

# **Eastern Corridor Major Roads Study**

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**Main Roads Western Australia**

**Proposed change to environmental conditions**

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

**Environmental Protection Authority  
Perth, Western Australia  
Bulletin 748  
July 1994**

#### 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 29 July 1994.

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## Summary

The Environmental Protection Authority has been requested by the Minister for the Environment under Section 46 of the Environmental Act, to report on proposed modifications to the section of the approved alignment within the Metropolitan Region of the Perth to Adelaide National Highway.

In assessing the original Eastern Corridor Major Roads Study in 1989 (EPA Bulletin 380) and specifically the proposed Perth to Adelaide National Highway route, the Environmental Protection Authority gave particular consideration to the following potential environmental and other effects:

- land acquisition and properties affected, including noise and landscape issues;
- vegetation and wildlife, particularly the impact of the highway on geographically restricted species;
- hydrology and wetlands; and
- conservation areas and System 6 Recommendation Areas, in particular John Forrest National Park and Reserve 2145 near Gidgegannup.

The impact of the proposed changes to the highway alignment in relation to these issues and the additional impacts on Jane Brook M20 resulting in a small extension of the route to join the Perth to Adelaide Highway to the Roe Highway have been evaluated and it is recommended that the original Environmental Conditions be amended to reflect management requirements associated with the changes proposed and the changes in emphasis in environmental impact assessment since 1989. It is also considered that a number of new standard procedural conditions need to be incorporated in the Environmental Statement in order to conform with more recent statements.

The following table provides a summary of the Environmental Protection Authority's recommendations for these proposals. The full recommendations of the Environmental Protection Authority are provided in the main text of this report. The recommendations of the Environmental Protection Authority have also been drafted into Recommended Environmental Conditions (see Section 6) for consideration by the Minister for the Environment in his negotiations with the decision making authorities for this proposal (the Minister for Transport and the Minister for Planning).

Recommendation Number	Summary of Recommendation
1	Management of impacts within John Forrest National Park (M 21), including measures to protect rare and endangered species and rehabilitation of a section of Toodyay Road.
2	Management aspects and final design of the road within the conservation area and the bridge over Jane Brook (M 20) and the associated landscape and drainage management plans.
3	Conditions 2 and 3 of the Environmental Statement for the proposal of 22 November 1989 be deleted to reflect the above recommendations and changes in emphasis in environmental impact assessment since 1989.
4	A number of standard project management conditions should be added to the Environmental Statement to replace Condition 4 which should be deleted.
5	The proposed modifications to the Perth to Adelaide Highway are acceptable subject to the above recommendations.

# 1. Introduction

## 1.1 Background

The Environmental Protection Authority has been requested, by the Minister for the Environment under Section 46 of the Environmental Act, to report on proposed modifications to the section of the approved alignment within the Metropolitan Region of the Perth to Adelaide National Highway. This report (Bulletin 748), containing the Environmental Protection Authority's recommendations will be subject to appeal, following which the Minister for the Environment will decide on any modifications to the conditions previously set on 22 November, 1989.

This alignment was previously assessed by the Environmental Protection Authority in 1989 (Bulletin 380) through its assessment of the Eastern Corridor Major Roads Study and approved on 22 November 1989 by the Minister for the Environment, subject to a number of legally binding conditions (see Appendix 1). The Study proposed:

- an upgrading of the Great Eastern Highway;
- the development of a Hills Spine Road; and
- the selection of a new route for the Perth to Adelaide National Highway along Toodyay Road from Campersic Road, just west of the Darling Scarp, to just east of Gidgegannup and then along a completely new alignment to join Great Eastern Highway near Wundowie (Figure 1).

This alignment for the proposed Perth to Adelaide National Highway was known as the "Orange Route".

At the time of the original environmental assessment by the Environmental Protection Authority (EPA Bulletin 380) and the setting of the Environmental conditions by the Minister for the Environment, the proponent was the State Planning Commission.

This proponent has changed and is now Main Roads Western Australia.

## 1.2 The proposal

A recent accident on Great Eastern Highway at the foot of Greenmount Hill has lent a sense of urgency to completing outstanding matters on the Perth to Adelaide Highway route.

Main Roads has advised that since the original environmental statement was published, a detailed review of the whole route between Middle Swan and the Metropolitan Region Scheme boundary at Wooroloo has now been completed. As a result of these studies, Main Roads consider that some sections of the original route need to be changed (Main Roads, 24 March 1993).

In its letter to the Minister for the Environment, Main Roads also indicated that a detailed study of the possible alignment options for the Perth to Adelaide National Highway from the Metropolitan Region Scheme boundary and Clackline will be undertaken. The section of the highway outside the Metropolitan Region Scheme to Clackline will need to be assessed separately and is not included in this report.

The changes requested as a part of this Section 46 amendment specifically relate to variations in alignment in the following sections of the approved Perth to Adelaide National Highway route:

1. Gidgegannup to the Metropolitan Region Scheme boundary near Wooroloo;
2. Around Gidgegannup townsite;
3. Top of Darling Scarp to Gidgegannup;
4. Campersic Road to top of Darling Scarp. A section of John Forrest National Park (System Six Recommendation Area M21) is affected; and

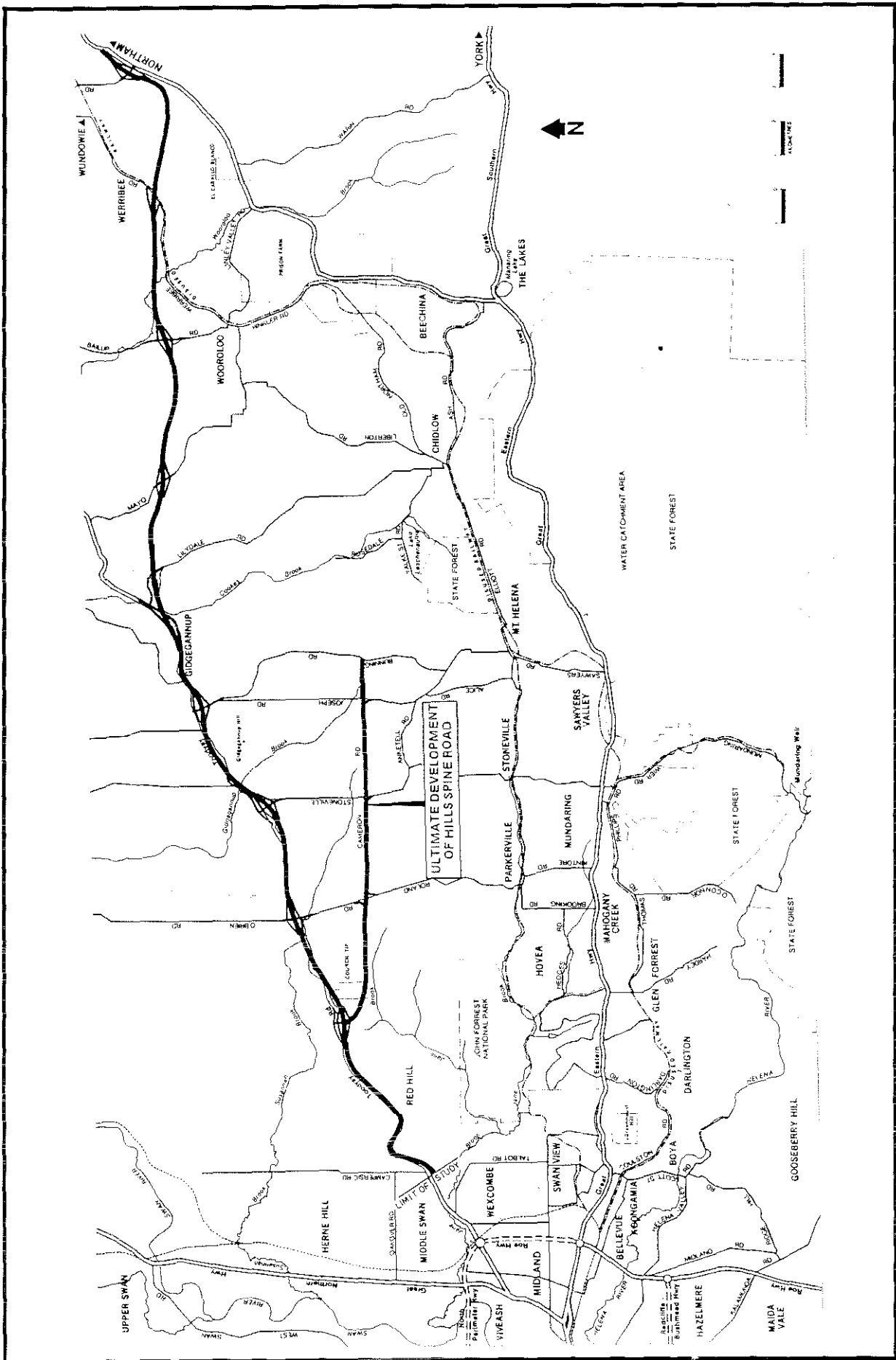


Figure 1. Orange Route — ultimate development (Incl. Hills Spine Road option)

5. Roe Highway to Campersic Road. Crossing of Jane Brook (System Six Recommendation Area M20) at Toodyay Road is required. This section of the highway route has not previously been referred to the Environmental Protection Authority. Although not part of the original assessment, it forms a logical extension westward to the route assessed and is considered in this report.

In addition to the assessment of the specific modified sections of the alignment, the Environmental Protection Authority has examined the conditions set on the whole proposal in 1989 to determine whether the conditions are still relevant or whether additional conditions are required. In undertaking this review the Environmental Protection Authority has noted that since 1989, there has been a change in emphasis in the type of assessment undertaken and that a number of standard project management conditions are now generally added.

## 2. Environmental Impact Assessment method

Department of Environmental Protection officers undertook the following actions, including a re-appraisal of the assessment undertaken in 1989.

Date	Activity	Outcome/issues discussed
February 1988 and March 1989	Re-appraisal of the Eastern Corridor Major Roads Study Public Environmental Report undertaken by State Planning Commission, Main Roads Department, Shires of Mundaring and Swan and the Environmental Protection Authority's previous assessment of the Eastern Corridor Major Study (Bulletin 380)	Review of project
1993	Appraisal of the document reviewing the Proposed National Highway - Roe Highway to Campersic Road	Review of the alignment for Main Roads and the Department of Planning and Urban Development
June 1993	Request to the Executive Director, Department of Conservation and Land Management and the Chairman of the National Park and Nature Conservation Authority for advice	Assessment of impacts from re-alignment through a section of John Forrest National Park.
February 1994	Report on the 'Flora, Vegetation and Fauna Survey, John Forrest National Park, Orange Route Diversion' undertaken by EM Matiske and Associates and Ninox Wildlife Consulting at the request of the NP&NCA	
March 1994	Advice from Executive Director CALM and the Chairman NP&NCA	
30 March 1994	Site visit of proposed modified sections of the Orange route.	Familiarised with the route and proposed modifications
April 1994	Received additional commitments from Main Roads regarding the management of other potential impacts.	Particularly with regard to potential impacts from bridge crossing of Jane Brook

### *Limitation*

This evaluation has been undertaken using information currently available. The information has been provided by the proponent through preparation of the environmental review document and in response to queries on specific issues by the National Park and Nature Conservation Authority and officers of the Department of Environmental Protection, by Department of Environmental Protection officers utilising their own expertise and reference material, by utilising expertise and information from other State government agencies, and by contributions from Environmental Protection Authority members.

The Environmental Protection Authority recognises that further studies and research may affect the conclusions. Accordingly, the Environmental Protection Authority considers that 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 Environmental Protection Authority

## **3. Evaluation**

### **3.1 Conservation of fauna, flora and landscape**

#### **3.1.1 Overall existing policy framework**

The major potential impacts associated with this proposal are associated with the conservation values of flora and fauna.

These potential impacts are assessed within the Environmental Protection Authority's strategy for conservation of fauna, flora and landscape which is outlined below. This strategy has been established through the Conservation Through Reserves study undertaken by the Conservation Through Reserves Committee (EPA 1975, 1976, 1980 and 1983) which are endorsed by Government and three environmental impact assessments of proposed developments over land with high conservation value which had not been recommended for conservation by the study (Ellenbrook, EPA August, 1992 and Brixton Street, EPA Sept, 1991 and July 1992). The Conservation Through Reserves study divided the State into 12 regions or Systems. System Six or the Darling System covers the highly populated areas in and around Perth and the South West of the State and is subject to most pressure.

The Environmental Protection Authority's strategy includes the following elements:

- an adequate and representative system of reserves should be set aside for the conservation of flora, fauna and landscape;
- such reserves should be properly managed and given security of tenure which recognises their conservation value;
- the integrity of such reserves should be maintained;
- the System Six Report (endorsed by Government in 1983 (EPA 1983)) established through the Conservation Through Reserves studies has formed a principle focus for the Environmental Protection Authority's conservation efforts on the Swan Coastal Plain;
- decisions to look at areas outside the Systems' areas are the exception but any proposal which may impact on areas of high conservation value outside the Systems areas should be looked at carefully and referred to the Environmental Protection Authority to be considered for environmental impact assessment. Areas with regionally significant vegetative systems which are endangered may be recommended for protection. Examples of areas which have



been assessed by the Environmental Protection Authority and have been found to have regionally significant conservation value which should be protected include Ellenbrook (EPA August 1992) and Brixton Street (EPA Sept 1991 and July 1992). General criteria for determining regionally significant conservation value include:

- the regional vegetation complex is endangered ( in general less than 10% of the vegetation complex remains and less than 10% is secured for conservation);
  - the area should have a unique attribute or special feature such as diversity of plant and animal communities, habitat for species that are scarce or otherwise threatened and in need of protection, contain elements that have scientific and educational value and have a high degree of naturalness;
  - the area should have a high degree of representativeness; and
  - the area should be managed to ensure viability;
- decisions on managing impacts on individual species which are endangered have generally been the responsibility of the Department of Conservation and Land Management under the *Wildlife Protection Act*. and the advice of that Department should be sought if species gazetted under the *Wildlife Protection Act* may be present. The Department of Conservation and Land Management may refer proposals to the Environmental Protection Authority for assessment; and
  - decisions on protecting areas of remnant vegetation outside the above framework for local conservation, linkages, buffers or local community use should be the responsibility of the planning agencies which have the framework to accommodate community interests in protecting the land for local conservation and recreation and to take into account the costs associated with this such as acquisition and loss of land for housing and other development.

This strategy is not intended to diminish the importance of the issues associated with local areas which do not have high conservation value or to discourage community concerns, but rather to indicate the role of the planning process in making decisions regarding the use of the land.

## **3.2 Evaluation of specific proposals for modification of the alignment of the Perth to Adelaide Highway route**

### **3.2.1 Alignment from Gidgegannup to the Metropolitan Region Scheme boundary near Wooroloo**

#### **Background**

Main Roads advises that the recommended alignment is almost identical to that of the Perth - Adelaide National Highway route recommended by the Eastern Corridor Major Roads Study. Grade separated changes have been removed at Mayo Road, Bailup Road and Werribee Road and there have been slight alterations to the highway alignment to suit these changes. The future interchange at the National Highway/Toodyay Road intersection has been modified slightly following more detailed design, however, the layout is still basically as proposed in the Eastern Corridor Major Roads Study (Main Roads, 24 March 1993).

### **The Environmental Protection Authority's evaluation**

The changes to the proposal for the Gidgegannup to the Metropolitan Region Scheme boundary near Wooroloo involve minor design alterations to the approved highway route and are not considered to have a significant impact upon the environment. The Environmental Protection Authority has therefore concluded that the changes proposed are environmentally acceptable.

#### **3.2.2 The alignment around Gidgegannup Townsite**

##### **Background**

The original alignment bypassed the Gidgegannup townsite to the south passing through a portion of Reserve 2145 (recreation) which the original Public Environmental Report document described as containing "...some significant creek vegetation which would be partially lost to road widening and realignment" (Travers Morgan Pty Ltd, 1988). In its original report (Bulletin 380), the Environmental Protection Authority recommended that the proponent provided details of the dimensions and areas of land to be removed from Reserve 2145 and that impacts be minimised. This recommendation was reflected in the environmental conditions set for the proposal (Appendix 1).

The Environmental Protection Authority has been advised by Main Roads that a review of the alignment recommended in the Eastern Corridor Major Roads Study was requested by the Shire of Swan following preparation of the Gidgegannup Township Strategy. The Shire planners could see major problems with expansion of the townsite to the north and local residents had expressed concern regarding division of the town by a major highway. The Shire planners then proposed that expansion of the townsite should be to the south and Main Roads were requested to review the planned southern bypass alignment for the National Highway (Main Roads, 24 March 1993).

Three additional alignment options were investigated and of these a bypass alignment to the north of Gidgegannup is now preferred by Main Roads (Figure 2). Main Roads advises that this alignment was also favoured by a large majority at a public meeting held by the Gidgegannup Progress Association in August 1990 (Main Roads, 24 March 1993). A study by Main Roads indicates that there are patches of natural vegetation in private properties which will be affected by all the bypass options considered including the preferred bypass to the north of the townsite (Main Roads, 1990). The affected vegetation is 'parkland cleared' with limited structural diversity and is characterised predominantly by established trees with a grassy understorey.

This new and preferred alignment does not impact upon Reserve 2145 (Main Roads, 13 April 1994).

##### **The Environmental Protection Authority's evaluation**

The original alignment of the National Highway at the Gidgegannup townsite did pass through a part of Reserve 2145 to the south of the town and would have impacted on an area of good vegetation. The new alignment, which will bypass the Town on the northern side, will not affect the Reserve but will pass through an area of 'parkland cleared' vegetation. This vegetation does not have high conservation value. Accordingly, the Environmental Protection Authority considers that the environmental issues associated with Main Roads preferred alignment to the north of the Gidgegannup townsite are not significant and could be managed through the detailed design and implementation stage of the proposal. The Environmental Protection Authority has therefore concluded that the changes proposed are environmentally acceptable.



### **3.2.3 The alignment from the top of the Darling Scarp to Gidgegannup**

#### **Background**

Main Roads has indicated that the recommended alignment for this section of the highway is basically the same as that for the approved Perth - Adelaide Highway route which follows close to Toodyay Road. Minor amendments have been proposed to remove the proposed grade separated interchanges at Stoneville Road and Roland Road. A change has also been made to the location of the future Hills Spine Road interchange to suit development in the area. Main Roads advises that the Shire of Swan has agreed to this amendment and to the loss of part of the Regional Rubbish Disposal Site which will be caused by the relocation of the interchange (Main Roads, 24 March 1993).

#### **The Environmental Protection Authority's evaluation**

The changes to the proposal for the Top of Darling Scarp to Gidgegannup section involve minor design alterations to the approved highway route and are not considered to have a significant impact upon the environment. The Environmental Protection Authority has therefore concluded that the changes proposed are environmentally acceptable.

### **3.2.4 The alignment from Campersic Road up the escarpment to top of Darling Scarp (Red Hill) through John Forrest National Park (M21)**

#### **Background**

The 1988 Eastern Corridor Major Roads Study recommended that the alignment of the Perth - Adelaide highway across the Darling Scarp should follow Toodyay Road as closely as possible to avoid the excessive environmental impact and cost of an entirely new alignment (Travers Morgan Pty Ltd, 1988).

In its Bulletin 380, the Environmental Protection Authority recognised that "...the 'Orange Route' would impinge to a limited degree on the northern edge of System 6 Area M21 extension to John Forrest National Park, mainly in the form of necessary road widening along the existing Toodyay Road alignment", and that "...the degree of impact on existing conservation areas and resources is acceptable in principle" (Environmental Protection Authority, 1989).

Main Roads has advised that the original highway alignment at this location directly affected approximately 17.14 hectares of John Forrest National Park. (Main Roads, 18 March 1994) As indicated above, this impact was mainly where widening works to the Toodyay Road would be required through the Park. John Forrest National Park is vested in the National Parks and Nature Conservation Authority and managed by the Department of Conservation and Land Management.

It is this section of the alignment which is of most concern with regard to safety. Recent investigations by Main Roads indicate that safety problems may occur on the approved highway route at the escarpment. (Main Roads. n.d., unpub.). In the event of brake failure, trucks may overturn or may cross the median into opposing lanes. This led to a study of alternative options for this section of the highway by Main Roads, of which a number were considered.

Following its investigations, Main Roads identified an alternative, preferred highway alignment, known as Option 7. Option 7 does not follow Toodyay Road at this section but diverts to the south (Figure 3). Main Roads has indicated that Option 7 offers the least cost, lowest level of social impact and the least obtrusive route of all the options examined.

However, the alignment now preferred by Main Roads for this section (Option 7) also affects a portion of John Forrest National Park. Main Roads have advised that Option 7 would require approximately 12.62 hectares of the Park, a reduction of 4.52 hectares over the original alignment.

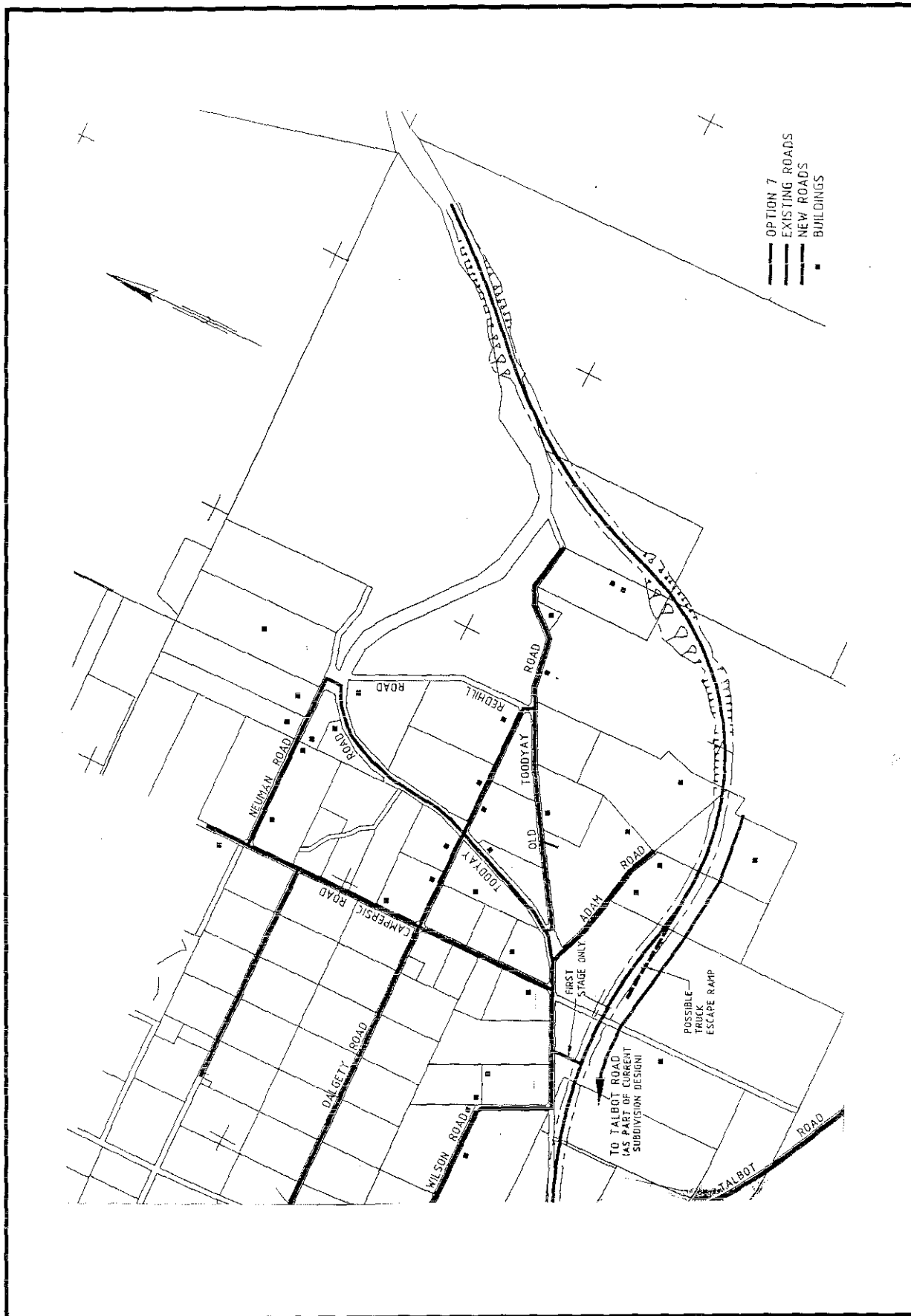


Figure 3. Option 7 - road network.

## **Impact on John Forrest National Park**

### Vegetation

In consultation with the Department of Conservation and Land Management, Main Roads engaged consultants to conduct a Flora, Vegetation and Fauna Survey for the section of Option 7 within John Forrest National Park.

The following plant communities were defined and mapped along the alignment. (E M Mattiske and Associates & Ninnox Wildlife Consulting, 1994):

- Woodland of *Eucalyptus wandoo* - *Eucalyptus calophylla* with mixed dense understorey of *Hakea trifurcata* and *Petrophile biloba* on upper slopes;
- Open Woodland of *Eucalyptus calophylla* - *Eucalyptus marginata* - *Eucalyptus wandoo* with disturbed understorey (partly cleared) on upper slopes;  
Closed Heath of Proteaceae and Myrtaceae spp. with pockets of Herbfields and an Open Woodland of *Eucalyptus wandoo* - *Allocasuarina huegeliana* on escarpment and valley with exposed granite rocks;
- Open Woodland of *Eucalyptus wandoo* over dense understorey dominated by species of Proteaceae and Myrtaceae on upper slopes of escarpment; and
- Open Woodland of *Allocasuarina huegeliana* - *Eucalyptus wandoo* on upper slopes of escarpment associated with granite outcrops.

The survey report indicates that all of these plant communities occur in other parts of John Forrest National Park.

### Flora Species

The survey also indicated that no rare flora protected by the Wildlife Protection Act and administered by the Department of Conservation and Land Management, were found. However, the report did indicate that a Declared Rare Flora species *Anthocercis gracilis* has been recorded within the park boundaries in communities similar to those which occur on the survey area. As the survey was undertaken during December 1993 the consultants have recommended to Main Roads that additional survey be undertaken probably during the months of September to October when flowering of this species is more likely and the potential for its identification is enhanced.

### Fauna

It is anticipated that the road works proposed will have some impact upon fauna mainly associated with loss of natural vegetation and habitat. This impact was recognised by the Environmental Protection Authority in its original assessment of the highway alignment. In Bulletin 380, the Environmental Protection Authority considered that:

*Final design detail, landscaping and road alignment will have a major bearing on the degree impact.*

## **Views of relevant agencies**

### Views of Main Roads

Main Roads has committed to the Department of Conservation and Land Management (Main Roads, 14 February 1994):

- that it would undertake a survey in September 1994 for the Declared Rare Flora, *Anthocercis gracilis*, and that in the event that *A. gracilis* is found within the proposed road reservation an application would be made to the Minister for Department of Conservation and Land Management for permission to disturb the site; and

- that Main Roads would remove the road materials and rehabilitate a section of Toodyay Road, (length approximately 1100 metres) wholly within the Park and which would be made redundant by the new Option 7 highway alignment.

Views of the Department of Conservation and Land Management and the National Parks and Nature Conservation Authority

The Department of Conservation and Land Management (CALM) has indicated to Main Roads (Department of Conservation and Land Management, 9 March 1994):

- that it supports the proposal for a re-survey for the declared rare flora *Anthocercis gracilis* in September 1994;
- that if the re-survey locates this species within the alignment a proposal to “take” will be required, for approval by the Hon Minister for the Environment;
- that CALM would wish to liaise with Main Roads in preparing a proposal which aims to maximise protection of the species and minimise any potential damage; and
- that CALM would be pleased to accept the incorporation of the old road reserve into the National Park, once the area has been rehabilitated to native vegetation, to a standard acceptable to CALM.

The Environmental Protection Authority has received advice from the National Parks and Nature Conservation Authority that it concurs with the above comments from CALM.(National Parks and Nature Conservation Authority, 16 March 1994)

**The Environmental Protection Authority’s evaluation**

The following issues are relevant to the Environmental Protection Authority’s consideration of the new Option 7 alignment.

1. In its original assessment (Bulletin 380), the Environmental Protection Authority recognised and accepted in principle, that some impact to John Forrest National Park would result from the highway proposal.
2. The Option 7 alignment presents a reduction in the overall area of impact to the Park.
3. Main Roads has indicated its intention to undertake a specific survey for the rare flora species *Anthocercis gracilis* and to rehabilitate the existing section of Toodyay Road (length approximately 1100 metres) within John Forrest National Park.
4. Both the management agency, the Department of Conservation and Land Management, and the vesting agency, the National Parks and Nature Conservation Authority, find Option 7 acceptable, subject to certain conditions being met.
5. Option 7 is significantly safer for heavy vehicle traffic than the Original National Highway alignment for this section.
6. Land associated with the Option 7 alignment has already received some preliminary approvals through the planning system and is now included in a Planning Control Area. This action was initiated by the planning agencies to enable development to proceed making allowance for the future road reserve.

The Environmental Protection Authority is keen to ensure that the environmental impacts of Option 7 on John Forrest National Park are identified and properly managed. In considering this issue, the Environmental Protection Authority recognises that advice from the National Parks and Nature Conservation Authority and the Department of Conservation and Land Management is essential in determining the acceptability or otherwise of the environmental impacts.

Accordingly, the Environmental Protection Authority considers that Main Roads should undertake another survey of the proposed highway alignment within John Forrest National Park to determine the presence of the rare flora species *Anthocercis gracilis* prior to commencement of construction and, if found to be present, prepare and subsequently

implement an approved strategy for the management of this species, to the requirements of the Minister for the Environment on advice from the Department of Conservation and Land Management.

The Environmental Protection Authority also considers that Main Roads should prepare and subsequently implement a strategy for the removal of the road materials and rehabilitation of a section of Toodyay Road (length approximately 1100 metres) within John Forrest National Park made redundant by the Perth to Adelaide National Highway alignment to the satisfaction of the Minister for the Environment on advice from the Department of Conservation and Land Management and the Department of Land Administration.

Subject to the above, the Environmental Protection Authority considers that the impacts to John Forrest National Park associated with the Option 7 alignment of the Perth to Adelaide National Highway at this location are acceptable and recommends that it could proceed subject to the following recommendation.

### **Recommendation 1**

**The Environmental Protection Authority recommends that, prior to commencement of construction, the proponent should prepare and implement a report :**

- **outlining measures to protect rare and endangered species within John Forrest National Park, including a flora survey, to determine the presence of the rare flora species *Anthocercis gracilis*, and prepare a management strategy for this species;**
- **outlining a strategy for rehabilitation of the section of Toodyay Road (following removal of the road materials) within John Forrest National Park made redundant by the Perth to Adelaide National Highway alignment;**

**to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority and the Department of Conservation and Land Management.**

### **3.2.5 An additional section to the Perth to Adelaide Highway from Roe Highway to Campersic Road over Jane Brook (M20)**

#### **Background**

The Eastern Corridor Major Roads Study only considered the National Highway route east of Campersic Road. The Department of Planning and Urban Development and Main Roads Western Australia subsequently commissioned a separate study for the route west of Campersic Road which made recommendations on the future road system to connect the National Highway to Roe Highway at Middle Swan.

The results of the above study were published in a report dated February 1990. The following extract is from that report:

*“The Proposed National Highway interchanges with Roe Highway about 500 metres south of the present Toodyay Road intersection. It then runs north east to join the line of Toodyay Road near the junction of Farrall Road and continues along the line of Toodyay Road to join the Orange Route at Campersic Road. The detailed route has been selected ... to preserve the present highway crossing of Jane Brook at Dickson’s bridge with widening on the south side only.”* (R Taylor & W Burrell 1990)

This section of the highway alignment crosses the System 6 Recommendation Area (M20), Jane Brook. (Environmental Protection Authority, 1983).



Main Roads has advised that the road alignment recommended in the Taylor & Burrell report (Taylor and Burrell 1990) and was subsequently covered by Planning Control Area No. 14.

A slight change to the road alignment recommended in the Taylor and Burrell report is proposed at the eastern end between Wilson Road and Campersic Road to suit the revised route for the section east of Campersic Road. (Main Roads, 24 March 1993).

Although this section of the National Highway was not part of the original assessment and has not previously been referred to the Environmental Protection Authority, it forms a logical extension to the route assessed and is therefore considered in this report.

### **Impact on Jane Brook**

The System 6 Recommendation Area (M20) Jane Brook, is affected by the alignment for this section of the proposed National Highway which will need to be crossed immediately adjacent to the existing Dickson's bridge.

Important management considerations for Jane Brook, identified in recommendation M20 of the Environmental Protection Authority's System Six report include:

*"...encouraging the growth and regeneration of local indigenous flora; only allowing recreation activities which are compatible with the conservation of flora and fauna; providing pathways along the riverbanks; restricting vehicle access; and the areas potential for clay, loam and sand"* (Environmental Protection Authority, 1983).

Main Roads has advised that they propose to build a new bridge immediately adjacent to the existing Dickson's bridge and that there will be a loss of some fringing vegetation adjacent to the existing bridge and under the proposed new bridge to the south. There is also potential for pollution to the stream including sedimentation (Main Roads, 13 April 1994). The existing bridge will be retained to provide a service to local traffic.

However, Main Roads has given a commitment to produce and implement a management plan in the design phase of the project to the satisfaction of the Environmental Protection Authority. The management plan will address such tasks as using indigenous flora for landscaping the area, providing access along river banks for pedestrians and bicycles, conservation of existing flora and fauna where possible, drainage management and landscaping and management for vehicular access to the worksite. Included in the management plan will be actions to maintain bank stability and restrict sediment transport into the stream.(Main Roads, 13 April 1994)

### **The Environmental Protection Authority's evaluation**

The Environmental Protection Authority recognises that:

- if the Perth to Adelaide National Highway is to be connected to the Roe Highway and thus the rest of the highway system, it will have to cross Jane Brook somewhere in this vicinity;
- the location of the National Highway route for this section is generally along the alignment of the existing Toodyay Road (except in the vicinity of Roe Highway) and, as such, minimises the impacts on environmentally sensitive areas; and
- Main Roads has committed to prepare and implement a Management Plan through the detailed design and implementation stages of the proposal to the satisfaction of the Environmental Protection Authority which will address the specific environmental issues associated with the crossing of Jane Brook.

Accordingly, the Environmental Protection Authority considers that the environmental impacts associated with this section of the Perth to Adelaide National Highway, including issues associated with the crossing of Jane Brook are acceptable and could proceed subject to Recommendation 2.

## **Recommendation 2**

**The Environmental Protection Authority recommends that, prior to commencement of construction, the final design of the road within conservation area M20, the bridge over Jane Brook and the associated landscape and drainage management plans be prepared to the satisfaction of the Minister for the Environment on the advice of the Department of Planning and Urban Development and the Department of Environmental Protection.**

### **3.2.6 Changes in emphasis of environmental impact assessment since 1989**

#### **Background**

Since 1989, the Environmental Protection Authority has significantly changed its emphasis in environmental impact assessment for proposals such as roads. This is due to a number of factors discussed below.

The first is due to the willingness of agencies such as Main Roads to accept responsibility for the management of environmental issues such as roadside vegetation and landscape. This willingness has increased over the past ten years to the extent that the management of many environmental issues is delegated to other agencies to varying degrees.

In many instances the delegation is within guidelines prepared by the agencies for different environmental issues. The adoption by Main Roads of guidelines for the satisfactory management of traffic noise so that new roads are planned and managed so that noise will be below 68dB(A) at the nearest residences is an example. Such levels appear appropriate to the Environmental Protection Authority.

The second is due to the recognition by the Environmental Protection Authority that, where appropriate legislation exists, social and economic issues are generally the responsibility of other agencies and, that where such mechanisms exist, the Environmental Protection Authority only becomes involved with evaluation of the environmental issues. Planning for and managing roads such as the Perth to Adelaide Highway within the metropolitan region are the main responsibility of the State Planning Commission and Minister for Planning through an amendment to the Metropolitan Region Scheme currently being finalised through the planning process and Main Roads and the Minister for Transport through the final design and construction stages. As these agencies will undertake the social and economic evaluation of this road, the Environmental Protection Authority will restrict its assessment to the significant environmental issues.

Finally, the Wildlife Conservation Act, which requires all agencies to protect and manage species gazetted under that Act to the satisfaction of the Minister for the Environment on the advice of the Department of Conservation and Land Management, ensures that any species which have been gazetted will be adequately protected. Accordingly, unless the matter involves areas of endangered vegetation or areas which have been nominated for conservation, the Environmental Protection Authority need not become involved. The Environmental Protection Authority's strategy for conservation (section 3.1.2. of this Bulletin) reflects this position.

#### **The Environmental Protection Authority's evaluation**

Given the changes in emphasis that have occurred in environmental impact assessment since 1989, subject to new conditions to reflect the recommendations in this report, the Environmental Protection Authority considers Condition 2 (requiring an environmental management programme) and 3 (relating to an historic site) of the Environmental Statement for the proposal of 22 November 1989, should be amended to reflect these changes. Accordingly, it is recommended that Conditions 2 and 3 be deleted.

### **Recommendation 3**

**The Environmental Protection Authority recommends that Conditions 2 and 3 of the Environmental Statement for the proposal of 22 November 1989 be deleted.**

#### **3.2.7 Additional standard conditions**

Since 1989, a number of standard conditions regarding project management are automatically included in Environmental Statements. The Environmental Protection Authority recommends that the following standard conditions be added to the Environmental Statement for the proposal to ensure the project can be managed more effectively and to ensure conformity with recent statements.

#### **Management of non substantial changes**

The Environmental Protection Authority notes that during the detailed implementation of proposals, it is often necessary or desirable to make minor and non-substantial changes to the designs and specifications which have been examined as part of the Environmental Protection Authority's assessment. The Environmental Protection Authority believes that subsequent statutory approvals for this proposal should make provision for such changes, where it can be shown that the changes are not likely to have a significant effect on the environment.

- **Subject to the conditions in the amended statement, 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.**

Condition 4 of the 1989 Environmental Statement requires the proponent to refer to the Environmental Protection Authority 'any environmentally significant variations'. Given the proposed changes to statement to introduce the new standard conditions addressed above, Condition 4 is no longer required.

- **Conditions 4 of the Environmental Statement of 22 November 1989 should be deleted.**

#### **Management of transfer of the proposal**

The Statement should include a "transfer" clause which has been used in all recent statements issued by the Minister for the Environment and which allows for a continuity of environmental responsibility by any new proponent.

- **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.**

## **Audit**

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

- **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.**

## **On-going role of the Minister for the Environment and various agencies**

A number of procedural statements are now incorporated in the Minister’s Statement to clarify the roles of the Minister, the Environmental Protection Authority and other government agencies in the verification of compliance and the determination of any disputes arising thereof.

- **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.**
- **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.**

## **Recommendation 4**

**The Environmental Protection Authority recommends that standard conditions to deal with:**

- **management of future non-substantial changes to the proposal;**
- **future transfer of the proposal;**
- **audit; and**
- **the on-going role of the Minister for the Environment and other various agencies;**

**should be added to the Environmental Statement and that Conditions 1 and 4 of the Environmental Statement of 22 November 1989 should be deleted.**

## **4. Discussion and synthesis**

In assessing the original Eastern Corridor Major Roads Study (EPA Bulletin 380) and specifically the proposed Perth to Adelaide National Highway route, the Environmental Protection Authority gave particular consideration to the following potential environmental and other effects:

- land acquisition and properties affected, including noise and landscape issues;
- vegetation and wildlife, particularly the impact of the highway on geographically restricted species;
- hydrology and wetlands; and
- conservation areas and System 6 Recommendation Areas, in particular John Forrest National Park and Reserve 2145 near Gidgegannup.

The Environmental Protection Authority has evaluated the impact of the proposed changes to the highway alignment in relation to these issues and the additional impacts on Jane Brook M20 resulting to a small extension of the route to join the Perth to Adelaide Highway to the Roe

Highway and has recommended that the original environmental conditions be amended to reflect the changes proposed and the changes in emphasis in environmental impact assessment since 1989. The Environmental Protection Authority also considers that a number of new standard procedural conditions need to be incorporated in the environmental statement in order to conform with more recent statements.

Following consideration of the environmental issues indicated in section 3 of this report and the proponents response to these, the Environmental Protection Authority has concluded that the modifications to the Perth to Adelaide National Highway route are acceptable and recommends that the environmental statement be amended accordingly.

## **5. Conclusions and recommendations**

The Environmental Protection Authority concludes the modifications to the Perth to Adelaide National Highway route alignment are environmentally acceptable and recommends that they could proceed, subject to the recommendations in this report.

### **Recommendation 5**

**The Environmental Protection Authority concludes that:**

- **the modifications to the Perth to Adelaide National Highway route are acceptable; and**
- **the Environmental Statement for the proposal of 22 November 1989 should be updated to reflect changes in emphasis in environmental impact assessment since 1989 and to include standard conditions relating to more effective project management;**

**and recommends that the Environmental Statement for the proposal of 22 November 1989 be amended as reported in Environmental Protection Authority Bulletin 748. The proponent shall fulfil the commitments made and implement the environmental management measures described in Chapter 17 of the Public Environmental Report and as updated through this re-assessment of the proposal (copies attached in Appendix 2), provided that the commitments are not inconsistent with the conditions or procedures contained in this statement.**

## **6. Recommended environmental conditions**

The following Recommended Environmental Conditions would amend the Minister's original Statement (Attachment 1) and apply additional conditions to reflect the recommendations in this report and ensure a continued review of the environmental performance of the development.

***DRAFT RECOMMENDED ENVIRONMENTAL CONDITIONS***  
**STATEMENT TO AMEND CONDITIONS APPLYING TO A PROPOSAL**  
**(PURSUANT TO THE PROVISIONS OF SECTION 46 OF THE**  
**ENVIRONMENTAL PROTECTION ACT 1986)**

PROPOSAL: EASTERN CORRIDOR MAJOR ROADS STUDY  
(048 / 815)

CURRENT PROPONENT: MAIN ROADS WESTERN AUSTRALIA

CONDITIONS SET ON: 20 NOVEMBER 1989

Conditions 1 to 4 to be deleted and replaced by the following:

## **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, including the proposed modifications to the highway route in the following sections:

- Gidgegannup to the Metropolitan Region Scheme boundary near Wooroloo;
- Gidgegannup townsite;
- top of Darling Scarp to Gidgegannup;
- Campersic Road to top of Darling Scarp; and
- Roc Highway to Campersic Road,

as reported in Environmental Protection Authority Bulletin 748, the proponent shall fulfil the commitments made in 1989 (ie at the time of the assessment) and the consolidated commitments of July 1994, published in EPA Bulletin 748, and shall implement the environmental management measures described in Chapter 17 of the Public Environmental Report; provided that the commitments and environmental management measures are not inconsistent with the conditions or procedures contained in this statement. (Copies of the consolidated commitments of July 1994 and Chapter 17 of the Public Environmental Report are 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 the conditions in this amended statement, 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 John Forrest National Park**

3-1 The proponent shall design the road through the John Forrest National Park so that the environmental impacts on the Park will be minimised.

3-2 Prior to commencement of construction, to achieve the objective of condition 3-1, the proponent shall prepare a management plan to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority:

This plan shall outline:

- 1 measures to protect rare and endangered species, including a flora survey of the proposed National Highway alignment within John Forrest National Park to determine the presence of the rare flora species *Anthocercis gracilis* and a management strategy for this species; and
- 2 a strategy for rehabilitation of the section of Toodyay Road (following removal of the road materials) within John Forrest National Park made redundant by the Perth to Adelaide National Highway alignment.

3-3 The proponent shall implement the management plan required by condition 3-2 to the requirements of the Environmental Protection Authority on advice of the Department of Conservation and Land Management.

## **4 Jane Brook**

- 4-1 The proponent shall design the road and bridge over Jane Brook so that the impacts on the conservation area will be minimised.
- 4-2 Prior to commencement of construction, to achieve the objective of condition 4-1, the proponent shall complete the final design for the road within the conservation area and the bridge over Jane Brook, including the landscape and drainage management plans, to the requirements of the Minister of the Environment on advice of the Environmental Protection Authority and the Department of Planning and Urban Development.
- 4-3 The proponent shall implement the design required by condition 4-2 to the requirements of the Environmental Protection Authority on advice of the Department of Planning and Urban Development.

## **5 Proponent**

These conditions legally apply to the nominated proponent.

- 5-1 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.

## **6 Compliance Auditing**

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

- 6-1 To help verify environmental performance, the proponent, in consultation with the Environmental Protection Authority, shall prepare periodic Progress and Compliance Reports.

### **Procedure**

- 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.
- 3 When constructing the road, Main Roads Western Australia should do so in a manner that is consistent with the requirements of this statement.

## **7 References**

Department of Conservation and Land Management, Letter to Main Roads, 9 March 1994

Environmental Protection Authority (1983), Conservation Reserves for Western Australia as Recommended by the Environmental Protection Authority. The Darling System - System 6 Part I: General Principles and Recommendations. Department of Conservation and Environment Report 13, Perth, Western Australia.

- Environmental Protection Authority (1983), Conservation Reserves for Western Australia as Recommended by the Environmental Protection Authority. The Darling System - System 6 Part II: Recommendations for Specific Localities. Department of Conservation and Environment Report 13, Perth, Western Australia.
- Environmental Protection Authority (1989), Eastern Corridor Major Roads Study. State Planning Commission, Main Roads Department, Shire of Mundaring, Shire of Swan. Bulletin 380. Environmental Protection Authority, Perth, Western Australia.
- Main Roads Western Australia. (1990), (unpub.), Perth-Adelaide National Highway Review of Proposed Gidgegannup Bypass Route Middle Swan to Wundowie Section. Report No. 118P. .
- Main Roads Western Australia.n.d., (unpub.), Perth - Adelaide National Highway Route Middle Swan to Wundowie Red Hill Section (Campersic Road - Top of Darling Scarp), includes Annexure 1 (Report No. 0128P), Annexure 2, and Annexure 3 (Report No. 0146P).
- Main Roads Western Australia.n.d., (unpub.), Perth - Adelaide National Highway Route Middle Swan to Wundowie Review of Access and Junction Types.
- Main Roads Western Australia, Letter to Environmental Protection Authority, 24 March 1993
- Main Roads Western Australia, Letter to Department of Conservation and Land Management, 14 February 1994
- Main Roads Western Australia, Letter to Department of Environmental Protection, 18 March 1994
- Main Roads Western Australia, Letter to Environmental Protection Authority, 13 April 1994
- Mattiske E M and Associates & Ninox Wildlife Consulting. (1994). Flora, Vegetation and Fauna Survey John Forrest National Park Orange Route Diversion. Main Roads Department.
- National Parks and Nature Conservation Authority, Letter to Department of Environmental Protection, 16 March 1994
- Taylor R & Burrell W. (1990). Proposed National Highway (Toodyay Road) Roe Highway - Campersic Road. Department of Planning and Urban Development, Main Roads Department
- Travers Morgan Pty Ltd. (1988). Eastern Corridor Major Roads Study; Final Report incorporating Public Environmental Report. State Planning Commission, Main Roads Department, Shire of Mundaring, Shire of Swan.
- Travers Morgan Pty Ltd. (1988). Eastern Corridor Major Roads Study; Technical Papers. State Planning Commission, Main Roads Department, Shire of Mundaring, Shire of Swan.



# **Appendix 1**

**Environmental Statement  
22 November 1989**



WESTERN AUSTRALIA  
MINISTER FOR ENVIRONMENT

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED (PURSUANT TO THE  
PROVISIONS OF THE ENVIRONMENTAL PROTECTION ACT 1986)

EASTERN CORRIDOR MAJOR ROADS STUDY

This proposal may proceed to detailed design and Metropolitan Region Scheme amendment subject to the following conditions:

1. The proponent shall adhere to the proposal as assessed by the Environmental Protection Authority and shall fulfil the commitments made and implement the environmental management measures described in Chapter 17 of the Public Environmental Report (copy attached).
2. The proponent shall, at the appropriate time prior to construction, and consistent with the findings of the Environmental Protection Authority's Assessment Report, provide to the satisfaction of the Minister for Environment, details of:
  - . areas of natural vegetation to be removed and retained, once final carriageway alignments and route variations from those indicated in the Public Environmental Report, are known;
  - . measures to protect rare and endangered species;
  - . dimensions and areas of land to be removed from Reserve 2145, John Forrest National Park, and the proposed northerly extensions to John Forrest National Park;
  - . the dimensions, including elevations and cross sections to indicate visual consequence and land area required, of major proposed earthworks;

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- . all landscaping, replanting and rehabilitation plans, including those associated with construction works;
  - . creek crossings, modification of existing water courses and hydrology, and method of disposal of run-off into the natural drainage system;
  - . noise attenuation methods along the routes, especially in the Wooroloo - Wundowie locality;
  - . measures taken to minimise the disruption caused by construction to adjacent landowners and affected residents; and
  - . any other aspect of environmental significance associated with the proposals which subsequently arises.
3. The proponent shall implement, to the satisfaction of the Minister for Planning, measures to preserve or relocate sites of historic or cultural significance. Special consideration shall be given to the site of Chipper's Leap.
4. The proponent shall refer to the Environmental Protection Authority any environmentally significant variations in the proposed road reserve alignments or location of major intersections from those described in the Public Environmental Report.



Bob Pearce MLA  
MINISTER FOR ENVIRONMENT

## **Appendix 2**

### **Commitments**

## **CONSOLIDATED LIST OF COMMITMENTS MADE BY MAIN ROADS FOR THE ASSESSMENT OF THE EASTERN CORRIDOR MAJOR ROAD STUDY UNDERTAKEN IN 1994**

### **John Forrest National Park**

1. Main Roads undertakes to have additional survey work completed in September 1994 for the rare flora species *Anthocercis gracilis* along the proposed alignment of the highway through the John Forrest National Park.

The findings of the survey will be added to the original 'Flora, Vegetation and Fauna Survey undertaken by EM Mattiske and Associates & Ninox Wildlife Consulting completed in January 1994 and a copy will be sent to the Executive Director of the Department of Conservation and Land Management.

2. Any clearing will be restricted to the more disturbed northern section of the Park near Toodyay Road and wherever possible the clearing of vegetation will be kept to a minimum.
3. All topsoil to be used for verge rehabilitation should be stored for a minimum period on already cleared areas.
4. Rehabilitation of cleared areas will be commenced as soon as is practicable.
5. Rehabilitation will be structured towards producing habitats conforming as close as possible to the original site prior to clearing, including the variety in structure and floristic compositions in the various communities and habitats
6. Main Roads will consult with CALM and officers on the provision of access to the Park from the National Highway.
7. Main Roads will remove the road materials and rehabilitate the strip of land of the existing Toodyay Road at no cost to the Department of Conservation and Land Management.

### **Jane Brook**

8. A management plan will be produced by Main Roads in the design phase of the project to the satisfaction of the Environmental Protection Authority.

The management plan will address such tasks as using indigenous flora, access along river banks by foot and bicycle, conservation of existing flora and fauna, drainage management, landscape plans, and vehicular access to the worksite. Included in the management plan will be actions to maintain bank stability and restrict sediment transport into the stream

9. Consultations with Aboriginal People have been held by specialist consultants retained by Main Roads. Aboriginal concerns have been noted in reports that have been referred to the Department of Aboriginal Sites.

Approval to disturb the site under Section 18 of the Aboriginal Heritage Act has been granted by the Minister for Aboriginal Affairs. The crossing of Jane Brook will be the subject of negotiations with Aboriginal People from the region at the design phase of the project. Concerns regarding the bed and banks of the stream will be addressed at this stage.

### **Reserve 2145**

10. The new alignment, which will bypass Gidgegannup Townsite on the northern side will not affect Reserve 2145.

## CHAPTER 17 Environmental Management Implications

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This chapter outlines a number of initiatives that should be taken to reduce the impact of the recommended schemes on the environment and to integrate them into their surroundings, should the study recommendations be adopted. These initiatives are all classed as environmental management issues in the context of the Environmental Protection Authority's guidelines for the Public Environmental Report, and would need to be addressed in the continuing formal environmental appraisal process for any schemes taken forward.

### GREAT EASTERN HIGHWAY SCHEMES

#### Design

A landscaping and planting scheme should be included in the detailed design, to provide relief for surrounding properties from noise and visual impacts wherever possible.

The need for cyclist and pedestrian routes along and across the route should be assessed and provisions made accordingly. Movements between residential areas and schools, the Undercliffe Hospital and the Greenmount Library and Hall should be considered. Crossings on the Highway should be included if and where appropriate.

The impact of the six lane widening scheme on Chipper's Leap is recognised as a serious effect. The feasibility of establishing a nearby memorial site should be investigated and discussed with interested parties.

#### Land Acquisition

A detailed land use policy should be prepared that identifies preferred uses and access arrangements for land alongside the Highway. The policy should concentrate upon the re-establishment of residential use for most of the land, but could also identify sites for local retail use and for landscaping, paving and planting to improve the civic amenities of the road surroundings and to mitigate noise impacts.

In conjunction with the above, special compensation measures for displaced residents should be investigated. Consideration should be given to changing current legislation so that sufficient funds can be provided to those that wish to rebuild further back on their remaining land. Some of the properties affected have been occupied by the same families for several generations, and the occupants should be given the opportunity to stay on their land if they so desire.

### ORANGE ROUTE

#### Design

If the long term provision of grade separated junctions is not required (subject to a relaxation of the national highway design criteria), the impact of the Orange route at junction sites can be substantially reduced. The design of the route should be reviewed in this event.

All new creek crossings along the route should be designed to avoid disruption to natural drainage regimes and hence creek vegetation and habitats. Bridges may prove preferable to culverts at some locations.

Detailed design of road drainage should include careful selection of run-off points into watercourses to minimise the risk of pollution from road run-off.

Measures should be taken to avoid or minimise the loss of restricted species of vegetation located alongside the route. In the first stage these are *Acacia Barbinervis* (two sites) and in the ultimate scheme, *Ulex europaeus*, *Baccharis pumila* and *Botrychium*.

## **SUMMARY**

The potential environmental impact of the recommended schemes can be considerably reduced by attention to the management measures outlined. In particular the impact of widening Great Eastern Highway on adjacent land and property would be lessened if a land use policy was prepared and if legislation were changed to make compensation sufficient for owners to rebuild on their remaining land should they wish.

The impact of the first stage of the Orange route is for the most part, manageable as described.

In its ultimate form the impact (and the cost) of the Orange route could be significantly reduced if grade separated interchanges were not required.

A landscaping and planting scheme should accompany each stage of the route, with the aims of minimising noise and visual impacts, rehabilitating cleared areas after road construction, avoiding erosion effects from surface run-off and where appropriate, linking larger stands of existing native vegetation to improve the availability of wildlife habitats.

Farm crossings should be provided if appropriate where the road severs significant areas of land within existing holdings. Eight lots are severed in the first stage to varying degrees; each should be examined to assess the need for separate crossings.

Access along the bridle path in the old railway reserve should be retained across the route. A path across the verges to enable users to cross the road at-grade would probably suffice for the first stage of the route; if a grade separated interchange with Werribee Road is built eventually the path may need to be diverted alongside Werribee Road to cross the junction site.

An archaeological survey of the route would be necessary before commitment to an amendment to the Metropolitan Region Scheme, to establish the presence or otherwise of any archaeological sites in the proposed road reserve.

## Construction

Measures should be taken during construction to restrict pollution from run-off, sedimentation of watercourses and nuisances such as dust and construction noise, in accordance with accepted road construction practice. Areas prone to Jarrah die-back should be identified and protective measures taken to prevent the disease being spread, although there are few such areas known along the route. At an early stage, fencing should be erected to prevent farm animals straying onto the construction site.

The first stage of the route is expected to have a surplus of cut material, so imported earthworks should not be required except special materials such as sub-base and road-base. Disposal of surplus material should also cause few problems as there is always a high demand for fill in the metropolitan area. However, appropriate sites should be found for disposal of material that cannot be re-used. Appropriate routes should be identified for construction vehicles; once a haul road is established it would be desirable to ban them from using minor roads.

Any borrow pits that might be required for the works should be identified at an early stage so that their possible environmental, visual and noise impacts may be assessed and management measures identified. The same applies to the location of site offices and machinery compounds.

## HILLS SPINE ROAD

### Design

The concept for the Hills Spine Road should be developed to a detailed design. The precise alignment of the new section from Red Hill to Roland Road should be determined, considering the effects on hydrology and vegetation, visual impact and the relationship with surrounding development. Once a design is finalised, land should be set aside in future subdivisions to provide for the road.

Adjacent new subdivision layouts should be designed to avoid direct access to the road from individual lots, and houses should be positioned where noise and visual impact from the new road will be minimised.

### Construction

Similar general comments would apply on construction of the Hills Spine Road to those given above for the Orange route.