal of the project (also undertaken by SMEC Australia) has been updated to address feedback comments from IA. This is provided at **Appendix B**.

3.2 Approach to Analysis

The economic analysis is based on strategic and micro traffic modelling to estimate the effects of the proposed improvements.

Micro-simulation modelling was validated by traffic counts. The Paramics model was calibrated by adjusting the default parameters in the standard behavioural models to local conditions. This relied mainly on the RTA guidelines. The model validation is in line with the best practice minimum fits.

The total expected benefits are estimated by calculating the savings from the proposed option as compared to the base option ('do nothing') in terms of travel time, vehicle operating costs, accident costs, and environmental costs.

The 'generated traffic' in the study refers to the traffic diverted from elsewhere in the transport network – no induced demand is assumed[1].

The approach and the parameters used in the analysis are in accordance with the relevant guidelines.

3.3 Benefit to Cost Ratio

The economic analysis indicates a Benefit to Cost Ratio (BCR) of 4.05 over 30 years at 7 per cent discount rate. The analysis also provides BCR at discount rates of 4 per cent and 10 percent. The BCR is greater than 2.75 under all discount rates.

The Net Present Value (NPV) of benefits is estimated around $637 million. The benefits largely arise from a reduction in travel time (captured through decrease in vehicle operating costs in the analysis), and accident costs.

Traffic modelling highlights significant increase in traffic congestion, and consequently, increase in transit times under a 'do nothing' scenario. This is considerably alleviated through the construction of this link.

The micro-simulation modelling was also used to estimate changes in key performance indicators. Those are summarised in the economic analysis report. In general, the level of service improves from F under 'do nothing' scenario to B. Average speed on North-South transit is projected to increase from 18km/hr to 77km/hr, and travel time in AM peak hour is projected to reduce from 40 minutes under 'do nothing' scenario to less than 9 minutes in 2031.

In summary, the project will significantly alleviate congestion and reduce transit costs.

3.4 Overall ACT Treasury Assessment

The overall approach and methodology appears reasonable. The BCR estimates appear robust, and are likely to be understated, as externality benefits for the rest of the network have not been estimated. Those are likely to be significant given that the proposed link would provide a more efficient link for freight traffic which is currently using the main thoroughfare, hence reducing congestion on Northbourne Avenue.

---

[1] In the analysis, the 'study area' refers to the project road. Freight carriers (and other traffic) diverted from, for example, Northbourne Avenue because of a quicker link between the highways is referred to as the traffic originated from outside the study area.

4. Related Studies and Project Readiness

The project has been developed to Preliminary Sketch Plan (PSP) stage. **Appendices C and D** provide PSP documentation and the detailed plans, respectively.

A detailed Environmental Impact Study (EIS) is currently underway. A draft of the EIS will be ready in March and the final EIS in April 2009.

Initial consultation was undertaken during the initial design stage. The alignment and PSPs incorporate input from the stakeholders. Further consultation is now being undertaken as part of the statutory process.

5. Related Projects

A number of other projects have been completed, or are currently underway, that are linked to this project in terms of traffic flows. Those are:

- Single eastbound bypass lane at Dairy Road/Morshead Drive roundabout;
- Duplication of Morshead Drive between Dairy Road and Monaro Highway;
- Three phase traffic signals at Monaro Highway/Morshead Drive;
- Widening of Morsehead Drive between Pialligo Avenue and Fairbairn Avenue;
- Duplication of Fairbairn Avenue between Morshead Drive and Pialligo Avenue (including a new bridge over Woolshed Creek);
- Duplication of Pialligo Avenue between Morshead Dr and Fairbairn Avenue (including a new bridge at Woolshed Creek and signalised intersection at Fairbairn Avenue); and
- Duplication of Pialligo Avenue between Fairbairn Avenue/Beltana Road intersection and a new airport access (currently at Ulinga Place).

For the purposes of this economic analysis, it has been assumed that all of the above works will be completed prior to construction of the Majura Parkway.

The micro-simulation with updated traffic count information has highlighted that the performance of the proposed Federal Highway/Monaro Highway link could be improved further by removing emergent 'pinch points' at three roundabouts on the east-west transit. Without these improvements, the project has a negative impact on these parts of the east-west link. The improvements have not been included in the project scope at this stage. Further work is required to develop design solutions and cost estimates.

6. Response to Infrastructure Australia's Feedback[2]

6.1 Profiling Against IA's Strategic Priorities

More information required to justify ratings. In particular no information was provided against strategic priorities 'Diversify Australia's economic capabilities and build Australia's global competitive advantages'.

Ratings against strategic priorities have been completed and provided in **Appendix E.**

Analysis based on Australian Bureau of Statistics' national accounts data indicates that productivity of the transport and storage industry in the ACT has been declining. Had productivity in the transport and storage industry remained stable, the value added by this industry in 2007-08 would have been an additional $158 million.

The deteriorating performance of the transport and storage industry in the ACT adversely affects not just the ACT but south eastern New South Wales[3]. The project has significant benefits for the national freight transit system, essentially by providing a highway bypass to Canberra and improving the level of access to the Airport. The reduced costs of freight transit will potentially improve competitiveness of Australian exports. A short paper summarising this analysis is at **Appendix F.**

6.2 Cost Benefit Analysis

Project mentions different stages, focuses on Stage 2. This raises two questions:

- *Need information on other stages to be clear that costs and benefits have been correctly apportioned to this stage and not hidden/taken from other stages where these are mutually dependent.*
- *Need BCR information specifically applying to this stage, not other stages (some info seems to come from Stage 1).*

As mentioned above in Section 5, from the ACT Government's perspective, the project forms part of a range of works around Airport, and hence was referred to as Stage 2. Reference to stages has now been removed to avoid confusion.

Undoubtedly, improvements at one point or part of the transport network have flow on effects on other parts of the network. For the purpose of this analysis, however, all the modelling assumes that those works have been completed, and that no costs or benefits from those works are attributed to this project.

- *Three flaws in the methodology – all likely to increase slightly the BCR: time period of evaluation short (24 vs 30 years); no residual value included; and no externalities assessed.*

[2] In this section, IA's feedback comments appear in italics.
[3] It is noteworthy that the national accounts attribute a proportion of the transit costs of freight passing through Canberra to the ACT.

Time period of evaluation has been extended to 30 years. The analysis also includes BCR over 40 years for reference. This has been included given that a significant part of the project involves bridges which have much longer economic life.

Residual value has been included in the analysis. Residual value at the end of the appraisal period of 30 years is estimated as the present value of benefits for the remaining life of the asset for the remaining 10 years of the assumed 40 year economic life, in accordance with the *National Guidelines for Transport System Management in Australia, Volume 3 (Appraisal of Initiatives)* by the Australian Transport Council (ATC).

The economic analysis includes an assessment of externality benefits, albeit, partially.

6.3 Delivery

- *Cost and fund sharing arrangements not shown in the submission. Clarification sought on maintenance costs – unlike Auslink BAF does not include maintenance.*
- *Capital cost – clarification required – cost benefit analysis contains a capital cost of $125 million while the submission refers to a preliminary design figure of $250 million – require copy of report and any supporting analysis.*

The capital cost estimated for the project in July 2008 was $242 million (excluding GST), as in Appendix C, Chapter 20. This has been escalated by 3 per cent to $250 million. The final cost of the project is likely to be higher subject to further cost escalation to tender time.

The ACT has already received funding commitment for $30 million from the Commonwealth Government under its Building Australia Program for works around the Airport precinct. Those works are an integral part of the proposed link project.

The funding being sought is therefore $220 million. As mentioned above, this does not include the cost of works required to address the impact of this project on east-west transit.

Maintenance costs, while included in the economic analysis, do not form part of the $250 million figure.

Risks – need more detail

In essence, the PSP report covers a number of the risks flagged by IA, and responds how these are being addressed. The report contains some useful information including environmental and cultural heritage assessments, geotechnical investigations, transport planning backgrounds and a progress on the public consultation and discussion with leaseholders and or key stakeholders to date.

In addition to the PSP report, there have been number of actions to address a number of project risks.

- An extended meeting with the Department of Defence in September 2008 to discuss the impact of the proposal on Defence lands and activities. A formal

approach to the Department of Defence is now being prepared to acquire necessary land

- A workshop in December with Senior Environmental Managers from the ACT Government's Parks Conservation and Lands and the ACT Commissioner for Sustainability and the Environment to identify a management strategy to protect high value native grasslands and areas of Yellow Box Gums.
- A request to the project team to prepare a project target out turn cost using the recently released *Best Practice manual in cost estimation for public road and rail infrastructure projects* by Evans and Peck prepared for the Federal Department of Infrastructure.
- The full EIS is now underway and includes a statutory consultation component - a draft of the EIS will be ready in March and the final EIS in April 2009.

The target is to be in a position to go out for a construction tender in July 2009.

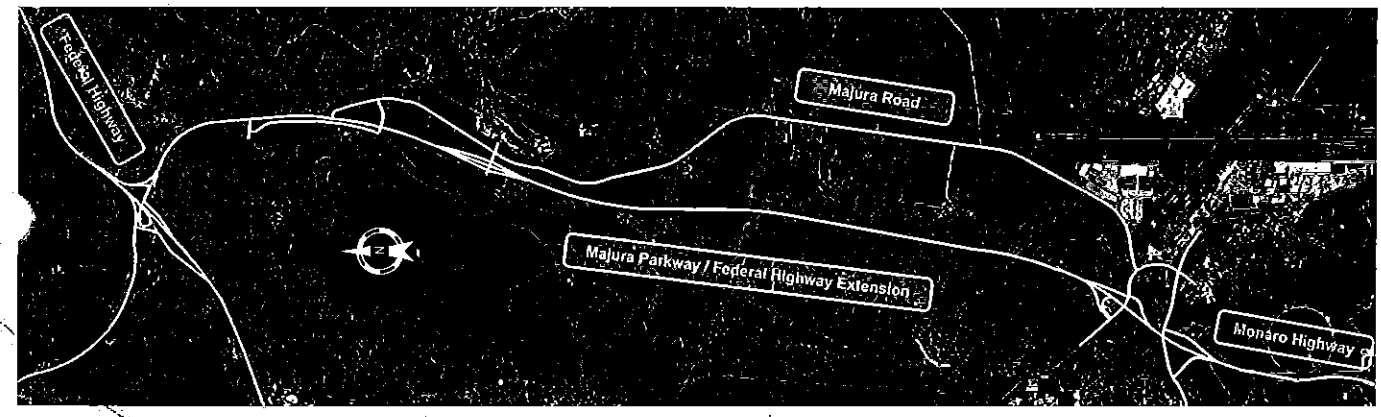
6.4 Infrastructure Australia's Minimum Requirements Template

This has been completed and provided at **Appendix G.**

Appendix List and Transmission Mode

Appendix A: Aerial view showing the proposed link (hard copy; courier)
Appendix B: Updated Economic Appraisal (electronic)
Appendix C: Preliminary Sketch Plan Documentation (hard copy; courier)
Appendix D: Preliminary Sketch Plan (detailed plans) (CD ROM; hard copy; courier)
Appendix E: Rating Against Strategic Priorities (electronic)
Appendix F: Transport and Storage Industry Productivity Analysis (electronic)
Appendix G: Minimum Information Requirement Template (electronic)

SMEC



MAJURA PARKWAY / FEDERAL HIGHWAY EXTENSION ECONOMIC ANALYSIS REPORT

14th January 2009

AUSTRALASIA | MIDDLE EAST | AFRICA | PACIFIC

Document / Report Control Form

Project Name: **Majura Parkway Economic Analysis**

Project number: **3002180**

Report for: **ACT Procurement Solutions**

PREPARATION, REVIEW AND AUTHORISATION

Revision	Date	Prepared by	Reviewed by	Approval for Issue
0	20/09/2007	Khaled Abbas	Craig Sutton	Tim Hahn
1	27/09/2007	Khaled Abbas	Craig Sutton	Tim Hahn
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Executive Summary

Introduction

The roads in the vicinity of the airport play an important role for the ACT economy, the surrounding New South Wales (NSW) region and nationally given the importance of the Monaro Highway as a freight route connection to the Federal Highway. Traffic in the vicinity of the Canberra airport has increased over the last few years with the continuing growth in Gungahlin and increased employment at the airport.

This report presents the findings of assessing the implementation of the Majura Parkway to improve traffic flows on the road network in the Majura Valley.

Majura Parkway

The Majura Parkway is proposed to be constructed in the Majura Valley on the east side of Canberra. As well as its metropolitan functions, the Majura Parkway is important in enabling traffic from Sydney and other northern destinations to the Monaro region to bypass Canberra.

In selecting a route for the Parkway, several considerations where taken into account:

- To protect the important natural and cultural heritage features of the Majura Valley;
- To provide access to all the existing and future development in the Majura Valley from Majura Road;
- To make provision for a possible future very high speed train (VHST);
- To avoid major constraints on potentially important long-term land uses, such as the upgrading of facilities at Canberra International Airport;
- To provide for a future Northcott Drive connection to the Central National Area while limiting traffic volumes on Fairbairn Avenue through Campbell;
- To limit the impacts on other existing land uses where practicable; and
- To construct the road at a realistic cost to the community

It comprises a number of ramps, interchanges, and structures, with several major bridges. The total length is about 11 km of dual carriageway linking the Monaro Highway and the Federal Highway.

Objective

The main objective of this study is to update the previous economic analysis which was undertaken as part of the Pialligo Avenue Options review (Nov. 2007) of alignment options and determine the economic feasibility of constructing the Majura Parkway. This revised study reflects up to date construction staging and construction cost estimates.

Results

Micro-simulation runs for the years 2009, 2012, 2021 and 2031 were conducted using the Paramics model for the existing road network as well as for the considered network improvement option. The overall network performance indicators for each of the micro-simulation runs are displayed. These include the amount of released vehicles and their percentage relative to demand volumes, vehicle hours travelled and vehicles kilometres travelled. The output results look logical with a reduced proportion of demand being released in future years.

Currently, most of the traffic demand can enter into the network without causing spill over to neighbouring roads. However, such traffic is operating within the network at low level of service i.e. F. If the current network remains without any intervention, it is expected that with increasing traffic demands, there will be queues at the entry points to the network and spill over to neighbouring roads. This will result into peak spreading and delays to a larger number of vehicles. This will be also accompanied by very low Level of Service (LOS) performance of traffic using the Pialligo network.

The proposed road network improvement is expected to avoid the occurrence of the first problem, namely the spill-over of traffic congestion into neighbouring roads as well as the prolonging of the peak traffic hour.

SMEC identified the following stakeholders as potential beneficiaries to the project:

- Canberra Airport Group
- ACT Government
- ACT Government (Land Sales)
- Department of Defence
- RTA & Queanbeyan City Council
- Department of Transport & Regional Services (Auslink)
- National Capital Authority

In order to assess and compare the considered option, an economic analysis of the costs and benefits of this option compared to maintaining the existing road network without future interventions ('do nothing' scenario) was undertaken over a 30 year period. An estimate of construction, annual and cyclic maintenance costs for the considered option was conducted. Benefits resulting as savings in Vehicle Operation Costs, Travel Time Costs, and Accident Costs were estimated for each option. Additionally, benefits derived from the generated or 'diverted' traffic, environmental cost savings, and the project's residual value after 30 years have also been considered. The Net Present Value (NPV) and Benefit Cost Ratio (BCR) were then computed for each of the three options using three different discount rates namely 4, 7%, and 10%.

Conclusions

The results of the cost-benefit analysis show that the construction of Majura Parkway can be considered as economically feasible. This is based on the two obtained key performance indicators namely the Net Present Value (NPV) and the Benefit Cost Ratio (BCR). The upgraded network produces a NPV equating to over $636 million after 30 years at a 7% discount rate. The estimated BCR is 4.05 assuming the same appraisal period and discount rate.

1 Introduction

The roads in the vicinity of the airport play an important role for the ACT economy, the surrounding New South Wales (NSW) region and nationally given the importance of the Monaro Highway as a freight route connection to the Federal Highway. Traffic in the vicinity of the Canberra airport has increased over the last few years with the continuing growth in Gungahlin and increased employment at the airport.

This report presents the findings of assessing the implementation of the Majura Parkway to improve traffic flows on the road network in the area between Duntroon and the Canberra Airport. At this location five major arterials converge namely Majura Road, Pialligo Avenue, Monaro Highway, Fairbairn Avenue and Morshead Drive. The affected area also extends North up to the Federal Highway to the north as the proposed Majura Parkway runs parallel to the west of the existing Majura Road.

In addition, further increase in traffic volumes is expected when Gungahlin is fully established, further development has taken place in the surrounding NSW region and the employment at the airport reaches levels as outlined in its master plan. In this context, the provision of relieving measures for the increased traffic in the vicinity of the airport and the Majura Valley is an important initiative that will benefit the region.

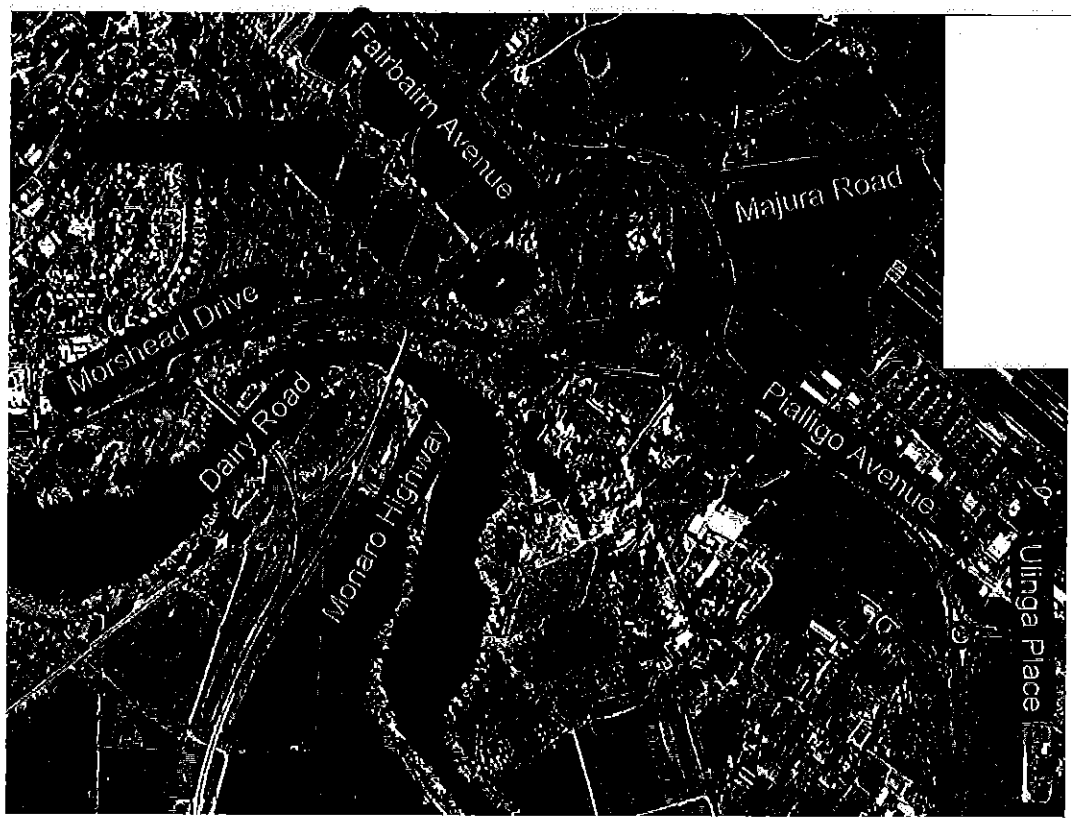

Figure 1 – Southern portion of the study area showing the convergence of main arterial roads

1.1 Majura Parkway

The Majura Parkway is proposed to be constructed in the Majura Valley on the east side of Canberra. As well as its metropolitan functions, the Majura Parkway is important in enabling traffic from Sydney and other northern destinations to the Monaro region to bypass Canberra.

In selecting a route for the Parkway, several considerations where taken into account:

- To protect the important natural and cultural heritage features of the Majura Valley;
- To provide access to all the existing and future development in the Majura Valley from Majura Road;

- To make provision for a possible future very high speed train (VHST);
- To avoid major constraints on potentially important long-term land uses, such as the upgrading of facilities at Canberra International Airport;
- To provide for a future Northcott Drive connection to the Central National Area while limiting traffic volumes on Fairbairn Avenue through Campbell;
- To limit the impacts on other existing land uses where practicable; and
- To construct the road at a realistic cost to the community

The Majura Parkway comprises a number of ramps, interchanges, and structures. The total length is about 11 km of dual carriageway linking the Monaro Highway and the Federal Highway. For each carriageway, cross sections of 2 x 3.5 m traffic lanes 2.5 m roadside shoulder and 1.0 m offside shoulder are provided for.

At the southern end from the Monaro Highway to Fairbairn Avenue, the cross section is chosen to suit the narrow road corridor available between Oval No. 1 and RMC Duntroon, and to restrict the impact on the existing trees in the vicinity. A cross section of 4 x 3.5 m traffic lanes (2 in each direction) and 2 m or 2.5 m shoulders with kerbing either side and with no central median is proposed. This is the only section of the Monaro Highway and Majura Parkway with a median barrier. This would reflect the short section between intersections and the more developed nature of this section of road. The shoulders are suitable for on road cycling. Progressing north from Fairbairn Avenue a cross section comprising dual carriageways of 2 x 3.5 m traffic lanes with 2 m outer and 1 m inner shoulders and a wide central median is proposed. The central median width varies. Again the shoulder will be suitable for on road cycling.

Major bridges included in the Majura Parkway are as follows:

- Majura Parkway Twin Bridges over Molonglo River
- Hopkins Drive Underpass
- Fairbairn Avenue Overbridge
- Woolshed Creek Structures (at Approx Stn 3500)
- Property Access Underpass at Stn 6900
- Twin Access Road Overbridges
- Access Road Overbridge

1.2 Background

Prior to this analysis, SMEC Australia was commissioned by the ACT Government to design the following roadworks:

- Duplication of Morshead Drive from Dairy Road to Pialligo Avenue; and
- Duplication of Pialligo Avenue from Morshead Drive to Ulinga Place.

During execution of the above works, SMEC was also commissioned to conduct an economic analysis for the considered road network improvement.

During the Preliminary Sketch Plan (PSP) phase of this project, traffic modelling suggested that an alternative scope of works would result in a greater alleviation of traffic congestion for the region. A Preliminary Sketch Plan submission was subsequently completed for this alternative scope of works which included:

- Single eastbound bypass lane at Dairy Road/Morshead Drive roundabout, thus enhancing the capacity of the roundabout. This will be accompanied (in its ultimate configuration) by part time signals at the roundabout;
- Duplication Morshead Drive between Dairy Road and Monaro Highway;
- Three phase traffic signals at Monaro Highway/Morshead Drive with banned right turns from Morshead to Monaro and from Pialligo to Morshead. This will replace the current roundabout;
- Widening of Morsehead Drive between Pialligo Ave and Fairbairn Ave;
- Duplication of Fairbairn Avenue between Morshead Drive and Pialligo Ave (including a new bridge over Woolshed Creek.
- Duplication of Pialligo Ave between Morshead Dr and Fairbairn Ave (including a new bridge at Woolshed Ck and signalised intersection at Fairbairn Ave)

A separate project being undertaken by Hughes Trueman relates to this work and includes:

- Duplication of Pialligo Ave between Fairbairn Ave/Beltana Road intersection and a new airport access (Currently at Ulinga Place)

For the purposes of this economic analysis, it has been assumed that all of the above works will be completed prior to construction of the Majura Parkway.

After completion of the PSP design, a number of events occurred that have instigated the need to re-assess the priority and scope of works to be undertaken in the study area. These events include:

- Further development of the design of the proposed Majura Parkway
- An increase in traffic due to developments occurring at the Canberra Airport and Gungahlin; and
- Working Group Meeting in September 2006

1.3 Objective

The main objective of this study is to update the previous economic analysis which was undertaken as part of the Pialligo Avenue Options review (Nov. 2007) of alignment options and determine the economic feasibility of constructing the Majura Parkway. This revised study reflects up to date construction staging and construction cost estimates.

1.4 Scope

This study documents an economic analysis of the considered option for the area. In agreement with ACT Procurement Solutions one option was assessed relative to the continuation of the existing condition. The following presents both the 'do nothing' base option as well as the Ultimate Majura Parkway option.

1. **Base Case ('Do Nothing'; Without Majura Parkway)**: The existing road network to be taken as the Base to which comparisons will be made, shown below in Figure 2.

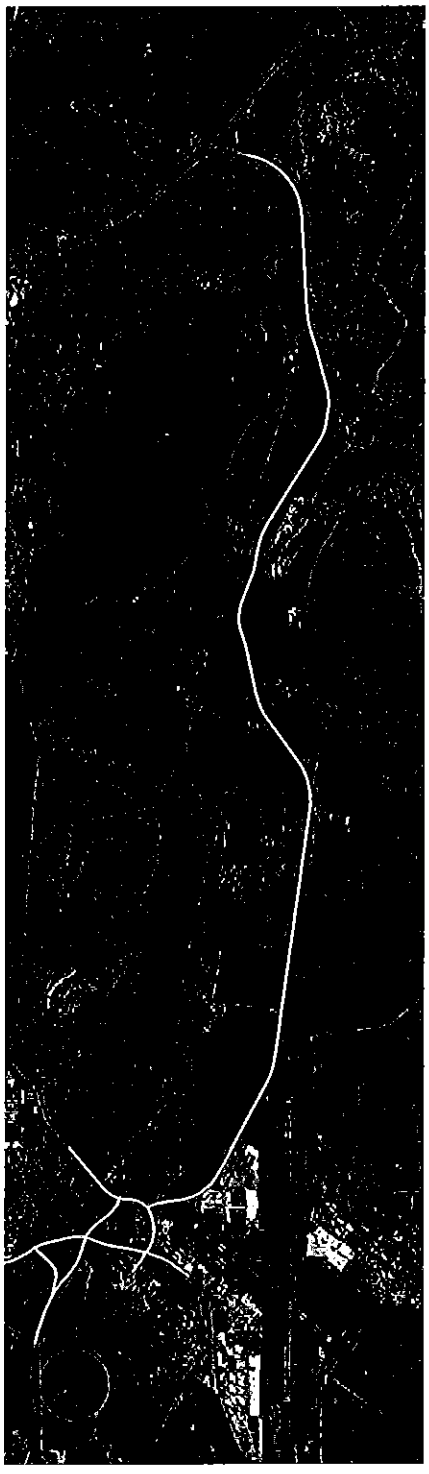

Figure 2 – Existing Road Network

2. **Upgraded Network Case (With Ultimate Majura Parkway)**: The upgraded road network with the ultimate configuration of the proposed Majura Parkway (green), as shown in Figure 3.

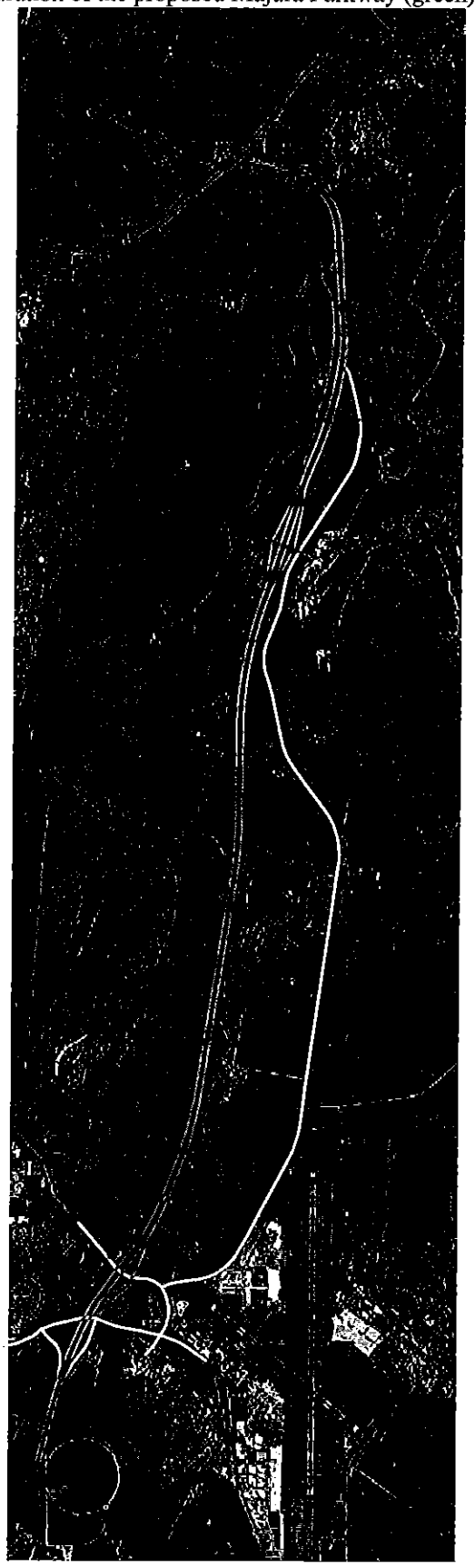

Figure 3 – Upgraded Road Network

2 Traffic Modelling

2.1 Introduction

Both strategic transport modelling (using TransCAD) and traffic micro-simulation modelling (using Paramics) were undertaken by SMEC for this analysis. The results of the modelling exercises were used as input into the economic analysis to assist in estimating the Net Present Value and Benefit Cost Ratio for the considered option compared to the existing network.

A description of the traffic modelling is presented below.

2.2 Model Calibration

The existing Paramics model was calibrated by adjusting the default parameters in the standard behavioural models contained in the micro-simulation software to local conditions. This relied mainly on the RTA default Paramics input files.

2.3 Matrix Estimation

In order to estimate future travel time and vehicle operating cost benefits for each of the improvement options, origin/destination (OD) matrices for traffic flows for 2009, 2012, 2021 and 2031 were taken from SMEC's TransCAD model of Canberra.

2.4 Model Validation

The resulting OD matrices produced flows that were a close fit to the traffic counts, and is in line with traffic engineering best practice of at least 85% of the counts having a GEH of less than 5, and 100% of the counts having a GEH of less than 10. The GEH Statistic is a formula used in traffic engineering, traffic forecasting, and traffic modelling to compare two sets of traffic volumes. The GEH Statistic gets its name from Geoffrey E. Havers, who invented it in the 1970s while working as a transport planner in London, England. Although its mathematical form is similar to a chi-squared test, is not a true statistical test. Rather, it is an empirical formula that has proven useful for a variety of traffic analysis purposes. The formula for the "GEH Statistic" is:

$$GEH = \sqrt{\frac{(M-C)^2}{(0.5\times(M+C))}}$$

where M is the traffic volume from the traffic model (or new count) and C is the real-world traffic count (or the old count).

2.5 Micro-simulation in Paramics

Assignment runs were conducted for the existing road network and the considered network option as listed in Table 2-1. Network layouts are shown in Figure 2 and Figure 3.

Table 2-1 – Paramics Runs

	2009	2012	2021	2031
Existing Network	✓	✓	✓	✓
Ultimate Majura Parkway		✓	✓	✓

2.6 Paramics Modelling Results (Performance Indicators)

Micro-simulation runs for the years 2012, 2021, 2031 and 2038 were conducted using the Paramics model for the existing road network as well as for the considered network improvement option. The overall network performance indicators for each of the micro-simulation runs are displayed in Table 2-2 and Table 2-4. These include the amount of released vehicles and their percentage

relative to demand volumes, vehicle hours travelled and vehicles kilometres travelled. The output shows that the network in its current configuration is not sufficient to accommodate all of the future traffic. As expected, the demand in future years increases leading to an increase in congestion, higher average travel times and hence an increase in vehicle hours travelled.

Table 2-2 – Micro-simulation measured performance factors (Entire Network)

Model	Released Vehicles				Vehicle Hours Travelled				Vehicle Kilometres Travelled			
	2009	2012	2021	2031	2009	2012	2021	2031	2009	2012	2021	2031
Base Case (Without Parkway)	9498 (97%)	10165 (90%)	10685 (70%)	10458 (65%)	834	984	1843	2767	36983	39946	54515	59522
Upgrade Option (With Parkway)	-	10387 (93%)	12609 (81%)	13073 (78%)	-	723	1108	1257	-	41184	55678	60316
Total Demand	9794	11170	15400	16300	-	-	-	-	-	-	-	-

(*) Percentage of Demand Met Within Peak Hour = Released Vehicles/Demand Volumes
Paramics model is constrained by capacity of modelled network. In this context, the Paramics model is not able to release demand flows that are in excess of the road network capacity during the peak modelled hour.

The percentage of 'released vehicles' is simply the proportion of the total demand that was able to come out the zone generators of the micro-simulation model. Table 2-3 shows a comparison of performance factors (similar to the ones shown in Table 2-2) between the North-South and East-West corridors of the study network. Travel time and average speed improvements resulting from implementing the Majura Parkway are primarily felt by travellers in the North-South corridor. Traffic operation improvements in the East-West direction will not be nearly as significant, unless the adjacent, major intersections (Majura Road – Fairbairn Avenue and Morshead Drive – Dairy Road/Majura Parkway) are upgraded.

Table 2-3 – Traffic Released from North and East

Model	Released Vehicles (From North)				Released Vehicles (From East)			
	2009	2012	2021	2031	2009	2012	2021	2031
Base Case (Without Parkway)	1566 (100%)	1754 (100%)	2070 (78%)	1595 (56%)	2091 (100%)	2471 (100%)	2603 (70%)	2245 (59%)
Upgrade Option (With Parkway)	-	1975 (100%)	3161 (100%)	3812 (100%)	-	2492 (100%)	3024 (79%)	3066 (79%)
Base Case Demand	1566	1754	2641	2842	2091	2471	3698	3836
Upgrade Option Demand	-	1975	3161	3828		2492	3821	3868

From Table 2-3, the percentage of released vehicles coming from the North is 100% for all the future scenarios, with 2,217 extra vehicles released in 2031. Traffic coming from the East did not see much change in the proportion of released vehicles with only 421 additional released vehicles in 2021 and 821 extra in 2031. This highlights the fact that the benefits of the Majura Parkway can primarily be felt along the North-South corridor and not much on the East-West. If the full benefit

of this upgrade is to be maximised, additional improvements and upgrades along the East-West corridor of the study area should also be done, particularly on the major intersections.

Table 2-4 – Micro-simulation calculated performance (Entire Network)

Model	Average Vehicle Travel Time [min]				Average Vehicle Speed [km/h]			
	2009	2012	2021	2031	2009	2012	2021	2031
Base Case (Without Parkway)	5.85	6.69	12.40	15.76	40.0	32.8	16.2	11.2
Upgrade Option (With Parkway)	-	5.97	10.27	11.41	-	43.1	28.5	28.0

2.6.1 Traffic Issues

In terms of traffic, two issues are considered:

1. Ability of traffic demand to enter the network without being delayed and hence causing spill over of delay to surrounding roads and entry points.
2. Once traffic entered into the network, the ability of the current network configuration to accommodate traffic with an acceptable level of service.

2.6.2 Existing Condition

Currently, most of the traffic demand can enter into the network without causing spill over to neighbouring roads. If the current network remains without any intervention, it is expected that with increasing traffic demands, there will be queues at the entry points to the network and spill over to neighbouring roads. This will result into peak spreading and delays to a larger number of vehicles. This will be also accompanied by very low Level of Service (LOS) performance of traffic using the Majura Valley network.

2.6.3 Expected Effect of Proposed Improvement

The proposed improvement is expected to avoid, or at least significantly reduce the effect of the occurrence of the first problem, namely the spill-over of traffic congestion into neighbouring roads as well as the prolonging of the peak traffic hour. The Majura Parkway implementation results in a substantial improvement in each year of operation, in terms of the number of vehicles being able to enter the network during the peak hour as well as in terms of the large reductions in vehicle hours travelled demonstrating significant time savings.

2.6.4 Assessment of Network Performance in the Study Area

SMEC identified two main urban arterial journeys within the Pialligo network. These are as follows:

- North-South direction starting from the intersection of Majura Road and the Federal Highway and finishing on the Monaro Highway South of Pialligo Avenue
- East-West movement starting from East of the intersection of Pialligo Avenue and Fairbairn Avenue and finishing Morshead drive between Dairy Road and Plant Road

To assess the performance of the network on these two main arterial journeys, average travel times and average journey speeds were calculated for both the base case ('do nothing') and the upgrade (Ultimate Majura Parkway) options for the forecast years 2009, 2012, 2021 and 2031. The differences between these traffic flow attributes provide great insight on the effects (i.e. benefits) of constructing the Majura Parkway on the study area road network. Table 2-5 and Table 2-6 show the calculated travel times and speeds for the North-South and East-West directions, respectively. The comparisons between these performance indicators are shown in Table 2-6 and Table 2-7.

Table 2-5 – Micro-simulation Average Travel Time and Average Speed (North-South Direction)

Model	North to South (~12000m) Average Vehicle Travel Time [minutes]				North to South (~12000m) Average Vehicle Speed [km/h]			
	2009	2012	2021	2031	2009	2012	2021	2031
Base Case (Without Parkway)	14.9	14.2	20.1	39.9	48.7	51.3	36.1	18.2
Upgrade Option (With Parkway)	-	6.7	7.2	8.6	-	99.1	92.3	77.0

Table 2-6 – Micro-simulation Average Travel Time and Average Speed (East-West direction)

Model	East to West (~1800m) Average Vehicle Travel Time [minutes]				East to West (~1800m) Average Vehicle Speed [km/h]			
	2009	2012	2021	2031	2009	2012	2021	2031
Base Case (Without Parkway)	2.5	3.6	7.8	9.1	38.8	30.2	14.1	12.0
Upgrade Option (With Parkway)	-	2.5	6.9	7.1	-	42.0	15.8	15.1

Table 2-7 – Comparison for North-South Direction (Base Case versus Upgrade Option)

	North-South Direction					
	Base Case (Without Parkway)		Upgrade Option (With Parkway)		Difference	
Year	Travel Time (AM Peak)	Average Speed (AM Peak)	Travel Time (AM Peak)	Average Speed (AM Peak)	Reduction in Travel Time (Minutes)	Increase in Average Speed (km/h)
2009	14.9	48.7	-	-	-	-
2012	14.2	51.3	6.7	99.1	7.5	47.8
2021	20.1	36.1	7.2	92.3	12.9	56.2
2031	39.9	18.2	8.6	77.0	31.3	58.8

Table 2-8 – Comparison for East-West Direction (Base Case versus Upgrade Option)

	East-West Direction					
	Base Case (Without Parkway)		Upgrade Option (With Parkway)		Difference	
Year	Travel Time (AM Peak)	Average Speed (AM Peak)	Travel Time (AM Peak)	Average Speed (AM Peak)	Reduction in Travel Time (Minutes)	Increase in Average Speed (km/h)
2009	2.5	38.8	-	-	-	-
2012	3.6	30.2	2.5	42.0	1.1	11.8
2021	7.8	14.1	6.9	15.8	0.9	1.7
2031	9.1	12.0	7.1	15.1	2.0	3.1

The results demonstrate the significant expected future improvement in LOS for the North-South direction, where significant improvements in average speed and travel times are observed in years 2021 and 2031. The East-West corridor also benefits from Majura Parkway, although not as significant as it is in the North-South direction, especially in the medium to long term.

2.7 Intersection LOS Assessment

The performance in the AM peak period for the following intersections was analysed:

- Majura Rd and Fairbairn Ave

- Pialligo Ave and Monaro Hwy (in the Upgrade Option, this intersection is the Southbound on-ramp to the Monaro Hwy)
- Morshead Dr and Dairy Rd (in the Upgrade Option, this intersection is the Northbound off-ramp from the Monaro Hwy)

The performances for the two scenarios (with and without the Majura Parkway) are shown in Table 2-8, Table 2-10 and Table 2-11.

Table 2-9 – Intersection of Majura Rd and Fairbairn Avenue

	Majura Rd / Fairbairn Ave				
	Base Case (Without Parkway)		Upgrade Option (With Parkway)		Reduction in Delay (Seconds)
Year	Average Delay (Seconds)	Level of Service	Average Delay (Seconds)	Level of Service	
2009	23.1	C	-	-	-
2012	30.1	D	16.2	B	13.9
2021	68.5	E	16.2	B	52.3
2031	105.3	F	16.9	B	88.4

Table 2-10 – Intersection of Pialligo Ave and Monaro Hwy

	Pialligo Ave / Monaro Hwy				
	Base Case (Without Parkway)		Upgrade Option (With Parkway)		Reduction in Delay (Seconds)
Year	Average Delay (Seconds)	Level of Service	Average Delay (Seconds)	Level of Service	
2009	68.0	E	-	-	-
2012	190.2	F	10.8	B	179.4
2021	569.0	F	18.3	B	550.7
2031	637.2	F	23.6	C	613.6

Table 2-11 - Intersection of Morshead Dr and Dairy Rd/Majura Pkwy NB Off-Ramp

	Morshead Dr / Dairy Rd				
	Base Case (Without Parkway)		Upgrade Option (With Parkway)		Reduction in Delay (Seconds)
Year	Average Delay (Seconds)	Level of Service	Average Delay (Seconds)	Level of Service	
2009	67.8	E	-	-	-
2012	127.5	F	136.7	F	-9.2
2021	456.4	F	467.0	F	-10.6
2031	509.5	F	517.6	F	-8.6

3 Potential Beneficiaries to Road Network Improvements

Both the National Capital and Canberra Spatial Plans identify the airport as a major employment node and describe the importance of considering the Majura Parkway as a future major road. In a regional planning context the road plan provides improved access from and to Queanbeyan and the wider NSW region via the Monaro Highway. In terms of the National road network, constructing the Majura Parkway will provide better connections with the Federal Highway. In summary, the road plan presented has a strategic context and is important to support the current and the future development of Canberra and the surrounding NSW region.

The considered road network as well as being utilized by several groups of road users is of interest to several stakeholder organizations at different levels. Table 3-1, demonstrates the potential beneficiaries to any improvements occurring for this road network.

Table 3-1 – Beneficiaries from Road Network Improvements

Road Users (Beneficiaries)	Organisations (Beneficiaries)	Level
Canberra Airport Traffic (Passengers)	Canberra Airport Group ACT and Australian Government	Local
Canberra Airport Traffic (Freight)	Canberra Airport Group	Local
Canberra Airport Traffic (Employees)	Canberra Airport Group	Local
Canberra Airport Traffic (Passengers)	ACT Government	Local
Canberra Airport Traffic (Freight)	ACT Government	Local
Canberra Airport Traffic (Employees)	ACT Government	Local
	Department of Defence (Brindabella Park)	Federal
Gungahlin Commuter Traffic	ACT Government (Land Sales)	Local
Traffic Related to Headquarters Joint Operational Command	Department of Defence	Federal
Queanbeyan Through Traffic*	RTA & Queanbeyan City Council	Regional
Better Connections with the Federal Highway**	Department of Transport & Regional Services (Auslink)	Federal
Politicians, Parliament Members & Canberra Visitors	National Capital Authority	Federal

** Regional traffic from NSW either on Pialligo Avenue and or the Federal Highway represent a high proportion of daily travel on the roads in the vicinity of the airport particularly on the section of Pialligo Avenue past the airport where almost 90% is generated in Queanbeyan and the surrounding NSW regions.*

*** Commercial traffic on the Monaro Highway and Majura Road represent some 16% of the total traffic presently with the connection between the Monaro Highway, Majura Road and the Federal Highway an important freight route within the ACT but also for regional NSW.*

4 Construction Cost

The capital cost estimated for the project in July 2008 was $242 million (excluding GST). This has been escalated by 3 per cent to $250 million. The final cost of the project is likely to be higher subject to further cost escalation to tender time.

5 Economic Analysis

5.1 Introduction

In order to assess the economic feasibility of constructing the Majura Parkway, an analysis of the costs and benefits of the project against the 'do nothing' scenario was undertaken over a 30 year period. Through this process the Net Present Value (NPV) and Benefit Cost Ratio (BCR), associated with the full implementation of the Majura Parkway design and construction in the first 3 years of the analysis period, were estimated. The Australia Transport Council (ATC) *National Guidelines for Transport System Management in Australia* recommends a 30 year life for road projects and a 'much longer life' for bridges. The Majura Parkway has several major bridges and therefore the economic life of the project has been assumed to be 40 years, which still leaves it with a 10 year residual value after the 30 year evaluation period.

5.2 Construction and Maintenance Costs

Capital construction costs and maintenance life costs were estimated relating to the implementation of the Ultimate Majura Parkway.

Table 5-1 below indicates an initial approximate estimate of the project design and construction costs. Although the estimate is still subject to further detailed design, it provides a broad overview of the magnitude of costs, which is considered appropriate for economic analysis purposes at this stage.

Table 5-1 – Initial Project Costs (ex GST)

	Project Cost
Base Case (Without Parkway)	$0
Upgrade Option (With Parkway)	$250 million

A simplified maintenance cost was also calculated for the analysis. The cyclic maintenance was assumed to occur every 5 years from the year of work completion and opening to traffic. The cyclic maintenance cost was estimated as 0.5% of the construction cost for the first application and then for the remaining 3 applications was estimated as a 1% of the construction cost. Similarly for annual maintenance, its cost was estimated as 0.125% of the construction cost for the initial years of application prior to the first cyclic maintenance, and this is raised to 0.25% of the construction cost in the succeeding years of application. In years that cyclic maintenance is applied, the annual maintenance cost is assumed to be $0.

5.3 Travel Related Costs

Several indicators of travel are obtained as output from the Paramics runs in the AM peak, namely the number of Vehicle Kilometres Travelled (VKT), the number of Vehicle Hours Travelled (VHT) as well as the mean speed. These are obtained for the years 2009, 2012, 2021 and 2031. The annual stream of VKT and VHT were estimated over a 40 year period with annual values interpolated between modelled values in 2009, 2012, 2021 and 2031. The growth between 2021 and 2031 was used to extrapolate values for 2038 and 2048. These are used to estimate the benefits for the existing condition continuing as well as for the upgraded network option. For each, the following travel related costs were estimated:

- Vehicle Operating Cost (VOC): - this is dependent on the number of Vehicle-Kilometres Travelled (VKT) as well as on the Vehicle Operating Cost per km (VOC/km) obtained from the RTA Economic Analysis Manual
- Time Cost (TC): - this is dependent on the Vehicle-Hours Travelled (VHT) as well as on the vehicle composition, average vehicle occupancy and value of travel time obtained from the RTA Economic Analysis Manual

- Accident Cost (AC): - this is dependent on the VKT as well as on the accident rate per Million Vehicle-Kilometres Travelled (MVKT) obtained from the RTA Economic Analysis Manual

The following sections detail the exact methodology used for estimating each of these costs:

5.3.1 Vehicle Operating Cost

Vehicle operating cost (VOC) is a function of kilometres travelled and VOC/km. From the most recent update of road user cost (RUC) values (June 2007) by Austroads, the equation to estimate vehicle operating cost is given by:

$$c = A + \frac{B}{V} + C \cdot V + D \cdot V^2$$

where:

c = vehicle operating cost (cents/km)
A, B, C, D = model coefficients
V = all day average link speed

This study considers four types of vehicles, namely private cars, business cars, light commercial vehicles and articulated trucks. Vehicle composition is calculated from the total estimated demand based on the proportions suggested by the *Economic Analysis Manual* of the RTA, as shown in Table 5-2. The proportions used for this study are figures for peak hours.

Table 5-2 – Vehicle Fleet Composition (*Economic Analysis Manual, RTA*)

	Private Car	Business Car	Light Commercial	Articulated Truck
Peak Hours	80	5	11	4
Business Hours	63	22	10	5
Other Hours	85	5	7	3

The annual VOC per vehicle type are calculated by getting the product of the total VKT each year and the estimated VOC per kilometre. The VKT for each vehicle type are calculated by multiplying the total VKT by the proportion of each vehicle type. The VOC per kilometre of each vehicle type is estimated by applying the corresponding model coefficients, given in Table 5-3 (Freeways) and Table 5-4 (At-Grade Roads), to the abovementioned equation.

Table 5-3 – Estimated VOC Parameters for Freeways

VOC Model Coefficients (Freeways)				
Vehicle Type	**A**	**B**	**C**	**D**
Cars	-16.262 (-16.262)	3929.78 (1553.78)	0.23531 (0.23531)	0.0000501 (0.0000501)
LCV	-30.00 (-30.00)	5167.74 (3396.74)	0.25629 (0.25629)	0.001262 (0.001262)
HCV + Buses	-30.00 (-30.00)	12255.38 (8544.38)	0.01850 (0.01850)	0.006029 (0.006029)

Note: Values in brackets are estimated parameters for VOC only specification, while estimated parameter values outside brackets are for VOC plus person time costs (commercial, freight and private time)
Source: Austroads (2007) Update of RYC Unit Values to June 2007

Table 5-4 – Estimated VOC Parameters for All At-Grade Roads

VOC Model Coefficients (At-Grade Roads)				
Vehicle Type	**A**	**B**	**C**	**D**
Cars	2.185 (2.185)	3352.21 (976.21)	0.05711 (0.05711)	0.0005795 (0.0005795)

LCV	-3.096 (-3.096)	3863.48 (2092.48)	0.19609 (0.19609)	0.0005658 (0.0005658)
HCV + Buses	5.885 (5.885)	9182.53 (5471.53)	0.58625 (0.58625)	0.0002108 (0.0002108)

Note: Values in brackets are estimated parameters for VOC only specification, while estimated parameter values outside brackets are for VOC plus person time costs (commercial, freight and private time)
Source: Austroads (2007) Update of RYC Unit Values to June 2007

Travel time costs are already incorporated in the estimated VOCs, so the benefits derived from reduced travel times are included in the VOC savings.

5.3.2 Accident Costs

The expected number of accidents by type is a function of kilometres travelled. It is a known phenomenon that the more travelling, the more is the propensity of getting involved in an accident. Table 5-5 shows the average cost of accidents per Million VKT by road type. The existing road network is assumed to be Arterial while the Majura Parkway is assumed to be Freeway.

Table 5-5 – Adopted Accident Rates and Costs

Road Type	Average Crash Cost ($/MVKT)
Arterial	45,800
Freeway	14,300

The Accident Costs (AC) is a summation of all the costs expected to be incurred as a result of occurrence of different types of accidents. The formulation for this computation is as follows:

$$AC_{option} = \left(\frac{Cost}{MVKT_{(Arterial)}} \times MVKT_{(Arterial)}\right) + \left(\frac{Cost}{MVKT_{(Freeway)}} \times MVKT_{(Freeway)}\right)$$

5.3.3 Annualisation Factor

An annual expansion factor of 1825 was applied to the AM peak VOC, TTC and AC in order to estimate the annual incurred costs over the evaluation period. The expansion factor is estimated by applying the existing peak hour to daily flow ratio. Recent 24 hour traffic count data collected for Canberra Airport Group along Majura Road provides a basis for estimating the peak hour to daily traffic flow ratio.

$$AnnualCosts_{option} = \left(VOC_{(option)} + TTC_{(option)} + AC_{(option)}\right) \times 1825$$

5.4 Generated Traffic

From the *National Guidelines for Transport System Management in Australia, Volume 3 (Appraisal of Initiatives)* published by the Australian Transport Council (ATC), 'existing traffic' is traffic that uses the infrastructure affected in both the base and upgrade scenarios. Traffic demand in excess of this that results from the implementation of the infrastructure improvement is considered 'diverted' or 'generated' traffic. This simply means that this demand came from somewhere outside the study area, and is *not* new demand induced by the upgrade.

After the Majura Parkway is implemented, it has been forecasted that some traffic from the external network (i.e. outside the modelled study area) will go through the study area because of improved traffic operations. The benefits derived due to this generated traffic can be calculated by estimating the consumers' surplus gain, given by:

$$CSG = \frac{1}{2}(P_1 - P_2) \cdot (Q_2 + Q_1)$$

where:

CSG = consumers' surplus gain

P_1 = perceived price (assumed to be the sum of *VOC* and *AC*) for the base case

P_2 = perceived price (assumed to be the sum of *VOC* and *AC*) for the upgrade case

Q_1 = demand (converted to *VKT*) for the base case

Q_2 = demand (converted to *VKT*) for the upgrade case

5.5 Residual Value

A road construction project is expected to have no residual value (*RV*) left by the end of its economic life. For the Majura Parkway option, the economic life of the project is assumed to be 40 years. The residual value at the end of the appraisal period of 30 years is estimated as the present value of benefits for the remaining life of the asset for the remaining 10 years of the assumed 40-year economic life. This procedure for calculating the residual value is suggested by the *National Guidelines for Transport System Management in Australia, Volume 3 (Appraisal of Initiatives)* published by the Australian Transport Council (ATC). At the end of 30 years, the project is expected to have a residual value of around $186 million using this approach.

5.6 Environmental Externalities

The RTA Manual includes monetary values for environmental externalities (noise, air pollution, water pollution, etc) and these are mainly shown as functions of VKT. Environmental externalities (*EE*) are known to be functions not only of kilometres travelled but also of traffic operating speed (i.e. it increases with kilometres travelled and reduces with the increase in operating speeds). The Majura Parkway (upgraded network) option is expected to increase the operating speed for the expected traffic as well as to increase the number of vehicle kilometres travelled. In this context the RTA values are not sufficient to compare and assess the full impact of the environmental externalities.

However, some partial benefit may be estimated from the generated traffic outside the study area. This is mainly that portion of the future demand that will not have passed through the study area without the Majura Parkway. These are assumed to be traffic that are diverted from the external network (i.e. road networks outside the study area), which are then subsequently assumed to be more highly urbanised than the areas surrounding the Majura Parkway. With these assumptions, the environmental costs caused by these 'redirected' traffic should then be reduced once they opt to go through the Majura Parkway, which is in a more 'rural' setting than their original route choices. In other words, environmental impacts at or near the City Centre are reduced through the diversion of this demand to the Majura Parkway. The RTA costs for environmental externalities are classified according to urban and rural settings, as shown in Table 5-6. The *EE* benefits (albeit partial) can then be estimated by getting the difference between the environmental costs of the diverted traffic in an urban and rural setting.

Table 5-6 – Environmental Externality Values per VKT for Passenger Cars and Buses (*Economic Analysis Manual, RTA*)

Environmental Externality	Passenger Vehicles (cents/veh-km)		Buses (cents/veh-km)	
	Urban	Rural	Urban	Rural
Noise	0.83	0.00	2.03	0.00
Air Pollution	2.58	0.03	29.08	0.00
Water Pollution	0.39	0.04	4.36	0.04
Greenhouse	2.03	2.03	11.98	11.98
Nature and Landscape	0.05	0.48	0.13	1.32
Urban Separation	0.60	0.00	1.92	0.00
Upstream & Downstream Costs	3.48	3.48	17.97	17.97

5.7 Majura Parkway Benefits

The total expected benefits to be derived from constructing the Majura Parkway are estimated by calculating the savings of the upgrade option (Ultimate Majura Parkway) as compared to the base option ('do nothing') in terms of *VOC* savings, *TTC* savings, *AC* savings, the residual value (*RV*) after the 30-year appraisal period, and the environmental cost savings (*EE*). Values of such savings for each option are depicted in **Appendix A**. The formulation for this computation is as follows:

$$Benefits = (VOC_{Upgrade} - VOC_{Base}) + (TTC_{Upgrade} - TTC_{Base}) + (AC_{Upgrade} - AC_{Base}) + CSG + RV + EE$$

5.8 Benefit Cost Ratio

In order to compare the costs and benefits of the proposed option relative to the existing road network over the evaluation period, the change in monetary values over time needs to be accounted for. This is achieved by discounting the annual costs and benefits of the project to the present year using a range of discount rates (4%, 7%, and 10%). The normal indicators of the worth of a project, the NPV and BCR for each option are estimated for each of these discount rates. The analysis results are summarised in Table 5-7.

Table 5-7 – Results of Economic Analysis

	Considered Option	
Discount Rates	**NPV in 2038 (000)**	**BCR**
4%	$1,212,473	6.26
7%	$636,615	4.05
10%	$334,289	2.76

If the discounted present value of the benefits exceeds the discounted present value of the costs, then the project is worthwhile. This is equivalent to the condition that the net benefit must be positive. Another equivalent condition is that the ratio of the present value of the benefits to the present value of the costs must be greater than one. In this context, it can be seen from the table that all of the assumed discount rates produce positive NPVs as well as BCRs > 1. A detailed spreadsheet of the output of the cost benefit analysis is included in **Appendix A**.

6 Conclusions

Micro-simulation modelling was used to demonstrate the severity of the current peak traffic congestion problems and the expected future further deterioration of the traffic conditions in this network for both the 'do nothing' case and with the implementation of Majura Parkway. The results showed significant improvements in terms of average travel speed and travel time for the North-South direction, with the East-West corridor also benefiting although not as significantly.

The micro-simulation modelling was also used to obtain key performance indicators including number of vehicle kilometres travelled as well as number of vehicle hours travelled both for the existing road network as well as for the considered option in the years 2009, 2012, 2021 and 2031. These were used in accordance with RTA economic Analysis Manual to estimate travel-related costs for each option including Vehicle Operation Costs. Travel Time Costs and Accident Costs. Capital construction costs, contingency, design, supervision costs were also estimated for each option, including Annual and Cyclic maintenance costs.

Travel benefits associated with the implementation of Majura Parkway were determined by subtracting the travel related costs of the upgraded option from those travel related costs of the 'do nothing' scenario (i.e. the existing road network staying as it is with no future intervention). Additional benefits include the generated traffic benefits, residual value of the project after the 30 year appraisal period and environmental cost savings.

The results of the cost-benefit analysis show that the construction of Majura Parkway can be considered as economically feasible. This is based on the two obtained key performance indicators namely the Net Present Value (NPV) and the Benefit Cost Ratio (BCR). The upgraded network produces a NPV equating to over $636 million after 30 years at a 7% discount rate. The estimated BCR is 4.05 assuming the same appraisal period and discount rate.

Appendix A Economic Analysis

A.1 With Majura Parkway vs Without Majura Parkway (30 years)

YEAR	COSTS (shown as -ve) *Current Prices* CAPITAL COSTS ($'000)	ADDITIONAL Annual Maintenance ($'000)	ADDITIONAL Cyclic Maintenance ($'000)	BENEFITS ($shown as +ve) *Current Prices* Vehicle Operating Cost Savings ($'000)	Accident Cost Savings ($'000)	Generated Traffic Benefits ($'000)	Environmental Benefits ($'000)	Residual Value ($'000)	TOTALS *Current Prices* ($'000)
2009	($25,000)	$0	$0	$0	$0	$0	$0	$0	*($25,000)*
2010	($25,000)	$0	$0	$0	$0	$0	$0	$0	*($25,000)*
2011	($100,000)	$0	$0	$0	$0	$0	$0	$0	*($100,000)*
2012	($100,000)	$0	$0	$0	$0	$0	$0	$0	*($100,000)*
2013	$0	($250)	$0	$31,040	$1,654	$3,107	$421	$0	*$35,972*
2014	$0	($250)	$0	$35,049	$1,712	$3,533	$464	$0	*$40,508*
2015	$0	($250)	$0	$39,243	$1,773	$4,018	$511	$0	*$45,295*
2016	$0	($250)	$0	$43,628	$1,836	$4,569	$563	$0	*$50,346*
2017	$0	$0	($1,000)	$48,213	$1,901	$5,196	$621	$0	*$54,931*
2018	$0	($500)	$0	$53,005	$1,969	$5,909	$684	$0	*$61,067*
2019	$0	($500)	$0	$58,014	$2,038	$6,720	$754	$0	*$67,026*
2020	$0	($500)	$0	$63,246	$2,111	$7,642	$831	$0	*$73,330*
2021	$0	($500)	$0	$68,712	$2,185	$8,690	$916	$0	*$80,004*
2022	$0	$0	($2,000)	$73,929	$2,210	$9,490	$936	$0	*$84,566*
2023	$0	($500)	$0	$79,320	$2,235	$10,363	$957	$0	*$92,375*
2024	$0	($500)	$0	$84,891	$2,260	$11,317	$978	$0	*$98,945*
2025	$0	($500)	$0	$90,646	$2,285	$12,358	$1,000	$0	*$105,789*
2026	$0	($500)	$0	$96,591	$2,310	$13,496	$1,022	$0	*$112,919*
2027	$0	$0	($2,000)	$102,733	$2,336	$14,738	$1,045	$0	*$118,851*
2028	$0	($500)	$0	$109,077	$2,362	$16,094	$1,068	$0	*$128,101*
2029	$0	($500)	$0	$115,631	$2,388	$17,575	$1,092	$0	*$136,185*
2030	$0	($500)	$0	$122,399	$2,415	$19,192	$1,116	$0	*$144,622*
2031	$0	($500)	$0	$129,390	$2,441	$20,958	$1,141	$0	*$153,430*
2032	$0	$0	($2,000)	$136,609	$2,469	$22,887	$1,166	$0	*$161,130*
2033	$0	($500)	$0	$144,065	$2,496	$24,993	$1,192	$0	*$172,245*
2034	$0	($500)	$0	$151,764	$2,523	$27,292	$1,218	$0	*$182,298*
2035	$0	($500)	$0	$159,713	$2,551	$29,804	$1,245	$0	*$192,814*
2036	$0	($500)	$0	$167,922	$2,580	$32,547	$1,273	$0	*$203,821*
2037	$0	$0	($2,000)	$176,397	$2,608	$35,542	$1,301	$0	*$213,848*
2038	$0	($500)	$0	$185,147	$2,637	$38,812	$1,330	$182,631	*$410,057*
Total	($250,000)	($9,000)	($9,000)	$2,566,374	$58,284	$409,571	$24,844	$182,631	*$2,973,704*
PRESENT VALUES									
PV @ 7%	($203,120)	($3,026)	($2,548)	$695,219	$18,965	$99,761	$7,438	$23,992	*$636,615*
PV @ 4%	($221,532)	($4,668)	($4,228)	$1,169,864	$29,507	$175,374	$12,003	$56,309	*$1,212,473*
PV @ 10%	($186,821)	($2,051)	($1,607)	$436,638	$12,828	$60,011	$4,854	$10,466	*$334,289*

Discount Rate	4.0%	7.0%	10.0%
NPV ('000)	$1,212,473	$636,615	$334,289
BCR	6.26	4.05	2.76

A.2 With Majura Parkway vs Without Majura Parkway (40 years)

YEAR	COSTS (shown as -ve) *Current Prices* CAPITAL COSTS ($'000)	ADDITIONAL Annual Maintenance ($'000)	ADDITIONAL Cyclic Maintenance ($'000)	BENEFITS (shown as +ve) *Current Prices* Vehicle Operating Cost Savings ($'000)	Accident Cost Savings ($'000)	Generated Traffic Benefits ($'000)	Environmental Benefits ($'000)	Residual Value ($'000)	TOTALS *Current Prices* ($'000)
2009	($25,000)	$0	$0	$0	$0	$0	$0	$0	*($25,000)*
2010	($25,000)	$0	$0	$0	$0	$0	$0	$0	*($25,000)*
2011	($100,000)	$0	$0	$0	$0	$0	$0	$0	*($100,000)*
2012	($100,000)	$0	$0	$0	$0	$0	$0	$0	*($100,000)*
2013	$0	($250)	$0	$31,040	$1,654	$3,107	$421	$0	*$35,972*
2014	$0	($250)	$0	$35,049	$1,712	$3,533	$464	$0	*$40,508*
2015	$0	($250)	$0	$39,243	$1,773	$4,018	$511	$0	*$45,295*
2016	$0	($250)	$0	$43,628	$1,836	$4,569	$563	$0	*$50,346*
2017	$0	$0	($1,000)	$48,213	$1,901	$5,196	$621	$0	*$54,931*
2018	$0	($500)	$0	$53,005	$1,969	$5,909	$684	$0	*$61,067*
2019	$0	($500)	$0	$58,014	$2,038	$6,720	$754	$0	*$67,026*
2020	$0	($500)	$0	$63,246	$2,111	$7,642	$831	$0	*$73,330*
2021	$0	($500)	$0	$68,712	$2,185	$8,690	$916	$0	*$80,004*
2022	$0	$0	($2,000)	$73,929	$2,210	$9,490	$936	$0	*$84,566*
2023	$0	($500)	$0	$79,320	$2,235	$10,363	$957	$0	*$92,375*
2024	$0	($500)	$0	$84,891	$2,260	$11,317	$978	$0	*$98,945*
2025	$0	($500)	$0	$90,646	$2,285	$12,358	$1,000	$0	*$105,789*
2026	$0	($500)	$0	$96,591	$2,310	$13,496	$1,022	$0	*$112,919*
2027	$0	$0	($2,000)	$102,733	$2,336	$14,738	$1,045	$0	*$118,851*
2028	$0	($500)	$0	$109,077	$2,362	$16,094	$1,068	$0	*$128,101*
2029	$0	($500)	$0	$115,631	$2,388	$17,575	$1,092	$0	*$136,185*
2030	$0	($500)	$0	$122,399	$2,415	$19,192	$1,116	$0	*$144,622*
2031	$0	($500)	$0	$129,390	$2,441	$20,958	$1,141	$0	*$153,430*
2032	$0	$0	($2,000)	$136,609	$2,469	$22,887	$1,166	$0	*$161,130*
2033	$0	($500)	$0	$144,065	$2,496	$24,993	$1,192	$0	*$172,245*
2034	$0	($500)	$0	$151,764	$2,523	$27,292	$1,218	$0	*$182,298*
2035	$0	($500)	$0	$159,713	$2,551	$29,804	$1,245	$0	*$192,814*
2036	$0	($500)	$0	$167,922	$2,580	$32,547	$1,273	$0	*$203,821*
2037	$0	$0	($2,000)	$176,397	$2,608	$35,542	$1,301	$0	*$213,848*
2038	$0	($500)	$0	$185,147	$2,637	$38,812	$1,330	$0	*$227,426*
2039	$0	($500)	$0	$197,244	$2,666	$42,384	$1,360	$0	*$243,153*
2040	$0	($500)	$0	$210,131	$2,696	$46,284	$1,390	$0	*$260,000*
2041	$0	($500)	$0	$223,860	$2,726	$50,543	$1,421	$0	*$278,049*
2042	$0	$0	($2,000)	$238,486	$2,756	$55,194	$1,452	$0	*$295,888*
2043	$0	($500)	$0	$254,068	$2,787	$60,273	$1,484	$0	*$318,112*
2044	$0	($500)	$0	$270,667	$2,818	$65,819	$1,517	$0	*$340,322*
2045	$0	($500)	$0	$288,352	$2,849	$71,876	$1,551	$0	*$364,128*
2046	$0	($500)	$0	$307,191	$2,881	$78,490	$1,585	$0	*$389,648*
2047	$0	$0	($2,000)	$327,262	$2,913	$85,713	$1,621	$0	*$415,509*
2048	$0	($500)		$348,644	$2,946	$93,601	$1,657	$0	*$446,347*
Total	($250,000)	($13,500)	($13,000)	$5,232,279	$86,323	$1,057,016	$39,882	$0	*$6,139,000*
PRESENT VALUES									
PV @ 7%	($203,120)	($3,467)	($2,891)	$932,686	$21,536	$156,890	$8,809	$0	*$910,442*
PV @ 4%	($221,532)	($5,833)	($5,189)	$1,823,065	$36,493	$333,432	$15,737	$0	*$1,976,172*
PV @ 10%	($186,821)	($2,224)	($1,734)	$525,986	$13,807	$81,385	$5,374	$0	*$435,774*

Discount Rate	4.0%	7.0%	10.0%
NPV ('000)	$1,976,172	$910,442	$435,774
BCR	9.50	5.35	3.28

Table 1: Traffic modelling summary by forecast year

	Base Case				Upgrade Option			
	Forecast Year				Forecast Year			
	2009	2012	2021	2031	2009	2012	2021	2031
Trip Number	9,328	10,658	14,411	15,257		10,623	14,872	15,810
Observation	AM Peak Hour				AM Peak Hour			
Annualisation Factor				1,825				1,825
VHT	834	984	1,843	2,767	2009	759	1,245	1,204
Observation	AM Peak Hour				AM Peak Hour			
Annualisation Factor				1825				1825
VKT	36,983	39,946	54,515	59,522	2009	45,558	67,967	76,277
Observation	AM Peak Hour				AM Peak Hour			
Annualisation Factor				1,825				1,825

Table 2: Traffic Modelling Summary – Market Segmentation (in 000s)

		Base Case				Upgrade Option			
		Forecast Year				Forecast Year			
		2009	2012	2021	2031	2009	2012	2021	2031
Trips (Annual)	Existing	17,024	19,451	26,300	27,844	0	10,033	14,069	14,630
	Diverted	0	0	0	0	0	9,354	12,235	14,223
	Induced	0	0	0	0	0	0	0	0
VHT (Annual)	Existing	1,521	1,797	3,363	5,051	0	539	880	730
	Diverted	0	0	0	0	0	845	1,392	1,467
	Induced	0	0	0	0	0	0	0	0
VKT (Annual)	Existing	67,494	72,901	99,490	108,628	0	21,208	29,588	30,579
	Diverted	0	0	0	0	0	61,986	94,452	108,627
	Induced	0	0	0	0	0	0	0	0

Table 3: Undiscounted Benefits by Item (in $'000)

	Base Case				Upgrade Option			
	Forecast Year				Forecast Year			
	2009	2012	2021	2031	2009	2012	2021	2031
VOC (including Time)	124,528	132,574	185,414	251,119	0	105,366	116,702	121,729
Accident Cost	3,091	3,339	4,557	4,975	0	1,742	2,371	2,534
Generated Traffic Benefit	0	0	0	0	0	-2,732	-8,690	-20,958
Environmental Benefit	0	0	0	0	0	-382	-916	-1,141
Residual Value Benefit	0	0	0	0	0	0	0	-182,631

NOTE: Benefits are shown as negative while costs are shown as positive

Table 4a: Calculation of undiscounted benefits by item

VOC (including Time)	Base Case	Upgrade Option
	Forecast year	Forecast Year
	2031	2031
$ (million Undiscounted)	251.119	121.729
Valuation Parameter	VKT, speed, road type, vehicle type	
Source	Macro and Micro-simulation Models	

Algorithm	$c = A + \frac{B}{V} + C \cdot V + D \cdot V^2$ where: c = vehicle operating cost (cents/km) A, B, C, D = model coefficients V = all day average link speed Algorithm taken from Austroads manual

Table 4b: Calculation of undiscounted benefits by item

Accident Cost	Base Case	Upgrade Option
	Forecast year	Forecast Year
	2031	2031
$ (million Undiscounted)	4.975	2.533
Valuation Parameter	VKT, road classification	
Source	Macro and Micro-simulation Models	
Algorithm	$AC_{option} = \left(\frac{Cost}{MVKT_{(Arterial)}} \times MVKT_{(Arterial)} \right) + \left(\frac{Cost}{MVKT_{(Freeway)}} \times MVKT_{(Freeway)} \right)$ Accident costs are defined in RTA Economic Analysis Manual, Appendix B	

Table 4c: Calculation of undiscounted benefits by item

Generated Traffic Benefit	Base Case	Upgrade Option
	Forecast year	Forecast Year
	2031	2031
$ (million Undiscounted)	0	-20.958
Valuation Parameter	Calculated benefit per vehicle	Calculated benefit per vehicle
Source	Macro and Micro-simulation Models, economic Analysis	
Algorithm	$CSG = \frac{1}{2}(P_1 - P_2) \cdot (Q_2 + Q_1)$ where: CSG = consumers' surplus gain P_1 = perceived price (assumed to be the sum of *VOC* and *AC*) for the base case P_2 = perceived price (assumed to be the sum of *VOC* and *AC*) for the upgrade case Q_1 = demand (converted to *VKT*) for the base case Q_2 = demand (converted to *VKT*) for the upgrade case	

Table 4d: Calculation of undiscounted benefits by item

Environmental Benefit	Base Case	Upgrade Option
	Forecast year	Forecast Year
	2031	2031
$ (million Undiscounted)	0	-1.141
Valuation Parameter	VKT by urban/rural	
Source	Macro and Micro-simulation Models	
Algorithm	The RTA Economic analysis manual details environmental costs by VKT for urban and rural travel. Induced demand on Majura Parkway is assumed to have come from an urban road and the difference in the urban and rural environmental costs is used to determine the actual benefit.	

Table 4e: Calculation of undiscounted benefits by item

Residual Value Benefit	Base Case	Upgrade Option
	Forecast year	Forecast Year
	2031	2031
$ (million Undiscounted)	0	-182.631
Valuation Parameter	NPV of benefits of project over life past economic analysis period	
Source	Economic Analysis	
Algorithm	The actual life of the road is assumed to be 40 years. The NPV of the benefit from the Majura Parkway over the extended life is assumed to be the residual value. This method is detailed in the ATC manual.	

[redacted]

From: [redacted]@infrastructure.gov.au]
Sent: Saturday, 17 January 2009 2:49 PM
To: [redacted]
Subject: RE: ACT Government Submission [SEC=UNCLASSIFIED]

Flag Status: Flagged

Thanks [redacted].

From: [redacted] [mailto:[redacted]@act.gov.au]
Sent: Friday, 16 January 2009 17:48
To: [redacted]
Cc: [redacted]
Subject: RE: ACT Government Submission [SEC=UNCLASSIFIED]

Paul

Please see attached two documents covering the outstanding table on minimum information requirements, and the ngs against strategic objectives. Again, apology for the delay.

I trust this completes the information requirement. Please feel free to call any time over the weekend if you require clarification or further information.

Regards

[redacted] | Executive Director | Policy Coordination and Development Division | ACT Treasury [redacted]
Phone: (02) 6207 0228 | [redacted]

[redacted]

From: [redacted] [mailto:[redacted]@infrastructure.gov.au]
Sent: Friday, 16 January 2009 10:23 AM
To: [redacted]
Cc: [redacted]
Subject: RE: ACT Government Submission [SEC=UNCLASSIFIED]

anks[redacted]. As discussed, please email any outstanding information (including delivery table of minimum ormation requirements) through electronically to me and [redacted]e by the end of today and courier relevant appendices to our office address below.

Regards

[redacted]
Infrastructure Australia
Level 21 Deutsche Bank Building
126 Phillip Street
SYDNEY NSW 2000
Telephone: (+612) 8114 1914
Fax: (+612) 8114 1932
Email: [redacted]@infrastructure.gov.au

From: [redacted] [mailto:[redacted]@act.gov.au]
Sent: Thursday, 15 January 2009 17:30

To: [redacted]
Cc: [redacted]
Subject: ACT Government Submission

Paul

Please see the attached updated material in support of the proposal to link the Federal Highway to the Monaro Highway – Majura Parkway.

The main word document should provide an executive summary of the project, response to the feedback from IA, and further information. The economic appraisal has been done again to address the issues raised in the feedback document provided before Christmas.

There are seven appendices, two of which are attached to this email as follows:

Appendix B: The Economic Analysis Report prepared by SMEC Australia;

Appendix G: Minimum Information Requirement Template

Three appendices (Appendix A, C and D) are rather large documents. Those are being sent through courier in CD and/or hard copy format.

Two appendices (Appendix E and F) will be forwarded in the morning through email. I apologise for the delay in sending these.

Thanks once again for your feedback and opportunity to provide further information. Please let me know if you require any further information or clarification.

[redacted] | Executive Director | Policy Coordination and Development Division | ACT Treasury

Phone: (02) 6207 0228 | [redacted]

<<Executive Summary 15 January 2009 — Final.doc>> <<Appendix B — Majura Parkway Economic Analysis Report 2009-01-15 rev 5a.pdf>> <<Appendix G —IA Minimum Information Requirements Template.pdf>>

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