Midland Highway, Symmons Plains and Bass Highway, North of Gannons Hill

Brought up by Ms White and ordered by the House of Assembly to be printed.

MEMBERS OF THE COMMITTEE

Legislative Council
Mr Harriss (Chairman)
Mr Hall

House of Assembly
Mr Booth
Mr Brooks
Ms White
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INTRODUCTION

The Committee has the honour to report to the House of Assembly in accordance with the provisions of the Public Works Committee Act 1914 on the following references -

Midland Highway, Symmons Plains
and
Bass Highway, North of Gannons Hill

BACKGROUND

Midland Highway, Symmons Plains
This reference recommended that the Committee approve the upgrading of a section of the Midland Highway near Symmons Plains. The proposed works incorporate improvements to address existing safety issues including the provision of:-

- Painted median and a tensioned wire rope safety barrier separating opposed traffic lanes;
- Roadside safety barriers;
- Sealed shoulders;
- Right-turning facilities at Symmons Plains Raceway junction; and
- Audible lines on the median.

Bass Highway, North of Gannons Hill
This reference recommended that the Committee approve the upgrading of a section of the Bass Highway north of Gannons Hill. The proposed works incorporate improvements to address existing safety issues including the provision of:-

- Painted median and a tensioned wire rope safety barrier separating opposed traffic lanes;
- Roadside safety barriers;
- ‘Channelised’ right-turn facilities at Gannons Hill Road and Dan Road junctions;
- Left-turn facilities at Gannons Hill Road and Dan Road junctions;
- Sealed shoulders; and
- Audible lines on the median.

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

PROJECT COSTS

Midland Highway, Symmons Plains

The project is funded under the Tasmanian Road Safety Strategy.

The cost of the works has been estimated based on historical rates for similar works delivered by DIER recently. The main components of the base estimate are shown in Table 3.

Table 3 Base Estimate

<table>
<thead>
<tr>
<th>Item</th>
<th>Estimated Cost</th>
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<tr>
<td>Project Specific (includes Bridge and 2 stock underpass extensions)</td>
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<td>Earthworks</td>
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SUB-TOTAL                                                                 $5,184,531.00

Additional Items (eg acquisition)                                      $108,000
Professional Fees                                                      $400,000
DIER Internal Overheads and Fees                                      $606,765
DIER Supplied Materials or Services                                   $150,115

TOTAL BASE ESTIMATE                                                   $6,446,483

P50 Estimate                                                          $7,036,992
P90 Estimate                                                          $7,862,867

The base estimate has subsequently been probabilistically modelled and the P50 and P90 estimates obtained. The P50 estimate notionally represents the project budget that will not be exceeded 50% of the time and the P90 estimate similarly represents the project budget that will not be exceeded 90% of the time.

It should be noted that as the base estimate is derived from historic rates, the P50 & P90 estimates by their nature already incorporate some allowance for risk and presume a stable market.
Bass Highway, North of Gannons Hill

The project is funded under the Tasmanian Road Safety Strategy. The cost of the works has been estimated based on historical rates for similar works delivered by DIER recently. The main components of the estimate are shown in Table 3.

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The base estimate has subsequently been probabilistically modelled and the P50 and P90 estimates obtained. The P50 estimate notionally represents the project budget that will not be exceeded 50% of the time and the P90 estimate similarly represents the project budget that will not be exceeded 90% of the time.

It should be noted that as the base estimate is derived from historic rates, the P50 & P90 estimates by their nature already incorporate some allowance for risk and presume a stable market.

EVIDENCE

The Committee commenced its inquiry on Tuesday, 31 July last with an inspection of the sites of the proposed works. The Committee then returned to the Lee Room, Elizabeth Town Café, Elizabeth Town whereupon the following witnesses appeared, made the Statutory Declaration and were examined by the Committee in public:-
• Craig Hoey, Acting General Manager – Land Transport Safety, Department of Infrastructure, Energy & Resources
• Deborah Davis, Acting manager, land transport Safety Policy, Department of Infrastructure, Energy & Resources
• Peter Hubble - Manager Traffic Projects, Department of Infrastructure, Energy & Resources
• Gunadasa Ginneliya, Senior Project Manager, Department of Infrastructure, Energy & Resources

Tasmanian Road Safety Strategy
Ms Davis provided the following overview of the use of wire rope barriers as part of the Tasmanian Road Safety Strategy:

(With) the road safety strategy ... We have tried to address the major crash types. In developing our program of work we look at that. The major crash types we have for our serious crashes are run-off-road and head-on crashes, and that is particularly why the barriers are important. We have used a safe-system approach in developing the strategy. ‘Safe system’ is a term that’s used throughout Australia, New Zealand and worldwide. It basically represents a shift in thinking about road safety where you look at the system as a whole, which involves users, the roads and road sides, the vehicles and the speeds at which they travel, all working together to provide a safe environment. It is based on the Swedish Vision Zero and Sustainable Safety from the Netherlands, which are two of the top performers in road safety. It takes the ethical basis that nobody should be seriously injured or killed in using our roads. That is where the shift has come, to say it is not acceptable for this to happen and we should try to make the system work so that doesn’t occur. It recognises that people will make mistakes - even the best drivers in the best cars will at times make mistakes - and that human bodies are frail and can only tolerate a certain amount of energy in an impact before they’re seriously damaged. The idea is that the system can help to prevent those crashes occurring, but where they do occur the energy that’s involved in a crash should be limited to that which the human body can tolerate. That is the basis of the safe system.

... The safe system has four cornerstones, which are having safe vehicles, safe road users and behaviours on the roads, safe speeds and safe roads and roadsides. What that allows is that where you have better infrastructure you can have higher travel speeds and that is particularly pertinent with these two roads because they are high traffic volume roads. They are ones that we want to get movement through as efficiently as possible. They also carry a reasonable amount of freight and so this is a strategically important route. So if we can upgrade the infrastructure to allow for safer travel at higher speeds, then that is part of the reason for having the barriers in place. We know from research that if you have, for example, a head-on car collision, 70 kilometres an hour is the travel speed at which you can survive but anything greater than that survivability rate is very low just because of the energy that is presented in that crash.

In terms of barriers in that safe system road design, the idea is to allow for higher speeds where it is safe to do so, to reduce the risk of the crashes occurring but then to manage energy in those crashes. So the barriers are very important because they separate the opposing traffic and they protect from
roadside hazards such as trees, poles and ditches. If we have that infrastructure in place we can allow the higher travel speeds and know that people have a greater chance of surviving should anything occur. That is particularly important where we have head-on and run-off-road crashes, as we have a history in Tasmania.

When we developed the action plans under the road safety strategy we had some modelling done by an independent body - Monash University. They said that if we went down the path of putting in median and side barriers that we could get probably a 5 per cent saving in our serious casualties every year. That is why the road safety strategy is targeting that and the road safety levy funds are being put as much as possible into that type of infrastructure to consistently deliver year on year when that infrastructure is in place.

In terms of the types of barriers, the issue for road designers and engineers in designing projects is to think about the most appropriate response to the problem in that area. We know there are different types of barrier systems available but the flexible safety barriers, or the wire rope, have been proven in the majority of cases to have the best responses. I think it is an 85 per cent to 90 per cent reduction in serious casualties where they have put them in place. I believe that is because they absorb more energy in the crash because they are flexible compared to steel railings, which will absorb some energy of the crash, or a solid barrier like concrete which doesn't absorb the energy. They also retain the vehicle within the space rather than bouncing it back into other traffic. I think that is a reasonably accurate description of why they are used.

It is recognised throughout Australia that the motorcycling community has concerns with wire rope barriers but we haven't be able to find any evidence that shows that they are more damaging than another type of barrier. We are not saying that they are better for motorcyclists than another type but we don't think that they are worse. The research evidence that we have been able to find says that they don't demonstrate any worse outcomes from having a wire rope barrier than from having a solid barrier or armco-type steel barrier.

I think in some cases there is a growing acceptance of that (from motor cycle representative bodies) but it is one of those situations where certain locations have greater risks for motorcyclists than others and that is where we would like to target our efforts, to put in the most appropriate infrastructure in those locations where there is greater risk.

We have regular discussions with the Tasmanian Motorcycle Council. We are trying to work collaboratively with them to address this issue, so we are looking at the types of crashes that they have. It seems to be the posts that are more of an issue than the wire rope, which is probably different from what the general community would believe to be the case.

... we are working towards getting a memorandum of understanding with the Tasmanian Motorcycle Council which will represent the approach they will be taking.

Mr Hubble added:-

Our last meeting was last Thursday and we agreed to a memorandum of agreement of where we should use safety barriers. There is now an acceptance by the Tasmanian Motorcycle Council that safety barriers are necessary on the road network. The question then is what type of barrier should we use? It has
now been agreed that on very tight radius curves we probably would consider using a steel beam, fitted with a rub bar. The rub bar is an extra piece that fits along the bottom of the W-beam and prevents a motorcyclist who loses control from hitting the post. Then on sweeping curves we would use padding.

**Prioritisation of works**
The Committee questioned the witnesses as to how competing potential works were prioritized. Mr Hubble responded:-

We are constantly monitoring crashes and we have done an analysis of crash types. We have done analysis of loss of control on curves and head-on crashes and from that we have identified and prioritised locations that have no representation of crashes. We have then targeted each of the locations to see what the crash types are, why they occur and what is an appropriate counter-measure. The head-on crashes report is also on our website; I think we have done about eight or nine now. We have also done motorcyclists, pedestrians, heavy vehicles, head-on, loss of control and cycling locations. From that report we have come out with some projects and today we have these two projects for head-on crashes - Symmons Plains and Cannons Hill. It is evidence-based.

**Bicycle use**
The Committee questioned the witnesses as to what, if any, standard applied to road shoulders and the surface of the shoulders to facilitate use by bicyclists. Mr Hubble responded:-

As has been instanced on the West Tamar Highway where there is a significant cycling recreational and training circuit, we have recognised that they use the road shoulders there. Where there are opportunities we will make it smoother and we will also go through there and sweep the edge on a more regular basis to try to remove the debris and improve the situation. On these roadworks we are making the shoulders wider.

Mr Ginneliya added:-

(The shoulder surface) is the normal seal, but we will come back after 12 months and put on another seal to make it a bit smoother. The normal seal is a 10 mm primer seal. It will stick to the gravel and part of it will roll nicely into the apron and become a smoother surface. The duration of that seal is 12-18 months. It is called a ‘temporary seal’. Then we come back 12 months after that and put on another coat of seal, which will then give a duration of maybe 8-10 years, sometimes 12 years. That will make it slightly smoother.

...it will be the same seal right across. There is no special treatment; it is the same seal across the entire width.

**Midland Highway, Symmons Plains**
Mr Hubble provided the following overview of the works:-

At the moment there is one lane in each direction. The report recognises that this is in the Northern Midlands Council and the project is 4.5 kilometres long.

The project objective ... is to improve road safety by preventing head-on crashes and reducing the severity of loss-of-control crashes. ... The department did a review of serious and fatal head-on crashes in Tasmania in
March 2009 and found the most serious type of crashes were head-on crashes. Through our analysis we found that Symmons Plains was over-represented and had a cluster of head-on crashes. The median barrier has been known to provide the best outcomes and we can achieve a 90 per cent reduction in the severity and number of crashes occurring.

This project is being funded by the Tasmanian Road Safety Levy and has a benefit-cost ratio of 2:1, which will deliver significant savings in road safety.

The project is to widen the road to accommodate a median barrier and provide a two-plus-one lane configuration, meaning the highway will be upgraded to three lanes with a median barrier down the middle. In one direction there will be two lanes and one lane in the opposite direction, but that would change throughout the project. Generally speaking, the change between the two and the one occurs approximately every 1.5 kilometres. That is to maintain overtaking manoeuvres.

**Dual Carriageway**

The Committee questioned the witnesses as to why a dual carriageway was not proposed for both subject sections of highway.

Mr Hubble responded:-

The (submission) indicates that currently the traffic volume on the Midland Highway is around 6 000 vehicles per day and the justification for dual carriageway doesn't cut in until you have traffic volumes over 15 000 or more.

... I thought there would be community concern about not providing a four-lane highway because over the last couple of years it has been put in the public arena. As I said, based on traffic volumes, a four-lane highway in both locations is not justified. The Midland Highway from Hobart to Launceston is a single-lane carriageway, but we have provided overtaking lanes or climbing lanes. South and north of this project are locations where we've provided overtaking lanes and it is just coincidence that the overtaking lane in the northern and southern directions occur in the same locations, so that's why you have a four-lane section. The overtaking lane is to allow vehicles to overtake a slower-moving vehicle.

We did some calculations regarding the cost. This project is being funded by the road safety strategy, so we are very cautious about what money we spend, because we have limited funding. We did some analysis and, believe it or not, the cost would be double to do a dual carriageway. Normally we have a 15-metre wide median to separate the opposing traffic lanes and that impacts on the cost and the amount of land we need to acquire from the landowners.

Our policy is that if the median is less than 15 metres, we have a barrier. A dual divided carriageway would have more impact to the landowners because we have to acquire more land. If were upgrading the highway through there, in an ideal situation you would like to make the road straighter and take the curves out. That would be an additional cost, have more impact on the landowners and would segregate the landowners' holdings by having the road go through there. We have limited funds and the best option at this stage is the concept of the two-plus-one, and that means we have other funds we can use to treat co-locations.
Overview continued

Mr Hubble continued:-

On Symmons Plains, the 4.5 kilometres section, has had 11 reported crashes in five years compared to the preceding and following locations which have only had one crash. That provides justification to say this section is a cluster. ... At Symmons Plains, with the sweeping curves we will be providing some padding to the posts.

...We acknowledge that cyclists will be users of the highway and we will therefore be providing wider, more consistent two-metre sealed shoulders, which will be an improvement for cyclists.

...the Midland Highway partnership agreement talks about the provision of a dual four-lane highway. That is considered to be an aspirational, long-term goal, while in the immediate term we are talking about location clusters where we need to do some treatment immediately. This is one of the locations where we need to provide some improvements on a small scale instead of the aspirational four-lane dual carriageway.

...The project is not trying to make raceway access more difficult, but it is not improving the access itself except for providing a dedicated right-turn lane into the access. ... It is the vision of the painted median and tension wire-rod safety barrier separating opposing traffic lanes to prevent head-on crashes; the provision of road safety side barriers to reduce severe crashes of loss-of-control vehicles; the provision of sealed shoulders to provide additional recovery of space for errant vehicles; provision of right-turn lane at the Symmons Plains raceway. The project will include audible lines on the edge of the roads.

... the two-plus-one concept is providing assurance for overtaking manoeuvres.

The Committee questioned the witnesses as to whether there would be sufficient access for emergency vehicles in the single lane sections of ‘two plus one’ configured highways. Mr Hubble responded:-

The distance between the median barrier and the outside barrier, so there’s a median barrier and a side barrier, will be a minimum seven metres on that one way. That will allow other vehicles to get around any vehicle that has broken down or had a minor accident. They can pull to the side and allow enough road room for through traffic.

... When we started developing a two-plus-one concept, which is some two-and-a-half years now, we spoke with the emergency vehicles people - ambulance, fire brigade et cetera. We are providing gaps or safe places for the emergency services to turn around, if there is a crash in the single lane, to get access to the site. We are providing a gap every three kilometres so they can reach the incident site relatively quickly. If it happens on the one lane then they can stop on the second lane and treat the person through the barrier. We have had conversations with them and they are more than happy with the concept because they believe the median barrier outweighs the inconvenience there may be for emergency services.
**Speed limit**
The Committee cited the statement in the submission of the Department that “current speed zoning through the project site is 110 kph. The existing road geometry is quite undulating in parts and makes achieving this speed limit as an operating speed marginal for some vehicles” and questioned the witnesses as to what consideration, if any, was given to reducing the speed limit. Mr Hubble responded:-

That was considered. We don’t want to reduce the speed limit for chop-and-change factors. There will be a difficulty if you had 110 kph and then drop it down to 90 kph for five kilometres and then back to 110 kph. That would rely on voluntary compliance and that location will be difficult to enforce because it is so remote from the Launceston base.

‘Two plus one’
The Committee questioned the witnesses as to whether ‘two plus one’ configured highways caused frustration in motorists. Mr Hubble responded:-

It is important to recognise that we have just upgraded the East Tamar Highway through Dilston; we put a new bypass there and that bypass is based on a two-plus-one concept. I don’t believe we’ve had any negative responses on the concept of the project.

... With the Dilston experience we haven’t had a situation where people have said to us that they feel constrained in the configuration. Both sites here are reasonably flat so we expect people wouldn’t be going any slower than what they are doing now. I did some calculations. For a vehicle travelling at 110 kmh and another vehicle travelling at 80 kph for 1.4 kilometres, it is 19 seconds of inconvenience.

Ms Davis added:-

I think at the moment people recognise they may have an overtaking opportunity on that length of road if there is no traffic coming but otherwise they are not able to overtake safely on that stretch of road. This configuration will allow them a dedicated overtaking opportunity within that stretch of road that they don’t currently have, in a safe environment.

... so you whether you are travelling north or south you will still be provided with a dedicated overtaking opportunity which doesn’t currently exist. In that respect we believe we are improving the operation of that part of the road by providing a safe overtaking opportunity which doesn’t currently exist for people travelling along that section, in both directions. That is why the two-plus-one works, because it swaps to provide an opportunity for both directions of traffic.

**Flora and Fauna/Heritage impact**
Mr Ginneliya made the following submission in relation to the impact of the works on flora and fauna species:-

Our consultants, GHD, have done an assessment on the impact on flora and fauna. Two threatened species were found - chocolate lily and variable
raspwort. We have had discussions with the DPIPWE’s threatened species unit and were able to get their approval to destroy some of those threatened species.

In terms of fauna, there was no significant impact by this project. We have had discussions with Aboriginal Heritage Tasmania and they have indicated that we are not required to do additional test pitting before the digging, based on historical evidence, because this area has been heavily disturbed by farmers. They have no objection for us to proceed with the project.

We have done a European heritage assessment and based on that some pioneer trees were found. Those historical records showed the current layout of the trees and found that impacts were minimal or nothing because some of the locations are far away. I have a report from our consultants who did the pioneer tree size assessment saying that the works would have minimal impact on that. Had we decided to do the road widening on the eastern side it would have significant impact. That is the very reason why we changed the widening to the western side, to avoid the impact on the cluster of trees.

**Bass Highway, North of Gannons Hill**

Mr Ginneliya advised that the Meander Valley Council had approved the proposed works.

**Peter Mackenzie**

The Committee received a late written submission from Peter Mackenzie who stated:-

I submit that the proposed upgrades contain safety deficiencies and that DIER should go back to basics and reassess the current design to address these deficiencies.

I strongly recommend that reassessment should be subject to independent peer review which I believe will support the need for reconsideration and redesign of the current upgrade plan, to eliminate the deficiencies in the current plan.

The planned upgrade is firstly and foremostly intended to improve safety and reduce crash occurrence, and where crashes occur, reduce the severity of any crash outcomes. Traffic flow improvements might be a secondary outcome, but safety is the key consideration.

In regard to what I call safety deficiencies, this takes into account the whole section between the Powranna Rd junction at Powranna, and the Woolmers Lane junction, just over 7.3 kilometres north of that point.

The current highway configuration from north of Powranna Rd changes from two lane to 4 lane undivided back to two lane, then a 4 lane undivided section which merges to two lanes again just before Woolmers Lane Junction.

The current DIER plan is to extend both of the 4 lane undivided sections, while the two lane sections in between are converted to Swedish style alternating 2 x 1 lanes with centre wire rope divider.

In effect a northbound driver will change in 7 kilometres, from 2 lanes to 4 lanes undivided to 2 lanes divided to one lane divided to 2 lanes divided to one lane
divided to 4 lanes undivided then continue on 2 lanes undivided towards Perth and beyond. This not only sounds confusing, but is a recipe for confusion for drivers, particularly at night and in rain or fog.

Eminently experienced engineers and staff from Brifen (who make the wire rope centre barriers) privately say that the alternating 2 x 1 road is quite okay for Swedish conditions but are not as safe for Australian driving abilities and conditions as 4 lane divided highway.

Other greatly experienced consulting engineers tell me that it would not cost an excessive amount extra to upgrade the section now to 4 lane divided highway with better results. And it would cost more than that amount to later undo the 2 x 1 sections and convert them to 4 lane divided.

None of these people want to commit those thoughts to public record due to what I am certain is concern that will “rock the boat” and affect their opportunities for contract work or employment in the relatively small engineering domain in Tasmania.

There is a very real chance of a fatigued driver, an older driver struggling with diminishing eyesight, or a young person using electronic equipment – perhaps exacerbated by rain, fog or darkness – becoming confused either in the upgraded section, or when transitioning back to 2 lanes.

Deaths from such problems do occur, a standout being the Hagley-Westbury-Exton Bypass.

DIER say that upgrade to 4 lane divided is not justified, and in fact traffic numbers will not justify duplication of the highway until 2050. That includes their leaving the 4 lane sections as undivided, which I believe parallels issues I raised with them around safety deficiencies of the Dilston Bypass intersections.

As with Dilston, the savings being looked for in the upgrades as planned would be outweighed by the monetary costs alone of just one death from a crash over the lifetime of this planned upgrade.

In regard to Dilston, I suggested then to DIER and Launceston City Council that truly independent assessment against nationally agreed to “Safe System” principles be carried out by independent experts. That suggestion was never taken up.

I suggest in this instance, Professor Raphiel Grzebieta who is Chair of Transport and Road Safety Research (TARS) Centre at University of NSW would be an excellent choice for independent assessment. He can be contacted at email r.grzebieta@unsw.edu.au (alternative contact email tars@unsw.edu.au).

Such submission was forwarded to the Secretary, Department of Infrastructure, Energy & Resources for response. The response of the Secretary dated 20 August last is as follows:-
Mr Mackenzie suggests a peer review from an independent source. Dr Bruce Corben from the Monash University Accident research Centre has extensive experience in developing evidence-based road safety strategies for Australian jurisdictions. Dr Corben is a member of the Tasmanian Road Safety Advisory Council and provides independent traffic expertise to the Council and further advice is not warranted.

"DOUMENTS 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 – Report for Midland Highway South of Symmons Plains Raceway to “Elsdon” - June 2012;
• Department of Infrastructure, Energy & Resources Submission to the Parliamentary Standing Committee on Public Works – Report for Bass Highway North of Gannons Hill Road - July 2012;

• Supporting traffic data for the Midland highway at Symmons Plains and Bass Highway north of Gannon Hill submissions to the Parliamentary Standing Committee on Public Works;

• Peter Mackenzie, Email communication dated 3 August 2012; and

• Correspondence dated 20 August 2012 from the Secretary, Department of Infrastructure, Energy and Resources.

CONCLUSION AND RECOMMENDATION

There is a clear need for safety improvements to be made on the subject sections of State highway. The Department of Infrastructure, Energy and Resources has initiated each project as a result of a review conducted of serious and fatal head-on crashes. Such review found that most such crashes occur on high-speed, high-volume roads and involve one driver losing control of their vehicle and crossing onto the wrong side of the road.

Given the ‘cluster’ nature of head-on crash history at these sites, the provision of a median barrier was submitted to be a cost-effective treatment to reduce the possibility of head-on collisions by 90% and reduce the severity of other loss of control crashes.

The matter of upgrading the subject sections of these highways to dual carriageway was pursued by the Committee. In verbal evidence and subsequently in supporting traffic data provided by the Department, it was submitted that the current traffic volumes of 6,400 and 6,500 vehicles per day for the Midland and Bass Highways respectively, fall well below the national benchmark for consideration of a dual divided carriageway which is 15,000 vehicles per day. It was further submitted that such a solution would be twice the cost of that which is proposed.

It was submitted that once completed, the works will provide improved safety by:-

- separating opposing traffic;
- providing upgraded junction treatments at Symmons Plains Raceway, Gannons Hill Road and Dan Road; and
- providing additional opportunities for safe overtaking.

The Committee accepts the evidence that the design for each of the proposed upgrades has been carried out in accordance with appropriate design standards and guidelines and will reduce the possibility of head-on collisions and the severity
of other loss of control accidents. The view of the Committee is that any opportunity for improvement to road safety should be taken up.

The Committee recommends each of the projects, in accordance with the documentation submitted.

Parliament House
Hobart
23 August 2012

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