2012 (No. 26)

PARLIAMENT OF TASMANIA

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

Murchison Highway Upgrades

Presented to His Excellency the Governor pursuant to the provisions of the Public Works Committee Act 1914.

MEMBERS OF THE COMMITTEE

Legislative Council	House of Assembly
Mr *Harriss* (Chairman)	Mr *Booth*
Mr *Hall*	Mr *Brooks*
	Ms *White*

TABLE OF CONTENTS

INTRODUCTION

To His Excellency the Honourable Peter Underwood, AC, Governor in and over the State of Tasmania and its Dependencies in the Commonwealth of Australia.

MAY IT PLEASE YOUR EXCELLENCY

The Committee has investigated the following proposals: -

Murchison Highway Upgrades

and now has the honour to present the Report to Your Excellency in accordance with the Public Works Committee Act 1914.

BACKGROUND

The Murchison Highway links between Zeehan in the western region of Tasmania and Somerset on the north-west coast. This project is focused on targeted upgrades along a 37km section of the highway extending south from the Cradle Mountain Link Road through to the township of Rosebery.

The upgrade works cover approximately 10km; these include: road widening, installation of additional overtaking facilities, geometric improvements and pavement stabilisation

The full submissions of the Department of Infrastructure, Energy & Resources in support of these references are published on the website of the Committee at:

http://www.parliament.tas.gov.au/ctee/Joint/works.htm

PROJECT COSTS

P90 AND P50 COST ESTIMATIONS FOR:

Project Name Murchison Highway

Project Description Concept design - Mt Black (Including WCC Tullah Upgrades and Ring River Repairs)

Brief reference number **1280-3-14** **Project Completion: May-16**

Dier Project Number **J110014.000**

Consultant Project number **PI30373.3**

Date 2/5/12

ID	Description	Base Estimate				
		Unit	Billed Qty	Net Rate	Net amount	
1.0	**Project Identification Services**					
1.1	Project identification report	item	1.00		$	-
1.2	Network Control	item			$	-
1.3	Desktop assessments	item			$	-
1.4	Consultant Management	item			$	-
1.5	DIER Management	item			$	-
	Subtotal Identification				$	-
2.0	**Project Scoping**					
2.1	Consultant project scoping phase activities (engineering survey, concept design, preliminary design and site investigations)	item	1.00	$ 120,000.00	$	120,000.00
2.2	DIER Project Management Scoping phase	item	1.00	$ -	$	-
	Subtotal Scopping				$	120,000.00
3.0	**Project Development Including Preconstructoin Activities**					
3.1	Project development phase activities (detailed design, Tender documentation, and service relocation design)	item	1.00	$ 130,000.00	$	130,000.00
3.2	DIER Project Management Scoping to Development	item	1.00	$ 50,000.00	$	50,000.00
3.3	Acquisition_rate/m2	/m2			$	-
3.4	Acquisition administration costs per property	/ property			$	-
3.5	Ring rRiver land slip repairs (as early works package)	item	1	$ 610,000.00	$	610,000.00
	Subtotal Development				$	790,000.00
4.0	**Contract Administration**					
4.1	DIER Project Management Delivery Phase cost per annum	item	0.8	$ 150,000.00	$	112,500.00
4.2	Contract Admin costs	years	0.8	$ 275,000.00	$	206,250.00
4.3	Insurances	%	$ 2,588,840.98	0.37%	$	9,534.70
	Subtotal Contract Administration				$	328,284.70
	Total Owners Costs				$	1,238,284.70
5.0	**Construction**					
5.2	PROJECT SPECIFIC	Item	1	$ 47,000.00	$	47,000.00
5.2	EARTHWORKS	Item	1	$ 1,338,776.00	$	1,338,776.00
5.3	DRAINAGE	Item	1	$ 214,720.00	$	214,720.00
5.4	PAVEMENT	Item	1	$ 623,204.98	$	623,204.98
5.5	BITUMINOUS SURFACING	Item	1	$ 134,400.00	$	134,400.00
5.6	TRAFFIC FACILITIES	Item	1	$ 138,240.00	$	138,240.00
5.7	LANDSCAPING	Item	1	$ -	$	-
5.8	MICELLANEOUS	Item	1	$ 139,500.00	$	139,500.00
5.9		Item	1	$ -	$	-
	Total Construction Costs (TCC)				$	2,588,840.98
	Base Estimate (Owners Cost + Construction Cost)				$	3,827,125.68
					P50	P90
	Inherent risk allowance				$ 99,451	$ 312,082
	Contingent risk allowance				$ 191,815	$ 288,202
	Base Estimate + Contingency (Inherent + Contingent)				$ 4,118,392	$ 4,427,409
	Total contingency % above base estimate				115%	123%
	Escalation (Nominal - applied to base case + contingency)				$ 245,721	$ 265,736
	Total Outturn Cost				$ 4,400,000	$ 4,700,000

P90 AND P50 COST ESTIMATIONS FOR:

Project Name	**Murchison Highway**
Project Description	**Concept design - Cradle Mtn to Anthony Rd option 17**
Brief reference number	**1280-3-14**
Dier Project Number	**J110014.000** Project Completion: May-14
Consultant Project number	**PI30373.3**
Date	2/5/12

ID	Description	Base Estimate				
		Unit	Billed Qty	Net Rate	Net amount	
1.0	**Project Identification Services**					
1.1	Project identification	item	1.00	$ 262,000.00	$	262,000.00
1.2	Network Control	item	1.00	$ 595,000.00	$	595,000.00
1.3	Desktop assessments (incl. In 1.1)	item	1.00		$	-
1.4	Consultant Management	item			$	-
1.5	Principle Costs (Management & Deflectogrph)	item	1.00	$ 70,000.00	$	70,000.00
	Subtotal Identification				$	**927,000.00**
2.0	**Project Scoping**					
2.1	Consultant project scoping phase activities (engineering survey, concept design, preliminary design and site investigations)	item	1.00	$ 508,000.00	$	508,000.00
2.2	DIER Project Management Scoping phase	item	1.00	$ 30,000.00	$	30,000.00
	Subtotal Scopping				$	**538,000.00**
3.0	**Project Development Including Preconstructoin Activities**					
3.1	Project development phase activities (detailed design, Tender documentation, and service relocation design)	item	1.00	$ 500,000.00	$	500,000.00
3.2	DIER Project Management Scoping to Development	item	1.00	$ 140,000.00	$	100,000.00
3.3	Acquisition_rate/m2	/m2	25,000	$ 3.00	$	75,000.00
3.4	Acquisition administration costs per property	/ property	1.00	$ 15,000.00	$	15,000.00
	Subtotal Development				$	**690,000.00**
4.0	**Contract Administration**					
4.1	DIER Project Management Delivery Phase cost per annum	years	2.0	$ 150,000.00	$	300,000.00
4.2	Contract Admin costs	years	2	$ 525,000.00	$	1,050,000.00
4.3	Insurances	%	$ 9,447,237.67	0.39%	$	36,844.23
	Subtotal Contract Administration				$	**1,386,844.23**
	Total Owners Costs				$	**3,541,844.23**
5.0	**Construction**					
5.1	PROJECT SPECIFIC	Item	1	$ 244,000.00	$	244,000.00
5.1	EARTHWORKS	Item	1	$ 2,308,871.50	$	2,308,871.50
5.2	DRAINAGE	Item	1	$ 653,297.50	$	653,297.50
5.3	PAVEMENT	Item	1	$ 3,668,443.67	$	3,668,443.67
5.4	BITUMINOUS SURFACING	Item	1	$ 1,459,620.00	$	1,459,620.00
5.5	TRAFFIC FACILITIES	Item	1	$ 727,005.00	$	727,005.00
5.6	LANDSCAPING	Item	1	$ -	$	-
5.7	MICELLANEOUS	Item	1	$ 630,000.00	$	630,000.00
5.8		Item	1		$	-
5.9		Item	1		$	-
	Total Construction Costs (TCC)				$	**9,447,237.67**
	Base Estimate (Owners Cost + Construction Cost)				$	**12,989,081.90**
					P50	**P90**
	Inherent risk allowance				$ 203,328	$ 548,717
	Contingent risk allowance				$ 762,417	$ 979,354
	Base Estimate + Contingency (Inherent + Contingent)				$ **13,954,827**	$ **14,517,153**
	Total contingency % above base estimate				119%	124%
	Escalation (Nominal - applied to base case + contingency)				$ 1,512,708	$ 1,583,931
	Total Outturn Cost				$ 15,500,000	$ 16,100,000

EVIDENCE

The Committee commenced its inquiry on Tuesday, 25 September last. The Committee met in Committee Room 2, Parliament House, Hobart whereupon the

following witnesses appeared, made the Statutory Declaration and were examined by the Committee in public:-

- Sarah Boyle, Manager Planning & Design, Department of Infrastructure, Energy & Resources
- Ra'ed Al-Qawasmeh, Project Manager, Roads and Traffic Division, Department of Infrastructure, Energy & Resources

Overview

Ms Boyle provided the following overview of the strategy of works in the North East of the State:-

As a bit of a background to this work, $21 million was allocated to this project through the community roads on the west coast program. We have targeted several different areas for the work. The bulk of the money will be expended on the section from the Cradle Mountain link road south towards Anthony Road. That part of the Murchison Highway is already a gazetted HPV-HML route. It carries mine freight and salmon farm freight. It is part of the west coast wilderness way touring route. It is the main connector between Cradle Mountain and Strahan, so it sees very heavy traffic during the summer months. With that comes the safety concerns of non-local drivers, people who aren't familiar with driving on Tasmanian style roads, mixing their travel with heavy freight and also for the local community on the west coast it has a significant commuting function between the towns on the west coast of Tullah, Rosebery, Zeehan and Strahan, through to the retail and social areas on the north-west coast.

There is quite a mix of traffic on this section of the Murchison Highway and we have done very little work on it since it was initially built in 1963 when it was opened. It is an old-fashioned road and this work is to bring it up to a more contemporary standard. We are targeting an 8-metre sealed cross-section for as far as we can on the section of road, but in recognition of the fact that it is mountainous and has a lot of steep hills, extended sustained climbing for heavy freight particularly, and the platooning and queuing of vehicles behind the trucks. We have also added in a three-four climbing lane or slow-vehicle turnout. The function of the road will change and there will be an increased efficiency and in particular the light passenger vehicles will have an increased number of opportunities to bypass and overtake the freight movement on the road.

The second area we are targeting is Mount Black and that is between Anthony Road and Rosebery. There are some targeted sites on Mount Black that will receive a range of different treatments. We are putting a pair of slow-vehicle turnouts up on the summit of Mount Black, one for each direction and there are two sites where we are stabilising pavement which is starting to move down the hill and we keep putting asphalt in, so there is very deep asphalt. Every time we put more asphalt in to keep the surface level it is adding weight and moving down the hill.

We have identified two sites that need stabilisation. There are also two sites where we are sealing existing wide gravel pull-over areas that the freight vehicles are using at the moment to pull over, and it is courtesy pull-over. They are pulling over to a stop to allow the queued passenger vehicles to get past. That is a summary of the intention of the works.

The time frame for the project is: we have completed detailed design for the Mount Black section of road - from Anthony Road to Rosebery - and we are looking to tender that in early October. We will focus on construction over Mount Black over this summer. Then the significant part of the works from Cradle Mountain link road

toward Anthony Road will be tendered in May next year. There will be two construction seasons for the 2013-14 and 2014-15 construction years. We are looking for practical completion of works so that all the works will be completed by May 2016.

The Committee questioned the witnesses as to how this reference received its prioritisation for commencement. Ms Boyle responded:-

Over the last 10 or 15 years DIER has had a program of moving south from the Ridgley Highway that comes in around the Waratah area; at Guilford there is a junction so we have invested in upgrading the highway from the end of Ridgley Highway down to the Cradle Mountain link road. That section of highway is being upgraded and we have been gradually, as we have had funding, moving south from Ridgley Highway towards Anthony Road. It has been a progressive program. About seven years ago we installed a slow-vehicle turnout facility just south of the Cradle Mountain link road as it is now, so we started that investment. We did some pavement strengthening and rehabilitation, and just south of that a slow-vehicle turnout as well. It is the next section in the Murchison Highway that has been targeted for a while for upgrading, on that progressive north-to-south policy we have been putting into place.

…It is driven primarily by the section from Ridgley Highway south and the pavement restrengthening we have done south of the Cradle Mountain link road has been driven predominantly by pavement failure. We have actually needed to go into full pavement strength work. The work in the last 10 years has been driven by failed pavement. It has had a lot of work over the years; it is now nearly 50 years and the life of the pavement has come to the end, so while we are doing that now and the restrengthening of the pavement - and this work [inaudible] a lot of pavement strengthening associated with the [inaudible] as there are quite a lot of failed sections. We are seeking to contemporise the cross-section and get the extra width to accommodate the mix of traffic that we have and get an improved efficiency in movement, and consistency.

… *At this stage the Murchison Highway is one of our preferred and priority highways. It has had five fatalities in the last 10 years on the sections that we are looking at. They are primarily single vehicle 'ran off roads' so the whole cross-section of curves and the nature of how people are travelling is reflected in these fatalities and serious injury accidents. There is a strong safety message in this. It is essentially a long section of black spot project. Although at this stage we are not achieving the full length of eight metre cross-section, we are getting about seven kilometres of eight metre cross-section. We are, in addition, targeting the specific sites of safety concern where there is a record of fatalities and serious injury accidents.*

Slow-vehicle turnouts

The Committee questioned the witnesses as to whether slow-vehicle turnouts were proposed to be utilised in the design. Ms Boyle responded:-

The Murchison Highway lends itself to the short climbing lanes and short slow-vehicle turnouts and technically they are two different lengths. A slow-vehicle turnout is about 150 metres. A climbing lane is anywhere between 400-600 metres. Then you have the full overtaking lanes, which are much longer. That is a bit of technical terminology. We are looking at applying the same sort of modelling and these sites were identified through development of models and we have looked carefully at the current traffic using the road, the forecast traffic and the increasing number of trucks.

We drove up and down with truck drivers and they pointed out to us the sites where they experienced queued up passenger vehicles behind them and how and where they

can pull over and allow vehicles to overtake. We also developed a traffic model that models the speed of the truck speed wash as it climbs up a hill and how fast it drops off. These sites were all carefully identified and set up in the traffic model. We are currently applying a similar model to Huon Highway, south of Geeveston, because that is another ideal site. It is hilly, it is steep and there are locations that we could really assist.

... I think the important thing is that it is a set of facilities of slightly good turnouts or climbing lanes along the length of road. If Murchison Highway works we would obviously have three or four put in and so over that 20 kilometres of road there will be a set of opportunities that vehicles have to overtake the slow trucks. We would apply that to the Huon Highway as well.

Projected usage

The Committee questioned the witnesses as to what factors had been accounted for when projecting use of the subject road. Ms Boyle responded:-

The traffic models I spoke about and identifying the locations to the climbing lanes have been set up on a web. The 20-year horizon for mining is fantasy in a sense but we know that the aquaculture industry at Strahan is rapidly increasing and they are targeting a 300 per cent increase over the next two to five years. We are also aware that there is a mine to open up next year, pending approvals, that will enter the Murchison Highway at Pieman Road so those traffic volumes have been incorporated in developing the model.

... This information was backed by a lot of work with industry to get a sense of the capability and possibility for mining south of Ridgley Highway. There are a few access points on this section of highway. We understand that south of Rosebery and getting towards Queenstown there are other opportunities for mines in the future. It is a bit of crystal ball gazing.

Bicycle access

The Committee questioned the witnesses as to what, if any, bicycle access had been provided for. MS Boyle responded:-

This is an eight-metre sealed cross-section. At the moment there are no sealed shoulders - the average width along here is about 6 metres. Basically we are putting two extra metres width and there will be an edge line and there will be space for cyclists to ride.

...The cyclists will benefit from the contemporisation and achieving a wider cross-section so they will benefit as road users. I have cycled up and down there a lot and I am looking forward to it. Yes, cyclists' safety will be improved significantly.

Settlement of the roadway

The Committee questioned the witnesses as to whether the settlement of the roadway was a naturally occurring event or whether it was a landslip issue. Ms Boyle responded:-

It is the original construction method. They just threw in large boulders, logs and trees, which was the traditional method in those days. Over time it starts moving and shifting. You can see where we have put the asphalt over time. On one of these sites you will see that the top of the fence posts are at the same level as the road. We do

not have the structural strength there to hold the safety fence in place. These works will stabilise all of that so that the fence will work as a safety fence and the road will be held in place. There is always a risk that heavy rainfall will leak through and lubricate that surface and it will all slide down. Being the west coast that is always at the back of our mind - there is a possibility that it will slip.

Mr Al-Qawasmeh added:-

One of the solutions is going to be guardian walls for the stabilisation of the embankment and then reflecting to the stabilisation of the pavement. The third area, which is number three, the northbound slow-vehicle turnout. We start from here and it is going up to the crest of the road - up to here. There is going to be a car park for Rosebery Development Association. They asked for a cleared area. It is going to be more like tidying up and some base work for the car park. Then the second one is the southbound slow-vehicle turnout. The fourth area will again be the pavement stabilisation.

Cost estimate

The Committee sought clarification of the terms 'inherent risk allowance' and 'contingent risk allowance'. Ms Boyle responded:-

The inherent risk allowance applies to the specific quantities and rates. I will give you an example - for the sealed surface area, we do an estimate of the area of seal we are going to put down and the inherent risk provides a range of possible losses, say 5 per cent. In the calculations we have our expected area of seal, or our median average area of seal and then we put it within a range. Because it is a pretty well defined quantity we might have a range of plus or minus 5 per cent on each side. That range is described as the inherent risk. It covers both the quantity of seal area we will put down, and the cost per square metre of seal. The entire inherent risk calculation has a percentage range around the average that we are expecting. In this case the cost range would probably be a much bigger percentage on either side. It might be 10 per cent or 15 per cent because we don't know at the time what the contractors will cost for sealing an area. All of our quantities, and all of the costs that we are putting against each of those quantities are put in a range to cover the fact that we don't know what the contract tender prices will be and what the actual overall costs will be. We are very close in our estimates for quantities because of the design process, but there is always some variation in the field. Conditions crop up, or change - the range accommodates that, and it is covered off in this calculation.

(the contingent risk allowance provides for) the project-specific risks that can be identified. Our major risk for this project is high rainfall, because it is the west coast. We are targeting to get this all delivered in two summers, or three summers including Mount Black. If we have a really wet summer for one of the summers and our construction time is shortened, the contingent risk would be the cost to move into a third or fourth summer. We can't do anything about the weather. The cost of that is allocated into the contingent risk aspect of the project. As you can see there are some cuts through there and there was a spring in the middle of the road. Although we try to allow for that in the designs there might be a lot more hard rock than we have anticipated or we might find a lot more springs popping up in the road. Although we have done a reasonable drainage design, there might be some project-specific work that needs to be done.

DOCUMENTS TAKEN INTO EVIDENCE

The following documents were taken into evidence and considered by the Committee:

- Department of Infrastructure, Energy & Resources Submission to the Parliamentary Standing Committee on Public Works – Murchison Highway Upgrades - July 2012; and
- Murchison Highway Upgrades – Chainage and brief description of works.

CONCLUSION AND RECOMMENDATION

This reference recommended that the Committee approve upgrades to selected sections of the Murchison Highway between Rosebery and the Cradle Mountain Link Road (Belvoir Road). The proposed upgrades are proposed for two distinct sections: Rosebery to Sterling River (Mt. Black); and Anthony Main Road to Cradle Mountain Link Road.

The proposed works includes: pavement strengthening and stabilisation and safety improvements; the provision of a pullover bay, slow vehicle turnouts and climbing lanes; a nature trail car park; road widening; an intersection upgrade and safety improvements.

The need for the proposed works was clearly established. Accordingly, the Committee recommends each of the projects, in accordance with the documentation submitted.

Parliament House
Hobart
3 October 2012

Hon. A. P. Harriss M.L.C.
Chairman