

Lancelin to Cervantes Coastal Road

Main Roads Western Australia

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

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Summary and recommendations

Main Roads Western Australia (MRWA) proposes to develop a coastal road between Lancelin and Cervantes (Figure 1). The single carriageway sealed road represents the final stage of the Perth to Dongara coastal route, to be known as Indian Ocean Drive.

The coastal road is intended to provide an alternative route for tourist traffic, separate from the high-speed freight traffic on the Brand Highway.

This report provides the Environmental Protection Authority's (EPA's) advice and recommendations to the Minister for the Environment and Heritage on the environmental factors relevant to the proposal.

Section 44 of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment on the environmental factors relevant to the proposal and on the conditions and procedures to which the proposal should be subject, if implemented. In addition, the EPA may make recommendations as it sees fit.

Relevant environmental factors

The EPA decided that the following environmental factors relevant to the proposal required detailed evaluation in the report:

- (a) Vegetation and conservation of biodiversity – the effects of construction and ongoing maintenance of the road on local and regional vegetation, and the consequential effects on biodiversity, both within the conservation estate and elsewhere along the road corridor;
- (b) Conservation estate - loss of area and fragmentation effects; and
- (c) Groundwater quality - protection of Lancelin's drinking water supply.

There were a number of other factors which were relevant to the proposal, but the EPA is of the view that the information set out in Appendix 3 provides sufficient evaluation.

Conclusion

The EPA has considered the proposal by MRWA to construct the Lancelin to Cervantes coastal road, which includes spur roads to the settlements of Wedge and Grey, and an unsealed east-west link to Brand Highway via Mimegarra Road.

The proposal will result in the clearing of approximately 224 hectares (ha) of vegetation within areas of the conservation estate, including the Nambung National Park, the Nilgen Nature Reserve and the Wanagarren Nature Reserve, as well as clearing on private land and in road reserves.

The vegetation proposed to be cleared or disturbed by this proposal has been examined against the EPA's Position Statement No. 2 *Environmental Protection of Native Vegetation in Western Australia* (EPA, 2000) which outlines the EPA's expectations for proposals that involve a clearing component.

It is the EPA's view that the proposal meets the elements detailed in Section 4.2, "*Clearing in the agricultural area where alternative mechanisms address biodiversity values*" and Section 4.3, "*Clearing in other areas of Western Australia*". The EPA considers the proponent has demonstrated, that through its consideration of alternatives, environmental investigations, management plans and development of a mitigation strategy, the proposal will not impact significantly on the conservation estate or other regionally significant vegetation.

The proposed alignment of the road principally occurs in the Quindalup and Spearwood Soil and Landscape Systems which are generally well represented in the region due to the large areas (34,983 ha) of conservation estate made up of the Nambung National Park, Nilgen Nature Reserve and Wanagarren Nature Reserve. MRWA has committed to a strategy which mitigates for losses to the conservation estate by providing additional land for inclusion in the conservation estate and rehabilitation of existing disturbed areas. Although there is some potential for this proposal to impact on priority flora, MRWA will manage these impacts in consultation and to the satisfaction of the Department of Conservation and Land Management. MRWA has also committed to management plans to ensure the road is designed and constructed in a manner that incorporates design criteria and management measures that are necessary to preclude the introduction of dieback and weeds both during construction of the road and in the longer term.

During the public review period, it was identified that MRWA's preferred alignment would traverse the Lancelin Water Reserve which supplies Lancelin's drinking water. The EPA supports MRWA's decision to revise the alignment which will take the road outside of the Water Reserve and provide for a level of protection of Lancelin's water supply satisfactory to the Water and Rivers Commission.

This road represents the final stage in the Indian Ocean Drive linking Perth to Dongara. The EPA understands that the Indian Ocean Drive will provide an alternative route for tourist traffic with MRWA maintaining the Brand Highway as the major freight traffic route. While there may be a need in the future to upgrade the road, the EPA is mindful of comments received from the Conservation Commission of Western Australia that the road was designed to showcase and provide access to the environmental and scenic attributes of the conservation estate, and therefore, the road should remain in accord with the management objectives of the conservation estate. The EPA supports the decision of MRWA to only excise from the conservation estate, an area that provides for the construction of a single carriageway. This decision provides clear recognition that a future proposal to upgrade the road will need to be considered on its merit and should be consistent with the management objectives of the conservation estate.

The EPA has concluded that it is unlikely that the EPA's objectives would be compromised provided there is satisfactory implementation by the proponent of the proponent's commitments and the recommended conditions set out in Appendix 4 and summarised in Section 4.

Recommendations

The EPA submits the following recommendations to the Minister for the Environment and Heritage:

1. That the Minister notes that the proposal being assessed is for the construction of the Lancelin to Cervantes coastal road, which includes spur roads to the settlements of Wedge and Grey, and an unsealed east-west link to Brand Highway via Mimegarra Road.
2. That the Minister considers the report on the relevant environmental factors as set out in Section 3.
3. That the Minister notes that the EPA has concluded that it is unlikely that the EPA's objectives would be compromised, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 4, and summarised in Section 4, including the proponent's commitments.
4. That the Minister imposes the conditions and procedures recommended in Appendix 4 of this report.

Conditions

Having considered the proponent's commitments and information provided in this report, the EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by Main Roads Western Australia to construct the Lancelin to Cervantes coastal road, which includes spur roads to the settlements of Wedge and Grey, and an unsealed east-west link to Brand Highway via Mimegarra Road is approved for implementation. These conditions are presented in Appendix 4. Matters addressed in the conditions include that the proponent shall fulfil the commitments in the Consolidated Commitments statement set out as an attachment to the recommended conditions in Appendix 4.

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1. Introduction and background

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for the Environment and Heritage on the environmental factors relevant to the proposal by Main Roads Western Australia (MRWA), to construct a single carriageway sealed road between Lancelin and Cervantes (Figure 1).

The Lancelin to Cervantes coastal road represents the final stage of the Perth to Dongara coastal route, to be known as Indian Ocean Drive. The coastal road is intended to provide an alternative route for tourist traffic, separate from the high-speed freight traffic on the Brand Highway. Once completed, the route will link the coastal towns and tourist destinations between Perth and Dongara.

The proposed alignment of the coastal road will traverse the Nambung National Park, the Wanagarren Nature Reserve and the Nilgen Nature Reserve (see Figure 1). The balance of the route traverses freehold land and gazetted road reserves.

Further details of the proposal are presented in Section 2 of this report. Section 3 discusses the environmental factors relevant to the proposal. The Conditions and Commitments to which the proposal should be subject, if the Minister determines that it may be implemented, are set out in Section 4. Section 5 presents the EPA's conclusions and Section 6, the EPA's Recommendations.

Appendix 5 contains a summary of submissions and the proponent's response to submissions and is included as a matter of information only and does not form part of the EPA's report and recommendations. Issues arising from this process and which have been taken into account by the EPA appear in the report itself.

2. The proposal

MRWA proposes to construct approximately 66 kilometres (km) of sealed road between Lancelin and Cervantes. The Lancelin to Cervantes coastal road is the final link of the Perth to Dongara coastal route, known as Indian Ocean Drive. The proposal includes the construction of spur roads to the settlements of Wedge and Grey, and an unsealed east-west link to Brand Highway via Mimegarra Road.

The proposed alignment of the coastal road will bisect several areas of conservation estate, including the Nambung National Park, the Wanagarren Nature Reserve and the Nilgen Nature Reserve. It will result in the excision of approximately 230 hectares (ha) from the conservation estate and the clearing of approximately 123 ha within the excised area.

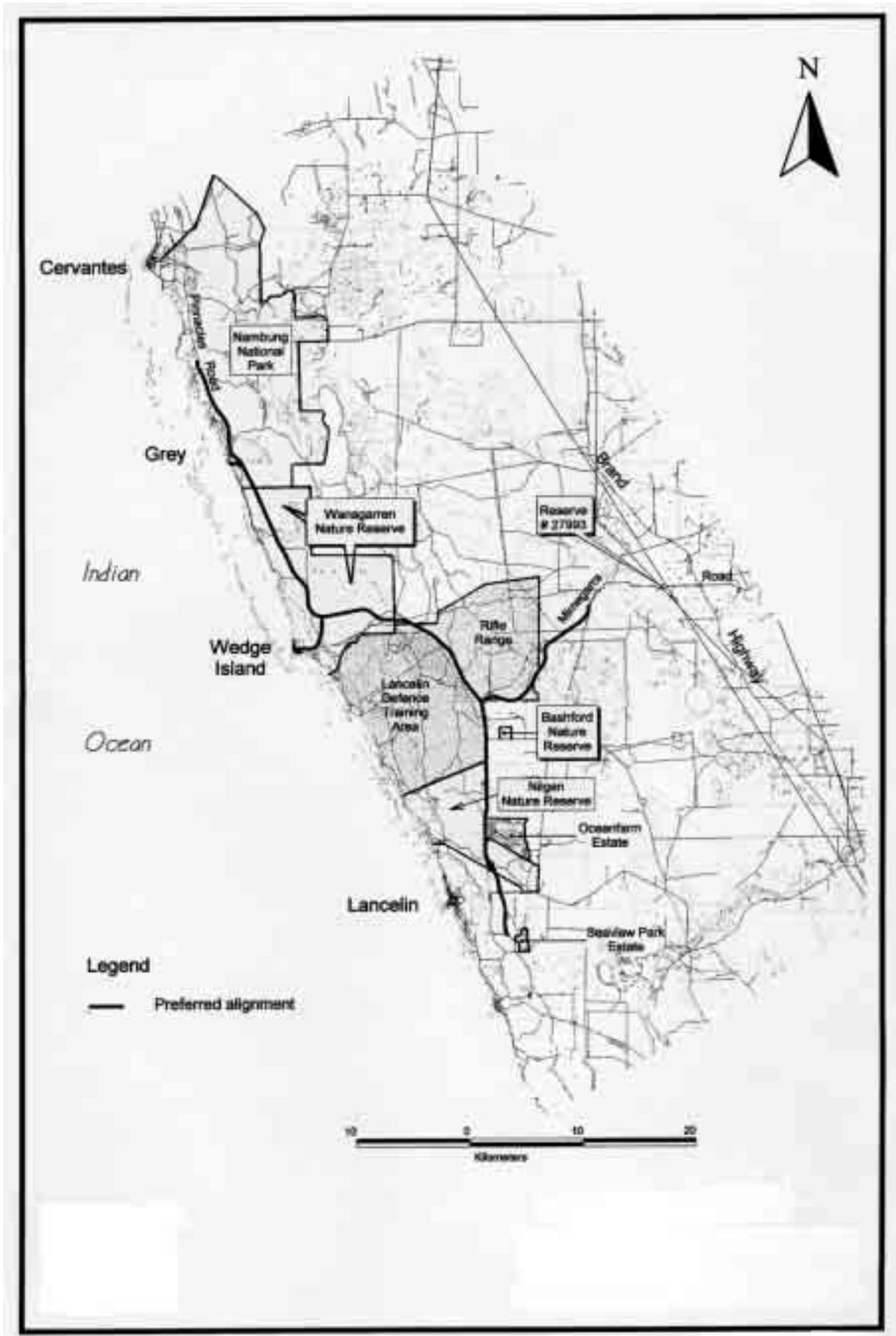


Figure 1: Lancelin to Cervantes coastal road general location of the alignment

The balance of the route traverses freehold land and gazetted road reserves. Clearing in these areas totals approximately 101 ha. The total clearing for the proposal is therefore approximately 224 ha.

The main characteristics of the proposal are summarised in Table 1 below. A detailed description of the proposal is provided in Section 1 of the PER document titled, '*Lancelin to Cervantes Coastal Road*' (Main Roads Western Australia, October 2000).

The PER report identified a preferred alignment, but also nominated several alternative alignment options for the Lancelin and Wedge sections. In the area of the Lancelin Defence Training Area (LDTA), the route of the road was defined by an existing road reserve which passes through the LDTA. The alternative alignments considered for the Lancelin and Wedge sections are shown as figures 2 and 3 respectively.

The preferred alignment put forward by MRWA in the PER represented, in its view, the most acceptable alternative after taking into account environmental concerns, impacts on private properties, ease of construction, cost and visual quality criteria.

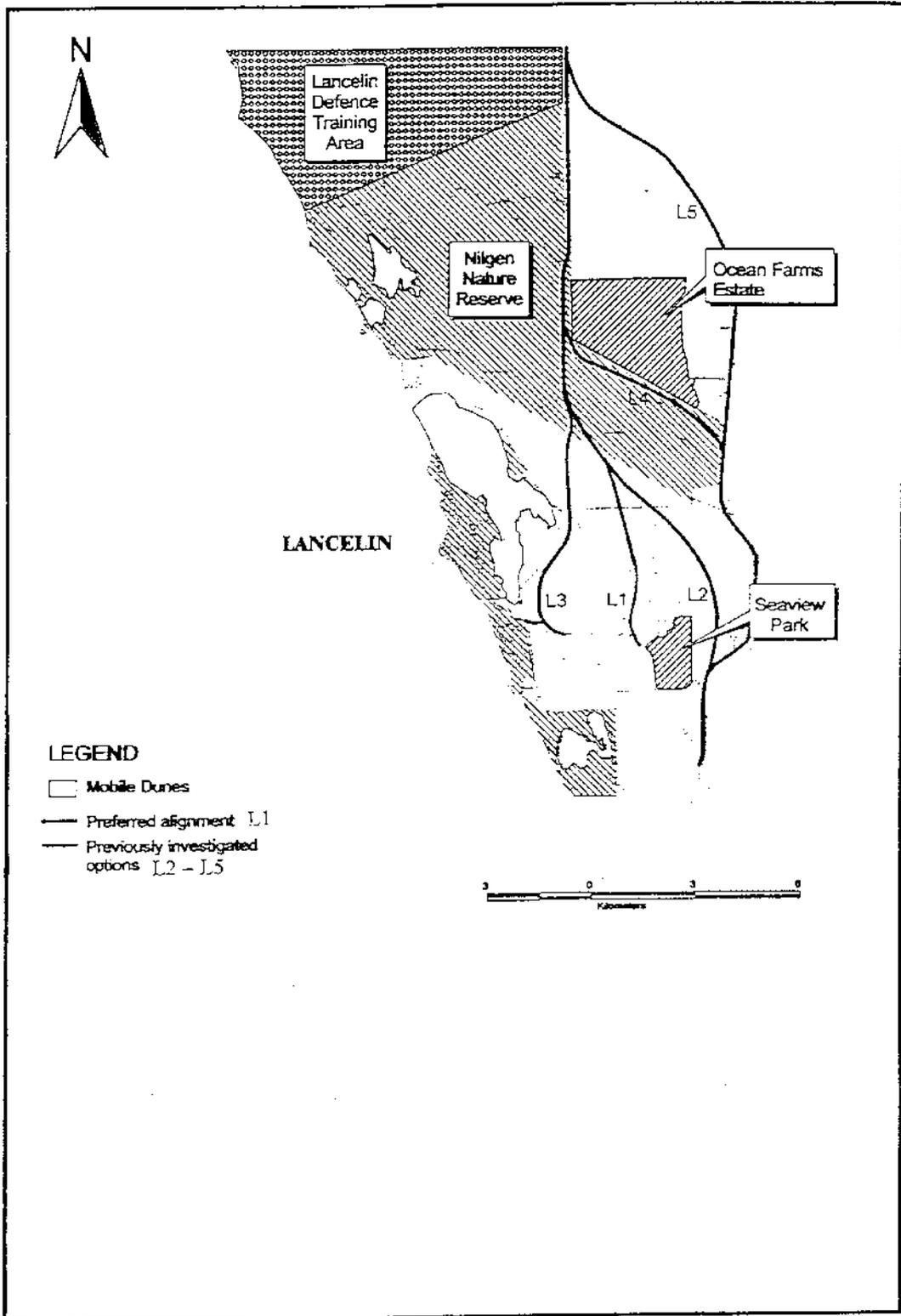


Figure 2: *Alternative alignment options – Lancelin section*

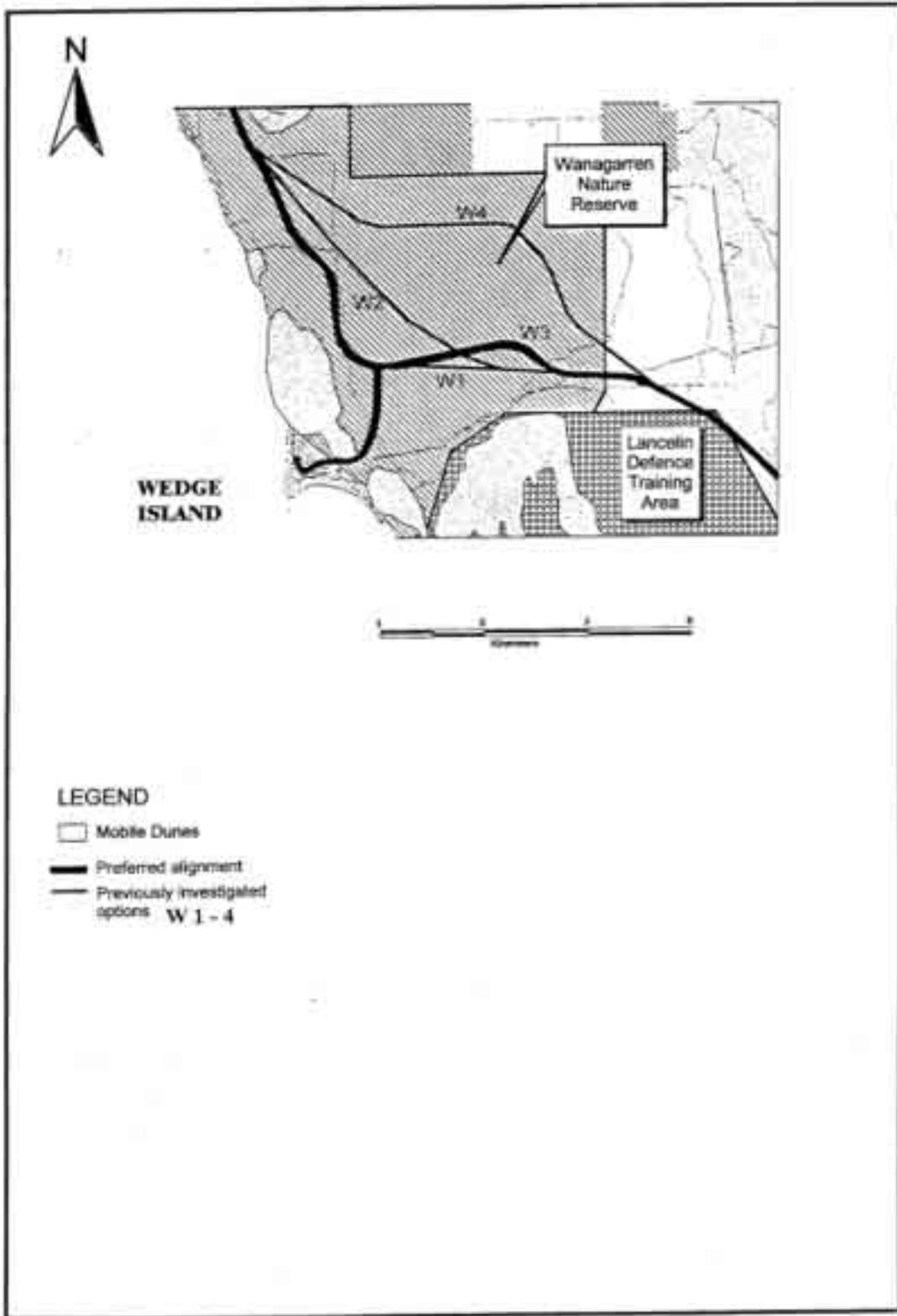


Figure 3: Alternative alignment options – Wedge section

Table 1: Summary of key proposal characteristics

Element	Description
Length of the proposed Lancelin to Cervantes link in coastal road	Approximately 66 kilometres.
Other road connections	<ul style="list-style-type: none"> • East-West connection from the Coastal Road to Mimegarra Road (14.0 kilometres). • Wedge spur road (5.2 kilometres). • Grey spur road (1.2 kilometres). • Kangaroo Point realignment on existing Pinnacles road (0.95 kilometres). • Kangaroo Point spur road connection (0.15 kilometres). • Pinnacle Desert spur road connection (0.38 kilometres). • Hangover Bay spur road connection (0.4 kilometres).
Average width of road construction area	Approximately 25 metres.
Width of road reserve	<ul style="list-style-type: none"> • Coastal Road, including the Kangaroo Point realignment – 50 metres through the Conservation Estate and 100 metres through other land tenures. • East-West connection from the Coastal Road to Mimegarra Road - 100 metres. • Wedge, Grey, Hangover Bay and Kangaroo Point spur roads as well as the Pinnacle Desert road connection – no designated road reserves will be created.
Duration of project construction	Staged over 2 years.
Standard of construction	<ul style="list-style-type: none"> • The Coastal Road, Wedge and Grey spur roads will be sealed, with a design speed of 110 kilometres per hour. • The East West Connection from the Coastal Road to Mimegarra Road will be unsealed. • No construction works, besides maintenance works, will be undertaken along the existing section of the Mimegarra Road. This existing section will remain unsealed. • The connection to Hangover Bay, Pinnacles Desert and Kangaroo Point spur roads will remain unsealed.
Construction material sources	Cut and fill requirements for the project are balanced. Imported fill will not be required.
Approximate area of vegetation disturbance	224 hectares.

Since the release of the PER, a number of modifications to the proposal have been made by the proponent. These include:

- Reduction in the width of the road reserve corridor proposed to be excised from the conservation estate from an original width of 100 metres to a lesser width of 50 metres. This reduction in the corridor to be excised from the conservation estate was undertaken to address concerns that a wider corridor excised at this time was signaling an intention to upgrade the coastal road to a dual carriage way. This is discussed further in Section 3.2.
- Provision of a mitigation strategy to ensure there is no significant loss of environmental values from the conservation estate as a consequence of implementing this proposal. This is also discussed further in Section 3.2.
- Rejection of the L3 alignment in the Lancelin section in favour of the L1 alignment, following advice from the Water and Rivers Commission (WRC) that the L3 alignment traverses the Lancelin Water Reserve. The road was considered to be incompatible with the Water Reserve which is the source of Lancelin's drinking water. The Water Reserve is a Priority 1 Source Protection Area which is declared over land where the provision of the highest quality public drinking water is the prime beneficial land use. This is discussed further in Section 3.3.
- Minor re-alignments within the proposed road reserve corridor, in order to minimise impact on vegetation transition zones and to provide greater protection to priority flora.

3. Relevant environmental factors

Section 44 of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment on the environmental factors relevant to the proposal and the conditions and procedures, if any, to which the proposal should be subject. In addition, the EPA may make recommendations as it sees fit.

The identification process for the relevant factors selected for detailed evaluation in this report is summarised in Appendix 3. The reader is referred to Appendix 3 for the evaluation of factors not discussed below. A number of these factors are relevant to the proposal, but the EPA is of the view that the information set out in Appendix 3 provides sufficient evaluation.

It is the EPA's opinion that the following environmental factors relevant to the proposal require detailed evaluation in this report:

- (a) Vegetation and conservation of biodiversity – the effects of construction and ongoing maintenance of the road on local and regional vegetation, and the consequential effects on biodiversity, both within the conservation estate and elsewhere along the road corridor;
- (b) Conservation estate - loss of area and fragmentation effects; and
- (c) Groundwater quality - protection of Lancelin's drinking water supply.

The above relevant factors were identified from the EPA's consideration and review of all environmental factors generated from the PER document and the submissions received, in conjunction with the proposal characteristics.

Details on the relevant environmental factors and their assessment are contained in Sections 3.1 to 3.3. The description of each factor shows why it is relevant to the proposal and how it will be affected by the proposal. The assessment of each factor is where the EPA decides whether or not a proposal meets the environmental objective set for that factor.

3.1 Vegetation and conservation of biodiversity

Description

The proposal will result in the clearing of approximately 123 ha of land within the conservation estate and 101 ha elsewhere along the route of the road in private land and gazetted road reserves. The total clearing required for the proposal is therefore approximately 224 ha.

The proposal is within the area covered by the EPA Position Statement No. 2, *Environmental Protection of Native Vegetation in Western Australia* (EPA, 2000).

Submissions

Concerns expressed in the submissions mainly focused on the:

- clearing of native vegetation and the potential loss or disturbance of significant flora;
- the potential for impacts to occur outside the direct area of disturbance brought about by changes to local and regional drainage flows; and
- the management of the proposal to avoid the introduction of weeds and dieback.

Assessment

The area considered for assessment of this factor is regionally significant vegetation including conservation estate and other land holdings within which the road corridor will be established.

The EPA's environmental objectives for this factor are to:

- maintain the abundance, species diversity, geographic distribution and productivity of vegetation communities; and
- to ensure that the proposal meets the requirements of the EPA Position Statement No. 2: *Environmental Protection of Native Vegetation in Western Australia* (EPA, 2000).

The clearing has been examined against the EPA Position Statement No.2 *Environmental Protection of Native Vegetation in Western Australia* (EPA, 2000). As the proposal is not for agricultural purposes it is the EPA's expectation that it meet the elements of Section 4.2, "*Clearing in the agricultural area where alternative mechanisms address biodiversity values*" and Section 4.3, "*Clearing in other areas of Western Australia*".

It is the EPA's view that the proposal meets the elements of the Position Statement in the following ways:

1. *Area proposed for clearing is relatively small:* The total area proposed for clearing (224 ha) can be considered to be relatively small when viewed in the context of the road being 66 km in length. The 123 ha of clearing proposed within the conservation estate is also relatively small taking account of the combined area of the Nambung National Park and the Nilgen and Wanagarren Nature Reserves being approximately 34,983 ha.
2. *Demonstrated elements in consideration of biological diversity:* This relates to the protection of Declared Rare Flora (DRF) and priority flora and an expectation that the proposal would not compromise any vegetation type by taking it below the 'threshold level' of 30% of the pre-clearing extent of the vegetation type.

DRF surveys have been conducted by the proponent including a subsequent spring survey which was necessary given the concerns raised in submissions about earlier studies not being conducted at an appropriate time. No DRF were identified during flora surveys. Individuals of five taxa of priority flora occur along the alignment. MRWA has committed to preparing, as a component of its Environmental Management Programme (EMP), a plan to address the protection of priority flora. It is considered that priority flora can be managed in consultation with the Department of Conservation and Land Management (CALM).

In the Dandaragan area the Department of Agriculture's geographic database of Soil / Landscape Systems provides indicative information on the distribution of plant communities. Within this area, the distribution of plant communities (defined in terms of floristic composition) has been demonstrated to be closely related to soil-landscape mapping. This mapping is more detailed than Beard's vegetation and maps cleared and uncleared areas equally well. Therefore the level of protection of native vegetation occurring within the area covered by each Soil / Landscape System provides an indicator of the level of biodiversity conservation which is complementary to that provided by evaluation using Beard (1979) vegetation types.

The proposed alignment principally occurs in the Quindalup and Spearwood Soil / Landscape Systems. The Geographic Information System interpretation of the woody remnant vegetation data set indicates approximately 64% (71,791 ha) of the Quindalup South system and 60% (162,749 ha) of the Spearwood system supports woody vegetation. Clearing of approximately 224 ha will not reduce the area of woody vegetation in either of these systems to below the 'threshold level' of 30% of the pre-clearing extent of the vegetation type.

3. *Land degradation will not be exacerbated:* The interference of catchment processes and threatening processes such as the introduction of dieback and weeds, are aspects of the proposal that require management.

Surveys conducted by the proponent indicate that dieback (*Phytophthora sp*) has not become well established in the area where the road is proposed. The major threat from both dieback and weed introduction is during the construction of the road. Management of dieback and weeds relies heavily on MRWA selecting an appropriate source of road building material and ensuring contractors follow strict hygiene protocols. MRWA has confirmed that the design of the road balances cut and fill volumes and therefore, the importation of fill material which would be likely to increase the risk of weed and dieback introduction, is not required. Base course will be required, and MRWA can require its contractors to meet strict hygiene protocols through its contract requirements, including specifying the source of road building materials if required by CALM. MRWA has committed to prepare and implement a plan, as a component of its EMP, that addresses dieback and weed management requirements. The plan will be prepared on the advice and to the requirements of CALM.

Changes to local drainage also has potential to have broader impacts on vegetation upstream and downstream of the road. MRWA has committed to prepare and implement a Drainage Management Plan that takes account of local and regional drainage during the final design of the road and addresses road construction requirements to ensure drainage patterns are maintained.

4. *Alternative mechanisms for protecting biodiversity:* MRWA has developed a mitigation strategy which provides for purchase of land (equivalent to 220 ha) for addition to the conservation estate, relinquishing gazetted road reserves for inclusion in the conservation estate (102 ha) and rehabilitation of tracks in the conservation estate.

Summary

Having particular regard to the:

- (a) relatively small area of vegetation clearing required when considered in the context of the distance over which the road will be constructed and secure conservation reserves in the area;
- (b) remaining extent of the affected vegetation types and the level of protection of these vegetation types in the conservation estate;
- (c) MRWA's commitment to prepare and implement, as a component of its EMP, plans that addresses, amongst other things, erosion controls, dieback and weed management;
- (d) MRWA's commitment to prepare and implement a drainage plan that will address the design and construction of the road to ensure local and regional drainage patterns are maintained; and
- (e) measures proposed by MRWA to mitigate for the loss of vegetation caused by this proposal to ensure that there will be no nett loss of conservation values,

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for this factor.

3.2 Conservation estate

Description

The proposed alignment of the coastal road will traverse portions of the Nambung National Park, the Wanagarren Nature Reserve and the Nilgen Nature Reserve. It will result in the excision of approximately 230 ha from the conservation estate. Clearing within the excised areas, assuming a 25 metre strip is required for the road and construction activities, will be approximately 123 ha.

Submissions

The Conservation Commission of Western Australia (CCWA) expressed concern that MRWA's intention to excise a corridor from the conservation estate that would provide for the future development of a dual carriageway was inconsistent with the objective to establish a tourist road. It was considered that this will lead to an expectation that this road is planned to become a future high-speed freight traffic route replacing the Brand Highway.

Other submitters questioned whether the construction of a road through the Nilgen and Wanagarren Nature Reserves could be considered consistent with their vesting for the conservation of flora and fauna.

The fragmentation of these reserves was also considered to reduce their viability.

Assessment

The area considered for assessment of this factor is the conservation estate affected by this road proposal including Nambung National Park, Nilgen Nature Reserve and the Wanagarren Nature Reserve.

The EPA's environmental objective for this factor is to protect the environmental values of areas identified as having significant environmental attributes.

The location of the road alignment is recognised in the Nambung National Park Management Plan 1998 – 2008 (CALM, 1998). As a National Park, the road can be considered compatible with the management objectives which relate to *“fulfil as much of the demand for recreation consistent with the proper maintenance and restoration of the natural environment, the protection of indigenous flora and fauna, and the preservation of any feature of archaeological, historic or scientific interest”*(CALM, 1998).

CALM also recognises the coastal road in its Master Plan for the development of Wedge and Grey settlements (CALM, 1999).

While the establishment of the coastal road can be considered consistent with the management objectives of the National Park, concern was also raised that it did not appear to be consistent with the management objectives of the Nilgen and Wanagarren Nature Reserves. Nature Reserves provide for the conservation of flora and fauna.

The EPA is aware that, although the road would normally be viewed as being inconsistent, the CCWA has confirmed its intention to incorporate the Wanagarren Nature Reserve into the Nambung National Park and to change the vesting of the Nilgen Nature Reserve to a Conservation Park. Accordingly, the road can be considered consistent with the intended future management objectives for these reserves.

The CCWA raised concerns about the potential upgrading of the road in the future to a dual carriageway. MRWA had originally proposed to excise a 100 metre corridor, which would have reserved sufficient land to allow for the eventual construction of a dual carriageway. The dual carriageway would have been subject to future environmental approvals. The CCWA considered that the decision to excise a corridor of this width within the conservation estate created an expectation that the road would be upgraded in the future. This is contrary to the CCWA's current position that the road should remain primarily for tourist use.

In view of these concerns, MRWA has subsequently revised its proposal such that it now intends only to excise sufficient land (50 metre corridor) from the conservation estate to allow for a single carriageway.

The road reserve bisects the Nilgen Nature Reserve and further isolates a small section of the Nilgen Nature Reserve along its boundary adjacent to Ocean Farms Estate.

The Nilgen Nature Reserve has an area of 5,507 ha. The EPA understands that CALM has advised that the section of the Nilgen Nature Reserve bisected by the road remains a viable size at over a 1,000 hectares and that the construction of the road is not expected to have a significant impact on the function and viability of the Nilgen Nature Reserve.

MRWA originally proposed a buffer of 250 metres between the road and Ocean Farms Estate to address noise impacts. This buffer had the effect of isolating a further area of the Nilgen Nature Reserve. Due to its small size, CALM considered that the isolated area would not be viable in the long term and was likely to be lost through degrading processes such as weed invasion, disturbance and fire. In consultation with and on the recommendation of CALM, the alignment has been moved such that it is approximately 140 metres from the boundary. This reduces the amount of area of the Nilgen Nature Reserve isolated by the proposal.

Moving the road closer to the boundary of the reserve and consequentially, closer to Ocean Farms Estate, raised the prospect that the proposal may increase noise experienced by residents of the estate. The new location places the road within a dune swale ameliorating the noise impacts of the road. Noise investigations conducted by MRWA indicate that, although the projected level is slightly higher (around 53 versus 50 dB(A) for the L₁₀(18 hour) value, this is still below the MRWA guideline level. MRWA has also committed to investigate the provision of treatments to further ameliorate noise impacts in the vicinity of Ocean Farms Estate, such as bunding and using smaller sized road stone as the final seal.

Summary

Having particular regard to the:

- (a) advice of the CCWA that a road primarily for tourist use is considered to be consistent with the management objectives of the Nambung National Park;
- (b) advice of the CCWA confirming its intention to incorporate the Wanagarren Nature Reserve into the Nambung National Park and to change the vesting of the Nilgen Nature Reserve to a Conservation Park. Accordingly, the road can be considered consistent with the intended future management objectives for these reserves;
- (c) concerns of the CCWA about the future upgrading of the road being addressed by MRWA only proposing to excise a road corridor that provides for the construction of a single carriageway from the conservation estate;
- (d) advice of CALM that the smaller portion of the Nilgen Nature Reserve that will be isolated by the road is still of a size (1,000 ha) that is considered to be viable and it is not expected that the construction of the road will have a significant impact on the function and viability of the larger Nilgen Nature Reserve;
- (e) MRWA's noise investigation which indicates that moving the road closer to the boundary of Ocean Farms Estate, to minimize the area of Nilgen Nature Reserve isolated by the road, will maintain road noise below MRWA's guideline noise levels. MRWA has also committed to additional ameliorative measures which will be undertaken in the vicinity of Ocean Farms Estate to address potential noise impacts; and
- (f) measures proposed by MRWA to mitigate for the vegetation affected by this proposal and to ensure that there will be no nett loss of conservation values,

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for this factor.

3.3 Groundwater quality

Description

MRWA's preferred alignment (L3), as proposed in the PER, would traverse the Lancelin Water Reserve, a Priority 1 Source Protection Area (Figure 4). The water source protection area was proclaimed in 1999 to protect Lancelin's drinking water supply which is sourced from groundwater abstraction bores. Priority 1 Source Protection Areas are declared over land where the provision of the highest quality public drinking water is the prime beneficial land use.

Submissions

The Water and Rivers Commission (WRC), which is responsible for the management of the State's surface and groundwater resources, advised that MRWA's preferred option (L3) was unacceptable because roads are incompatible with Priority 1 Source Protection Areas.

Assessment

The area considered for assessment of this factor is the Lancelin Water Reserve Priority 1 Source Protection Area.

The EPA's environmental objective for this factor is to ensure that the proposal does not adversely affect environmental values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards.

Figure 4 shows the route of the L1 and L3 alignments relative to the Water Reserve. The EPA understands that MRWA's preference for the L3 alignment is derived from the Lancelin community's preference for this option because it would take the road closer to Lancelin. MRWA assessed the options for the alignment against several criteria in the PER, including environmental, engineering and social criteria and concluded that options L1 and L3 were not dissimilar in their overall performance against the criteria. MRWA therefore proposed the L3 alignment based on the Lancelin community's preference.

The potential impacts of the L3 alignment on the Water Reserve was not identified by MRWA as a criteria for consideration prior to the release of the PER. The WRC policy position is that roads are incompatible with Priority 1 Source Protection Areas. Roads present a threat to groundwater from the transport of dangerous and hazardous goods and from more general contamination from pollutants such as fuels and oils entering local drainage systems and ultimately the groundwater.

The WRC submission advised that given this incompatibility, MRWA should reject its preferred alignment (L3) in favour of the second most preferable alignment (L1), which would take the road outside of the Water Reserve.

MRWA has subsequently revised its proposal and confirmed it will follow the L1 alignment, with a minor modification in the vicinity of a possible future residential estate to reduce the visual impact. The EPA understands that the revised alignment is acceptable to the WRC.

The EPA is aware of the Lancelin community's preference for an alignment that takes the road in close proximity to the Lancelin town site. However, given the importance of this area as a source of supply for the town's drinking water, the EPA supports MRWA's decision to revise the alignment to L1, which will provide for a level of protection for Lancelin's water supply satisfactory to the WRC.

Summary

Having particular regard to the:

- (a) advice of WRC that roads are incompatible with Priority 1 Source Protection Areas; and
- (b) the decision of MRWA to revise the alignment to L1 which will take the road outside of the Priority 1 Source Protection Area and provide for a level of protection of Lancelin's water supply satisfactory to the WRC,

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for this factor.

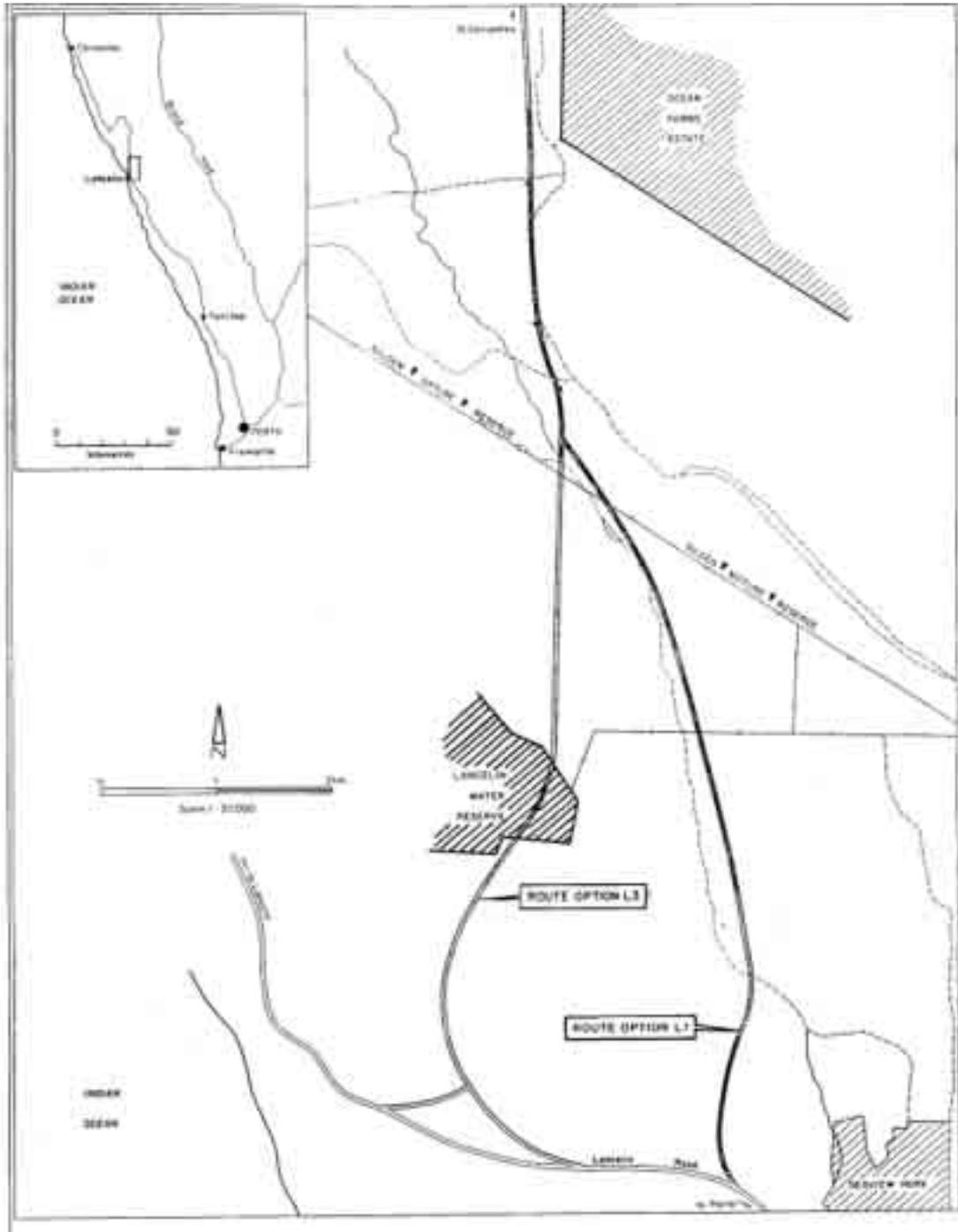


Figure 4: Road alignment options relative to the Lancelin Water Reserve

4. Conditions and Commitments

Section 44 of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment on the environmental factors relevant to the proposal and on the conditions and procedures to which the proposal should be subject, if implemented. In addition, the EPA may make recommendations as it sees fit.

In developing recommended conditions for each project, the EPA's preferred course of action is to have the proponent provide an array of commitments to ameliorate the impacts of the proposal on the environment. The commitments are considered by the EPA as part of its assessment of the proposal and, following discussion with the proponent, the EPA may seek additional commitments.

The EPA recognises that not all of the commitments are written in a form which makes them readily enforceable, but they do provide a clear statement of the action to be taken as part of the proponent's responsibility for, and commitment to, continuous improvement in environmental performance. The commitments, modified if necessary to ensure enforceability, then form part of the conditions to which the proposal should be subject, if it is to be implemented.

4.1 Proponent's commitments

The proponent's commitments as set out in the PER and subsequently modified, as shown in Appendix 4, should be made enforceable.

4.2 Recommended conditions

Having considered the proponent's commitments and the information provided in this report, the EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by Main Roads Western Australia to construct the Lancelin to Cervantes coastal road which includes spur roads to the settlements of Wedge and Grey, and an unsealed east-west link to Brand Highway via Mimegarra Road is approved for implementation.

These conditions are presented in Appendix 4. Matters addressed in the conditions include that the proponent be required to fulfill the commitments in the Consolidated Commitments statement set out as an attachment to the recommended conditions in Appendix 4.

5. Conclusions

The EPA has considered the proposal by MRWA to construct the Lancelin to Cervantes coastal road, which includes spur roads to the settlements of Wedge and Grey, and an unsealed east-west link to Brand Highway via Mimegarra Road.

The proposal will result in the clearing of approximately 224 ha of vegetation within areas of the conservation estate, including the Nambung National Park, the Nilgen Nature Reserve and the Wanagarren Nature Reserve as well clearing on private land and in road reserves.

The vegetation proposed to be cleared or disturbed by this proposal has been examined against the EPA's Position Statement No. 2 *Environmental Protection of Native Vegetation in Western Australia* (EPA, 2000) which outlines the EPA's expectations for proposals that involve a clearing component. It is the EPA's view that the proposal meets the elements detailed in Section 4.2, "*Clearing in the agricultural area where alternative mechanisms address biodiversity values*" and Section 4.3, "*Clearing in other areas of Western Australia*".

The EPA considers the proponent has demonstrated that through its consideration of alternatives, environmental investigations, management plans and development of a mitigation strategy, the proposal will not impact significantly on the conservation estate or other regionally significant vegetation.

The proposed alignment of the road principally occurs in the Quindalup and Spearwood Soil and Landscape Systems which are generally well represented in the region due to the large areas (34,983 ha) of conservation estate made up of the Nambung National Park, Nilgen Nature Reserve and Wanagarren Nature Reserve. MRWA has committed to a strategy which mitigates for losses to the conservation estate by providing additional land for inclusion in the conservation estate and rehabilitation of existing disturbed areas. Although there is some potential for this proposal to impact on priority flora, MRWA will manage these impacts in consultation and to the satisfaction of CALM. MRWA has also committed to management plans to ensure the road is designed and constructed in a manner that incorporates design criteria and management measures that are necessary to preclude the introduction of dieback and weeds both during construction of the road and in the longer term.

During the public review period it was identified that MRWA's preferred alignment would traverse the Lancelin Water Reserve which supplies Lancelin's drinking water. The EPA supports MRWA's decision to revise the alignment which will take the road outside of the Water Reserve and provide for a level of protection of Lancelin's water supply satisfactory to the WRC.

This road represents the final stage in the Indian Ocean Drive linking Perth to Dongara. The EPA understands that the Indian Ocean Drive will provide an alternative route for tourist traffic with MRWA maintaining the Brand Highway as the major freight traffic route. While there may be a need in the future to upgrade the road, the EPA is mindful of comments from the CCWA that the road was designed to showcase and provide access to the environmental and scenic attributes of the conservation estate, and therefore, the road should remain in accord with the management objectives of the conservation estate. The EPA supports the decision of MRWA to only excise from the conservation estate, an area that provides for the construction of a single carriageway. This decision provides clear recognition that a future proposal to upgrade the road will need to be considered on its merit and should be consistent with the management objectives of the conservation estate.

The EPA has concluded that it is unlikely that the EPA's objectives would be compromised provided there is satisfactory implementation by the proponent of the proponent's commitments and the recommended conditions set out in Appendix 4 and summarised in Section 4.

6. Recommendations

The EPA submits the following recommendations to the Minister for the Environment and Heritage:

1. That the Minister notes that the proposal being assessed is for the construction of the Lancelin to Cervantes coastal road, which includes spur roads to the settlements of Wedge and Grey, and an unsealed east-west link to Brand Highway via Mimegarra Road.
2. That the Minister considers the report on the relevant environmental factors as set out in Section 3.
3. That Minister notes that the EPA has concluded that it is unlikely that the EPA's objectives would be compromised, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 4, and summarised in Section 4, including the proponent's commitments.
4. That the Minister imposes the conditions and procedures recommended in Appendix 4 of this report.

Appendix 1

List of submitters

Government:

Aboriginal Affairs Department
Conservation Commission of Western Australia
Department of Conservation and Land Management
Department of Transport
Fire and Emergency Services Authority
Midwest Development Commission
Shire of Dandaragan
Water and Rivers Commission
Western Australian Tourism Commission

Organisations:

Conservation Council of Western Australia inc
Friends of Lancelin Island
Heartlands Tourism Association
Jurien Bay Progress & Tourism Association
Ocean Farm Community and Recreation Association
Wedge Island Protection Association
Wildflower Society of Western Australia

Individuals:

Coastal Real Estate Lancelin
PM & PG Goff
J Grehan
The Grey Family
PR & MM Harding
RH&DM Howlett
I Kelly
Chappell and Lambert
Mitchell Goff & Associates
J & M Preedy
Roberts Day Group
Rondownia Investments
G Snook
JA Stevens
A & M Teague
R Tognola
RHB & PA Ward
C Waterman
KB & JM Watters

Appendix 2

References

Beard J. S. (1979). *The vegetation of the Moora and Hill River area, Western Australia : Map and explanatory memoir*. Vegetation Survey of Western Australia. Vegmap publications, Perth.

CALM (1998) *Nambung National Park Management Plan 1998 - 2002*. Department of Conservation and Land Management, Government of Western Australia, 1998.

CALM (1999) *Wedge and Grey Draft Master Plan 1999*. Department of Conservation and Land Management, Government of Western Australia, 1998.

EPA (2000) *Environmental Protection of Native Vegetation in Western Australia: Clearing of native vegetation with particular reference to the agricultural area*, Environmental Protection Authority Position Statement No. 2. Environmental Protection Authority, Government of Western Australia, 2000.

MRWA (2000) *Lancelin to Cervantes Coastal Road*, Main Roads Western Australia, Government of Western Australia, October 2000.

Appendix 3

Summary of identification of relevant environmental factors

Summary of identification of relevant environmental factors.

Preliminary Environmental Factor	Proposal Component and Possible Impact	Government Agency and Public Comments	Identification of Relevant Environmental Factors
BIOPHYSICAL			
Vegetation	<p>Clearing of native vegetation, including the loss and disturbance of significant flora species populations.</p> <p>Direct and indirect impacts of the proposal on roadside vegetation.</p>	<p>Submissions expressed the view that clearing native vegetation for this proposal was unacceptable.</p> <p>Submissions asked MRWA to detail how it will manage potential long-term indirect impacts on significant flora and fauna.</p> <p>Submissions sought further details on how the proponent would avoid and/or minimise impacts on vegetation from fire, dieback, weeds, and modifications to natural drainage.</p> <p>MRWA's decisions about the regional representation and significance of vegetation affected by the proposal was questioned.</p>	This is a relevant factor and is discussed under the issue of Vegetation and conservation of biodiversity
Conservation Estate	<p>Fragmentation and long-term increased level of disturbance within the conservation estate.</p> <p>Impact on regionally significant flora and vegetation communities found within the conservation estate.</p>	<p>Submissions questioned whether construction of the coastal road through Wanagarren Nature Reserve and Nilgen Nature Reserve was consistent with their vesting as a reserve dedicated to the conservation of flora and fauna.</p> <p>Several public submissions have objected to the fragmentation of Nilgen Nature Reserve given its small size and high susceptibility to disturbance from "edge effects". There is concern that such fragmentation may compromise its ecological integrity and thus its conservation value.</p> <p>Several submissions suggested MRWA be required to offset the loss of conservation estate land and values.</p> <p>Several submissions questioned the need for a 100 metre road reserve width through the conservation estate, and suggested that the width be reduced.</p> <p>Public submissions objected to road building materials being sourced from within the conservation estate, on the basis that it was inconsistent with the management objective of the estate, and threatened conservation values. CALM in contrast supported sourcing materials from the estate, on the basis that they would be guaranteed free of weeds and pathogens. This issue is discussed in further detail under the factor "Weeds and Pathogens".</p>	This is a relevant factor

Preliminary Environmental Factor	Proposal Component and Possible Impact	Government Agency and Public Comments	Identification of Relevant Environmental Factors
Weeds and diseases, including dieback.	Potential for construction works and long-term use of the road to introduce weeds and pathogens to the road reserve, and their subsequent spread into the conservation estate.	<p>It was suggested that sourcing road construction materials from borrow pits located on agricultural land, would establish a weed seed store close to the conservation estate, and increase the risk of introducing weeds and pathogens to conservation estate.</p> <p>CALM suggested that consideration be given to sourcing construction materials from borrow pits located within conservation estate, to reduce risk of introducing road building materials from freehold pits that may be contaminated with weeds and pathogens.</p> <p>Concerns were expressed that future users of the road would introduce and/or spread weeds and pathogens along the road reserve corridor. MRWA was asked how it would prevent a subsequent spread of those weeds and pathogens into the adjacent conservation estate.</p>	This is a relevant environmental factor discussed under the issue of Conservation Estate.
Declared Rare Flora (DRF), Priority Flora and other significant flora	Impact from construction and use of road on one population of DRF and fifteen populations of Priority Flora.	Submissions expressed concern that the absence of spring survey data in the PER, prevented the assessment of the likely impact on DRF and priority listed flora.	<p>A flora survey of the alignment was undertaken in spring 2001 by the proponent's botanical consultant, <i>Ecologia</i>, which in combination with the biological studies undertaken in preparation of the PER, indicated that three species had the potential to be impacted by this proposal:</p> <p><i>Astroloma sp.</i> (Identity unconfirmed, possibly P4) - Recorded near Ocean Farms Estate. Impacts can be prevented through detailed planning of road and drainage works near the recorded locations.</p> <p><i>Grevillia thyrsoides</i> subsp. <i>thyrsoides</i> (P3)- 57 individuals recorded on southern side of Mimegarra Road, but only 7 individuals on the northern side. This section of Mimegarra Road will not be affected.</p> <p><i>Tricoryne robusta</i> (P2) Populations of this species recorded within L1 alignment and also along Mimegarra Road. Impacts can be prevented through detailed planning of roadwork and drainage work near to the recorded locations.</p> <p>MRWA has committed to preparing and implementing a Significant Flora Management Plan as a component of its Environmental Management Programme. The management plan will be to the satisfaction of CALM</p> <p>Factor does not require further EPA evaluation.</p>

Preliminary Environmental Factor	Proposal Component and Possible Impact	Government Agency and Public Comments	Identification of Relevant Environmental Factors
<p>Specially Protected (Threatened) Fauna</p>	<p>The project could impact on populations, habitat and movements of Specially Protected (Threatened) Fauna, and Priority Fauna Species.</p> <p>Presentation of additional information suggesting the Nilgen Nature Reserve is environmentally significant and that the coastal road is incompatible with the values of Nilgen Nature Reserve.</p>	<p>It was suggested that this proposal might constrain the movement of fauna, adversely affecting the feeding and breeding habits of local native species; and may also result in a significant loss and degradation of fauna habitat, and a long-term decline in fauna populations through road kills.</p> <p>Submissions were received highlighting concern that the road would have many indirect impacts on native fauna, including:</p> <ul style="list-style-type: none"> • Increased access and predation by introduced feral species; • Disruption of normal behaviour due to noise and vibrations. • Changes to vegetation composition (habitat) as a result of change to fire frequency/intensity. <p>A submission was received advising that a yet unpublished scientific research program undertaken within Nilgen Nature Reserve, recorded several fauna species not previously identified in the PER, and a yet unidentified mammal species.</p> <p>The submission expressed the view that Nilgen Nature Reserve had significance as possibly the southern most extent of the White-tailed Dunnart, and held particular significance as habitat for at least five mammal species within a comparatively small area.</p> <p>There was concern that constructing the road through Nilgen Nature Reserve was inconsistent with its management objective, as per Section 56 of the CALM Act.</p>	<p>CALM has advised that the proposed fragmentation of the conservation estate (including Nilgen Nature Reserve), does not represent a specific threat to small animals given their restricted movement.</p> <p>The PER indicated that the all fragmented remnants are above the minimum viable area required to sustain the existing populations of those species present. CALM has advised that road kills are unlikely to have a significant effect on populations of significant fauna.</p> <p>CALM also consider that the distance of the road from the Namming Wetland suite is adequate to minimise risk of direct impacts on wetland fauna. The proponent has committed to prepare a Drainage Management Plan in consultation with WRC, which will apply best management practice and aim to prevent any decline in wetland water quality and habitat function.</p> <p>CALM has advised that it acknowledges that the road may increase access for introduced species, and will address this issue under its existing 1080 baiting program. CALM do not consider noise and vibration disturbance likely to significantly affect fauna behaviour.</p> <p>The fire management plan outlined in the Nambung National Park Management Plan (CALM, 1998) has been designed with regard to the protection of fauna, however CALM is likely to revise this plan to reflect the changed fire risk scenario.</p> <p>CALM science confirmed through morphological and genetic traits that the Dunnart thought to be a new species has been identified as the Long - Tailed Dunnart <i>Sminthopsis dolichura</i>.</p> <p>CALM also advised that the species richness and population density of fauna of Nilgen Nature Reserve, is not so significant as to reject the dissection of Nilgen Nature Reserve, nor does the information warrant a revision to the proposed change in tenure of Nilgen Nature Reserve to Nilgen <i>Conservation Park</i>.</p> <p>Factor does not require further EPA evaluation.</p>

Preliminary Environmental Factor	Proposal Component and Possible Impact	Government Agency and Public Comments	Identification of Relevant Environmental Factors
Wetlands	The potential for the proposal to directly disturb wetlands and indirectly lead to the their degradation from uncontrolled run off from the road.	<p>Submissions expressed concern that construction of the road may modify the local hydrology, adversely affecting wetland habitat and water sensitive species, such as Bootoo Swamp and the <i>Eucalyptus decipiens</i> community.</p> <p>There is also concern that run-off generated during construction and use of the road, may cause contaminants and sediments to pollute wetlands and watercourses near the road alignment. Wetlands at risk include Bootoo Swamp, Cataby Creek, and the Namming Suite sumplands.</p> <p>There is concern that Figure 5.6 of the PER Document shows the road alignment being constructed through the middle of Bootoo Swamp, contrary to statements in the text that the road will go around it.</p>	<p>The proponent will prepare a Drainage Management Plan to the satisfaction of WRC that will detail design measures to protect adjoining wetlands, contain any spills, and detain 'first flush' drainage before discharge to the environment.</p> <p>The proponent advises that Figure 5.6 is incorrect in this regard, and has confirmed that the road will not dissect Bootoo Swamp. The road will instead be setback at least 50 metres from the wetland boundary, and a Drainage Management Plan will provide measures to minimise adverse impacts.</p> <p>MRWA has made a commitment that the final design of the coastal road will separate the road as far as practicable from the <i>E. decipiens</i> community, and that management measures will be outlined in both the EMP and DMP.</p> <p>Factor does not require further EPA evaluation.</p>
Coastal Landforms	Impact on landforms	Submissions called for road reserve and pavement to be constructed with minimal disturbance to natural landforms.	<p>The proponent has advised that the road alignment has avoided hill crests where possible, to minimise the area affected by cut and fill, and thereby reduce the disturbance to the natural landform. The proponent will consult with CALM in the detailed planning phase, to ensure the final road position is to CALM's general satisfaction.</p> <p>Factor does not require further EPA evaluation.</p>
Karst	Impact of road during both construction and operation on Karst.	A submission highlighted that if Karst was discovered, the PER provided no details on how it would be managed.	<p>Investigations using ground penetrating radar did not identify any significant Karst features that are likely to be affected by this proposal.</p> <p>Factor does not require further EPA evaluation.</p>
Stygofauna and troglobitic fauna	Potential impacts examined through groundwater sampling program.		<p>No troglobitic fauna were identified within study area. Groundwater sampling for stygofauna returned only one unidentifiable nematode. MRWA's investigations using ground penetrating radar indicate that no karst formations are at risk from this proposal.</p> <p>Factor does not require further EPA evaluation.</p>

Preliminary Environmental Factor	Proposal Component and Possible Impact	Government Agency and Public Comments	Identification of Relevant Environmental Factors
POLLUTION			
Gases and Dust	Construction works have the potential to generate dust impacts on nearby residences, and may also impact on native flora.	Concern was expressed that dust may impact on roadside flora, particularly those populations of priority flora located close to the construction areas.	The proponent has committed that the management of dust will be detailed in a management plan that will be part of the EMP. The management plan will be to the satisfaction of CALM. Factor does not require further EPA evaluation.
Surface Water quality	Impact of road run-off on wetlands and creek lines adjacent to the road reserve.	WRC raised concerns regarding road run-off impacting on wetland areas adjacent to the road alignment. These concerns related to both construction impacts, and the impacts associated with the future use of the road. Also of concern is contingency measures to contain any spills of contaminants that may occur during construction, or during the future use of the road.	The proponent has committed to developing a Drainage Management Plan for construction operations, and to install temporary sand bagging or divert drainage to settlement areas prior to discharge to the environment. MRWA has advised that the road will be designed and constructed to accord with best management practice, with particular regard to techniques shown in the WRC Manual for Water Sensitive Urban Design. Factor does not require further EPA evaluation.
Groundwater quality – contamination from pollutants in road run-off.	A portion of the preferred Lancelin alignment (L3) is within the Lancelin Water Reserve which is a Priority 1 Source Protection Area.	WRC advised that the preferred alignment (L3) posed an unacceptable risk to the Lancelin water supply, however the L1 alignment was considered more acceptable (from a water resource protection perspective).	This is a relevant environmental factor and is discussed under the issue of Groundwater quality.
Non-chemical emissions (Noise)	Noise impacts likely to impact on Ocean Farms Estate and Cervantes townsite.	Submissions were received expressing concern over noise assessment methodology, and the noise and vibration impacts of the road on Ocean Farms Estate. Several public submissions sought to increase the distance between the road and Ocean Farms Estate (MRWA proposed 250m) to protect against noise and visual impacts.	The alignment through Nilgen Nature Reserve has been moved closer to Ocean Farms Estate, to minimise the amount of land isolated from the Nature Reserve. Although the decision to reduce the setback distance to Ocean Farms Estate from 250 to 140 metres will slightly increase noise levels, they remain below the maximum allowable levels. MRWA has demonstrated to the satisfaction of the EPA that the modelling used is acceptable. However, having regard for community concern, MRWA has made a commitment to undertake additional noise reduction techniques, including sinking the road, constructing bunds along the carriageway, and using smaller aggregate near the estate, to minimise tyre noise and vibration. Factor does not require further EPA evaluation.

Preliminary Environmental Factor	Proposal Component and Possible Impact	Government Agency and Public Comments	Identification of Relevant Environmental Factors
SOCIAL SURROUNDINGS			
Visual Amenity	Impact on landscape values.	<p>Submissions expressed the view that locating the road 250 metres from Ocean Farms Estate will have an adverse impact on local residents.</p> <p>Submissions questioned the adequacy of the landscape assessment methodology and the adequacy of consultation with CALM on landscape impacts.</p>	<p>The location of the proposed road corridor (west and below Ocean Farms Estate has been revisited by MRWA, in response to advice from CALM. The road alignment will now be located 140 metres from the boundary of Ocean Farms Estate. Detailed examination of topographical mapping indicates that this new location will further reduce visual impacts, as its elevation in the landscape is equivalent to the original (250 metre) site.</p> <p>CALM initially raised concern with the landscape assessment methodology, however it was later recognised that the route alignment was driven by many factors including the Ministry for Planning's indicative alignment and regular input by the CALM District Manager.</p> <p>CALM has suggested that additional visual amenity work be undertaken as part of the EMP. The proponent has made a commitment to undertake additional visual quality assessment in consultation with CALM and Department of Defence, during the detailed design phase.</p> <p>Factor does not require further EPA evaluation.</p>
Wilderness	Road construction will adversely impact on the sense of wilderness.	Concern was expressed that a bitumen road with traffic speeds of 110km/h did not enhance the sense of wilderness associated with the region, and that lower speeds should be imposed.	<p>The coastal road and Wedge and Grey spur roads will be constructed and sealed to a design speed of 110 km/h, to provide for the direct and efficient movement of people and goods between the coastal towns.</p> <p>The Wedge and Grey spur roads will not be excised from the Conservation Estate, and therefore the speed limit can be decided by CALM with regard for wilderness values.</p> <p>Factor does not require further EPA evaluation.</p>
Aboriginal culture and heritage	No major ethnographic or archaeological sites of Aboriginal significance identified from surveys.	The Aboriginal Affairs Department advised that archaeological surveys and ethnographic consultations have not identified any sites of significance. If no sites are affected by the proposed development then the proponent has no obligations to fulfil under the provisions of the <i>Aboriginal Heritage Act 1972</i> .	<p>The Aboriginal Affairs Department provided advice that the proponent has no additional obligations under the <i>Aboriginal Heritage Act 1972</i> unless sites of significance are to be disturbed.</p> <p>Factor does not require further EPA evaluation.</p>
Risk and hazard of UXO	Unexploded ordnance may be located within or adjacent to the alignment.		<p>A UXO survey and remediation plan was undertaken and hazardous items were appropriately disposed. The proponent has made a commitment to maintain UXO survey requirements during construction of the road.</p> <p>Factor does not require further EPA evaluation.</p>

Preliminary Environmental Factor	Proposal Component and Possible Impact	Government Agency and Public Comments	Identification of Relevant Environmental Factors
Risk and hazard of military vehicle crossing points	Potential conflict between road users and military vehicles crossing the road.		Managed through appropriate design and placement of crossing points, with particular regard to sight distances. Appropriate signs may also be used. To be addressed in the EMP. Factor does not require further EPA evaluation.
Risk and hazard of public access to LDTA	Risk of increased public access into LDTA		MRWA has made a commitment to fence and sign the LDTA boundary. Design measure to discourage motorists stopping in LDTA section will also be included. This commitment will form part of the EMP. Factor does not require further EPA evaluation.

Appendix 4

Recommended Environmental Conditions and Proponent's Consolidated Commitments

Statement No.

RECOMMENDED CONDITIONS AND PROCEDURES

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

COASTAL ROAD

FROM LANCELIN TO CERVANTES

Proposal: The construction and use of approximately 66 kilometres of sealed road between Lancelin and Cervantes, to complete the final link of the Perth to Dongara coastal route, known as Indian Ocean Drive as documented in schedule 1. Spur roads to the squatter settlements of Wedge and Grey, and an unsealed east-west link to Brand Highway via Mimegarra Road will also be constructed.

The alignment of the coastal road will bisect several areas of conservation estate, including the Nambung National Park, the Wanagarren Nature Reserve and the Nilgen Nature Reserve. The balance of the route traverses freehold land and gazetted road reserves.

Proponent: Main Roads Western Australia

Proponent Address: PO Box 6202
EAST PERTH WA 6004

Assessment Number: 1282

Report of the Environmental Protection Authority: Bulletin 1053

The proposal referred to above may be implemented subject to the following conditions and procedures:

Procedural conditions

1 Implementation and Changes

1-1 The proponent shall implement the proposal as documented in schedule 1 of this statement subject to the conditions of this statement.

- 1-2 Where the proponent seeks to change any aspect of the proposal as documented in schedule 1 of this statement in any way that the Minister for the Environment and Heritage determines, on advice of the Environmental Protection Authority, is substantial, the proponent shall refer the matter to the Environmental Protection Authority.
- 1-3 Where the proponent seeks to change any aspect of the proposal as documented in schedule 1 of this statement in any way that the Minister for the Environment and Heritage determines, on advice of the Environmental Protection Authority, is not substantial, the proponent may implement those changes upon receipt of written advice.

2 Proponent Commitments

- 2-1 The proponent shall implement the environmental management commitments documented in schedule 2 of this statement.
- 2-2 The proponent shall implement subsequent environmental management commitments which the proponent makes as part of the fulfilment of the conditions in this statement.

3 Proponent Nomination and Contact Details

- 3-1 The proponent for the time being nominated by the Minister for the Environment and Heritage under section 38(6) or (7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal until such time as the Minister for the Environment and Heritage has exercised the Minister's power under section 38(7) of the Act to revoke the nomination of that proponent and nominate another person as the proponent for the proposal.
- 3-2 If the proponent wishes to relinquish the nomination, the proponent shall apply for the transfer of proponent and provide a letter with a copy of this statement endorsed by the proposed replacement proponent that the proposal will be carried out in accordance with this statement. Contact details and appropriate documentation on the capability of the proposed replacement proponent to carry out the proposal shall also be provided.
- 3-3 The nominated proponent shall notify the Department of Environmental Protection of any change of contact name and address within 60 days of such change.

4 Commencement and Time Limit of Approval

- 4-1 The proponent shall provide evidence to the Minister for the Environment and Heritage within five years of the date of this statement that the proposal has been substantially commenced or the approval granted in this statement shall lapse and be void.

Note: The Minister for the Environment and Heritage will determine any dispute as to whether the proposal has been substantially commenced.

- 4-2 The proponent shall make application for any extension of approval for the substantial commencement of the proposal beyond five years from the date of this statement to the Minister for the Environment and Heritage, prior to the expiration of the five-year period referred to in condition 4-1.

The application shall demonstrate that:

- environmental factors of the proposal have not changed significantly;
- new, significant, environmental issues have not arisen; and
- all relevant government authorities have been consulted.

Note: The Minister for the Environment and Heritage may consider the grant of an extension of the time limit of approval not exceeding five years for the substantial commencement of the proposal.

Environmental conditions

5 Compliance Audit

- 5-1 The proponent shall prepare an audit program in consultation with and submit compliance reports to the Department of Environmental Protection which address:
- the implementation of the proposal as defined in schedule 1 of this statement;
 - evidence of compliance with the conditions and commitments; and
 - the performance of the environmental management plans and programs.

Note: Under sections 48(1) and 47(2) of the *Environmental Protection Act 1986*, the Chief Executive Officer of the Department of Environmental Protection is empowered to audit the compliance of the proponent with the statement and should directly receive the compliance documentation, including environmental management plans, related to the conditions, procedures and commitments contained in this statement. Usually, the Department of Environmental Protection prepares an audit table which can be utilised by the proponent, if required, to prepare an audit program to ensure that the proposal is implemented as required. The Chief Executive Officer is responsible for the preparation of written advice to the proponent, which is signed off by either the Minister or, under an endorsed condition clearance process, a delegate within the Environmental Protection Authority or the Department of Environmental Protection that the requirements have been met.

Procedures

- 1 Where a condition states "to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority", the Chief Executive Officer of the Department of Environmental Protection will obtain that advice for the preparation of written advice to the proponent.
- 2 The Environmental Protection Authority may seek advice from other agencies, as required, in order to provide its advice to the Chief Executive Officer of the Department of Environmental Protection.

Notes

- 1 The Minister for the Environment and Heritage will determine any dispute between the proponent and the Environmental Protection Authority or the Department of Environmental Protection over the fulfilment of the requirements of the conditions.

Schedule 1

The Proposal (Assessment No. 1282)

The construction and use of approximately 66 kilometres of sealed road between Lancelin and Cervantes, to complete the final link of the Perth to Dongara coastal route, known as Indian Ocean Drive. Spur roads to the squatter settlements of Wedge and Grey, and an unsealed east-west link to Brand Highway via Mimegarra Road will also be constructed.

The proposed alignment of the coastal road will dissect several areas of conservation estate, including the Nambung National Park, the Wanagarren Nature Reserve and the Nilgen Nature Reserve. The balance of the route traverses freehold land and gazetted road reserves.

The key characteristics of the proposal are summarised in Table 1 below.

Table 1: Key Proposal Characteristics

Element	Description
Length of the proposed Lancelin to Cervantes link in coastal road	Approximately 66 kilometres.
Other road connections	<ul style="list-style-type: none"> • East-West connection from the Coastal Road to Mimegarra Road (14.0 kilometres). • Wedge spur road (5.2 kilometres). • Grey spur road (1.2 kilometres). • Kangaroo Point realignment on existing Pinnacles Road (0.95 kilometres). • Kangaroo Point spur road connection (0.15 kilometres). • Pinnacle Desert spur road connection (0.38 kilometres). • Hangover Bay spur road connection (0.4 kilometres).
Average width of road construction area	Approximately 25 metres.
Width of road reserve	<ul style="list-style-type: none"> • Coastal Road, including the Kangaroo Point realignment – 50 metres through the conservation estate and 100 metres through other land tenures. • East-West connection from the Coastal Road to Mimegarra Road - 100 metres. • Wedge, Grey, Hangover Bay and Kangaroo Point spur roads as well as the Pinnacle Desert road connection – no designated road reserves will be created.
Duration of project construction	Staged over 2 years.

Standard of construction	<ul style="list-style-type: none"> • The Coastal Road, Wedge and Grey spur roads will be sealed, with a design speed of 110 kilometres per hour. • The East West Connection from the Coastal Road to Mimegarra Road will be unsealed. • No construction works, besides maintenance works, will be undertaken along the existing section of the Mimegarra Road. This existing section will remain unsealed. • The connection to Hangover Bay, Pinnacles Desert and Kangaroo Point spur roads will remain unsealed.
Construction material sources	Cut and fill requirements for the project are balanced. Imported fill will not be required.
Approximate area of vegetation disturbance	224 hectares.

Figures

Figure 1: Lancelin to Cervantes coastal road general location of the alignment

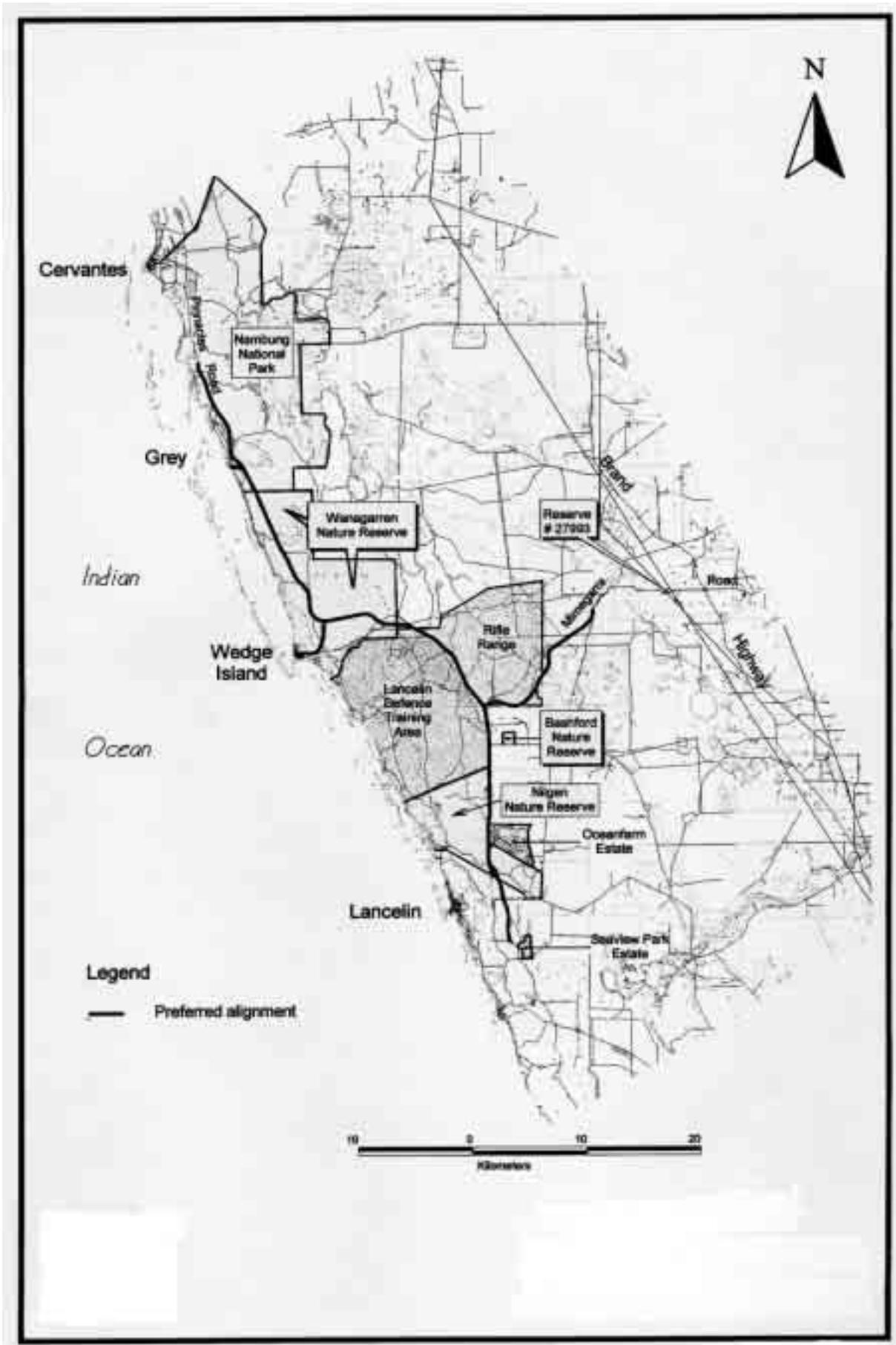


Figure 1: Lancelin to Cervantes coastal road general location of the alignment

Environmental Management Commitments

July 2001

**LANCELIN TO CERVANTES COASTAL ROAD
(Assessment No. 1282)**

Main Roads Western Australia

Schedule 2: Proponent's Environmental Management Commitments for the Lancelin to Cervantes Coastal Road (Assessment Number 1282)

Topic	Objective/s	Action	Timing	Advice
General Environmental Management	To ensure that environmental impacts are prevented or minimized in the design, construction and maintenance of the road	<p>Commitment 1</p> <p>Develop an Environmental Management Program (EMP) that:</p> <ol style="list-style-type: none"> 1. includes specific plans and procedures developed in consultation with concerned stakeholders through ongoing stakeholder liaison and discussion by the proponent's officers, which addresses construction and operational impacts and stakeholder concerns; 2. includes monitoring procedures and control of the activities of employees, agents and contractors to ensure adherence to environmental requirements identified in the EMP; and 3. incorporates a series of management plans addressing the following: <ol style="list-style-type: none"> (i) drainage management (see commitment 3 and 4); (ii) noise management (see commitment 5 and 6); (iii) a system of environmental offsets; (iv) coastal access and erosion controls; (v) rehabilitation and topsoil management; (vi) borrow pits; (vii) fire control and response; (viii) dieback management including appropriate hygiene techniques to prevent its introduction; (ix) weed control including the conduct of post-construction audits and eradication of weeds; (x) vegetation clearing controls including timing; (xi) the protection of Declared Rare Flora and management of priority flora species; (xii) fauna management; (xiii) visual amenity; (xiv) cultural heritage sites; (xv) dust suppression; (xvi) management of unexploded ordnances (UXO); and (xvii) waste management 	Pre-construction	CALM WRC
		<p>Commitment 2</p> <p>Implement the approved Environmental Management Program required by Commitment 1.</p>	During construction and post-construction	CALM WRC

Topic	Objective/s	Action	Timing	Advice
Drainage Management	To ensure that changes to surface hydrology and groundwater quality are prevented or adequately managed	<p>Commitment 3</p> <p>Prepare a Drainage Management Plan to minimize changes to existing drainage patterns with particular emphasis on protection of water-sensitive vegetation.</p>	Pre-construction	WRC
		<p>Commitment 4</p> <p>Implement the approved Drainage Management Plan required by Commitment 3.</p>	Construction	WRC
Noise Management	To ensure that noise levels during road construction and operation meet statutory requirements and acceptable standards	<p>Commitment 5</p> <p>Prepare a Noise Management Plan which addresses:</p> <ol style="list-style-type: none"> 1. acceptable working hours and complaints procedure; and 2. amelioration measures to be implemented adjacent to Ocean Farms Estate. 	Pre-construction	DEP
		<p>Commitment 6</p> <p>Implement the approved Noise Management Plan required by Commitment 5.</p>	Construction	DEP

Schedule 2: Proponent's Other Commitments for the Lancelin to Cervantes Coastal Road (Assessment Number 1282)

Topic	Objective/s	Action	Timing	Advice
Public Safety Management Plan	To ensure public risk is as low as reasonably achievable and complies with acceptable standards	Commitment 1 Prepare a plan that addresses: <ol style="list-style-type: none"> 1. consultation protocols with the Department of Defence to advise the public of military activities; 2. military vehicle crossing points; and 3. fencing and signage requirements for the Lancelin Defence Training Area. 	Pre-construction	DoD
		Commitment 2 Implement the approved Public Safety Plan required by Commitment 1.	During construction and post-construction	DoD

Abbreviations:

CALM: Department of Conservation and Land Management

DEP: Department of Environmental Protection

DoD: Department of Defence (Commonwealth Government)

WRC: Water and Rivers Commission

Appendix 5

Summary of Submissions and Proponent's Response to Submissions

The Chairman
 Environmental Protection Authority
 Westralia Square
 121 St George's Terrace
 PERTH WA 6000

ATTENTION: Mark Jefferies

Dear Mark

**LANCELIN TO CERVANTES COASTAL ROAD
 PUBLIC ENVIRONMENTAL REVIEW : RESPONSE TO SUBMISSIONS**

Enclosed is the final revision of Main Roads' responses to the submissions received as a result of the Public Environmental Review as well as supplementary information not yet forwarded to assist with assessment of the project. Please note that these final responses replace all previous drafts that may have been submitted for comment. All previous drafts should be discounted.

As you may be aware, the project has evolved over the months since the release of the PER, partly in response to submissions received. The following tables summarise the characteristics of the project as it is now proposed, and document the changes that have been made.

Key Characteristics of the Proposal

Element	Description
Length of proposed Lancelin – Cervantes link in Coastal Road.	65.6 km
Spur Roads, realignments and connections	<ul style="list-style-type: none"> ● East–west connection to Mimegarra Road (14.7km) ● Wedge Spur Road (5.2 km) ● Grey Spur Road (1.2 km) ● Kangaroo Point realignment on existing Pinnacles Road (0.95 km) ● Kangaroo Point Spur Road connection (0.15 km) ● Pinnacle Desert Spur Road connection (0.38 km) ● Hangover Bay Spur Road connection (0.4 km)
<u>Average</u> width of road construction area	Approximately 25 m
Width of road reserve	<ul style="list-style-type: none"> ● Coastal Road, including the Kangaroo Point realignment – 50 metres through the conservation estate and 100 metres through other land tenures. ● Connection to Mimegarra Road – 100 metres. ● Wedge, Grey, Hangover Bay and Kangaroo Point spur roads as well as the Pinnacles Desert Road connection – No designated road reserve will be created for these spur roads.
Duration of construction	Staged over two years.

Element	Description
Standard of Construction	<ul style="list-style-type: none"> ● The Coastal Road, Wedge and Grey spur roads will be sealed, with a design speed of 110 km/hr. ● The connection to existing Mimegarra Road will be unsealed. ● No construction work will be undertaken along the existing section of Mimegarra Road. ● The connections to Hangover Bay, Pinnacles Desert and Kangaroo Point spur roads will remain unsealed.
Construction materials sources	Investigations to date indicate that cut and fill requirements for the project are balanced, and there will thus be no need for imported fill. Suitable basecourse material will be imported.

Changes to the Proposal

Key Issue	Changes made in response to issue
Priority 1 Water Protection Area	Following advice from EPA that the proposed L3 alignment, which crossed the Lancelin Water Protection Area would not be acceptable, Main Roads has adopted the L1 alignment (with minor modifications – see below) for construction.
L1 modified alignment	As a result of requests to move the alignment west of a dune ridge near the Seaview Park Estate in order to minimise noise and visual amenity impacts on future residential development Main Roads has modified the southern end of the alignment where it connects to the Lancelin Road. The Water and Rivers Commission have been consulted on this matter and have no objection to the modification (see correspondence enclosed).
Location of alignment past Ocean Farms Estate	In accordance with advice from the Department of Conservation and Land Management, the alignment past Ocean Farms Estate has been moved closer (approximately 140 metres instead of 250 metres separation) to the Estate boundary. This alignment has less of a visual impact as far as the Ocean Farms Estate is concerned.
Ocean Farms Estate - noise	A noise assessment undertaken for the new alignment 140 metres from the boundary of Ocean Farms Estate indicates that there will be an increase in road traffic noise (from 50 to 53 dB(A) for the L ₁₀ (18 hour) value compared with the previous alignment. Main Roads has committed to investigating the provision of treatments to assist in ameliorating the noise impacts in this location.
Wedge Spur Road	In consultation with CALM, the Wedge Spur Road has been realigned to avoid an area of significance to the Aboriginal Community.
Hangover Bay Spur Road connection	The connection of the existing Hangover Bay Spur Road to the Coastal Road is now included as part of the project. The connection is approximately 0.4 km in length, and the area was included in the original biological survey.
Pinnacles Desert Spur Road connection	A connection between the Coastal Road and the Pinnacles Desert spur road is now included as part of the project. This connection is approximately 0.4 km in length, and the area was included in the original biological survey.
Kangaroo Point Spur Road connection	A connection between the Coastal Road and the existing Kangaroo Point spur road is now included in the project. This connection is approximately 0.2 km in length, and the area was included in the original biological survey.
Kangaroo Point realignment on existing Pinnacles Drive	Since the preparation of the PER, Main Roads has determined that the existing alignment of Pinnacles Drive at Kangaroo Point will require a minor realignment for safety reasons. The length of the realignment is approximately 0.9 km in length. The realigned section was not included in the studies for the PER. A supplementary flora and vegetation survey carried out in 2000 included this section. The report on this survey has previously been submitted to the DEP.

The following issues that have been raised in correspondence with the Department of Environmental Protection have been addressed in the responses to submissions as indicated below.

Issue	Response to Submission Number(s)
Location of borrow pits	4.8
Vegetation transition zones	4.19 See also supplementary information enclosed
Impacts of dust on significant flora	4.20
Vegetation offsets and compensation	4.7, 4.11, 4.21, 4.22
The “different” Dunnart	5.4
Impacts on small mammals	6.1, 6.2
The <i>Eucalyptus decipiens</i> community	6.3 The locations of the <i>E. decipiens</i> communities are shown in Figure 3 which is included with the supplementary information enclosed.
Visual impacts	3.8, 10.2, 10.3, 10.4, 10.6
Use of the Coastal Road by heavy vehicles	11.1
Aboriginal Heritage	13.2, 13.2
Extent of clearing	4.7, 4.11, 4.21, 4.22
Noise impacts	9.1 - 9.5
Consultation with the Conservation Commission of WA	See supplementary information enclosed
Road reserve widths	4.7, 4.9, 4.21, 4.22
Lancelin Water Protection Area	3.6
Impacts on significant flora	4.12 In response to the additional query regarding the unconfirmed <i>Astroloma</i> species – it was collected east of the currently proposed alignment past Ocean Gardens Estate. No other specimens were located.
Modified L1 alignment	3.6 See also “Changes to Proposal” table above

Main Roads made a list of environmental commitments in the PER. Several, such as the targeted Spring flora survey, the biological assessment of borrow areas, the assessment of vegetation transition zones, and part of the unexploded ordinance survey and remediation work, have already been completed.

Since the preparation of the PER, Main Roads has made several additional commitments in response to the issues raised during the public comment period. A consolidated list of commitments is therefore provided below.

Consolidated Commitments

Commitment	Objective	Action	Timing	To Whose Requirements
1. Prepare and implement an Environmental Management Plan for the Project	To ensure that environmental impacts are prevented or minimised in the design, construction and maintenance of the Lancelin to Cervantes Road	<p>Prepare an Environmental Management Plan which details management measures to minimise adverse impact on issues including:</p> <ul style="list-style-type: none"> • coastal access and erosion controls; • rehabilitation and topsoil management; • borrow pits; • fire control and response; • dieback management and weed hygiene; • vegetation clearing controls including timing; • fauna management; • visual amenity; • cultural heritage sites; • dust suppression; • waste management <p>Liaise with CALM regarding management of the road reserves through the conservation areas.</p>	Develop in parallel with final design. Implement during construction and maintenance	CALM, DEP, Shire of Gingin, Shire of Dandaragan
2. Undertake a targeted threatened flora survey during Spring	To ensure that impacts on populations of threatened flora are minimised or avoided	Undertake survey during Spring	Prior to letting of the Contract. COMPLETED.	CALM, DEP.
3. Carry out site specific biological assessment of borrow pits and spoil disposal areas	To ensure that no significant flora or fauna species are affected by the location of these areas	Undertake site specific flora and fauna assessments once materials sourcing sites are identified. Develop management actions for any significant taxa as required.	Prior to letting of the Contract. COMPLETED	CALM
4. Continue the liaison with CALM and local authorities	To ensure that the road design accommodates and integrates with the access and facilities for adjoining land managers and stake holders	Liaison with CALM, Shire of Gingin, and other local stakeholders during final planning and design on issues such as stopping places, coastal access, and signage	Throughout planning, design and construction	DEP

Commitment	Objective	Action	Timing	To Whose Requirements
5. Prepare and implement a Landscape Management Plan for the project	To maximise the retention of local landscape values and enhance the visual amenity of the finished road. To ensure environmentally sound rehabilitation of disturbed areas.	Prepare a Landscape Management Plan which addresses: <ul style="list-style-type: none"> • measures to minimise impact on local landscape character and remnant vegetation; • appropriate earthworks and revegetation treatments; • visual amenity at roadside stopping places. 	Develop in parallel with final design. Implement during design and construction.	CALM, Shire of Gingin, Shire of Dandaragan.
6 Prepare and implement a Drainage Management Plan for the project	To ensure that changes to surface hydrology and groundwater quality are prevented or adequately managed	Prepare a Drainage Management Plan to minimise changes to existing drainage patterns, with particular emphasis on protection of water sensitive vegetation.	Develop in parallel with final design. Implement during design and construction.	CALM, Water and Rivers Commission, Shire of Gingin, Shire of Dandaragan.
7. Prepare and implement a Public Safety Management Plan	To ensure that public risk is as low as reasonably achievable, and complies with acceptable standards	Continue liaison with Department of Defence in relation to military vehicle crossing points, fencing requirements for the LDTA and related issues	Develop in parallel with final design. Implement during construction.	DEP and Department of Defence.
8. Carry out a UXO search and remediation exercise consistent with Department of Defence requirements	To minimise risk during construction and operation of the road.	Commission a UXO survey by an approved contractor in accordance with Department of Defence procedural requirements	Prior to letting the Contract. PART COMPLETED	Department of Defence and Fire and Emergency Services Authority WA.
9. Prepare a Noise Management Plan for the project.	To ensure that noise levels during road construction and operation meet statutory requirements and acceptable standards.	Prepare a Noise Management Plan which addresses: <ul style="list-style-type: none"> • acceptable working hours and complaints procedure; • amelioration measures to be implemented adjacent to Ocean Gardens Estate. 	Develop in parallel with final design. Implement during construction.	DEP
10. Undertake a geotechnical drilling programme	To ensure that no significant caves or karsts will be impacted by the project	Prepare and implement a geotechnical drilling programme for areas of high risk along the alignment.	During final planning. COMPLETED	DEP, CALM
11. Land Offset Package	To compensate for the loss of native vegetation due to clearing for construction	Prepare and offer offset package. Continue liaison with CALM on outstanding issues	Prior to letting the Contract	DEP, CALM

Also enclosed are the following reports, Figures and correspondence, submitted as supplementary information:

- Information provided to the Conservation Commission;
- Report – Lancelin to Cervantes L1 Route Option. Vegetation Assessment (Vegetation transition zones);
- Report – Lancelin to Cervantes L1 Route Option. Assessment of Impact to Rare Flora;
- Copy of correspondence with Water and Rivers Commission regarding the modified L1 alignment;
- Copy of correspondence from CALM regarding the previously undetermined species of Dunnart;
- Figure 1 – Proposed Alignment;
- Figure 2 – Borrow areas;
- Figure 3 – Sensitive Environmental Areas along the proposed alignment.

Should you require any additional information, please do not hesitate to call me on 9323 4526.

Yours sincerely

Mark Walker
PROJECT DIRECTOR

Enc

3 April 2002

LANCELIN TO CERVANTES ROAD PUBLIC ENVIRONMENTAL REVIEW

MAIN ROADS WA's RESPONSES TO ISSUES RAISED DURING THE PUBLIC COMMENT PERIOD March 2002

1 No comments or queries

One submitter had no comments or queries

Noted.

2 General comments supporting the proposal

A number of submissions offer support for the proposed road and alignment citing benefits including:

- *Consistency with the Central Coast Regional Strategy.*
- *Provision of public access to coastal areas while reducing uncontrolled and illegal access tracks.*
- *Reduced travel distance to Perth from Jurien achieving benefits such as reduced Greenhouse Gas emissions due to vehicle emissions and reduced fossil fuel use.*
- *Improved public safety through the construction of the road separating recreational traffic from heavy haulage traffic.*
- *Greater opportunity for management of coastal reserves.*

Noted.

3 Route Selection

3.1 *There is opportunity to investigate more options for the Lancelin to Cervantes Road in the vicinity of the Ocean Farms Estate. It appears that only routes close to and parallel to the western boundary of Ocean Farms have been considered. Curvilinear alignment and alignments further west should be considered.*

&

3.2 *Routing the road along the ridges approximately 250m and 500m west of Ocean Farms is not supported from a road design and environmental viewpoint. Alternative routes 600m and 350m west of Ocean Farms Estate would offer extensive views of the nature reserve and ocean (600m) or locating the road within a valley between two ridges minimising noise and visual impacts (350m) should be considered.*

Five options for the Lancelin section of the route were examined as set out in Section 3.3 of the PER. Option L5 (to the east of Ocean Farms Estate), while being the preferred option on environmental grounds, performed poorly in the economic benefits, impacts on private properties, ease of construction, cost and visual quality criteria.

All routes to the west of Ocean Farms Estate would impact on the Nilgen Nature Reserve. Requests from Ocean Farms Estate residents for a 500m wide buffer between the road and the Estate and Department of Conservation and Land Management (CALM) requirements to minimise the impacts on the nature reserve were taken into consideration in the development of the route alignment. From a nature conservation point of view, an alignment immediately adjacent to the boundary of the Ocean Farms Estate was preferred. A compromise alignment located approximately 250 metres from the boundary of the Ocean Farms Estate was thus proposed in the Public Environmental Review (PER). As a result of further consultation with CALM, a route approximately 140 metres from the boundary of the Estate has now been agreed. This reduces the extent of the land isolated between the road and the Estate boundary. Other aspects of this alignment are discussed in the response to submission 3.8 below.

3.3 *'Impacts on future development' is assessed as 'Not applicable' however the future development at Wedge would be totally dominated by the proposed alignment and terminus of the spur road. Given that the Department of Conservation and Land Management (CALM) is likely to be negotiating with prospective developers during the second half of 2001 consultation with these proponents should be part of the assessment of route alignments.*

&

3.4 *Professional fishermen will be remaining in their locations for up to a further 3 years (beyond 30 June 2001). The proposed road alignment would isolate this commercial activity from tourism developments. This impact should be considered in the assessment of 'Impacts on future development'.*

Within the Wedge and Grey townsites, the alignments for the spur roads were developed in consultation with CALM to give consideration to the development strategy for the two sites. These alignments follow the proposed major roads within the sites as proposed in the Wedge and Grey Draft Master Plan.

It is unclear as to how the proposed road alignment would isolate professional fishing operations from tourist developments. The coastal road provides a route between Lancelin and Cervantes that will allow for improved access to coastal developments between the two centres.

3.5 *All five options evaluated in the PER for the Lancelin sector of the proposal have either poor conservation outcomes or poor social outcomes. It would appear these problems stem from a failure to negotiate an acceptable outcome with the Department of Defence. The requirement to link all potential alignments with an inland road reserve skirting the Defence Training Area is an unacceptable constraint that eliminates the best and most direct option along the coast. A route through the Defence Training Area adjacent to the coast should be adopted.*

Agreement with the Department of Defence regarding the proposed road corridor through or adjacent the Lancelin Defence Training Area (LDTA) is a real and valid constraint on the project. Final decisions regarding the route came about through consultation convened by the Ministry for Premier and Cabinet's Federal Affairs Branch. The Department of Land Administration, Department of Environmental Protection, Ministry for Planning, Department of Transport, Main Roads WA, and the Wheatbelt Development Commission participated in these consultative meetings.

The proposed route, which uses the existing gazetted road reserve No. 17250 was favoured by all parties as it:

- allows State Government objectives for the coastal road to be met;
- minimises impacts on the Department of Defence operations;
- follows existing tracks, thus limiting further clearing of native vegetation.

3.6 *The best route on environmental, social and economic grounds would be a continuation of the Lancelin-Wanneroo Road through to Cervantes. Why was this option not selected?*

The option (L3) put forward as the preferred route was chosen for the reasons set out in the PER. Since the release of the PER, the potential impact of this alignment on the Priority Protection Area for the Lancelin Water Supply has meant a reassessment of the options. The more direct continuation of the Wanneroo to Lancelin Road (L1), with a minor modification to reduce the visual impact on the nearby residential estate, is the route (modified L1) that is now proposed for construction.

3.7 *Is the gravel road from just south of Wedge Island to Mimegarra Road and the Brand highway below Cataby intended to service the Agricultural Lime cartage expectations associated with Agricultural Limesand Route 3? If not, completion of the link from Sappers Road to the Coastal Highway, which is already gazetted as a road reserve, would be more cost effective (only 3-4 km in length) and provide a direct route to Agricultural Limesand Route 2 without the need to disturb any of the rare and endangered flora and fauna in the Mimegarra area.*

No. The connection through Mimegarra Road is to provide more direct access to the coast for the Wheatbelt communities from the Dandaragan and Moora districts. Any modifications to the Agricultural Limesand Routes are not part of this proposal.

3.8 *CALM considers that the most appropriate alignment for reduced visual impact is at the toe of the slope immediately west of the Ocean Farms Estate boundary (approximately 140 metres from the boundary at the minimum). This alignment (a plan with the CALM preferred alignment is attached) would significantly reduce the visibility of the road and passing traffic from residences at Ocean Farms Estate.*

CALM believes that its suggested alignment (i.e. 140m) will not result in any significant noise increase and may well improve the situation. Is Main Roads Western Australia (MRWA) willing to modify the preferred route to accord with alignment suggested by CALM? Please provide an analysis of noise impacts which examine the suggestion that this modified alignment will not result in a significant increase in noise.

Main Roads considers the placement of the road in this location is appropriate and has undertaken planning and design activities to include this alignment in the Master Plan for the project. Positioning the alignment approximately 140m west of Ocean Farms Estate will reduce the visual impact for residents on the estate because the road will traverse a natural low point in the landscape.

In reviewing the location of the road, noise propagation calculations for the alignment closer the Estate have been undertaken to ensure that guidelines relating to the management of noise impacts can be met. Although the projected level is slightly higher (around 53 versus 50 dB(A) for the L₁₀(18 hour) value) than for the alignment 250 metres away, this is still below the Main Roads' guideline level. In addition, Main Roads has committed in the PER to investigate the provision of additional treatments for amelioration of the noise impacts on the residential properties at Ocean Farms Estate.

3.9 *Clarify whether MRWA intends to create a road reserve for the Wedge and Grey spurs, confirm the proposed width of these road reserves, and advise whether MRWA will retain responsibility for management of those road reserves?*

Main Roads will not create designated road reserves for the Wedge and Grey spur roads. The future care and control of the Wedge and Grey spur roads will be the responsibility of CALM and management of the adjacent areas will be no different to the remainder of the Reserve and National Park.

3.10 *The PER identifies the presence of highly significant roadside vegetation, wetlands, and fauna habitat linkages at various points along the existing Mimegarra Road alignment. However, the proposed Mimegarra alignment was a result of negotiations with the Department of Defence. What consideration was given to environmental impacts when negotiating the proposed Mimegarra alignment, and what environmental information formed the basis for the final decision? Was consideration given to selecting an alignment over cleared farmland that would avoid these environmental values and enable the development of a more direct route to Cataby?*

It should be noted that there will be no works undertaken along the existing section of Mimegarra Road. Factors that influenced the final route selected for the connection between the Coastal Road and Mimegarra Road included the location of Bootoo Swamp, the presence of difficult landforms, and the potential for concentrations of unexploded ordnance being present.

The vegetation communities throughout the area (where variations in the alignment were considered) are relatively uniform, with all options traversing primarily through the Banksia Woodland over Heath community. This vegetation is common throughout the region. No Declared Rare or Priority flora have been identified along the proposed alignment.

Siting the road over farmland would have significant impacts relating to severance and the viability of the properties concerned, and does not have any benefit with respect to travel distance.

4 Vegetation Communities

4.1 *Locating the road as close as possible to the coast would leave Nilgen Reserve as a complete unit rather than divided into parcels leaving a small parcel between Ocean Farms and Sappers Road. The coastal dunes are relatively stable so why has a coastal alignment not been adopted?*

A coastal alignment for the proposed road would still have significant effects on the Nilgen Nature Reserve. However, the major constraint remains the requirement for agreement with the Department of Defence regarding the proposed road corridor through or adjacent the Lancelin Defence Training Area (LDTA). See also response to submission 3.5 above.

4.2 *Why was the recommended route along Nilgen Road as cited in “Acquisition by the Commonwealth of Land at Lancelin for Defence Training Purposes” not adopted by the proponent? This route would have less interference with the Nilgen Nature Reserve than the current proposal and achieve greater separation from Ocean Farms Estate.*

A route along Nilgen Road was included in the assessment of route options (Option L5), but was shown to not perform as well as other options based on the range of assessment criteria employed. See also response to submissions 3.1 and 3.2.

4.3 *An up to date Environmental Impact Study should be done on local flora and fauna including a list of exotic weeds. The absence of spring flora survey data within the PER prevents an accurate assessment of the environmental acceptability of the preferred alignments. Has the spring survey been completed, and if so when? Provide comprehensive details of the results. This information will need to be provided in time for the EPA to prepare its report and recommendations.*

A comprehensive biological survey was undertaken as part of the impact assessment for the project. Some of the field survey time was in Spring (October) of 1999. The findings of the field surveys were presented in detail in a Biological Survey report prepared for the project, and a summary of the findings were documented in the PER. A list of flora and fauna species recorded in the study area during the field investigations (including non-native species) were provided as Appendices C and D to the PER.

Since the completion of the PER, an additional field survey for flora has been undertaken to cover modifications and additions to the route, to provide more detail of the link to Mimegarra Road, and to add to the knowledge of the flora along the alignment in general. This survey occurred between October and December 2000. The survey report has previously been forwarded to the Department of Environmental Protection as additional information for assessing the impacts of the proposal.

4.4 *An increase in the width of the road reserve to support the conservation of flora and fauna within the reserve deserves further consideration in the vicinity of Ocean Farms. The road reserve could then be linked with that part of the Nilgen Nature Reserve to the south east of Ocean Farm for increased viability.*

See response to submissions 3.1 and 3.2. Also, all undisturbed vegetation and rehabilitated areas within the road reserve will be managed to comply with the management objectives for the Nature Reserve as a whole.

4.5 *It would be preferable if the detailed positioning of the road reserve, and subsequent constructed road, was such that disturbance to natural landforms and vegetation is minimised.*

Minimising impacts to existing landforms throughout the length of the Lancelin to Cervantes Coastal Road has been a major consideration during the development of the concept design. The road alignment avoids dune crests where possible, resulting in smaller areas affected by “cut and fill” which reduces the impacts on landforms and vegetation.

The area of vegetation that will be cleared for road construction will also be minimised through contractual requirements which will limit clearing to the minimum needed for safe work practices on site.

4.6 *Rehabilitation of areas cleared for construction should be implemented as part of the construction process. Lancelin is known for its strong winds and careful attention to stabilisation and re-vegetation of areas disturbed by road construction is essential. What rehabilitation measures are proposed and when will they be carried out?*

The “Design and Construct” (D & C) Contractor engaged for the project will be required to prepare a detailed Landscape Management Plan to address:

- the integration and management of earthworks;
- soil hygiene and weed control strategies;
- clearing protocols, including the reuse of cleared material;
- revegetation, including species selection and timing;
- fire hazard reduction during construction, and
- monitoring of revegetation.

This Landscape Management Plan will form part of a Construction Environmental Management Plan, which will need to be approved by CALM.

The contract will also require temporary stabilisation and dust control measures to be implemented if conditions indicate that these are needed.

4.7 *Compensation for losses to the Conservation Estate due to the construction of the road should be offset by the purchase of all, or part of, the under represented Spearwood System bushland off Sappers Road for inclusion in Nilgen Nature Reserve (Dobney Block). Have MRWA investigated purchasing this or other lands for inclusion in conservation areas? What investigations were undertaken?*

&

4.11 *How will MRWA compensate for the direct loss of 311 hectares of land from conservation estate, the indirect impact of estate fragmentation, and the increased disturbance resulting from increased public access and visitor numbers?*

&

4.21 *This proposal should reflect the national agreed objective of “no net loss of native vegetation quality and quantity”. This position has also been agreed upon by the WA Government and represents the emerging ‘best practice’ standard for native vegetation impacts. This position does not necessarily mean that there cannot be any clearing, however it does mean that there should not be any net loss of either type or area of vegetation, as a result of a proposal. Hence a development such as the L-C coastal road should include a range of measures adopted by the proponent to offset the impact of the road development. Suitable offset measures may include:*

- *Revegetate all land that is disturbed and not required for the actual roadway or sight light safety clearance (ie. Minimise net vegetation loss through rehabilitation along the route).*
- *Revegetation of previously cleared land held or could be acquired along the route.*
- *Purchase of existing vegetation and adding it to the conservation estate.*

&

4.22 *It is suggested that MRWA efforts to offset road construction impacts include purchasing an area of good quality native vegetation of an equal or greater size than that which will be excised from CALM managed land. This land could be added to the conservation estate, so that there is no net loss of native vegetation. Alternatively, MRWA could purchase and rehabilitate poor quality native vegetation or cleared/semi-cleared areas and add these to the conservation estate to achieve the principle of no net loss of native vegetation.*

Several issues are dealt with in these submissions. These are:

- Losses to the Conservation Estate;
- Loss of native vegetation due to clearing for the project;
- Fragmentation of the conservation areas, and
- Increased public access and visitor numbers.

The table below sets out the land areas included in the proposed road reserves through the Nature Reserves and National Park. It should be noted that the road reserve widths have been amended to take into consideration discussions with the Department of Environmental Protection and the Conservation Commission of WA. Existing road reserve widths (100 metres inside the conservation areas and 200 metres elsewhere) will be reduced by half to 50 and 100 metres respectively. These areas, although fairly accurate, will be confirmed once formal land requirement drawings are available. Changes should be no more than a few hectares over the whole project.

Total Land Areas inside the Road Reserves

Alignment	Wanagarren Nature Reserve	Nambung National Park	Nilgen Nature Reserve	Total Area
Lancelin to Cervantes (50m)	99.2 ha	60.7 ha	62.3 ha#	222.2 ha
Kangaroo Point realignment (50m)		4.7 ha		4.7 ha
Hangover Bay spur road realignment (40m)		1.6 ha		1.6 ha
Pinnacles Desert Drive connection (40m)		1.5 ha		1.5 ha
Kangaroo Point connection (40m)		0.6 ha		0.6 ha
Total	99.2	69.1	62.3 ha	230.6

Includes the buffer between the road and the boundary of Ocean Farm Estate which essentially becomes isolated from the remainder of the Reserve.

Also note that the Wedge and Grey spur roads will be managed by CALM and no designated road reserves will be created.

Total loss to the Conservation Estate is thus 230.6 hectares.

With respect to the amount of vegetation that will need to be cleared for construction, it has been estimated that an average width of 25 metres over all areas of the project will accommodate all of the necessary works.

The table below itemises the extent of the proposed clearing for all of the land use types.

Vegetation Lost Through Clearing of a 25 metre Works Area

Alignment	Wanagarren Nature Reserve	Nambung National Park	Nilgen Nature Reserve	Private Land	Vacant Crown Land	Dedicated Road reserve	Total Area
Lancelin to Cervantes	49.6 ha	33.8 ha*	18.5 ha	19.4 ha		44.3 ha	164.6 ha
Wedge Spur	13.1 ha**						13.1 ha
Grey Spur		3.1 ha***					3.1 ha
Mimegarra Link				1.0 ha	35.3 ha	0.6 ha	36.9 ha
Kangaroo Point realignment		2.4 ha					2.4 ha
Hangover Bay spur road realignment		1.0 ha					1.0 ha
Pinnacles Desert Drive connection		1.0 ha					1.0 ha
Kangaroo Point connection		0.4 ha					0.4 ha
Total	62.7 ha	41.7 ha	18.5 ha	20.4 ha	35.3 ha	44.9 ha	223.5 ha

* Includes 3.5 ha within the Grey Reserve (townsite)

** Includes 3.9 ha within the Wedge Reserve (townsite)

*** Includes 2.5 ha within the Grey Reserve (townsite)

In mitigation of these impacts Main Roads proposes the following:

- To provide funds to the Conservation Land Trust for purchase of land for inclusion in the Conservation Estate. It is proposed that the quantum of these funds be calculated based on the developed rural land value for the local area, and the extent of the native vegetation that will be cleared i.e. around 220 hectares;
- To relinquish the half of the gazetted road reserve (# 17250) adjacent to Nilgen Nature Reserve that is no longer required for the project, and to incorporate this in the Nature Reserve. This land has an area of 34 hectares;
- To relinquish the gazetted road reserve (# 17252) which has been superseded by a new alignment for the spur road to Wedge and to incorporate this area in the Wanagarren Nature Reserve. This land has an area of 68 hectares.

In addition, Main Road also proposes:

- To liaise with CALM regarding closure of informal tracks which cross the Coastal Road alignment. It is proposed to rehabilitate these unwanted tracks for an agreed distance (line of sight) from the Coastal Road. Temporary or permanent barriers can be erected at the intersections with the Coastal Road and at other strategic locations if required.

With respect to fragmentation of the conservation areas, it is considered that the new road will have only minor effects on the local fauna. The portion of the Nature Reserve to the east of the proposed alignment is neither small (at well over a thousand hectares), or isolated in a strict sense. Aside from possible mortalities during clearing for construction, expert opinion has suggested that the road will have very little impact on small mammals because of their restricted territories.

Indirect, long term impacts on the flora and vegetation are mainly through the risk of dieback infection as a result of road construction activities, and the importation or proliferation of weedy species. The D & C Contractor will be required to address these issues to the satisfaction of CALM in a Construction Environmental Management Plan for the project.

Main Roads acknowledges that the new Coastal Road may increase visitor numbers to the area. However, rationalisation and closure of many of the informal tracks through the conservation areas should enable better management of recreational activities. The Coastal Road and the proposed access roads to Wedge and Grey townsites complement CALM's Masterplan for development of recreational facilities at these locations.

The Coastal Road will also improve safety for all visitors to the region by providing ready access for the emergency services, Shire Rangers and CALM personnel.

4.8 *Provide details on the proposed sources of construction materials. The PER does not address the EPA Guidelines to include "the sources of road materials, including the potential for significant impacts on the environment." It is not possible to comment on the full impact of this project when the PER fails to provide an indication of where construction materials might be sourced from within conservation reserves.*

There should be no borrow pits or extractive works within the conservation estate. All borrow pits should be located on already cleared land. Where this is not possible due to the absence of cleared land adjacent to the proposed route, then they should be located on vegetation that is well represented in the adjoining conservation reserves. There should be no impacts on the Nilgen Nature Reserve other than the area required for the actual construction of the road surface and any essential cut and fill necessary to construct the road alignment and grade.

Investigations to date indicate that the Coastal Road can be designed to balance construction cut and fill requirements. This means that there will be no need for additional sources of fill material. It is for this reason that no additional areas outside of the road reserve were surveyed during the impact assessment. In the event that additional sources of fill are required, the Contractor will be required to seek advice and clearances from the CALM and the Environmental Protection Authority. Main Roads takes CALM's concerns regarding the importation of weeds into the conservation areas very seriously, and the D & C Contract will emphasise the need to manage this issue.

With respect to sourcing basecourse material, two areas with suitable material have been identified during the final planning for the project. These are situated outside of the conservation estate. No additional clearing will be required if these sources are used by the Contractor. Should the Contractor identify other sources, either within the conservation estate, or where clearing of native vegetation would occur, the Contractor will be required to seek additional clearances through the Environmental Protection Authority. CALM's concerns regarding the importation of pathogens and/or weeds in basecourse material is noted. See also response to submission 4.14 below.

4.9 *CALM will not support the proposed 250 metre buffer within the Nilgen Nature Reserve which, if implemented would have considerable greater impact upon Ocean Farms residents and would also have considerable impact on the integrity of the Nilgen Nature Reserve by isolating extra hectares for no real gain.*

See response to submissions 3.1, 3.2 and 3.8 above.

4.10 *CALM will not support the development of a link road through the preferred 250-metre 'buffer' between the Ocean Farms Estate and the coastal road, as such a link would further isolate and compromise the integrity of that fragmented 'buffer'.*

Providing a link from Ocean Farms Estate to the proposed coast road is not part of the Lancelin to Cervantes Coastal Road proposal.

4.12 *The PER failed to adequately address flora and vegetation, notwithstanding the need for and commitment to ongoing surveys. The consultant has used soil types as a surrogate for vegetation in determining extent of these units in the subject area. This is a valid approach where there is good correlation, but the report demonstrates that there is poor correlation, with many vegetation types extending over multiple soil types, and also the converse of many soil types having multiple vegetation associations. Thus Table 5.5 is not of value in determining relative impact on the vegetation.*

Table 6.2 provides an indication of the relative impact but what is required are additional columns to give qualitative (or quantitative) information on the relative impacts on each community in regional terms. Table 6.3 is not very informative. For populations that are going to be affected an estimate of the number of plants (order of magnitude) present, and the number (or proportion) that will be directly impacted, and those within a buffer that may suffer indirect impacts is required.

In the absence of information on the type and distribution of vegetation communities within the conservation reserves through which the proposed Coastal Road alignment passes, soil type was used to assist in determining the regional distribution and conservation status of vegetation communities identified within the study area. This approach was determined as the most appropriate method of determining regional distribution in consultation with Ted Griffin, a botanist with significant experience in the area, and officers of the Department of Environmental Protection.

With respect to Table 6.2 (Vegetation Types Affected by the Proposed Development), the accompanying text does provide a qualitative assessment of the impact of the proposal in regional terms.

Similarly for Table 6.3 (Flora of Conservation Significance which may be Impacted by the Proposal), the accompanying text does provide some indication of the level of impact on the various taxa.

The table below has been prepared to consolidate information regarding impacts on significant flora along the proposed alignment using information from the PER and from the subsequent survey undertaken by *Ecologia* in 2000.

Taxon	Cons. Status	Comment
<i>Anigozanthus humilis</i> ssp. <i>chrysanthus</i>	DRF	Not identified during field surveys. Known population on Mimegarra Rd will not be impacted.
<i>Thysanotus</i> sp. Badgingarra (EA Griffin 2511)	P2	Not identified during field surveys. Possibly present along alignment.
<i>Tricoryne robusta</i> ms.	P2	Scattered individuals found on alignment just north of Nilgen NR. Four other populations recorded in the area.
<i>Conostylis pauciflora</i> ssp. <i>euryrhipis</i>	P3	One population within the survey area near the southern end of the alignment. Eight other populations recorded in the area. Identification not confirmed.
<i>Grevillea thyrsoides</i> ssp. <i>thyrsoides</i>	P3	Recorded from the eastern end of Mimegarra Road. Not impacted by this proposal.
<i>Guichenotia alba</i>	P3	Not recorded during surveys. Known from eastern end of Mimegarra Road where it will not be impacted by this proposal.
<i>Haemodorum loratum</i>	P3	Not recorded during surveys. Known from Mimegarra Road where it will not be impacted by this proposal

Taxon	Cons. Status	Comment
<i>Haloragis foliosa</i>	P3	Identified in both vegetation surveys (1999 & 2000) along the proposed alignment. Widespread to the east of Wedge. Population(s) considered to number many thousands of individuals. Impact of road construction not significant.
<i>Hibbertia spicata</i> ssp. <i>leptotheca</i>	P3	Ten populations known from the area. Recorded as being widespread over the first 3 km of the alignment. Total population(s) estimated as being “many hundreds” of individuals, and the impact of the clearing for the road as being insignificant.
<i>Jacksonia anthoclada</i>	P3	Not recorded during the surveys. Known from four populations in the area.
<i>Leucopogon oliganthus</i>	P3	Recorded from eastern end of Mimegarra Road where it will not be impacted by this proposal.
<i>Nemcia axillaris</i>	P3	Recorded from the eastern end of Mimegarra Road where it will not be impacted by this proposal.
<i>Stylidium diuroides</i> ssp. <i>paucifoliatum</i>	P3	Recorded as scattered individuals at four sites during the surveys. Two populations will be impacted.
<i>Eucalyptus macrocarpa</i> ssp. <i>elachantha</i>	P4	Recorded from the eastern end of Mimegarra Road where it will not be impacted by this proposal.
<i>Verticordia lindleyi</i> ssp. <i>lindleyi</i>	P4	Not recorded during the surveys. Known from Mimegarra Road where it will not be impacted by this proposal.

Thus five taxa of Priority Flora may be impacted by the proposal. The exact extent of the impacts cannot be determined until final design for the road is complete, and the extent of clearing is determined at each of the localities.

The Contractor will be required to address minimisation of impacts on these populations in the Construction Environmental Management Plan for the project.

4.13 *There is a high risk that increased visitation/access resulting from the coastal road could cause significant landscape destruction as it opens up new country for 4WD access. Who is going to co-ordinate, plan, implement and maintain the closure of all unnecessary existing informal tracks as mentioned in Section 3.7?*

If this work is not successful, the combined impact of the existing tracks and new road will be significant.

Main Roads has made a commitment to consult with CALM on rationalisation of 4WD tracks which cross the Coastal Road alignment. Closure and limited rehabilitation will be undertaken as part of the construction works for the Coastal Road as detailed in response to submission 4.7.

4.14 Evidence on the northern section of Indian Ocean Road indicates that all cleared areas within the road reserve will be vulnerable to weed invasion. What long-term measures will be taken by MRWA to ensure that weeds do not compromise the integrity of the conservation estate?

&

4.17 Paterson's Curse is present through most of the agricultural areas in the region. Sourcing construction materials from nearby agricultural lands is likely to result in the introduction and spread of Paterson's Curse along the road alignment. How will MRWA manage this issue?

&

4.18 It is recommended that to manage the introduction or spread of weeds, MRWA identify boundaries of pathogen and weed-infested areas and manage them on a split-phased basis. With reference to the third dot point on page 110 of the PER, MRWA monitoring of weeds should extend beyond the road reserve, particularly to borrow pits. Respond to these recommendations.

Investigations to date indicate that there will be no requirements for additional fill material for this project, and thus no risk of importing weeds in this way. All fill will be sourced from areas of cut along the road alignment. Transport of fill should be over short distances only, thus reducing the risk of spreading weedy species already present.

Two potential sources for basecourse material have been identified outside the reserve areas. The Contractor will be required to confirm these sources or identify alternative ones as a priority after award of the contract. Once the sources have been confirmed, the Contractor will be required to implement a weed management strategy for the borrow areas if this is required. Details of this strategy, and of the management of weeds along the new road will be part of the Landscape Management Plan (included in the Construction Environmental Management Plan), which is auditable by the DEP with advice from CALM.

Main Roads will consult with CALM prior to calling for tenders to determine suitable monitoring methods and intervention levels for weed control once the project is complete. These methods and levels will be included in the contract requirements. See also response to submission 4.8.

4.15 With reference to the second dot point on page 108 of the PER, it is considered that vehicles and construction equipment should be confined to the 'clearing width' to prevent disturbance to the adjacent vegetation. Furthermore, it is suggested that having a road reserve 100 metres in width through CALM managed lands is excessive. Why is this width required? Would CALM prefer a lesser reserve width? What opportunities exist for reducing the width of the proposed road reserve?

Main Roads agrees that construction equipment should be confined to the area determined for clearing.

Amended road reserve widths are discussed in the response to submission 4.7.

4.16 The PER should include objectives, specific techniques and completion criteria for revegetation works, and the commitment to prepare and implement a “landscape management plan” is not sufficient. All areas disturbed during construction should be revegetated in accordance with a detailed “ecological restoration plan”. The ecological restoration plan should be prepared for all areas disturbed during construction, as well as the rationalised 4WD tracks and all borrow pits. Restoration should be undertaken using only local indigenous plant species to replace the indigenous plant communities in naturally occurring associations.

With the “Design and Construct” (D & C) delivery for major projects, Main Roads cannot detail all of the work methods or strategies which may be employed by the Contractor during implementation of the project. However, where there are immutable requirements, such as for environmentally driven rehabilitation, or for the use of locally native species, these are included in the Scope of Work for the project, and the Contractor is bound through the contract to comply.

In the case of this project, the requirement to consider adjacent vegetation associations in the revegetation of disturbed areas will be included in the Scope of Works.

The Landscape Management Plan, which the Contractor must prepare as part of satisfactory delivery of the project, will be auditable by the Department of Environmental Protection with advice from CALM.

4.19 It is noted that in many places, the preferred alignment follows existing tracks located along soil/vegetation transition zones? As these areas typically exhibit higher biodiversity, it would be preferable to locate the alignment outside of these areas. What measures can be taken to ensure retention and adequate representation of such transitional zones?

The preferred alignment has been located along existing tracks where possible, to minimise further disturbance to vegetation and landforms. The proposed road alignment crosses the transition zone between the Quindalup and Spearwood Dune systems at several locations and the Spearwood Dune / Bassendean Dune transition zone once.

With respect to the Quindalup / Spearwood transition area near the southern end of the alignment where the proposal is now to utilise a modified version of the L1 route option, a survey of this alignment concluded that the new alignment did not have conservation implications. A copy of the report on this survey is included in the supporting information accompanying this document.

4.20 *The PER clearly identifies that the lands along and surrounding Mimegarra Road contain many significant plant species and vegetation communities with limited distribution and/or regional representation. The PER also identified significant fauna corridors and wildlife habitats. The PER has not adequately addressed the likely indirect impacts on these environmental values. Further details should be provided on the ability of the proponent to manage long-term indirect impacts on these values, and/or the provision of offsets where such impacts cannot be mitigated. The proposals impact on all of the wetland vegetation communities needs to be covered in greater detail.*

This project does not include any road works along the existing Mimegarra Road. The PER does however recognise that an increase in the use of Mimegarra Road may have indirect impacts on the vegetation and resident fauna along the road and the connection to the Coast Road. These impacts will be addressed for the construction phase of the project in the Contractor's Construction Environmental Management Plan.

With respect to long term impacts, expectations are that there will be very little increase in use of Mimegarra Road for the foreseeable future.

5 Terrestrial Fauna

5.1 *The greatest impact on populations of Carpet Pythons at Wedge and Grey will be the total removal of all shacks post 31 June 2001. The Pythons inhabit these shacks. This impact could be minimised by allowing a transition period between shack lease expiry and development activity.*

Removal of the shacks at Wedge and Grey is not part of the Lancelin to Cervantes Coastal Road development and was therefore not addressed in the PER. This comment has however been forwarded to CALM for their consideration.

5.2 *A vertebrate ground fauna survey in an area covering approximately 10ha in the south-eastern sector of the Nilgen Nature Reserve has been underway since March 1998. An annotated list of the vertebrate ground fauna recorded in this study area, and as a result of other opportunistic observations in the vicinity of Nilgen, is provided as Attachment 1. Note the addition of the frog *Lymnodynastes dorsalis* and the skinks *Ctenotus australis* and *Lerista distinguenda* to the inventory provided in the PER.*

Noted.

- 5.3 *The PER implies that that the Carpet Python (Morelia spilota) may have been deliberately transported from inland localities. There are consistent reports of these snakes being observed within the Ocean Farms Estate suggesting that a significant population may be located within the Nilgen Nature Reserve, probably centred on the limestone habitats. Given the propensity for the Morelia spilota to bask on roads and its listing as vulnerable under the Federal EPBC Act, the proposed road may pose a significant, long-term cause of increased mortality and as such, the proposal should be subject to Commonwealth assessment.*

The Carpet Python (*Morelia spilota*) is listed as a Schedule 4 Species (Fauna that are in need of special protection) under Western Australia's *Wildlife Conservation Act 1950* but is not listed as an Endangered or Vulnerable species under the Commonwealth's *Environmental Protection and Biodiversity Conservation Act 1999*. Therefore the project does not require referral to Environment Australia in relation to the Carpet Python. No specific studies are cited to support the contention that *Morelia spilota* has a greater propensity to bask on roads than any other reptile species.

- 5.4 *Honey Possums and Bush Rats are abundant within the south-eastern sector of the Nilgen Nature Reserve. In addition Ashy-grey Mouse (Pseudomys albocinereus) was trapped infrequently as were three species of Dunnart (the White-tailed Dunnart Sminthopsis granulipes, the White-bellied Dunnart S. dolichura and a large (19g) unidentified and possibly undescribed Dunnart superficially resembling S.gilberti) which were not reported in the PER. Nilgen is possibly the most southerly locality for the White-tailed Dunnart.*

The occurrence of five, and possibly six, small mammal species is significant, as this component of fauna has been virtually eliminated from otherwise intact habitats closer to the metropolitan area. Consequently the maintenance of this group of species in the Nature Reserves of the region is an important conservation objective. The current alignment of the road is not consistent with this objective and should be reexamined to meet this objective.

With respect to the unidentified and possibly undescribed Dunnart referred to in this submission, on advice from CALM, Main Roads arranged for both morphological (at the Western Australian Museum) and DNA studies (through the South Australian Museum) to be undertaken to confirm the status of the specimens provided.

The results of these analyses identified the specimens as the Long-tailed Dunnart *Sminthopsis dolichura*. A copy of the relevant correspondence is included with the supplementary information provided with these responses. *S. dolichura* is considered to be common in the south-west of WA and is not listed as a threatened species. This species inhabits a variety of habitats including Eucalypt woodlands, woodlands of Acacia and Casuarina, shrublands, heaths and hummock grasslands. It is therefore likely that this species occurs throughout the Lancelin to Cervantes region.

Construction of the road through Nilgen Nature Reserve is less likely to present a threat to the small mammal assemblage in the southern part of the reserve than other developments such as the increasing population associated with new residential estates. Throughout Western Australia, the demise of the small mammal fauna has been associated with massive habitat reduction and with the presence of a suite of feral predators. Construction of the road does not directly contribute either of these factors to the local equation. Less than half a percent of the total area of the reserve will be affected by clearing for road construction.

5.5 *The floristically and structurally diverse Spearwood (deep yellow sand) habitats restricted to the south eastern and eastern sectors of the Nilgen Nature Reserve represent the most limited and species rich (particularly small mammal) habitats in the Reserve and should be avoided by the road. If the alignment must pass through the Reserve it should follow the natural boundary between Spearwood and Quindalup land systems as far as practicable to minimise fragmentation of habitats within the Reserve.*

The agreed alignment (modified L1 – see response to submissions 3.1, 3.2 and 3.6) does run close to the boundary between the Quindalup and Spearwood dune systems.

5.6 *The reference to the “unidentified worm” collected during stygofauna sampling is unacceptable. Very little is known of stygofauna in this area and so at the least, identification to genera level is required.*

Unfortunately poor preservation technique precluded any taxonomic investigation of the “unidentified worm” collected from one of the bores sampled for stygofauna. Given that:

- the bore from which the worm was collected is situated well outside of the proposed alignment, and
- this was the only specimen collected from 60 samples from 28 bores in the vicinity of the project,

the significance of the record was deemed to be small. It was included in the PER for the sake of completeness.

5.7 *The PER acknowledges that the construction works and ongoing use of the road will result in road kills, however no attempt is made to manage this issue. The development of the road will clearly impact on native fauna movement and potentially on population levels. This is particularly significant as this proposal dissects large areas of conservation estate where a key management objective is to protect indigenous flora and fauna. As the L5 route option does not dissect conservation estate, could selection of this route reduce the overall impact of the coastal road on native fauna? What other measures are MRWA proposing to reduce the short and long-term impacts on native fauna?*

Adoption of alignment option L5 would mean no impact on the Nilgen Nature Reserve, but would not eliminate impacts on the regional conservation areas as a whole. As set out in the responses to submissions 3.1, 3.2, 3.5 and 3.6 the proposed alignment was arrived at through a series of analyses, which attempted to balance a range of requirements.

None of the conservation areas severed by the proposal are small or isolated, and thus fragmentation is not considered to be significant.

Reducing or eliminating road kills can only be achieved by fencing the road reserve, with substantial structures required to restrict movement of macro fauna and fine mesh buried at ground level to restrict smaller creatures. These measures have only seldom been used in rural Western Australia, and are not considered appropriate for this project. As detailed in the PER, signs advising road users that they are travelling through conservation areas may help to increase driver awareness, and thereby reduce the risk of road kills.

6 Wetlands

6.1 Insufficient information is provided to allow the Water and Rivers Commission to adequately assess the effect of the proposal on wetlands in the region. The Commission requires orthophotos and/or maps indicating the exact position of wetlands of international, national and regional significance in relation to the proposed development before it can provide an adequate assessment of potential impacts.

According to the evaluation by the Semeniuk Research Group of the wetlands in the region, the proposed alignment does not traverse any wetlands of international, national or regional significance. The Water and Rivers Commission was consulted during the preparation of the PER, and indicated that there were no major concerns with the proposal.

6.2 The wetland map indicates that wetlands exist along the route in the existing 200 metre wide road reserve adjacent to the LDTA. These wetlands have not been recognised, considered or discussed in the document. The impact of this proposal on all of the wetland vegetation communities needs to be considered in detail.

During the field investigations undertaken for the Coastal Road, two small seasonal sumplands were identified close to the alignment just south of the proposed junction of the link to Mimegarra Road. Another wetland area is located north of the link to Mimegarra Road just over 10 kilometres from the junction with the Coastal Road. These small wetlands, along with a swamp known as Bootoo Swamp, which occurs approximately one kilometre east if the proposed alignment were identified as constraints during the planning study. The road alignment has been planned to avoid direct impacts on these areas.

Through the D & C Contract, Main Roads will ensure that indirect impacts on these wetlands are addressed during both design and construction of the road.

6.3 *The Eucalyptus decipiens community should be avoided and an adequate buffer established between the community and the road alignment. Implementation of this proposal may result in modifications to the local hydrology, resulting in flow-on impacts on this and other wetland/dampland vegetation communities. Discuss this and provide details as to how these issues will be managed.*

The small stand of the *Eucalyptus decipiens* mallee low forest community that occurs between the Lancelin Defence Training Area and Bashford Nature Reserve cannot be avoided completely if the road is to be constructed inside of the existing road reserve. A second smaller stand of this vegetation also occurs along the alignment of the connection to Mimegarra Road. Direct and indirect impacts to the community will be minimised through design initiatives, and through stringent management of works in the two areas. Main Roads will ensure that the Contractor addresses this issue during detailed design and in the Construction Environmental Management Plan for the project.

7 Karst

7.1 *What action would be taken should significant caves be located along the alignment?*

A detailed site investigation using a ground penetrating radar technique was carried out to detect any karst formation along the preferred alignment within the high-risk area identified in the PER. No significant caves were found along the preferred alignment.

If significant caves are identified along the alignment during construction, the Contractor will be required to develop mitigation and management actions in consultation with CALM, the DEP and the Western Australian Museum.

8 Groundwater Quality

- 8.1 *The preferred road alignment between Wedge Island and Lancelin traverses the south east corner of the Lancelin Water Reserve. The reserve was proclaimed on 23 July 1999 and is a Priority 1 Source protection area. The area is managed in accordance with risk avoidance and it is considered that roads are incompatible with the protection of P1 areas. The Water and Rivers Commission recommends that the route be amended so that it remains outside the Lancelin Water Reserve.*

See response to submission 3.6.

9 Traffic Noise

- 9.1 *An initial request was made for a 500m buffer zone between the road and the western boundary of the Ocean Farms Estate. Refinement of the proposal has resulted in a gradual decrease in this buffer to 250m and finally to 140m. Noise impacts associated with the road on the Ocean Farms Estate as a result of this reduction in separation distance is of some concern. The alignment should be located to maintain a minimum 500m setback from the Ocean Farms Estate.*

Considering the potential use of the road by trucks hauling Agricultural Lime Sand, increases in tourist traffic and local traffic what assurances can the proponent give that the proposed setback of 140m is adequate to ensure noise impacts on residents of the Ocean Farms Estate would be acceptable?

&

- 9.6 *CALM believes that its suggested alignment near Ocean Farms Estate (i.e. 140m), will not result in any significant noise increase and may well improve the situation. What measures can MRWA take to ensure noise levels are compliant with accepted criteria.*

See response to submissions 3.1, 3.2 and 3.8.

- 9.2 *The MRWA noise level limit of 63 dB(A) is used when evaluating noise from major urban highways. Individual spikes of noise in quiet locations best represent the perceived change in noise level. The 63 db(A) criterion is based on averaging noise over extended periods making it an inappropriate criterion to use when considering roads located in quite rural areas.*

The L_{10} (18 hour) criterion used by Main Roads in the assessment of road projects is an indication of the noise level (averaged for each hour) that is exceeded for 10% of the 18 hour period. The measuring and modelling carried out by Main Roads uses accepted methodology which take into account “spikes” of noise.

9.3 *MRWA noise level policy notes a limit for the increase in noise level however this is not mentioned in the PER. How does the proposed road compare to this Policy?*

The limit of 3 dB(A) for increases in noise levels set out in the Main Roads policy notes applies to situations where pre-existing noise levels are high (≥ 60 dB(A) for the L₁₀ (18 hour index)). These situations are usually found in busy urban areas.

Existing levels of noise at the nearest receivers in the Ocean Farms Estate and Seaview Park are not high, therefore the 3 dB(A) increase criterion is not applicable.

9.4 *The noise evaluation undertaken in the PER is misleading in that it quotes an increase in noise level by 10% (40dB(A) to 44dB(A)). Considering noise is reported on a log rather than linear scale the increase is greatly understated. This increase in noise level deserves greater consideration than that presented in the PER.*

&

9.5 *On what basis was the 40dB(A) 'before' level established? Was this level based on noise values measured in the Ocean Farms Estate area.*

The noise evaluation reported in section 6.7 of the PER makes no reference to noise levels of 40 dB(A) or 44 dB(A) or that there would be a 10% increase in the noise level.

10 Visual Amenity

10.1 *The location of the road will result in a visual scar on the landscape as viewed from the Ocean Farms Estate. The route should be located to minimise visual impact by positioning it in the gullies that traverse the coastal tract of land towards Wedge Island and Cervantes.*

&

10.5 *The location of the proposed road corridor, (west and below Ocean Farms Estate), will be visible to some degree in the foreground from residences, regardless of the distance from the estate boundary. A 250 to 500-metre buffer will place the road alignment significantly higher in the landscape profile than necessary*

&

10.7 *CALM has not "agreed" to any alignment (pp 105, 2nd last para). CALM considers that the most appropriate alignment for reduced visual impact is at the toe of the slope immediately west of the Ocean Farms Estate boundary (approximately 140 metres from the boundary at the minimum). This alignment (a plan with the CALM preferred alignment is attached) would significantly reduce the visibility of the road and passing traffic from residences at Ocean Farms Estate*

See response to submissions 3.1, 3.2, 3.6 and 3.8.

- 10.2 *An inadequate qualitative assessment of the visual values/characteristics of the route has been made. Mapping of existing visual values, specific visual amenity/viewing opportunities and potential impact locations is not provided.*
&
- 10.3 *Visual landscape management zones (VLM Zones) provide objectives and priorities for management, outlining what is possible in terms of alteration to a particular landscape setting, considering it's visual context. They are a key component in CALM's broadscale Visual Landscape Management System (1989), which provided the methodology for the PER assessment. However, VLM Zones for the route are not shown.*
&
- 10.4 *Some potential impacts on visual amenity have not been addressed e.g. data has not been provided for the location of borrow pits and material stockpiles. EPA objectives for management of visual amenity are stated, however these are not addressed directly within the PER.*
&
- 10.6 *Buffers and set exclusion distances will not ameliorate visual impacts in this very open coastal landscape and alternative methods (through landscape responsive design) should be employed to achieve a more satisfactory visual impact/quality outcome. The location of lookouts and parking bays along the coastal road need to be determined in consultation with CALM.*

The level of the visual assessment undertaken for the project was considered to be appropriate for the planning stage to which it was applied. The aim of the visual assessment undertaken for the PER was to determine the visual context in which the road will be constructed, and to provide advice on the important visual features that should be considered during the detailed design and construction of the road.

No mapping of landscape features or visual landscape management zones was included in the PER, but the text provided descriptions of important landscape characteristics with recommendations for treatment during final design and construction. These included coastal views, vegetated ridge tops, and large trees in the dune swales. Sensitive treatment of the aspects outlined in the PER during final design, construction and rehabilitation will assist in minimising negative visual aspects whilst creating a visually stimulating landscape for the traveller.

For management of visual impacts as far as nearby estates are concerned, see responses to submissions 3.6 and 3.8.

For comments on the location of borrow pits see response to submission 4.8.

The location and design parameters for lookouts, rest stops, parking bays, signage, information boards and other roadside furniture are still being discussed and agreed with CALM. These details will be addressed in the Contractor's Landscape Management Plan for approval by CALM and the Department of Defence.

11 Social Amenity

11.1 Can heavy haulage traffic be discouraged from using the route to help preserve the lifestyle and amenity of residents along the route?

With the completion of the Lancelin to Cervantes section, the whole of the Coastal Road is likely to be proclaimed as a “Main Road” under the Main Roads Act. “Main Roads” are defined as “second order” roads which include those that provide access to areas of regional tourist / recreation significance. Brand Highway will remain as the primary freight route servicing the Mid West and Gascoyne regions, however, access for all vehicles up to 19.0 metres in length will be allowed on the Coastal Road.

11.2 There is no commitment by MRWA to address the management of roadside litter. As the proposed highway will traverse reserves identified as national and international tourism icons and areas of high conservation value, a commitment to an ongoing rubbish management strategy should be made.

Main Roads WA has always endeavoured to minimise roadside litter by establishing roadside parking bay & rest area facilities where litter bins are provided for travelling public. In addition, maintenance contracts for all of the roads under Main Roads’ management stipulate stringent intervention levels for collection of roadside litter and for the maintenance of aesthetics at the roadside stopping places.

Possible inclusion of litter prohibition or “Keep The Scene Clean” signs will be discussed with CALM and the Local Government Authority.

12 Social Surroundings

12.1 A bitumen road with traffic speeds of 110km/h does not enhance the area’s sense of wilderness. Low speed limits should be imposed, either through road design or signage, to enable visitors to enjoy the views as they approach the area without fear of compromising traffic safety.

The Lancelin to Cervantes link in the Coastal Road will be designed to the same speed standard (110 km/hr) as the already completed sections to the north and south. Although the road will be utilised extensively by tourists, it is also required to cater for the direct and efficient movement of people and goods between towns along the coast. Strategically placed stopping places will allow visitors and sight seers to pull off and enjoy the views without compromising the safety of other road users or themselves.

The speed limit on the proposed access roads to Wedge and Grey may be restricted depending on CALM’s management plan for these sites.

13 Aboriginal Heritage

13.1 *While it is true that there are no registered Aboriginal or ethnographic sites of significance in the study area action has been taken to effect a registration that is likely to be in place by the time road construction is proposed to commence. This potential impact should be taken into account during the assessment of the proposed route.*

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13.2 *The consultation process with Aboriginal people appears to have been flawed given the degree of dissatisfaction now being expressed. The survey activity in the area of Wedge and Grey settlements does not appear to have been thorough enough and the consultation with all eleven members of the Yued Claim appears to have been somewhat vague at best. Revisit these issues to ensure that the consultation process with the Aboriginal people is thorough and adequately carried out.*

Since the release of the PER several additional Aboriginal Groups have requested that they be consulted about the project. To ensure that all relevant Aboriginal informants have been consulted about the Coastal Road project, an additional ethnographic survey for the preferred alignment was undertaken. The Aboriginal informants consulted for both ethnographic surveys determined that no sites of Aboriginal significance, registered or unregistered, would be impacted by the proposal.

In addition to the surveys undertaken for the Lancelin to Cervantes Coastal Road project, CALM and Main Roads jointly commissioned an ethnographic survey for the Wedge and Grey settlements (May 2001). Further information indicated the possible presence of an area significant to Aboriginal people in the Wedge area. A supplementary survey was undertaken that included consultation with Yeud native title claimant group, the Shaw family who are residents of Wedge, and the Pandawn and Kickett 2 native title claimant groups.

The outcome of the additional survey of the Wedge and Grey Reserves was that a site of historical and cultural significance to the Yued people, might be impacted by the spur road into Wedge on the alignment proposed at that time. Main Roads, in consultation with CALM has realigned this section of Wedge Spur Road to avoid any impacts on the area which has significant cultural interest. The lodgement of an application to disturb the site will not be required

14 Other Matters

14.1 *As the future development at Wedge will require construction material for local roads it is suggested that a source close to Wedge be identified for such and be approved within this process.*

The future development at Wedge is not part of the Coastal Road proposal. It will be the responsibility of the proponent for any such development to gain approval for the sources of materials.

14.2 *The Department of Defence has accepted full responsibility for damage to public assets during full scale military exercises that would require intermittent road closure to the public. Who would be responsible for damage to private assets during these full scale military training exercises?*

It is assumed that the Department of Defence would be liable for any damage incurred to both private and public assets as a result of full scale military exercises.

14.3 *A narrow limestone track to connect between the coastal road and Sappers Road is requested. The narrow limestone track joining the Lancelin-Cervantes Road to the west would greatly improve the safety aspect of living in the Ocean Farms Estate by providing a second escape route in the event of a fire.*

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14.4 *A properly constructed heavy haulage road connecting the coastal road and Sappers Road for all the heavy haulage vehicles using the Agricultural Limesand route would keep traffic out of the Ocean Farms Estate where the roads are narrow and not suitable for heavy haulage vehicles*

A connecting road between the Coastal Road and Sappers Road is not part of the Coastal Road proposal. This issue should be raised with the relevant Local Government Authority for consideration in the local planning process.

14.5 *The PER does not address the general requirement of the EPA Guidelines to “describe the impacts, both direct and indirect, that will occur and may occur on the environment as a result of the use of the road (eg. Increased visitor pressure on the National Parks and Nature Reserves ... and increased access to coastal areas)”.*

The PER has not adequately considered the impact of the increased visitation that will result as a consequence of the coastal road. Increased visitation will result in increased impacts on recreation areas located within the conservation estate (eg. Pinnacles, Hangover Bay and Kangaroo Point and Boggy Point). The PER fails to acknowledge that the road will have significant negative impacts unless resources are provided for adequate access, infrastructure and ongoing management.

Directing travellers to rest areas and scenic lookouts are considered inadequate measures for managing visitor impacts. Proper management of increased visitation will require good vehicle access and basic visitor facilities such as parking, toilets, paths and information. How will MRWA address these issues?

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14.6 *CALM estimate that the development of infrastructure to manage increased visitation and environmental impacts on CALM managed lands resulting from the coast road, is in the order of \$4 to \$6 million capital. CALM advise that these resources are not currently available, yet significant resources will be required to ensure adequate long-term environmental protection and management of the conservation estate. How will MRWA address these issues?*

The PER did not fail to acknowledge that there may be negative impacts for the environment as a result of the new road bringing increased visitor numbers to the area, however, Main Roads' contribution to solutions for this problem had yet to be finalised at that stage. Main Roads has since come to an agreement with CALM regarding some areas where practical assistance can be forthcoming as part of this project, and has provided some assistance to date:

- Main Roads will construct new access roads into Wedge and Grey settlements that will complement future development in these areas. The roads will be constructed to a high standard which will minimise ongoing maintenance costs;
- Main Roads contributed to the jointly commissioned Aboriginal Heritage surveys and consultation for the Wedge and Grey townsites. The information gained during these surveys should allow future development in accordance with the Aboriginal Heritage Act;
- As part of the Coastal Road project, a number (locations and design yet to be established) of look out and stopping areas will be constructed to CALM's satisfaction;
- Main Roads has committed to retaining any water bores that are established for the purpose of road construction so that they may be utilised by CALM for future management initiatives. These water supply points will be of assistance for future fire control;
- Main Roads has committed to close and undertake limited rehabilitation of any of the informal tracks that cross the Coastal Road alignment (see compensation package set out in response to submissions 4.7 etc.).

These initiatives are felt to be reasonable on the part of Main Roads. Development for increased tourism should be tackled as a whole of Government (including Local Government) responsibility. As such other government agencies need to develop strategies and programmes and source funding to address the Government initiatives for this region.

14.7 *Rationalisation of 4WD tracks must also address vehicle access to be retained, upgraded or realigned.*

See statement that forms part of the compensation package in response to submissions 4.7 etc.

14.8 *The statement that the road will give greater public ownership to Nambung National Park is not attributable to anyone in CALM who has reviewed this document and it needs to be deleted. It is not reasonable to apply a similar argument to the proposal as a whole and it is not a concept that is widely supported as a counter to the impacts of vastly increasing visitor numbers to a reserve. Greater public ownership of these reserves will occur if CALM can meet the challenge to protect conservation values and provide for appropriate recreation.*

The comment has been noted.

14.9 *Adoption of strategic approach to limesand mining applications might be a solution to encroachment of sand sheets. Conversely, there is a critical need for Government to reach a strategic, whole of Government position, to protect limesand dunes of landscape (and environmental) significance such as the crescent dune. This will become increasingly important as the road provides access for heavy haulage.*

Noted.

14.10 *In the proponent's commitments (Page 129, table 7.1), the relationship is not clear between the proposed Environmental Management Plan and the Landscape Management Plan. Both plans need to include the requirements to manage increased visitation to recreation areas in CALM-managed reserves. The development of an agreement for the management of road reserves also needs to be included.*

The D & C Contractor will develop the Construction Environmental Management Plan and the Landscape Management Plan concurrently. Essentially, these plans are prepared in order to guide the design, construction and maintenance of the project, and to ensure that all the commitments made during the planning of the project are successfully carried out. As such they have a limited life, usually three years after construction completion. Strategic or long term commitments made by Main Roads are not usually included in these plans.

For comments on management of increased visitor numbers see response to submissions 14.5 and 14.6.

Long term management of the road reserves throughout the conservation areas will be agreed with CALM prior to the award of the Contract.

14.11 *The future of that portion of the Miningarra Road Reserve that will not form part of the road alignment (as mentioned in Section 3.2) should be detailed. It is suggested that this portion of the road reserve be closed and included in the adjacent defence training land.*

See part of compensation package in response to submissions 4.7 etc.

14.12 The assessment process may require provision of additional offsets and compensation to CALM for ongoing management of increased visitor impacts that result from increased visitor access to the conservation estate. MRWA are encouraged to consider whether the cost of providing offsets will be greater than the cost of implementing the L5 alignment.

Main Roads does not see how the choice of any particular alignment for the southern end of the project could have any connection to the expected increases in visitor numbers to the area.

14.13 Concerns regarding the validity of the Multi Criteria Analysis were brought to your attention by the DEP in its letter dated 29 August 2000, with particular reference to the preferability of the L5 alignment. Your comments and modifications to the PER in response to this letter did not adequately address the constraints identified. However, in recognition that the PER is a proponent document, it was considered that these matters should not hold up public release and that the issues would be resolved through the EPA assessment process.

Provide further justification with appropriate weighting and emphasis toward environmental matters, as to why option L5 is not the preferred option. Please bear in mind that the EPA in assessing your proposal, will need to be satisfied that the environmental considerations have been adequately addressed. The EPA cannot specifically consider economic factors in its assessment.

The multi criteria analysis undertaken as part of the planning study, to identify the preferred option for various sections of the route, utilised a comprehensive range of criteria (17 in all), which were accorded equal weighting. Four of the criteria related to environmental issues.

Although Option L5 clearly was the best option in terms of the environmental criteria it performed poorly in the economic benefit, impacts on private properties, ease and cost of construction and visual quality criteria.

The L1 option with small modifications is now the option proposed. This (and the L3 option) performed best in the analysis for the following reasons:

- they are closer to Lancelin;
- they are favoured by the Shire of Gingin, Lancelin Chamber of Commerce and business community;
- they provide better ocean views and vistas;
- impacts on private properties are low;
- they are superior regarding ease of construction, and
- they have substantial cost benefits over the L5 alignment.

It should be noted that Main Roads has an obligation to take into account other (not strictly environmental) issues when planning and implementing projects, and strives to find a balanced approach.

14.14 The PER has not provided a clear picture of the significance of fauna and flora within Nilgen Nature Reserve. Using all available data (including spring survey results) and having regard for both direct and indirect impacts on flora, fauna and biodiversity, summarise the impacts of the L3 alignment on Nilgen Nature Reserve and demonstrate why these impacts are not fatal flaws.

The flora and fauna surveys undertaken for the PER (and subsequently) covered only the possible alignments and their immediate surroundings. There was no intention of carrying out a biological survey of the Nilgen Nature Reserve as a whole. However, all existing documentation on regional biology, as well as numerous acknowledged experts, were consulted in order to place the results of the surveys into a local and regional perspective.

A modified version of the L1 alignment is now proposed for construction. Many of the environmental implications have been addressed in various responses to submissions in this document. A comprehensive compensation package has also been proposed (See response to submissions 4.7 etc.).

The following table provides a summary of the direct and indirect impacts considered in the PER or raised in the public submissions. Given the compensation package and the commitments to minimisation and management given in the PER and in these responses, construction of the road through Nilgen Nature Reserve should not be seen as a fatal flaw.

Impact	Comments Management / Mitigation / Compensation
Excision of 42.7 ha for the road reserve. If the area between the road and the boundary of Ocean Farms Estate is included, the area is 62.3 ha.	This 62.3 ha has been included in determination of an offset or compensation package.
Loss of approximately 18.5 ha of native vegetation through clearing for the project.	This 18.5 ha has been included in determination of an offset or compensation package.
Possible impact on three populations of Priority Flora <i>Conostylis pauciflora</i> ssp. <i>euryrhipis</i> (P3); <i>Hibbertia spicata</i> ssp. <i>leptotheca</i> (P3); <i>Stylidium diuroides</i> ssp. <i>paucifoliatum</i> (P3)	See also response to submission 4.12 One population out of nine known locally. Identification not confirmed. One population out of ten known locally. Relatively small impact on population. One population (scattered individuals) out of four identified locally will be impacted.

Impact	Comments Management / Mitigation / Compensation
Fragmentation of the reserve	Area to east of road alignment is large (>1000 ha), and not strictly isolated (see also response to submission 5.7)
Loss of resident fauna during construction	Some mortality is expected during any clearing operation.
Barrier to fauna movement and potential increase in road kills	Expert opinion has suggested that the road will have only minor effects on small mammals due to their normally restricted territories. Reptiles are already impacted by 4WD activity as mentioned in the survey results. Minimising or eliminating road kills can only be accomplished through elaborate fencing, which is not considered appropriate for this proposal.
Potential for importation of new weedy species, or the spread of those already present	Current estimates indicate that cut and fill requirements for the road will be balanced, and there will be no need for imported fill. The D & C Contractor will be required to manage weed problems in basecourse material imported for construction (see also response to submissions 4.14, 4.17 and 4.18)
Potential for introduction of plant pathogens	The D & C Contractor will address this issue in a Construction Environmental Management Plan for the project, which will be auditable by the DEP with advice from CALM.
Increased access for feral animals	Dogs, foxes and cats are already present as recorded during the fauna survey for the PER. It is unlikely that the Coastal Road will have any effect on their presence, other than a possible increase in road kills.

15 Errors in Document

15.1 Table 3.4 lists the length of W3 on the preferred route as 3.5km however all other references state the length of this section to be 5.2km. The error should be corrected and any subsequent changes to the assessment values adjusted accordingly.

The discrepancy in the lengths given for the Wedge access road is due to the inclusion of the length of the road inside the Wedge townsite in the second (and higher) value. No correction to the assessment of impacts is required.

15.2 *Table S1 (page 2) states that the approximate area of vegetation disturbance is 200 hectares, however all other references indicate the total area of vegetation disturbance is 311 hectares. Please clarify this matter.*

See response to submissions 4.7 etc.