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PARLIAMENT OF TASMANIA

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

Replacement of the Leven River Bridge

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

MEMBERS OF THE COMMITTEE

Legislative Council

Mr *Harriss* (Chairman)
Mr *Hall*

House of Assembly

Mr *Best*
Mr *Green*
Mrs *Napier*

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INTRODUCTION

To His Excellency the Honourable Peter George Underwood, Officer of the Order of Australia, 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: -

Replacement of the Leven River Bridge

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

SUBMISSION OF THE DEPARTMENT OF INFRASTRUCTURE, ENERGY AND RESOURCES

Background and Location

The existing Leven River Bridge, constructed in 1934, takes traffic from Hobbs Parade over the Leven River at Ulverstone. It is in a marine environment approximately 700m from the mouth of the Leven River and Bass Strait. It is a seven span simply supported bridge with equal span lengths of 18.6 metres and an overall length of 130.2 metres. It has an overall width of 9.5 metres, which includes a 1.2 metre clear width footpath on the upstream side.



Figure 1.1 – Site Location, Ulverstone TAS

The superstructure consists of four steel beams with a composite reinforced concrete deck. The substructure comprises of concrete reinforced piers and abutments. The

eastern abutment and eastern most pier are founded on spread footings, while the western abutment and five other piers are supported by reinforced concrete piles.

In October 2006, GHD issued to DIER a *Report for the Leven River Bridge, Bridge Strengthening / Replacement Options* ("October 2006 Report"). This report detailed bridge strengthening and replacement options. The report described the existing structure, assessed the bridge's heritage value, gave a condition assessment of the existing structure and indicated the current capacity of the bridge and rehabilitation / replacement options.

As a result of that investigation, DIER is undertaking the following works:

- ▶ Construction of a replacement bridge adjacent to the existing structure;
- ▶ Modification to the existing road alignment and construction of new road approaches; and
- ▶ Demolition of the existing structure.

Discussions with Central Coast Council (Council) have highlighted additional Council requirements and these are as follows:

- ▶ The bridge is to be an architectural feature, due to its central location in Ulverstone
- ▶ Reconstruction of Tasma Parade and Hobbs Parade junction;
- ▶ Additional footpath width on the bridge as well as on adjacent approaches.

DIER considers these requirements as additional to DIER requirements and as a result, Council has agreed to provide funding in consideration of these additional works.

Contract Type

DIER will complete this construction project by a Design and Construct method. In this type of contract a concept plan is provided to construction contractors that satisfies the traffic, safety and stakeholder requirements for the project.

On this basis the plans and project description should be considered as proposed concepts and the final bridge and roadworks arrangement may vary from this provided it meets the stakeholder mandatory requirements and as many of the preferred requirements as possible.

Funding

The State Government contribution is \$8.9m which will be funded by \$1.9m in 09/10 and \$6.0m in 10/11, with the balance in 11/12.

The Council works associated with the project will be funded with a contribution of approximately \$0.95m, based on the final arrangement of the works. The Council funding will be over two years in 9/10 and 10/11.

The total cost of the project amounts to \$9.9m including the Council contribution of approximately \$0.95m.

Objectives

The strategic objectives of the project are as follows:

- ▶ Maintain the existing level of service on Hobbs Parade into the future;
- ▶ Improve safety for road users and bridge operation and maintenance staff;
- ▶ Reduce ongoing maintenance costs; and
- ▶ For the bridge to be an architectural feature aligned with Council's Ulverstone Wharf Master Plan;

More specifically, the objectives are:

- ▶ Ensure the bridge reliably carries traffic for 100 years without the need for major maintenance works; and
- ▶ Minimise the risk of future unplanned road closures due to the escalation of existing structural issues.

Existing Bridge Heritage

Historic Heritage Value of the Bridge

DIER has previously commissioned the following reports relevant to the project:

- ▶ Leven River Bridge Replacement – Heritage Advice, GHD Pty Ltd, December 2008;
- ▶ Tasmania's Composite Bridges, GHD Pty Ltd, June 2008;
- ▶ Historic Heritage Study, Anna Gurnhill, prior to June 2008.

The December 2008 report was in response to the provisional listing of the bridge in the Tasmanian Heritage Register (THR).

The June 2008 report assessed and compared 5 composite beam / deck bridges in Tasmania and attempted to rate these bridges in terms of their heritage value and eligibility for the THR.

Heritage Outcome

Anna Gurnhill's Heritage Study made the following recommendations with regards to the heritage value and treatment of the bridge.

“From a heritage perspective, the preferred option for the Leven River Bridge is that efforts should be made to conserve the bridge and retain as much of its physical fabric as possible, so as to ensure that its historic cultural heritage significance is preserved.

However, it is acknowledged that this option may not be economically viable and, as such, the following recommendations suggest the secondary preferred course of action for the Leven River Bridge from a heritage perspective.

In the event that there is no other option but the removal of the existing composite bridge to make way for a new bridge which will meet the modern needs of transport and pedestrian access across the Leven River, it is recommended that the current bridge is fully documented and recorded. This documentation should include

photographic records, as well as detailed scale drawings of the bridge as it currently stands, and written notes describing the bridge. Once complete, the documentation should be provided to both the Tasmanian Heritage Council and the Central Coast Council.

Interpretation of the current bridge should be undertaken, and may include an interpretive signage panel to be placed near the site of the bridge, detailing its historic cultural heritage significance and association to Sir Alan Knight.”

DIER in liaison with Council will adopt the recommendations that an interpretive panel be erected adjacent to the site of the existing bridge, which will include a segment of the existing bridge. Council also wants to identify the other bridges that were a key part of the development of Ulverstone.

On this basis, the Tasmanian Heritage Council has advised that the existing Leven River Bridge will not be listed on the Tasmanian Heritage Register.

Project Benefits

Safety Benefits

The proposed works provide the following safety benefits:

- ▶ The current bridge does not meet current Australian Standards requirements in terms of structural capacity and safety. The bridge is not able to carry current traffic loads with an appropriate factor of safety so a 38 tonne load limit has been applied. The new bridge will be designed in accordance with AS 5100 *Bridge Design Code* and will cater not only for current traffic load requirements but also for traffic loads likely to be encountered in the future; and
- ▶ The current road traffic barriers on the bridge do not meet current safety requirements in terms of structural capacity. This is due to the original design being less than the current requirements but also to the current condition of the reinforced concrete barriers. The road traffic barriers that will be provided as part of the new bridge will meet current Australian Standard requirements.

Maintenance Benefits

The proposed works provide the following maintenance benefits:

- ▶ The current bridge is nearing the end of its serviceable design life. This means that the maintenance and repair costs associated with the bridge will yield diminishing returns from now and into the future. The new bridge will incorporate a robust and efficient design and be constructed with durable materials. This will minimise the amount of future maintenance work.

Other Benefits

- ▶ As mentioned above, the bridge is nearing the end of its serviceable design life and indeed some elements of the bridge have already failed. Failure of elements will become more frequent and less easily predicted as the bridge gets older. As such, the

risk of unplanned road closures due to structural failure will increase into the future. The new bridge construction will reduce this risk;

- The bridge concept design has been undertaken so as to maximise the aesthetics of the bridge whilst minimising the associated costs. To that end, architectural input has focused on the horizontal and vertical alignment of the bridge, shape of piers and abutments and shape of the bridge parapets. These elements will enhance the bridge aesthetics with a minor increase in costs; and
- The navigation width underneath the bridge has been increased as well as the vertical clearance under the central and eastern spans.

Project Description

Scope of Works

The project scope of works can be categorised into the following areas, which are shown in the Public Display plans in Appendix A and the bridge general arrangement in Appendix B:

Construction of the Replacement Bridge

The replacement bridge concept design has been finalised. The bridge has been designed to Australian Standard AS 5100 *Bridge Design Code* and has a design life of 100 years. The bridge concept design consists of the following elements:

- A five span bridge that is 147 metres in length and has a total width between barriers of approximately 11 metres. The carriageway consists of two 3-metre wide running lanes with a 1 metre wide outside shoulders and a 3 metre wide shared path for pedestrians and cyclists on the downstream side of the bridge as agreed with Council;
- The superstructure will likely consist of 1,500mm deep prestressed Super-T girders seated on elastomeric bearing pads;
- Expansion joints will likely be provided at each end of the bridge;
- Reinforced concrete abutments supported by piles and reinforced concrete wing walls. A spill through abutment will be provided at the eastern abutment and a vertical face wall will be provided at the western abutment;
- A proposed reinforced concrete culvert underpass can be provided behind the western abutment for future pedestrian use as part of Council's long term pedestrian access planning, but this is technically difficult;
- The substructure will likely consist of reinforced concrete headstocks, columns and pile caps. Pile caps will extend to below Lowest Astronomical Tide (LAT). Piled footings will be adopted below the pile caps; and
- Traffic barriers will be provided at the outsides of the bridge width.

The bridge geometry is a key element of the Council requirement for an architectural feature bridge and has been designed to consist of both a horizontal and vertical curve. This geometry has been designed in conjunction with architectural and road safety design input and includes the following attributes:

- A minimum horizontal radius of 200m suitable for the speed limit of 60km/h;

- ▶ Sight lines, for this horizontal radius, meet the requirements for 60km/h, provided that there are no fences between the road and footpath; and
- ▶ A stopping sight distance, for the vertical curve, that exceeds requirements for 70km/h.

The spans at each end of the bridge will require widening to cater for a widened road pavement associated with junction approaches/departures. This widening will be accounted for in the flanges of the Super-T girders.

Reconstruction of the Eastern Roundabout

A new 16 metre diameter roundabout is proposed which is identical in size to the existing roundabout. The proposed roundabout will be in the same plan location as the existing roundabout but will be built at a higher level. The roundabout will generally match existing levels on the eastern side and will be constructed on a tilted plane that rises towards the river. The existing roundabout is on a tilted plane that falls towards the river. This raised level results in the western extremity of the new central island being approximately 860 mm higher than existing.

Reconstruction of the existing pedestrian footpath and ramp access to Anzac Park on the southern side of the roundabout will be necessary.

A new retaining wall will be necessary on the northern side of the roundabout, between the roundabout and the existing foreshore footpath, to support the new 3 metre wide shared path and provide for new traffic barriers.

The purpose of changing the levels at the roundabout is to:

- ▶ Secure increased clearance between the riverside footpath and the soffit of the new bridge;
- ▶ To eliminate the necessary dip that would result in the roundabout roadway if it was not reconstructed before it rises to the higher level of the new bridge; and
- ▶ To make the roundabout more visible as it is being approached from the west.

The following heights have been used to determine appropriate levels:

- ▶ Vertical distance between foreshore footpath and bridge soffit of 2.5 metres;
- ▶ Bridge structure depth of 2.0 m

The roundabout will cater for single unit trucks on the paved carriageway. Larger and B-Double trucks will be able to negotiate the roundabout by mounting the annulus of the central island. This replicates the existing condition.

Deflection requirements are not achieved for vehicles travelling from Crescent St to Kings Parade, however, the proposal replicates the existing conditions.

The roundabout geometry has been selected to:

- ▶ Minimise the amount of reconstruction needed along Hobbs Parade and Crescent Street and thereby minimise construction time and costs;
- ▶ Minimise service relocations;
- ▶ Provide footpath clearance underneath the bridge;
- ▶ Avoid any unnecessary encroachment into the foreshore reserve.

The above details the methodology and reasoning for the design of the bridge and bridge eastern approach vertical and horizontal alignment. This is the optimum approach to take and so has been incorporated into the concept design.

Several other options were investigated that would retain the existing roundabout, including a pedestrian underpass under the eastern abutment and reducing head clearance to the foreshore footpath, but none of these other options met the requirements as fully as this option.

Construction of Western Approach & Tasma Parade Junction

Geometric modifications to this junction are minimal and the functionality of this intersection will be unchanged by the bridge replacement. Primary changes to the existing layout are:

- ▶ The approach will be realigned to suit the new bridge alignment;
- ▶ Tasma Parade will be squared up to provide a safer junction further away from the junction of Helen Street; and
- ▶ A pedestrian underpass has been indicated on the plans but it may not be constructed depending on costs and functionality due mainly to the fact that it will need to be built below Highest Astronomical Tide level. This may require a waterproofing wall built to at least that level and have special valves for draining rainwater that would fall onto the path.

The effect of squaring up the Tasma Parade junction improves vehicle-turning movements and minimises the width of road crossing for pedestrians. The junction has been designed to cater for single unit trucks but there is another access into this precinct further up Hobbs Parade that provides adequate entry for larger vehicles. Squaring up of the junction involves encroachment into a separate crown title on the eastern side of Tasma Parade (PID 7374363). Council is currently negotiating transfer of part of this title.

The finished surface levels of the new bridge approach will closely match the existing surface and the works have been designed to minimise encroachment into Tobruk Park.

A 1.5m pedestrian footpath will be provided on the southern side of the bridge approach and will be connected by a pedestrian refuge island to the shared footpath on the northern side. A new footpath will be provided to gain access to the Tobruk Park foreshore and Council may construct a footpath to the foreshore on the northern side at some future time.

Demolition of the Existing Bridge

Following construction and commissioning of the replacement bridge, the existing bridge and piers will be demolished with all materials disposed of from site, apart from the sample bridge section for display. The existing steel girders are coated with a lead-based paint and this will need to be managed by the contractor with OH&S and environmental consideration.

Traffic Disruption

It is expected that traffic disruption during the construction and demolition works will be minimal, however, there will be times when disruption will be unavoidable. This is likely to result from the following factors:

- ▶ Construction traffic generally working in and around the site using public roads;
- ▶ Service relocation under the roads and footpaths;
- ▶ Construction of the new bridge abutments;
- ▶ After construction of the new bridge, reconstruction of the approaches adjacent and over the existing road infrastructure; and
- ▶ Reconstruction of the roundabout at the eastern approach.

The existing upstream bridge on the Bass Highway has been recognised as a route for any vehicular detours, when necessary, but the contractor will need to make provision for pedestrian access. It is also likely that some traffic will use the detour to avoid the area once construction works commence.

Any planned closures would be advertised in advance and sufficient real time information would be provided to inform drivers of the need to take alternative routes. Traffic management during construction will be undertaken in consultation with Council as part of the ongoing public consultation process.

Bicycles

Council has been consulted and provided input regarding the bridge service to cyclists. As a result, a 3 metre wide shared path has been provided on the downstream side of the bridge and at each adjacent approach. This is consistent with AS 5100 *Bridge Design Code* requirements for a “Dual use (two-way bicycles and pedestrians)”.

Although dedicated cycle lanes have not been provided on the bridge deck proper, the 3 metre traffic lane plus 1 metre shoulder provides an improved road cycling facility, albeit less than the desirable 4.2 metres required for a dedicated traffic lane of 3 metres and a cycle lane of 1.2 metres. The 3 metre wide shared footpath is designed to cater for cyclists as well as pedestrians.

Heritage Considerations

Heritage considerations are detailed in Section 2 above.

DIER, in liaison with Council, will adopt the recommendation by Anna Gurnhill that an interpretive panel be erected adjacent to the site of the existing bridge. It is proposed that this will include a cut out section of the existing bridge with concrete broken back to show the composite nature of the beam to deck connection.

Aboriginal Heritage

The proposal was referred to Aboriginal Heritage Tasmania for comment as part of the Crown Land approvals process. No further investigations or permit requirements were identified.

Noise Considerations

The proposal is for a replacement bridge to maintain the existing bridge function, rather than an increase in capacity for traffic volume.

The proposed realignment will result in the new bridge and road approaches being nominally closer to the nearest residential properties in Helen Street on the western side of the river. The distance from the road to the nearest property (at that point) will reduce from approx 36m to 33m (3 metres closer). As such, the likelihood of an increase in noise is minimal. Further, the impact to residents of traffic noise from the new bridge, in comparison to the existing situation, is likely to be reduced due to the:

- ▶ New asphalt deck with less and quieter expansion joints than the existing bridge; and
- ▶ New proposed 800mm high solid concrete road traffic barriers provided in place of the existing open steel rail arrangement will also act as a noise barrier.

Based on the above considerations, the noise impacts of the proposal are considered to be acceptable but noise modeling (and noise monitoring at nearby properties) is being undertaken to confirm current and future noise levels.

Noise management throughout the construction period will be managed as described in the Contractor's Construction and Environmental Management Plan for the project.

Environmental Considerations

A review of the project by the Crown Lands Technical Advisory Group, which includes representatives from various specialist branches within the Environment Protection Agency, made recommendations on environmental controls and permit conditions which have been included in the Development Application to Council and these are described below. The project was deemed to have minimal environmental impacts and no additional environmental studies were required.

Erosion, Sediment Control and Slope Stabilisation

The proposed works have potential to impact upon soil stability and increase erosion. This could occur during construction, or post construction where rehabilitation is not effectively implemented. To address these issues:

- ▶ Appropriate erosion control techniques will be established and outlined in a detailed Construction and Environmental Management Plan (CEMP) prior to commencement of construction; and
- ▶ On completion of the works all disturbed areas will be topsoiled and seeded with appropriate grass species to prevent erosion of the newly formed embankments and batters. Council will provide landscaped gardens in these areas once the bridge construction phase is completed.

River Hydrology

The new abutment works will have minimal impediment on any areas below Highest Astronomical Tide (HAT) and so hydraulic actions in these areas will remain unchanged from the works.

The hydraulic effects due to the construction of the piers will be minimal and there will be no reduction in the total channel area due to the new works.

The piles at each pier were designed such that an appropriate amount of scour was adopted below existing riverbed level. The amount of scour was assessed during the concept design geotechnical investigation. The estimated amount of scour per pier will be similar to the existing situation and given the reduction in number of piers, from 6 to 4, the total amount of scour in the river will be reduced due to the new works.

Dust Emissions

There is some potential for impact on air quality from dust and airborne particulates generated during earthworks, including excavation activities and the transportation, stockpiling and placement of fill.

Mitigation measures to minimise the level of impact will be outlined in the Construction and Environmental Management Plan, and are likely to include the use of water carts during dry conditions, covers for stockpiled material (where required) and appropriate vehicle maintenance schedules to minimise vehicle emissions.

With these management mitigation measures in place, the potential impacts are not considered to be significant.

Lead Based Paint on Existing Bridge

The existing steel girders have been painted with a lead-based paint system. These girders will be removed and disposed of as part of the demolition phase of works.

The safety and environmental risks associated with this demolition will be managed by the Contractor, who will be required to comply with DIER's requirements and environmental legislation.

Social Considerations

Impact On Bridge Users During Construction

The bridge provides a critical link for local traffic including pedestrians across the Leven River. This project will ensure the reliability of that link for the design life of the bridge, nominally 100 years.

The works will cause delays during construction and create some noise, especially during any pile driving activities. These issues will be managed through public consultation. It is recognised that some people will be disproportionately affected by the works (eg a person living and working on opposite sides of the river may need to detour via the Bass Highway bridge at times). The need for any traffic disruptions will be driven by safety requirements and a detailed traffic management plan will be developed for the project. The possibility of lane and or road closures is driven by the desire to minimise overall inconvenience for road users by completing most work requiring closures in a single period. The effect on bridge users is the primary consideration.

Careful consideration will need to be given to pedestrian access across the river and closure to pedestrian access is not expected, but may be necessary for safety reasons.

Ulverstone Wharf Redevelopment Master Plan

Council was extensively consulted as part of the bridge design process so that the new bridge accords with the Council master plan for redevelopment of the wharf and foreshore areas adjacent to the location of the new bridge. As such, the new bridge design will be a key feature of the plan and will cater for pedestrian movements in accordance with Council requirements.

Improved pedestrian access will be provided underneath the bridge at the eastern abutment by providing greater head clearance and a 3 metre wide foreshore path. The wider footpath will provide an improved view field underneath the bridge from Anzac Park.

An underpass is proposed at the western abutment, but this is technically difficult to achieve based on the lower bridge levels on this side. A final decision will be made by Council whether to include this option in the project.

Stakeholder Engagement

Stakeholder Engagement Plan

DIER has developed a Stakeholder Engagement Plan for the project to ensure effective and timely consultation initially throughout the design phase and later during the construction phase of the project.

Due to the specialised scope and critical importance of the project, there has been consultation with Council staff and Councillor workshops to ensure that the Council requirements can be adequately addressed. The opportunity for direct community involvement has been provided in the public consultation undertaken in July 2009 and through the formal Development Application to Council.

Public Consultation

Consultation to date has included notification of the project in early July 2009 to Ulverstone community and recreational groups, emergency services and transport groups. This was followed by a public display at the Council offices that community members were invited to attend. The public display material is also available on the DIER website to view. These activities were conducted in accordance with the Stakeholder Engagement Plan.

A report on the outcome of the public display is provided in Appendix C with most comment requesting clarification or additional detailed information on the project.

The main issues arising from the public consultation included a request for more information for the nearby residents, the width of the west bound road bike lane and the lack of a barrier between the road and shared footpath.

The DIER project manager and Council officers have been in contact with the closest neighboring property owners and have addressed their concerns. Issues in relation to the potential additional noise have been actioned by installing noise monitors at two properties and completing a noise study. Visual impact of the new structure that is upstream and higher than the existing bridge has been addressed by clarifying with

property owners that most riverside vegetation will remain to reduce the view of the bridge from their property. Council officers have identified with residents the future works (mainly new footpaths) being proposed by Council along the foreshore.

The issue of the on road bike lane width from the Safer Road for Cyclists group has been responded to by advising that the shared footpath is designated to the appropriate width to cater for cyclists and pedestrians and that road cyclists and other road users have been allocated a 4 metre lane to share. Initially only the centre line of the new bridge will be line marked and this will be reviewed after operation to determine the benefits of adding the shoulder lines at one metre from the edge of the road.

The requirement for a barrier between the shared footpath and the road was thoroughly reviewed. The outcome was that for the speed environment, ie a speed limit of 60km/h on the bridge leading to a lower speed to negotiate the roundabout then followed by a 50km/h speed limit into the shopping zone at Crescent Street, a barrier is not warranted. The situation is similar to most other roads, which have footpaths directly adjacent to the roadways and in this case the shared footpath is 3 metres wide compared to the usual 1.5 metre wide footpath.

Provision of a barrier at this location would also limit the sight distance for road users because of the curved geometry of the bridge, both vertical and horizontal.

PROGRAM AND COSTS

Construction Program

The key phases and delivery dates are detailed below:

- | | |
|---|----------------|
| • Completion of documentation and tendering | December 2009; |
| • Award of tender for construction works | January 2010; |
| • Detailed design phase commences | February 2010 |
| • Construction start | March 2010; |
| • Completion of construction works | May 2011. |

Project Costs

The cost of the works has been estimated based on historical rates for similar works delivered by DIER and elsewhere in Australia and considers estimates previously undertaken for the works.

The estimated project cost is \$9.9m and the main components of the project and associated costs are shown in the table included in Appendix D of the submission of the Department. Appropriate contingencies are included for each line item to compensate for the uncertain scope in some areas and uncertain cost in others. A summary of construction costs is as follows:-

ITEM	COST
Preliminaries	935,000

Demolition of Existing Bridge	1,038,500
Eastern Approach	504,975
Bridgeworks	4,294,400
Western Approach	239,500
Tasma Pd/Hobbs Rd/Helen St	243,000
Sub-total (Excl. GST)	7,255,375
DIER CA/Construction Surveillance	362,769
DIER Project Management	420,812
Contingency	1,287,240
Escalation	362,769
Total (Excl. GST)	9,688,964

EVIDENCE

The Committee commenced its inquiry on Friday, 13 November last with an inspection of the site of the proposed works. The Committee then reconvened in the Conference Room, Beachway Motel, Ulverstone whereupon the following witnesses appeared, made the Statutory Declaration and were examined by the Committee in public:-

Department of Infrastructure, Energy & Resources

- Steven Kaczmariski, Senior Project Manager
- Andrew Murray, Consultant Engineer, GHD

Central Coast Council

- Cr. Mike Downey, Mayor
- Sandra Ayton, General Manager
- Bevin Eberhardt, Director Engineering Services

Background

The Project Manager, Mr Kaczmariski, provided the Committee with the following overview of the project:-

The existing Leven River Bridge was built in 1934 and it has served its function quite well until now. It has recently had a 38-tonne load limit placed on it subsequent to inspections of the structure. The structure itself has some significance in that it was designed by Sir Allan Knight and is comprised of a composite concrete and steel beam structure, which is one of a number of bridges built that way in Tasmania. In looking at the bridge, the department commissioned reports on whether the bridge could be strengthened or repaired, and that information is provided in the document in the introduction. Having gone through the exercise of looking at how much it would cost, a lot of the work is hidden within the existing concrete itself and it would be very hard and expensive to rehabilitate the existing structure.

When it was decided that the bridge should be replaced, in conjunction with the council officers and staff, the department and the council looked at a number of options - I could table a plan that shows predominantly the two options: the blue and the red, as they are identified on the plan - with the blue option forming a new Hobbs Parade into the end of Reibey Street, which is the main street in Ulverstone, with potentially a roundabout at that location. The red alternative is predominantly the design that has been adopted now, to connect in the existing Hobbs Parade into the existing roundabout that is on the eastern side of the river. I think perhaps the council might be able to answer more questions on that in their submission. Needless to say, the red bridge option was adopted and I will continue to talk about that red option.

The contract type that the department carries out with bridge construction is a designer-construct process. In that process the tenderers put forward their options of meeting the requirements that the department and the council have in this particular case. The department has undertaken perhaps more investigation into the concept of the bridge design because the council has made specific requirements about the architectural feature of the bridge. The department is mindful that this bridge is in the centre of Ulverstone and therefore would have more impact on visual amenity and aesthetics than perhaps a bridge might have that is in the middle of the highway in the middle of a rural setting. In conjunction with the council we have spent a bit more time to develop the concepts, which are contained in the attachments to the report - and they're the colour images that we have had on public display and are contained within appendix A.

Funding for the project is \$8.9 million staged over two years - \$1.9 million in 2009-10 and \$6 million 2010-11, with the balance in years 2011-12. That estimate is our current estimate for the tender work. I noticed when the notice was read out it mentioned a figure of \$6.9 million, and I can go into that as I am going through the presentation on where the differences have occurred.

Effectively, the objective of this bridge is to replace the existing structure. The review of traffic has identified that the traffic flows are not expected to increase more than the requirement for a two-lane bridge and in particular, the work that we have undertaken has identified that we need to supply a shared footpath and cycleway for use by the local community. That has been provided for in the actual design.

Of course the new bridge structure will reduce the maintenance costs that we would incur and those would increase dramatically if we were to retain the existing structure. The existing bridge has some historical significance. We have looked at those issues along with the Tasmanian Heritage Trust and an outcome of that is in section 2 - the heritage outcomes identified on what should happen if we cannot maintain the existing structure. There was some talk about listing the structure on a heritage register but with representations from DIER and the council that was not pursued.

... In section 3 the project benefits are identified in three main areas: safety benefits, maintenance benefits and other benefits. I do not anticipate going through those in any detail. With section 4, which is on project description, I pointed out previously that we are looking at replacing the existing seven-span bridge with a five-span structure. The consequences of that are that the depth of the bridge will be slightly more, but we are providing for a double curvature for the new bridge.

The existing bridge is effectively a straight line from one side to the other, and that double curvature provides for an architectural feature and it also provides for extra room for water craft through the mid-spans. There are obviously fewer piers in the river, so there are fewer obstructions and that is of benefit for navigation. But it also

provides for additional headroom for our footpath on the eastern side that goes underneath the bridge.

We have made provision in the tender documentation for an underpass on the western side of the bridge. There is no footpath under the bridge in the current arrangement and there is a problem with that pedestrian underpass, particularly with the highest astronomical tide. The invert level of that footpath will need to be below that level and has the potential to flood.

We will review the information received from tenderers on that and discuss it with council and see whether we want to pursue that option or not. But that us something that we will discuss with them, as long as we can make sure that that pedestrian underpass will be safe to use and no doubt it will be progressed. If not, we may need to remove that from the contract.

The new bridge will be a reinforced concrete structure. Most likely a super-T design. But once again, that is up to the tenderers to identify to us. We have identified a minimum horizontal radius for the bridge, so that will limit its extent upstream. We do not want the bridge to be too far upstream from the existing bridge, so we have identified that as -

The reconstruction of the eastern roundabout is an issue that the council are keen to investigate. At the moment the design that we have identifies that the eastern roundabout will need to be reconstructed. As discussed on-site, it is the vertical alignment and vertical geometry of traffic moving from the roundabout onto the bridge which is the key issue. The level of the bridge is governed by the pedestrian access underneath the eastern abutment, which needs to be increased from its current, approximately 2 metres, to 2.5 metres. We have left that issue in the hands of the tenderers at the moment and asked them to see if they can come up with an option that retains the existing roundabout and, if so, that will be adopted. If not, then the roundabout will need to be reconstructed.

The Committee questioned the witnesses as to as to why it was decided to raise the eastern abutment rather than excavate an appropriate amount. Mr Kaczmariski responded:-

We did look at that option along with a number of other options. The footpath at the moment is predominantly level across the front of Anzac Park and then there are about three or four steps as you go under the existing bridge to go up to a higher level. So the footpath on the downstream side is at a higher level than the footpath under the bridge. Once again, the highest astronomical tide is 1.64 metres and that footpath, at the moment, is about RL 2. So there is about 400 millimetres of clearance or thereabouts between the highest astronomical tide and that footpath now. If you put that footpath down that extra 500 millimetres, you start getting awfully close to the highest astronomical tide and obviously, some sort of protection would be required. As soon as you do that, you have the issue of any stormwater that would enter that section of footpath needing to be drained through some sort of valving system.

So, once again, at the moment, the tides do come up across that footpath across Anzac Park at a lower level, at about the 1.6-metre mark and three or four times a year, part of Anzac Park is flooded. So the discussion with the council on that has been that we did not want to necessarily put that footpath any lower than what it is at the moment on the basis that the potential then is for flooding on that particular footpath.

Mr Kaczmariski continued the overview:-

So, on the western approach, the council have asked us to reconstruct Tasma Parade as part of this project, and the council are willing to contribute to the cost of that work. That just improves the intersection between Helen Street, Hobbs Parade and Tasma Parade and just makes the traffic mentioned there a bit easier. So, we are doing that. That has a marginal effect on making the bridge a bit wider on the western side to allow for the right-turn slot but that can be accommodated.

After the new bridge is built, then we will be demolishing the old bridge. So, as discussed on-site, the new bridge proposal is that there are two 3-metre traffic lanes in each direction with a shoulder 1 metre wide, making a full traffic width of 4 metres on the bridge and there is a shared footpath of 3 metres width on the downstream side. The 3-metre-wide footpath is the requirement of the council and their insurers, and the result of the discussions between the department and the council about whether it should be on the upstream side or the downstream side was that they identified that the downstream side was the preferred side.

There will be traffic disruptions during the construction of the bridge. Predominantly, that will be when the crossover works are done to connect the old infrastructure into the new bridge, and there will be increases in level and new road works required during that time. Obviously, during the construction of the new bridge there might be some minor disruptions for traffic. One of the key elements that we have identified in our documentation for the construction is that pedestrian access is very important. Lots of pedestrians walk across the bridge and it is important that that is maintained for the duration of the construction period.

We have had a representation from bicycle groups that the bicycle lane should be provided on the road proper itself and that for this environment those widths ought to be 1.2 metres. As I mentioned before, we are providing a shoulder that is 1 metre wide and so we cannot necessarily provide for 1.2 metres as was requested. Once again we have mentioned that to tenderers, and they might come up with an option on that but, nevertheless, without making the bridge wider again it is going to be very difficult and more expensive to widen the bridge any further than it is at the moment.

We have investigated Aboriginal heritage and there are no issues of concern for us in this locality.

With noise considerations, we have recently installed noise monitors on adjacent properties and found that the existing noise levels are well below any areas of concern and therefore, the noise from traffic on the new bridge should not necessarily be a problem. Obviously there will be construction noise and that will need to be governed by the local government requirements and other noise regulations. Nevertheless, people ought to expect that pile-driving will occur during the construction of the piers and abutments and that will generate a significant amount of noise. It has been reported to us that when the Bass Highway/Leven River Bridge was being constructed, everyone in Ulverstone knew that pile-driving was happening and so there is a sense that there will be noise associated with that.

With environmental considerations, we have reviewed this site with the Crown Land's Technical Advisory Group and they have identified that care should be taken with erosion, sediment and slope stability, and we have allowed for that in the tender documentation. We have looked at the issue of river hydrology and the effect of this bridge on the river hydrology and obviously, with fewer piers in the river the hydrology should not be made any worse than it is at the moment. We have looked at dust emissions from the works and predominantly, that will be during the construction phase. That will need to be monitored by the contractor in his construction and environmental management plan that he will develop for the site. There is an issue with the existing bridge and lead-based paint and once again, the contractor will need to be careful about the removal of the old bridge to make sure that the lead-based paint is not disturbed during the removal process.

Social implications: there will be the noise issues that I identified before with construction noise, and there will be some disruptions to traffic and traffic flow from time to time depending on the activities that are happening. As I said, predominantly the main issues will be at the crossover works from the old to the new bridge. We have, along with the council, developed the concepts for this bridge to match the Ulverstone Wharf Redevelopment Master Plan; in a sense, what we have achieved in the concept design matches the requirements of that particular master plan.

Demolition of old bridge

The Committee questioned the witnesses as to the methodology to be adopted to remove the existing bridge and what, if any, environmental factors needed to be addressed. Mr Kaczmariski responded:-

We will most likely cut up the deck, with some sort of concrete cutting equipment, into smaller sections and most likely remove a beam and concrete section with a crane, so they will be removing segments of the bridge in large pieces and transporting them away. It is not as if it will be totally demolished on site; it will be segmented into manageable pieces. Then the main part, with the existing piers and piles into the river, will need to be extracted and removed in large chunks.

The concrete part of the structure could be used as inert landfill, so that is an option that the contractor would look at at this stage. We have looked at options of inert landfill in and around the Ulverstone area, but DIER has no such areas where we could put that material. At this stage it would be up to the contractor to see whether he could find a site where that inert fill could go, and that would be the concrete part. The steel beams are a bit of an issue with the lead paint. If they were to be reused somewhere, bearing in mind we can't fix them, because they are rusted and a lot of the flanges on the steel beams are fairly rusted away, the recycling use of that will possibly end up being some sort of re-melting the metal down, but all of that at the moment is in the hands of the contractor or the tenderer.

Pedestrian use and cycleways

The Committee questioned the witnesses as to why the proposed cycle way was proposed to be only one metre wide and whether white lines would be provided for separation. Mr Kaczmariski responded:-

The design is for a 3-metre lane and a 1-metre wide shoulder. That 1-metre wide shoulder could be line-marked. The reason that we cannot extend that out to 1.2 metres is that the cost implications we identified with making that extra width could be significant. We have raised with the tenderers that it would be something that we ought to look at if it did not include a significant cost increase.

We believe that making that lane 200 millimetres wider would add a significant cost to the bridge with potentially another beam required under the structure. So that is the reason we have this arrangement at the moment and the 3-metre wide shared cycleway and footway is meant to allow for cycling use.

... (the) 1 metre (is identified) as a shoulder, not as a cycle lane, because it is too narrow for a cycle lane.

...True commuting cyclists, I believe, would probably stay on the road and on the bridge and not use the shared footpath, especially going west.

Environmentally appropriate design

The Committee questioned the witnesses as to what environmentally sensitive measures were proposed for the design. Mr Kaczmarski responded:-

We have stipulated energy-efficient lighting but we have not necessarily identified solar lighting specifically. Once again, that is an issue that was left for the design and construct process.

Cost estimate

The Committee questioned the witnesses as to why there existed a cost differential between the figure of \$6.9 million contained in the Message from His Excellency the Governor-in-Council and the cost estimate of \$8.9 million contained in the submission of the Department. Mr Kaczmarski provided the following explanation:-

Originally when the comparison was made and the option was adopted to construct the bridge upstream, the estimate for the structure was \$6.9 million. Since that time, we have undertaken a geotechnical investigation through the river and found that some of the piles need to be at least 30 metres deep. So there is a significant additional cost associated with that particular phase of the work. Fortunately, there are only a smaller number of piers that will be in the river itself compared with the six that are there at moment for the spans, so that is a mitigating factor. In conjunction with that the bridge is now going to be wider than we had first envisaged, particularly the extra width for the shared footpath which originally was being promoted as 2.5 metres. So that has increased in width by half a metre.

The curvature would be marginally, in our estimation, more than the original design cost and also the bridge is slightly longer as well. So they are the main factors, apart from possibly the time span of when this project started until now - a few years down the track. So that is where the major cost estimates have been. Nevertheless, the tenders will identify what the actual cost is likely to be and then we will obviously work off that basis.

Stakeholder engagement

Mr Nibbs provided the Committee with the following account of stakeholder engagement:-

In relation to stakeholder engagement, we are working very closely to a stakeholder engagement plan for this particular project, as we do for all significant projects. Steve Kaczmarski, the project manager, has been working very closely with the council to make sure that their requirements are very heavily taken into account.

In terms of procedure, we have sent out an original notification letter to key stakeholders advising of the works and the public display. We have conducted a public display at the council chambers with the imagery that was shown before. That was also put up on the DIER web site so that people could have access to it through that mechanism and was advertised through a public notice to make sure that the public were well aware that the public display was occurring and to give an opportunity for direct community feedback in relation to that project. As can be seen in section 4.92 there, the main issues that came out of the public consultation - and there was not a huge number of responses from that - were requests for more information from nearby residents; Steve has been working very closely with the nearby residents following on from that.

The width of the bike lane on the westbound side has been discussed, and the barriers between the road and shared footpath. They were issues that came out there and the appendix C has the report from the public display. Following that, the development application process has involved capacity for public consultation as well and there has been some media coverage of the proposal. Again, people have seen the imagery that was provided in that public display through that mechanism as well.

Within our stakeholder plan, I should note that we also have plans in train to notify key people, emergency services, residents and so forth of the works so that, if we get to that stage, people are well aware of the works that will be occurring, what is involved and so forth.

Central Coast Council

The Mayor of the Central Coast Council made the following submission in support of the project:-

We conducted what we called a Leven River precinct study a number of years ago, which also looked at the mouth of the river right up to the Bass Highway in that precinct, and of course the bridge fits into that as well. I heard one of the other gentlemen talk about the wharf redevelopment master plan, which came out of that study as well. We had consultants in to actually undertake that study. We had 300 people turning up to the civic centre one night to discuss the Leven River, the bridge, the redevelopment of the wharf, the showgrounds and the like. That gave us a very good indication that our community is very pleased to be able to discuss it but also to take up the opportunity if the replacement could happen. We've also conducted what we called cultural plans back in the mid-1990s, which today are named community plans. The bridge certainly raised its head through those two processes as well.

We conducted a cultural plan study back in 1997 in Ulverstone and it certainly came up then. Only about two years ago we reviewed that culture plan, which is now called a community plan, and it certainly came up once again. So as far as our community is concerned we're very much in favour of the new bridge going forward, to the degree that my council, only back in August of this year, decided that it is prepared to put into the actual replacement and any associated works to the tune of about \$1.5 million. The exact figure is confidential at this point. I think that is a fairly big commitment from any council for a bridge that is not their responsibility. We believe that through the consultation that we have had with our community and the input that they have had to us at different times, people are saying that you only get one crack at these things every 100 years. As Sue said, it is probably going to last for 100 years. We always felt that there had to be some sort of feature built into the bridge in some way because we want to make sure that we can attract tourists and the like into our town to come and look at that bridge, which would then have a impact on the businesses in the area as well.

Part of that \$1.5 million would be to make sure of the features that were going into the bridge. Obviously there are two curves that will go into it from the concept plans that we have looked at so far, but also the lighting and the extra pathway.

We also were so keen with the bridge that we set up a council committee to look at how we could help in any way through the government departments to make sure the bridge went forward. We met on a number of occasions to talk about that. One of the main things of course was the features that were going to be built into the bridge. Through the letter that we wrote to you the other week we have also indicated that we are prepared to take over some responsibility of the routine maintenance and tasks that are involved with the bridge - the sweeping, maintenance of the

landscaped areas of the bridge approaches, the lighting - including fittings - and operating costs and all those sort of things.

We are really keen to make sure the bridge happens. Of course, it has gone through the planning process where I do not believe there was any representation against it all. When the heritage issue raised its head some months back, I cannot tell you exactly what people were telling me they would do if that bridge was ever listed. I would not like to put that on record but certainly I had half a dozen phone calls with lots of offers - just give me the nod sort of thing and the bridge might happen to disappear. So that is the sentiment out there in the community of just how strongly they feel about the bridge. It was pleasing to read finally that the bridge was not going to be listed. We certainly had enough of that in Penguin and we did not want to have that flow through into Ulverstone.

Overall, we are very pleased that the current Government are prepared to bite the bullet and replace our bridge. I pulled up there one morning. There was a bit of an accident near the roundabout and we had to pull up. A truck came back through the other way and quite frankly if you sit on that bridge in a car it certainly does rock around quite a bit, especially with trucks going across it. That gave me a bit of fright. I did not realise it was so unstable.

Mr Eberhardt added:-

In respect to the choice of the 3-metre width, I guess the options that council were given in the early stages of the bridge design were to have two 1.5 metre wide footpaths on each side or go for one, I think it was 2.5 metres suggested at that stage. What we've found as we've been progressing with the cycleway project between Turner's Beach and Ulverstone is that the requirement for shared pathways is now becoming a 3-metre width and our insurers basically advised that we should be going to that 3-metre width to allow for future situations. The other thing with the 3-metre width is that we don't have a barrier proposed there between the traffic lane and the shared pathway, so that does allow a bit of extra width for safety reasons as well.

On the selection of which side to put the 3-metre shared pathway, there was quite some debate internally. There are pluses and minuses on both sides but I guess at the end of the day we are trying to get a shared pathway link through, tying it in with the wharf precinct. The shared pathway will come across the river to the western side and will go along the foreshore or the top of the embankment of the river on the western side to link up with West Ulverstone. Had it been on the other side we would have had the issue of crossing back over once you got the western side and it's already been highlighted, the difficulty in trying to get an underpass on that western side. That's the main reason we went for that one. Also, from the point of view of viewing the actual precinct, if you can imagine once the old bridge is removed, the section there looking back to the wharf and the showground areas and back out to the mouth of the river will be fairly unique from that point of view, so it was thought that that would be the most advantageous of locations. You can still view the Dial Range from that side of the bridge as well.

The Committee questioned the witnesses as to what interpretation of the history and the crossings of the river might be provided and what part of the bridge might be kept.
Mr Eberhardt responded:-

Council has a theme that was built into their cultural grants some time ago about the stories of Ulverstone. There are various signs linked in there. There is one down in the wharf area so the intention was to build on that with the area on the eastern side where the underpass would go, to actually do some display there, and also pick up the previous history on the other two bridges that were across the Leven. We've already done some historical research on what we could design to be on that display.

The other concept in the early stages was, and I think is still allowed for in the tender, whether we can retain a section of the bridge and also give the engineering history of the design of that bridge, which is probably of interest to engineers. It's probably worthwhile for the public knowing about it but I think we can do something quite well on that historical side of it.

DOCUMENTS TAKEN INTO EVIDENCE

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

- Department of Infrastructure, Energy & Resources – Leven River Bridge Replacement – Submission to the Parliamentary Standing Committee on Public Works – October 2009; and
- Central Coast Council – Submission dated 9 November 2009.

CONCLUSION AND RECOMMENDATION

The need for the proposed works was clearly established. The bridge requires upgrading and refurbishment to operate adequately into the future. The new bridge has been designed as an architectural feature in consideration of its proximity to the centre of Ulverstone and it complements the Council master planning for the area.

These works will provide a safer and more reliable bridge for traffic to cross the Leven River on Hobbs Parade as well as providing improved navigation underneath the bridge.

When the new bridge is completed, the risk of unplanned bridge closures due to structural issues will be reduced, as will the safety risk to road users.

The Committee was of the view that every effort should be made to provide a 1.2 metre wide cycling lane going west with appropriate line marking.

Accordingly, the Committee recommends the project, in accordance with the documentation submitted.

**Parliament House
Hobart
4 December 2009**

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