

Proposed upgrade and widening of Brookton Highway (Armadale to Brookton)

Main Roads Western Australia

**Report and recommendations
of the Environmental Protection Authority**

**Environmental Protection Authority
Perth, Western Australia
Bulletin 697
August 1993**

THE PURPOSE OF THIS REPORT

This report contains the Environmental Protection Authority's environmental assessment and recommendations to the Minister for the Environment on the environmental acceptability of the proposal.

Immediately following the release of the report there is a 14-day period when anyone may appeal to the Minister against the Environmental Protection Authority's report.

After the appeal period, and determination of any appeals, the Minister consults with the other relevant ministers and agencies and then issues his decision about whether the proposal may or may not proceed. The Minister also announces the legally binding environmental conditions which might apply to any approval.

APPEALS

If you disagree with any of the contents of the assessment report or recommendations you may appeal in writing to the Minister for the Environment outlining the environmental reasons for your concern and enclosing the appeal fee of \$10.

It is important that you clearly indicate the part of the report you disagree with and the reasons for your concern so that the grounds of your appeal can be properly considered by the Minister for the Environment.

ADDRESS

Hon Minister for the Environment
12th Floor, Dumas House
2 Havelock Street
WEST PERTH WA 6005

CLOSING DATE

Your appeal (with the \$10 fee) must reach the Minister's office no later than 5.00 pm on 26 August 1993

Environmental Impact Assessment (EIA) Process Timelines in weeks

Date	Timeline commences from receipt of full details of proposal by proponent	Time (weeks)
10/05/93	Proponent Document Released for Public Comment	4
8/6/93	Public Comment Period Closed	
17/6/93	Issues Raised During Public Comment Period Summarised by EPA and Forwarded to the Proponent (Note: CALM submission provided to proponent on 23/6/93)	2
28/7/93	Proponent response to the issues raised received	6
13/8/93	EPA reported to the Minister for the Environment	2

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Summary and recommendations

Main Roads Western Australia propose to upgrade and widen the Brookton Highway between Armadale and Brookton (Figure 1). At present the road has a safety problem because the road and its gravel verges are narrow, there are sharp corners and the surface is hilly and rough. Main Roads indicate that because the road is of such poor standard, the accident rate on the Brookton Highway is almost twice that for similar roads in Western Australia.

A portion of the Highway passes through an area of State Forest which was identified as potentially valuable for conservation by the Environmental Protection Authority in its System 6 'Red Book' report of 1983 (recommendation C37). The values of this area include: the natural vegetation of the Darling Range, particularly the extensive forest areas of jarrah, marri and wandoo which is accessible to travellers, the many wildflowers to be seen in the understoreys, and the values for scientific study (Environmental Protection Authority 1983).

Sections of the Brookton Highway will be upgraded by widening of the sealed road area and the verges and drains. Curves and hills will also be smoothed. Four areas within the State Forest section will be realigned.

Eight submissions were received from members of the public, community interest groups and other Government Departments. Issues raised by the public focussed upon the need to improve safety of the Brookton Highway, the loss of flora, fauna and ecosystems, the loss of tourist values associated with landscape values and concerns about dieback hygiene.

The Authority considers that, in the main, from the environmental viewpoint, the proposed road works have been well designed taking into account the conservation and landscape values of the State Forest area. In addition, Main Roads has made commitments towards ensuring that construction activities will not spread dieback disease, and that disturbed areas will be rehabilitated.

Recommendation 1

The Environmental Protection Authority has concluded that the proposed upgrading and widening of the Brookton Highway as modified during the assessment process is environmentally acceptable.

In reaching this conclusion, the Environmental Protection Authority identified the major environmental issues as:

- **the potential impact upon the area proposed for conservation and landscape protection by System 6 recommendation C37;**
- **the management of forest hygiene; and**
- **the extraction of gravel and rehabilitation of disturbed areas.**

Accordingly, the Environmental Protection Authority recommends that the proposal could proceed subject to the proponent's environmental commitments listed in Appendix 1 and the following recommendations. (Recommended Environmental Conditions are listed in Section 6)

In regard to the four proposed realignments, the Authority considers that, where possible, existing pavement and disturbed road edge areas should be utilised in preference to clearing additional vegetation. In particular, the realignment between 19 and 20 SLK (Figure 2), should avoid using the option of disturbing the south-western area which contain rock outcrops and a stream with substantial associated heath vegetation.

Recommendation 2

The Environmental Protection Authority recommends that in order to minimise additional disturbance to stream and heath vegetation in the section of road between 19 and 20 SLK (Straight Line Kilometres), the proponent re-align this portion of Brookton Highway closer to the already disturbed edges. (see Recommended Environmental Condition 3)

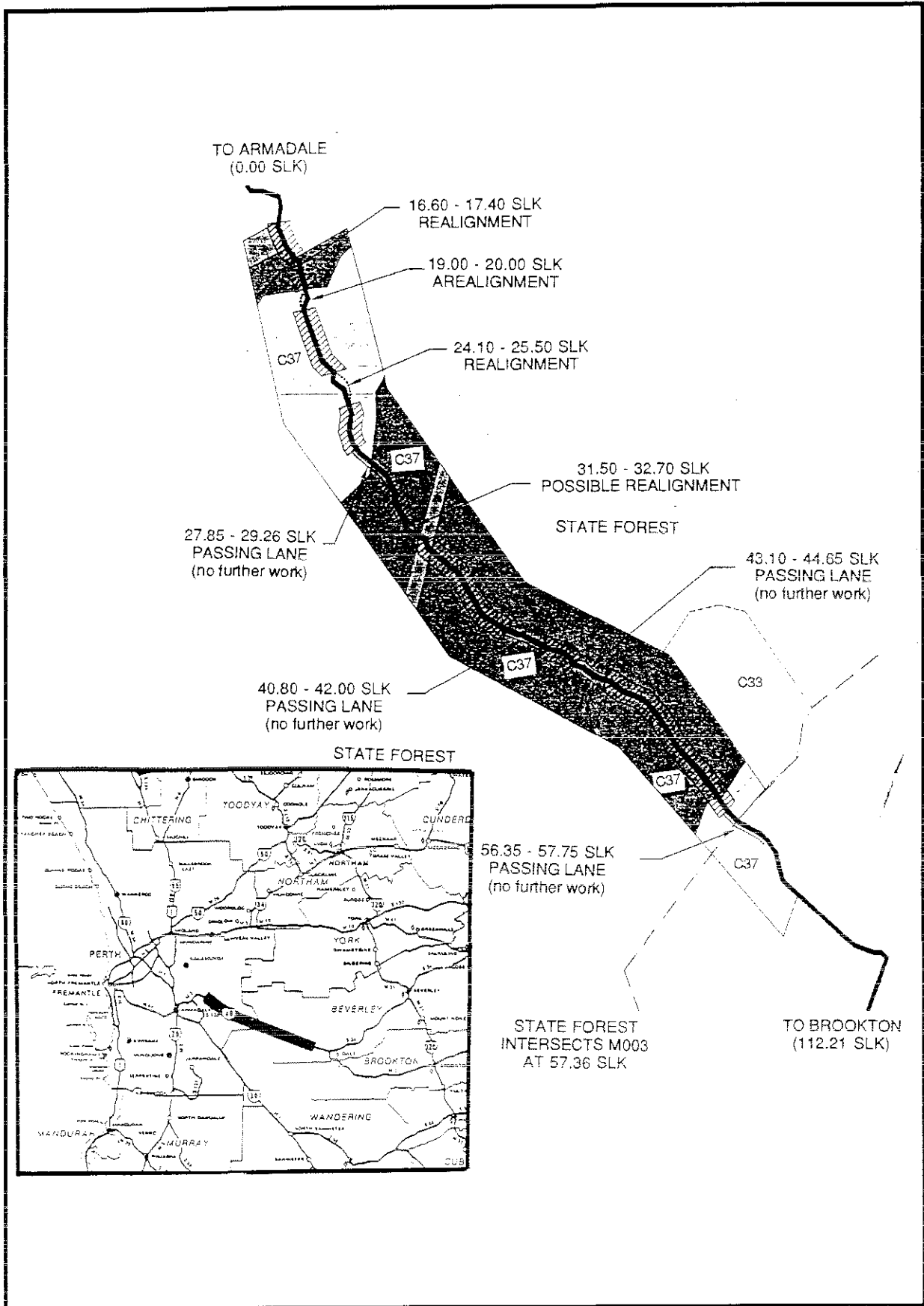


Figure 1: Project location indicating proposed upgrading and realignments in relation to the System 6 area C37 recommended for conservation.

The Department of Conservation and Land Management has requested the preparation of a dieback hygiene plan. This plan should address the management of existing infections, the risks of new infections, the management of imported materials, including water and rehabilitation of borrow pits.

Recommendation 3

The Environmental Protection Authority recommends that Main Roads Western Australia prepare a hygiene control plan to ensure that equipment and materials to be used in the upgrading and widening of the Brookton Highway will not spread dieback disease. This plan should be prepared to the requirements of the Minister for the Environment on advice from the Department of Conservation and Land Management. (see Recommended Environmental Condition 4)

Activities associated with the road works include the extraction of gravel for road base material and access to water for construction. These activities have the potential to reduce the landscape values of the State Forest next to the road. Main Roads have stated that new gravel 'borrow' pits will be located outside of the road reserve and outside of the System 6 area. The Authority endorses this approach, and commends Main Roads for their commitments to rehabilitation of new and old gravel pits and unneeded portions of road.

Recommendation 4

The Environmental Protection Authority recommends that new borrow pits for the extraction of gravel and bore sites for access to water should be located outside of the System 6 area C37 and should be sourced from areas free from dieback, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority and the Department of Conservation and Land Management. (see Recommended Environmental Condition 5)

1. Introduction

Main Roads Western Australia (hereafter referred to as Main Roads) has proposed to improve the safety of the Brookton Highway. The section of the Brookton Highway which passes through the State Forest between the Darling Scarp and the agricultural areas to the east is proposed to be widened and some sections to be realigned. This area of State Forest was identified by the Environmental Protection Authority as open space of regional significance in the System 6 'Red Book' report (recommendation C37).

Main Roads referred this proposal to the Environmental Protection Authority in December 1991. The Authority decided that the potential environmental impacts are sufficient to warrant formal environmental impact assessment at the level of Consultative Environmental Review. This decision was based upon the potential for impacts upon the values identified in the System 6 report. The Authority issued guidelines in January 1992 to assist Main Roads in the preparation of the relevant documentation. The Consultative Environmental Review document was released for a four week public comment period which closed on 8 June 1993.

2. The proposal

The Brookton Highway has an unusually high record of accidents. Main Roads reports that 11 deaths have occurred on this road between January 1985 and May 1993 (Main Roads Western Australia 1993). The reported accident rate for Brookton Highway for the seven years to 1991 is 0.97 accidents per million vehicle kilometres travelled. This rate is almost twice the average accident rate (0.51) for two lane undivided roads in Western Australia.

Brookton Highway is a main route between Perth and the Great Southern Region. Traffic also includes a substantial portion of heavy vehicles hauling grain and other agricultural produce, and tourism and recreation traffic. In summary, Main Roads report that the Brookton Highway is sub-standard because sections of the road are rough, narrow, undulating (hilly), have sharp corners and/or narrow gravel verges.

Sections of the Brookton Highway which already have passing lanes will not be further upgraded. It is proposed to upgrade the rest of the highway passing through the State Forest area to approximately this same standard (Figure 1). In addition, there are four realignments proposed to improve corners, hills and sight distances. Brookton Highway will be upgraded to the same sealed road width (7 metres) as Albany Highway (also through the System 6 C37 area). However, the shoulder width and the drains will be narrower. Overall the width of clearing in the State Forest section will be 19 to 20 metres; by comparison Albany Highway has a cleared width of 30 metres (see Figure 2: from page 17 of the CER).

Once the road works have been completed, Main Roads intends to reduce the road reserve from the current 80 metres to a size in keeping with a 20 metre cleared area (see Appendix X, 4.1).

3. Review of public submissions

Comments on the proposed upgrading and widening of the Brookton Highway were sought from the public. The Consultative Environmental Review document prepared for the proposal was available for a four (4) week submission period ending 8 June 1993.

A total of eight submissions were received within the following categories:

SOURCE OF SUBMISSION	NUMBER
Individuals	4
Community Groups	2
Government Departments	2
TOTAL	8

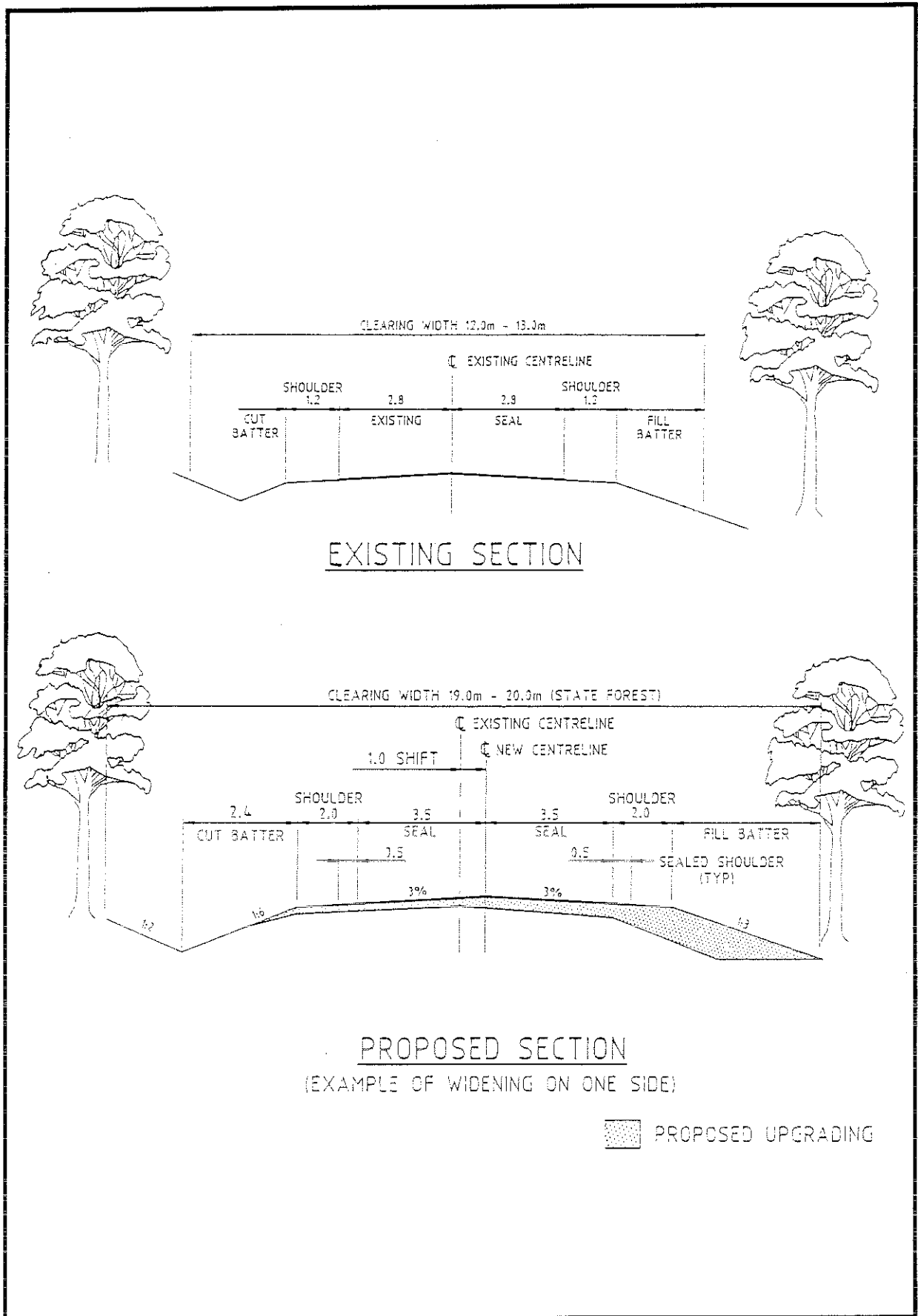


Figure 2: Typical cross section of the existing Highway and with the proposed upgrading.

The major issues raised in submissions from the public are as follows:

- Road safety:
Some members of the public felt that the Brookton Highway should be upgraded to the same standard as the Albany Highway, or at least that the road verges should be cleared wider in order to enable drivers to see kangaroos on the road edge. Others submissions suggested that the accident problem was related to speeding motorists and that the cause of the safety problem should be fixed, not the symptoms.
- Flora, fauna and ecosystem concerns:
Again submissions presented contrasting points of view in regard to the significance of tree clearing; some submissions stating that all clearance of vegetation is environmentally significant because of habitat loss, others stating that in a proportionate sense the required clearing is not important. The potential for spreading dieback was raised in several submissions, with requests for more detailed information on the management of dieback risk. Clarification of weed management, and rehabilitation of gravel pits and un-required portions of road pavement were also sought.
- Landscape values:
A number of submissions focussed upon the loss of landscape value which is important to the tourist attraction of the Brookton Highway at present.
- Other issues:
Other issues raised included the general need to discourage use of private motor vehicles (because of the pollution implications and resource efficiency), the potential for reducing the road reserve from its present 80 metre width to be consistent with a 20 metre cleared area when upgrading has been completed, and the sources of gravel for road base material. In addition, the need for a Consultative Environmental Review for this proposal was questioned.

The Environmental Protection Authority provided a summary of public submissions to Main Roads for comment. The summary of submissions and the responses provided by Main Roads are included in this assessment report as Appendix 2. The Authority has given consideration to the submissions received and the responses from Main Roads, during the assessment process and in the preparation of this report advising the Minister for the Environment of the Environmental Protection Authority's findings.

4. Environmental impacts and their management

The major environmental issues related to this proposal which have been identified through the environmental impact assessment process are:

- the potential impact upon the area proposed for conservation and landscape protection by System 6 recommendation C37;
- the management of forest hygiene; and
- the extraction of gravel and rehabilitation of disturbed areas.

The Authority recognises that the upgrading of Brookton Highway is necessary, and considers that, in the main, the proposed road works have been sensitively designed taking into account the environmental and landscape values of the State Forest area. In addition, Main Roads have made commitments towards ensuring that construction activities will not spread dieback disease, and that disturbed areas will be rehabilitated.

Following consideration of the Consultative Environmental Review, public submissions and the proponent's response to those issues raised, the Authority believes that the potential environmental impacts could be managed adequately.

Recommendation 1

The Environmental Protection Authority has concluded that the proposed upgrading and widening of the Brookton Highway as modified during the assessment process is environmentally acceptable.

In reaching this conclusion, the Environmental Protection Authority identified the major environmental issues as:

- **the potential impact upon the area proposed for conservation and landscape protection by System 6 recommendation C37;**
- **the management of forest hygiene; and**
- **the extraction of gravel and rehabilitation of disturbed areas.**

Accordingly, the Environmental Protection Authority recommends that the proposal could proceed subject to the proponent's environmental commitments listed in Appendix 1 and the following recommendations. (Recommended Environmental Conditions are listed in Section 6)

4.1 System 6 recommendation C37

Upgrading and widening of Brookton Highway is proposed for the length of the road between Karragullen and Brookton. About forty five (45) kilometres of the Highway is surrounded by State Forest which has been identified in the Environmental Protection Authority's System 6 'Red Book' report as potentially significant for conservation. The Authority strongly defends the values identified for conservation in the 'Red Book' reports.

However, where a road already exists within an area identified for conservation by the System 6 report, consideration of its upgrading or realignment is appropriate, subject to its environmental acceptability.

The values identified in recommendation C37 (Brookton and Albany Highways) relate to the opportunities for travellers to see the natural vegetation of the Darling Range, particularly the forest of jarrah, marri and wandoo in extensive areas (Environmental Protection Authority 1983). There are many wildflowers to be seen in the understoreys, their composition changing with different soil types and with rainfall. The values for scientific study of these areas are also identified in the System 6 report.

The proposed upgrading of the Brookton Highway in this area is required to improve the safety of the road (Main Roads Western Australia 1993). The Authority was aware of this potential at the time of making its System 6 recommendation for conservation.

The Authority considers that Main Roads have given due consideration to the values identified for conservation. Accordingly Main Roads has proposed a compromise for widening the road which will provide the safety features which they require, whilst clearing the minimum amount of vegetation.

In regard to the four proposed realignments, the Authority considers that, where possible, existing pavement and disturbed road edge areas should be utilised in preference to clearing additional vegetation. In particular, the realignment between 19 and 20 SLK (see Figure 2), should avoid using the option of disturbing the creek system which is on the south - westerly side of the current alignment. This area contains numerous rock outcrops and a stream with substantial associated heath vegetation. Realignment through this area will require approximately seven metres of fill with a width of between 35 and 40 metres.

Recommendation 2

The Environmental Protection Authority recommends that in order to minimise additional disturbance to stream and heath vegetation in the section of road between 19 and 20 SLK (Straight Line Kilometres), the proponent re-align this portion of Brookton Highway closer to the already disturbed edges. (see Recommended Environmental Condition 3)

4.2 Management of forest hygiene

The Brookton Highway passes through areas which are affected by dieback disease in varying degrees. Main Roads are aware of the potential environmental effects of their activities in regard to spreading dieback disease.

The extraction of gravel is necessary to provide road base material. Water is also required during road construction. These materials are a potential source of dieback infection. However, gravel must be sourced from within the State Forest area because of the need to ensure that the material is dieback free. Gravel cannot be sourced from cleared agricultural areas because it is not possible to meet this requirement.

Similarly, water requires treatment to ensure that it is dieback free before being used during construction. Water run-off can lead to the spread of dieback, because the spores of the fungus which cause the disease survive well under these circumstances.

The Authority commends Main Roads for the commitments which they have made to manage forest hygiene and to preclude the spread of dieback disease. The Authority considers that Main Roads will be able to manage the risk of dieback in consultation with the Department of Conservation and Land Management.

The primary mechanisms for controlling the spread of dieback are related to ensuring that the plant and equipment, and materials used for road making are dieback free. Main Roads have requested the Department of Conservation and Land Management undertake dieback mapping for the project area. The Department of Conservation and Land Management have requested the preparation of a dieback hygiene plan. This plan should address the management of existing infections, the risks of new infections, the management of imported materials, including water and rehabilitation of borrow pits.

Recommendation 3

The Environmental Protection Authority recommends that Main Roads Western Australia prepare a hygiene control plan to ensure that equipment and materials to be used in the upgrading and widening of the Brookton Highway will not spread dieback disease. This plan should be prepared to the requirements of the Minister for the Environment on advice from the Department of Conservation and Land Management. (see Recommended Environmental Condition 4)

4.3 Extraction of gravel and rehabilitation of disturbed areas

Activities associated with the road works include the extraction of gravel for road base material and access to water for construction. These activities have the potential to reduce the landscape values of the State Forest next to the road. Main Roads have stated that new gravel 'borrow' pits will be located outside of the road reserve and outside of the System 6 area. The conservation and landscape values of the C37 area will therefore not be affected by these other activities which are associated with the upgrading and widening of the Brookton Highway.

The Department of Conservation and Land Management advise that rehabilitation of the roadside verges and un-required portions of the road pavement should use species which are locally endemic. In addition, the Department of Conservation and Land Management request that monitoring of the rehabilitation work be carried out for a period of two years.

Main Roads have also made substantial commitments to rehabilitate both new and old borrow pits along the Brookton Highway, as well as areas of pavement which will no longer be required after realignments have been completed. In addition, Main Roads have stated that monitoring of rehabilitated areas will be carried out over a three year period. These commitments will ensure that, as far as possible the conservation and landscape values of the State Forest area which surrounds the Brookton Highway will be maintained.

Recommendation 4

The Environmental Protection Authority recommends that new borrow pits for the extraction of gravel and bore sites for access to water should be located outside of the System 6 area C37 and should be sourced from areas free from dieback, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority and the Department of Conservation and Land Management. (see Recommended Environmental Condition 5)

5. Conclusion

The Environmental Protection Authority concludes that the proposed upgrading and widening of the Brookton Highway would be environmentally acceptable provided the proponent's commitments and the recommendations of this report are implemented. This includes locating realignments in or next to already disturbed areas, preparing a hygiene control plan, and siting new gravel 'borrow' pits outside of the System 6 area. In addition, Main Roads have made substantial commitments to rehabilitate areas of pavement which are no longer required and to rehabilitate both old and new borrow pits along the Brookton Highway.

The Authority's experience is that it is common for details of a proposal to alter through the detailed design and construction phase. In many cases alterations are not environmentally significant or have a positive effect on the environmental performance of the project. The Authority believes that such non-substantial changes, and especially those which improve environmental performance and protection, should be provided for.

The Authority believes that any approval for the proposal based on this assessment should be limited to five years. Accordingly, if the proposal has not been substantially commenced within five years of the date of this report, then such approval should lapse. After that time, further consideration of the proposal should occur only following a new referral to the Authority.

6. Recommended environmental conditions

Based on its assessment of this proposal and recommendations in this report, the Environmental Protection Authority considers that the following Recommended Environmental Conditions are appropriate:

1 Proponent Commitments

The proponent has made a number of environmental management commitments in order to protect the environment.

- 1-1 In implementing the proposal, the proponent shall fulfil the commitments (which are not inconsistent with the conditions or procedures contained in this statement) made in the Consultative Environmental Review and in response to issues raised following public submissions. These commitments are consolidated in Environmental Protection Authority Bulletin 697 as Appendix 1. (A copy of the commitments is attached.)

2 Implementation

Changes to the proposal which are not substantial may be carried out with the approval of the Minister for the Environment.

- 2-1 Subject to these conditions, the manner of detailed implementation of the proposal shall conform in substance with that set out in any designs, specifications, plans or other technical material submitted by the proponent to the Environmental Protection Authority with the proposal. Where, in the course of that detailed implementation, the proponent seeks to change those designs, specifications, plans or other technical material in any way that the Minister for the Environment determines on the advice of the Environmental Protection Authority, is not substantial, those changes may be effected.

3 Realignment between 19 and 20 SLK (Straight Line Kilometres)

Existing pavement and disturbed road edge areas should be used in preference to clearing entirely new areas.

- 3-1 The proponent shall prepare a new detailed design for the realignment of Brookton Highway between 19 and 20 SLK, making use of the existing road pavement and disturbed road edge, to minimise disturbance to the creek system and associated health vegetation.
- 3-2 The proponent shall subsequently construct the redesigned alignment.

4 Management of forest hygiene

The proponent must ensure that dieback disease is not spread by road work.

- 4-1 Prior to any road works, the proponent shall prepare a dieback hygiene plan to the requirements of the Minister for the Environment on advice from the Department of Conservation and Land Management, which shall address, but not be limited to:
 - (1) the management of existing infections;
 - (2) the risks of new infections;
 - (3) the management of imported materials (including water); and
 - (4) the rehabilitation and monitoring of borrow pits.
- 4-2 The proponent shall implement the above dieback hygiene plan to the requirements of the Minister for the Environment on advice of the Department of Conservation and Land Management.

5 Extraction of gravel from borrow pits

The area surrounding the Brookton Highway which has been identified for conservation in recommendation C37 of the System 6 report should not be used for the development of new borrow pits for the extraction of gravel.

- 5-1 The proponent shall identify new gravel extraction areas in consultation with the Department of Conservation and Land Management. These areas shall be outside of the System 6 nominated areas and shall be dieback free.

6 Proponent

These conditions legally apply to the nominated proponent.

- 6-1 No transfer of ownership, control or management of the project which would give rise to a need for the replacement of the proponent shall take place until the Minister for the Environment has advised the proponent that approval has been given for the nomination of a replacement proponent. Any request for the exercise of that power of the Minister shall be accompanied by a copy of this statement endorsed with an undertaking by the proposed replacement proponent to carry out the project in accordance with the conditions and procedures set out in the statement.

7 Time Limit on Approval

The environmental approval for the proposal is limited.

- 7-1 If the proponent has not substantially commenced the project within five years of the date of this statement, then the approval to implement the proposal as granted in this statement shall lapse and be void. The Minister for the Environment shall determine any question as to whether the project has been substantially commenced. Any application to extend the period of five years referred to in this condition shall be made before the expiration of that period, to the Minister for the Environment by way of a request for a change in the condition under Section 46 of the Environmental Protection Act. (On expiration of the

five year period, further consideration of the proposal can only occur following a new referral to the Environmental Protection Authority.)

8 Compliance Auditing

In order to ensure that environmental conditions and commitments are met, an audit system is required.

- 8-1 The proponent shall prepare periodic "Progress and Compliance Reports", to help verify the environmental performance of this project, in consultation with the Environmental Protection Authority.

Procedures

- 1 The Environmental Protection Authority is responsible for verifying compliance with the conditions contained in this statement, with the exception of conditions stating that the proponent shall meet the requirements of either the Minister for the Environment or any other government agency.
- 2 If the Environmental Protection Authority, other government agency or proponent is in dispute concerning compliance with the conditions contained in this statement, that dispute will be determined by the Minister for the Environment.

7. References

Environmental Protection Authority (1983). Conservation Reserves for Western Australia as recommended by the Environmental Protection Authority - 1983. The Darling System - System 6. Part II: Recommendations for Specific Localities. Department of Conservation and Environment.

Main Roads Western Australia (1993). Armadale - Ravensthorpe Road M3 (Brookton Highway). Proposed upgrading and widening Armadale to Brookton (State Forest section). Consultative Environmental Review). Main Roads Western Australia.

Appendix 1

Proponent's list of environmental management commitments

11. SUMMARY OF ENVIRONMENTAL COMMITMENTS

The upgrading and widening of the Armadale/Ravensthorpe Road (Brookton Highway) in the State Forest will be undertaken by Main Roads, commencing in 1993.

Main Roads will be responsible for the design and construction of the road and for the management of the environmental impacts associated with the project.

For this project the following environmental commitments are made:-

1. The spread of Dieback fungal disease will be controlled by the adoption of approved construction practices and techniques.
ACTION: Construction Engineer
2. To plan, design and construct roadworks to minimise or improve the visual impacts on the areas that the road traverses.
ACTION: Design Engineer, Construction Engineer
3. To minimise cut and fill earthworks to provide a curvilinear flow of the road over the landscape.
ACTION: Design Engineer, Construction Engineer
4. To shape cuts and fills to fine tune landform details for enhanced visual effect on roadsides. Slope rounding, warping, filling and moulding techniques will be employed.
ACTION: Construction Engineer
5. To retain rock outcrops and stable boulders within road cuts where it can be done without creating a hazard for vehicles. Remove loose boulders, stockpile and re-positioned in key locations to enhance slopes.
ACTION: Design Engineer, Construction Engineer
6. Road cuts through solid bed-rock will be left with irregular rough textured faces.
ACTION: Construction Engineer
7. To incorporate undulating clearing limits and edge feathering techniques. When clearing roadside vegetation, felled vegetation will be removed and buried in approved spoil sites.
ACTION: Construction Engineer
8. To revegetate roadside areas disturbed by earthworks with appropriate plantings before or soon after construction operations are completed.
ACTION: Road Verge Officer
9. To stockpile topsoil removed during construction and replace on cut and fill batters to aid revegetation.
ACTION: Construction Engineer

10. Plants selected for revegetation shall represent hardy species well adapted to survival in the soil and climatic conditions of the site..
ACTION: Road Verge Officer
11. Planting of native species shall be positioned both inside and outside the clearing limit and the species selected to enhance transitional blending and feathering of existing vegetation.
ACTION: RoadVerge Officer
12. Exposed end sections of culverts and drain pipes will be formed, coloured or screened with plantings to blend with the landscape.
ACTION: Design Engineer, Construction Engineer, Road Verge Officer
13. To design guardrails with colours and materials that will be visually compatible with their surroundings. Staining, colouring or dulling solutions will be used to reduce colour contrasts.
ACTION: Design Engineer, Construction Engineer
14. To select signs to provide clear legible information and be designed to otherwise enhance the scenic quality of the roadside. Appropriate scale, colours and materials will be used. Excessive signage and widely divergent sign construction standards will be avoided.
ACTION: Technical Officer
15. To locate major interpretation signs at appropriate roadside rest areas.
ACTION: Technical Officer
16. To utilise rock materials removed from solid rock cuts in the construction of retaining walls, bridges and visitor facilities where possible.
ACTION: Design Engineer, Construction Engineer
17. To minimise vegetation clearing limits to retain existing tree and shrub cover as close as possible to the roadway.
ACTION: Construction Engineer
18. To protect vegetation from damage by construction equipment and blasting.
ACTION: Construction Engineer
19. To disperse downslope water drainage at frequent and even intervals to avoid interruptions and concentrations of water flows due to earthworks (which could damage or kill downslope vegetation).
ACTION: Design Engineer, Construction Engineer
20. To make every effort to protect endangered or rare species of flora and fauna.
ACTION: Construction Engineer
21. Construction techniques will not disturb existing Aboriginal sites and appropriate measures will be undertaken to identify and protect any new sites found during the construction period.
ACTION: Design Engineer, Construction Engineer

22. No camps will be erected in the State Forest.
ACTION: Construction Engineer

23. To diminish the visual impact of borrow pits by carefully selecting their locations and once operations are complete, the borrow pits and their associated access roads will be rehabilitated.
ACTION: Materials Manager, Construction Engineer

24. To control potential scour and erosion problems by implementing preventative measures.
ACTION: Design Engineer, Construction Engineer

Appendix 2

Summary of public submissions and the responses from Main Roads Western Australia

REPLY TO SUBMISSIONS
ARMADALE - RAVENSTHORPE ROAD M3 (BROOKTON HIGHWAY)
PROPOSED UPGRADING AND WIDENING - ARMADALE TO BROOKTON
(STATE FOREST SECTION)
EPA ASSESSMENT N° 694

The following reply to submissions is the Main Roads Western Australia response to the summary comments provided by the Environmental Protection Authority (EPA).

The EPA comment number and question is stated, followed by the reply.

1. ROAD SAFETY

- 1.1 **Upgrading of the Brookton Highway as proposed in the Consultative Environmental Review document by constructing the road only to the minimum level acceptable for safety (page 54) is not sufficient for the uses which are made of this road.**

Reply - Main Roads WA

The level of upgrading proposed for the State Forest Section of Brookton Highway is intended to:-

- reduce the high accident rate for the route;
- make the route available to larger trucks with a consequent saving in transportation costs to the rural sector;
- minimise the environmental impact of the works on the State Forest.

The standards used in road design aim to provide a transport route that is safe for the community. These standards have been developed over many years through analysis and testing of various aspects of road design and by monitoring accident statistics.

The compromises which have been made in order to reduce the environmental impact on the forest relate mainly to a reduction in standards for drain widths and depths, and cuts and fills have been reduced. This has had the effect of minimising the required clearing widths. Most of these compromises do not greatly affect the level of service to the road user.

- 1.2 **Why won't Brookton Highway be upgraded to the same standard as Albany Highway? Are the Main Roads willing to accept a higher number of deaths on the Brookton Highway?**

Reply - Main Roads WA

Traffic volumes on Brookton Highway vary from 930 vehicles per day at the west end of the State Forest section to 570 vehicles per day at the east end of the State Forest section.

Traffic volumes on Albany Highway at an equivalent distance from the city are in excess of 3 000 vehicles per day.

For economic reasons, the level of upgrading of a road has to relate to the volume of traffic using the road.

The width of traffic lane proposed for Brookton Highway is the same as that provided on Albany Highway while the proposed horizontal curve radii comply with AUSTROADS guidelines for a design speed of 110 kilometres per hour.

- 1.3 **Brookton Highway is not dangerous. Speeding motorists should be stopped and road speed limits should be reduced.**

Reply - Main Roads WA

Page 12, paragraph 2.8 of the Consultative Environmental Review gives accident data for the route. This shows that the accident rate on Brookton Highway is almost twice the average rate for two lane undivided roads in WA.

The police manpower required to be permanently on hand to stop all speeding motorists is not available.

A further reduction in the present speed limit of 100 kilometres per hour would be:

- (a) uneconomic in terms of travel time for regular users of the road;
- (b) ignored by a significant proportion of road users.

- 1.4 **Brookton Highway is currently one of the three most monotonous roads in the State. Additional clearing will improve safety, enable drivers to avoid wildlife crossing the road, and provide much needed tourist opportunity to see into the forest.**

Reply - Main Roads WA

The principal purpose for conserving this roadside corridor is to maintain the landscape values which are supported by the roadside in this area. Additional clearing beyond that proposed would severely reduce those values.

It is intended to clear to the minimum extent necessary to accommodate the upgraded road. However, the new road width of 11 metres shoulder to shoulder, plus clearing for side slopes means that the new cleared width will generally be five to eight metres greater than the old.

- 1.5 **The CER does not address the problem of kangaroo kills on the road and the danger that they present. The road and verges should be wider to enable kangaroos to have a better chance of hopping back into the forest rather than onto the road and into the path of vehicles.**

Reply - Main Roads WA

The road and verges will be wider than before as explained in 1.4

A compromise has been made between a degree of clearing which some members of the public regard as excessive and other members of the public may regard as insufficient.

Road kills in this area are seasonal and correspond to the migration of kangaroos from drier forest areas to those areas where summer water supply is available. Kangaroos move to and from these areas with seasonal change and the presence of permanent water and food near the road. Broader clearing widths do not correspond to reduced road kills of kangaroos or other fauna.

2. FLORA, FAUNA AND ECOSYSTEM CONCERNS

- 2.1 **The additional widening required to make this road equivalent to Albany Highway is small in comparison to the overall size of the forest. Therefore, it cannot be concluded that the additional clearing required is going to have a significant effect on diminishing genetic potential (page 45).**

Reply - Main Roads WA

The primary concern for reduced clearing on this road is the maintenance of landscape value in the forest section of the road. A significant body of public opinion supports the need to minimise disturbance of areas which hold these values.

- 2.2 **Every tree is part of our unique ecosystem and an important link in the food chain as a resource for birds and ground dwelling animals. It is short-sighted, unethical and immoral to deplete this food source for just another road widening.**

Reply - Main Roads WA

A balance has to be struck between preserving trees and preserving the safety of the travelling public. As explained in section 1.3, the accident rate on

Brookton Highway is nearly twice the rate for comparable roads in WA. Compromises have been made in some road design standards in order to reduce the requirement for clearing, as explained in section 1.1

- 2.3 **It is of concern that some of the trees earmarked for clearing are very old. About 30% of birds require hollows provided by native trees which are more than 130 years old.**

Reply - Main Roads WA

The new road alignment follows that of the old road as far as possible. This means that clearing can be kept to a minimum while preserving road safety and important design standards. Unnecessary removal of old trees will not occur as a result.

- 2.4 **Strict dieback hygiene should be maintained. Whilst Main Roads give good environmental commitments and set down high environmental standards, the contractors performing the work must ensure that these standards are met.**

Reply - Main Roads WA

Construction work may be carried out by contract or direct labour. In either case the work will be supervised by Main Roads personnel to ensure that the required standards are met.

- 2.5 **Clarification is sought as to how imported material including water will be processed to ensure removal of dieback fungi (page 56, section 7.3 paragraph 5).**

Reply - Main Roads WA

Material other than water which is imported to dieback free areas will originate from other dieback free areas and will not require treatment. Where the road is constructed through areas of forest classified as dieback affected, the material to be used can be dieback affected. Water imported to dieback free areas will be assumed to be dieback contaminated and will be treated prior to use with sodium hypochlorite in liquid form with an active ingredient of 125 gm/litre of available chlorine. The dilution rate is one litre of sodium hypochlorite per 1500 litres of water. This method is the one used by CALM.

- 2.6 **A dieback hygiene plan is required. The plan should address the management of existing infections, the risks of new infections, the management of imported materials, including water and rehabilitation of borrow pits. Furthermore, borrow pits which have been rehabilitated should be monitored for two years and weed control and drainage work carried out if necessary.**

Reply - Main Roads WA

A dieback hygiene control plan will be prepared and forwarded to CALM for their approval prior to commencement of work. Borrow pits within the State Forest will be rehabilitated in accordance with CALM's requirements and will be monitored over a three year period. Weed control and drainage work will be carried out as necessary.

- 2.7 **The issue of weed management, particularly environmental weeds, has not been addressed in the planning, construction and monitoring phases of the proposal. A commitment to the management of weeds, both declared and environmental, is required.**

Reply - Main Roads WA

Main Roads has a commitment to the management of declared and environmental weeds. An ongoing weed management programme is currently in place.

- 2.8 **Rehabilitation of roadside verges and unrequired portions of road pavement should use representative endemic species approved by CALM, which are well adapted to survival in the soil and climatic conditions of that site.**

Reply - Main Roads WA

It is Main Roads policy to provide indigenous species when rehabilitating roadside verges and areas of old road which are no longer required.

3. LANDSCAPE VALUES

- 3.1 **The Brookton Highway is the only scenic route left out of the City that provides access to the wheatbelt. Roads through forests are, and will be, very important for tourism in this State as they provide access to scenic beauty with little effort.**

Reply - Main Roads WA

As previously indicated Main Roads has recognised the value of this scenic roadside in development of this project, commensurate with its corporate mission. With this project a safer road is also being developed to allow tourists the opportunity to comfortably appreciate the scenic values when travelling to the wheatbelt.

- 3.2 **The Manjimup - Walpole road was a tragic loss to scenic tourism. It has now lost much of its value through being widened. The same will happen to the Brookton Highway.**

Reply - Main Roads WA

It is the intention of Main Roads to preserve the scenic value of the route as far as possible while at the same time providing a safe route for road users.

- 3.3 **This proposal will lead to a large loss of remnant vegetation which is not only important for nature conservation, but also landscape value. Where work is required, vegetation loss should be minimised by using areas which are already cleared and the road verges should be rehabilitated with native vegetation.**

Reply - Main Roads WA

Every effort will be made to minimise the loss of vegetation. Rehabilitation will be carried out using native species.

4. OTHER ISSUES

- 4.1 **The Road Reserves Review Committee has recommended that the reserve width for this section of road should be coincident with the dedicated road which has a width of 20 metres. Once construction work has been completed, the road reserve should be reduced accordingly.**

Reply - Main Roads WA

Agreed.

- 4.2 **Since only a very small proportion of the forest is to be cleared, why was it necessary to do a CER9.**

Reply - Main Roads WA

The Environmental Protection Authority sets the level of consultation required for each project after consideration of the significant issues and sensitive elements associated with the proposal.

These include landscape values, flora and fauna, wetlands and drainage considerations.

- 4.3 **The use of motor vehicle should be discouraged, because cars are responsible for 30% of Greenhouse gas emissions. Widening of Brookton Highway will only encourage more use of cars.**

Reply - Main Roads WA

Widening and upgrading of Brookton Highway will make it suitable for use by longer truck and trailer combination vehicles. These vehicles are more fuel efficient than those using the route at the present time and hence the improvement could be said to have a beneficial effect on greenhouse gas emissions.

- 4.4 **Gravel should be sourced from already cleared farmland and no native vegetation should be cleared to obtain gravel.**

Reply - Main Roads WA

Removal of gravel from within the State Forest will be minimised and undertaken in consultation with CALM. Where the road passes through dieback free forest, it is essential that dieback free gravel is used in the road construction to prevent spreading dieback disease. The only way to ensure that gravel is dieback free is to obtain the material from an area of forest which is classified as dieback free.

Gravel source areas will be rehabilitated as explained on pages 56 and 57 of the CER. Rehabilitation and reseedling with native species will be carried out in accordance with CALM's requirements.

TO ARMADALE
(0.00 SLK)

16.60 - 17.40 SLK
REALIGNMENT

19.00 - 20.00 SLK
AREALIGNMENT

24.10 - 25.50 SLK
REALIGNMENT

31.50 - 32.70 SLK
POSSIBLE REALIGNMENT

27.85 - 29.26 SLK
PASSING LANE
(no further work)

STATE FOREST

43.10 - 44.65 SLK
PASSING LANE
(no further work)

40.80 - 42.00 SLK
PASSING LANE
(no further work)

STATE FOREST

56.35 - 57.75 SLK
PASSING LANE
(no further work)

STATE FOREST
INTERSECTS M003
AT 57.36 SLK

TO BROOKTON
(112.21 SLK)

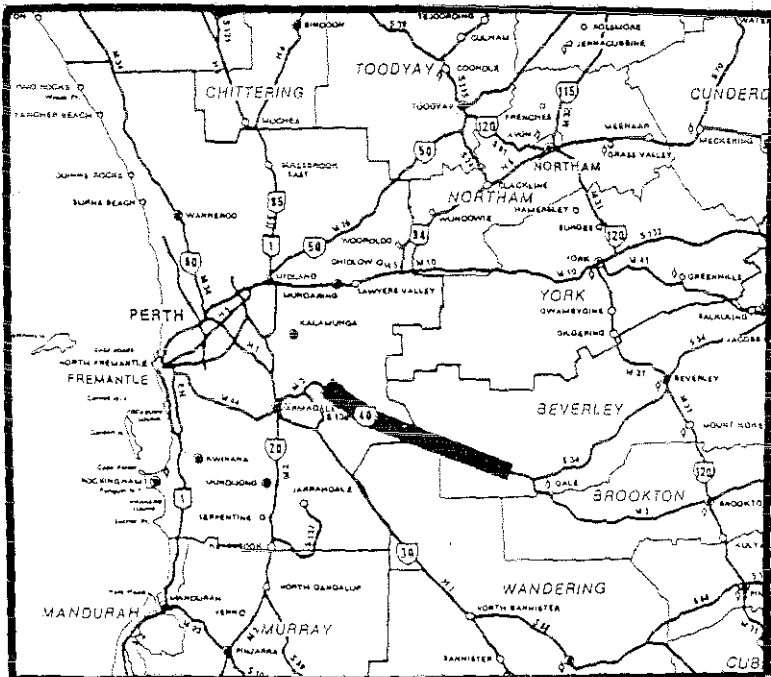
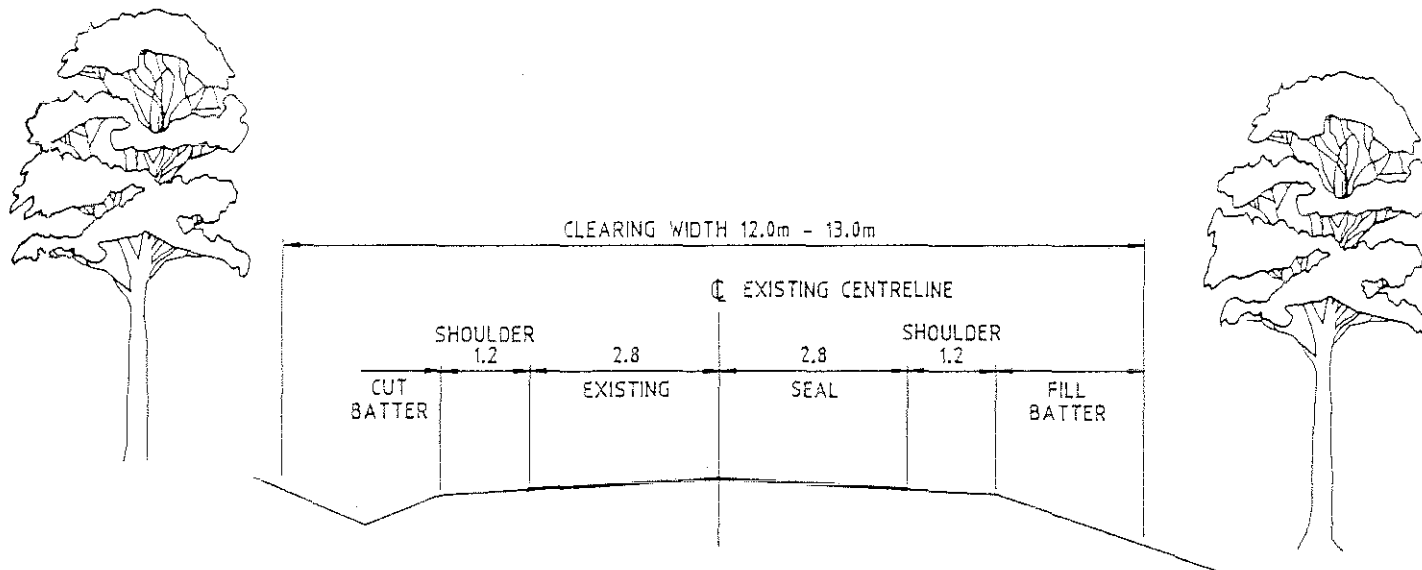
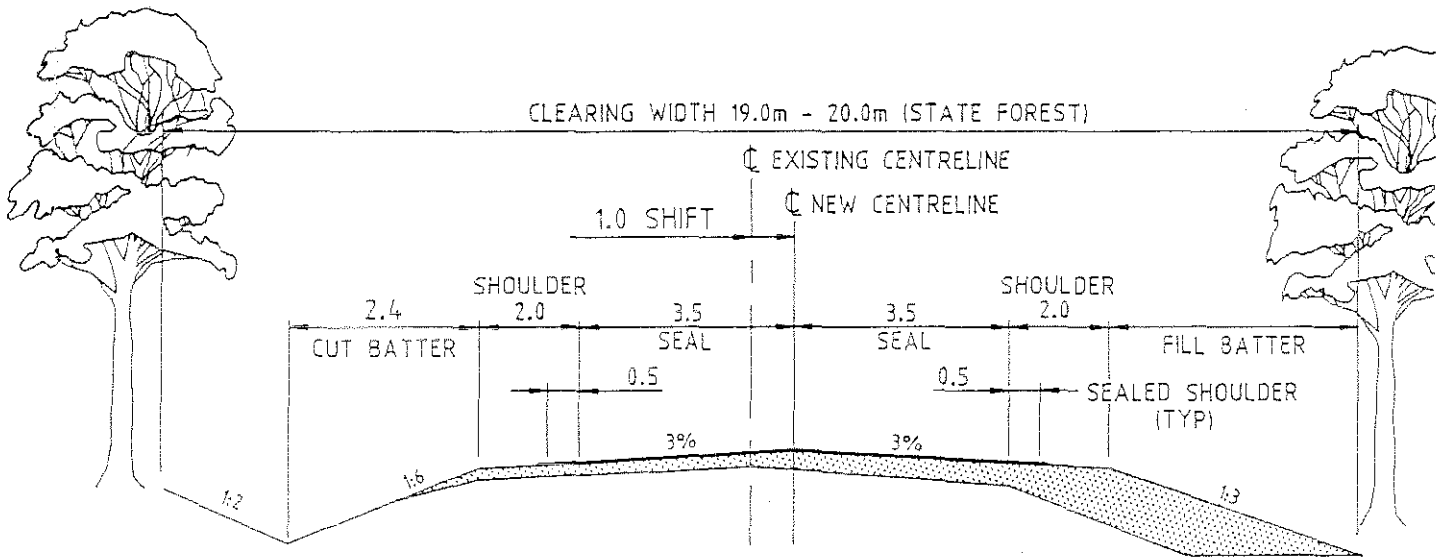


FIGURE 4

TYPICAL CROSS SECTION



EXISTING SECTION



PROPOSED SECTION

(EXAMPLE OF WIDENING ON ONE SIDE)

 PROPOSED UPGRADIN

