

# **Roe Highway, Stages 3 to 5, Welshpool Road to South Street.**

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**Main Roads of Western Australia**

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

**Environmental Protection Authority  
Perth, Western Australia  
Bulletin 709  
October 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 11 November 1993

## Environmental Impact Assessment (EIA)

### Process Timelines in weeks

| Date | Timeline commences from receipt of full details of proposal by proponent                    | Time (weeks) |
|------|---|--------------|
|      | Proponent Document Released for Public Comment  | 8            |
|      | Public Comment Period Closed<br><i>5/7/93</i>   |              |
|      | Issues Raised During Public Comment Period Summarised by EPA and Forwarded to the Proponent | 2            |
|      | Proponent response to the issues raised received  | 15           |
|      | EPA reported to the Minister for the Environment  | 1            |

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## Summary and recommendations

Main Roads of Western Australia has proposed to build further portions of the Roe Highway from Welshpool Road, Beckenham to South Street, Canning Vale. Main Roads has indicated that Roe Highway will provide access to areas of manufacturing concentration and access to the termini of National Highways, airports, ports, freight forwarding centres and major rail heads. In summary, Roe Highway along with Reid and Tonkin Highways, will join other arterial roads to provide easy access to these commercially significant centres from all districts throughout the Perth region.

Roe Highway will require a bridge over the Canning River and interchanges with several other roads. A flyover at Brixton Street, Kenwick is also proposed. A number of seasonal wetlands will be affected by the construction of the Roe Highway.

A total of 19 submissions were received during the public submission phase. There were several very substantial submissions from the public. The response from the community and the considerable detail provided were appreciated by the Environmental Protection Authority. Major issues raised included: transport planning and management; cumulative impacts; archaeology and ethnography; noise impacts; the interchange between Albany Highway and Roe Highway on the alignment of Wimbledon and Rupert Streets and the Canning River Floodplain; general flora and fauna issues; the upper Canning River (System 6 recommendation M75); wetlands and watercourses and protection of the Brixton Street conservation reserves.

### Recommendation 1

**The Environmental Protection Authority has concluded that the proposed extensions to Roe Highway from Welshpool Road Beckenham to South Street Canning Vale, as modified during the assessment process, could be made environmentally acceptable.**

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

- **the potential impacts on the area proposed for regional recreation and conservation by the System 6 recommendation M75;**
- **the potential impact upon the areas proposed for conservation at Brixton Street; and**
- **retention of the biological functions of Swan Coastal Plain wetlands which may be affected by this proposal.**

**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 and Recommended Environmental Conditions.** (Recommended Environmental Conditions are in Section 6)

#### Upper Canning River (System 6 recommendation M75)

Main Roads has recognised the regional recreation and conservation values of the Canning River and its floodplain in the bridge design for the River crossing. Once construction and rehabilitation are complete, the bridge will maintain active and passive recreation opportunities in and around this section of the Canning River, drainage will be collected for treatment prior to percolation to the groundwater or flow to the river, and the ecological links provided along the River banks will be maintained.

#### Proposed Brixton Street conservation reserves and access across the Roe Highway

Main Roads has considered six alternative design concepts for the proposed crossing at Brixton Street. Two alternative routes for the crossing of Roe Highway near Brixton Street have been put forward in submissions from the public.

Given the environmental values of the Brixton Street wetland suite, the Environmental Protection Authority concludes that consideration of any proposed road development in the Brixton Street area should meet the following environmental objectives:

- There should be no impacts upon populations of Declared Rare Flora.
- There should be no impacts upon the hydrology of the ephemeral wetlands.
- Brixton Street should be confined to the areas which are already disturbed within the current local authority road reserve.
- The linkages for fauna movement between the proposed conservation reserves on either side of Brixton Street should be maintained or enhanced.

The Environmental Protection Authority concludes that closure and rehabilitation of Brixton Street is the preferred strategy based on environmental considerations; it is also the option with the lowest cost for construction and environmental management. The Authority considers that Main Roads and the City of Gosnells should continue to consult with interested community groups to find a solution which meets local traffic planning requirements and provides the major environmental benefits of rehabilitating the vegetation and habitat link across Brixton Street.

**The Environmental Protection Authority believes that during the detailed design of the Roe Highway in the Brixton Street area, Main Roads and the City of Gosnells should continue to consult with the interested community groups to develop a solution which meets local traffic planning requirements, and provides for the rehabilitation of the vegetation and habitat link across Brixton Street.**

A number of options for the crossing of Roe Highway in the Brixton Street area which were detailed in the Public Environmental Review document, may meet the above environmental objectives. The following options, in the Authority's order of preference (highest to lowest preference) could be managed such that the environmental impacts of a crossing of Roe Highway in the Brixton Street area are made acceptable:

- Closure of Brixton Street with no alternative provided (Option 2).
- Closure of Brixton Street with an alternative provided (Option 3, subject to referral of the alternative to the Authority and possible environmental assessment).
- Brixton Street over Roe Highway using an extended bridge structure on the existing alignment (Option 5).
- Brixton Street over Roe Highway using retaining walls and culverts on the existing alignment (Option 6).

## **Recommendation 2**

**The Authority recommends that in order for Options 5 and 6 as stated in the Public Environmental Review, or any other proposed crossing of Roe Highway at Brixton Street, to be environmentally acceptable the following environmental objectives should be met by the proponent:**

- **There should be no impacts upon populations of Declared Rare Flora.**
- **There should be no impacts upon the hydrology of the ephemeral wetlands.**
- **Brixton Street should be confined to the areas which are already disturbed within the current local authority road reserve.**
- **The linkages for fauna movement between the proposed conservation reserves on either side of Brixton Street should be maintained or enhanced.**

(See Recommended Environmental Condition 3-2)

#### **Recommendation 4**

**The Authority recommends that prior to the commencement of any road works for the Roe Highway in the Brixton Street area (including Options 2, 3, 5 and 6 as stated in the Public Environmental Review), Main Roads should prepare an Environmental Management Programme detailing how the environmental objectives detailed in Recommended Environmental Condition 3-2 will be met, to the requirements of the Minister for the Environment on advice from the Department of Conservation and Land Management and the Environmental Protection Authority. The Environmental Management Programme shall also provide details of, but not be limited to:**

- **the final detailed design for any crossing of Roe Highway at Brixton Street;**
- **construction of fencing to confine vehicular movement and construction activity to the already disturbed areas within the current local authority road reserve;**
- **the management of dieback disease;**
- **the management of drainage during construction activities and following construction; and**
- **the induction of all personnel employed on the project in environmental management methods.**

(see Recommended Environmental Condition 3-3)

Option 1 for crossing of Roe Highway in the Brixton Street area, which is detailed in the Public Environmental Review document, involves using the full Metropolitan Region Scheme road reserve. The Authority understands that this alignment would not meet the environmental objectives stated in Recommended Environmental Condition 3-2. Therefore, this option is not environmentally acceptable and should not be permitted to proceed.

Submissions from the public identified another option for crossing Roe Highway in the Kenwick area. Bickley Road was nominated as a potential site for a cross-over. However, Bickley Road bisects the Yule Brook Nature Reserve and other areas proposed for conservation of flora and fauna (Lot 48 Brixton Street). This option would also have unacceptable environmental impacts and should not proceed.

#### **Recommendation 5**

**The Environmental Protection Authority concludes that Option 1 as stated in the Public Environmental Review, or a crossing of the Roe Highway at Bickley Road as proposed in public submissions are environmentally unacceptable and recommends that they do not proceed.**

(see Recommended Environmental Condition 3-5)

##### Swan Coastal Plain wetlands

A number of seasonal wetlands will be affected by this proposed extension to Roe Highway. These wetlands include a remnant of the high conservation value Brixton Street wetland suite which contains a population of the Declared Rare Flora *Aponogeton hexapetalus*. In addition, the Canning River floodplain, System 6 recommendation M75, will be the site of a bridge crossing the Canning River.

The main factors in protection of the seasonal wetlands in the Roe Highway reserve include assessment of the human use and natural values of the wetlands, and management based upon objectives derived from that assessment. In addition, protection of water levels and water quality through management of drainage (water balance) is required.

### **Recommendation 6**

**The Environmental Protection Authority recommends that prior to commencement of the construction of the extension of Roe Highway from Welshpool Road, Beckenham to South Street, Canning Vale, Main Roads includes in the Environmental Management Programme required by Recommended Environmental Condition 3-3, details of wetland management strategies (including a monitoring plan), wetland replacement strategies, and the timing of any wetland replacement strategies.**

(see Recommended Environmental Condition 4)

#### Fauna

The Department of Conservation and Land Management has requested that Main Roads consult with it to develop a relocation programme for populations of the Southern Brown Bandicoot. This programme should be developed and implemented prior to commencement of construction activities in areas known to be habitat for the Southern Brown Bandicoot.

### **Recommendation 7**

**The Environmental Protection Authority recommends that Main Roads prepare and implement a relocation programme for the Southern Brown Bandicoot (*Isoodon obesulus*) prior to commencement of construction activities in areas of known habitat for this species, to the requirements of the Department of Conservation and Land Management.**

(see Recommended Environmental Condition 5)

# 1. Introduction

Main Roads of Western Australia (hereafter referred to as Main Roads) has proposed to build further portions of the Roe Highway from Welshpool Road, Beckenham to South Street, Canning Vale (Main Roads Western Australia, 1993). Roe Highway is identified in the Metropolitan Region Scheme as part of the proposed 'ring road' system surrounding the Perth Metropolitan area. The road reserve for Roe Highway represents a substantial portion of the remnant indigenous vegetation in the localities affected and contains numerous areas of wetland vegetation. The Highway is intended to cross through areas identified in the Environmental Protection Authority's System 6 'Red Book' report (recommendation M75) as open space of regional significance for conservation and recreation (Environmental Protection Authority, 1983).

Main Roads referred this proposal to the Environmental Protection Authority in April of 1992. The Authority decided that the potential environmental impacts would be sufficient to warrant formal environmental impact assessment at the level of Public Environmental Review. This decision was based on the potential for impacts upon environmental values identified by the Authority in the System 6 report, and in other public reports by the Authority in relation to proposed developments at Brixton Street in Kenwick (Environmental Protection Authority, 1991; Environmental Protection Authority, 1992a). The Authority issued guidelines in July 1992 to assist Main Roads in the preparation of the relevant documentation. The Public Environmental Review document was released for an eight week public comment period which closed on 5 July 1993.

# 2. The proposal

Roe Highway is identified on the Metropolitan Region Scheme as a 'Controlled Access Highway'. Existing portions of the Roe Highway and sections currently under construction will link Middle Swan from its junction with the Great Northern Highway near Midland to Beckenham. Roe Highway will ultimately link with the Reid Highway at Middle Swan and Stock Road east of Fremantle (see Figure 1). The current proposal has been included in the Federal Government's Five Year Strategy for National Arterial Roads.

Main Roads have indicated that Roe Highway will provide access to areas of manufacturing concentration and access to the termini of National Highways, airports, ports, freight forwarding centres and major rail heads. In summary, Roe Highway along with Reid and Tonkin Highways will join other arterial roads to provide easy access to these commercially significant centres from all districts throughout the Perth region.

The alignment for Roe Highway, which is reserved in the Metropolitan Region Scheme, is surrounded by residential areas which restrict the potential for alternative route alignments. The road will be constructed largely on fill brought into the area. Roe Highway will require a bridge over the Canning River and interchanges with several other roads. A flyover at Brixton Street, Kenwick is also proposed.

Construction of the road will result in clearance of almost all of the vegetation in the Roe Highway road reserve, except along the west of the Highway reserve between Willeri Drive and South Street, at the Canning River crossing and around the Welshpool Road interchange. Main Roads have indicated that the portion of the road reserve which is not required for road works will be rehabilitated and landscaped using indigenous species where possible.



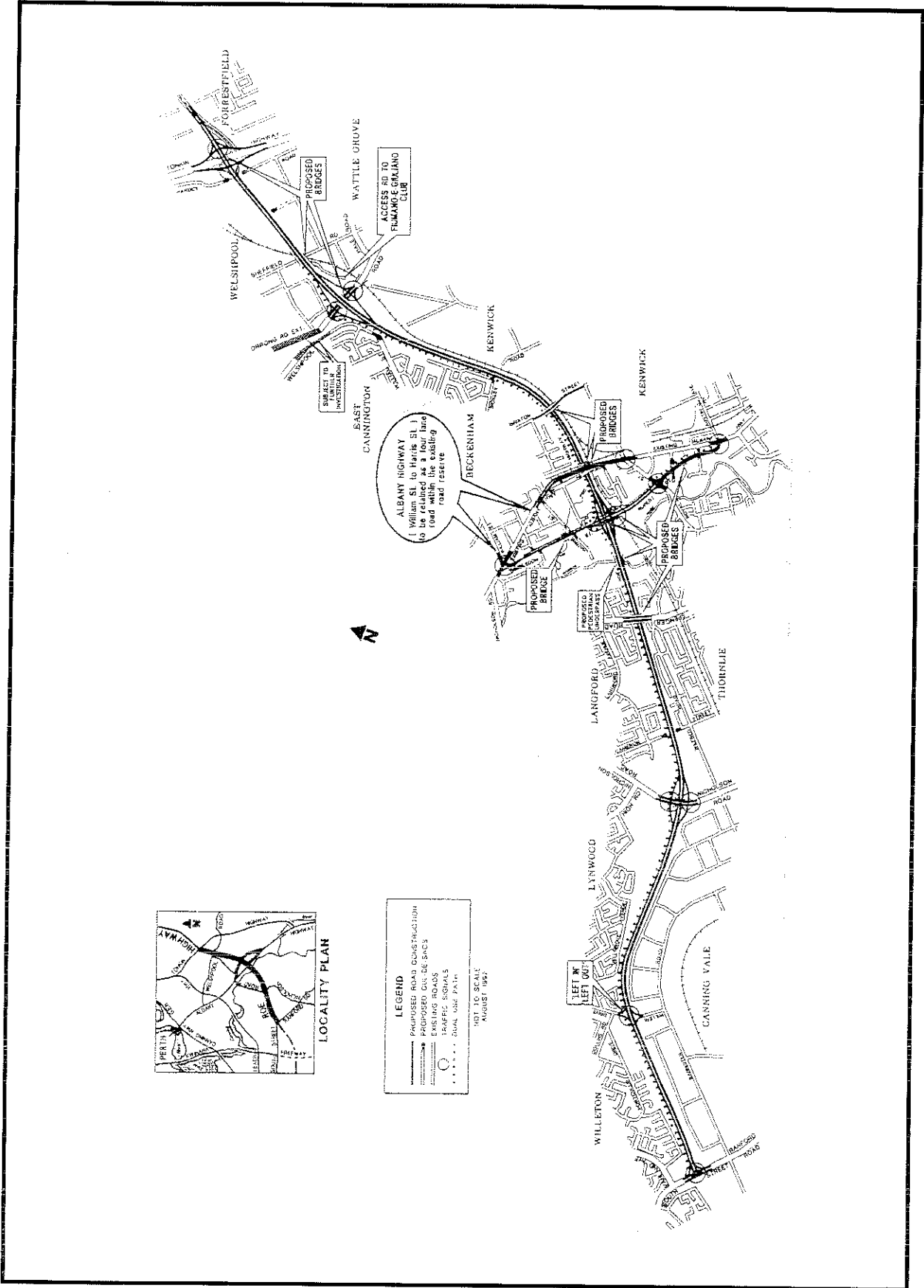


Figure 1: Project location.

### 3. Review of public submissions

Comments on the proposed construction of Roe Highway were sought from the public. The Public Environmental Review document prepared for the proposal was available for an eight week submission period ending 5 July 1993.

A total of 19 submissions were received during the public submission phase. There were several very substantial submissions from the public. The response from the community and the considerable detail provided were appreciated by the Environmental Protection Authority. The category of submissions was as follows:

| SOURCE OF SUBMISSION   | NUMBER    |
|------------------------|-----------|
| Individuals            | 4         |
| Community Groups       | 11        |
| Government Departments | 4         |
| <b>TOTAL</b>           | <b>19</b> |

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

- Transport planning and management:  
Many submissions indicated that integrated transport planning should be undertaken by Government rather than continuing the policy of primacy of the private motor vehicle. In particular, public transport initiatives were seen as being of greater benefit to the public at large and for the environment also. Submissions argued that the environment would be improved through lower air pollution emissions and less resource wastage, if Government pursued policies which restricted private motor vehicle usage and concentrated on providing accessible public transport. Issues of pedestrian and bicycle access and safety features which should be built into the Roe Highway design were also identified in one substantial submission.  
  
Some submissions suggested that Main Roads should be reorganised as the department's emphasis does not allow for consideration of broader transport planning. It was also suggested that fuel use charges should be introduced as a clear incentive to people to minimise vehicle use and hence environmental impacts from this source.
- Cumulative impacts:  
Criticism of the Public Environmental Review document was directed at the failure to address issues of cumulative impacts which are likely to arise from the implementation of this proposed Highway. Cumulative impacts which submitters considered required attention included airborne lead levels, air pollution (smog and haze), and Greenhouse gas emissions.
- Archaeology and ethnography:  
Submitters requested information on the management of identified sites of aboriginal significance. Similarly, further consultation was requested during the construction phase when it is possible that other sites of aboriginal significance may be discovered.

- Noise impacts:  
Concerns were expressed regarding the design of screening walls along the Highway. Submitters were particularly concerned that walls should not be visually offensive, and cited the screening walls along the Mitchell Freeway at Leederville as a design to be avoided. Questions were raised as to why the cut off level for managing road noise is 68 dB(A) in Western Australia, whereas other States use 63 dB(A).
- Interchange between Albany Highway and Roe Highway on the alignment of Wimbledon and Rupert Streets and the Canning River Floodplain:  
A number of submissions took the opportunity to raise issues which are part of another phase of the Roe Highway proposal. In particular rural amenity, noise, community severance and the public consultation processes related to the construction of an interchange at Wimbledon - Rupert Streets in Cannington were raised as issues which Main Roads should address. In addition, the construction of the road in this area was questioned in relation to impacts upon the wetland functions of the Canning River Floodplain.
- General flora and fauna issues:  
Submissions noted that the Highway reserve contains a large portion of the remaining indigenous vegetation in the areas through which it passes. Submissions requested that Main Roads should be required to replace equivalent habitat functions of the vegetation which will be removed. Submissions indicated that locally collected seed is the preferred source of rehabilitation material for the landscaping and rehabilitation works. A relocation programme for Bandicoots was recommended by the Department of Conservation and Land Management, as well as means for Western Brush Wallabies to be able to escape into surrounding bushland.
- Upper Canning River (System 6 recommendation M75):  
Submissions focussed on the need to reduce filling of the floodplain and to minimise vegetation clearance. The ecological value of the continuity of passage along the river and its banks was identified as a concern. Similarly, ensuring that the bridge supports are out of the floodplain and do not cause river flow to cease during construction were raised as issues for consideration.
- Swan Coastal Plain wetlands:  
Many submissions noted that the Public Environmental Review document had not considered the impacts upon wetland areas. Submissions indicated an expectation that wetland areas would be assessed using the techniques for evaluation of human use and natural values, which are detailed in the Environmental Protection Authority's 'A Guide to Wetland Management in the Perth and Near Perth Swan Coastal Plain Area' (Environmental Protection Authority, 1993b). Furthermore, strategies should be developed in keeping with the objective of ensuring that no further loss of wetlands on the Swan Coastal Plain occurs as was required in previous environmental assessments (Environmental Protection Authority, 1992b). Substantial submissions from community groups identified 16 areas containing wetland vegetation. The management of drainage was questioned by several submissions.
- Proposed Brixton Street conservation reserves and access across the Roe Highway:  
Most of the submissions included discussion of the Brixton Street cross-over proposals. Submissions indicated a strong preference for the closure and removal of Brixton Street, to enable the areas of vegetation on Lot 47 and 48 to be rejoined. The conservation values of the Brixton Street area were highlighted in many submissions.  
  
The public submissions also indicated dissatisfaction with the fact that no information was available on the need for a crossing of the Roe Highway in the Brixton Street area, and that no studies had been carried out to determine source and destination of vehicles using Brixton Street. The public expectation expressed in the submissions is that alternatives to a crossing at Brixton Street should have been canvassed during the Public Environmental Review process.

The Environmental Protection Authority provided a summary of public submissions to Main Roads so that the Department could respond to public comments. The summary of submissions and the responses provided by Main Roads are included in this assessment report as Appendix 2 and Appendix 3 respectively. 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 which advises the Minister for the Environment of the Environmental Protection Authority's recommendations.

## **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 impacts on the area proposed for regional recreation and conservation by the System 6 recommendation M75;
- the potential impact upon the areas proposed for conservation at Brixton Street; and
- retention of the biological functions of Swan Coastal Plain wetlands which may be affected by this proposal.

Following consideration of the Public 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 extensions to Roe Highway from Welshpool Road Beckenham to South Street Canning Vale, as modified during the assessment process, could be made environmentally acceptable.**

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

- **the potential impacts on the area proposed for regional recreation and conservation by the System 6 recommendation M75;**
- **the potential impact upon the areas proposed for conservation at Brixton Street; and**
- **retention of the biological functions of Swan Coastal Plain wetlands which may be affected by this proposal.**

**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 and Recommended Environmental Conditions. (Recommended Environmental Conditions are listed in Section 6).**

### **4.1 System 6 recommendation M75**

Main Roads have recognised the ecological and recreational significance of the Canning River. The Public Environmental Review document also recognises the ecological links which are provided by the River and its fringing vegetation.

The preliminary design proposal is a bridge with three spans each of thirty metres, with the central span straddling the main channel. The road will be 6.5 metres above the winter water level in the River. Drainage from the bridge will be diverted away from directly discharging into the Canning River. A dual use path is planned for the western side of the bridge and will

link to the existing path on the southern bank of the River. These design principles will ensure that once construction and rehabilitation are complete, the bridge will maintain active and passive recreation opportunities in and around this section of the Canning River.

Public submissions note that there will be disturbance to the floodplain habitat in the area of the bridge and suggest that a commitment to compensate for the loss of biological functions of the floodplain wetland, should be required. In this case, the Authority considers that the ecological links which are provided by the Canning River and its fringing floodplain can be accommodated in the detailed design. The Authority has previously stated the position that there should be no further loss of wetland functions on the Swan Coastal Plain (Environmental Protection Authority, 1992b; Environmental Protection Authority, 1993a; Environmental Protection Authority, 1993b). Compensation for any loss of wetland function is discussed in Section 4.3 below.

Construction of the bridge will require approval of the Minister for the Environment on advice of the Swan River Trust, under Part 5 (Development Control) of the *Swan River Trust Act* 1988. The Swan River Trust is established by law with the responsibility for planning, protection and management functions in respect of the Swan and Canning Rivers and adjoining parks and recreation reserves. The Authority believes that it is the role of the Swan River Trust to give due consideration to the environmental issues associated with this portion of the proposal in its advice to the Minister for the Environment regarding the detailed design of the Roe Highway bridge over the Canning River.

## **4.2 Proposed Brixton Street conservation reserves**

### **4.2.1 Environmental significance of the Brixton Street wetlands**

The State Government has accepted previous recommendations by the Environmental Protection Authority that developments surrounding Brixton Street should ensure that the ecological integrity of the area is conserved (Environmental Protection Authority, 1991; Environmental Protection Authority, 1992a). The environmental values of the Brixton Street area are derived from the regional scarcity of the habitats which are typical of the Pinjarra Plain geomorphological unit, in particular those of the ephemeral wetland communities which are represented by the areas surrounding Brixton Street. Other environmental values are the richness and diversity of flora in these sites, the composition of species, the presence of Declared Rare Flora and flora listed as requiring priority management, and the continuum between the adjacent areas for both vegetation and for the habitats of the Southern Brown Bandicoot (*Isodon obesulus*) which is a gazetted species under the *Wildlife Protection Act*.

### **4.2.2 Consideration of alternative crossings at Brixton Street**

The Environmental Protection Authority believes that impacts upon areas of high conservation value should be avoided. The Authority considers that this Public Environmental Review of the Roe Highway has not fully justified the need for, nor investigated the alternatives to, a crossing of Roe Highway at Brixton Street. Indeed the Public Environmental Review document indicates that there will be approximately a 15% reduction in traffic using Brixton Street once Roe Highway is constructed (page 26; Main Roads Western Australia, 1993). The Authority understands that Main Roads as proponent for the current proposal is unable to make a determination which would cause Brixton Street to be closed, because the City of Gosnells is responsible for local traffic planning, including determining the need for Brixton Street. Main Roads has made a commitment to inform all interested parties as the plans for the Brixton Street crossing are developed. However, the Authority maintains the view that information such as traffic movements and alternative routes for traffic dispersion, to indicate the need for maintaining a crossing at Brixton Street, should be made available before this aspect of the proposal is finalised.

TABLE 5.1  
BRIXTON STREET CROSSING OPTIONS

| OPTION  | IMPACT on HYDROLOGY   | IMPACT on FLORA   | IMPACT on FAUNA   | INTRUSIVENESS   | ROAD SAFETY  | COST *                         |
|---|---|---|---|---|--|--------------------------------|
| Original Proposal   | Some compaction under embankment. Surface drainage manageable | Some DRF destroyed  | Increased barrier to Fauna movement   | Large structure, but impact minimised by distance & orientation to existing or proposed dwellings                       | Improved alignment of carriageway  | 100                            |
| Closure-no alternative provided                           |   | Opportunity to rehabilitate road reserve  | Full and open passage provided between two proposed reserves                | Removal of through traffic possibly of benefit to some residential properties   | Current and predicted traffic would have to be accommodated on other routes    | Negligible                     |
| Closure-alternative provided                              |   | Opportunity to rehabilitate road reserve  | Full and open passage provided between two proposed reserves                | Increased traffic on Bickley Rd could alter the residential amenity west of the highway                                 | Current and predicted traffic would be diverted onto Bickley Rd                | Dependant on type of structure |
| Roe Highway over Brixton Street                           | No change from present  | DRF preserved, no change from present   | No change from present  | Large and intrusive, additional fill close & parallel to existing residences  | Roe Highway earthworks and bridge obscure approaching trains at level crossing | 81                             |
| Brixton St. over Roe using extended bridge structure      | No impact on claypans. Surface drainage manageable            | DRF preserved, Opportunity for creating some continuity between proposed reserves | Temporary disturbance, free movement possible between proposed reserves     | Large structure. Design could be pleasing. Impact minimised by distance & orientation to existing or proposed dwellings | Less than optimal alignment of carriageway                                     | 217                            |
| Brixton Street over Roe using retaining wall and culverts | No impact on claypans. Surface drainage manageable            | DRF preserved   | Temporary disturbance, culverts to allow movement between proposed reserves | Large and intrusive structure. Impact minimised by distance & orientation to existing or proposed dwellings             | Less than optimal alignment of carriageway                                     | 115                            |

Note: \* As % of the estimated cost of the original proposal.

Public consultation during the Public Environmental Review has identified divergent views from community groups and members of the public. The Public Environmental Review document indicates in Table G1 (Appendix G of the Public Environmental Review) that of 12 replies received in response to the public information display the “majority desire to keep the crossing & some would also welcome access to Roe Highway here” (Main Roads Western Australia, 1993). In contrast, submissions received by the Environmental Protection Authority during the public comment period following release of the Public Environmental Review document indicate that all submissions, except one, which referred to the Brixton Street crossing would prefer that Brixton Street was closed and the area of the current road pavement was rehabilitated. The other submission suggested that there should be no further damage to the habitat of the Declared Rare Flora.

Main Roads have considered six alternative design concepts for the proposed crossing of Roe Highway at Brixton Street (see Table 1). Of these, Option 4, which takes Roe Highway over Brixton Street, has been ruled out by Main Roads because of unacceptable safety concerns at the railway crossing. Main Road’s preferred option as stated in the Public Environmental Review document (Option 6), attempts to balance cost, road safety, and the City of Gosnells preference that the Brixton Street crossing should remain open, whilst minimising impacts upon hydrology, flora, fauna and amenity.

#### **4.2.3 Options put forward in public submissions**

Two alternative routes for the crossing of Roe Highway near Brixton Street have been put forward in submissions from the public. A number of submissions suggested that closing Brixton Street and rehabilitating the road area would be preferred, and access across Roe Highway could be provided at Bickley Road. The Authority is aware that Bickley Road bisects areas of high conservation value. The Authority’s view is based upon the recommendations in the System 6 report (recommendation M69) and the recent recommendations for a conservation reserve on the adjacent land of Lot 48 Brixton Street (Environmental Protection Authority, 1983; Environmental Protection Authority, 1992a). Consequently, the Authority recommends that a crossing of the Roe Highway in this area would be environmentally unacceptable.

A second option which has been canvassed through public submissions is to route traffic to the re-aligned Albany Highway and provide access to the western portion of Brixton Street using Ladywell Street. This option would use roads which will not have any significant environmental impacts, but would require a new crossing of the Perth to Armadale railway line and perhaps an increase in the traffic status of Ladywell Street. The Authority considers that this option is environmentally acceptable, but recognises that the City of Gosnells and Main Roads would need to undertake further traffic planning for this option. Included in this proposal is a cycle and walkway crossing at Brixton Street to overcome community severance, and to provide public access to the Mills Park recreation area.

The Authority considers that Main Roads should consult with the City of Gosnells and interested community groups during the detailed design phase for Roe Highway. Consideration should be given to the options of using other roads to disperse motor vehicle traffic away from Brixton Street.

#### **4.2.4 Environmental assessment of options for a cross-over at Brixton Street**

Notwithstanding the Authority’s position stated in Section 4.2.2 above, the Environmental Protection Authority has considered the six alternatives presented in the Public Environmental Review and the further two options put forward through public submissions.

Given the environmental values of the Brixton Street wetland suite (as discussed in section 4.2.1), the Environmental Protection Authority concludes that consideration of any proposed road development in the Brixton Street area should meet the following environmental objectives:

- There should be no impacts upon populations of Declared Rare Flora.

- There should be no impacts upon the hydrology of the ephemeral wetlands.
- Brixton Street should be confined to the areas which are already disturbed within the current local authority road reserve.
- The linkages for fauna movement between the proposed conservation reserves on either side of Brixton Street should be maintained or enhanced.

The Environmental Protection Authority concludes that closure and rehabilitation of Brixton Street is the preferred strategy based on environmental considerations; it is also the option with the lowest cost for construction and environmental management. Closure of Brixton Street would enable rehabilitation of the vegetation continuum between Lots 47 and 48, and provide a habitat link for the Southern Brown Bandicoot which inhabits the area. The Authority considers that Main Roads and the City of Gosnells should consult with interested community groups to find a solution which meets local traffic planning requirements and provides the major environmental benefits of rehabilitating the vegetation and habitat link across Brixton Street.

**The Environmental Protection Authority believes that during the detailed design of the Roe Highway in the Brixton Street area, Main Roads and the City of Gosnells should continue to consult with the interested community groups to develop a solution which meets local traffic planning requirements, and provides for the rehabilitation of the vegetation and habitat link across Brixton Street.**

A number of the options which have been canvassed in the Public Environmental Review document and put forward in public submissions may also meet the above environmental objectives. The following options, in the Authority's order of preference (highest to lowest preference), could be managed such that the environmental impacts of a crossing of Roe Highway at Brixton Street are made acceptable:

- Closure of Brixton Street with no alternative provided (Option 2 in the Public Environmental Review document).
- Closure of Brixton Street with an alternative provided (Option 3 in the Public Environmental Review document), subject to referral of the alternative to the Environmental Protection Authority (and possible environmental assessment).
- Brixton Street over Roe Highway using an extended bridge structure as indicated in the Public Environmental Review document (Appendix F, Figure F.2 of the Public Environmental Review document) (Option 5).
- Brixton Street over Roe Highway on the existing alignment using retaining walls and culverts (Appendix F, Figure F.3 of the Public Environmental Review document) (Option 6).

The Authority concludes that in order to make either Option 5 or Option 6 environmentally acceptable, Main Roads would need to manage the potential impacts of construction activities on the environmental values identified above. In order for construction impacts arising from Options 5 and 6 to be acceptable, Main Roads would be required to construct a fence along the already disturbed area within the current City of Gosnells Brixton Street road reserve. In addition a management plan, acceptable to the Department of Conservation and Land Management, would be required to ensure that the vegetation is protected from the spread of dieback disease.

### **Recommendation 3**

**The Authority recommends that in order for Options 5 and 6 as stated in the Public Environmental Review, or any other proposed crossing of Roe Highway at Brixton Street to be environmentally acceptable, the following environmental objectives should be met by the proponent:**

- **There should be no impacts upon populations of Declared Rare Flora.**



- There should be no impacts upon the hydrology of the ephemeral wetlands.
- Brixton Street should be confined to the areas which are already disturbed within the current local authority road reserve.
- The linkages for fauna movement between the proposed conservation reserves on either side of Brixton Street should be maintained or enhanced.

(see Recommended Environmental Condition 3-2)

#### **Recommendation 4**

The Authority recommends that prior to the commencement of any road works for the Roe Highway in the Brixton Street area (including Options 2, 3, 5 and 6 as stated in the Public Environmental Review), Main Roads should prepare an Environmental Management Programme detailing how the environmental objectives detailed in Recommended Environmental Condition 3-2 will be met, to the requirements of the Minister for the Environment on advice from the Department of Conservation and Land Management and the Environmental Protection Authority. The Environmental Management Programme shall also provide details of, but not be limited to:

- the final detailed design for any crossing of Roe Highway at Brixton Street;
- construction of fencing to confine vehicular movement and construction activity to the already disturbed areas within the current local authority road reserve;
- the management of dieback disease;
- the management of drainage during construction activities and following construction; and
- the induction of all personnel employed on the project in environmental management methods.

(see Recommended Environmental Condition 3-3)

Option 1 for crossing of Roe Highway in the Brixton Street area, which is detailed in the Public Environmental Review document, involves using the full Metropolitan Region Scheme road reserve. The Authority understands that this alignment would not meet the environmental objectives stated in Recommended Environmental Condition 3-2. Therefore, this option is not environmentally acceptable and should not be permitted to proceed.

Submissions from the public identified another option for crossing Roe Highway in the Kenwick area. Bickley Road was nominated as a potential site for a cross-over. However, Bickley Road bisects the Yule Brook Nature Reserve and other areas proposed for conservation of flora and fauna (Lot 48 Brixton Street). This option would also have unacceptable environmental impacts and should not proceed.

#### **Recommendation 5**

The Environmental Protection Authority concludes that Option 1 as stated in the Public Environmental Review, or a crossing of the Roe Highway at Bickley Road as proposed in public submissions are environmentally unacceptable and recommends that they do not proceed.

(see Recommended Environmental Condition 3-5)

### 4.3 Swan Coastal Plain wetlands

There are no wetlands affected by the Roe Highway extension which are gazetted in the Environmental Protection (Swan Coastal Plain Lakes) Policy 1992. However, a number of seasonal wetlands which have been identified in the wetland mapping and classification work undertaken by Water Authority of Western Australia will be affected by the Roe Highway extension from Welshpool Road, Beckenham to South Street, Canning Vale (Payne, 1993). Substantial submissions from community interest groups have indicated other wetlands occurring in the City of Canning which will be affected by the construction of the Highway.

The wetlands which will be impacted by construction of the Roe Highway includes a remnant portion of the high conservation value Brixton Street wetland complex. This remnant contains a small population of the Declared Rare Flora *Aponogeton hexapetalus* (the Stalked Ribbon Weed). In addition, the Canning River floodplain which has been recommended in the System 6 report for protection and management of its regional conservation and recreation value will be the site of a bridge crossing the Canning River (Environmental Protection Authority, 1983).

The Authority expects that proponents will recognise that all wetlands have special value and they should be appropriately managed to maintain their human use and natural values when assessing possible uses. The main factors in protection of the seasonal wetlands in the Roe Highway reserve include:

- assessment and management of the wetlands having regard to the Authority's guidance contained in Bulletin 686 (Environmental Protection Authority, 1993b);
- protection of water levels and water quality through management of drainage (water balance).

In previous assessments the Authority has required Main Roads to ensure that wetland functions are replaced where impacts upon these wetlands cannot be avoided. This strategy is consistent with recent environmental approvals granted to Main Roads for the extension of Kwinana Freeway from Forrest Road to Thomas Road, Casuarina, and the Water Authority of Western Australia for development of Stage 2 of the Jandakot Groundwater Scheme. The Environmental Protection Authority notes the commitments and undertakings provided by the proponent and the assessment of the wetland functions which has been provided by the proponent in response to submissions from the public.

#### Recommendation 6

**The Environmental Protection Authority recommends that prior to commencement of the construction of the extension of Roe Highway from Welshpool Road, Beckenham to South Street, Canning Vale, Main Roads includes in the Environmental Management Programme required by Recommended Environmental Condition 3-3, details of wetland replacement, wetland management (including a monitoring plan) and the timing of any wetland replacement strategies.**

(see Recommended Environmental Condition 4)

### 4.4 Fauna

Main Roads have made a commitment to consult with the Department of Conservation and Land Management regarding the management of Bandicoot populations in the Roe Highway reserve. The Department of Conservation and Land Management have indicated that Main Roads should undertake a study to identify populations of Bandicoots in the Highway reserve, and develop and implement strategies for their relocation. This management programme should be developed and implemented prior to commencement of construction activities for areas of known habitat for the Southern Brown Bandicoot.

## **Recommendation 7**

**The Environmental Protection Authority recommends that Main Roads prepare and implement a relocation programme for the Southern Brown Bandicoot (*Isodon obesulus*) prior to commencement of construction activities in areas of known habitat for this species, to the requirements of the Department of Conservation and Land Management.**

(see Recommended Environmental Condition 5)

## **5. Conclusion**

The Environmental Protection Authority concludes that the proposed extension to the Roe Highway from Welshpool Road, Beckenham to South Street, Canning Vale could be made environmentally acceptable provided that the proponent's commitments and the recommendations of this report are implemented. This includes protecting areas of high conservation or recreational value, ensuring that there is no overall loss of wetland function on the Swan Coastal Plain and relocating populations of gazetted fauna known to occur in the road reserve for the 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 709 as Appendix 1.

### **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 Environmental objectives for conservation reserves near Brixton Street**

- 3-1 The proponent shall design any crossing of Roe Highway involving Brixton Street to protect the conservation values of the Brixton Street wetlands.
- 3-2 The proponent shall ensure that any crossing of Roe Highway at Brixton Street (including Options 2, 3, 5 and 6 as stated in the Public Environmental Review) does not:
- (1) impact upon populations of Declared Rare Flora;
  - (2) impact upon the hydrology of the ephemeral wetlands;
  - (3) does not extend beyond the areas which are already disturbed within the current local authority road reserve; and
  - (4) provides linkages for fauna movement between the proposed conservation reserves on either side of Brixton Street to be maintained or enhanced.
- 3-3 Prior to commencement of road works, the proponent shall prepare an Environmental Management Programme for any construction activities in the Brixton Street area to meet the environmental objectives detailed in Condition 3-2, to the requirements of the Minister for the Environment on advice of the Department of Conservation and Land Management and the Environmental Protection Authority.

This Environmental Management Programme shall address, but not be limited to:

- (1) the final detailed design for any crossing of Roe Highway at Brixton Street;
  - (2) construction of fencing to confine vehicular movement and construction activity to the already disturbed areas within the current local authority road reserve;
  - (3) the management of dieback disease;
  - (4) the management of drainage during and following construction; and
  - (5) the induction of all personnel in environmental management methods.
- 3-4 The proponent shall implement the Environmental Management Programme required by Condition 3-3, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.
- 3-5 Option 1 for the crossing of Roe Highway at Brixton Street, as described in the Public Environmental Review, is not environmentally acceptable and is not to be implemented.

### **4 Management of Swan Coastal Plain wetlands**

- 4-1 The proponent should replace or otherwise secure the biological, hydrological and human use functions of wetland areas equivalent to those that will be lost as a consequence of the Roe Highway extension.
- 4-2 Prior to commencement of road works, the proponent shall submit to the Environmental Protection Authority with the Environmental Management Programme required by Condition 3-3, details of the following:
- (1) the management of wetlands impacted by the proposal;
  - (2) the monitoring of wetlands impacted by the proposal; and
  - (3) the replacement of any wetland functions which will be lost through implementation of the proposal and the timing of replacement.

### **5 Relocation of Bandicoots**

- 5-1 The proponent shall ensure that populations of fauna gazetted under the *Wildlife Protection Act* which will be impacted by the proposal are relocated to alternative habitats.

5-2 Prior to the commencement of road works, the proponent shall plan and implement strategies for the relocation of populations of protected fauna (especially Bandicoots; *Isoodon obesulus*) which are known to inhabit the road reserve, to the requirements of the Department of Conservation and Land Management.

## **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.

- Environmental Protection Authority (1991). Subdivision: Concept plan and design. Lots 37 and 47 Brixton Street, Kenwick. Homeswest. Report and Recommendations of the Environmental Protection Authority. Bulletin 577. Environmental Protection Authority.
- Environmental Protection Authority (1992a). Proposed urban development of Lots 35 and 48 Brixton Street, Kenwick, City of Gosnells. St Joseph's Properties and Dudley & Dwyer Limited. Report and Recommendations of the Environmental Protection Authority. Bulletin 635. Environmental Protection Authority.
- Environmental Protection Authority (1992b). Management of wetland impacts associated with extension of the Kwinana Freeway (Forrest Road to Thomas Road, Casuarina). Main Roads Department, Western Australia. Report and Recommendations of the Environmental Protection Authority. Bulletin 664. Environmental Protection Authority.
- Environmental Protection Authority (1993a). Strategy for the protection of lakes and wetlands of the Swan Coastal Plain. Bulletin 685. Environmental Protection Authority.
- Environmental Protection Authority (1993b). A guide to Wetland Management in the Perth and near Perth Swan Coastal Plain. Bulletin 686. Environmental Protection Authority.
- Main Roads Western Australia (1993). Roc Highway extension, Welshpool Road to South Street. Public Environmental Review. Report P170. Main Roads Western Australia.
- Payne, J. (1993). Wetlands in the City of Gosnells. A report to the Water Authority of Western Australia and the Environmental Protection Authority. Report WP 160. Water Authority of Western Australia.

## **Appendix 1**

**Proponent's list of environmental management commitments**

## LIST OF COMMITMENTS

Main Roads undertakes responsibility for the implementation of the commitments listed below. This holds whether the work is done directly by Main Roads personnel or by others contracted for specific phases or elements of the project. All commitments will be expedited promptly at the appropriate stage during the design or construction of the project, and will be carried out to the satisfaction of the of the Project Manager through the Construction Co-ordinator.

- Note:
- i. These commitments are also highlighted in the main text of the PER.
  - ii. All additional commitments made as a result of consideration of the public submissions are appended to the end of the original list and identified with letters of the alphabet.

### SECTION 5.1 Watercourses and Hydrology (Pages 15 and 16).

1. *All structures will be designed to accomodate a 100 year flood event, and comply with the backwater constraints set by the Water Authority of Western Australia.*
2. *Should the flow in any of the watercourses need to be dammed temporarily during construction, Main Roads will ensure that the ponded water is pumped downstream.*
3. *During construction, pollution and siltation of the watercourses will be avoided by means of careful planning of operations, and the use of sandbags or other temporary traps if necessary.*
4. *If needed, provision will be made for drainage control measures such as retention basins in order to limit polluted road run-off and silt entering the Yule Brook wetland areas and the Canning River.*
5. *In order to monitor the effects of the cuttings in Beckenham and Langford on watertable levels, established groundwater bores at both locations will continue to be read for at least 12 months after construction is complete. Local residents who experience detrimental effects to domestic bores as a result of the highway construction will have recourse to corrective action through Main Roads.*



SECTION 5.2 Canning River - System Six (M75) Area (Pages 17 and 18).

6. *Although some clearing will be necessary to facilitate construction of the Canning River crossing, much of the vegetation at this location will remain intact.*
7. *Drainage off the Canning River bridges will be channelled to both banks and there will be no direct discharge into the river channel or onto the floodplain below the bridges*
8. *Application for the necessary clearances from the Swan River Trust for construction of the Canning River bridges will be made through the Local Authority (City of Gosnells) during the design period.*

SECTION 5.3 Flora and Vegetation (Pages 18 to 20).

9. *Wherever space and construction techniques permit, any remnant native vegetation present in the highway reserve will be retained.*
10. *At the Canning River and Yule Brook crossings weedy material which is felled during site works will be removed in order to prevent it re-establishing or being washed downstream.*
11. *The presence of Blackberry along the Canning River at the crossing site has implications for the success of rehabilitation and landscaping of the area. Main Roads will liaise with the Swan River Trust on the possibility of setting up a Blackberry control programme over an extended area up and downstream of the crossing.*
12. *A dieback risk and hazard assessment for the areas between Willeri Drive and South Street and north of the Perth-Armadale railway to Yule Brook will be completed during the design phase of the project. If this assessment indicates a need to do so, detailed earthworks management procedures will be prepared and incorporated in the instructions to the contractor.*

SECTION 5.4 Fauna (Page 20).

13. *The impact of fauna habitat loss along the Highway reserve will be reduced by the following measures:*
  - *Indigenous vegetation will be retained wherever possible;*
  - *Habitat diversity will be expressly incorporated in the landscaping plans; and*

- *Topsoil and mulch from the areas cleared for construction will be reintroduced into the roadside areas.*

14. *The Department of Conservation and Land Management will be consulted regarding the action to be taken as far as the Southern Brown Bandicoot population along the Highway reserve is concerned.*

#### SECTION 5.5 Brixton Street - Flora and Fauna Constraints (Pages 21 and 23).

15. *Drainage off the Brixton Street bridge will be directed into the drain on the north of Brixton Street so that no additional run-off finds its way onto the rare flora site.*
16. *Main Roads guarantees to inform all interested parties as the plans for the Brixton Street crossing are developed.*

#### SECTION 5.6 Archaeology (Page 23).

17. *Should the need arise, a temporary barrier fence will be erected during the construction period in order to prevent accidental disturbance to the Archaeological Site near Vellgrove Avenue.*
18. *Any further concentrations of Archaeological material which might be exposed during construction will be notified to the Aboriginal Sites Department of the WA Museum. Project personnel will be made aware of the provisions of the Aboriginal Heritage Act which prohibit unauthorised interference with Aboriginal sites.*

#### SECTION 5.7 Ethnography (Pages 24).

19. *The following three points which were raised by the Aboriginal consultants during the Ethnographic survey will be incorporated in the planning, design and construction of the bridges at the Canning River crossing:*
  - *No piles will be driven or buried in the main stream of the river:*
  - *Earthmoving and other construction work within the one hundred year floodplain will be kept to the minimum necessary to allow the project to proceed;*

- *Rehabilitation/Landscaping of the site will be carried out immediately after construction, will be sympathetic to the site, and will use species native to the river ecosystem; and*
- *Main Roads will approach the Aboriginal community regarding the naming of the bridge after one of the community elders, and will submit the names to the Geographic Names Committee of the Department of Land Administration for consideration.*

**SECTION 5.8 Social Impacts (Pages 24 to31).**

20. *Main Roads will consult with the City of Gosnells to ascertain the current use of, and the possible need to maintain the pedestrian crossing at Bickley Road, and the footbridge access to Mills Park.*
21. *Main Roads will also consult with the City of Gosnells planners on the need for maintaining a pedestrian link between the Cameron Street precinct and the shopping, school, and sporting facilities in Langford.*
22. *Main Roads will conduct further negotiations with the City of Canning in order to re-assess the possibility of providing a full interchange at Willeri Drive. Should the result of this re-evaluation be to construct the intersection as currently proposed, the requirement for some form of pedestrian and cycle crossing in the vicinity of Willeri Drive will be examined.*
23. *In order to mitigate the overall impact (both noise and visual) of the highway, earth bunds will be included in the final design.*
24. *During project design, the existing noise environment will be confirmed by a measurement program, and the noise prediction study will be repeated. Up to date traffic volume forecasts for the year 2011, and any design modifications will be incorporated in this study. Should any of the forecast noise levels be 68 dB (A) or above, additional noise attenuation will be incorporated in the design.*
25. *Screening (walls or fences) will be built along Spencer Road at the crossing with the Highway.*
26. *Actions to help reduce the impact of construction for local residents will include the following:*

- *Careful timing of road closures to ensure minimum inconvenience to local residents and commuters;*
- *Ensuring that the following commitments are included in the instructions to the contractor;*
  - *Reasonable working hours will be adhered to in areas where disturbance to residents is a factor;*
  - *Where vibrating rollers are used, the vibration levels will be monitored, and work practices modified to reduce the nuisance and possibility of damage;*
  - *Dust suppression measures such as the use of water carts will be employed throughout the construction process;*
  - *Site offices and equipment compounds will be sited away from residences wherever possible;*
  - *The importance of good hygiene practices on site will be communicated to the workforce, and compliance with acceptable standards will be monitored by the site manager.*

## ADDITIONAL COMMITMENTS

### TRANSPORT PLANNING AND MANAGEMENT

- A. *The final form and position of pedestrian and cyclist crossings will be determined during design when there will be further consultation with Local Government, Bikewest and the adjacent communities.*
- B. *All intersections on Roe Highway will have a separate bicycle lane supplied with its own detection loop for the control of traffic signals. Provision of pedestrian push buttons for "pedestrian only" phases will be considered during the final design.*

### BRIXTON STREET ISSUES

- C. *Drainage of all new works in the Brixton Street area will be addressed during the final design, and will involve consultation with Local Government, the Water Authority of WA and the Swan River Trust, and will be designed to conform with the highest environmental standards.*

## GENERAL WETLAND AND WATERCOURSE IMPACTS

- D. *Conservation functions such as providing habitat for amphibians in the form of seasonally wet areas will be considered in the design of the drainage for the project. Native sedges and rushes can be included in the planting for such areas.*
- E. *With the consent of Westrail, the native vegetation which remains between the carriageways and the railway at Brixton Street can be augmented by rehabilitation of the track and disturbed area closest to the railway. Species such as *Viminaria juncea*, *Hypocalymma angustifolium*, and sedges which occur naturally at the site would be used. The underlying soil would not be disturbed, and this linear remnant would collect and hold rain-water during winter. Planting on the highway embankment would also be site specific using locally occurring species.*
- F. *At South Street, rehabilitation of the embankment on the west will be designed to merge with the remnant vegetation on the WAWA reserve just to the north along the highway. This will include the use of wetland species at the toe of the embankment. Final rehabilitation will be included in the next stage of the Roe Highway project.*

## ARCHAEOLOGY AND ETHNOGRAPHY

- G. *Areas in the Highway reserve with a high potential for Archaeological sites (such as swamp margins) will be surveyed in detail prior to construction. Any new finds would be referred to the Aboriginal Cultural Material Committee through the WA Museum.*

## NOISE IMPACTS AND MANAGEMENT

- H. *Any alternative structures (other than bunds) used for noise attenuation would be designed with local community input to be in keeping with the surroundings.*

## OTHER ISSUES

- I. *Main Roads will undertake to contact land owners in the vicinity of the Spencer Road cutting area well in advance of the start of construction work so that all private bores in the area can be monitored for possible adverse effects.*

## **Appendix 2**

### **Summary of public submissions**

**Roe Highway Stages 3 to 5, Welshpool Road to South Street**  
**Consultative Environmental Review**  
**Assessment Number 724**

A list of concerns and questions has been compiled from submissions received during the period of public comment. The Environmental Protection Authority would appreciate responses to these concerns / questions as soon as possible. This list and the responses from Main Roads will be reproduced in the Authority's report on the project to the Hon Minister for the Environment.

**1 Transport planning and management**

- 1.1 The need for the proposal has not been established; the justification given is based upon primacy of road transport. The concept of the Roe Highway was born out of concepts of private transport originating in the 1950s with the Stephenson-Hepburn plan. As the levels of air pollution within the Metropolitan area rise, any factor that increases the ability and desire of people to use their cars should be avoided. This extension does not promote public transport - rather it promotes the use of the private motor vehicle.
- 1.2 What alternatives were considered by Main Roads?
  - (i) What liaison has occurred (if any) with TransPerth and Westrail in terms of alternatives to road transport?
  - (ii) Have the Light Rail Action group and the Cyclist Action Group been consulted?
- 1.3 Government departments are giving rights to the car over other forms of transport. Instead of building more roads and a Los Angeles lifestyle, we should be considering investing more of the billions of dollars the Government is spending on roads towards walk / cycle ways.
- 1.4 Dual use bicycle and pedestrian paths should be provided on both sides of the highway for the full length of this section. Paths for cyclists should be direct, not circuitous. The southern Kwinana Freeway paths force cyclists to go up and down large sandhills zigzagging around obstacles, while cars get straight routes and smooth grades through cuttings.
- 1.5 Experienced cyclists should be able to use the local dual use paths to travel along the line of the highway until they can gain access to the proposed sealed shoulder bicycle facilities for regional trips.
- 1.6 Pedestrian and cyclist transverse access should be at a spacing of no more than 500 metres. Simple underpasses are far more cost effective and energy efficient than the elaborate and costly bridges (with 7 metre climbs) favoured by Main Roads. The only reported case of assault on the Mitchell Freeway has been on an overpass. Complete through vision underpasses for cyclists and pedestrians are far better, 30 mm of reinforced concrete above the underpass is all that is needed.
- 1.7 All transverse bridges and underpasses should have pedestrian and bicycle access on both sides of the carriageway crossing the Roe Highway. It is not adequate to base 'warrants' for the provision of such facilities on existing use when there is no established road system.
- 1.8 All traffic signals must have vehicle sensors which reliably detect bicycles in all legal positions in the lane. Traffic signals installed in WA to date only detect motor

vehicles. Traffic signal systems which can reliably detect bicycles are widely available elsewhere in the world, even in less developed countries than Australia.

- 1.9 All traffic light systems should have a pedestrian only phase. Main Roads must end its practice of endangering pedestrians and cyclists to save motorists a few seconds. Exclusive pedestrian phases are essential if the social impact of this massive project is to be minimised.
- 1.10 What proportion of the Roe Highway project cost will be devoted to bicycle transport and safety? Bicycle trips best substitute for the 40 % or so of urban car trips which are shorter than 5 kilometres. These trips are the most polluting, because pollution control equipment does not work until it is warmed up.
- 1.11 In order to make the most efficient use of bicycle facilities to be provided as part of the project, it is suggested that a commitment is given to liaise with Bikewest and Local Governments to integrate the project with existing bicycle planning.
- 1.12 Given that an estimated 19 % of vehicles using the road will be 'heavy vehicles', have the effects of road wear, air pollution and social impacts been considered from this perspective?
- 1.13 What impacts will the proposal have upon public transport and how will residents be affected by this?
- 1.14 Circulation and access movements in the area will change. The impact on the local area should be assessed so that any detrimental effects are considered and appropriate ameliorative measures taken.
- 1.15 All heavy traffic which currently uses Karel Avenue from Welshpool and Kwinana should be made to use Roe Highway to connect between these areas.

## **2 Brixton Street**

- 2.1 When a road threatens to destroy a priceless part of our natural heritage, there needs to be a reassessment of our priorities. This road proposal places three rare species under threat as well as making the survival of the bandicoot less likely in the long term.
- 2.2 It seems incongruous to identify rare flora and then build a major roadway over the site?
- 2.3 The rare claypan area of Brixton Street Wetlands should not be damaged by this proposal.
- 2.4 There are three Declared Rare Flora species in the Brixton Street road reserve, the option of closing Brixton Street would be preferable for the preservation of these species. This option would also have the advantage of joining the Reserves on both sides of the street and allowing Bandicoots to move freely between the reserves.
- 2.5 To conserve the only habitat where large numbers of *Calectasia grandiflora* grow in the metropolitan area and *Calectasia cyanea*, on the outer edges of the clay pans, Brixton Street should be closed and the road reserve rehabilitated. From an environmental point of view this would be sound, and assist in the efficient and economic management of the proposed reserves.
- 2.6 The proposals for the Roe Highway extension would have a very severe impact upon the proposed nature reserve (Figure 5.4). Not only would it destroy the



important flora in the road reserve (including the sole known co-occurrence of the Star of Bethlehem Lilies, *Calectasia cyanea* and *Calectasia grandiflora*), it would also have an adverse affect on the rest of the site, which is already quite small.

- 2.7 With respect to the gazetted rare fauna, the closure of Brixton Street remains the preferred alternative. However, what barriers or obstacles will be used to dissuade fauna from crossing or using the Roe Highway, and what crossings if any are planned for construction?
- 2.8 The conservation values of the Brixton Street area have been established beyond doubt. The closure of Brixton Street would enable management of the Brixton Street wetlands as part of the larger conservation reserve proposed and partly progressed. Further investigations proposed in the Public Environmental Review should also include:
  - (i) consultation with the interested groups identified by Main Roads in the PER
  - (ii) accurate traffic counts for the proposed and alternative crossings
  - (iii) recognition of the values of the area identified as the Canning Wetlands and the impact alternative crossings would have on the Canning Wetlands.
- 2.9 No developments in the area of the Canning Wetlands (Welshpool Rd to Lots 37 and 47 Brixton St, Kenwick) should be considered until vesting of the Brixton Street wetlands for flora conservation is resolved and management of these lands for flora conservation begun.
- 2.10 The Public Environmental Review does not say which option for the Brixton Street crossover is preferred by Main Roads. Therefore, the Department of Conservation and Land Management's preference is for minimal disturbance, and that there should be provision for fauna access across Brixton Street between the two areas to be reserved for conservation. "The preferred option from CALM's viewpoint would be for the closure and rehabilitation of Brixton Street to provide continuity to reserves and proposed reserves in the vicinity."
- 2.11 That portion of Brixton St road reserve not presently used, or the entire road reserve should be cancelled and the land vested as part of the Brixton Street wetlands in the National Parks and Nature Conservation Authority for the conservation of flora and fauna.
- 2.12 Closing Brixton Street is the best option. If this were adopted the road could be rehabilitated and the environmental management of the area would be greatly simplified, as well as providing considerable savings in expenditure.
- 2.13 In the event of any roadworks in the vicinity of the Brixton Street wetlands these must be confined to already disturbed areas. Revegetation, even with local species, will not return the complex plant communities extant in the area. Revegetation is only acceptable in already disturbed areas.
- 2.14 Since use of the Brixton Street route at present is not high (page 22), now is the time to close it, before any increased use makes it too difficult to change patterns of habit.
- 2.15 Traffic from Brixton Street could be diverted north to Welshpool Road or to Bickley Street, or south to the Albany Highway. A crossing at Bickley Street would benefit residents by providing easier access to Mills Park than at present. Crossings of the Roe Highway would then be better spaced.

- 2.16 A number of groups request further detailed information on the scoping studies which have been done by Main Roads regarding the dispersal of traffic around Brixton Street.
- 2.17 Further information is required about the traffic volumes along Brixton Street and what options can be put forward to disperse this traffic.
- 2.18 Meetings have been requested with City of Gosnells and Main Roads prior to the release of the Public Environmental Review document. It is hoped that full consultation with the interested parties can occur after the submission period.
- 2.19 It has been suggested that Main Roads cannot initiate any road closures; yet Cameron Street is to be closed. So why is it not possible to close Brixton Street on the basis of over-riding environmental values?
- 2.20 Drainage run-off from Brixton Street east of the railway line should be directed towards the local authority drain in Alston Street and not towards Yule Brook.

### **3 System 6 recommendation M75 (Canning River)**

- 3.1 While the Public Environmental Review states that much of the vegetation (at the Canning River) will not be disturbed, it is nevertheless stated that the area has significant ecological values and there will be an adverse impact on this special environment. Fauna may not be present at the wetland, but may utilise that wetland from up to 800 metres away. Therefore the damage to another System 6 area is not acceptable, without a commitment to compensate for this loss.

### **4 General wetland and watercourse impacts**

- 4.1 Little detail is given concerning affected wetlands. No lakes identified in the Environmental Protection (Swan Coastal Plain Lakes) Policy 1992 are impacted, nevertheless effects on wetlands should be minimised. The Department of Conservation and Land Management should have input into the assessment of the effects on wetlands.
- 4.2 Around 16 wetland areas (some remnants) appear to be in or adjacent to the path of the proposed Highway. The Public Environmental Review provides very little information about these wetland areas, and the colours on the key showing the existing vegetation are indistinct. The functions of these wetlands should not be destroyed, or if this is not achievable, then there should be a commitment from Main Roads that their functions will be replaced.
- 4.3 Drainage run-off should be retained in nutrient and hydrocarbon stripping basins as a permanent provision for pollution control rather than make a general commitment that action will be taken if needed (commitment 4). In particular, retention traps should be constructed near all wetlands to prevent pollution by petrol, oil, etc, caused by everyday run-off and by accidents.
- 4.4 The principles applied to the Jandakot Groundwater Scheme Stage 2 and the Kwinana Freeway Extension to Thomas Road (EPA Bulletin 664) should be applied to this proposal. That is, there should be no further loss of wetland functions and minimal damage to wetland systems. Where damage is unavoidable an EMP should be required which quantifies wetland impacts and develops a strategy for the enhancement or replacement of lost wetland functions.
- 4.5 Previous sections of the Roe Highway have had huge costs for the environment, passing through healthy Banksia woodland abutting the Tonkin Highway as well as

through the Tomah Swamp and associated wetlands. The compensating basins north and south of William Street are drainage basins and they do not provide equivalent function to Tomah Swamp.

## **5 General Flora and Fauna concerns**

- 5.1 The Department of Conservation and Land Management would be happy to assist with a study to relocate bandicoots (as was done for the section of Roe Highway between Tonkin Highway and Welshpool Rd).
- 5.2 Means of escape into surrounding bushland may need to be provided for the Western Brush Wallabies. The Department of Conservation and Land Management believes that it may be worthwhile constructing wildlife underpasses to connect remnant vegetation and swampland habitat, provided the future of nearby remnants is secure.
- 5.3 Where clearing must occur or already has occurred, the revegetation programme should commence with collecting and propagating material collected from any vegetation before further clearing occurs. Revegetation with non-local species is not acceptable.
- 5.4 Seed should be collected from the plants to be cleared to be used for re-planting. Commercial seed are not sufficiently specific to the area.
- 5.5 This highway extension will have a significant impact on a large overall area, in many cases destroying the only indigenous vegetation remaining. If it proceeds it will also have far reaching consequences for fauna which have until now been using this belt of vegetation as a wildlife corridor.
- 5.6 The biological survey done in November 1989 states that 'the species richness is high, a result of the diversity of habitats traversed by the road reserve.' What needs to be emphasised is parts of the road reserve comprise large mature trees and intact vegetation communities, in some areas the road reserve has the last remnant of native vegetation. This makes their loss even more serious, and replacement of habitat should be pursued for the fauna which uses this area.
- 5.7 Whilst considerable effort was expended in retaining Banksia woodlands in the road reserve of the Kwinana Freeway north of Forest Rd, the area is not managed appropriately. Weed invasion has occurred and most plantings are not compatible with the local vegetation. Such avoidable problems should not be continued in the Roe Highway proposal.

## **6 Wimbledon - Rupert Streets and the Canning River Floodplain**

- 6.1 Wimbledon and Rupert Streets are Beckenham's country lanes. They run through the Canning River Floodplain. This bypass is inappropriate because the road will:
  - (i) be a speed ramp of such gross size that it will cut residents off from neighbours and parklands;
  - (ii) totally change the rural atmosphere of the area;
  - (iii) increase noise by an amount that Main Roads cannot or will not disclose and;
  - (iv) will be totally imposing at 2 - 3 metres above the current road level to avoid flood waters.
- 6.2 The community consultative process has been grossly breached by the imposition of a 4 lane flyover with a figure 8 intersection on the Wimbledon Avenue - Rupert Street alignment. The agreement of the 3 out of 4 community groups was for a 2

lane access to Roe Highway. The diversion of traffic from Spencer Road was not considered during of the consultative process nor was a four lane road.

- 6.3 The Main Roads intend to send 8,500 vehicles through the Wimbleton - Rupert Street area. A more realistic reconsideration would be sharing the access to the Roe Highway between Spencer Road and Wimbleton - Rupert Streets.
- 6.4 Drivers on the Wimbleton - Rupert St ramp will be subjected to dense fog at certain times of the year, which is not present on the Albany Highway. This will be a traffic hazard.
- 6.5 Why was Sevenoaks Street and Railway Parade off the agenda for the Roe Highway access, when these roads, being coupled with public transport would have been the obvious roads to use rather than the Wimbleton - Rupert Street alignment?
- 6.6 The Main Roads intend to build 4 lanes along Wimbleton and Rupert Streets (though only 2 as a starter), plus two lanes of local traffic, plus an upgraded through road from Spencer Rd to Rupert St, all in the floodplain as a monument to dead bitumen in the existing combined 8 lanes in Spencer Rd and Albany Highway.
- 6.7 There is currently no data on the amount of pollutants in the run-off from roads in Perth. In May this year over 30 ducks died from chemical poisoning or botulism along the Canning River in the Wimbleton St area. Since the Canning River is already suffocating from pollutants, then shouldn't we locate our roads outside of wetlands and floodplains.
- 6.8 What will be the impact upon floodwaters by building the Wimbleton - Rupert St ramp. Recent floods were within 1 centimetre of entering some homes in this area.
- 6.9 What impact will there be from changes to drainage patterns in the Wimbleton - Rupert Street area. There are a stand of River Gum and Melaleuca which need regular flooding, and the road will block the flood way.
- 6.10 The Wimbleton - Rupert Street access will unnecessarily destroy the Canning River floodplain and its wetlands. The Main Roads have not considered the use of Spencer Road as an alternative to provide access to Roe Highway.

## **7 Cumulative impacts**

- 7.1 The socio - economic benefits of this proposal are all directed towards business and industry. This benefit to industry will mean increased industry and larger numbers of heavy vehicles using the highway. What resulting effect does this have upon lead levels in the air and general air quality and the health of local residents and pedestrian safety?
- 7.2 Government departments should turn their considerable talents and resources to more productive and efficient means of mass transport systems, rather than designing more roads. If it is found absolutely necessary to build more roads like this, then all the ancillary factors should be considered and presented, rather than those just directly linked to the construction of the roadway.
- 7.3 We should be reducing the number and size of roads and encouraging public transport and not ignoring the air pollution and 'greenhouse' gas warnings.
- 7.4 Assessing the Roe Highway stage by stage will mean that the total effect of the future highway will not be considered. We need measures to counter air pollution,

traffic jams and the ugliness of built up areas of bitumen. The promotion of the 'wonders' of car use also has created unforeseen problems with insurance, car park security, high speed chases and the like. Counter measures against the many undesirable effects of car use must be in the framework of a public transport policy.

- 7.5 The failure by Main Roads to consider the impact of the Highway on Perth's declining air quality and exacerbating the overall automobile dependence of our transport system is another blow to the ecological sustainability of our transport system. Failure to consider these gross environmental impact renders the PER a mere local palliative.

## **8 Archaeology and ethnography**

- 8.1 There appear to be some inconsistencies between the recommendations contained in Appendix 4 (Archaeological survey) and the commitments made by Main Roads (Section 5.6).
- (i) There are two sites identified in the survey, but no mention is made of excavating the sites. If no excavations are planned, have the Museum been advised and offered the opportunity to excavate?
  - (ii) Were aboriginal consultants used to determine the significance of the other 2 sites found during the archaeological survey? What were their conclusions?
  - (iii) What safeguards exist within Main Roads work practices to ensure that further sites will not be destroyed without notification or due consideration of the site?
  - (iv) How will Main Roads staff and contract staff be trained to recognised archaeological sites in the course of construction?
- 8.2 Will Main Roads maintain contact and ongoing consultation with Aboriginal communities with regard to discoveries of further sites; especially in relation to significance?

## **9 Noise impacts and management**

- 9.1 Are bunds sufficient to screen noise from nearby residential areas?
- 9.2 If screening walls are used the designs should not be unsightly as they are along the Mitchell Freeway at Leederville. Furthermore, screening walls should not restrict motorists leaving the roadway in the event of breakdown.
- 9.3 As residential development is likely to follow the Highway, are noise buffers intended for the entire length of the road?
- 9.4 A commitment is given that additional noise attenuation will be incorporated in the design if forecast noise levels are above 68 dB(A). Why has this level not been reviewed to be consistent with current practice in other states.
- 9.5 Noise barriers appear necessary on the north east corner of the Spencer Road bridge location.

## **10 Other issues**

- 10.1 The Water Authority of Western Australia considers that dewatering near Spencer Road will have no long term impact upon the aquifer system. However, local bore owners may be adversely affected without their knowledge and may suffer temporary inconvenience. It is recommended that Main Roads contact the land

owners prior to dewatering commencing so that adequate alternatives can be planned.

- 10.2 The structure and function of Main Roads should reviewed and re-organised, because they have vested interests in continuing the building of roads, rather than taking an integrated approach to the transport requirements of this state.
- 10.3 Fixed annual vehicle charges (licence and third party insurance) should be abolished and replaced by an equivalent fuel-use charge to offer a clear incentive for people to minimise vehicle use.

| <b>SOURCE OF SUBMISSION</b> | <b>NUMBER</b> |
|-----------------------------|---------------|
| Individuals                 | <b>4</b>      |
| Community Groups            | <b>11</b>     |
| Government Departments      | <b>4</b>      |
| <b>TOTAL</b>                | <b>19</b>     |

## **Appendix 3**

**Responses from Main Roads Western Australia  
to the summary of public submissions**

## ROE HIGHWAY - WELSHPOOL ROAD TO SOUTH STREET

### RESPONSES TO QUESTIONS RESULTING FROM THE PUBLIC SUBMISSIONS TO THE PER

#### **1A. Transport planning and Management (Long-term and Project Specific Planning)**

The following paragraphs are presented in response to the questions/concerns raised in the EPA's summary of the public submissions numbered 1.1 to 1.3, 7.1 to 7.5, and 10.2 and 10.3.

As part of Perth's overall transport needs, now and into the future, the justification for the project was set out in Sections 2.1 to 2.3 of the PER.

The need for, and the concept proposed for the extension of Roe Highway have been endorsed by the Local Government bodies responsible for the region, and by the general public as evidenced in the responses to the public information process (See Table G1 in Appendix G of the PER).

Favourable comment came in particular from individuals who drive in the course of earning their living such as the owners/drivers of service vehicles, taxi operators and the drivers of transport and delivery vehicles.

Roads provide for several different aspect of transport needs. They are used by a variety of clients which includes the private motorist. Of equal importance is the movement of freight (both bulk and small volumes), the use by various forms of public transport, commuting by the service industries, and the movement of emergency vehicles. The emphasis in providing new roads (and upgrading existing ones) is that all these functions be fulfilled in the most efficient and safest manner possible. In addition, the lifestyle of adjacent residents and the viability of other land uses in the vicinity are taken into account.

Main Roads is a participant in the Metropolitan Transport Strategy Group which aims to define a vision for Perth's transport system over the next 30 years, and to suggest ways for its implementation. This study has so far involved the first phase of an extensive public consultation process. The group includes in its brief the examination of **all** transport methods and the effect of 'telecommuting' and other new technologies on the lifestyle and transport needs of the Metropolitan population. Urban air quality in relation to transport planning is also taken into account in these studies.

Highways such as Roe Highway are planned and designed to provide mainly for inter-suburb or regional transport needs. It was in this context that the original ring road concept was proposed. In



some parts of the metropolitan area, public transport (rail and road) has assumed a higher profile in this respect. However, in the corridor serviced by the Roe Highway extension, the rail possibility is not seen as feasible in the short term. Both Transperth and Westrail have been kept informed during the planning phase of the project.

An analysis of road use in the vicinity of the Highway extension in 1989 showed that heavy vehicles made up approximately 10% of total traffic. Allowing for growth of the industrial areas the figure of 19% given by a respondent is on the high side. All calculations such as the predicted life of the road surface and noise levels on completion, take into account that a proportion of the total traffic will be made up of heavy vehicles.

There are two areas where existing Transperth bus routes will be affected by the construction of the Highway extension. One is in the Welshpool Road/William Street area, and the other where Cameron Street will be severed by the Highway. Transperth have been consulted so that planning for new routes can be initiated. Any alteration to routes or the position of bus stops will be notified well in advance and will proceed with as little inconvenience as possible. All other severance, access and traffic flow issues were dealt with in the PER in Sections 5.8.1, 5.8.2 and 5.8.3 and outstanding items are being addressed in consultation with Local Government.

All forecasts indicate that the extension of Roe Highway will attract commercial traffic away from suburban routes because of the higher standard of the carriageways and the absence of traffic lights. Future completion of the Roe Highway to Kwinana Freeway and beyond will ensure that heavy vehicles travelling between Welshpool and Kwinana will use the Highway in preference to other less suitable routes. This means a safer environment for all other users of the suburban road network including pedestrians and cyclists.

#### **1B. Transport Planning and Management (Cyclists and Pedestrians)**

The following information is provided in response to points 1.2 to 1.11 in the EPA's summary of public submissions.

The Cyclist Action Group has not been consulted directly, but has the opportunity for input into planning for all cycling facilities provided by Main Roads through their representative on the Western Australian Bicycle Committee.

In the past 10 years Main Roads has spent about \$14 million (in dollars of the day) on facilities for use by cyclists. With respect to the extension of Roe Highway, approximately one percent of the estimated construction cost is allowed for cycling facilities. This estimate includes provision of the

cycleway/dual use path, sealing of the shoulders for use by cyclists, and a proportion of the cost of under/overpasses. As a percentage of total expenditure, both historically, and for this project, this compares favourably with the percentage of commuter trips made by cyclists.

Planning provisions for new highways include the initial construction of a dual use path on one side only. Which side of the highway is utilised takes into consideration the surrounding land use, existing cycling and pedestrian patterns, as well as such factors as topography and the limits of the highway reserve. In the case of Roe Highway, professional and long distance bicycle commuters will also be able to use the shoulders of the road travelling in the same direction as the motorised traffic. If demand becomes such that a single dual use path is not enough, consideration is given by Main Roads to a second path on the other side of the highway such as has recently been constructed on sections of the Mitchell Freeway. Every attempt is made to provide first class facilities which conform with Bikewest guide-lines.

As with the positioning of the initial path, the location of crossings for cyclists and pedestrians is largely dependant on adjacent land use. Local Government and Bikewest are consulted during the planning and design of the paths and crossings, so that sensible linkages into the suburban networks are ensured. The final form of the crossings is determined in the design phase of the project. There will be further consultation with Local Government, Bikewest and the adjacent communities at that time.

All intersections on Roe Highway will have a separate bicycle lane supplied with its own detection loop for the control of traffic signals. Provision of pedestrian push buttons for "pedestrian only" phases will be considered during the final design.

## **2. Brixton Street Issues**

The following should be read in conjunction with the Brixton Street impact and management section of the PER (Section 5.5).

Main Roads recognises the biological importance of the area around the proposed Brixton Street crossing. It is for this reason that the original concept for the crossing was discarded, and alternatives examined. However, as Brixton Street comes under Local Government control, any alterations to the road which would substantially alter the level of service provided would only be undertaken on the recommendation of the Gosnells Council.

Since the end of the public submission period for the PER, Main Roads has initiated a consultative process between officers of the Gosnells Council and concerned members of the Conservation movement. The initial meeting was also attended by representatives from Main Roads, the Bickley

Ward Progress and Rate Payers Association, and the Departments of Conservation and Land Management and Planning and Urban Development. The decision of the meeting was that the Council be requested to reconsider the need for keeping Brixton Street open, and that with the approval of Council an informed community evaluation of the issue be undertaken. At the meeting the Council officers were approached for information on the local dispersal of traffic and related matters (See questions/comments 2.8, 2.14, 2.15, 2.16 and 2.17). These are local traffic management questions which Main Roads does not have the data to answer.

Main Roads will continue to be a party to the discussions where requested, and will provide whatever technical information it has at its disposal. Main Roads is confident that construction of the Brixton Street crossing within the confines of the existing road reserve would pose no additional threat to the Rare Flora at the site, and, that with the provision of suitably designed fauna underpasses, it would have little influence on the regional status of the Southern Brown Bandicoot population. It is not envisaged that the Bandicoots resident to the south-east of the proposed Highway extension would cross the Highway itself as the area opposite is largely developed. However, this question will be addressed in consultation with the Department of Conservation and Land Management during the final design phase of the project.

Drainage of all new works will also be addressed at that time and will involve consultation with Local Government, the Water Authority of WA and the Swan River Trust, and will be designed to conform with the highest environmental standards.

### **3. System 6 Recommendation M75 and the Canning River Bridges**

The concept for the bridges at the Canning River Crossing takes into account the environmental importance of the riverine environment. Construction work will not be required at the water's edge, and the potential for siltation and erosion through removal of vegetation on the edge of the main channel will be minimised. Disruption to fauna (mainly bird species) will be temporary, and will be mitigated by the continuity of the vegetation along the river up- and downstream from the construction site. When completed there will be ample space for fauna movement along the river banks beneath the bridge. The commitment to initiate a Blackberry control programme along the banks of the river (in co-operation with the Swan River Trust) will be of considerable environmental significance to the System 6 area outside of the road reserve itself. This measure along with ecologically sound and rapid rehabilitation at the site will mean that there will be no long-term negative effects to the System 6 values of the area.

#### 4. General Wetland and Watercourse Impacts

The general geographical location of the route for the highway extension means that much of the reserve is waterlogged or inundated during the winter months. However, with the exception of the four sites mentioned below, these ephemerally wet areas are partly or totally cleared and significantly degraded. It is acknowledged that even these degraded areas retain some wetland functions. These would primarily be concerned with local hydrology (groundwater recharge, flood control, nutrient filtration). Areas along the reserve would also have some recreational or aesthetic value for a proportion of the local residents, especially as the remnant native plants are often trees. All hydrological functions will be considered during the design of the extension, and care will be taken not to alter local hydrological cycles. Some aesthetic values will be replaced, and in certain areas improved during the landscaping/rehabilitation. Conservation functions such as providing habitat for amphibians in the form of seasonally wet areas will also be considered in the design of the drainage for the project. Native sedges and rushes can be included in the planting for these areas.

The four sites where the remnant vegetation is still in a good enough condition to suggest that other conservation values need to be considered are:

- **The Yule Brook crossing**

The management of environmental impacts at the crossing were dealt with in Section 5.1 and 5.3 of the PER.

- **The Brixton Street area from Bickley Road to approximately 400m south of Brixton Street**

The area is seasonally waterlogged to inundated, and vegetation consists of a mixture of Swishbush (*Viminaria juncea*) shrubland and patches of *Verticordia/Hypocalymma* dominated heath. Most of the shrub layer is intact, but the ground layer is weedy. The area would originally have been contiguous with the larger uncleared shrub- and heathlands east of the railway line, and probably also covered areas of Mills Park. The section south of Brixton Street is surrounded and crossed by deeply incised tracks used by trailbikers. A recent site visit found the water collected on the tracks and lower lying areas to be turbid and growing algal mats. Oil slicks were present in places. A small population of the DRF *Aponogeton hexatepalus* located some 100m south of Brixton Street in the road reserve has been reported since the release of the PER. No count of the numbers in the population has yet been made, but it appears to be small in comparison with the population on the other side of the railway on the 'Homeswest' site (ref. L Mutter, CALM). The presence of the rare flora places this wetland remnant in the H - High Conservation category (EPA's Guide to Wetland Management - Bulletin 686). An assessment of the other values of the area using Bulletin 686 resulted in a Natural Attribute score of 16, and a Human Use score of 11 for the site. Ministerial permission to take the DRF in the Highway reserve will be sought in the near

future, and the following measures are suggested in mitigation of the impact of the highway construction. The highway will be constructed on fill through this section. There will be an area of some 25m to 30m wide between the toe of the carriageway embankment and the railway formation. This land is part railway reserve and part road reserve. With the consent of Westrail, the native vegetation which remains can be augmented by rehabilitation of the track and disturbed area closest to the railway. Species such as *Viminaria juncea*, *Hypocalymma angustifolium*, and sedges which occur naturally at the site would be used. The underlying soil would not be disturbed, and this linear remnant would collect and hold rain-water during winter. Planting on the highway embankment would also be site specific using locally occurring species.

The small size of the remnant and of the DRF population, and the proximity of larger areas of similar wetland with a large population of *Aponogeton hexatepalus* already earmarked for conservation make unreasonable any request for replacement of the functions in any manner other than that set out above.

- **The fringes of the Canning River**

The management of environmental impacts at the Canning River crossing are set out in Sections 5.2 to 5.4 of the PER, and at Section 3 above.

- **The seasonally waterlogged heath north of South Street**

The area was considered in the PER at Section 4.3. The vegetation consists of dense *Pericalymma ellipticum* heath with scattered emergent *Melaleuca preissiana* and some areas of sedges. The vegetation is generally in good condition. A Bulletin 686 evaluation of the site resulted in a Natural Attribute score of 16, and a Human Use score of 6. This gives the wetland remnant a R - Resource Enhancement classification. In this stage of the construction, the carriageways will only occupy the western side of the reserve. When Roe Highway is extended beyond South Street the whole of the reserve will be needed for the intersection. However, in the medium term, much of this site will remain undisturbed. Rehabilitation of the embankment on the west will be designed to merge with the remnant vegetation on the WAWA reserve just to the north along the highway. This will include the use of wetland species at the toe of the embankment. Final rehabilitation and mitigation should be included in the next stage of the Roe Highway project, when the design of the intersection is finalised.

## 5. General Flora and Fauna Concerns

Management commitments which deal with general Flora and Fauna concerns occur in Sections 5.3 and 5.4 of the PER.

There is no warrant for including fauna underpasses in the design. With the exception of the Canning River crossing, there are no areas along this section of the Highway route where remnant vegetation remains on opposite sides of the reserve. As was mentioned in Section 3, the Canning bridges have been designed so that there will be ample space on both banks of the river beneath the bridge for fauna movement.

There are few intact vegetation remnants in the Highway reserve, and these have been dealt with in Sections 3 and 4. In environmentally sensitive areas every attempt is made to use appropriate species in the rehabilitation programme. In other areas along the reserve, a mix of local, and rapidly growing, (but not necessarily local), native species are used in the landscaping. Between Welshpool Road and South Street, seed or propagules for use in rehabilitation will only be collected at the for use in the environmentally important areas at Brixton Street and South Street.

## **6. Wimbleton-Rupert Streets and the Canning River Flood plain**

The Wimbleton-Rupert Streets section of the Roe Highway project is not included in this PER. The Wimbleton-Rupert Streets connection to Roe Highway was referred to the EPA separately, because of the difference in timing for the various sections. However, the following comments are offered.

All alternatives, including connecting Spencer Road to Roe Highway were given serious consideration during the planning and scoping of the project. The environmental and social issues raised by the construction of the connection continue to be taken into account as the design for this section is finalised. Local Government, WAWA, The Swan River Trust and the EPA are consulted whenever necessary, and separate and independent noise and traffic studies have been or will be undertaken.

## **7. Cumulative Impacts**

See comments given under section 1A above.

## **8. Archaeology and Ethnography**

It must be noted that under the Aboriginal Heritage Act the final arbiter of the significance or otherwise of Aboriginal sites (both Archaeological and Ethnographic) is the Aboriginal Cultural Materials Committee. This committee considered the Archaeological and Ethnographic reports as appended to the PER and granted unconditional clearance to disturb the Archaeological sites for the purposes of road construction. As mentioned in the PER disturbance to the Velgrove Avenue site is

in fact unlikely. The consultant archaeologist considered that the likelihood of finding sites in the general area was moderate. However, as survey visibility in some parts of the reserve was not good, areas with a high potential for sites (such as swamp margins) will be surveyed in detail prior to construction. Any new finds would be referred to the Aboriginal Cultural Material Committee through the WA Museum.

## **9. Noise Impacts and Management**

The effectiveness of any noise barrier including earth bunds in reducing traffic noise is dependent on a number of factors. These include the local topography, and the distance and orientation of the impact area in relation to the carriageways. Generally, along the Roe Highway extension bunds will be sufficient to maintain the noise levels at acceptable levels. The 68 dB(A) level quoted in the PER is in fact under review at present and may be revised downwards before final design for Roe Highway is complete.

Spencer Road crossing is an area already identified as probably requiring alternative and/or additional noise barriers, and these will be provided if the warrant exists.

There are no new residential areas proposed along this section of the Highway extension, and noise attenuation measures will only be provided as shown on the plans appended to the PER - ie. where existing residential areas abut the highway reserve, and where the warrant exists.

Any alternative structures (other than bunds) used for noise attenuation would be designed with local community input to be in keeping with the surroundings.

## **10. Other Issues**

Main Roads will undertake to contact land owners in the vicinity of the Spencer Road cutting area well in advance of the start of construction work so that all private bores in the area can be monitored.

## **Appendix 4**

**List of individuals and organisations who forwarded a submission during public review of the Public Environmental Review document**



- Swan River Trust
- Department of Conservation and Land Management
- Water Authority of Western Australia
- Department of Planning and Urban Development
  
- Ms M Geelen
- Ms C Heal
- Ms A Herlihy
- Mr K Barron
  
- Friends of Brixton Street Wetlands
- Wildflower Society of Western Australia (Inc)
- The Greens (W.A.)
- Save Our Suburbs Community Group
- The Tree Society
- Wetlands Conservation Society (Inc)
- Waterbird Conservation Group Inc
- National Threatened Species Network (WA)
- Society For Growing Australian Plants (Calectasia Study Group)
- Conservation Council of Western Australia Inc.
- Cyclists' Action Group