

Stravens, Helen

From: Blume, Kristin  
 Sent: Friday, 10 June 2011 1:41 PM  
 To: Austin, Luke  
 Cc: Bourne, Sarah; Davis, Imogen; Kugathas, Kuga; Gill, Tony; Ashcroft, Kelly; Peters, Paul; Smith, Mayumi; Perkins, Anita  
 Subject: RE: TAMS QoN - Majura Pkwy  
 Attachments: ACT heavy vehicle Tony Majura Pkwy.doc

Luke,

The ACT does not hold data on freight movement within the Territory (proposals to undertake modelling and develop a freight strategy have been considered but not supported by Budget Cabinet in the past).

We are however able to make use of freight data from the NSW Roads and Traffic Authority – as NSW is the origin of all freight to the ACT. The NSW freight data in the attached summary was provided to Infrastructure Australia to help obtain support for Majura:

- o The Federal and Barton Highways are the main feeders into Canberra from the north, and the Monaro Highway is the main feeder from the south. The proposed Majura Parkway connects the main feeders of Federal Highway and Monaro Highway.
- o Heavy mass limit (HML) restrictions in place in the ACT mean that there is no HML-approved route through the ACT joining the Monaro Highway to the south with the other major cross-border highways, specifically the Federal and Barton Highways to the north, and the Kings Highway to the east. As a result, vehicles wishing to pass to/from the Monaro through the ACT either cannot operate at HML load or are obliged to use alternative, longer routes, with a direct impact on the efficiency of freight movements.
- o There are issues with NSW-ACT cross-border due to Majura road – Monaro highway HML which impedes efficient freight movement along the Monaro Highway.
- o It is estimated that approximately 38,000 freight vehicles travel on the Monaro Highway per annum through the Michelago weigh in motion station (both directions)
- o The traffic volumes on Majura Road are estimated to grow by 80% over the next 10 years, and a further 50% between 2021 and 2031. This freight growth in the main driver supporting the upgrade of Majura Parkway.

In addition, please see below the advice from TAMS and transport planning provided last Friday:

In a transport network, freight movement is about connections to the national networks and major freight destinations like Fyshwick and the airport. Movement of freight and vehicles away from the centre of Canberra is the main purpose of Majura Parkway. Rapid transport networks serve a different purpose – they are about connecting people from home to major activity and work destinations – the majority of which are located in the City, Parliamentary Zone and town centres. Movement of people has a completely different set of priorities to moving freight, but both are equally important in a creating a sustainable and efficient transport system for Canberra.

Majura Parkway

There are three broad objectives in progressing the Majura Parkway project:

- a) in a national context, the Majura Parkway will provide a high standard and direct connection between the Federal and the Monaro Highways, two important freight routes and assist in improving freight access into and from regional NSW and Canberra. The amount of freight that will be carried on roads will double in the next 10-15 years and improvements such as the Majura Parkway are important in this regard.

b) In a regional context, the Majura Parkway will provide better access to Canberra Airport which is developing as a transport hub given its 24/7 operations with no curfews

c) In a local Canberra context, the Majura Parkway will provide improved capacity on the main road system in North Canberra and assist in improving the amenity and reducing the level of traffic using residential streets in North Canberra as rat runs during the peak periods. The Parkway will also have limited use for public transport, as it links suburban areas (Gungahlin) to destinations (airport, Fyshwick) that have mostly peak demand, and will therefore be served by peak express buses rather than an all day transit network.

Infrastructure Australia, an organisation set up by the Federal Government to identify and assess projects that can contribute to the country has assessed Majura Parkway as a national priority, a project that can contribute to improving the productivity of the nation by making the freight movements more efficient in a national and regional context. The ACT Government also recognises this priority and the contribution that the project can make. When appraising projects, both costs and benefits need to be assessed and the work done to date has confirmed the Majura Parkway to be a very cost effective project on this basis.

#### Rapid transit

The main rapid transit network for movement of passengers will be located on the transport corridors identified between the town centres and future development areas, detailed in the 2009 *Strategic Public Transport Network Plan* (to be finalised as part of *Transport for Canberra*). A summary of the principles for mass passenger movement is available at

<http://www.transport.act.gov.au/Strategic%20public%20transport%20plan%20fact%20sheet.pdf> . Light rail or other mass rapid transit will continue to be considered on its merits to move people around the city on the "Rapid" corridors, including Gungahlin to Civic.

Cheers

Kristin

#### **Kristin Blume**

A/g Senior Manager, Transport Policy Coordination  
Transport Planning  
Environment and Sustainable Development  
ACT Government  
t: (02) 6205 4672 e: [kristin.blume@act.gov.au](mailto:kristin.blume@act.gov.au)

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**From:** Austin, Luke  
**Sent:** Friday, 10 June 2011 1:06 PM  
**To:** Blume, Kristin; Kugathas, Kuga  
**Cc:** Bourne, Sarah; Davis, Imogen  
**Subject:** TAMS QoN - Majura Pkwy  
**Importance:** High

Here is the QoN and answer

Can I please get some urgent advice on this

Thanks

Luke

From: Burmester, Tom  
Sent: Friday, 10 June 2011 10:26 AM  
To: office@act.greens.org.au  
Subject: ACT Greens Media: Government fails to back freight claim with data

# MEDIA RELEASE

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Amanda Bresnan MLA, Transport Spokesperson, ACT Greens

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10 June 2011

## Government fails to back freight claim with data

The ACT Government has claimed a freeway through the Majura Valley is needed to keep freight trucks out of urban Canberra. Questioning from the ACT Greens has revealed that the ACT Government's arguments are based on guesswork rather than data.

"The ACT Government had to admit that they have no data about the amount of freight travelling through Canberra or about how much of this could be diverted with a new freeway," said Greens Transport Spokesperson, Amanda Bresnan.

"First the Government tried to sell this freeway as a panacea for commuting problems and congestion. But with revelations about the likelihood of the road remaining congested, it has flipped to an argument about diverting freight out of urban Canberra.

"Now it is revealed that the Government does not have the data on which to base this argument.

"Responses to my questioning in Budget Estimates show the Government has no data about how much freight is passing through Canberra, no data about the origins or destinations of any freight, and no data about how much freight a freeway might divert.

"It is important that a \$288m infrastructure project be scrutinised, and that the Government provide clear data and evidence for why a project should go ahead.

"The ACT Greens are the only party properly scrutinising this major outlay of Canberrans' taxes and questioning whether a highway through the Majura Valley is really the best use of our limited resources," Ms Bresnan said.

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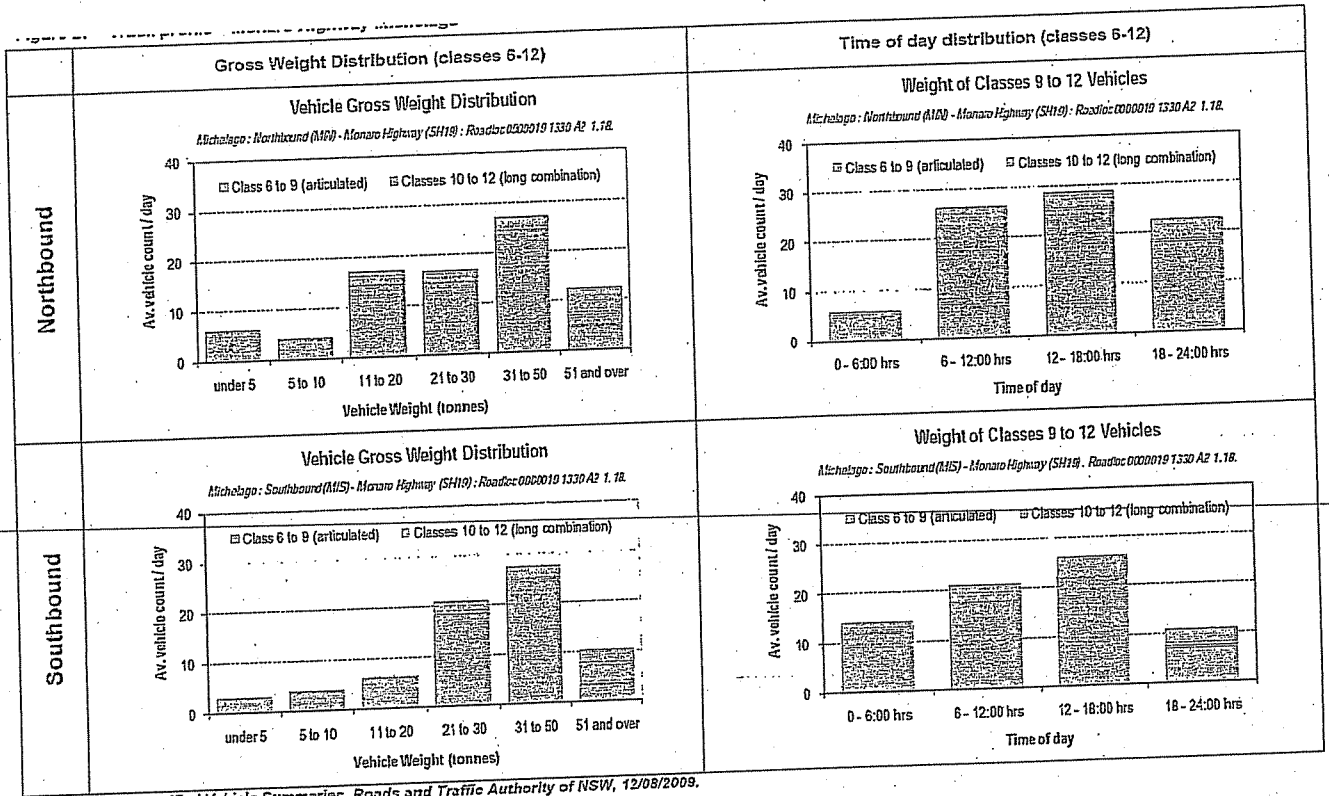
**MEDIA CONTACT:** Tom Burmester – 0423 657 561 ACT Legislative Assembly GPO Box 1020, Canberra ACT 2601

## ACT heavy vehicle (freight movement)

### Some key points

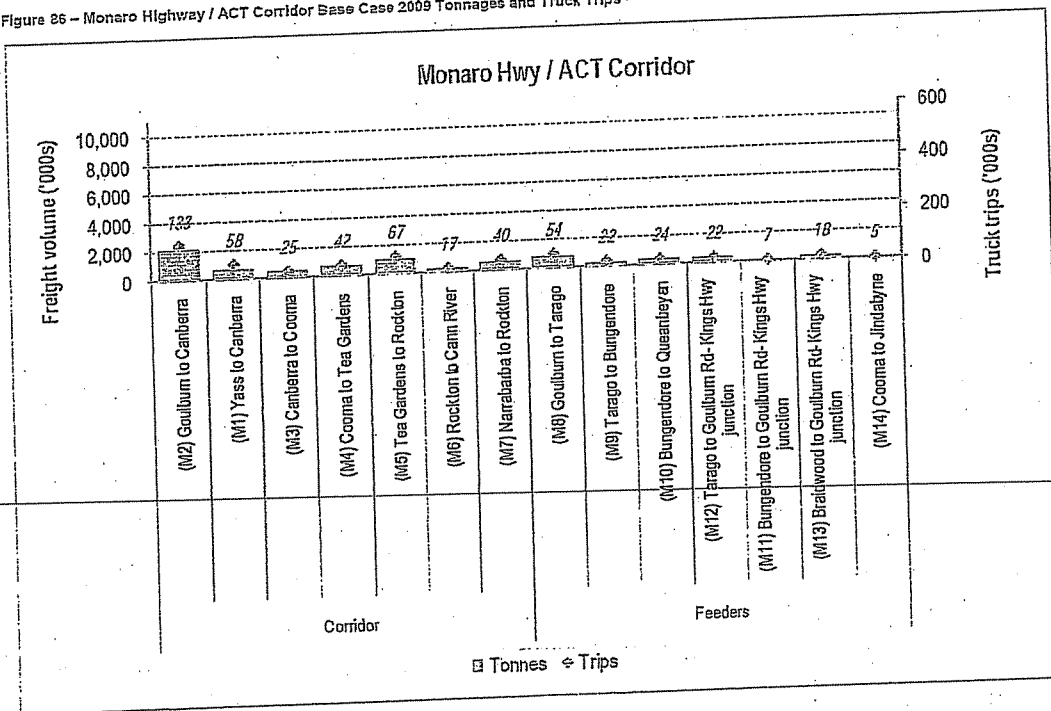
- The Federal and Barton Highways are the main feeders into Canberra from the north and the Monaro Highway is the main feeder from the south. The proposed Majura Parkway connects the main feeders of Federal Highway and Monaro Highway.
- HML restrictions in place in the ACT mean that there is no HML-approved route through the ACT joining the Monaro Highway to the south with the other major cross-border highways, specifically the Federal and Barton Highways to the north, and the Kings Highway to the east. As a result, vehicles wishing to pass to/from the Monaro through the ACT either cannot operate at HML load or are obliged to use alternative, longer routes, with a direct impact on the efficiency of freight movements.
- There are issues with NSW-ACT cross-border due to Majura road – Monaro highway HML which impedes efficient freight movement along the Monaro Highway.
- It is estimated that approximately 38,000 freight vehicles travel on the Monaro Highway per annum through Michelago WIM station (*both directions*)
- The traffic volumes on Majura Road are estimated to grow by 80% over the next 10 years and further 50% between 2021 and 2031.

The truck profile data measured on Monaro Highway at Michelago is as below.



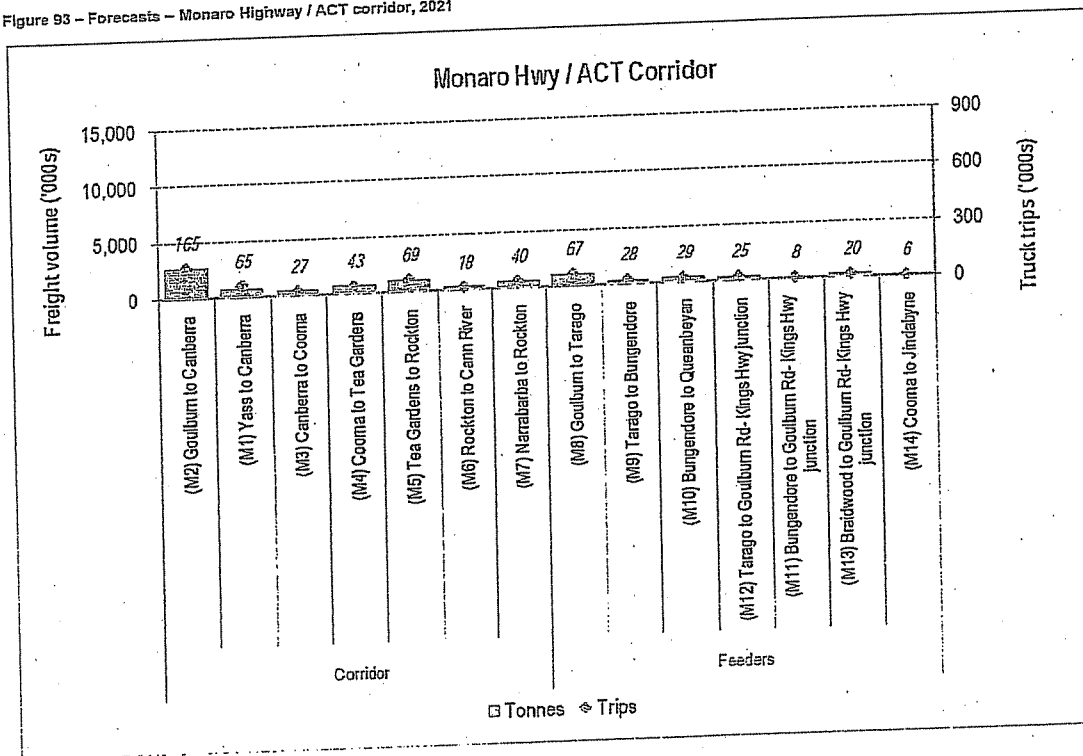
Source: WIM Classified Vehicle Summaries, Roads and Traffic Authority of NSW, 12/08/2009.

Figure 26 – Monaro Highway / ACT Corridor Base Case 2009 Tonnages and Truck Trips



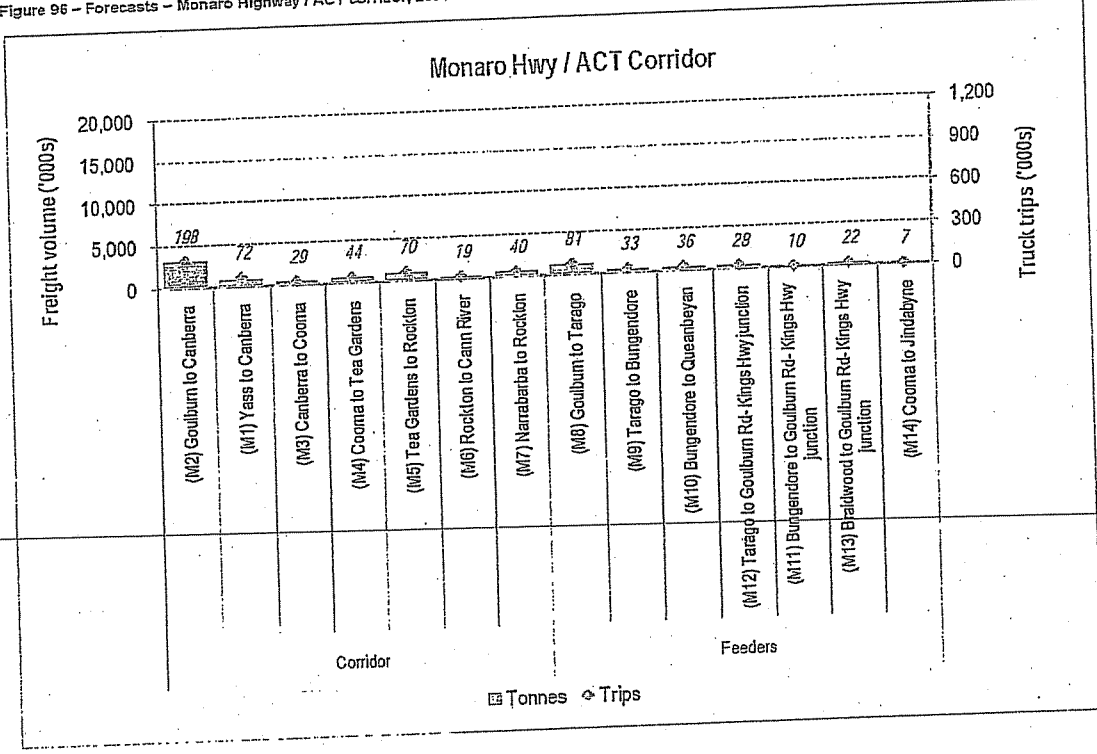
Projection to 2021 (assuming no Majura Parkway and HML restrictions)

Figure 93 – Forecasts – Monaro Highway / ACT corridor, 2021



# Projection to 2031 (assuming no Majura Parkway and HML restrictions)

Figure 96 - Forecasts - Monaro Highway / ACT corridor, 2031



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**Stravens, Helen**

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**From:** Dias, Carl  
**Sent:** Friday, 10 June 2011 10:16 AM  
**To:** Gill, Tony  
**Subject:** RE: Majura Parkway - Defence Land Acquisition  
**Attachments:** 10-10-29 Duntroon No 1 Oval PSP Report.pdf; OVAL\_1825-P1 A.pdf; OVAL\_BLDG-A101 A.pdf

Tony

As discussed attached is the relevant information associated with the above.

Roads ACT will need to write to Defence committing to funding the package of works including the oval and the pavilion.

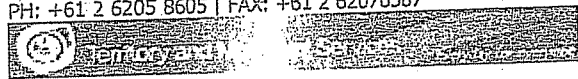
Separately Roads ACT will need to commence the land acquisition process. Jurgen Fritz (Defence Property)(6266 8017) will be able to assist.

A copy of the Roads ACT letter will need to be attached with the land acquisition documentation.

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Hope this assists.

**Carl Dias**  
| Manager - Major Capital Works | ROADS ACT |  
TRANSPORT AND INFRASTRUCTURE DIVISION |  
PH: +61 2 6205 8605 | FAX: +61 2 62076587

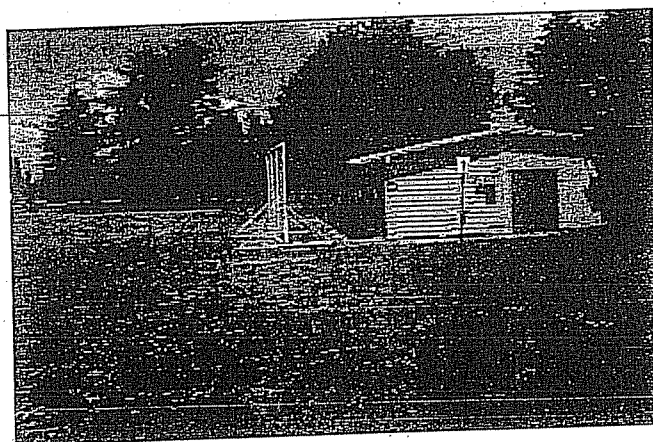


E: [carl.dias@act.gov.au](mailto:carl.dias@act.gov.au)

# Duntroon No 1 Oval Upgrade

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## Preliminary Sketch Plan Report



Report for SMEC  
October 2010



## 2 Project key Issues

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### LANDSCAPE

Upgrade of the Duntroon No 1 Oval has followed the TAMS Design Standards for Urban Infrastructure – DS24 Sportsground Design.

This design standard identifies the minimum standard for an irrigated playing field and for the inclusion of a turf wicket. Irrigation is provided as an extension to the non-potable system currently installed to the Duntroon Ovals.

The scope of oval works included in this Preliminary Sketch Design is,

- Removal of top 250mm of existing grass and topsoil and removal of the turf wicket pug. Delivery to Pialligo recycling facility.
- Rip and gypsum subgrade to 350mm.
- Install subsoil drainage and stormwater drainage.
- Install irrigation system
- Install 250mm growing medium compliant with Design Standard specification
- Install turf wicket (5 wicket table)
- Install grass surface
- Install perimeter picket fence and mowing strip
- Consolidate grass surface

The scope of oval perimeter ancillary works included in this Preliminary Sketch Design is,

- Concrete paths and vehicular access from adjacent carparks to oval and equipment store.
- Concrete path connections to adjacent cyclepath.
- Concrete apron to forecourt to change facilities.
- Landscape shrub beds adjacent to carparks and change facilities.
- Tree planting to complete oval perimeter planting.
- Provision of relocatable 5 tier spectator seating (6) for 300 spectators.
- Provision of a new scoreboard (manual or electric).

### LIGHTING

The oval lighting shall be designed in accordance with Australian Standards AS 2560.1 and AS 2560.2.3.

The oval lighting shall be sufficient to meet the requirements for "Amateur level ball and physical training" in accordance with table 1 of AS 2560.2.3.

The luminaires and column heights shall be selected to meet the requirements of the "Manual of Standards Part 139 – Aerodromes". The oval's proximity to the Canberra airport may impact on the allowable upward light and column heights.

A preliminary lighting installation for the oval is:

- 6 off 25m mid-hinge columns with 3 floodlights on each,

## **CHANGE FACILITIES, CANTEEN, EQUIPMENT STORE**

The Amenity Building is a modest self contained building designed to serve the future requirements of Oval No.1 at Duntroon. The building is designed in accordance with Building Code of Australia and relevant Australian Standards.

The building consists of:

- Two change rooms with showers and locker facilities
- Common toilet facilities including an accessible toilet
- Umpire change room, with shower and toilet
- Canteen with kitchen facilities
- Maintenance and equipment store
- Covered seating area for spectators.

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The building is orientated to the southwest of Oval 1 to minimise the glare from the morning and afternoon sun and take advantage of the shading from the summer sun.

The change room areas are calculated on the basis that a cricket team consists of 16 people including coach, the change rooms are 32m<sup>2</sup>, which equates to 2m<sup>2</sup> per player. The covered seating area allows for standing space and 50 seated spectators.

The location of circulation corridor that divides the building through the centre enables the building to be developed further in the future if the requirements of the facility changes.

The enclosed spaces encourage natural cross flow ventilation by allowing high level louvers along two sides of the building to minimise cooling requirements. The roof form is designed to maximise rainwater harvesting which is to be stored to supplement irrigation demands and/or used to flush the toilets. The construction method is to be of robust materials to minimise maintenance and damage from vandalism.

## LIGHTING

The lighting works identified is expected to cost approximately \$280,000 + GST.

## CHANGE FACILITIES, CANTEEN, EQUIPMENT STORE

The building consists of 162m<sup>2</sup> of fully enclosed NLA, an estimate for a building of this type and construction method would be \$2000/m<sup>2</sup>. The external covered seating area is 142m<sup>2</sup> and could be built for approximately \$900/m<sup>2</sup>.

The demolition of the existing building is approximately \$5000 and this cost may be absorbed in the construction price.

Total costs:

Enclosed spaces: \$324,000

External covered spaces: \$127,800

Demolition: \$5,000

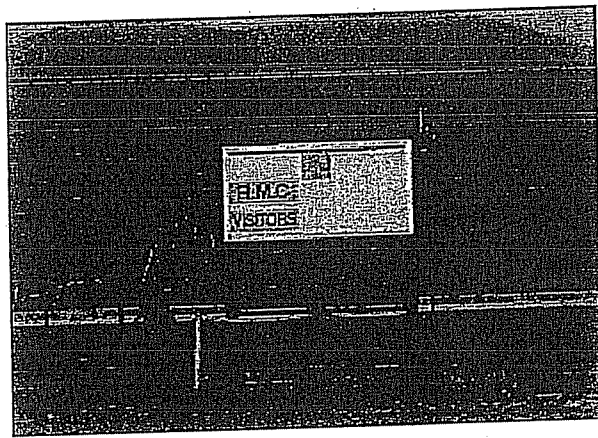
Preliminaries: 10%

Total: \$502,480

The figures are based on previous similar work and it is an estimate, the extent of wet areas and the associated services can escalate the price for this project. For a more precise estimate it is recommend a quantity surveyor be engaged.

## COSTINGS SUMMARY

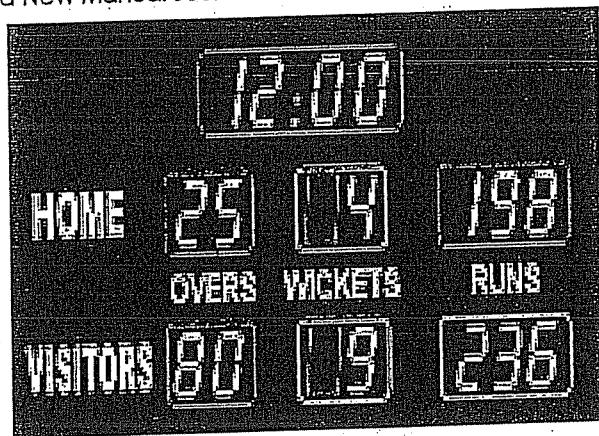
Landscape Oval Works	\$1,076,287 +GST	\$1,183,915 incl GST
Ancillary Oval Perimeter Works	\$126,500 +GST	\$139,150 incl GST
Lighting	\$280,000 +GST	\$308,000 incl GST
Architecturals		\$502,480 incl GST
	Subtotal	\$2,088,545 incl GST
Contingency 10%		\$208,854 incl GST
<b>Project Estimate</b>		<b>\$2,297,400 incl GST</b>



Existing Duntroon No 1 Oval Scoreboard



Proposed New Manual Scoreboard



Proposed Optional Electronic Scoreboard

## 5 Quality assurance

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### Contact information

DSB Partners Pty Ltd  
Trading as dsb Landscape Architects  
ABN 94 052 528 293

Directors: Paul Bombardier, Michael Reeves

Deakin Chambers  
14 Hannah Place  
Deakin ACT 2600

Phone 02 6285 1955

Fax 02 6281 6668

Email dsb@dsbla.com.au

Web www.dsbla.com.au

### Quality assurance information

Report title: Duntroon No 1 Oval Upgrade

Job number: 1825

Date: 29 October 2010

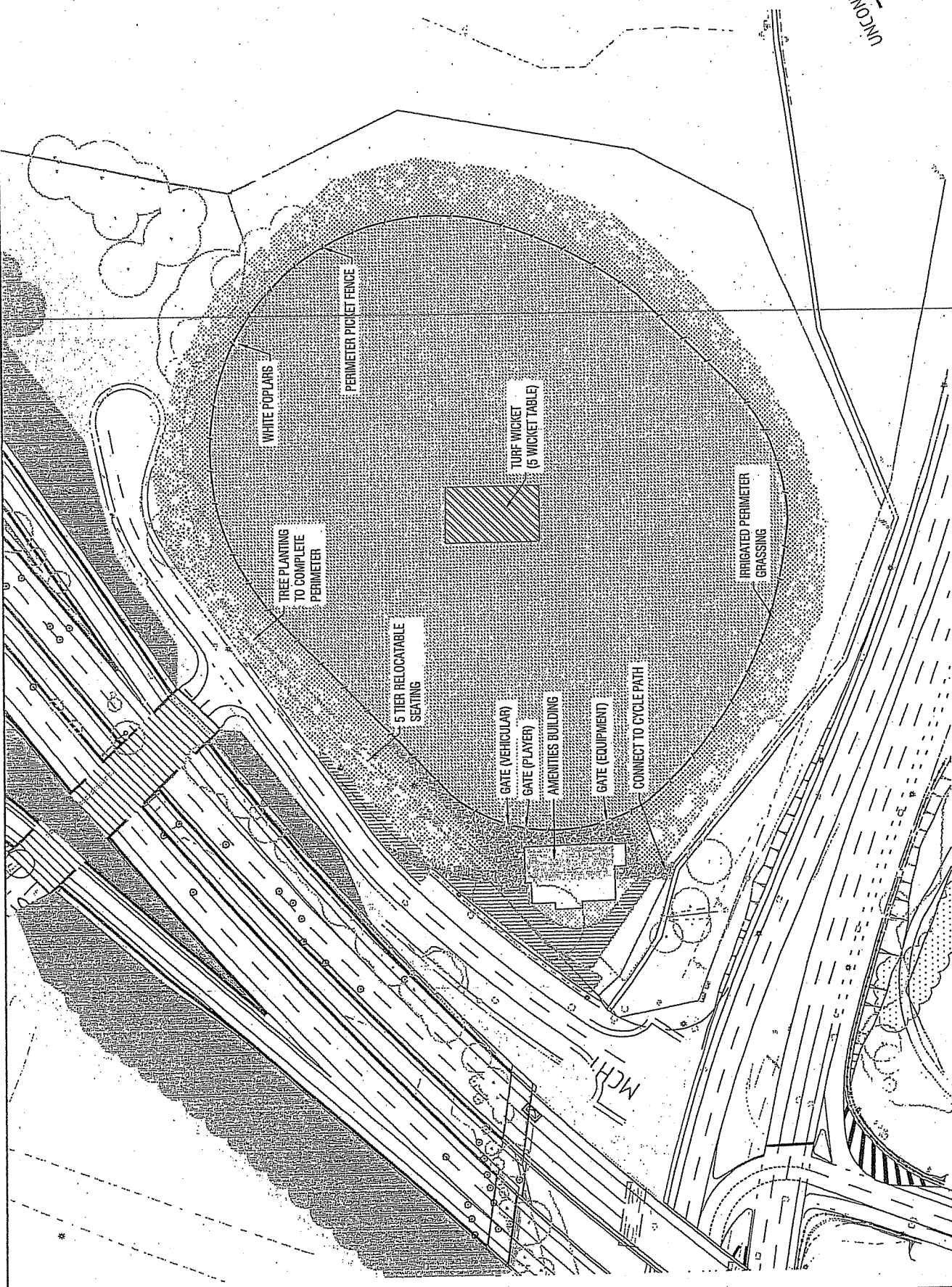
Prepared by: Michael Reeves

Reviewed by: Paul Bombardier

### Issue history

Issue Letter	Issue Date	Details	Authorised by
A	29/10/10	Preliminary Sketch Plan Report	Pb

- EXISTING TREES TO BE RETAINED
- LA THINNE TREE PLANTING
- SPRING PLANTING
- IRRIGATED GRAZED OVAL
- IRRIGATED GRASS
- COARSE PAVEMENT
- TURF WICKET
- VEHICLE ACCESS GATE
- PACKET FENCE



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PRELIMINARY SKETCH PLANS - NOT FOR CONSTRUCTION

PROJECT TITLE	HA JIRA PARKWAY FROM HOWARD HWY TO FEDERAL HWY DUNTRON NO. 1 OVAL UP GRADE LANDSCAPE PLAN
SCALE	1:500 @ A1
DATE	15/03/2014
PROJECT NO.	1025-PTA
REVISED BY	
DATE	
DESIGNED BY	
DATE	
CHECKED BY	
DATE	
APPROVED BY	
DATE	

DESIGNER	SMBC
CLIENT	SIBC AUSTRALIA PTY LTD
PROJECT NO.	1025-PTA
DATE	15/03/2014
PROJECT TITLE	HA JIRA PARKWAY FROM HOWARD HWY TO FEDERAL HWY DUNTRON NO. 1 OVAL UP GRADE LANDSCAPE PLAN

**SMBC**  
SIBC AUSTRALIA PTY LTD  
1025-PTA  
15/03/2014  
HA JIRA PARKWAY  
FROM HOWARD HWY TO FEDERAL HWY  
DUNTRON NO. 1 OVAL UP GRADE  
LANDSCAPE PLAN

**SMBC**  
SMBC ARCHITECTS  
1025-PTA  
15/03/2014  
HA JIRA PARKWAY  
FROM HOWARD HWY TO FEDERAL HWY  
DUNTRON NO. 1 OVAL UP GRADE  
LANDSCAPE PLAN

NAME	H. REEVES
DESIGNER	H. REEVES
CLIENT	P. BOWMAN
PROJECT MANAGER	A. BORELAND
PROJECT DIRECTOR	C. SUTTON

DATE	15/03/2014
REVISION	01
DESCRIPTION	PRELIMINARY ISSUE

REVISION IN PROGRESS

REVISION IN PROGRESS



(18)

**Stravens, Helen**



**From:** Gill, Tony  
**Sent:** Monday, 6 June 2011 4:16 PM  
**To:** Ashcroft, Kelly; Blume, Kristin; Kugathas, Kuga  
**Cc:** Smith, Mayumi; Zotti, Kristen; Josifovski, Kiki; Bourne, Sarah  
**Subject:** RE: Media Enquiry: Majura Parkway

Answers to the various questions on Majura Parkway

- 1) Yes, the planning for the Majura Parkway has considered Canberra traffic forecasts for 2021 and 2031. Some of this traffic will have been generated or induced by the provision of a high standard road but the majority will have been redistributed from other routes such as the residential streets in North Canberra during the peak periods.
- 2) The modelling has indicated that the Majura Parkway will carry in excess for 40,000 vehicles a day and that it will attract a lot of traffic that is currently using residential streets in North Canberra given the limited capacity of the existing main road network.

3) There are three broad objectives being sought in progressing the Majura Parkway project

- in a national context, the Majura Parkway will provide a high standard and direct connection between the Federal and the Monaro Highways, two important freight routes and assist in improving freight access into and from regional NSW and Canberra. The amount of freight that will be carried on roads will double in the next 10-15 years and improvements such as the Majura Parkway are important in this regards.

- in a regional context, the Majura Parkway will provide better access to Canberra Airport which is developing as a transport hub given its 24/7 operations with no curfews

- In a local Canberra context, the Majura Parkway will provide improved capacity on the main road system in North Canberra and assist in improving the amenity and reducing the level of traffic using residential streets in North Canberra as rat runs during the peak periods.

Infrastructure Australia, an organisation set up by the Federal Government to identify and assess projects that can contribute to the country has assessed Majura Parkway as a national priority , a project that can contribute to improving the productivity of the nation by making the freight movements more efficient in a national and regional context. The ACT Government also recognises this priority and the contribution that the project can make.

- While the planning work for a future light rail network is still ongoing, a light rail network will address only one of the three broad objectives of the Majura Parkway project by way of improving the local public transport capacity. It will not have the regional benefits associated with the Majura parkway and will not contribute to improving the national freight network. When appraising projects, both costs and benefits need to be assessed and the work done to date has confirmed the Majura Parkway to be a very cost effective project on this basis.

Regards

Tony Gill  
 Roads ACT  
 6/6/11

**From:** Ashcroft, Kelly  
**Sent:** Monday, 6 June 2011 3:20 PM  
**To:** Gill, Tony; Blume, Kristin; Kugathas, Kuga  
**Cc:** Smith, Mayumi; Zotti, Kristen; Josifovski, Kiki

**Subject:** FW: Media Enquiry: Majura Parkway  
**Importance:** High

Hi Tony

Can I please get some urgent advice on the media enquiry below in relation to Majura Parkway.

Kristin/Kuga – not sure if you guys can assist with the light rail component of question three.

The Minister's office have asked for a response by 5 pm today.

Kelly

**From:** Austin, Luke  
**Sent:** Monday, 6 June 2011 3:11 PM  
**To:** Ashcroft, Kelly  
**Cc:** Bourne, Sarah  
**Subject:** FW: Media Enquiry: Majura Parkway

For response, can I please have by 5pm?

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Thanks

Luke

**From:** Markus Mannheim [<mailto:markus.mannheim@canberratimes.com.au>]  
**Sent:** Monday, 6 June 2011 2:20 PM  
**To:** Austin, Luke  
**Subject:** Media Enquiry: Majura Parkway

Luke, could you call me about this, or ask the relevant minister's officer to answer asap if it's not Corbell? It's for tomorrow's paper.

Background:

The Victorian Auditor-General has just completed an inquiry into six roads that cost \$6 billion ([link](#)). Among the criticisms were that the Victorian Government overestimated the long-term benefits of these roads, such as less traffic congestion, specifically by ignoring the traffic that these roads will create.

The ACT Government has argued that the Majura Parkway will cut traffic and greenhouse gases ([link](#)).

Question:

1. Has the ACT Government modelled or otherwise estimated the amount of extra traffic that the Majura Parkway will induce?
2. If so, what were those findings/estimates?
3. ACT Government cost estimates suggest that a standalone Gungahlin-Civic light rail system would cost less to build than the parkway, and a light rail route that was part of an ACT-wide network would cost substantially less than the parkway. Why is the Government prioritising the parkway over light rail, given that it is more expensive?

Cheers,  
Markus Mannheim  
The Canberra Times | Public Sector Informant  
Phone: 02 6280 2230 | 0428 280 114

Stravens, Helen

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From: Davies, Tanya  
Sent: Tuesday, 7 June 2011 3:10 PM  
To: Gill, Tony  
Subject: Majura parkway

Hello Tony

I'm just checking whether you have any talking points that would be helpful to the Chief Minister in light of the Greens media release today. (below fyi)

A few lines in response to this would be very helpful.

Thanks

Tanya

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## Government ignores traffic realities

The ACT Greens say that the Government is ignoring the medium to long term consequences of major road projects and that the new ACT Auditor General should consider investigating this issue in the ACT.

Amanda Bresnan, ACT Greens transport spokesperson, cited a new report from the Victorian Auditor General, which criticised the Victorian Roads Authority for failing to assess the *induced traffic* caused by new roads. This results in an overestimating of the benefits of the road, "giving decision-makers false confidence about the capacity of the improved road network to cope with future traffic."

"This is exactly the issue that the ACT Greens have repeatedly raised with the ACT Government, and which it continues to ignore. The ACT Government is committing the same faults that are criticised in this report," said Ms Bresnan.

"The number one recommendation of the report is that the roads authority take account of the significance of induced traffic. This concept recognises that building major new roads increases the amount of travel and traffic, creating an overall increase in fuel and greenhouse emissions, and fails to reduce commuters' travel times."

"The ACT Government's website on Majura Parkway continues to claim that a new Majura Parkway will 'relieve traffic congestion' and 'reduce greenhouse gases'. This is exactly the kind of claim that the Victorian Auditor General has criticised."

"We can't keep spending ACT taxpayers money on false promises – we have to be realistic about the genuine impacts of any new proposals that are put up as a solution to congestion.

It may well be that the money is better spent on public transport options that have been shown to actually relieve congestion over the longer term.

"I think it would be appropriate that our new Auditor General conduct a similar audit on the ACT Government's assessment of roads. It is especially timely given the Government's current proposal to build Majura Parkway for hundreds of millions of dollars," said Ms Bresnan.

The Victorian Auditor General's Report, *Management of Major Roads*, can be found at: <http://download.audit.vic.gov.au/files/20110601-Major-Roads.pdf>

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Stravens, Helen

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From: Gill, Tony  
Sent: Thursday, 2 June 2011 10:31 AM  
To: Foulds Alex  
Cc: Dias, Carl  
Subject: FW: Majura Parkway - Construction Cost Estimate Review  
Attachments: 3002212 Majura Parkway Cost Estimate Review - Draft.pdf

Alex

As discussed, this is a draft report which we will be reviewing in relation to the Best practise guide format as well as other comments that we may have- I think t is helpful for you to be aware of it as the underlying message is one of confirming the previous cost estimate for this project as adequate.

Regards

Tony Gill

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From: Sutton, Craig [mailto:Craig.Sutton@smec.com]  
Sent: Tuesday, 31 May 2011 3:45 PM  
To: Gill, Tony  
Cc: Dias, Carl; Cowper, Peter  
Subject: Majura Parkway - Construction Cost Estimate Review

Tony,  
Please find attached SMEC's draft report on the recent construction cost review for the Majura Parkway project. SMEC's review, and 3<sup>rd</sup> party Audit by Macdonald International, have concluded a P90 estimate in the order of \$290M is appropriate for this project. Full documentation is attached. I am available to attend a briefing session if you wish to discuss further.

Thanks and Regards,

Craig Sutton | Regional Manager, ACT  
SMEC Aust Pty Ltd  
Suite 2, Level 1, 243 Northbourne Ave, Lyneham ACT 2602  
T +61 2 6234 1922 | F +61 2 6234 1966 | M 0419 440 633  
craig.sutton@smec.com | www.smec.com

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www.smec.com

27 May 2011

Mr Tony Gill  
Territory and Municipal Services  
Level 7, Macarthur House  
12 Wattle St  
Lyneham ACT 2602

Dear Tony,

**RE: Majura Parkway Cost Estimate Review**

SMEC was engaged by Roads ACT to undertake a construction cost estimate review on the previous cost estimate prepared based on the Concept Design of the Majura Parkway Project.

A recent funding application to Infrastructure Australia (IA) was based on the previous cost estimate. It is understood that the ACT Government wished to obtain an improved understanding of this cost estimation, so as to enable informed response to IA queries. In order to do this, SMEC utilised independent staff that had not worked on the concept design and did a full review of the quantities and rates.

The calculations to the quantities are fully documented and can be made available if required. The adopted rates used are based on contractor rates for various jobs throughout the ACT over the last three years and inflated to current prices by 5% per year. The previous estimate of \$287.4M increased slightly to \$293.5M or approximately 2.1%.

To support this review, SMEC commissioned MacDonald International (MI) to prepare an independent audit of the cost estimate. A copy of their report is attached to this letter. A summary of the cost estimates prepared by SMEC and MI are given in the table 1 below.

A key risk was identified in regards to the supply of imported fill. The scheduled quantity of 637, 677 cubic metres of imported fill may be difficult to supply during the construction period as quarry licenses and approval conditions limit the volumes of extraction allowed annually. It is noted that the supply rate may increase if material is needed from longer distances. Potential sources may need to be identified to reduce the risk of increased construction costs.

The independent review by MI identified some pay items that could be reduced in rates, but our cost estimate was generally in agreement with the review. SMEC revised the cost estimate sent to MI where appropriate to reflect more realistic rates which resulted in a final total outturn cost of \$293,512,347. A copy of the Bill of Materials is attached.

It can be concluded that the previous estimate submitted as part of the IA application is within the expected costs of the project and can be supported by this review. Incorporating a contingency of 2.5% of total construction costs for inherent risks, it is reasonable to expect a maximum total outturn cost of \$300M.

Table 1 Summary of Cost Estimate

Element	SMEC Original	SMEC Revised	MacDonald International	
			Expected Min.	Expected Max.
Detailed Design and Construction Management	\$16,574,951	\$ 17,624,252	\$17,909,000	\$19,794,000
<b>CONSTRUCTION COSTS</b>				
Preliminaries	\$1,859,456	\$5,432,375	\$3,534,000	\$4,077,000
Provision for Traffic	\$1,656,250	\$2,000,000	\$6,497,000	\$6,697,000
Earthworks	\$47,636,787	\$46,051,754	\$43,693,000	\$48,121,000
Underground Services	\$8,360,312	\$14,585,334	\$12,080,000	\$13,539,000
Flexible Pavement Construction	\$65,574,649	\$73,963,673	\$56,116,000	\$63,512,000
Concrete Kerbs, Footpaths and Minor Works	\$452,882	\$3,579,582	\$3,556,000	\$3,914,000
Road Furniture	\$4,314,638	\$4,582,250	\$4,735,000	\$5,193,000
Incidental Works	\$1,248,359	\$1,605,957	\$1,665,000	\$1,826,000
Landscape	\$16,525,938	\$7,460,831	\$5,315,000	\$7,874,000
Road Signs	\$233,999	\$445,310	\$460,000	\$505,000
Pavement Marking	\$1,172,442	\$1,557,484	\$397,000	\$553,000
Retaining Walls	\$4,810,800	\$5,772,960	\$5,725,000	\$6,302,000
Noise Walls	\$2,544,165	\$2,544,165	\$2,417,000	\$2,671,000
Bridges	\$68,160,000	\$68,160,000	\$59,252,000	\$66,068,000
Soft Ground Treatment	\$1,760,000	\$2,300,000	\$2,485,000	\$2,715,000
Oval No1 Rehabilitation	\$2,090,000	\$2,185,000	\$2,361,000	\$2,579,000
Traffic Signals	\$1,650,000	\$3,000,000	\$1,963,000	\$2,263,000
Street Lighting	\$1,576,532	\$3,373,424	\$3,486,000	\$3,823,000
<b>TOTAL CONSTRUCTION COSTS</b>	<b>\$231,627,209</b>	<b>\$248,600,099</b>	<b>\$215,737,000</b>	<b>\$242,232,000</b>
Escalation from 2011 to 2013	\$39,209,559	\$27,287,996	\$23,949,000	\$26,858,000
<b>Total Outturn Costs</b>	<b>\$287,411,719</b>	<b>\$ 293,512,347</b>	<b>\$257,595,000</b>	<b>\$288,884,000</b>

We hope this meets your current requirements. If you have any queries, don't hesitate to contact the undersigned.

Yours sincerely,

Craig Sutton  
Regional Manager, ACT

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## SMEC 2011 P90 Outturn Cost Estimate

Item	Base Estimate	Contingency	Base Estimate + Contingency	% of Base Estimate
<b>Detailed Design and Construction Management</b>				
Superintendence and Surveillance (3.0%)	\$6,008,267.71	10.0%	\$6,609,094.48	
Design consultancy (3.0%)	\$6,008,267.71	10.0%	\$6,609,094.48	
Procurement and Management (2.0%)	\$4,005,511.81	10.0%	\$4,406,062.99	
<b>Subtotal Detailed Design and Documentation</b>			<b>\$17,624,251.96</b>	<b>6.6%</b>
<b>Property Acquisition</b>				
Duntroon	\$0.00	0.0%	\$0.00	
<b>Subtotal Property Acquisition</b>			<b>\$0.00</b>	
<b>TOTAL OWNER'S COST (TOC)</b>			<b>\$17,624,251.96</b>	<b>6.6%</b>
<b>Construction Costs</b>				
Preliminaries	\$4,345,900.00	25.0%	\$5,432,375.00	
Provision for Traffic	\$1,600,000.00	25.0%	\$2,000,000.00	
Earthworks	\$35,424,426.21	30.0%	\$46,051,754.07	
Underground Services	\$11,219,487.41	30.0%	\$14,585,333.63	
Flexible Pavement Construction	\$59,170,938.26	25.0%	\$73,963,672.82	
Concrete Kerbs, Footpaths and Minor Works	\$3,112,680.16	15.0%	\$3,579,582.18	
Road Furniture	\$3,818,541.91	20.0%	\$4,582,250.29	
Incidental Works	\$1,396,484.24	15.0%	\$1,605,956.87	
Landscape	\$5,739,100.70	30.0%	\$7,460,830.91	
Road Signs	\$371,091.80	20.0%	\$445,310.16	
Pavement Marking	\$1,297,903.34	20.0%	\$1,557,484.01	
Retaining Walls	\$4,810,800.00	20.0%	\$5,772,960.00	
Noise Walls	\$1,957,050.00	30.0%	\$2,544,165.00	
Bridges	\$56,800,000.00	20.0%	\$68,160,000.00	
Soft Ground Treatment	\$2,000,000.00	15.0%	\$2,300,000.00	
Oval No1 Rehabilitation	\$1,900,000.00	15.0%	\$2,185,000.00	
Traffic Signals	\$2,500,000.00	20.0%	\$3,000,000.00	
Street Lighting	\$2,811,186.40	20.0%	\$3,373,423.68	
<b>TOTAL CONSTRUCTION COSTS (TCC)</b>	<b>\$200,275,590.42</b>		<b>\$248,600,098.63</b>	<b>93.4%</b>
<b>Base Estimate (TCC + TOC)</b>			<b>\$266,224,350.58</b>	<b>100.0%</b>
<b>Contingency - Inherent risk</b>	0.00% of TCC		<b>\$0.00</b>	<b>0.0%</b>
<b>Contingency - Contingent risk</b>	0.00% of TCC		<b>\$0.00</b>	<b>0.0%</b>
<b>Base Estimate + Contingency</b>			<b>\$266,224,350.58</b>	
Escalated price (from 2011 prices to 2013, 5% per annum)		10.3%	\$27,287,995.93	
<b>Total Outturn Cost (excl GST)</b>			<b>\$293,512,346.52</b>	<b>110.3%</b>
<b>Total Outturn Cost (incl GST)</b>			<b>\$322,863,581.17</b>	

ROADWORKS

SECTION 0 - PRELIMINARIES

Pay Item	Description	Unit	Quantity	Rate	Amount
<b>G1</b>	<b>Fixed Charges</b>				
G1.1.1	Site Establishment	Item	1	\$600,000.00	\$600,000.00
G1.1.2	Establishment of Temporary Erosion Protection	Item	1	\$300,000.00	\$300,000.00
G1.1.3	Maintenance of Site Amenities	Wk	90	\$350.00	\$31,500.00
G1.1.4	Maintenance of Temporary Erosion Protection	Wk	90	\$800.00	\$72,000.00
G1.2	Survey Setout and Control	Item	1	\$250,000.00	\$250,000.00
G1.3	Construction Quality Records	Item	1	\$75,000.00	\$75,000.00
G1.4	Project Signs	Each	10	\$2,500.00	\$25,000.00
G1.5	Co-ordination of Construction of Services by Utility Service Providers	Item	1	\$128,000.00	\$128,000.00
G1.6	Temporary Site Perimeter Security Fence	Item	1	\$686,000.00	\$686,000.00
G1.7	Survey	Hours	1,440	\$210.00	\$302,400.00
G1.8	Compliance with Project EMP	Item	1	\$15,000.00	\$15,000.00
<b>G2</b>	<b>Provisional Sums</b>				
G2.1.1	Delay Charges due to Principal imposed delays (delays commencing during initial 3 months of the contract) (PQ)	Wk	4	\$25,000.00	\$100,000.00
G2.1.2	Delay Charges due to Principal imposed delays (delays commencing at times other than during the initial 3 months of contract) (PQ)	Wk	4	\$25,000.00	\$100,000.00
G2.2	Condition Survey of Residences (PQ)	Each	19	\$3,000.00	\$57,000.00
G2.3	Additional Work	PS	1	\$1,400,000.00	\$1,400,000.00
G2.4	Audit Testing	PS	3	\$5,000.00	\$15,000.00
G2.5	<b>Relocation/Adjustment of existing services</b>				
G2.5.1.1	Works by ActewAGL for water relocation/adjustment	PS	1	\$10,000.00	\$10,000.00
G2.5.1.2	Works by the contractor on existing water service, excluding works by ActewAGL	PS	1	\$20,000.00	\$20,000.00
G2.5.2.1	Works by ActewAGL for sewer relocation/adjustment	PS	1	\$9,000.00	\$9,000.00
G2.5.2.2	Works by the contractor on existing sewer service, excluding works by ActewAGL	PS	1	\$10,000.00	\$10,000.00
G2.5.3.1	Works by Telstra for Telstra service relocation/adjustment	PS	1	\$50,000.00	\$50,000.00
G2.5.3.2	Works by the contractor on existing Telstra service, excluding works by Telstra	PS	1	\$20,000.00	\$20,000.00
G2.5.4.1	Works by Jemena for gas relocation/adjustment	PS	1	\$50,000.00	\$50,000.00
G2.5.4.2	Works by the contractor on existing gas service, excluding works by Jemena	PS	1	\$20,000.00	\$20,000.00
	<b>TOTAL</b>				\$4,345,900.00

SECTION 1 - PROVISION FOR TRAFFIC

Pay Item	Description	Unit	Quantity	Rate	Base Estimate
101P1	Provision for Traffic, Establish, Maintain & Remove	Item	1	\$1,600,000.00	\$1,600,000.00
	<b>TOTAL</b>				\$1,600,000.00

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SECTION 2 - EARTHWORKS

Pay Item	Description	Unit	Quantity	Rate	Base Estimate
203P1	Protection of the Works	Item	1	\$50,000.00	\$50,000.00
204P1	Clearing and Grubbing				
204P1.1	Clearing and grubbing	Item	1	\$401,000.00	\$401,000.00
204P1.1D	Remove existing electricity tower foundations Ch7160	Item	1	\$0.00	
204P2	Removal of Nominated Trees	Each	471	\$250.00	\$117,750.00
205P1	Removal and Stockpiling of Topsoil				
205P1.1	Removal and Stockpiling of Topsoil (including Leaf Litter Base, Quarantined First Strip Horse Paddock Material and Native Grass Topsoil)	m <sup>3</sup>	98,895	\$15.00	\$1,483,419.15
205P2	General Earthworks				
205P2.1	General Earthworks	m <sup>3</sup>	332,663	\$25.50	\$8,482,906.50
205P3	Disposal of Spoil Material Off Site	m <sup>3</sup>	0	\$15.75	
205P4	Unsuitable Material (PQ)	m <sup>3</sup>	27,808	\$30.00	\$834,240.00
205P5	Tree Breathing Protection - Fill >500mm deep in locations directed by the Superintendent	Each	0	\$0.00	
205P6	Tree Breathing Protection - Fill <500mm deep in locations directed by the Superintendent	Each	4	\$1,200.00	\$4,800.00
206P1	Imported Fill	m <sup>3</sup>	637,677	\$30.00	\$19,130,310.00
206P2	Replacement of Unsuitable with General Fill (PQ)	m <sup>3</sup>	27,808	\$29.73	\$826,731.84
206P3	Time and recompact existing pavements beneath fills	m <sup>2</sup>	6,360	\$7.19	\$45,728.40
206P4	Placing fill in embankments from site stockpiles	m <sup>3</sup>	140,000	\$15.00	\$2,100,000.00
207P1	Preparation of Cut or Fill Subgrade	m <sup>2</sup>	311,792	\$3.71	\$1,156,748.32
207P3	Replacement of Unsuitable with Select Fill Suitable for Subgrades	m <sup>3</sup>	0	\$30.64	
208P1.1	Tree Pit - 1000mm	Each	16,317	\$40.00	\$652,672.00
208P1.2	Garden Beds	Each	22	\$6,000.00	\$132,000.00
212P1	Supply & Installation of Geotextile (PQ)	m <sup>2</sup>	1,700	\$3.60	\$6,120.00
213P1	Water Quality Pond Structures	m <sup>3</sup>			
	<b>TOTAL</b>				<b>\$95,424,426.21</b>

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## SECTION 3 - UNDERGROUND SERVICES

Pay Item	Description	Unit	Quantity	Rate	Base Estimate
303P1.1	Backfilling Under Roads, Paths and Driveways (PQ)	m <sup>3</sup>	20,000	\$73.19	\$1,463,800.00
303P1.2	Replace existing services backfill with subbase material (PQ)	m <sup>3</sup>	13,000	\$86.00	\$1,118,000.00
303P2	<b>Trenching for Service Authorities</b>				
303P2.1	Local low voltage electricity only	m	200	\$61.00	\$12,169.50
303P2.2	High voltage electricity only	m	360	\$82.12	\$29,563.20
303P2.3	Street lighting electricity only	m	0	\$18.41	
303P2.4	Gas only	m	165	\$24.17	\$3,988.05
303P2.5	Telecommunications only	m	555	\$23.24	\$12,898.20
303P2.6	Shared trench with gas and telecommunications	m	0	\$0.00	
303P2.7	Shared trench with electricity, gas and telecommunications	m	0	\$0.00	
303P2.8	50mm dia streetlighting conduit	m	6,500	\$18.00	\$117,000.00
303P3	<b>Removal of Unsuitable Material from Trenches (PQ)</b>	m <sup>3</sup>	1,500	\$57.80	\$86,700.00
303P4	<b>Existing Services Location</b>				
303P4.1	- Sewer	Item	1	\$1,800.00	\$1,800.00
303P4.2	- Stormwater	Item	1	\$1,800.00	\$1,800.00
303P4.3	- Gas	Item	1	\$1,800.00	\$1,800.00
303P4.4	- Electricity	Item	1	\$1,800.00	\$1,800.00
303P4.5	- Water	Item	1	\$1,800.00	\$1,800.00
303P4.6	- ICON	Item	1	\$3,600.00	\$3,600.00
303P4.7	- Telecommunications (all providers including Optic Fibre)	Item	1	\$3,600.00	\$3,600.00
303P5	Extra Over for supply and placement of aggregate bedding material only as directed by the superintendent (PQ)	m <sup>3</sup>	180	\$16.50	\$2,970.00
304P1	<b>Sewer Pipe</b>	m	0	\$0.00	
304P2	<b>Sewer Pipe Fittings</b>				
304P2.1	100x150mm diameter slope junction	Each	0	\$0.00	
304P2.2	100x225mm diameter slope junction	Each	0	\$0.00	
304P2.3	100x300mm slope junction	Each	0	\$0.00	
304P2.4	100x375mm slope junction	Each	0	\$0.00	
304P2.5	225x45 degree bend	Each	0	\$0.00	
304P2.6	buried vertical riser 0.45m high	Each	0	\$0.00	
304P3	<b>Flexible Joints</b>	m	0	\$0.00	
304P4	<b>Pipe and trench Protection</b>				
302P4.1	Concrete bedding	m <sup>3</sup>	0	\$0.00	
302P4.2	Concrete Encasing	m <sup>3</sup>	0	\$0.00	
304P5	<b>Maintenance Holes</b>				
304P5.1	Standard 1050mm diameter maintenance holes	Each	0	\$0.00	
304P5.2	Extra over pay item 304P4.1 for depth in excess of 1.45m	m	0	\$0.00	
304P5.11	Standard 1200mm diameter maintenance hole	Each	0	\$0.00	
304P5.12	Extra over Pay Item 304P4.11 for depth in excess of 1.45m	m	0	\$0.00	
304P5.21	1500mm diameter maintenance hole	Each	0	\$0.00	
304P5.22	Extra over pay item 304P4.21 for depth in excess of 1.45m	m	0	\$0.00	
304P6	<b>Additional Items for maintenance holes</b>				
304P6.1	150mm diameter pipe to depth of 0.45m	vert. dro	0	\$0.00	
304P6.2	Extra over Pay Item 304P5.1 for vertical drops in excess of 0.45m height	m	0	\$0.00	
304P6.11	225mm diameter pipe to depth of 0.45m	vert. dro	0	\$0.00	
304P6.12	Extra over Pay Item 304P5.11 for vertical drops in excess of 0.45m height	m	0	\$0.00	
304P6.21	300mm diameter pipe to depth of 0.45m	vert. dro	0	\$0.00	
304P6.22	Extra over Pay Item 304P5.21 for vertical drops in excess of 0.45m height	m	0	\$0.00	
304P6.31	375mm diameter pipe to depth of 0.45m	vert. dro	0	\$0.00	
304P6.32	Extra over Pay Item 304P5.31 for vertical drops in excess of 0.45m height	m	0	\$0.00	
304P6.41	Class C galic heavy duty cover	Each	0	\$0.00	
304P6.42	Class D galic heavy duty cover	Each	0	\$0.00	
304P6.51	Construction of ladder in maintenance hole	m	0	\$0.00	
304P6.52	Construction of ladder in maintenance hole	landing	0	\$0.00	
304P6.53	Construction over existing sewer excluding fees payable to the Sewer Authority		3	\$1,500.00	\$4,500.00
304P7	<b>Maintenance Shafts</b>				
304P7.1	Maintenance shaft for 150mm diameter pipe	Each	0	\$0.00	
304P7.2	Maintenance shaft for 225mm diameter pipe	Each	0	\$0.00	
304P8	<b>Rodding Points</b>				
304P8.1	Rodding point for 100mm diameter pipe	Each	0	\$0.00	
304P8.2	Rodding point for 150mm diameter pipe	Each	0	\$0.00	

<b>304P9</b>	<b>End Caps</b>					
304P9.1	150mm diameter sewer main - temporary uPVC end cap	Each	0	\$0.00		
304P9.2	225mm diameter sewer main - temporary uPVC end cap	Each	0	\$0.00		
304P9.3	300mm diameter sewer main - temporary uPVC end cap	Each	0	\$0.00		
304P9.4	375mm diameter sewer main - temporary uPVC end cap	Each	0	\$0.00		
304P9.11	100mm diameter sewer tie - uPVC end cap and marker	Each	0	\$0.00		
304P9.12	150mm diameter sewer tie - uPVC end cap and marker	Each	0	\$0.00		
304P9.13	225mm diameter sewer tie - uPVC end cap and marker	Each	0	\$0.00		
<b>304P10</b>	<b>Trench Stops and Scour Stops</b>					
304P10.1	Scour stop on 150mm diameter sewer main	Each	0	\$0.00		
304P10.2	Scour stop on 225mm diameter sewer main	Each	0	\$0.00		
304P10.3	Scour stop on 300mm diameter sewer main	Each	0	\$0.00		
304P10.4	Scour stop on 375mm diameter sewer main	Each	0	\$0.00		
304P10.11	Trench stop on 150mm diameter sewer main	Each	0	\$0.00		
304P10.12	Trench stop on 225mm diameter sewer main	Each	0	\$0.00		
304P10.13	Trench stop on 300mm diameter sewer main	Each	0	\$0.00		
304P10.14	Trench stop on 375mm diameter sewer main	Each	0	\$0.00		
<b>304P11</b>	<b>Works by Sewer Authority</b>					
304P11.1	Works by Sewer Authority to existing sewer services	Item	1	\$5,000.00	\$5,000.00	
304P11.2	Works by the Contractor on existing sewer services, excluding works by the Sewer Authority	Item	1	\$5,000.00	\$5,000.00	
<b>304P12</b>	<b>CCTV Camera Testing</b>	Item	1	\$20,000.00	\$20,000.00	
<b>304P13</b>	<b>Exhume Existing Sewer Pipes</b>	m	0	\$0.00		
<b>304P18</b>	<b>Remove Existing Manholes</b>	Each	0	\$0.00		
<b>305P1</b>	<b>Stormwater Pipes</b>					
305P1.1.2.300.1	300 mm dia. Stormwater pipe, RRJ-CL2, depth range 0-1.5m	m	988	\$264.96	\$261,780.48	
305P1.1.2.300.2	300 mm dia. Stormwater pipe, RRJ-CL2, depth range 1.5-3m	m	423	\$283.21	\$119,797.83	
305P1.1.2.375.1	375 mm dia. Stormwater pipe, RRJ-CL2, depth range 0-1.5m	m	0	\$0.00		
305P1.1.2.375.2	375 mm dia. Stormwater pipe, RRJ-CL2, depth range 1.5m-3m	m	0	\$0.00		
305P1.1.2.450.1	450 mm dia. Stormwater pipe, RRJ-CL2, depth range 0-1.5m	m	916	\$272.44	\$249,555.04	
305P1.1.2.450.2	450 mm dia. Stormwater pipe, RRJ-CL2, depth range 1.5-3m	m	916	\$326.93	\$299,466.05	
305P1.1.2.525.1	525 mm dia. Stormwater pipe, RRJ-CL2, depth range 0-1.5m	m	260	\$331.87	\$86,312.20	
305P1.1.2.525.2	525 mm dia. Stormwater pipe, RRJ-CL2, depth range 1.5-3m	m	607	\$355.17	\$221,656.37	
305P1.1.2.600.2	600 mm dia. Stormwater pipe, RRJ-CL2, depth range 1.5m-3m	m	53	\$402.34	\$21,324.02	
305P1.1.2.675.2	675 mm dia. Stormwater pipe, RRJ-CL2, depth range 1.5m-3m	m	92	\$442.57	\$41,162.37	
305P1.1.2.750.2	750 mm dia. Stormwater pipe, RRJ-CL2, depth range 1.5m-3m	m	182	\$461.99	\$84,082.18	
305P1.1.2.900.2	900 mm dia. Stormwater pipe, FJ-CL2, depth range 1.5m-3m	m	186	\$632.27	\$117,602.22	
305P1.1.2.1050.2	1050 mm dia. Stormwater pipe, RRJ-CL2, depth range 1.5m-3m	m	102	\$823.77	\$84,024.54	
305P1.1.2.1200.2	1200 mm dia. Stormwater pipe, RRJ-CL2, depth range 1.5m-3m	m	1,099	\$925.00	\$1,017,674.00	
305P1.1.2.1350.2	1350 mm dia. Stormwater pipe, FJ-CL2, depth range 1.5m-3m	m	254	\$1,063.00	\$270,002.00	
305P1.1.2.1500.2	1500 mm dia. Stormwater pipe, RRJ-CL2, depth range 1.5m-3m	m	507	\$1,156.00	\$586,092.00	
305P1.1.2.1650.2	1650 mm dia. Stormwater pipe, RRJ-CL2, depth range 1.5m-3m	m	131	\$1,260.00	\$165,060.00	
305P1.1.4.1800.3	1800 mm dia. stormwater pipe, FJ-CL4, depth range 3.0-4.5m	m	227	\$1,315.29	\$298,570.83	
<b>305P2</b>	<b>Precast Stormwater Reinforced Concrete Box Culverts</b>					
305P2.1.2.2700.1	2700 mm wide x 750 mm height Stormwater RCBC	m	67	\$2,500.00	\$167,500.00	
305P2.1.2.3000.1	3000 mm wide x 900 mm height Stormwater RCBC	m	149	\$3,000.00	\$447,000.00	
<b>305P3</b>	<b>Stormwater Pipe Fittings</b>					
305P3.1	100x225mm diameter slope junction		0	\$0.00		
305P3.2	100x300mm diameter slope junction		0	\$0.00		
305P3.3	100x375mm diameter slope junction		0	\$0.00		
305P3.4	150x225mm diameter slope junction		0	\$0.00		
305P3.5	150x300mm diameter slope junction		0	\$0.00		
305P3.6	150x375mm diameter slope junction		0	\$0.00		
304P3.11	225x300mm diameter saddle slope junction		0	\$0.00		
304P3.12	225x375mm diameter saddle slope junction		0	\$0.00		
304P3.13	225x450mm diameter saddle slope junction		0	\$0.00		
304P3.14	225x525mm diameter saddle slope junction		0	\$0.00		
304P3.15	225x600mm diameter saddle slope junction		0	\$0.00		
305P3.21	100x30 degree bend		0	\$0.00		
305P3.22	150x30 degree bend		0	\$0.00		
305P3.23	225x30 degree bend		0	\$0.00		
<b>305P4</b>	<b>Stormwater Pipe Branch Connections</b>					
305P300.750	- 300 to 750mm diameter branch connection	Each	0	\$0.00		
305P300.900	- 300 to 900mm diameter branch connection	Each	0	\$0.00		
305P300.1200	- 300 to 1200mm diameter branch connection	Each	0	\$0.00		
305P25.1650	- 525 to 1650mm diameter branch connection	Each	0	\$0.00		
305P300.2100x600	- 300 to box culvert 2100x600mm branch connection	Each	0	\$0.00		

<b>305P5</b>	<b>Flexible Joints</b>					
305P5.300	300mm flexible joint	Each	173	\$166.41	\$28,788.93	
305P5.375	375mm flexible joint	Each	0	\$0.00		
305P5.450	450mm flexible joint		57	\$200.77	\$11,443.89	
305P5.525	525mm flexible joint	Each	10	\$375.16	\$3,751.60	
305P5.600	600mm flexible joint		0	\$0.00		
305P5.675	675mm flexible joint		0	\$0.00		
305P5.900	900mm flexible joint		0	\$0.00		
305P5.1350	1350mm flexible joint		0	\$0.00		
305P5.1800	1800mm flexible joint		0	\$0.00		
<b>305P6</b>	<b>Splayed Stormwater Pipe</b>					
<b>305P7</b>	<b>1050mm Diameter Manhole</b>					
305P7.1	Standard 1050mm diameter manhole	Each	0	\$0.00		
305P7.2	Extra over per metre depth in excess of 1.45m for Pay Item 305P7.1	m	0	\$0.00		
305P7.3	Extra over Pay Item 305P7.1 for Class D heavy duty galic access covers	Each	0	\$0.00		
<b>305P8</b>	<b>Special Chambered Manholes</b>	Each	0	\$0.00		
<b>305P9</b>	<b>Stormwater Sumps</b>					
305P9.1	Standard Single Type R Sump	Each	140	\$2,332.98	\$326,617.20	
305P9.2	Extra over Pay Item 305P9.1 for depth in excess of 1.8m	Each	14	\$924.61	\$12,944.54	
305P9.3	Extra over for single sided plantation type inlet including concrete apron	Each	0	\$0.00		
305P9.4	Extra over for double sided plantation type inlet including concrete apron	Each	0	\$0.00		
305P9.11	Standard Double Type R Sump	Each	0	\$0.00		
305P9.12	Extra over Pay Item 305P9.11 for depth in excess of 1.8 m	m	0	\$0.00		
305P9.41	Standard Single Type QS Sump	Each	0	\$0.00		
305P9.42	Extra over for single sided plantation type inlet including concrete apron	Each	0	\$0.00		
<b>305P10</b>	<b>Grated Inlet Sumps</b>					
305P10.600.600	600mmx600mm rectangular grated inlet sump		0	\$0.00		
305P10.P.450.450	450mm x 450mm grated sump above retaining wall		0	\$0.00		
305P10.P.700.1	RTA NSW Standard gully pit type SO1 (Drg MD.R11.B21.A.1)	Each	10	\$3,464.84	\$33,631.76	
<b>305P11</b>	<b>Surcharge Structures</b>	Each	0	\$0.00		
<b>305P12</b>	<b>Dead Ends</b>					
305P12.1	150mm diameter stormwater main - uPVC end cap	Each	0	\$0.00		
305P12.2	225mm diameter stormwater main - uPVC end cap	Each	0	\$0.00		
305P12.11	100mm diameter stormwater tie - uPVC end cap and marker	Each	0	\$0.00		
305P12.12	150mm diameter stormwater tie - uPVC end cap and marker	Each	0	\$0.00		
305P12.13	225mm diameter stormwater tie - uPVC end cap and marker	Each	0	\$0.00		
305P12.14	300mm diameter stormwater tie - uPVC end cap and marker	Each	0	\$0.00		
<b>305P13</b>	<b>Headwalls</b>					
305P13.P.300.1.1	300mm headwall	Each	3	\$926.10	\$2,778.30	
305P13.P.450.1.1	450mm headwall	Each	3	\$1,018.25	\$3,054.75	
305P13.P.525.1.1	525mm headwall	Each	1	\$1,284.56	\$1,284.56	
305P13.P.600.1.1	600mm headwall	Each	2	\$1,550.87	\$3,101.74	
305P13.P.675.1.1	675mm headwall	Each	2	\$1,720.00	\$3,440.00	
305P13.P.750.1.1	750mm headwall	Each	6	\$1,908.10	\$11,448.60	
305P13.P.900.1.1	900mm headwall	Each	4	\$2,045.11	\$8,180.44	
305P13.P.900.1.2	Twin 900mm headwall	Each	2	\$4,444.01	\$8,888.02	
305P13.P.1050.1.2	Twin 1050mm headwall	Each	2	\$6,141.20	\$12,282.40	
305P13.P.1200.1.1	1200mm headwall	Each	2	\$7,500.00	\$15,000.00	
305P13.P.1200.1.2	Twin 1200mm headwall	Each	6	\$8,600.00	\$57,600.00	
305P13.P.1200.1.3	Triple 1200mm headwall	Each	10	\$12,500.00	\$125,000.00	
305P13.P.1350.1.1	1350mm headwall	Each	4	\$8,200.00	\$32,800.00	
305P13.P.1350.1.2	Twin 1350mm headwall	Each	0	\$0.00		
305P13.P.1350.1.3	Triple 1350mm headwall	Each	2	\$14,000.00	\$28,000.00	
305P13.P.1350.1.3	Triple 1350mm headwall	Each	8	\$15,000.00	\$120,000.00	
305P13.P.1500.1.3	Triple 1500mm headwall	Each	2	\$7,500.00	\$15,000.00	
305P13.P.1650.1.1	1650mm headwall	Each	2	\$9,000.00	\$18,000.00	
305P13.P.1800.1.1	1800mm headwall	Each	2	\$12,000.00	\$24,000.00	
305P13.B.2700.1.2	2700mm wide - 750mm height RCBC headwall	Each	2	\$15,000.00	\$30,000.00	
305P13.B.3000.1.2	3000mm wide - 900mm height RCBC headwall	Each	2	\$15,000.00	\$30,000.00	
<b>305P14</b>	<b>Scour Stops</b>	Each	0	\$0.00		
<b>305P15</b>	<b>CCTV Camera Testing</b>	Item	1	\$30,000.00	\$30,000.00	
<b>305P18</b>	<b>Remove Existing Structure</b>					
305P18.1	Remove existing stormwater pit	Each	29	\$700.00	\$20,300.00	
305P18.2	Remove existing headwall	Each	17	\$600.00	\$10,200.00	
305P18.3	Remove existing scour protection	Each	0	\$0.00		

<b>305P21</b>	<b>Exhume Existing Stormwater Pipes</b>					
305P21.1	Existing 100mm dia pipes	m	0		\$0.00	
305P21.2	Existing 225mm dia pipes	m	0		\$0.00	
305P21.3	Existing 300mm dia pipes	m	0		\$0.00	
305P21.4	Existing 375mm dia pipes	m	0		\$0.00	
305P21.5	Existing 450mm dia pipes	m	0		\$0.00	
305P21.6	Existing 600mm dia pipes	m	0		\$0.00	
305P21.7	Existing 900mm dia pipes	m	0		\$0.00	
<b>305P22</b>	<b>Connect to Existing Stormwater Structures</b>	Each	0		\$0.00	
<b>306P1</b>	<b>Subsoil Drains</b>					
306P1.1	Class 400	m	0		\$0.00	
306P1.2	Class 1000 including filter material	m	32,000		\$34.74	\$1,111,680.00
306P1.3	Extra over item 306P1.2 for no fines concrete capping to subsoil drains (PQ)	m	0		\$0.00	
<b>306P2</b>	<b>Solid Walled uPVC Subsoil Pipes</b>	m	1,600		\$38.92	\$62,272.00
306P3.1	High End Risers	Each	400		\$162.22	\$64,888.00
306P3.2	Intermediate Risers	Each	400		\$162.22	\$64,888.00
<b>306P4</b>	<b>Subsoil Outlets</b>					
306P4.1	Outlet to structure	Each	140		\$186.14	\$26,059.60
306P4.2	Subsoil Drain Headwall	Each	400		\$217.03	\$86,812.00
306P5.1	Remove & Relocate existing subsoil High End Riser	Each	0		\$0.00	
306P5.2	Remove & Relocate existing subsoil Intermediate Riser	Each	0		\$0.00	
<b>306P6</b>	<b>Drainage Blanket (PQ)</b>	m <sup>2</sup>	2,700		\$350.00	\$945,000.00
<b>315P1</b>	<b>Protections and Relocations</b>					
315P1.1	Relocation of power line	Item	1		\$150,000.00	\$150,000.00
315P1.4	Protect Fibre Optic during construction	Item	1		\$60,000.00	\$60,000.00
315P1.5	Protect Gas main during construction	Item	1		\$60,000.00	\$60,000.00
315P1.6	Protect water supply during construction	Item	1		\$100,000.00	\$100,000.00
315P1.7	Protect Electricity during construction	Item	1		\$60,000.00	\$60,000.00
<b>316P1</b>	<b>Remove Existing watermain structure</b>					
316P1.1	Remove existing 900mm dia watermain (including disposal of asbestos coating)	m	0		\$0.00	
316P1.2	Removal of all existing watermain other than 900mm diameter	Item	0		\$0.00	
316P1.3	Removal of all existing stormwatermain	Item	10		\$2,300.00	\$23,000.00
	<b>TOTAL</b>					<b>\$11,219,487.41</b>

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## SECTION 4 - FLEXIBLE PAVEMENT CONSTRUCTION

Pay Item	Description	Unit	Quantity	Rate	Base Estimate
403P1	<i>Base Material</i>				
403P1.1	Traffic Category 1 - Cement Treated	m <sup>3</sup>	50,216	\$186.00	\$9,340,217.81
403P1.2	Traffic Category 2a	m <sup>3</sup>	0	\$0.00	
403P1.3	Traffic Category 2b	m <sup>3</sup>	6,212	\$110.00	\$683,325.50
403P1.4	Traffic Category 2c	m <sup>3</sup>	0	\$0.00	
403P1.5	Traffic Category 2d	m <sup>3</sup>	0	\$0.00	
403P1.6	Cycleways	m <sup>3</sup>	0	\$0.00	
403P2	<i>SubBase Material (Class 1)</i>				
403P2.1	Traffic Category 1	m <sup>3</sup>	0	\$0.00	
403P2.2	Traffic Category 2a	m <sup>3</sup>	0	\$0.00	
403P2.3	Traffic Category 2b	m <sup>3</sup>	7,454	\$110.00	\$819,990.60
403P2.4	Traffic Category 2c	m <sup>3</sup>	0	\$0.00	
403P2.5	Traffic Category 2d	m <sup>3</sup>	0	\$0.00	
403P2.6	Cycleways	m <sup>3</sup>	0	\$0.00	
403P3	<i>Select Material</i>				
403P3.1	CBR15	m <sup>3</sup>	0	\$0.00	
403P3.2	CBR12	m <sup>3</sup>	0	\$0.00	
403P3.3	CBR10	m <sup>3</sup>	43,437	\$35.00	\$1,520,305.35
403P3.4	CBR8	m <sup>3</sup>	0	\$0.00	
403P3.5	CBR6	m <sup>3</sup>	0	\$0.00	
403P4	<i>Match to Existing Pavement</i>	m	2,949	\$22.00	\$64,857.00
404P1	<i>Supply and Spray Primer, Primerbinder</i>	l	0	\$0.00	
404P1.1	AMC00	l	0	\$0.00	
404P1.2	AMC0	l	0	\$0.00	
404P1.3	AMC1	l	0	\$0.00	
404P1.4	AMC2	l	0	\$0.00	
404P1.5	AMC3	l	0	\$0.00	
404P1.6	AMC4	l	0	\$0.00	
404P1.7	Field Cutback Primer/Primerbinder	l	597,118	\$3.29	\$1,964,519.67
404P1.8	Prime/Primer Seal	l	0	\$0.00	
404P2	<i>Supply and Spray Binder - Class 170 Bitumen</i>	l	0	\$0.00	
404P3	<i>Supply and Spray Binder - Class 320 Bitumen</i>	l	83,869	\$3.29	\$275,928.94
404P4	<i>Supply, Incorporate and Spray Cutter Oil in Binder</i>	l	23,298	\$2.50	\$58,243.94
404P5	<i>Supply, Incorporate and Spray Flux Oil in Binder</i>	l	0	\$0.00	
404P6	<i>Supply, Precoat, Apply and Incorporate Aggregate</i>				
404P6.1	5mm aggregate (precoated)	m <sup>3</sup>	0	\$0.00	
404P6.2	7mm aggregate (precoated)	m <sup>3</sup>	2,449	\$280.00	\$685,766.27
404P6.3	10mm aggregate (precoated)	m <sup>3</sup>	0	\$0.00	
404P6.4	14mm aggregate (precoated)	m <sup>3</sup>	226	\$280.00	\$63,249.96
404P6.5	20mm aggregate (precoated)	m <sup>3</sup>	0	\$0.00	
404P7	<i>Deductions in Accordance with Clause 4.04.13 (V)</i>				
404P7.1	Bitumen	l	0	\$0.00	
404P7.2	Refinery Cutback Bitumen	l	0	\$0.00	
404P8	<i>Supply and Spray Binder - Grade S25E (SAM)</i>	l	0	\$0.00	
404P9	<i>Supply and Spray Binder - Class 450 Bitumen</i>	l	1,202,546	\$3.40	\$4,088,657.88
404P10	<i>Supply and Spray Binder - A15E</i>	l	689,336	\$3.60	\$2,481,608.33
404P11	<i>Supply and Spray Binder - S20E/S55R</i>	l	67,836	\$3.40	\$230,640.99
405P1	<i>Supply and Application of Tack Coat</i>	l	0	\$0.00	
405P2	<i>Dense Graded Asphalt (AC) in Corrective Courses</i>				
405P2.1	AC-MD 5mm Nominal Size	t	0	\$0.00	
405P2.2	AC-MD 10mm Nominal Size	t	0	\$0.00	
405P2.3	AC-MD 14mm Nominal Size	t	0	\$0.00	
405P2.4	AC-MD 20mm Nominal Size	t	0	\$0.00	
405P2.11	AC-HD 5mm Nominal Size	t	0	\$0.00	
405P2.12	AC-HD 10mm Nominal Size	t	0	\$0.00	
405P2.13	AC-HD 14mm Nominal Size	t	0	\$0.00	
405P2.14	AC-HD 20mm Nominal Size	t	0	\$0.00	

405P3	<i>Dense Graded Asphalt in Intermediate / Base Course</i>					
405P3.1	AC-MD 5mm Nominal Size	t	0		\$0.00	
405P3.2	AC-MD 10mm Nominal Size	t	0		\$0.00	
405P3.3	AC-MD 14mm Nominal Size	t	0		\$0.00	
405P3.11	AC-HD 10mm Nominal Size	t	0		\$0.00	
405P3.12	AC-HD 14mm Nominal Size	t	0		\$0.00	
405P3.13	AC-HD 20mm Nominal Size	t	0		\$0.00	
405P3.14	C320 AC 20mm Nominal Size	t	16,664		\$260.00	\$4,332,671.51
405P3.15	C450 AC 20mm Nominal Size	t	66,603		\$260.00	\$17,316,668.68
405P4	<i>Dense Graded Asphalt in Wearing Course</i>					
405P4.1	AC-MD 10mm Nominal Size	t	0		\$0.00	
405P4.2	AC-MD 14mm Nominal Size	t	0		\$0.00	
405P4.3	AC-MD 20mm Nominal Size	t	0		\$0.00	
405P4.11	AC-HD 10mm Nominal Size	t	0		\$0.00	
405P4.12	AC-HD 14mm Nominal Size	t	0		\$0.00	
405P4.13	AC-HD 20mm Nominal Size	t	0		\$0.00	
405P4.14	A15E AC 14mm Nominal Size	t	28,228		\$310.00	\$8,750,525.09
405P4.15	C450 AC 14mm Nominal Size	t	24,976		\$260.00	\$6,493,750.75
405P5	<i>Dense Graded Asphalt (AC) over an Existing Pavement (No Levels Specified)</i>					
405P5.1	AC-MD 10mm Nominal Size	t	0		\$0.00	
405P5.2	AC-MD 14mm Nominal Size	t	0		\$0.00	
405P5.3	AC-MD 20mm Nominal Size	t	0		\$0.00	
405P5.11	AC-HD 10mm Nominal Size	t	0		\$0.00	
405P5.12	AC-HD 14mm Nominal Size	t	0		\$0.00	
405P5.13	AC-HD 20mm Nominal Size	t	0		\$0.00	
405P6	<i>Dense Graded Asphalt (AC) over an Existing Pavement (Levels Specified)</i>					
405P6.1	AC-MD 10mm Nominal Size	t	0		\$0.00	
405P6.2	AC-MD 14mm Nominal Size	t	0		\$0.00	
405P6.3	AC-MD 20mm Nominal Size	t	0		\$0.00	
405P6.11	AC-HD 10mm Nominal Size	t	0		\$0.00	
405P6.12	AC-HD 14mm Nominal Size	t	0		\$0.00	
405P6.13	AC-HD 20mm Nominal Size	t	0		\$0.00	
405P7	<i>Stone Mastic Asphalt (SMA) in Wearing Course</i>					
405P7.1	SMA-M14mm Nominal Size	t	0		\$0.00	
405P7.2	SMA-M10mm Nominal Size	t	0		\$0.00	
405P7.11	SMA-H A20E 10mm Nominal Size	t	0		\$0.00	
405P7.12	SMA-H 14mm Nominal Size	t	0		\$0.00	
405P8	<i>Stone Mastic Asphalt (SMA) over an Existing Pavement (No Levels Specified)</i>					
405P8.1	SMA-M 10mm Nominal Size	t	0		\$0.00	
405P8.2	SMA-M 14mm Nominal Size	t	0		\$0.00	
405P8.11	SMA-H 10mm Nominal Size	t	0		\$0.00	
405P8.12	SMA-H 14mm Nominal Size	t	0		\$0.00	
405P9	<i>Open Graded (OG) Asphalt in Wearing Course</i>					
405P9.1	OG 10mm Nominal Size	t	0		\$0.00	
405P9.2	OG 14mm Nominal Size	t	0		\$0.00	
405P10	<i>Open Graded Asphalt (OG) over an Existing Pavement (No Levels Specified)</i>					
405P10.1	OG 10mm Nominal Size	t	0		\$0.00	
405P10.2	OG 14mm Nominal Size	t	0		\$0.00	
405P11	<i>Fine Gap Graded Asphalt (FGG) in Wearing Course</i>					
405P11.1	FGG-A	t	0		\$0.00	
405P11.2	FGG-B	t	0		\$0.00	
405P11.3	FGG-R	t	0		\$0.00	
405P12	<i>Fine Gap Graded Asphalt (FGG) over an Existing Pavement (No Levels Specified)</i>					
405P12.1	FGG-A		0		\$0.00	
405P12.2	FGG-B		0		\$0.00	
405P12.3	FGG-R		0		\$0.00	
405P13	<i>Deduction in accordance with Clause 4.05.13</i>		0		\$0.00	
408P1.1	<i>Rise and Fall of bitumen in Asphaltic Pavement</i>	PS	1		\$0.00	\$0.00
408P1.2	<i>Rise and Fall of Primers/sealing and Sealing</i>	PS	1		\$0.00	\$0.00
	<b>TOTAL</b>					<b>\$59,170,938.26</b>



## SECTION 6 - CONCRETE KERBS, FOOTPATHS AND MINOR WORKS

Pay Item	Description	Unit	Quantity	Rate	Base Estimate
603P1	<i>Kerb Works</i>				
603P1.1	Mountable Kerb - Type MK	m	50,721	\$51.14	\$2,593,871.94
603P1.2	Mountable Kerb and Gutter - Type MKG	m	2,654	\$52.46	\$139,228.84
603P1.3	Kerb Only - Type KO	m	0	\$0.00	
603P1.4	Kerb and Gutter - Type KG	m	2,378	\$53.28	\$126,699.84
603P1.5	Modified Layback Kerb - Type MLBK	m	0	\$0.00	
603P1.6	Open Channel Invert - Type OCI	m	0	\$0.00	
603P1.7	Modified Mountable Kerb - MMK	m	0	\$0.00	
603P1.8	Mower Strips (200mm x 200mm)	m	0	\$0.00	
603P1.9	Kerb - Type SO (NSW RTA)	m	942	\$153.45	\$144,549.50
603P1.10	Extra over for transitions between kerb types	Each	0	\$0.00	
603P1.11	Concrete Dish Drain	m	0	\$0.00	
603P1.12	Elsholz kerb	m	0	\$0.00	
603P1.20	Extra over rate for steel reinforcement as specified	m	0	\$0.00	
603P2	<i>Footpaths, Driveways, and General Paving Works</i>				
603P2.1	- 125mm Thick Concrete Paving	m <sup>2</sup>	741	\$55.55	\$41,179.22
603P2.2	- 145mm Thick Concrete Paving	m <sup>2</sup>	0	\$57.79	
603P2.11	Extra over rate for reinforced concrete paving using SL82 mesh	m <sup>2</sup>	741	\$15.00	\$11,115.00
603P2.12	Extra over rate for reinforced concrete paving using SL92 mesh	m <sup>2</sup>	0	\$0.00	
604P1	Pram Crossings	Each	1	\$720.00	\$720.00
604P2	Vehicle Crossings	Each	0	\$0.00	
604P3	Pram Ramps	m <sup>2</sup>	0	\$0.00	
605P1	Remove existing kerb	m	4,293	\$12.40	\$53,227.62
605P2	Remove existing concrete paths / Island	m <sup>2</sup>	161	\$13.00	\$2,087.80
605P3	Remove existing pavements outside the limits of the earthworks	m <sup>2</sup>	0	\$0.00	
	<b>TOTAL</b>				<b>\$3,112,680.16</b>

## SECTION 7 - ROAD FURNITURE

Pay Item	Description	Unit	Quantity	Rate	Base Estimate
704P1	<i>Supply and Installation of Guide Posts</i>	Each	0	\$0.00	
704P2	<i>Removal of Existing Guide Posts</i>	Each	0	\$0.00	
705P1	<i>Construction of W Beam and Thrie Beam Safety Barriers</i>				
705P1.1	W Beam - G4	m	7,420	\$166.10	\$1,232,462.00
705P1.2	W Beam - MB4	m	0	\$0.00	
705P1.3	W Beam - MB9 (Modified)	m	0	\$0.00	
705P2	<i>Construction of W Beam and Thrie Beam Safety Barriers Transitions</i>				
705P2.1	W-Beam - Thrie Beam Transition (6m unit length)	Each	46	\$3,045.00	\$140,070.00
705P2.2	W-Beam - Bridge Approach (Long end post)	Each	0	\$0.00	
705P3	<i>Construction of W Beam and Thrie Beam Safety Barriers Terminals</i>				
705P3.1	Specified End Treatment - ET 2000 Terminal	Each	0	\$0.00	
705P3.2	Trailing terminal	Each	0	\$0.00	
705P3.3	Trailing Slotted Breakaway Cable Terminal	Each	0	\$0.00	
705P3.4	Specified End Treatment - G-R-E-A-T Terminal	Each	0	\$0.00	
705P3.5	MELT Terminal	Each	57	\$5,584.36	\$318,308.52
705P4	<i>Construction of Steel Wire Rope Barrier</i>	m	3,033	\$141.02	\$427,713.66
705P5	<i>Construction of Steel Wire Rope Anchor Terminals</i>	Each	4	\$2,760.00	\$11,040.00
705P6	<i>Removal / Modifications to existing Safety Barriers</i>				
705P6.1	Remove existing wire rope barrier	m	0	\$0.00	
705P6.2	Remove existing concrete barrier Type F/Half Type F	m	0	\$0.00	
706P1	<i>Construction of Concrete Safety Barriers</i>				
706P1.1	Tric Bloc Type concrete barrier 900mm high (Profile Type 1)	m	0	\$0.00	
706P1.2	Half Type F concrete barrier 820mm high (Profile Type 2)	m	6,131	\$273.83	\$1,678,851.73
706P2	<i>Construction of Concrete Safety Barrier Transitions</i>				
706P2.1	6m sloped end terminal	m	20	\$504.80	\$10,096.00
706P2.2	Tric Bloc Type concrete barrier to bridge concrete barrier	m	0	\$0.00	
706P2.4	Tric Bloc Type concrete barrier to existing Type F concrete barrier	m	0	\$0.00	
706P2.5	Tric Bloc Type concrete barrier to existing Tric Bloc Type concrete barrier	m	0	\$0.00	
	<b>TOTAL</b>				<b>\$3,818,541.91</b>

## SECTION 8 - INCIDENTAL WORKS

Pay Item	Description	Unit	Quantity	Rate	Base Estimate
B03P1	Mortared Stone Fitching	m <sup>2</sup>	0	\$204.18	
B04P1	Fencing				
B04P1.2	Fencing Type S	m	25,443	\$24.96	\$635,057.28
B04P1.5	Galvanised Steel Handrail Type PD-1	m	0	\$191.81	
B04P2	Removal of Existing Fences	m	6,118	\$10.55	\$64,539.63
B04P3	Gates				
B04P3.1	Ranger (Vehicle Access) Gates	Each	1	\$2,130.75	\$2,130.75
B04P3.2	Pedestrian access gates	Each	0	\$0.00	
B04P3.3	Construction access gates	Each	4	\$2,130.75	\$8,523.00
B04P5	Cycle Rest Rail				
B04P5.1	Single Post Cycle Rest Rail	Each	0	\$578.00	
B04P5.2	Double Post Cycle Rest Rail	Each	0	\$0.00	
B05P1	Post and Rail Log Barriers	m	0	\$0.00	
B05P2	Log Bollards	Each	0	\$0.00	
B07P1	Electric Barbeque Installation		0	\$0.00	
B08P1	Timber Edging		0	\$0.00	
B09P1	Decomposed Granite Gravel (100mm thickness)	m <sup>2</sup>	0	\$0.00	
B10P1	Tree Grates	Each	0	\$0.00	
B10P2	Tree Guards	Each	0	\$0.00	
B11P1	Mortared Stone Wall Foundation	m <sup>3</sup>	0	\$0.00	
B11P2	Mortared Stone Wall Face and Top	m <sup>2</sup>	0	\$0.00	
B11P4	Remove Existing Retaining Wall				
B11P4.1	Remove rock retaining wall	m <sup>2</sup>	0	\$0.00	
B12P1	Rock Filled Wire Mattresses and Gabion Baskets				
B12P1.1	170mm mattress thickness	m <sup>2</sup>	2,230	\$114.08	\$254,398.40
B12P1.2	230mm mattress thickness	m <sup>2</sup>	0	\$0.00	
B12P1.3	300mm mattress thickness	m <sup>2</sup>	0	\$0.00	
B12P1.4	500mm mattress thickness	m <sup>2</sup>	0	\$0.00	
B12P1.5	1000mm mattress thickness	m <sup>2</sup>	0	\$0.00	
B12P2	Excavation for Mattresses and Gabion Baskets	m <sup>3</sup>	379	\$89.44	\$33,906.70
B20P1	Jute-Mesh	m <sup>2</sup>	48,179	\$7.96	\$383,504.84
B20P2	Geotextile Fabric	m <sup>2</sup>	2,676	\$5.39	\$14,423.64
B21P1	Rip Rap	m <sup>2</sup>	0	\$0.00	
B22P1	Stairs	m <sup>3</sup>	0	\$0.00	
	TOTAL				\$1,395,484.24

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SECTION 9 - LANDSCAPE

Pay Item	Description	Unit	Quantity	Rate	Base Estimate
903P1	Landscape Drainage	m	0	\$0.00	
904P1	Irrigation Pipe	m	0	\$0.00	
904P1.1	100 dia HDPE	m	0	\$0.00	
904P1.2	150 dia HDPE	m	0	\$0.00	
904P2	Irrigation Sprinklers	Each	0	\$0.00	
904P3	Irrigation QCV's	Each	0	\$0.00	
904P4	Irrigation automatic valves	Each	0	\$0.00	
904P5	Irrigation stop cocks and gate valves	Each	0	\$0.00	
904P6	Irrigation valve boxes	Each	0	\$0.00	
904P7	Irrigation electrical cable	m	0	\$0.00	
904P8	Irrigation conduits	m	0	\$0.00	
904P9	Irrigation tracer wire	m	0	\$0.00	
904P10	Irrigation controller housing	Each	0	\$0.00	
904P11	Irrigation controllers	Each	0	\$0.00	
904P12	Irrigation meter pit/equipment pit	Each	0	\$0.00	
904P13	Irrigation water meter, backflow prevention and associated equipment	Each	0	\$0.00	
904P14	Irrigation polyethylenes tubing	m	0	\$0.00	
905P1	Topsolling	m <sup>2</sup>	40,792	\$1.44	\$58,740.48
905P2	Planting Beds / Planting Areas	m <sup>2</sup>	40,792	\$3.16	\$128,902.72
906P1	Grassing	m <sup>2</sup>	589,522	\$0.75	\$442,141.50
906P1.1	Re-instate disturbed areas with dryland grassing Mix A or B	m <sup>2</sup>	407,236	\$0.75	\$305,427.00
906P1.2	Re-instate disturbed areas with non-invasive dryland grassing	m <sup>2</sup>	0	\$0.00	
906P1.3	Re-instate area with pavement is to be removed with non-invasive dryland grassing. Rippling & scarifying of existing base and spreading site topsoil, refer to Civil Document	m <sup>2</sup>	0	\$0.00	
906P1.4	Reinstate steeper batters with 50/50 mix of Dryland Grassing Mix C or D and Temporary Grassing Mix	m <sup>2</sup>	92,528	\$0.78	\$72,171.84
907P1	Turfing	m <sup>2</sup>	0	\$0.00	
908P1	Bitumen and Straw Mulch	m <sup>2</sup>	1,089,286	\$0.86	\$936,785.96
909P1	Planting	Each	246,875	\$8.50	\$2,098,437.50
909P1.1	Supply and plant native trees (forestry tubes) as detailed	m	2,800	\$19.50	\$54,600.00
909P1.2	Shrub Planting	m <sup>3</sup>	0	\$0.00	
909P2	Excavation of Rock for Planting	m <sup>3</sup>	0	\$0.00	
909P3	Root Control Barrier		0	\$0.00	
909P3.1	Tree planting position in pavement		0	\$0.00	
909P3.2	6m length	m	14,892	\$56.00	\$833,952.00
909P3.3	Kangaroo Fence		0	\$0.00	
909P4	Tree Guards / Water Tubes	No	0	\$0.00	
910P1	Mulching	m <sup>2</sup>	92,528	\$7.20	\$666,201.60
911P1	Consolidation	Week	30	\$4,724.67	\$141,740.10
<b>TOTAL</b>					<b>\$5,739,100.70</b>

SECTION 10 - ROAD SIGNS

Pay Item	Description	Unit	Quantity	Rate	Base Estimate
1005P1	Manufacture & Delivery of Guide Signs & Support Structures	m <sup>2</sup>	305	\$240.25	\$73,276.25
1010P1	Manufacture and delivery of guide sign support structures	tonne	9	\$5,527.60	\$57,116.50
1010P2	Erection of Guide Sign Structures				
1010P2.1	Tubular Post Mounted	Each	365	\$300.97	\$109,854.05
1010P2.2	Modular Mounted (Steel Rectangular Hollow Section)	Each	10	\$650.00	\$6,500.00
1010P2.3	Overhead Gantry Mounted including fixing guidesigns to gantry	Each	0	\$0.00	
1010P2.4	Overhead Canillever Mounted	Each	0	\$0.00	
1010P3	Modifications to Existing Signs	Each	25	\$259.90	\$6,497.50
1010P4	General Signs				
1010P4.1	Traffic Signs	Each	375	\$314.26	\$117,847.50
1010P4.1.0	DN22			\$0.00	
1010P4.1.1	R1-1A	Each	0	\$0.00	
1010P4.1.2	R1-2A	Each	0	\$0.00	
1010P4.1.3	R2-3	Each	0	\$0.00	
1010P4.1.4	R2-4A	Each	0	\$0.00	
1010P4.1.5	R2-4B	Each	0	\$0.00	
1010P4.1.6	R2-6A(L)	Each	0	\$0.00	
1010P4.1.7	R2-6B(L)	Each	0	\$0.00	
1010P4.1.8	R2-6B(R)	Each	0	\$0.00	
1010P4.1.9	R2-9B(R)	Each	0	\$0.00	
1010P4.1.10	R2-14A(R)	Each	0	\$0.00	
1010P4.1.11	R2-14A(L)	Each	0	\$0.00	
1010P4.1.12	R4-1A(60)	Each	0	\$0.00	
1010P4.1.13	R4-1B(60)	Each	0	\$0.00	
1010P4.1.14	R4-1B(80)	Each	0	\$0.00	
1010P4.1.15	R5-35(L)	Each	0	\$0.00	
1010P4.1.16	R5-35(R)	Each	0	\$0.00	
1010P4.1.17	R5-35	Each	0	\$0.00	
1010P4.1.18	R7-1-4B	Each	0	\$0.00	
1010P4.1.19	R7-1-6C	Each	0	\$0.00	
1010P4.1.20	R7-4B	Each	0	\$0.00	
1010P4.1.21	R7-2C	Each	0	\$0.00	
1010P4.1.22	R9-4A	Each	0	\$0.00	
1010P4.1.23	R9-4B	Each	0	\$0.00	
1010P4.1.24	W1-3A(L)	Each	0	\$0.00	
1010P4.1.25	W1-3A(R)	Each	0	\$0.00	
1010P4.1.26	W1-3B(L)	Each	0	\$0.00	
1010P4.1.27	W1-3B(R)	Each	0	\$0.00	
1010P4.1.28	W2-4B(L)	Each	0	\$0.00	
1010P4.1.29	W4-1B	Each	0	\$0.00	
1010P4.1.30	W4-4B	Each	0	\$0.00	
1010P4.1.31	W4-9C	Each	0	\$0.00	
1010P4.1.32	W5-29B	Each	0	\$0.00	
1010P4.1.33	W5-34B	Each	0	\$0.00	
1010P4.1.34	W5-34B(L)	Each	0	\$0.00	
1010P4.1.35	W5-34C(L)	Each	0	\$0.00	
1010P4.1.36	W5-35B(L)	Each	0	\$0.00	
1010P4.1.37	W6-7B	Each	0	\$0.00	
1010P4.1.38	W6-1B	Each	0	\$0.00	
1010P4.1.39	W8-2A(25)	Each	0	\$0.00	
1010P4.1.40	W8-2B(25)	Each	0	\$0.00	
1010P4.1.41	W8-2B(65)	Each	0	\$0.00	
1010P4.1.42	W8-2C	Each	0	\$0.00	
1010P4.1.43	W8-5A	Each	0	\$0.00	
1010P4.1.44	W8-5B	Each	0	\$0.00	
1010P4.1.45	W8-15C(L)	Each	0	\$0.00	
1010P4.1.46	W8-15C(R)	Each	0	\$0.00	
1010P4.1.47	W8-23A	Each	0	\$0.00	
1010P4.1.48	G7-12(L)	Each	0	\$0.00	
1010P4.1.49	G9-15	Each	0	\$0.00	
1010P4.1.50	G9-15A	Each	0	\$0.00	
1010P4.1.51	G9-57A(R)	Each	0	\$0.00	
1010P4.1.52	G9-57B	Each	0	\$0.00	
1010P4.1.53	G9-63(R)	Each	0	\$0.00	
1010P4.1.54	G9-63(L)	Each	0	\$0.00	
1010P4.1.55	G9-15(A)	Each	0	\$0.00	
1010P4.1.56	G9-15(C)	Each	0	\$0.00	
1010P4.1.57	D4-4(A)	Each	0	\$0.00	
1010P4.1.58	Special Sign	Each	0	\$0.00	
1010P4.2	Street Name Blades	Each	0	\$0.00	
<b>TOTAL</b>					<b>\$371,091.80</b>



## SECTION 11 - PAVEMENT MARKING

Pay Item	Description	Unit	Quantity	Rate	Base Estimate
1108P1	Eradication of Redundant Pavement Marking	Item	1	\$35,000.00	\$35,000.00
1110P1	Setout of Pavement Marking	Item	1	\$50,000.00	\$50,000.00
1111P1	Paint - Longitudinal Lines				
1111P1.1	Separation Line (S1-12)	m	1,858	\$8.66	\$16,090.28
1111P1.2	Separation Line (S1-24)	m	0	\$0.00	
1111P1.3	Separation Line (S2)	m	0	\$0.00	
1111P1.4	Separation Line (S3)	m	0	\$0.00	
1111P1.5	Barrier Line (B1)	m	0	\$0.00	
1111P1.6	Barrier Line (B2)	m	0	\$0.00	
1111P1.7	Barrier Line (B3)	m	0	\$0.00	
1111P1.8	Barrier Line (B4)	m	0	\$0.00	
1111P1.9	Barrier Line (B4S)	m	0	\$0.00	
1111P1.10	Barrier Line (B5)	m	0	\$0.00	
1111P1.11	Barrier Line (B6)	m	0	\$0.00	
1111P1.12	Lane Line (L1)	m	0	\$0.00	
1111P1.13	Lane Line (L5-12)	m	0	\$0.00	
1111P1.14	Lane Line (L5-24)	m	0	\$0.00	
1111P1.15	Lane Line (L8)	m	0	\$0.00	
1111P1.16	Continuity Line (C3)	m	0	\$0.00	
1111P1.17	Edge Line (E1)	m	0	\$0.00	
1111P1.18	Edge Line (E3)	m	0	\$0.00	
1111P1.19	Lane Line (L2)	m	0	\$0.00	
1111P1.20	Lane Line (L3)	m	0	\$0.00	
1112P2	Paint - Transverse Lines, Symbols, Legends, Arrows, Chevrons, Chevrons, Traffic Islands and Kerbs				
1111P2.1	Island Nose (WG)	m	0	\$14.00	
1111P2.2	Chevron (CHEV)	m <sup>2</sup>	650	\$15.80	\$10,270.00
1111P2.3	Bicycle Pavement Marking	m <sup>2</sup>	0	\$40.48	
1111P2.4	Disabled Pavement Marking				
1112P1	Long Life Material (LLM) - Longitudinal Lines				
1112P1.1	Continuity Line (C1)	m	690	\$9.60	\$6,624.00
1112P1.2	Continuity Line (C2)	m	0	\$0.00	
1112P1.5	Merge Line (M1)	m	4,724	\$7.90	\$37,319.60
1112P1.6	Merge Line (M2)	m	465	\$7.90	\$3,673.50
1112P1.7	Barrier Line (B1)	m	848	\$10.40	\$8,819.20
1112P1.8	Barrier Line (B2)		0	\$0.00	
1112P1.9	Barrier Line (B3)		0	\$0.00	
1112P1.10	Barrier Line (B4)		0	\$0.00	
1112P1.11	Barrier Line (B5)		0	\$0.00	
1112P1.12	Barrier Line (B6)		0	\$0.00	
1112P1.13	Edgeline (E1)	m	40,851	\$9.94	\$407,052.94
1112P1.14	Edgeline (E3)	m	32,638	\$9.18	\$299,616.84
1111P1.15	Edgeline (L1)	m	28,292	\$12.72	\$359,874.24
1112P2	Long Life Material (LLM) - Transverse Lines, Symbols, Legends and Arrows				
1112P2.1	Stop Line (SL1)	m	304	\$31.04	\$9,436.16
1112P2.2	Stop Line (SL2)	m	0	\$0.00	
1112P2.3	Hold Line (HL1)	m	0	\$0.00	
1112P2.4	Cross Walk Line (XWL)	m	0	\$0.00	
1112P2.5	School Crossing (SCS)	m	0	\$0.00	
1112P2.11	Pavement Arrow (A1)	Each	0	\$0.00	
1112P2.12	Pavement Arrow (ASR / ASL)	Each	34	\$182.22	\$6,195.48
1112P2.13	Pavement Arrow (AR / AL)	Each	15	\$226.86	\$3,402.90
1112P2.14	Pavement Arrow (AD)	Each	0	\$0.00	
1112P2.15	Pavement Arrow (A5)	Each	0	\$0.00	
1112P2.16	Pavement Arrow (A6)	Each	0	\$0.00	
1112P2.17	Pavement Arrow (A7)	Each	0	\$0.00	
1112P2.18	Pavement Arrow (A8)	Each	0	\$0.00	
1112P2.19	Pavement Arrow (A9)	Each	0	\$0.00	
1112P2.20	Lettering "Form One Lane"	Each	0	\$0.00	
1112P2.21	Lettering "Only"	Each	0	\$0.00	
1112P2.22	Lettering "Keep Clear"	Each	0	\$0.00	
1112P2.23	Lettering "Bus Stop"	Each	0	\$0.00	
1112P2.25	Lettering "Bus Lane"	Each	0	\$0.00	
1112P2.26	Symbol "Bicycle"	m <sup>2</sup>	0	\$0.00	
1112P2.31	Zebra Crossing (ZC)	m <sup>2</sup>	0	\$0.00	
1112P2.32	Transverse Bar Speed Reduction (TB)				
1112P3	Colored Surface Coatings for Cycleways				
1112P3.1	Preparation of Surface	m <sup>2</sup>	0	\$0.00	
1112P3.2	Supply & Apply Green Coloured Surface Coating (Including Priming)	m <sup>2</sup>	0	\$0.00	
1113P1	Installation of non-Retroreflective Raised Pavement Markers	Each	0	\$0.00	
1113P2	Installation of Retroreflective Raised Pavement Markers				
1113P2.1	Uni-directional reflective white (SW)	Each	2,934	\$8.10	\$23,765.40
1113P2.2	Uni-directional reflective yellow (SY)	Each	1,123	\$7.95	\$8,927.85
1113P2.3	Uni-directional reflective red (SR)	Each	1,321	\$7.95	\$10,501.95
1113P2.4	Bi-directional reflective blue (BB)	Each	0	\$0.00	
1113P2.5	Bi-directional reflective white (BW)	Each	155	\$8.60	\$1,333.00
1113P2.6	Bi-directional reflective yellow (BY)	Each	0	\$0.00	
1113P2.7	Bi-direction reflective white/yellow (WY)	Each	0	\$0.00	
	TOTAL				\$1,297,903.34

## SECTION 12 - STRUCTURES

Pay Item	Description	Unit	Quantity	Rate	Base Estimate
1201P1	Bridges				
1201P1.1	Majura Pkwy Twin Bridges over Molonglo River	Item	1	\$36,000,000.00	\$36,000,000.00
1201P1.2	Hopkins Drive Underpass	Item	1	\$4,000,000.00	\$4,000,000.00
1201P1.3	Fairbairn Ave Twin Overbridge	Item	1	\$6,500,000.00	\$6,500,000.00
1201P1.4	Woolshed Creek Bridge At Approx CH 3540	Item	1	\$1,500,000.00	\$1,500,000.00
1201P1.5	Property Access Underpass at CH 6920	Item	1	\$800,000.00	\$800,000.00
1201P1.6	Twin Access Road Overbridges	Item	1	\$3,750,000.00	\$3,750,000.00
1201P1.7	Bicycle Track Underpass	Item	1	\$500,000.00	\$500,000.00
1201P1.8	Bicycle Track Underpass	Item	1	\$450,000.00	\$450,000.00
1201P1.9	Access Road Overbridge	Item	1	\$2,800,000.00	\$2,800,000.00
1201P1.10	Extension to existing underpass	Item	1	\$500,000.00	\$500,000.00
1202P1	Retaining Walls				
1202P1.1	Retaining Walls	m <sup>2</sup>	4,009	\$1,200.00	\$4,810,800.00
1203P1	Noise Walls				
1203P1.1	1.8m high	m <sup>2</sup>	846	\$300.00	\$253,800.00
1203P1.2	2.0m high	m <sup>2</sup>	2,490	\$300.00	\$747,000.00
1203P1.3	3.0m high	m <sup>2</sup>	2,280	\$300.00	\$684,000.00
1203P1.4	3.3m high	m <sup>2</sup>	908	\$300.00	\$272,250.00
	<b>TOTAL</b>				<b>\$63,567,850.00</b>

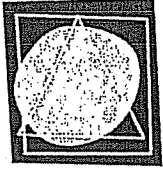
## SECTION 13 - TRAFFIC SIGNALS

Pay Item	Description	Unit	Quantity	Rate	Base Estimate
1302P1	Standard Traffic Signal Post	Each	0	\$0.00	
1302P2	Short Post/Push Button Post	Each	0	\$0.00	
1302P3	Mast Arm Post	Each	0	\$0.00	
1302P4	Combined Use Post	Each	0	\$0.00	
1303P1	Vehicle Signal Lanterns				
1303P1.2.3.L	Three aspect in line vehicle signal lantern, 300mm diameter, LED set	Each	0	\$0.00	
1303P1.3.3.L	Four aspect in line vehicle signal lantern, 300mm diameter, LED set	Each	0	\$0.00	
1303P1.6.3.L	Six aspect in line vehicle signal lantern, 300mm diameter, LED set	Each	0	\$0.00	
1304P1	Pedestrian Signal Lanterns	Each	0	\$0.00	
1305P1	Pedestrian Push Button Assemblies				
1305P1.1	Standard push button assembly	Each	0	\$0.00	
1307P1	Control Equipment	Each	0	\$0.00	
1308P1	Multi-core cabling	m	0	\$0.00	
1308P2	Twin Screen cabling	m	0	\$0.00	
1308P3	Multi-core cable conduit	m	0	\$0.00	
1308P4	Twin Screen cable conduit (1x50mm dia.)	m	0	\$0.00	
1308P5	Twin Screen cable conduit (1x100mm dia.)	m	0	\$0.00	
1309P1	Vehicle Detector Loops	Each	0	\$0.00	
1310P1	JB-R Large Conduit Junction Box	Each	0	\$0.00	
1310P2	JC-1 Small Conduit Junction Box	Each	0	\$0.00	
1311P1.1	Fees to ACTEW for power supply to controllers	PS	0	\$0.00	
1311P1.2	Coordination, attendance and profit for work by ACTEW	Item	0	\$0.00	
132P1	Telecommunication Supply	Each	0	\$0.00	
1312P1	Full cost per intersection	Each	5	\$500,000.00	\$2,500,000.00
	<b>TOTAL</b>				<b>\$2,500,000.00</b>

SECTION 14 - STREET LIGHTING

Pay Item	Description	Unit	Quantity	Rate	Base Estimate
1404P1	Lighting Columns				
1404P1.1	Less than 6m Column Height	Each	90	\$3,054.00	\$275,760.00
1404P1.2	6.5m Column height - single outreach 1.5m arm	Each	0	\$0.00	
1404P1.3	9.0m Column Height	Each	0	\$0.00	
1404P1.4	10.5m Column height	Each	0	\$0.00	
1404P1.5	12.0m Column height	Each	290	\$3,334.36	\$966,964.40
1404P1.6	13.5m Column Height	Each	0	\$0.00	
1404P1.7	15.0m Column height	Each	0	\$0.00	
1404P1.8	Greater than 15.0m Column height	Each	0	\$0.00	
1404P2	Lightings and Light Fixings - Watts				
1404P2.1	400w HPS Luminaire	Each	0	\$0.00	
1404P2.2	250w HPS Luminaire	Each	0	\$0.00	
1404P2.3	250w HPS Luminaire to be relocated and relamped	Each	0	\$0.00	
1404P2.4	250w HPS Luminaire to be relocated and relamped plus 4.5m SDR	Each	0	\$0.00	
1404P2.5	Cycleway under pass lighting as specified on streetlight drawings	Each	0	\$0.00	
1404P2.6	100w Sylvania Urban Luminaire	Each	90	\$762.00	\$68,580.00
1404P2.7	100w Sylvania Roadster Luminaire	Each	290	\$665.00	\$192,850.00
1404P3	Relocated Lighting Columns				
1404P3.1	Less than 6m Column Height	Each	0	\$0.00	
1404P3.2	6.5m Column Height	Each	0	\$0.00	
1404P3.3	9.0m Column Height	Each	0	\$0.00	
1404P3.4	10.5m Column Height	Each	0	\$0.00	
1404P3.5	12.0m Column Height	Each	0	\$0.00	
1404P3.6	13.0m Column Height	Each	0	\$0.00	
1404P3.7	15.0m Column Height	Each	0	\$0.00	
1404P3.8	Greater than 15.0m Column Height	Each	0	\$0.00	
1404P4	Remove existing Lighting Columns				
1404P4.5	12.0m Column height	Each	0	\$0.00	
1404P5	Clean and relamp existing 250w luminaires	Each	0	\$0.00	
1406P1	Streetlighting Fees and Co-Ordination Costs	PS	1	\$20,000.00	\$20,000.00
1406P2	Supply and Lay Conduit	m	17,200	\$27.88	\$479,536.00
1406P3	Supply and Lay Cable	m	21,800	\$19.66	\$428,588.00
1406P4	Cable Pits	Each	290	\$688.00	\$199,520.00
1406P5	Concrete Foundations for Lighting Columns	Each	380	\$420.00	\$159,600.00
1406P6	Supply and install new Street light controller	Each	3	\$6,596.00	\$19,788.00
	<b>TOTAL</b>				<b>\$2,811,186.40</b>
	<b>TOTAL COST ESTIMATE</b>				<b>\$196,375,590.42</b>

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**MacDonald**  
**International**  
consulting engineers

Report Number: SC110010

## Concept Estimate Review

Majura Parkway

*Prepared for:*  
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Date: 26<sup>th</sup> May 2011

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### Limitations Statement

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## 1. Executive Summary

Snowy Mountains Engineering Corporation (SMEC) commissioned MacDonald International to undertake a review of the concept estimate for the proposed Majura Parkway. The estimate provided by SMEC for review by MacDonald International was titled Majura Parkway Cost Estimate Rev 0. A summary of the cost estimate provided follows:

Item	Estimated cost excluding contingency	Contingency	Total
Total Owners Cost	\$17,138,000	\$1,714,000	\$18,852,000
Total Construction Costs	\$214,224,000	\$50,738,000	\$264,962,000
Base Estimate incl. contingency			\$283,814,000
Escalation			\$29,091,000
<b>Total Outturn Cost</b>			<b>\$312,904,000</b>

Note: The above costs exclude Goods and Service Tax (GST).

The base estimate amounts are at Quarter 2, 2011 values; with allowance for 2 years escalation.

Based on our review of the estimate and extensive experience from other projects MacDonald International considers that the Majura Parkway Cost Estimate Rev 0 Total Outturn Cost to be at the higher end of expectations. It is our consideration that there may be opportunities for an overall cost reductions ranging between 8% and 18%.

The key items where significant opportunities for cost reductions are considered to be available are Flexible Pavement Construction and Landscaping.

The overall comparison summary of our review is enclosed as Appendix 1.

## 2. Introduction

Snowy Mountains Engineering Corporation (SMEC) commissioned MacDonald International to undertake a review of the concept estimate for the proposed Majura Parkway.

### 2.1. Supplied Information

The following documentation was issued by SMEC and forms the basis of the Concept Estimate review:

- Majura Parkway Cost Estimate Rev0,
- Majura Structures Cost Estimate\_100915,
- Preliminary Sketch Plans, including drawings of;
  - General Arrangements,
  - Plans and Long Sections,
  - Typical Cross Sections,
  - Stormwater Master Plans showing catchment areas only,
  - Landscaping,
  - Traffic Control Devices,
  - Lease Details, and
  - Bridges,
- Final Preliminary Sketch Plan Alignment Design Report, and
- Draft EIS Report 3002147.

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### 3. Review Methodology

The estimate review undertaken by MacDonald International implemented the following procedure:

1. The documents provided were reviewed and the scope of works and general site conditions assessed. We note that a site inspection was not undertaken.
2. The Bill of Quantities attached to the cost estimate provided was reviewed for completeness and coverage of the planned scope of works.
3. Key item quantities were checked for accuracy and representation of proposed works.
4. First principles estimates were developed for some of the key cost items of the following elements;
  - a. Earthworks,
  - b. Flexible Pavement Construction, and
  - c. Bridges.
5. Item rates of other key costs were reviewed against rates from other projects and where considered outside the expected range.
6. Remaining item rates have been reviewed and where sufficient detail was available, assessed for appropriateness. Where insufficient detail was available, (e.g. provisional sums), the estimated costs provided have been accepted.
7. Contingency allowances included at the summary level have been reviewed.
8. Owner's Costs have been reviewed. Comments on Owner's Costs are included in section 6.

## 4. Construction Costs

The following are review comments for each Construction Cost element.

### 4.1. Preliminaries

The allowance for Preliminaries in the provided estimate includes Contractor's Overheads items that MacDonald International has allowed for in the markup of our estimated direct cost rates (e.g. Site Establishment, Survey Setout and Control, Quality Records and Project Signs etc). Accordingly, these items have been excluded in our review summary.

The allowances for Establishment and Maintenance of Temporary Erosion Protection were considered to be low. We have allowed for these amounts to be doubled and have been doubled in the review process.

The amount for Relocation/Adjustment of Existing Services is considered to be low as a percentage of the project cost. MacDonald International has not undertaken a detailed evaluation of the impact of the proposed scheme on existing services. In accordance with the estimated costs and the corresponding notes included in the Bill of Quantities, it appears that the impact on Services is low. Without evidence to the contrary, MacDonald International has accepted the estimated costs provided.

A contingency of 40% has been adopted in our review summary, resulting in an estimate range for Preliminaries in the order of 25% to 35% lower than the estimate provided.

### 4.2. Provision for Traffic

The allowance for Provision for Traffic in the estimate provided equates to less than 1% of Construction Costs. MacDonald International acknowledges that the majority of the proposed works is Greenfield constructions. However, it is considered that the estimate allowance is at the lower end of expected costs.

Our review summary has included an allowance for this item at 3% of Construction Costs with a contingency of 30%. Therefore, we consider that there is a risk that estimated cost for this item could increase substantially from the amount allowed.

### 4.3. Earthworks

MacDonald International has undertaken a first principles analysis of earthworks costs. The earthworks quantities included in the estimate provided have been adopted as the basis of the MacDonald International assessment.

The primary key cost driver for earthworks is the item for imported fill. MacDonald International has made initial enquiries regarding the cost and availability of the scheduled quantity of 637,677 m<sup>3</sup> of imported fill. From our enquiries, it is considered that quarry licence/approval conditions may present difficulties in supplying that quantity of material within the earthworks construction duration. For the purposes of our review we adopted a supply price of \$10 per tonne delivered.

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Unless SMEC has specific information regarding an indicative source and cost of the material; this item is potentially a key risk and may require further investigation.

Generally, our overall earthworks estimate was in accord with the supplied estimate

With regard to Pay Item 208P1.1, Tree Pits-1000mm, the quantity of 16,317 was not readily reconciled with the planting quantities in Landscaping. The 16,317 is noted as a tree every 2.5m<sup>2</sup> over an area of 40,792 m<sup>2</sup>. It is considered that plants at that spacing in a roadside planting application would not be a species that will mature into a large size. If the quantity is correct, the hole size required for the planting of species at that spacing would not likely cost the \$40 each allowed. Conversely, if the proposed plants are to be a size that requires excavation for planting, the provided quantity may be high.

A contingency of 35% has been included in our review assessment resulting in an estimate for Earthworks that includes the SKM provided estimate within an expected range of variation.

### 4.4. Underground Services

MacDonald International has adopted the provided quantities for Underground Services and compared provided item rates for the key cost items to rates expected for corresponding items. The items reviewed in this manner comprise 84% of the total estimated cost provided for Underground Services.

Generally, the item rates reviewed are in the range of rates expected.

One exception is item 306P6, Drainage Blanket. The provided rate of \$350 per m<sup>2</sup> is considered to be well in excess of the range of rates expected based on a nominal 300mm to 500mm drainage blanket with 2 layers of geofabric.

A contingency of 30% has been included in the MacDonald International assessment resulting in the SKM provided estimate being within an expected range of variation.

#### 4.5. Flexible Pavement Construction

A first Principles assessment has been undertaken for all Flexible Pavement Construction items. The pavement areas noted in the provided Bill of Quantities have been adopted as the basis of reviewed costs.

The key differences in our assessment of costs relate to the following Pay Items:

- 403P1.1, Base Material Traffic Category 1 - Cement Treated. Our estimated rate is approx 15% lower - based on 4% cement content.
- 403P1.3 & 2.3, Base and Sub-base Material. Our estimated rates are approx 10% higher - based on material delivered price per tonne of \$32 (DGB) and \$31 (DGS).
- 403P3, Select Material. Our estimated rate is approx 100% higher - based on material delivered price per tonne of \$15.
- 404P1.8, Prime / Primer Seal. Our estimated rate is approx 25% lower.
- 404P3, Supply and Spray Binder - Class 320 Bitumen 83,869 litres. This item not included in our estimate as the quantity appears to relate to the 205mm thick AC20 intermediate course layer to the Arterial pavements. We consider that the reference to C320 Binder relates to the type of binder used in the AC mix and as such is included in the rate for items 405P3.14.
- 404P9, Supply and Spray Binder - Class 450 Bitumen 1,202,546 litres. This item not included in our estimate as the quantity appears to relate to the 45mm thick AC14 and 120mm thick AC20 base course layers to the Freeway pavements. We consider that the reference to C450 Binder relates to the type

of binder used in the AC mix and as such is included in the rate for items 405P3.15 and 405P4.15.

- 404P10, Supply and Spray Binder – A15E 689,336 litres. This item not included in our estimate as the quantity appears to relate to the 40/45mm thick AC14 wearing course to the Arterial/Freeway pavements. We consider that the reference to A15E Binder relates to the type of binder used in the AC mix and as such is included in the rate for item 405P3.15.
- 405, Asphalt. Our rates are approx 10% lower.

A contingency of 25% has been applied to our estimate, resulting in our assessment for Flexible Pavement Construction being 15% to 25% lower than the estimate provided.

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#### **4.6. Concrete Kerbs, Footpaths and Minor Works**

Item rates for Concrete Kerbs, Footpaths and Minor Works included in the provided estimate have been reviewed and are generally considered to be appropriate. There is a potential for a relatively small saving in item 603P1.9 where the item rate is considered to be at the high end of the expected range.

MacDonald International has adopted the provided estimate for Concrete Kerbs, Footpaths and Minor Works and included a contingency of 20%.

#### **4.7. Road Furniture**

Item rates for Road Furniture included in the provided estimate have been reviewed and are generally considered to be appropriate.

MacDonald International has adopted the provided estimate for Road Furniture and included a contingency of 30%.

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#### **4.8. Incidental Works**

Item rates for Incidental Works included in the provided estimate have been reviewed and are generally considered to be appropriate.

The rate for item 820P1 was initially considered to be high. With consideration given to the fixing detail at the pavement edge, the provided rate has been accepted.

MacDonald International has adopted the provided estimate for Incidental Works and included a contingency of 25%.

#### **4.9. Landscape**

Item 909P1.1, Supply and plant native trees (forestry tubes) as detailed, includes a high quantity at a rate that appears unsuitable for the item description. MacDonald International has adopted a rate of \$8.50 for tubestock against the scheduled quantity provided. This represents a saving in the order of \$14,000,000.

Item 910P1, Mulching, with a quantity of 92,528 m<sup>2</sup> is the same quantity as 906P1.4 and appears to be also included in item 908P1. MacDonald International has excluded item 910P1 from our assessment of Landscaping costs as it appears to be a duplication.

The quantity of topsoil for re-spread from stockpile at 100mm thick as noted in the Bill of Quantity details, equates to 4,080 m<sup>3</sup>. The quantity of topsoil stripped under pay item 205P1.1 is 98,895m<sup>3</sup>. This leaves an excess of 94,815 m<sup>3</sup> of topsoil. It is considered that the rate for stripping of topsoil in item 205P1.1 includes for disposal of excess onsite.

A contingency of 30% has been included in the MacDonald International assessment resulting in an estimate for Landscaping that is 70% to 80% lower than the estimate provided.

#### **4.10. Road Signs**

Item rates for Road Signs included in the provided estimate have been reviewed and are generally considered to be appropriate.

MacDonald International has adopted the provided estimate for Road Signs and included a contingency of 30%.

#### **4.11. Pavement Marking**

The item rates for linemarking in the estimate provided for review are considered to be higher than expected rates. Our assessment allows for lower linemarking rates.

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As a result, our assessment of the cost of Pavement Marking is 65% to 75% lower than the estimate provided. Our assessment includes a 25% contingency.

#### **4.12. Retaining Walls**

MacDonald International has adopted the provided quantity and rate for Retaining Walls. We have not undertaken a detailed review based on project specific information; however we note that an opportunity for a cost saving may exist if a high proportion of the walls are to be Reinforced Earth Walls or other lower cost alternatives.

We have applied a contingency of 25% to the provided estimate allowance as considered appropriate for projects at this stage of development.

#### **4.13. Noise Walls**

MacDonald International considers the rates for Noise Walls to be appropriate for timber noise walls. On this basis, we have adopted the provided estimated costs. If the noise walls were to be of an alternative construction methods (e.g. concrete, architecturally-detailed) there is a risk for cost increases.

We have adopted the estimated cost and contingency allowance as included in the provided estimate.

#### 4.14. Bridges

MacDonald International has undertaken first principles estimates for the following bridges;

- Bridge 02 – Hopkins Drive,
- Bridge 03 – Fairbairn Ave, and
- Bridge 05 – Property Underpass at Chainage 6920.

The remaining bridges have been assessed using recent rates for bridges of corresponding construction methods.

MacDonald International has included a contingency of 30% in our summary of estimated bridge costs compared to 20% in the estimate provided for review.

Below are comments on the findings of our assessment of estimated bridge costs.

##### **Bridge 01 – Bridge over Molonglo River.**

The bridge area used in the provided estimate appears to include the northbound bridge at a 15m width for the full length resulting in 3,757m<sup>2</sup>. Macdonald International has assessed the northbound bridge area at 3,565m<sup>2</sup> allowing for the narrower 1<sup>st</sup> and 2<sup>nd</sup> spans as shown on the drawings provided.

The square metre rate provided is considered to be at the high end of expectations.

Our findings indicate an opportunity for the cost of Bridge 01 to be 5% to 5% lower than the provided estimate excluding contingencies, noting however that our contingency allowance is 10% higher.

**Bridge 02 - Hopkins Drive Underbridge - Precast Concrete Arch structure.**

MacDonald International has undertaken a first principles assessment of Bridge 02.

The estimate provided includes an allowance for the structure foundation in excess of anticipated cost range; and the allowance for fill is also considered high. It is noted that the above 2 items were highlighted in the Majura Structures Cost Estimate spreadsheet provided.

Our findings indicate an opportunity for the cost of Bridge 02 to be 35% to 45% lower than the provided estimate excluding contingencies, noting however that our contingency allowance is 10% higher.

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**Bridge 03 - Fairbairn Ave Underbridge - Twin Single Span 1600 Super Tees.**

MacDonald International has undertaken a first principles assessment of Bridge 03.

The bridge area included in the Majura Structures Cost Estimate provided is based on lengths of 51m each. Our area for the twin bridges is based on a length of 47.96m as shown on the plans provided and a width as shown between barriers of 11m for the northbound and 12.5 for the southbound. Our total area is 1,127 m<sup>2</sup> for the two bridges compared to your 1,250 m<sup>2</sup>.

Our findings indicate an opportunity for the cost of Bridge 03 to be 35% to 45% lower than the provided estimate excluding contingencies, noting however that our contingency allowance is 10% higher.

**Bridge 04 - Woolshed Creek - Single span 600 deep plank.**

MacDonald International has reviewed the allowance for Bridge 04 by comparing the square metre rate for the structure against square metre rates for similar bridges.

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Our findings indicate a risk for the cost of Bridge 04 to be 10% to 20% higher than the provided estimate excluding contingencies, noting also that our contingency allowance is 10% higher.

**Bridge 05 - Bridge 05 Property access underpass - Twin "Box" structures with continuous walls and base slab.**

A first principles assessment was undertaken for Bridge 05. Our findings indicate a risk for the cost of Bridge 05 to be 25% to 35% higher than the provided estimate excluding contingencies, noting also that our contingency allowance is 10% higher.

**Bridge 06 - Tambrett Street Underbridge - Twin Bridges, 1800 Super T's**

In our review of Bridge 06, we have used the same square metre rate that we developed for Bridge 03 as the bridges are of a similar construction method and similar span.

Our findings indicate an opportunity for the cost of Bridge 06 to be 5% lower than the provided estimate excluding contingencies, noting however that our contingency allowance is 10% higher.

**Bridge 07 - Bicycle Underpass - Twin 4500 x 3000 Box Culverts**

Our findings indicate an opportunity for the cost of Bridge 07 to be 5% lower than the provided estimate excluding contingencies, noting however that our contingency allowance is 10% higher.

**Bridge 08 - Bicycle Underpass - Twin 4500 x 3000 Box Culverts**

We consider your estimate for Bridge 08 excluding contingencies to be appropriate, noting however that our contingency allowance is 10% higher.

#### **Bridge 09 - Access Road Overbridge - 2 Span 1500 Super T**

Our findings indicate an opportunity for the cost of Bridge 09 to be 5% to 10% lower than the provided estimate excluding contingencies, noting however that our contingency allowance is 10% higher.

#### **Bridge 10 - Existing Underpass Extension - Concrete Arch 10m wide**

Our findings indicate an opportunity for the cost of Bridge 10 to be 20% to 30% lower than the provided estimate excluding contingencies, noting however that our contingency allowance is 10% higher.

---

The major opportunity relates to the allowances for foundations and backfill as per our comments on Bridge 02.

#### **4.15. Soft Ground Treatment**

MacDonald International has not undertaken a detailed review of estimated Soft Ground Treatment costs. We have adopted your summary estimate and applied a contingency of 30%.

#### **4.16. Oval No1 Rehabilitation**

MacDonald International has not undertaken a detailed review of estimated Oval No1 Rehabilitation costs. We have adopted your summary estimate and applied a contingency of 30%.

#### **4.17. Traffic Signals**

~~We have included a base cost for traffic signals at intersections substantially lower than included in the estimate provided. Our expected allowance is in the order of 25% to 35% lower than the provided estimate, although we have included a contingency of 30%.~~

#### **4.18. Street Lighting**

MacDonald International has reviewed the item rates provided for Street Lighting and agree with the base allowance included. We have applied a contingency of 30% to your allowance.

### **5. Contingencies**

It is MacDonald International's experience that projects at the concept stage in the estimate lifecycle typically include cost estimate contingencies between 25% to 40%, dependent upon the degree of certainty with the item rate, quantity and design detail.

MacDonald International has included a contingency for each construction element at the summary level within the 25% to 40% range. The only exception to the above being a 20% contingency for Concrete Kerbs, Footpaths and Minor Works.

Our weighted project contingency for the project construction costs is approximately 30%. The comparable contingency in the Majura Parkway Cost Estimate Rev0 is approximately 20%.

### **6. Detailed Design and Construction Management**

MacDonald International understands that the allowances for Detailed Design and Construction Management do not include Preliminary Design Costs. No historic costs are shown in the Majura Parkway Cost Estimate Rev0.

We consider the allowance included for Detailed Design and Construction Management at 6.6% of Construction Costs including contingencies to be appropriate.

## 7. Conclusion

MacDonald International's review of the Majura Parkway Cost Estimate Rev0 are summarised as follows;

- Item rates developed by MacDonald International included a markup for overheads, a separate overheads item was not developed by MacDonald International. The estimate provided by SMEC included some items for overheads, however they did not appear to represent total overheads costs and it is considered that provided item rates include a margin for overheads,
- Generally, the provided estimate contained item rates that are at the upper region of rates expected for the project,
- The contingency included in the estimate provided by SMEC at approximately 20% is lower than expected. MacDonald International has included a contingency of approximately 30%,
- Detailed Design and Construction Management costs, as included, are appropriate, and,
- Escalation included in the provided estimate at 5% PA is considered appropriate, albeit at the lower end of the range of escalation allowances generally recommended by road authorities.

MacDonald International considers that the Majura Parkway Cost Estimate Rev0 Total Outturn Cost is 8% to 18% higher than our anticipated cost range. The source of the vast majority of the differences between the estimate provided and the expected estimated costs are found in items in the Flexible Pavement Construction and the Landscaping sections.

The overall comparison summary of our review is enclosed as Appendix 1.

**Appendix 1 – Estimate Summary Comparison**

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Majura Parkway Concept Estimate Review

Element	SMEC	MacDonald International	
		Expected Min.	Expected Max.
Detailed Design and Construction Management	\$18,851,714	\$17,909,000	\$19,794,000
<b>CONSTRUCTION COSTS</b>			
Preliminaries	\$5,432,375	\$3,534,000	\$4,077,000
Provision for Traffic	\$2,000,000	\$6,497,000	\$6,697,000
Earthworks	\$44,280,533	\$43,693,000	\$48,121,000
Underground Services	\$14,585,334	\$12,080,000	\$13,539,000
Flexible Pavement Construction	\$73,963,673	\$56,116,000	\$63,512,000
Concrete Kerbs, Footpaths and Minor Works	\$3,579,582	\$3,556,000	\$3,914,000
Road Furniture	\$4,582,250	\$4,735,000	\$5,193,000
Incidental Works	\$1,605,957	\$1,665,000	\$1,826,000
Landscape	\$25,593,800	\$5,315,000	\$7,874,000
Road Signs	\$445,310	\$460,000	\$505,000
Pavement Marking	\$1,557,484	\$397,000	\$553,000
Retaining Walls	\$5,772,960	\$5,725,000	\$6,302,000
Noise Walls	\$2,544,165	\$2,417,000	\$2,671,000
Bridges	\$68,160,000	\$59,252,000	\$66,068,000
Soft Ground Treatment	\$2,300,000	\$2,485,000	\$2,715,000
Oval No1 Rehabilitation	\$2,185,000	\$2,361,000	\$2,579,000
Traffic Signals	\$3,000,000	\$1,963,000	\$2,263,000
Street Lighting	\$3,373,424	\$3,486,000	\$3,823,000
<b>TOTAL CONSTRUCTION COSTS</b>	<b>\$264,961,846</b>	<b>\$215,737,000</b>	<b>\$242,233,000</b>
Escalation	\$29,090,890	\$23,949,000	\$26,858,000
<b>Total Outturn Costs</b>	<b>\$312,904,450</b>	<b>\$257,594,000</b>	<b>\$288,885,000</b>

The above costs include contingency and exclude GST.