



PARLIAMENT OF TASMANIA

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

South Arm Highway, Shoreline Drive to Oceana Drive - Duplication

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

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TABLE OF CONTENTS

INTRODUCTION	3
BACKGROUND	3
PROJECT OBJECTIVE	3
PROJECT JUSTIFICATION.....	4
THE EXISTING SITUATION.....	5
THE PROJECT	7
COSTS	8
ENVIRONMENTAL AND SOCIAL IMPLICATIONS.....	8
PROJECT AMENDMENT.....	12
EVIDENCE.....	13
DOCUMENTS TAKEN INTO EVIDENCE.....	26
CONCLUSION AND RECOMMENDATION.....	26

INTRODUCTION

To His Excellency the Honourable William John Ellis Cox, Companion of the Order of Australia, Reserve Forces Decoration, Efficiency Decoration, 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: -

South Arm Highway, Shoreline Drive to Oceana Drive - Duplication

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

The following constitutes the written submission of the Department of Infrastructure, Energy and Resources to the Committee:

BACKGROUND

The South Arm Highway, a State owned highway constructed in 1989, provides the primary arterial access between the Tasman Highway and areas such as Howrah and Rokeby. It connects the South Arm peninsula with the city centre of Clarence, Hobart's western shore and the Hobart CBD.

The highway has a four-lane divided carriageway between the Tasman Highway and immediately south of the Shoreline roundabout, where it reverts to a two-lane, two-way configuration. At the time of construction, earthworks for future duplication between the Shoreline roundabout and Merindah Street were substantially completed.

The Department of Infrastructure, Energy and Resources (DIER) plans to upgrade the South Arm Highway from Shoreline Drive to Oceana Drive by duplicating the highway to form a four lane divided carriageway, the conversion of the Merindah Street junction to a signalised intersection and the extension of Oceana Drive to join the highway.

The South Arm Highway and Rokeby Main Road are contiguous and join 120 metres east of the Merindah Street junction - the use of South Arm Highway in this report should be read as the road known as South Arm Highway – Rokeby Main Road.

PROJECT OBJECTIVE

The objective of the South Arm Highway, Shoreline Drive to Oceana Drive project is to increase the capacity of this section of highway to cater for the future urban developments of the Droughty Point, Clarence Plains and South Arm areas.

DIER is also currently working on a project to determine the future transport options for the South Arm Highway from the Pass Road junction to the Police Academy in order to optimise the allocation of future funding for this road transport corridor.

PROJECT JUSTIFICATION

This project is part of the Tasmanian Labor Government's \$10 million election commitment to upgrade South Arm Road. The project will duplicate the existing highway to provide a dual carriageway from Shoreline Drive to Oceana Drive and connect Oceana Drive to the South Arm Highway.

Currently the only road access to Howrah south, Tranmere and Droughty Point is via Howrah Road. The Oceana Drive connection is a high priority project for the Clarence City Council because it provides a second link from these growing areas to the Highway.

In 2004 DIER and the Droughty Point land developers jointly undertook a traffic modeling study to identify long-term traffic demand and to assess possible solutions to improve transport access to Droughty Point from South Arm Highway. This study recommended the connection of Oceana Drive onto the South Arm Highway.

Safety Benefits

The following safety benefits are expected:

- Avoiding head-on collisions by providing a median strip with a road barrier;
- Re-directing the existing pedestrian crossing through the intersection traffic signals;
- Providing safer turning facilities to Merindah Street and Oceana Drive;
- Improving the existing pedestrian/cycle path by taking it through the signalised intersection;
- Providing designated bus stops at the intersection;
- Reducing traffic congestion on Howrah Road via Tranmere Road and their numerous intersections by connecting Oceana Drive; and
- Releasing pressure at Shoreline roundabout during peak hours by metering traffic at Merindah Street/Oceana Drive intersection.

Road User Benefits

The growth in residential sub-divisions over recent years has made it important to improve traffic flow in the area. The project increases the road's capacity to cater not only for current traffic volumes but also for traffic emanating from new urban developments planned for Droughty Point, Clarence Plains and South Arm peninsula.

THE EXISTING SITUATION

The Road

The South Arm Highway has been constructed as a single carriageway.

At the western end of the project area, near the Shoreline roundabout, the highway is approximately 25 m ASL. The highway dips slightly before rising to approximately 50 m ASL adjacent to the Church of Christ Centre.

East of Merindah Street the existing highway is relatively narrow as it passes through a low gap in the line of hills, including Glebe Hill and Rokeby Hills, that define the eastern extent of the existing urban development of Howrah.

There is a pedestrian/cycle path along the southern side of the Highway from Clarence Street to the eastern end of the project.

Traffic Flow

The existing traffic volume on South Arm Highway is 17,000 vehicles per day.

Traffic data based on a count undertaken by DIER 290 metres south of Shoreline roundabout in the week from 20 February 2007 is summarised in Table 1.

Table 1.

Traffic Data

	Average Week Day Traffic (vpd)	Average Daily Traffic (vpd)	Average Week Day Traffic 0600 to 2400 (vpd)	Average Daily Traffic 0600 to 2400 (vpd)
Northbound	8,858	8,452	8,651	8,234
Southbound	9,233	8,708	9,118	8,544
Two way	18,091	17,160	17,769	16,778

Road Crashes

The section of the South Arm Highway from the Shoreline roundabout to the entrance to the quarry experienced 19 crashes in the period from April 2000 until December 2006. This included:

- Three head on crashes;
- Seven collisions between vehicles traveling in the same direction; and
- Six vehicles leaving the carriageway.

The Road Side

The project is located within urban land, with native vegetation being confined to small remnants and scattered plants within the road reserve. The predominant land use on the lower slopes west of Glebe Hill and Rokeby Hills is urban. The more elevated parts of these hills are currently retained as natural bush, with minor quarrying and gravel extraction.

The land adjacent to the South Arm Highway, east of the project area between Glebe Hill and Pass Road, has recently been approved for residential and associated activities.

Land capability mapping has identified four land classes in the area. The majority of the land in the immediate area is classed as Exclusion Areas (major urban areas), with some Class 4, 5 and 6 land bordering the highway and urban areas.

No natural drainage lines cross the road in this section of the highway.

A vegetation and fauna habitat assessment undertaken in November 2006 has identified the following:

- The majority of the roadside is comprised of residential gardens and modified road reserve.
- The vegetated sections north of the existing highway consist of *Eucalyptus amygdalina* forest and *Eucalyptus viminalis* grassy woodland, neither of which is threatened at a regional or statewide basis.
- A wide section of the southern road reserve, along the gully east of Oceana Drive is *Eucalyptus ovata* forest, an endangered forest community.
- Although much of the area is highly modified it does offer some habitat opportunities for native fauna species, specifically:
 - There is potential habitat at the bushland pasture interface for the Eastern-barred bandicoot *Perameles gunnii*.
 - The *Eucalyptus ovata* offers foraging habitat for the Swift parrot *Lathamus discolor*.
- Five plant species of conservation significance were recorded from the area in the current survey:
 - One species of state and national significance, *Austrodanthonia popinensis* (Roadside wallaby grass), was recorded. This species is listed as 'endangered' at both the state and national levels.
 - Four plant species of state significance, *Juncus amabilis* (Gentle rush), *Arthropodium strictum* (Chocolate lily), *Austrodanthonia induta* (Tall wallaby grass) and *Lepidium pseudotasmanicum* (Shade peppercress), were recorded. These species are listed as 'rare' on the Tasmanian Threatened Species Protection Act 1995.

- Five Declared Weeds, as listed on schedules of the Tasmanian Weed Management Act 1999, were recorded from the project area. They are: Blackberry (*Rubus fruticosus*), Boneseed (*Chrysanthemoides monilifera*), Gorse (*Ulex europaeus*), Montpellier Broom (*Genista monspessulana*), and Wild Fennel (*Foeniculum vulgare*).
- One of these species, Gorse, is considered to be a Weed Of National Significance (WONS) under the National Weed Strategy.
- In addition, the environmental weeds Hawthorn (*Crataegus monogyna*), Sweet Briar (*Rosa rubiginosa*) and Sweet Pittosporum (*Pittosporum undulatum*) were recorded from the area.

An Aboriginal cultural heritage survey of the site has not been undertaken; however there has been consultation with the Aboriginal Heritage Office.

- The area has been subjected to significant landscape modification as a result of urban development over many decades and the road reserve has been highly disturbed by past roadworks.
- The Aboriginal Heritage Office of the Department of Tourism, Arts and the Environment has indicated that there are no sites recorded on the Tasmanian Aboriginal Site Index in the area of the proposed works and that, given the nature of the land, it is considered unlikely that there are any Aboriginal sites present.
- The Aboriginal Heritage Office has advised that there is no requirement to carry out a survey for Aboriginal sites and no requirement to apply for a permit under the Aboriginal Relics Act 1975.

An historic heritage survey in the area of the proposed roadworks has not been undertaken but all authoritative registers and databases have been examined. Examination of these registers and databases revealed the following:

- There are no places within the area included in the National Heritage List, the Commonwealth Heritage List or the Register of the National Estate.
- There are no places within the subject area included in the Tasmanian Heritage Register.
- There are no places within the area included in Schedule 3 – Heritage List of the Eastern Shore Planning Scheme 1963.

THE PROJECT

The proposed works will consist of:

- Construction of a second two-lane carriageway from Shoreline roundabout to Oceana Drive resulting in the formation of a four lane dual carriageway highway.
- Connection of Oceana Drive to the highway;
- Provision of a signalised intersection at Merindah Street/Oceana Drive.
- Provision of smooth transition to two lanes east of Oceana Drive.
- Closure of the current access to the Church of Christ.
- Construction of noise attenuation fences.

COSTS

The major project components and estimated costs are as follows:-

Cost Item	Amount (\$'000)
Project Specific	1,149
Earthworks	183
Drainage	418
Pavement	578
Bituminous Surfacing	576
Traffic Facilities	359
Landscaping	373
Miscellaneous	131
Acquisition	40
Professional Fees for Design, Contract Administration and DIER	639
Contingency	565
TOTAL	5,011

ENVIRONMENTAL AND SOCIAL IMPLICATIONS

Environmental Implications

There will be limited impact on the natural or built environment by the proposed works. The following processes and actions will be incorporated into the project:

Soils and Land Use

The soils in this area are particularly susceptible to erosion. Appropriate drainage measures will be undertaken to ensure that any runoff from the proposed roadworks, both during and after construction, is sufficiently controlled so that it does not initiate, or exacerbate, soil erosion in the area of the proposed roadworks. Land acquisition has been kept to the minimum practical level required to undertake the proposed roadworks.

Drainage and Water Quality

In accordance with Section 35.1 of The State Policy on Water Quality Management 1997, all road construction works will employ measures consistent with best practice environmental management to prevent erosion and the pollution of streams and waterways by runoff from sites of road construction. Sedimentation controls will be used, where required, to reduce the particulates in surface water run-off from entering local waterways. All drainage from the site drains will be directed to outfalls with sediment traps. These controls will be established prior to commencing the works and will be removed following completion of the earthworks, once disturbed soil has stabilised.

Botanical Values

The proposed road improvements will result in the clearance of the majority of the *E. ovata* woodland community in the area west of the Church of Christ entrance (including approximately 42 individual *E. ovata* trees) and a small section of the community east of the access (approximately 9 individual trees). The area of *E. ovata* woodland community to be cleared is a highly degraded isolated remnant with little value to the forest community in the area, region or state. Impact mitigation and offset measures are discussed below in Zoological Values.

Five plant species of conservation significance were recorded from the project area during the assessment of botanical values: *Austrodanthonia popinensis* (Roadside wallaby grass), *Juncus amabilis* (Gentle rush), *Arthropodium strictum* (Chocolate lily), *Austrodanthonia induta* (Tall wallaby grass) and *Lepidium pseudotasmanicum* (Shade peppercress), were recorded.

The roadworks proposed will require a Permit to Take, pursuant to the Threatened Species Act 1995, for the destruction of 6 plants of *Juncus amabilis* (Gentle rush) and 1 plant of *Arthropodium strictum* (Chocolate lily) both listed as rare under the Threatened Species Act 1995. An application for a Permit to Take, pursuant to the Threatened Species Protection Act 1995, has been sought from the Conservation Assessment Section of the Department of Primary Industries and Water.

Larger populations of both species occur in other parts of the project (75 *Juncus amabilis* and between 200 and 600 *Arthropodium strictum*). These populations will not be affected by the proposed road works and will be protected with environmental fencing for the duration of the roadworks.

Clearing for road construction will be kept to the minimum practicable level to ensure that any other impact on botanical values in the area is minimised.

All weed areas will be identified and requirements for treatment of the various declared weeds and environmental weeds will be included in the construction contract documents.

Zoological Values

A fauna habitat assessment of the area was undertaken as part of the botanical survey. Although much of the area is highly modified it does offer some habitat opportunities for native fauna species.

The *E. ovata* along the gully on the southern side of the highway, east of Oceana Drive, offer foraging habitat for the Swift parrot.

The reduction in Swift parrot foraging habitat needs to be offset with an appropriate strategy to ensure there is no negative impact on the Swift parrot foraging resource in the region. The clearance of this quantum of *E. ovata* trees is likely to be considered a significant impact on the Swift parrot and be deemed a Controlled Action by the Commonwealth Department of

Environment and Water Resources (DEWR), pursuant to the Environment Protection and Biodiversity Conservation Act 1999.

The design of the duplication has, where possible, attempted to reduce the impact on the individual *E. ovata* trees, however operational factors, the necessity to construct noise walls and the location of the isolated community severely constrains the opportunity for mitigation strategies. With this in mind a strategy for offsetting the impact is being developed. At this stage negotiations have begun with Clarence City Council, Clarence Plains Rivulet Landcare and the Mt Rumney Landcare. Each of these organisations provides local opportunities to offset the loss of Swift Parrot habitat in a long term, cost effective and meaningful way while also engaging with the local community in the planning and actions.

Roadkill is an issue in the area, as indicated by the significant number of carcasses, particularly of the Rufus wallaby and possums, observed on the roadside during the survey. It is thought that this is as a result of animals moving between Howrah and Rokeby Hills, using the blackberry thickets beneath the *E. ovata* in the gully on the southern side of the highway as shelter. Recent residential development to the south of the highway and the tidying up of the gully as a result of development of the highway will isolate Rokeby Hills and possibly reduce the rate of roadkill in the area.

Aboriginal Heritage Values

There will be no significant impact on Aboriginal cultural heritage values in the area as no Aboriginal sites or cultural landscape values are likely to be found within the modified landscapes adjacent to the South Arm Highway. Approval under the Aboriginal Relics Act 1975 will not be required for this proposal.

Historic Heritage Values

As no sites or features of historic heritage significance will be affected by the proposed roadworks, no specific management measures will be required.

Noise

A total of 6 sites were selected for noise measurements to be undertaken. Existing and future traffic noise was modeled using the SoundPLAN software package and applying the Calculation of Road Traffic Noise algorithms.

In accordance with DIER's current traffic noise policy, a traffic noise protection target was set as 63 dB(A), 1 m in front of the most exposed façade of each house along the project route.

Allowable locations for noise barriers were determined along the project length, based on safety, engineering and property boundary considerations. SoundPLAN was then used to calculate the height and length of roadside noise barriers in these allowable locations necessary to achieve the noise protection target.

Where appropriate, pragmatic adjustments to the calculated noise barriers (such as connecting short gaps and evening out heights) were made, leading to the final recommended noise barriers. The location and extent of the necessary noise barriers is shown in the design drawings contained in Appendix B.

Topography and Visual Impact

The proposed roadworks will have minimal impact on the local topography. No excavations are required from the Shoreline roundabout to Merindah Street as this area has already been excavated for the extra lanes. The Merindah Street intersection will require some very minor excavations to provide for additional turning lanes for vehicles traveling east entering and leaving Merindah Street.

The road widening on the southern side of the highway will require some fill to raise the level of the gully to facilitate construction of the additional lanes and the Oceana Drive connection to the highway.

The road design has incorporated the minimum possible fill consistent with good design including appropriate gradients and sight distances in order to minimise impacts on the local topography and adjacent properties. The proposed works have been designed to minimise any impacts on landscape values to ensure that the visual amenity of the area is maintained, while still achieving mitigation of the predicted noise impact discussed above.

Social Implications

Potential social and economic impacts as a result of the proposed works will be positive, as the aim of the works is to improve safety and traffic flow on this section of the South Arm Highway. Once complete, the works will provide improved safety on this section of the South Arm Highway by separating the opposing traffic flows on the highway.

There will be some short-term social impacts arising from inconvenience associated with the road construction activities.

There is a pedestrian/cycle path along the southern side of the highway from Clarence Street to the eastern end of the project. This path has been maintained and a signalised crossing point provided at the Merindah Street/Oceana Drive intersection. Where the path is reconstructed it will have a clear width of 3 metres.

Currently there is a formalised pedestrian access from the western end of Myoora Street to Clarence Street, with a break in the safety fence on the Clarence Street side of the highway. It has not been possible to maintain a safe pedestrian linkage at this point within the budget constraints. Pedestrians will be encouraged to continue along the pedestrian/cycle path to the signalised intersection at Oceana Drive to cross the highway.

The Metro bus stops on the highway will be reinstated on the western side of the intersection.

Property Impacts

There are a number of property owners that will be affected by the proposed project. The proposal will require acquisition of land from two residential properties.

All directly affected property owners have been consulted and are generally in acceptance of the proposed acquisitions and necessary changes to their properties. There have been discussions with the affected property owners to determine what accommodation works are necessary and to enable acquisition of the necessary land. Every effort has been made to ensure that individual concerns have been addressed.

The accesses to abutting properties will be adjusted to facilitate construction of the roadworks.

Public Consultation

DIER has written to all owners of land abutting the project to advise them of the proposed works and in particular the proposed construction of noise attenuation fences.

A display of the proposal was held at the Clarence Council Chambers and the Shoreline Shopping Centre from 24 May to 15 June and 24 May to 27 May respectively. Staff from DIER and Pitt & Sherry were available to respond to issues raised by the public. This display provided an opportunity for the wider community to understand and comment on the proposal.

PROJECT AMENDMENT

The Department of Infrastructure, Energy and Resources advised the Committee by email of 12 September last that the provision made for noise attenuation walls had been reviewed and consequently such walls would be installed as follows:-

- “Extend the noise attenuation walls on the edge of the highway shoulder adjacent to Holland Court westward by 4 metres. Although the extension of the wall will not be parallel to the highway so that sight distance from/to the Oceana Drive junction is not reduced the top of the wall will be the same height as the wall on the shoulder (1.6 metres).
- A 4 metre high noise attenuation wall will be constructed on the property boundary for the properties at Nos. 1 and 3 Holland Court.
- The noise attenuation wall will be extended to the western side boundary of No. 374 Clarence Street. This wall will be within the Highway road reserve as there is a 900 mm diameter Hobart Water main is located close to the property boundary.
- The noise attenuation wall on the south side of the Highway from the Shoreline Shopping Centre to the eastern side of Jasmin Court will be located

to on the property boundary and will replace the existing back fences for these properties.

- The noise attenuation wall on the northern side of the Highway from Shoreline Drive to 9 Norma Street will be located on the Highway road reserve. It is proposed to remove the existing back fences on each property and extend the side fences between the affected properties.
- The noise attenuation wall from Myoora Street to Merindah Street is located on the Highway road reserve and no change is proposed.”

EVIDENCE

The Committee commenced its inquiry on Monday, 2 July last with an inspection of the site of the proposed works. The Committee then reconvened in Committee Room 1, Parliament House whereupon the following witnesses appeared, made the Statutory Declaration and were examined by the Committee in public:-

- Geoff Mulcahy, Manager Project Services, Programming & Delivery Branch
- Brian Williams, Design Manager, Pitt & Sherry
- Dion Lester, Planner, Pitt & Sherry
- Dr Ian Woodward, Consultant, Pitt & Sherry
- John Freeman, resident of Clarence Street, Howrah
- Gregory Howells, resident of Holland Court, Howrah

Background

Mr Mulcahy provided the following overview of the proposed works:-

As an introduction, during the 2006 State election the Labor Government announced the Building Better Infrastructure plan. This plan included - and if I may quote:

'\$10 million to upgrade the South Arm Road from the Shoreline Roundabout to the Police Academy. This includes the connection of Droughty Point, Oceana Drive to the highway network. It also includes traffic management and major upgrades at Pass Road, Burtonia Street and Hawthorn Place to improve access to the new residential developments.'

However, the latter is part of stage 2 and is not part of the present works we are looking at.

Justification for the project: high traffic volumes at peak hours south of the Shoreline roundabout. Completion of the previously constructed Bellerive bypass - and of course the earthworks for that duplication were substantially completed some years ago. There is the Droughty Point study recommendation to connect Oceana Drive onto the South Arm

Highway. That was a joint study between the developer and the department.

Clarence Council's interest: the Oceana Drive connection is a high priority for the council. The strong growth of residential subdivision in the locale at Tranmere, Glebe Hill and a bit further south along the highway from this location and further south again down at, say, Oakwood.

Objectives of the project: to provide a four-lane dual carriageway to Oceana Drive, Merindah Street from the Shoreline roundabout; to provide a signalised intersection arrangement at Merindah Street junction, including the joining of Oceana Drive; and to provide a smooth transition to a two-lane carriageway south of Oceana Drive. The details of the engineering commitment will be picked up by our consultants, Brian and Dion respectively, after I give this introduction. Also to provide transport access for non-vehicular and public transport.

Funding for the works: in the financial year just finished we had \$320 000 for the design and documentation of the project, which is substantially complete. The remaining money for 2007-08 is for construction, being \$4.68 million, a total of \$5 million.

Some of the issues and constraints - and we saw a number of these out on site earlier today - underground services and storm run-off from the creek adjacent to Oceana Drive; traffic management issues at Oceana Drive and Merindah Street intersections during construction - any construction project has its traffic management issues; the budget allocation; the noise-attenuation walls - and we saw some of the sites where they would be going in; and pedestrian/cyclist issues.

Progress to date. Our consultants, Pitt & Sherry, were commissioned in September 2006 for planning and design. As I mentioned earlier, this is substantially complete. Public consultation work is almost completed. This included a public display at the Shoreline - I think that must have been in about May this year.

Detailed design works have reached an advanced stage. Development application and other environmental approvals are currently being sought. We expect to advertise for tender in August, subject to receiving our various approvals, with construction to be completed later in the financial year.

The next stage, and again not part of this current works, is what happens south of Oceana Drive and Merindah Street, or south of the extent of this project. We currently have a planning study being conducted to finalise the project scope for this stage. Survey and concept design for the next stage is expected to commence in September 2007.

Mr Williams provided a computer generated 'fly over' of the proposed works following which he made the following submission:-

There are about 18 000 vehicles a day on the road, a considerable number on a two-lane road. That is predicted to grow by natural organic growth and also by further subdivision in the South Arm area and locally. There have been a number of crashes including three head-on crashes in about six years, probably not applicable. So on the provision of the median, it is pretty important to separate the oncoming traffic streams and the project includes a continuous wire-rope safety barrier in the centre. That will preclude the current pedestrian crossing of the highway that occurs where we parked at the cul de sac at the end of Clarence Street. There is a pedestrian crossing there and that noise wall you can see down the right-hand side will also effectively stop that unsafe pedestrian crossing on the road.

The issues on the side of the road I will leave to Dion and Ian. With regard to the budget costs, as Geoff has already said, it is a \$5 million project. The majority of the money, or the biggest single item is the sound walls, around \$600 000 worth of walls. That also has some associated costs in the servicing. We will also need \$600 000 to put an opening layer of asphalt right across the road and that is an additional cost, but that is required to meet the guidelines for noise abatement. None of the other items are particularly out of kilter for this sort of project. There was quite a bit of cost in drainage and, even though there is a lot of drainage infrastructure there to pick it all up again, it is quite a substantial item.

The roads, generally, will have 3.5 metre lanes, which is what the current pavement is and what they were designed to be about 20 years ago when it was built. The effect of that is that in the area there on the screen, which is the area for signals where the lanes are narrowed, they are narrowed at the signals for two reasons. The traffic speeds are slower at the signals so that you can cope with the narrower lanes, it is straight through the signals so big vehicles do not have problems with the narrower lanes and the narrower lanes give a shorter walking distance across the signals so that reduces the time it takes for pedestrians to cross the signals and therefore makes the signal operation more efficient by allowing more green time for vehicles and minimises the time it takes to safely get pedestrians through the system.

The Committee questioned the witnesses as to the shoulder width of the proposed works. Mr Williams responded:-

Yes, I am quite familiar with that. Actually it is not a standard. There are some guidelines for shoulders on roads and they are generally related to traffic volumes and those sorts of issues. This road has not got any shoulders between Shoreline and Oceania Drive. It is two 3.5 metre lanes plus a gutter plus a curb. Where the pavement is sloping away from the gutter side, the high side, we do not put the gutter in. So there is 450 millimetres there. But apart from that there are no shoulders on the road.

The project does include provision for upgrading of the bicycle facilities that are there at the moment between Oceania and Clarence Street. The path is about 2 metres wide. There are shoulders on the road designed between Oceania and towards Rokeby.

Road site

Mr Lester provided the Committee with the following submission in relation to the site of the proposed works:-

I think we all got a good indication that it is a highly disturbed site today. Earthworks have been certainly started for the section from Shoreline Drive to Merindah Street when they put the original section through. It is only really the section of vegetation on the bottom side, the ovata, that we discussed from Merindah Street or Oceania Drive up past the Church of Christ entrance.

A flora and fauna study was undertaken by North Barker and they found exactly that, an isolated remnant of Eucalyptus ovata on that bottom section. There are five other plant species of conservation significance, two of which will be impacted by the roadworks, six plants of a Juncus that is in the drainage line and one single plant of another State-listed. A permit to take has been forwarded to the conservation assessment section so we are waiting to hear back regarding that.

Due to the level of disturbance of the site and its urban context, an Aboriginal survey was not undertaken but consultation with the Aboriginal Heritage Office was and they have confirmed that there is no necessity for a survey. We are meeting all the requirements of the Aboriginal Relics Act at this stage. Likewise, because of the level of disturbance, no historic heritage survey was undertaken but again it is fairly obvious that there are certainly no heritage items, European heritage items in close proximity. I think the closest listed house is on Pass Road over the top of the hill. Otherwise there is nothing particularly remarkable about the site.

The Eucalyptus ovata provides swift parrot foraging habitat so that is a significant environmental issue and the majority of that forest community there will be cleared. The community itself does not offer a lot of value because it is heavily infested with weeds but it does offer foraging resource for the swift parrot. Consequently a referral to the Department of Environment and Water Resources under the EPBC act has been made so we are awaiting a response from Canberra as to whether that will be a controlled action or not.

There are approximately 50 mature trees that will be removed and another 30 saplings, all Eucalyptus ovata. The saplings are not old enough or large enough to provide foraging habitat so that is not a significant issue. Once confirmation from Canberra is received then we will know what is the appropriate offset strategy for those ovata. Typically it will be in the

range of five to one so we can expect to have to provide five times the volume of individual trees that are being cleared as an offset.

Other approvals - we are about to submit a development application to Clarence City Council. The works that are occurring within the existing road reserve do not require a development application but it does require some land acquisition from two properties and it steps outside their zoning of a future road into their residential D zone. That is more a legacy of the up-to-dateness of these zoning controls because there are significant portions of the road reserve that are still zoned residential D.

That will require a discretionary application so that will be advertised for two weeks and we should know within 42 days when we have a response from Clarence.

Noise modelling

Dr Woodward provided the Committee with an overview of the noise modelling which had been undertaken in relation to the proposed works:-

The modelling was computer noise software that we use commonly. It has been used on probably 10 projects over the last seven or eight years. It is called SoundPLAN and the modelling algorithms we use are consistent with CORTN which is the calculation of road traffic noise which was developed in the UK in the mid-1980s and it has been adopted in Australia as the accepted method of calculating road noise.

The targets are DIER's code of practice for road traffic noise, which has been around for probably seven or eight years I think from memory. In very simple terms, the objective is to meet a noise level of 63 decibels measured over an 18-hour period. It is called the L 10 (18 hour) - L 10 means the noise is exceeded for 10 per cent of the time and it is measured over an 18-hour period so although there may be individual truck noises which go over 63 it is like a statistical figure.

The Committee questioned Dr Woodward as to where noise measurements in relation to the residences were taken. Dr Woodward responded:-

The CORTN standard is that the noise objective needs to be met 1 metre from the most exposed façade of a residential building, in effect the facing wall of the house, if you like. If you were measuring it with a noise meter you would set up the meter 1 metre in front of that. In the modelling situation you set up a virtual noise meter 1 metre in front of the façade.

We set up the model by putting in the survey data, creating a digital terrain model, digitising where the houses are within that model. We set the road up, we set the traffic lines where the vehicles can go and put in the traffic volumes over the 18-hour period. We modeled the existing situation and the situation in 2017. In the existing situation we also did a calibration by doing some spot measurements and we ran the model for

one-hour periods which matched up with the measurements that we did. We calibrated the model to test the model. Once we were satisfied with that we then ran it over the 18-hour period.

The modelling for the current situation shows that the 63 decibel target is exceeded for quite a number of houses over the road. Because there are projects that will be implemented, in accordance with DIER's code of practice we now look at the contemporary situation and aim to meet the 63 decibel objective for all affected houses. We ran the model with that for the current situation, we ran it without noise walls for the 2017 situation and then we ran it again to calculate what walls were required to meet 63 decibels for all the affected houses.

The noise walls we are talking about now and that are shown here are effectively the outcome of that. They have been adjusted somewhat to make it pragmatic to join up gaps where the model suggested there could be gaps and the noise walls come in certain dimensions so we had to step it up to those dimensions. Essentially the noise walls that are shown here reflect the outcomes of the model. There are restrictions on where the walls can go from a safety point of view so that alignment has to be set.

The Committee further questioned the witnesses as to the sites selected for noise testing. Dr Woodward responded:-

I do not know if I can pinpoint them exactly. We picked the sites to distribute them as best we could over the length of the project ... As a rough estimate there were two sites in Holland Court, so down this end.

... (In terms of testing) it does not really matter where. You pick a location that is convenient without disturbing people by going onto private property. We do not need to actually measure the 1 metre from the wall of the houses themselves because the model predicts noise wherever. We picked a number of locations and then in the model we put the actual locations where the measurements were done and that calculates the noise that is predicted there.

... The purpose of the measurements was to scatter the measurements along the site and then to predict the noise which predicts contour maps and at any point you can work out what the noise should be and then we match that with the measured noise at that particular point. There were a couple of sites down there and there were others, I think, and some across the other side too.

Noise attenuation fence

The Committee questioned the witnesses as to why the noise attenuation fence was proposed to be sited where no house was located. The following exchange occurred:-

Mr BEST - ... Why would you ... have the noise attenuation fence starting here at, say, the 4 kilometre 100 mark, when there is no house there?

Dr WOODWARD - Because noise just does not travel perpendicular to the vehicle. I can show you on the map that even coming down from the top of the left-hand corner of the plan there is noise coming to other areas. If you were traveling this way then that noise would be coming down at that angle, it just does not go out like that.

Mr BEST - But you never measured here, did you?

Dr WOODWARD - We measured in this vicinity here but we did not need to measure there because, as I said, that was not the purpose of the measurement. The purpose was to calibrate the model for modelling the existing situation. Once we were satisfied with the model, and confident that it could predict noise, then we added in the volumes for the 10-year situation and predicted noise there. The noise walls started with an alignment which allowed noise walls to be anywhere along the length of the project. We did not just decide they would start at that 400 metre mark. The potential location for the walls extended from the roundabout right up to the end of the project and the actual walls that we determined are required are those that the model predicted need to be at particular places along that wall.

Mr BEST - How do you know then that the noise would finish here and not finish there?

Dr WOODWARD - Sorry, the noise will finish -

Mr BEST - As I understand it, the noise attenuation fence finishes here based on the calculations that you have done so it must be assumed then that no noise will pass that point. That house is not going to get -

Dr WOODWARD - No, it is not based on that assumption. The noise will reach those houses but it will not be over the 63 limit.

Mr BEST - We do not know that because you have not measured 1 metre from the facade of the -

Dr WOODWARD - No, the -

Mr BEST - I am not trying to be difficult here, I am just trying to work out how you could possibly reach that conclusion. Residents have told us they do not understand why it would stop there and I do not understand either, to be honest.

Dr WOODWARD - I can go the other way, if you like. If we shortened that noise wall more noise would come from traffic traveling down that

road than would be the case if we put that wall there and the noise level at these houses would therefore be higher.

Mr BEST - *Well, then it is going to start here. So you are saying the noise is going to travel to there?*

Dr WOODWARD - *The noise will go to there from all directions to those houses from traffic coming down here -*

Mr BEST - *So you would be better off to live here than there, would you not?*

Dr WOODWARD - *No, because the 63 decibel objective is met at both those houses.*

Mr BEST - *How do we know that because you cannot tell me where you measured that?*

Dr WOODWARD - *The purpose of the measurement was to calibrate the model but that is the only purpose of the measurement. It is not to say what is the measured noise at those houses. The 63 decibel objective will be met at all those houses. There is no need to extend that wall further because the noise objective of those other houses is already met.*

When questioned as to whether the construction of a noise attenuation fence would improve the noise levels for residents Dr Woodward responded:-

Yes, it will ensure that the 63 decibels target is met for all houses where it is practical. With the modelling that we did, which is the best that can be done because you are trying predict a future situation, that success of the 63 decibels -

... Occupational standards is 85 decibels. So it is much less than that. The noise scale is logarithmic too. The actual noise goes up very quickly with increases of noise. The best example of the 63 decibels is traffic noise, but that is a circular argument. For example, the noise on Davey Street here would be well above 63 decibels in peak hour. The noise on South Arm Highway at the moment at some houses is 70 decibels. So that is well above 63 decibels again. When I say 'well above, most people cannot perceive an increase of less than 2 decibels but an increase of 5 or more above, would be very noticeable.

... Getting back to the question that Mr Best asked as well, it is important to understand that noise just does not come out perpendicular to a car. The total noise that a house experiences is the noise that it receives from the vehicles traveling all the way along, so from when they are approaching a sharp angle, when it is at 90 degrees and when it goes in the other direction. The purpose of noise walls is not just to block it off at the 90° angle, it is a total reduction. By blocking noise along this path, for these houses that reduces it sufficiently to achieve the 63 dB target. There

will be noise of course and noise will go over the wall - it does not mean it is silent - it just reduces the noise. Where there is no wall there will be more noise passing directly to the houses, but the 63 dB target is achieved. The walls do reduce the noise sufficiently to achieve the 63 dB target. If the wall was to be extended beyond what is shown here, we would be going beyond the 63 dB target; it might take it down to 62, 61 or 60, which is below DIER's objective.

The Committee questioned the witnesses as to whether the residents of Holland Court would be more adversely affected by noise as a result of their proximity to the intersection. Dr Woodward responded:-

Intersections do change the noise because it slows vehicles down. If they are going in a downhill direction, it makes it better. If they are going in an uphill direction, it makes it noisier. There will be the noise from trucks when they are taking off from a standing position. Again, it comes down to what the policy is. The policy is an 18-hour measure and not a measure that deals with individual truck noises, for example. As I said at the start, there will be noises from individual vehicles that will be higher than the 63 dB, but the policy - and this is consistent with policies across the nation - is a statistic that is measured - in New South Wales it is measured over 15 hours, in most other States it is measured over 18 hours - it is an average noise over the time.

The Committee asked the witnesses whether the prohibition of the use of exhaust brakes would be considered as a noise mitigation measure. Mr Mulcahy responded:-

I guess that is an option and one we can look at. I am not sure if that has been included in the modelling at all.

... Trucks are definitely a problem with their exhaust stacks being high. Most of the noise comes from tyre noise on the pavement. We deal with that by the open-graded asphalt. That is the best seal for minimising tyre noise. The wall works on the assumption of a typical engine noise height but where you have trucks with a vertical stack that might be 2.4 metres off the ground that is a very difficult thing to control through the use of walls. You would find that the walls would have to be so high that there would be structural and shading problems.

... As far as the law goes with air brakes, it is a matter that we would have to check to see what the actual law situation is. That would be how I would understand the model too, on a statistical basis the infrequency of such happenings would not disrupt the model. Ian might be able to comment further on that.

Dr Woodward added:-

The model parameters that Portman use are based on empirical measurements so they are not theoretical measurements of noise from vehicles as they are based on actual measurements. They have been done

very comprehensively and are continually updated and studies in Australia have made sure that the Australian situations are still pertinent. All those individual noises over an 18-hour period are picked up as an 18-hour average. As I said, the individual noises might be spikes.

The Committee questioned the witnesses as to whether the noise attenuation fence could be extended. Dr Woodward responded:-

In principle, there is no reason why it could not be extended, but if it were it would be doing more than the policy requires. So the walls meet the 63 decibel target and if you make them longer they would achieve 62 or 61 or some other number, which goes beyond the policy requirement. So that comes down to a policy decision.

... The best modelling that we have available using the accepted standards show that those houses there will be below the 63.

... Every house along the entire project, all the closest houses had, in the model, a virtual microphone 1 metre in front of its façade and the walls were built until every one of those got to 63 or below.

Water run-off

The Committee questioned the witnesses as to what, if any, assessment had been made as to the capacity of the pipe that goes underneath Oceana Drive to cope with the additional run off from the new road pavement. Mr Williams responded:-

We have looked at that in quite a bit of detail. There have been two significant floods in that creek that went down through the houses on the downstream side of Oceana Drive and one flooded inside a house and caused substantial damage to the property.

According to information we received from council, they were mainly caused by a trash rack being blocked up with rubbish on the inlet to the pipe. There was vertical pressuring on the inlet to the pipe, and that blocked and so the water went over the top and went down through the property. Since then the council has altered that trash rack to make it an angled one and also put a second one upstream to try to stop the trash heading for the inlets.

Our analysis indicates that our system with the extended pipeline running back to the Rokeby side of Oceana Drive will satisfy the need in terms of capacity, and council have also said that the design is adequate. The road is bigger and the run-off will be slightly quicker and it can all get into that system.

Pavement

The Committee questioned the witnesses regarding pavement type and noise generation. Dr Woodward responded:-

It is an open asphalt and the purpose of it is to reduce tyre noise.

... It is actually an open surface. This open-graded asphalt reduces tyre noise by about two decibels over dense-graded asphalt and is probably about four decibels quieter than chip seal.

It is more expensive. It has some maintenance problems too because it is more susceptible, particularly at intersections.

Mr Williams added:-

... there are a number of issues. It is designed so that so the air can go down when a tyre rolls on it, so you do not get a clapping sound out of the tyre roll. To generate that you have holes in the asphalt and the water also goes down, so it does improve skid resistance as well because the surface is dry. You have to have somewhere for the water to go so it has got to be up. There is waterproof layer underneath it to stop the water going into the pavement, so it does add to the cost a little. You have to have seal on the road and you put this on top. It is not structurally as strong so under heavy traffic loads it can tend to crush, so its life is not as long and it needs replacing more often. You should get 15 to 20 years out of a dense-graded asphalt. You will get about 10 years out of an open-graded asphalt before you have got to replace it.

Through the intersection it is not strong enough to deal with the skewing movement caused by turning vehicles, particularly large vehicles. There is not a lot of them here but there are going to be enough large buses with dual axles and that sort of thing turning through the intersection, so the intersection will have to be dense-graded asphalt to cope with that.

Residents

Mr Freeman made the following submission to the Committee:-

I live at 374 Clarence Street, in the last house at the end of Clarence Street, at which I believe, you might have stopped today. I am in the pink brick house on the top side of the road. I have already had some land resumed from me at the back of my property when the original highway was put through, so you can understand that my house is very close to the existing highway and proposed extension to it.

The existing amenity has already been affected by the traffic on the highway, particularly at night as all three bedrooms are at the same height as the road going past there.

... When I originally saw this plan there was no sound wall there but there is now a small one. Traffic speeds away towards Rokeby and comes zooming in towards us, particularly of a night time. When I saw the proposed plan to the highway extension I was surprised to see no sound

wall. There is now a small one. My request is that an additional sound wall or an extension to it now be provided so that it would go up to where the walkway joins the highway.

... because my floor level is virtually the same height as the highway and coming up around that bend they are virtually facing straight into the room. You get lights, but it is the noise which we cop quite strongly there. There is a small sound wall there but it really needs to come back to where that walkway comes up and joins the armourguard rail there. That is my opinion.

A further comment in relation to the lights. When the lights are starting to change to yellow, knowing the type of traffic that heads down that way, they gun the cars to try to get through on the yellow light. The model assumed that all traffic would stick to existing speed limit of 80 kilometres an hour but they certainly do not.

Mr Howells made the following submission:-

I live at 1 Holland Court, which has three roads bordering it: the new highway, the new Oceana Drive and Holland Court. We put up with the noise now, which is not too bad at the moment. With Oceana Drive opening up, I have a row of trees on that side which, I was told, are going to have to go. There are no trees at the back at the moment. I do not know if they have checked the decibels from the Oceana Drive side as well but if it is the same then I am going to cop 63 from two sides.

With the new pavements they were talking about, they said they were going to reduce the noise by two decibels, which is not audible at all to the human ear. I and the other residents who have signed the paper would like the noise reduction wall brought down to at least the footpath, if not past the footpath that connects up to the new highway.

... It is four house blocks in width, which would be about 200 metres.

... The two (roads) combined would be a bit of a nightmare. I could probably put up with that Oceana Drive by itself. We bought the house knowing that it would one day be opened so we can't be too angry about it. We knew it was going to happen one day, but to have two roads is a problem. We assumed when we bought it that it would be noise down along behind us and we thought we could put up with Oceana Drive, which will have a lot more traffic past us. Also there is truck noise through that intersection. They're stopping, then starting, which I don't think was in the model. That is going to be a horrific noise - trucks stopping at the intersection and going from it when the traffic lights turn from green to red.

In response Mr Williams submitted:-

The noise barrier on the back part of Holland Court is placed almost right on the edge of the road. There is only a safety barrier in front and when you look at the photo you can see it is like that. The wall is a hazard to vehicles. That wall has the maximum efficiency in terms of stopping the noise escaping from the road horizontally, forcing it up and therefore missing the houses. The other alternative is to put the noise as close to houses as possible. Now, that often has problems because you cannot get very close to the houses because the houses are not built close to their boundaries or there are driveways or other things. So that is normally the most efficient system, to have it right against the road.

Some of our other noise walls cannot be in that location for reasons like sight distance, the need to see around curves and that sort of thing. Those further toward Shoreline cannot be in those positions because of having to build foundations for underground services. A 900 millimetre water main is where you would like to build a wall from an efficiency point of view. So it best to get the wall right close to receiver or right close to the source of the noise. Anywhere in between is less efficient.

The Committee questioned Mr Williams as to whether it would be in any way practicable to place a noise barrier on the fence line of the houses rather than up at the road level. Mr Williams responded:-

If you are putting a noise wall on the property boundary at the back of Holland Court, as Mr Howells said his house and some others are elevated and so it will make wall much bigger. A big wall on the property boundary creates a lot of shadow if it is on the northern side of the property, so we create a new problem. Shading of properties is an issue because things do not grow.

As to the height of such a barrier, Dr Woodward added:-

The rule of thumb is that we need to block vision. If you can have a wall high enough so that you cannot see the cars then you are doing a reasonable job of blocking noise. If you had fences on the property boundary in that area then your wall would have to be extremely high to cut the line of sight to the road. Without doing any calculations I could not say but my guess is that it might be three or four metres high and that would be right on the boundary of those houses.

... I have a comment about Mr Howells' point about the traffic on Oceana Drive. I think the figure is about 2 000 vehicles a day going down Oceana Drive. It is about one-tenth of what there is on the highway. If you are adding two identical noise sources together then you get a three decibel increase. So for the noise level to go up by three decibels you would need 20 000 vehicles on Oceania Drive but it is only about 2 000.

My expectation is that the increase in combined noise of South Arm Highway and Oceana Drive is probably only in the order of one or less decibels. It will obviously be a new noise source because it is a source

that is not there at the moment. So, again, it comes down to policies to achieve 63 decibels, recognising that people will experience different noise environments with the new road.

DOCUMENTS TAKEN INTO EVIDENCE

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

- South Arm Highway, Shoreline Drive to Oceana Drive - Duplication – Submission to the Parliamentary Standing Committee on Public Works, dated June 2007;
- Residents of Holland Court, Howrah, submission (undated);
- John Freeman, submission dated 2 July 2007;
- Return to the Order of the Committee of 2 July last – Correspondence dated 6 July 2007 from Mr Geoff Mulcahy, Manager Project Services; and
- Return to the Order of the Committee of 6 September last – Email dated 12 September 2007 from Gunadasa Ginneliya, Project Manager, Department of Infrastructure, Energy & Resources to the Secretary of the Committee

CONCLUSION AND RECOMMENDATION

The Committee was disappointed at the standard of the submission provided in support of the proposed works by the Department of Infrastructure, Energy and Resources. It was submitted by the Department on page 13 of its submission on the project that “A report will be prepared incorporating all comments received (during the consultation process) and included as an annexure to this report.” No such report was annexed to the submission and it was not until the examination of the witnesses at the hearing that the document was eventually provided. The Committee was then concerned to find that such document lacked the details of the written communications to land owners which the Committee then had formally to request that it be provided.

The budget for the project detailed, *inter alia*, four items, namely: “Project Specific”; “Miscellaneous”; “Professional Fees” and “Contingency”. Such items total \$2.484 million, approximately 50% of the total budget of the project, but the submission provided no breakdown of these significant proposed expenditures. Again, it was necessary for the Committee to seek a breakdown to be subsequently provided.

The situation with this project and other references that have come before the Committee recently is that the Committee has found itself in the position where it does not have before it evidence that, by any reasonable assessment, should have been included in the written submission of the sponsoring Department. This has the most undesirable effect of the consideration of the project being delayed whilst the information is formally sought and then provided at a later date.

Given the deficiencies in this case, the Committee took the unusual step of resolving that the Chairman communicate its concerns directly to the Minister for Infrastructure and request that consideration be given by him to ensuring that details of any public consultation process and project budget are in future provided to the Committee as a

matter of course. The Committee considers these matters to be of fundamental importance to its timely consideration of projects.

Once complete, the proposed works will provide additional traffic capacity to a fast growing South Arm corridor by extending a four lane, dual carriageway to Oceana Drive/Merindah Street from the Shoreline Drive. Improved traffic safety by the provision of 'at-grade' junction geometry that allows all traffic movements to and from Merindah Street and Oceana Drive will also be provided. The request of the Clarence City Council for an additional access to residential developments of Droughty Point, together with transport access for non-vehicular and public transport will also be included.

Accordingly, the Committee recommends the project, in accordance with the documentation submitted, at an estimated total cost of \$5,000,000.

**Parliament House
HOBART
4 October 2007**

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