



PARLIAMENT OF TASMANIA

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

Midland Highway Safety Works Package – Symmons Plains to South of Perth

Brought up by Mrs Rylah and ordered by the House of Assembly to be printed.

MEMBERS OF THE COMMITTEE

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1 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 -

Midland Highway Safety Works Package – Symmons Plains to South of Perth

2 BACKGROUND

- 2.1 This reference recommended the Committee approve upgrade works to improve the safety of the Midland Highway between Symmons Plains and the south of Perth.
- 2.2 The Midland Highway forms part of Tasmania's National Transport Network and is the major transport link between Tasmania's north and south. In May 2014, the Australian and Tasmanian Governments committed to the *Midland Highway 10 Year Action Plan*, which is to provide \$500 million in funding over 10 years for the upgrade of the Highway. The Midland Highway Safety Works Package – Symmons Plains to South of Perth projects is a component of the *Midland Highway Strategic 10 Year Action Plan*.
- 2.3 The Midland Highway upgrade projects utilise the 'Safe System' approach, which has been adopted by all Australian state and territory road authorities to achieve a minimum 3 star AusRAP rating. The 'Safe System' approach recognises that people will make mistakes which result in crashes and, therefore, road infrastructure needs to be designed to take account of these errors.
- 2.4 For most of the Midland Highway, the predominant crash type is loss-of-control, most of which are single vehicle crashes with some resulting in head-on crashes and fatalities. 60% of the fatalities on the highway have been due to head-on crashes.
- 2.5 The upgrade design being employed along the Midland Highway includes the provision of alternating sections of two lanes in one direction and one lane in the opposite direction separated by a flexible safety barrier. The 2 plus 1 configuration is alternated at regular intervals to provide safe and regular overtaking opportunities, reducing driver frustration and the risk of head-on crashes. Safe turning facilities and breaks in the flexible safety barrier are also provided at intervals to access properties on the opposite side of the road.
- 2.6 The upgrade to the Midland Highway between Symmons Plains and south of Perth will provide safety benefits to all road users, and will, in particular, help to reduce serious injuries and fatalities caused by head-on collisions through the installation of a flexible safety barrier within a central median.

3 PROJECT COSTS

- 3.1 Pursuant to the Message from Her Excellency the Governor-in-Council, the estimated cost of the work is \$21.1 million.

The following table details the p50 and p90 cost estimates for the project:

ID	Description	Estimate			
		Unit	Billed Qty	Net Rate	Net amount
1.0	Project Identification Services				
1.1	Project identification consultancy	Item	1.00	\$ 115,791.00	\$ 115,791.00
1.2	State Growth Management	Item	1.00	\$ 192,931.00	\$ 192,931.00
	Subtotal Identification				\$ 308,722.00
2.0	Project Site Investigations				
2.1	Consultant project scoping phase activities (engineering survey, environmental and heritage investigations)	Item	1.00	\$ 210,186.00	\$ 210,186.00
2.2	State Growth Project Management Scoping phase	Item	1.00	\$ 350,212.00	\$ 350,212.00
	Subtotal Scoping				\$ 560,398.00
3.0	Project Development including Preconstruction Activities				
3.1	Project development phase activities (preliminary design, detailed design, Tender documentation)	Item	1.00	\$ 326,398.00	\$ 326,398.00
3.2	State Growth Project Management Scoping to Development	Item	1.00	\$ 548,258.00	\$ 548,258.00
3.3	Acquisition and Utilities relocation costs	Item	1.00	\$ 858,371.20	\$ 858,371.20
	Subtotal Development				\$ 1,733,027.20
4.0	Contract Administration and Owners Costs				
4.1	State Growth Project Management Delivery Phase cost per annum	Item	1.00	\$ 75,000.00	\$ 75,000.00
4.2	Contract Admin costs	Item	1.00	\$ 650,000.00	\$ 650,000.00
4.3	Insurances	%	\$ 11,771,151.50	0.39%	\$ 46,025.20
	Subtotal Contract Administration				\$ 771,025.20
	Total Owners Costs				\$ 3,373,172.40
5.0	Construction				
5.1	PROJECT SPECIFIC ITEMS	Item	1.00	\$ 896,770.50	\$ 896,770.50
5.2	EARTHWORKS	Item	1.00	\$ 1,648,420.00	\$ 1,648,420.00
5.3	DRAINAGE	Item	1.00	\$ 283,953.00	\$ 283,953.00
5.4	PAVEMENT	Item	1.00	\$ 5,210,830.00	\$ 5,210,830.00
5.5	BITUMINOUS SURFACING	Item	1.00	\$ 1,126,619.00	\$ 1,126,619.00
5.6	TRAFFIC FACILITIES	Item	1.00	\$ 974,534.00	\$ 974,534.00
5.7	LANDSCAPING	Item	1.00	\$ 547,565.00	\$ 547,565.00
5.8	MISCELLANEOUS	Item	1.00	\$ 947,310.00	\$ 947,310.00
5.9	PRECAST UNITS	Item	1.00	\$ 135,150.00	\$ 135,150.00
	Total Construction Costs (TCC)				\$ 11,771,151.50
	Base Estimate (Owners Cost + Construction Cost)				\$ 15,144,323.90
				P50	P90
	Inherent risk allowance			\$ 887,972	\$ 1,899,122
	Contingent risk allowance			\$ 985,645	\$ 2,043,185
	Base Estimate + Contingency (Inherent + Contingent)			\$ 17,017,941	\$ 19,086,831
	Escalation (Nominal - applied to base case + contingency)			\$ -	\$ -
	Total contingency % above base estimate + Escalation			112%	126%
	Total Out turn			\$ 17,020,000	\$ 19,090,000

4 EVIDENCE

4.1 The Committee commenced its inquiry on Wednesday, 3 August last with an inspection of the sites of the proposed works. The Committee then returned to the Perth Community Centre, Perth, whereupon the following witnesses appeared, made the Statutory Declaration and were examined by the Committee in public:-

- Andrew Fowler, Senior Project Manager, Project Services, Department of State Growth;
- Stefano Conforti, Project Manager, State Roads, Department of State Growth; and
- Andrew Knight, Section Leader Design and Delivery, Jacobs.

The Existing Section of the Highway

4.2 The Midland Highway is gazetted as a high productivity (HPV) route. The highway between Symmons Plains and south of Perth is generally a two lane single carriageway with a posted speed limit of 110km/h. There is one section of dual overtaking lanes south of Woolmers Lane. The land adjacent to the highway within the project site is agricultural, used for grazing and cropping. There are currently 27 private accesses within the project site.

4.3 The current AusRAP rating for the 7.23km section of highway being upgraded between Symmons Plains and south of Perth is predominantly one star and two star. The existing road has deficiencies in stopping sight distance and geometric alignment, and there are a number of sections where the existing highway does not meet the design guidelines for a 110km/h speed environment.

Project Objectives

4.4 The general objective of the proposed works is to improve safety for all road users. More specifically the objectives of the proposed works are to:

- reduce head-on collisions;
- provide additional safe overtaking opportunities;
- maintain a 110 km/h speed environment, consistent with the Tasmania standard for the National Highway;
- improve to the overall capacity of the highway to cater for future traffic growth and freight movements; and
- achieve a minimum 3-Star AusRAP rating on the section of Midland Highway between Symmons Plains and South of Perth.

Proposed Works

4.5 The proposed works include the following elements:

- Separation of northbound and southbound traffic through the provision of a flexible safety barrier within a central median;

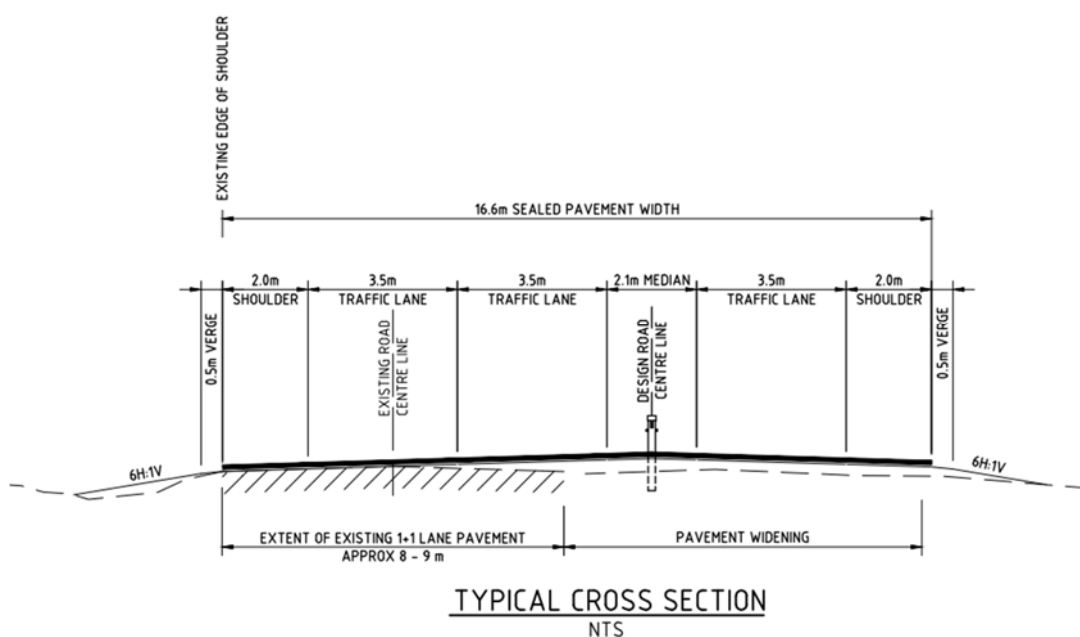
- Providing additional safe overtaking opportunities through an alternating '2+1' lane arrangement;
- Upgrading Leighlands Secondary Road and Woolmers Lane junctions;
- Improving two substandard horizontal curves towards the northern end of the project, in the vicinity of Leighlands Secondary Road and Native Point, respectively;
- The provision of 6 turning facilities, with all turn facilities designed to accommodate 26m B-double vehicles;
- Upgrading and/or relocation of property accesses along the section of the highway;
- Upgrades to roadside drainage;
- Pavement repairs;
- Extension of an existing stock underpass and reinstatement of adjacent livestock lanes;
- Relocation of TasNetworks and Telstra infrastructure where necessary; and
- Removal and replacement of heritage trees and hedgerows.

Road Cross Section

4.6 The upgraded highway will generally consist of the following elements:

- Lane widths of 3.5m
- Sealed shoulder widths of 2.0m
- Median width of 2.1m with a flexible safety barrier located within a central median
- Verge width of 0.5m, plus widening to accommodate safety barriers.

A typical cross-section of the '2+1' lane arrangement is shown in below.



Design Speed of this Section of the Highway

- 4.7 This section of the Midland Highway currently has a speed limit of 110km/h. However, there are a number of sections within the site where the existing highway does not meet the design guidelines for a 110km/h speed limit.
- 4.8 For example, there are a number of horizontal and vertical curves that do not comply with minimum stopping sight distances. There are also some accesses where safe intersection sight distances are not achieved.
- 4.9 As part of the proposed works, the horizontal and vertical alignment deficiencies will be addressed by making improvements that will meet the 110km/h guidelines. A number of property accesses will also be upgraded or relocated to achieve safe intersection sight distances.

The Use of Flexible Safety Barriers

- 4.10 Flexible safety barriers are being installed along the Midland Highway as part of the upgrade program as a consistent treatment to improve safety for all road users by reducing loss-of-control crashes. A flexible safety barrier will be installed within a central 2.1m median along the 7.23km section of highway between Symmons Plains and south of Perth.
- 4.11 Flexible safety barriers help absorb impact energy, reducing the risk of serious injury and damage. Studies have found an 85% to 90% reduction in serious casualties where flexible safety barriers have been installed. Flexible safety barriers in the centre of the road:
- stop out-of-control vehicles from crossing into the path of on-coming traffic, thereby preventing head-on crashes; and
 - reduce the severity of single vehicle crashes, where the vehicle veers to the right.
- 4.12 In addition to the central median barrier, flexible safety barriers have also been provided in specific areas to protect embankment batters with heights of 2.0m or greater and where flat, safe batters cannot reasonably be provided. This will improve safety for road users involved in run-off road incidents.
- 4.13 The Committee noted that some concerns have expressed about the potential risks to motor cyclists from the use of flexible safety barriers. While some concerns are valid, the witnesses noted that much of these concerns are based on misinformation and misinterpretation of the facts surrounding flexible safety barriers.
- 4.14 The witnesses noted that the Victorian *Towards Zero* campaign, a joint initiative of the Transport Accident Commission, VicRoads, Victoria Police, the Department of Justice and Regulation and the Department of Health and Human Services, has compiled an article entitled “Flexible Barriers: How They Work and the Cheese Cutter Myth”, which is available on their website. This provides details on how flexible safety barriers work, their benefits and addresses many of the concerns and questions raised about flexible safety barriers based on research conducted in Australia and overseas. The document can be accessed at the following

address: <https://www.towardszero.vic.gov.au/making-progress/articles/flexible-barriers-how-they-work-and-the-cheese-cutter-myth>

- 4.15 In the interests of informing the community and allaying some of the concerns with flexible safety barriers, the Committee suggested to the witnesses that the Department of State Growth include a link to this article on its website.

Increased Overtaking Opportunities

- 4.16 The proposed works will provide a significant increase in safe overtaking opportunities on this section of the highway.
- 4.17 There is currently only a single section of 2+2 overtaking lanes, presenting 1.22km of northbound overtaking distance and 1.30km of southbound overtaking distance. Replacing this single section of 2+2 overtaking lanes will be four safe overtaking opportunities in a 2+1 and 2+2 lane arrangement. This will result in 2.82km of northbound overtaking distance and 2.52km of southbound overtaking distance.
- 4.18 The provision of safe and regular overtaking opportunities will improve safety for all road users by:
- reducing driver frustration, and thereby reducing the incidence of unsafe overtaking manoeuvres that can result;
 - helping to eliminate head-on collisions, in conjunction with the flexible safety barrier in the median; and
 - improving the efficiency of traffic flow.

Turning Facilities

- 4.19 As a result of installing the flexible safety barrier in the central median and the changes to property accesses, with some being limited to left-in/left-out accesses, six safe turning facilities will be provided across the site as part of the proposed works.
- 4.20 Two of the turning facilities are P-turns and four are G-turns. P-turn facilities are generally located on access roads that adjoin the highway, whereas G-turn facilities are generally located on edge of the highway itself.
- 4.21 For a vehicle wishing to turn and travel in the opposite direction at a P-turn facility, the vehicle must make a right hand turn (from a specific right-hand turning lane) across the highway into the roadway in which the P-turn facility is located, turn left to enter the turning facility, exit the turning facility with a right turn back onto the roadway in which the P-urn facility is located, then exit the roadway with a left-hand turn to re-enter the highway travelling in the opposite direction to which the vehicle had been originally.
- 4.22 For a vehicle wishing to turn and travel in the opposite direction at a G-turn facility, the vehicle must make a left hand turn off the highway into the G-turn facility, and exit the G-turn facility by making a right-hand turn across the highway to re-enter the highway travelling in the opposite direction to which the vehicle had been originally.

- 4.23 All turning facilities have been designed to accommodate 26m B-Double vehicles and will be provided at the following locations:
- at the Elsdon property access (G-turn);
 - on Woolmers Lane (P-turn);
 - opposite the Woodhall property access (G-turn);
 - opposite the Leighlands property access (G-turn);
 - on Leighlands Road (P-turn); and
 - opposite the Native Point property access (G-turn).

Impact on Properties adjacent to the Highway

- 4.24 Land from twelve individual titles will be subject to property acquisition for the proposed works. It is estimated that approximately 65,516m² of land will need to be acquired to complete the works. New property boundaries will be placed at the limit of the road clearzone or the extent of earthworks plus 2.0m.
- 4.25 It is not expected that dwellings located within the project site will be subject to increased noise as a result of the highway being realigned and/or widened. Most dwellings will either be slightly further away from the highway or are already far enough away from the highway such that any changes will result in negligible noise impacts.
- 4.26 A number of accesses along the highway will be upgraded or relocated as part of the proposed works. Many of these will be designed as left-in/left-out accesses due to the installation of the flexible safety barrier in the central median. This will require upgrading existing and construction of additional turning facilities as part of the proposed works.
- 4.27 The project site contains significant Hawthorn Hedgerow and Pioneer Tree plantings. Impact upon these is unavoidable due to widening of the highway, however a landscaping plan developed in conjunction with landowners and relevant approval authorities will ensure that any impacts are minimised.
- 4.28 The proposed design impacts approximately 140m of the intermittent Hawthorn Hedgerows (equivalent to 3.5% of those present along the route). These impacts arise mainly at the 'Native Point' property, where the existing hedgerows form a corridor which is too narrow for the new, widened road formation. Following consultation with landowners, the road centreline has been realigned 3.0m to the east so that hedgerows on the western side can be retained, with hedgerow impacts restricted to the eastern side only.
- 4.29 It is estimated that the proposed works will impact approximately 34 of the Pioneer Trees (equivalent to around 18% of the total number along the length of the project). This estimate has been developed on the assumption that any trees within the road clear zone will require removal. Additional flexible safety barriers have been provided, where reasonable and practicable, to minimise the number of trees impacted. Removal of any heritage trees due to the road upgrades will be offset by planting replacement trees, including European and American varieties, clear of the works in accordance with the landscaping plan.

- 4.30 In order to maintain privacy for surrounding landowners and the visual amenity and heritage values associated with the 'corridor' of hedgerows on the approach into Perth, Pioneer Trees and hedgerows that will need to be removed on the eastern side of the highway may be replaced with new trees based on the landscaping plan.

5 DOCUMENTS TAKEN INTO EVIDENCE

- 5.1 The following document was taken into evidence and considered by the Committee:

- Midland Highway – Symmons Plains to South of Perth - Submission to the Parliamentary Standing Committee on Public Works, Department of State Growth, submitted on 8 June 2016.

6 CONCLUSION AND RECOMMENDATION

- 6.1 The Committee is satisfied that the need for the proposed works has been established. Once completed, the proposed works will result in a much safer road environment for all users by;
- reducing head-on and run-off road collisions;
 - providing more safe overtaking opportunities;
 - improving traffic flow efficiency; and
 - realigning sections of the highway so that it meets the design standard for a 110km/h speed environment.
- 6.2 Accordingly, the Committee recommends the Midland Highway Safety Works Package - Symmons Plains to South of Perth, at an estimated cost of \$21.1 million, in accordance with the documentation submitted.

**Parliament House
Hobart
18 August 2016**

**Joan Rylah MP
Chair**