2017 (No. 25)

PARLIAMENT OF TASMANIA

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

Apsley River Bridge

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

MEMBERS OF THE COMMITTEE

Legislative Council	House of Assembly
Mr *Farrell*	Mrs *Rylah (Chair)*
Mr *Valentine*	Mr *Llewellyn*
	Mr *Shelton*

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1 INTRODUCTION

To Her Excellency Professor the Honourable Kate Warner 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 proposal:-

Apsley River Bridge

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

2 BACKGROUND

2.1 This reference recommended the Committee approve works to replace the existing Apsley River Bridge with a new bridge on an improved alignment.

2.2 The Apsley River Bridge is located approximately 5 kilometres south of Bicheno on the Tasman Highway and provides an important regional link to the town of Bicheno for freight vehicles. The Tasman Highway is the major east coast road link and this section links the coastal centres of Bicheno, Coles Bay and Swansea, passing a number of tourist attractions such as vineyards, beaches and national parks. The section of the Tasman Highway in this area is also a popular cyclist route.

2.3 The existing bridge was constructed in 1947 and is comprised of 12 simply supported spans with a total length of 146 metres. A detailed structural assessment on the bridge has been undertaken, which found the structure is unacceptable to support current truck, axle and crane loads under normal operating conditions. In addition, the road alignment on the western approach to the bridge does not meet the design requirements for the posted speed limit of 100km/h.

2.4 Therefore, the Department of State Growth (Department) is planning to replace the bridge and realign the highway in this area to improve safety for road users, and to ensure the structure can meet the current, and anticipated future increases in, heavy vehicles tasks. The new bridge will be built in accordance with current Australian standards for bridge design (AS 5100) and traffic loading capacity (SM1600, which reflects potential increases in heavy vehicle loading for the next 100 years) and will have a 100-year design life.

2.5 The proposed works include:

- Construction of a new 90m concrete Super T bridge structure with three equal 30m spans over the Apsley River, on a new alignment upstream of the existing bridge;
- Demolition of the existing bridge;

- Realigning the highway over approximately 1400m on either side of the new bridge to improve the alignment so that it is suitable for travel at 100 km/h; and
- Rehabilitating the sections of road made redundant as a result of realigning the highway.

2.6 The road cross section for the new road alignment and bridge includes:

- 3.1m wide traffic lanes throughout;
- 1.4m wide sealed shoulders at the approaches to and departures from the bridge where safety barriers exist;
- 1.4m wide sealed shoulder across the bridge;
- 1.0m wide sealed shoulders elsewhere;
- Verges sealed to 0.5m behind the safety barrier where a safety barrier is to be installed; and
- 0.5m wide unsealed verges elsewhere.

3 PROJECT COSTS

3.1 Pursuant to the Message from Her Excellency the Governor-in-Council, the estimated cost of the work is $9.55 million-$10.35 million.

The following table details the current p50 cost estimates for the project:

Costs	
Scoping and Development Phase	$756,832
Delivery Phase (including service relocations, construction and land acquisition)	$8,087,840
Contingencies and escalation	$921,328
Total Project P50 Estimate of Cost*	**$9,766,000**

4 EVIDENCE

4.1 The Committee commenced its inquiry on Monday, 4 September last with an inspection of the site of the proposed works. The Committee then returned to the Bicheno Community Hall, Bicheno, whereupon the following witnesses appeared, made the Statutory Declaration and were examined by the Committee in public:-

- Kevin Bourne, Project Manager, Department of State Growth; and
- Vincent Tang, Project Sponsor, Department of State Growth.

Overview

4.2 Mr Bourne provided an overview of the proposed works:

> ***……*** *The Tasman Highway - Apsley River Bridge replacement is obviously to replace an existing bridge that crosses the Apsley River on the Tasman Highway. The original bridge was constructed in 1947 and a detailed structural assessment has shown it is unacceptable to support current truck axle and crane loads. The intention is to replace the bridge, which will improve the safety for road users and enable continued access for heavy vehicles. The objective is to provide an SM1600 loading - that is for large, heavy vehicles - and to have a 100-year design life. The existing horizontal alignment of the road, which is substandard at the moment and only has a design speed of 70 kilometres per hour, will be increased to 100 kilometres an hour with a different alignment.*
>
> *The section is a popular cyclist route so the bridge barriers will be a sufficient height to provide for cyclists to use the bridge safely. The works involved will include construction of a new 90-metre overall, simply supported super-T bridge - it is a precast, prestressed bridge beam. There will be three equal 30-metre spans and a total of 1434 metres of road will be realigned on either side of the bridge. The existing Apsley River Bridge will be demolished and the redundant road sections will be rehabilitated.*
>
> *To support the project some public utilities will be realigned. Overhead electricity by TasNetworks will be realigned. Nearby underground telecommunication cables owned by Telstra should be unaffected.*
>
> *The works will require some property acquisition on two titles, both of which are owned by the same owner. The acquisition process is underway now and a property access will be reconstructed to suit the new alignment.*
>
> *Most of the statutory approvals for flora and fauna and heritage have been obtained and are in place. There has been active engagement with key stakeholders, such as the Glamorgan Spring Bay Council and the affected landowner, and no negative feedback has been received from either of those parties.*
>
> *A development application has been submitted to the council. No representations were received. A planning permit has been issued regarding the project.*

Bridge Design

4.3 The Committee noted that the new bridge design was a Super-T bridge structure. The Committee sought further detail from the witnesses on the Super-T bridge design and why this type of structure had been chosen to replace the existing bridge:

> ***CHAIR*** *- It mentions in the report a super T bridge structure. Could you describe to the committee what a super T bridge structure means and why we have chosen it?*
>
> ***Mr TANG*** *- Basically a super-T bridge structure is a precast, prestressed form or structure. It is shaped like a super-T, which is hollow inside and is quite regularly used in bridge construction*

in Australia. We have a few contractors or suppliers in this state who are able to fabricate super-T beams in a mould and transport them to site for construction.

***CHAIR** - Okay. What is the maximum beam length we can get in Tasmania and how has that impacted on the design?*

***Mr TANG** - Typically for the span we can go up to slightly over 30 metres, but that is probably pushing the limit for what we have in Tasmania. In the other states they can go up even longer, up to 36 metres or so.*

***CHAIR** - Our beam length is? I cannot remember.*

***Mr SHELTON** - Thirty.*

***CHAIR** - Yes, so we are at the maximum end of what we can have built here in the state.*

4.4 The Committee also noted that the design incorporated spill through style abutments and sought further detail from the witnesses on their purpose:

***CHAIR** - Could you now describe the spill-through style of abutment?*

***Mr TANG** - Abutments are at the ends of the structure. Typically, it is like any other pier except it supports only one side of the super structure while the other side would be a roadway. With a spill-through, we normally put some rock pitching around the abutment to prevent scouring or erosion. That is what we call a spill-through abutment where rock pitching wraps around the abutment structure. It is typically only abutments, but with a pier the power and the structure actually goes down to the ground. It is usually not much of an issue there.*

***CHAIR** - You are putting larger rock and in some instances will fill between the piers or right up to the edge of the concrete of the pier?*

***Mr TANG** - Yes.*

4.5 The Committee also noted that the plans included bridge foundations that extended quite deeply below ground level. The Committee questioned the witnesses on how the design and depth of the new bridge's foundations had been determined:

***CHAIR** - The pylons are quite deep on the drawings. Could you explains why? Have you have done the drilling with regard to what is the likelihood that is accurate?*

***Mr TANG -** We have done short-term investigations at the abutment and pier locations to determine what sort of geology we get so that we can understand what kind of foundation system we should be using.*

In this instance, it is unlike where the existing bridge is right now. We have high-level rock, which means the rock is not too far away from the existing ground levels. You don't really need to dig that deep to do any foundations and you could easily get away with just a concrete slab sitting on the rock.

At the location of the new structure, we have a fair bit of other materials before the rock appears underneath. Therefore, we could not use footing as the foundation type; that is the reason we used piles instead. You drive them down to the rock level so that all the load from the structure is taken down to the rock, which is the suitable material to found the structure on.

***CHAIR** - You have done the drilling to determine that?*

***Mr TANG** - That is right.*

4.6 The Committee was aware that the Department recognised the area was a popular cyclist route. The Committee sought further information on what elements had been included in the bridge design to ensure safety for cyclists. Mr Bourne noted

that while the traffic volumes on the bridge did not warrant a barrier between traffic and cyclists, the width of the bridge, especially the shoulder widths, and barrier height had been designed with cyclist safety in mind:

> ***Mr VALENTINE*** *- You referred to the width of the bridge now being wide enough to provide protection to cyclists. Did you consider putting in a barrier, or was that not considered necessary for cycling?*
>
> ***Mr BOURNE*** *- I guess the traffic lanes have been set according to departmental standards for this sort of category of road and the traffic volumes that go through here, so the lane widths and the shoulder widths have been set from that. We have gone a little bit more than that with this bridge because of its long-term nature. There is quite a generous allowance for cyclists.*
>
> ***Mr VALENTINE*** *- There is plenty of room to get away from big trucks?*
>
> ***Mr BOURNE*** *- Yes, that is right. There is no barrier between cyclists and vehicles because that is probably not warranted by the traffic volumes, but there is protection from over the edge of the bridge or first of all for the traffic impacts, so it is designed for that. It is also at a height sufficient for the cyclists as per the Australian standard.*
>
> ***Mr SHELTON*** *- I assume that because of the realignment of the bridge, the sight distances for heavy vehicles or traffic coming onto the bridge are much more favourable to a cyclist than the current situation?*
>
> ***Mr BOURNE*** *-Yes, I believe they would be.*

Flooding

4.7 The Committee was aware that the new bridge was significantly shorter than the current bridge, with the new bridge to have a span of 90m compared to 140m. The Committee questioned the witnesses on the capacity of the new bridge to cope with flood events, given that the new bridge would have a narrower span for water to escape. The witnesses noted that the bridge had been designed with larger openings to promote drainage, and the bridge would be built significantly higher than both the 1 in 100-year flood event level and the inferred historical flood level:

> ***Mr SHELTON*** *- My main question is about the height of the bridge and flooding. There is no doubt the old bridge has served us well since 1947, but it does come off a catchment where there are significant heavy downpours. I have witnessed the climate changing over my lifetime and the predictions are that the east coast will get hotter and wetter. Therefore you can only indicate that the floods will be of a higher nature.*
>
> *The bottom of the support beams of this new bridge, considering the new bridge is 90 metres and the old one is 140 metres or whatever, means more water has to go through a narrower space. The height of the beams will give us the ability to cope with those floods. We had a look around, so thank you for that, but we need to ask these questions to get a repeat of the answer given to us prior to this hearing.*
>
> *I understand water can go over the top of the bridge at the same time. Could you give me some information around the flooding capabilities and what is likely to occur?*
>
> ***Mr BOURNE*** *- In one of the drawings in the submission, it was noted that the modelled flood level for the 100-year return interval was RL 20.9. That is just below the soffit of the pier crosshead. It is a metre below the bridge beams.*
>
> ***Mr VALENTINE*** *- Which page are you looking at?*
>
> ***Mr BOURNE*** *- That is on sheet number 1804. We have also shown an inferred historical flood of RL 21.3, which is 0.4 metres higher. In the design consultant's investigations they came up with those figures by looking at historical information on flood levels and flood flows. They have taken higher flows as a result of climate change, as you were suggesting, Mark.*

They modelled the catchment based on those higher flows and higher levels, taking account of climate change and the different arrangement of the bridge cross-sections - that is, the larger openings. That is where they have set those flood levels and the corresponding bridge beams.

As you said, if a larger flood mat comes through, which is possible, the water level could overtop the road, although it has a bit more than a metre to get to that point, if it doesn't go around the bridge, over the highway and embankments. If it goes above that, the bridge has been designed so that in a larger flood, any debris falling against it will not fail the bridge but it will overtop the bridge to get the water through.

***Mr SHELTON** - As you indicated, above the inferred historical flood line, there appears to be 700 or 800 millimetres that the water can come up. When you spread water out over the distances on that flat ground there, to rise another 700 to 800 millimetres would be an astronomical flood.*

***Mr BOURNE** - It would be a significant flood. I should add that the design consultant consulted extensively with landowners to get that historical, anecdotal view on what flood levels were reached in the past and what caused them.*

***Mr SHELTON** - One last point on flooding. I presume it is an advantage of the old design, and it was more obvious coming into Bicheno, that on every joint, you seem to hop over the bridge coming across each section and each section has a pillar support under it.*

This new design has spans of 30 metres. In the northern floods last year, one of issues was that a tree would wash out of the river upstream and be lodged between two pylons.

As a design feature, it is an advantage to have those pylons spread as far apart as you can. During the design process, was thought given to the distance between the pillars in the middle of the river relating to floods?

***Mr TANG -** Yes. That was definitely thought about. Given we have limitations with the span lengths of the super-Ts we can accommodate, I made a specification in the design of the piers away from the main water channel. In our design we wanted to make sure that if any logs came down through the main channel, that could be avoided by bringing the piers away.*

***Mr SHELTON** - Okay, but the other ones are still 30 meters wide anyway.*

***Mr TANG -** Yes, they are all 30 metres.*

***Mr SHELTON** - My point is that in this design most things would actually wash through under the bridge and therefore not cause a dam and worse flooding than would have occurred under the old bridge.*

***Mr TANG -** Yes, definitely. The old bridge has 12 spans and a lot of piers, which means a higher chance for any log to get jammed in between them. Given the new bridge will have three spans at 30-metre widths, there will be more opportunity for these logs to actually get through easily.*

Redundant Sections of Road

4.8 The Committee understood that realigning the highway would result in sections of the current highway being made redundant. The Committee sought further information on what was planned for the reduntant sections of road:

***Mr VALENTINE** - My other question is about the redundant section. When you move the road and realign everything, there will be a redundant section, as mentioned in the report. What*

happens to that? Does it go back to the farmer? Does it get rehabilitated into pasture? What is intended to happen with that?

***Mr BOURNE** - I mentioned before that the TasNetworks lines are going to be relocated so they will be right beside the existing road. That will happen before the new road is commissioned, so that will remain adjacent to that existing road. The property boundaries that have been acquired have been set based on that. It is a right-of-user road, which means there is no formal road reservation; just by using it as a road, it is in that way. The newly acquired boundaries have been set to facilitate all those bits we need inside the property boundaries, and once the works are completed, the existing redundant road will be repaired and brought back to pastoral land. It is proposed to set the existing fence line within the boundary so the landowner will have the opportunity to run their stock over that area. The property boundary will still be somewhat into their property.*

***Mr VALENTINE** - It will not necessarily go back to the landowner?*

***Mr BOURNE** -No, it will stay as road reservation.*

***CHAIR** - The reason you are putting their fence boundary in the road reserve is to help maintain it? Is that the issue?*

***Mr BOURNE** - Yes, to help maintain it, that is right. The TasNetworks infrastructure will be crossing over that land as well.*

***CHAIR** - He will provide gateways and access for the utilities to get into there to access their infrastructure?*

***Mr BOURNE** -Yes, that is right. The fencing and gate arrangement with the new road have been discussed with the landowner and they are comfortable with what has been proposed. TasNetworks has also spoken with the landowner to make sure they have the required maintenance access.*

***Mr VALENTINE** - Does that raise any legal issues in the case of, say, the farmer having accidents on that land? Or is that something you would have to take on notice?*

***Mr BOURNE** - I would have to take that on notice. It is probably a departmental issue where this has been done in other places as well, so it is not unusual. I just do not know the answer in terms of liability.*

4.9 Mr Bourne provided the following information in response to the question taken on notice regarding the attachment of liability on the sections of rehabilitated redundant road:

I have followed up on the question raised by Mr Valentine in the Apsley River Bridge hearing.

The drawings included in our submission showed the proposed boundary fence line close to the new road, with the relocated powerlines beside the existing road and within the newly acquired road reservation boundary. With the fence constructed close to the road, the rehabilitated pastoral land would be available for stock, which would help with maintenance, as indicated at the hearing.

It is expected that a Lease Agreement would be negotiated at a future time for the land in question. The lease agreement would define the legal responsibility and liability for use of the land, which should address Mr Valentine's query. Discussions with the adjacent landowner have been ongoing as the

design has progressed, however their interest in entering into such an arrangement has not yet been confirmed.

Due to the status of discussions with the landowner, the design drawings have been amended to show the fence on the new road reservation boundary, which differs from the statement that I made at the hearing. If an agreement to lease the land is reached, then the fence will be constructed in the location agreed with the landowner. If an agreement is not reached, then the fence will be constructed on the boundary line, and the responsibility for maintenance within the new road reservation, once rehabilitated, would be shared between the Department of State Growth and TasNetworks. State Growth would be responsible for mowing close to the new road, and for control of weeds and saplings for the full width of the road reservation. TasNetworks would be responsible for pruning of existing vegetation that may affect their assets, consistent with their current operational policies.[1]

Road Reserve

4.10 The Committee noted that the existing highway was not in a formal road reserve and sought further information on whether this matter was being dealt with as part of the project:

> ***CHAIR*** *- In our discussions and in the report, it was mentioned that the current private road that we drove down is classified as a future road. In fact the current highway is not a - give me some words - fully titled -*
>
> ***Mr BOURNE*** *- Right-of-user road - is that what you mean?*
>
> ***CHAIR*** *- Yes. Can you describe what that means and what is happening with these works?*
>
> ***Mr BOURNE -*** *In terms of acquisition?*
>
> ***CHAIR*** *- Yes. In terms of the road and how the definition of the road classification is changing.*
>
> ***Mr BOURNE -*** *There is no defined road reservation for the existing highway. It is called a right-of-user road. By having a road there for so long, the state has effectively acquired the right to use that road as a highway.*
>
> *The intention is to acquire the land for the new highway, but also while we are effecting that lot, at the same time extend the amount of acquisition right through to the north and south boundaries, as it is quite a distance past the extended works.*
>
> *That will formalise the road reservation. There should be small if any, compensation for the bit where the existing highway will remain unaffected.*
>
> *There is an existing property access off the existing highway that will be slightly affected by this highway. In the design drawings there is a change so the access will come off in a slightly different place and then join into the existing access.*
>
> *What you are referring to as a future road is probably an unclear description on the title plans. What is shown on the title plans for that property is not affected by the works but is shown as a future road. It is probably up to the landowner about what they do in the future to use or not use that future road.*
>
> ***CHAIR*** *- The future road is not a departmental or government term?*

[1] Excerpt from email from Mr Kevin Bourne, dated 19 September, providing additional information in response to a question taken on notice on the attachment of liability on the sections of rehabilitated redundant road

Mr BOURNE - *No, it is on the title plan.*

CHAIR *- It does not mean anything in terms of this development?*

Mr BOURNE - *No.*

Does the Project Meet Identified Needs and Provide Value for Money?

4.11 In assessing any proposed public work, the Committee seeks assurance that each project is a good use of public funds and meets identified needs. The Committee sought confirmation from the witnesses that the proposed works were fit for purpose and a good use of public resources:

CHAIR *- ... ... Do you believe that this project is fit for purpose with the design you have put forward?*

Mr TANG *- Yes, we do. Given the structure is as at the end of its life - it is 70 years old and currently under strain from contemporary vehicles - we believe this design is fit for purpose.*

CHAIR *- Do you think the design you have put forward is value for money for the Tasmanian taxpayer?*

Messrs BOURNE and TANG - *Yes, we do.*

5 DOCUMENTS TAKEN INTO EVIDENCE

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

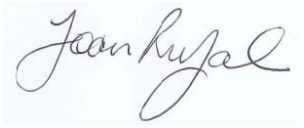
- Tasman Highway – Apsley River Bridge Replacement – Submission to the Parliamentary Standing Committee on Public Works – Department of State Growth, 18 August 2017.
- Email from Mr Kevin Bourne, dated 19 September 2017, providing additional information from the Department of State Growth in response to a question taken on notice on the attachment of liability on the sections of rehabilitated redundant road.

6 CONCLUSION AND RECOMMENDATION

6.1 The Committee is satisfied that the need for the proposed works has been established. Once completed, the proposed works will replace the existing Apsley River Bridge with a contemporary bridge designed in accordance with the current Australian Standard.

6.2 The Apsley River Bridge provides an important regional link to the town of Bicheno for freight vehicles, and its replacement will ensure that the structure will be able to meet the anticipated future increase in heavy vehicles tasks. The replacement bridge will also be constructed on an improved alignment so that it is suitable for travel at 100km/h. The new bridge and alignment will improve safety for all road users.

6.3 Accordingly, the Committee recommends the Apsley River Bridge, at an estimated cost of $9.766 million, in accordance with the documentation submitted.



Parliament House
Hobart
3 October 2017

Joan Rylah MP
Chair