# Exmouth limestone project barge loading facility, Mowbowra Creek, Shire of Exmouth

Whitecrest Enterprises Pty Ltd

Report and recommendations
of the Environmental Protection Authority

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## Summary

The proponent, Whitecrest Enterprises Pty Ltd, proposes to construct and operate a barge loading facility south of Mowbowra Creek in the Shire of Exmouth for the export of limestone proposed to be mined from the nearby Whitecrest Limestone Mine. The proponent has indicated that a future proposal to develop a larger shipping facility, including a dredged shipping approach, is envisaged. Such a proposal is not considered as part of this assessment, and will require further environmental impact assessment at a later stage should the proponent wish to proceed with such a proposal.

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for the Environment, on the environmental factors, conditions and procedures 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

In the EPA's opinion, the following are the environmental factors relevant to the proposal:

(a) Subterranean fauna;

(b) Karst systems;

(c) Marine fauna;

(d) Foreshore;

(e) Marine water quality; and

(f) Aboriginal heritage.

## Conclusion

The assessment of proposals by the EPA is usually a two-part process: firstly a consideration of the broad array of information available from the proponent's review documentation and public advice, which provides the basis for the EPA report to the Minister, and then later an examination of more detailed information obtained through an on-going environmental management plan (EMP) prepared by the proponent if conditional approval for the proposal to proceed is granted. This arrangement provides for an orderly process of environmental review of the information provided to the EPA followed by a sound programme of environmental management for consideration as to detail. However, care has to be taken to obtain sufficient information through the first part of the process to allow the EPA to be confident in its advice to the Minister.

The EPA has concluded, on the information available, that the proposal by Whitecrest Enterprises Pty Ltd to construct and operate a barge loading facility south of Mowbowra Creek in the Shire of Exmouth can be managed in a manner such that it does not impose an unacceptable impact on the environment, provided that the conditions recommended in Section 4, and set out in formal detail in Appendix 3, are imposed, and provided the proposal can be undertaken in conformity with the *Wildlife Conservation Act 1950*.

As for most development proposals on the Cape Range peninsula, a critical element will be the potential for impact on the internationally significant subterranean fauna. The EPA has noted that the proposal will not require major excavation, as ground work will be limited to levelling surfaces for construction of the laydown area and the haul route, and thus the impact on the subterranean fauna is likely to be small. However, because of the cryptic and specialised nature of this important fauna, the proponent's consultation with the Department of Conservation and Land Management will be of special importance in relation to the requirements of the *Wildlife Conservation Act 1950.*

In summary, there appears to be no overriding environmental reason why the proposal should not proceed provided a sound programme of environmental management is approved and implemented.

## Other advice

The Cape Range Peninsula is an area of special environmental importance for a number of reasons.

In reporting on a number of recent development proposals in the Exmouth-Cape Range area, (EPA Bulletins 843 and 846) the EPA has provided advice on the need for an integrated approach to land use planning and environmental management for the Cape Range Peninsula, and for priority to be given to consideration of extensions to the Cape Range National Park. The EPA maintains these views.

The EPA is now preparing an environmental policy on development within the Exmouth-Cape Range area to assist in the assessment of development proposals.

The need for protection of subterranean fauna has been recognised as a relevant environmental factor in assessment of this and recent proposals in the Cape Range area. However there is limited scientific information available on these species. The EPA proposes the Government take action to ensure resources are directed into research of subterranean fauna, in particular:

(i) species diversity;

(ii) population sizes and distribution (including areas outside Cape Range);

(iii) biology; and

(iv) ecology

## Recommendations

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

1. The Minister considers the report on the relevant environmental factors of Subterranean fauna (3.2), Karst systems (3.3), Marine fauna (3.4), Foreshore (3.5), Marine water quality (3.6) and Aboriginal heritage (3.7);

2. The Minister notes that the EPA has concluded that the proposal appears likely to be able to be managed to meet the EPA's objectives, and thus not impose an unacceptable impact on the environment, provided there is a satisfactory implementation by the proponent of the recommended conditions set out in Section 4 and Appendix 3;

3. That the Minister note that a critical element of the Environmental Management Plan proposed in the condition section will be the ability of the proponent to demonstrate that the proposal will be implemented in conformity with the *Wildlife Conservation Act 1950*;

4. That the Minister imposes the conditions recommended in Section 4 and set out in formal detail in Appendix 3 of this report;

5. That the Minister for the Environment notes that there has been a number of previous planning and scientific studies which have recommended extension of the Cape Range National Park. The EPA recommends that the Government give priority to consideration of the proposals in these various reports to extend the Cape Range National Park and to consider other extensions which may be relevant in light of additional information particularly covering the coastal plains and foothills;

6. That the Minister for the Environment notes the EPA's views on the need for an integrated approach to planning and environment for the Cape Range Peninsula referred to in Section 5 of the report, and takes appropriate action to address the EPA's proposals;

7. That the Minister for the Environment notes that the EPA is progressing the preparation of an environmental policy on development within the Exmouth-Cape Range area to assist in the management of the area and the assessment of development proposals.

## Conditions

The EPA recommends that the following conditions, which are set out in formal detail in Appendix 3, be imposed if the proposal by Whitecrest Enterprises Pty Ltd to construct and operate a barge loading facility at Mowbowra Creek in the Shire of Exmouth is approved for implementation:

(a) the proponent shall fulfil the commitments set out in the Summary of Commitments statement as an attachment to the recommended conditions in Appendix 3;

(b) in order to manage the relevant environmental factors and EPA objectives contained in this bulletin, and subsequent environmental conditions and procedures authorised by the Minister for the Environment, the proponent shall be required to prepare, prior to implementation of the proposal, environmental management system documentation with components such as those adopted in Australian Standards AS/NZS ISO 14 000 series;

(c) prior to commencement of construction, the proponent shall prepare and implement an Environmental Management Plan, to the requirements of the Environmental Protection Authority on advice of the Department of Environmental Protection.

This Plan shall address, but not be limited to the following:

1. Liaison and consultation;
2. Spillage, wastes and contaminants;
3. Noise, dust and emissions;
4. Vegetation disturbance;
5. Karst features and subterranean fauna;
6. Marine monitoring;
7. Heritage; and
8. Foreshore management.

(d) in order to successfully carry out the decommissioning of the project, removal of the plant and installations and rehabilitation of the site and its environs, the proponent shall prepare and implement a decommissioning and rehabilitation plan; and

(e) the proponent shall submit periodic Performance and Compliance Reports, in accordance with an audit programme prepared by the Department of Environmental Protection in consultation with the proponent.

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**Appendix**

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# 1. Introduction

This report is to provide the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for the Environment on the environmental factors relevant to the proposal by Whitecrest Enterprises Pty Ltd (Whitecrest) to construct and operate a barge loading facility south of Mowbowra Creek in the Shire of Exmouth.

The barge loading facility is proposed to enable the transport of limestone from the proposed Whitecrest Limestone Mine. The Whitecrest Limestone Mine, described by Halpern Glick Maunsell (1995), was assessed by the EPA at the level of a Public Environmental Review (PER). The EPA provided its report and recommendations to the Minister for the Environment in 1997 (EPA, 1997). Appeals on the EPA bulletin have recently been determined by the Minister for the Environment, and the Ministerial Statement for this project was published on 6 November 1997. The Whitecrest Mine proposal includes the mining of limestone and production of quicklime with trucking of these products via Murat Road to the existing Point Murat jetty for shipment. Due to community concern in respect of trucking operations along Murat Road through the town of Exmouth, the proponent made a commitment as part of the Limestone Mine proposal to develop a shiploading facility south of Mowbowra Creek when, and if, export exceeded one million tonnes per annum.

However, due to ongoing public concern regarding the trucking of limestone through the town of Exmouth, Whitecrest has subsequently developed a proposal to construct a barge loading facility south of Mowbowra Creek. The barge loading facility will be utilised for the export of limestone regardless of tonnage, and will remove the need for trucking limestone through the town of Exmouth to the Murat Jetty.

The Exmouth Limestone Project Barge Loading Facility proposal described in the CER report (Halpern Glick Maunsell, 1997a), hereafter referred to as the CER, was available for public review for two weeks between 3 June 1997 and 18 June 1997. The shortened review period of two weeks was considered adequate as there had previously been extensive public consultation relating to this proposal during the assessment of the Whitecrest Limestone Mine.

Nine submissions were received by the Department of Environmental Protection (DEP). The major issues raised in submissions were:

- potential impacts on subterranean fauna and karst systems;
- potential impacts on the marine environment;
- potential impacts on vegetation and flora;
- heritage;
- foreshore management; and
- bulk handling of limestone and quicklime.

In compiling this report, the EPA has considered:

(a) information provided in the CER;

(b) issues raised by the public and government agencies in their submissions on the CER;

(c) the proponent's response to submissions; and

(d) information provided by the DEP as well as other expert agencies.

The proposal that is the subject of this assessment is described in Section 2. This report identifies and discusses the environmental factors that the EPA considers are relevant to the proposal (Section 3), and sets out the conditions which should be applied if it is to be implemented (Section 4). Other advice by the EPA concerning the management of Cape Range is provided in Section 5. The report also provides conclusions (Section 6) and recommendations (Section 7).

A list of people and organisations that made submissions is included in Appendix 1, published information is listed in Appendix 2 and Recommended Environmental Conditions and Proponent Commitments are included as Appendix 3.

The DEP's summary of submissions and the proponent's response to those submissions has been published separately and are available in conjunction with this report.

## 2. The proposal

Whitecrest proposes to construct and operate a barge loading facility south of Mowbowra Creek in the Shire of Exmouth to accommodate the export by ship of limestone and other product from the nearby Whitecrest Limestone Mine. Construction of the barge loading facility will negate the need for trucking limestone and other product from the mine through the town of Exmouth to the Murat Jetty.

The proposal for the Whitecrest Limestone Mine included the construction of a quicklime plant, a haul route to Murat Road and the use of existing port facilities at Point Murat. The construction of a quicklime plant was not included in the Minister for the Environment's approval of the Whitecrest Limestone Mine. The proponent was required to investigate alternative sites for the location of the quicklime plant to ensure protection of the groundwater resource beneath the project area. The selected plant site was then to be referred to the EPA for consideration and, if required, assessment. The proponent has yet to refer this component of the Whitecrest Limestone Mine to the EPA for further consideration.

It is proposed to realign the haul road from the route detailed and approved for the Whitecrest Limestone Mine PER (Halpern Glick Maunsell, 1995). The haul route will be constructed along the bed of Stoney Creek from the mine to the coastal plain on the same alignment, and in the same form, as detailed in the PER (Halpern Glick Maunsell, 1995). The route across the coastal plain will be realigned to the south to provide more direct access to the loading facility. The CER states that the two alignments traverse similar terrain with common biophysical characteristics. Figure 1 illustrates the route of the haul road as approved for the Whitecrest Mine compared to that proposed for the barge loading facility.

Five alternative port sites along the western shore of Exmouth Gulf were identified for the potential location of a barge loading facility: Point Murat; Mowbowra Creek; Badjir; Learmonth; and Point Lefroy (Figure 2). The preferred location of the barge loading facility south of Mowbowra Creek was selected after reviewing the five alternative sites and their respective environmental, engineering and cost constraints.

The Mowbowra Creek site is located approximately 8.5 km south of Exmouth on the western shore of the Exmouth Gulf. The site is located in close proximity to the proposed Whitecrest Mine, and will be connected to the mine via a haul route, as outlined above. The location of the proposed barge loading facility in relation to the proposed Whitecrest Mine and Murat Jetty is illustrated in Figure 3.

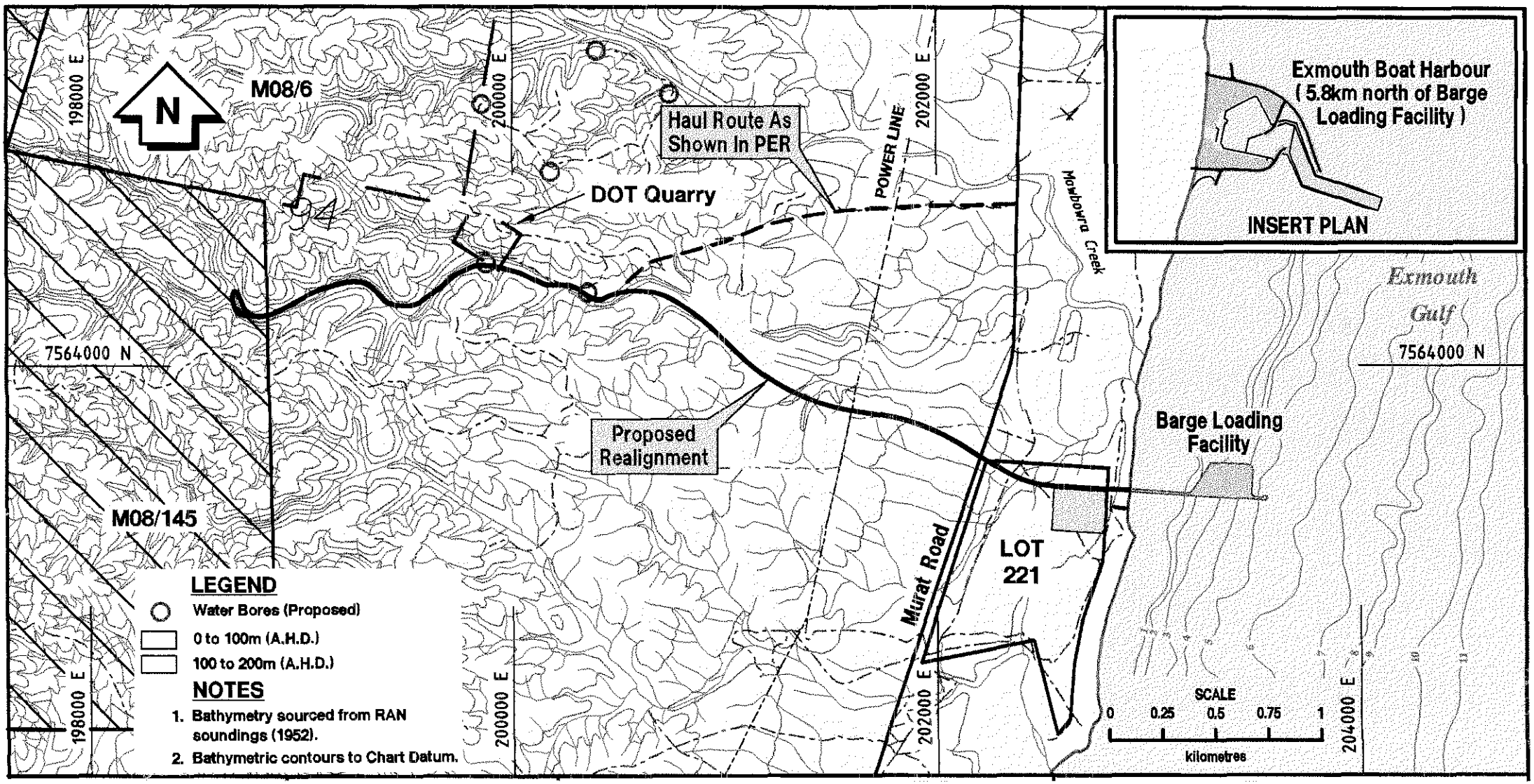


*Figure 1. Haul route alignment.*

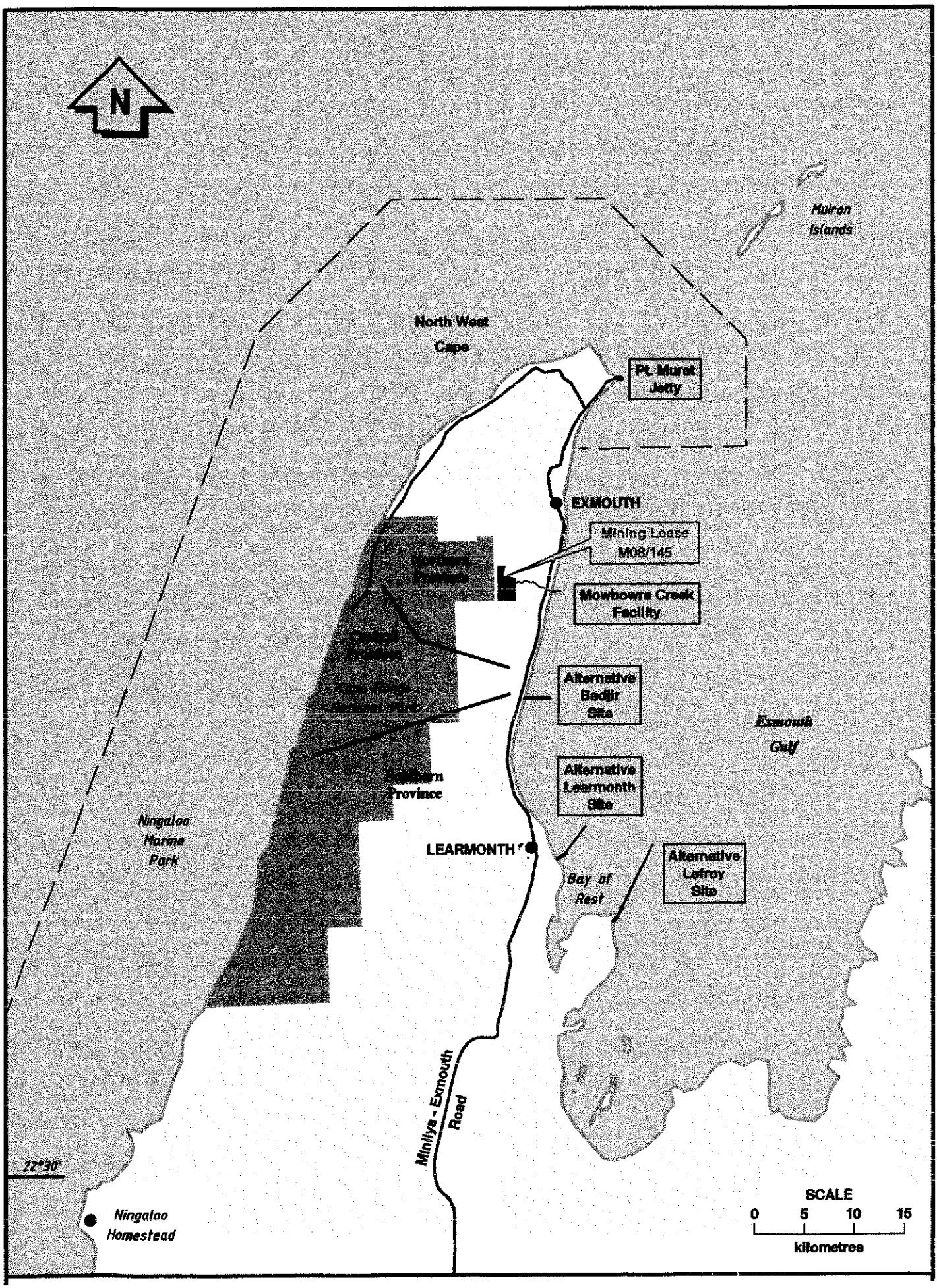


*Figure 2. Alternative port sites and subterranean fauna provinces (Source: Halpern Glick Maunsell, 1997a).*

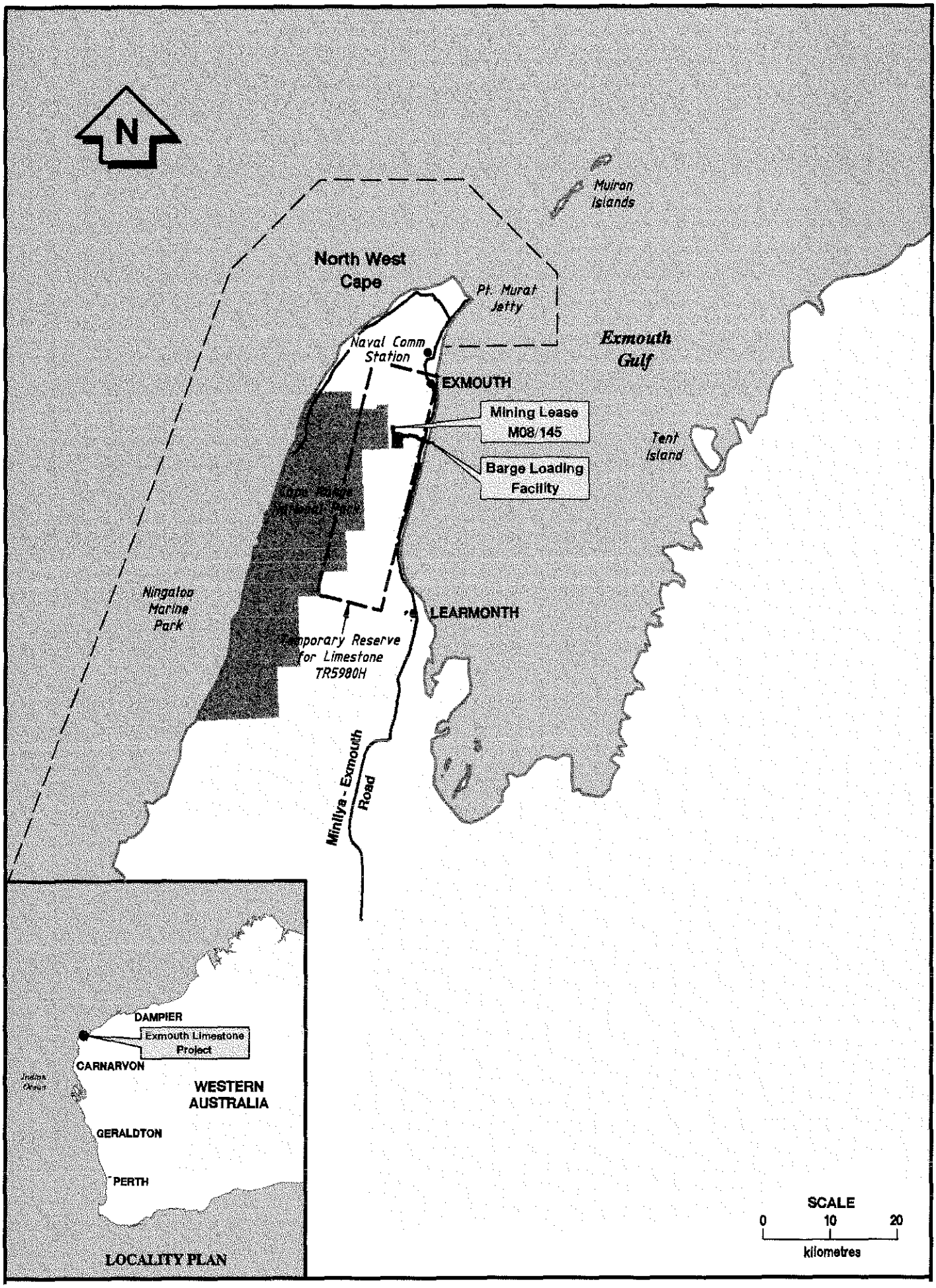


*Figure 3. Location of barge loading facility in relation to Whitecrest minesite (Source: Halpern Glick Maunsell, 1997a).*

The proposal includes the construction of a rockfill causeway with a reclaimed offshore storage area, an onshore laydown/plant area and a haul road from the proposed Whitecrest Mine to the barge loading facility.

The proposal characteristics of the barge loading facility are summarised in Table 1 below.

Limestone and other product produced for shipment will be trucked along the haul route from the Whitecrest Mine to the loading facility. Limestone will then be stacked on the offshore storage area at the end of the causeway. Quicklime would be stored onshore in a sealed storage shed. Products will be loaded into barges by front-end loaders and mobile conveying systems. The barges will then be towed by tug to ships moored approximately 1.5 km from the barge loading facility in deep waters of the Exmouth Gulf. Products will then be unloaded using the ship's cranes and grabs.

A detailed description of the proposal is provided in Section 3 of the Exmouth Limestone Barge Loading Facility CER report (Halpern Glick Maunsell, 1997a).

The proponent has indicated that a future proposal to develop a larger shipping facility, including a dredged shipping approach, is envisaged. Such a proposal is not considered as part of this assessment, and will require further environmental impact assessment at a later stage should the proponent wish to proceed with such a proposal.

**Table 1. Proposal characteristics**

| Aspect | Characteristic |
|---|---|
| Causeway | 650 m rockfill. |
| Storage and loading area | 3 ha offshore, end of causeway. |
| Haul road | 1 km haul road from proposed Whitecrest Mine to the west of Murat Road. Alignment modified from that described in Whitecrest PER. 0.75 km haul road between Murat Road and the causeway.<br>Haul road ~20 m wide, therefore ~3.5 ha area proposed in total. |
| Laydown/plant area<br>(including quicklime storage) | 5 ha onshore adjacent to haul road. |
| Source of rockfill | Whitecrest Limestone Mine |
| Barge capacity | 3 000 tonnes. |
| Ship capacity | 30 000 DWT. |
| Frequency of shipments | 1 every 6 weeks, initial production<br>1 every 2 weeks, production of 1 million tpa. |

# 3. Environmental factors

## 3.1 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 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.

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

(a) Subterranean fauna - impacts from surface clearing and groundwater contamination;

(b) Karst systems - impacts from surface disturbance and groundwater contamination;

(c) Marine fauna - habitat alteration and exotic fauna introduction;

(d) Foreshore - sediment accumulation and dune disturbance;

(e) Marine water quality - spillage and ballast water discharge; and

(f) Aboriginal heritage - disturbance to sites.

The above relevant factors were identified from the EPA's consideration and review of all environmental factors generated from the CER document and the submissions received (preliminary factors), in conjunction with the proposal characteristics (including significance of the potential impacts), the adequacy of the proponent's response and commitments, the ability for other processes to manage the factor, and the effectiveness of proposed management. On this basis, the EPA considers that the marina flora, terrestrial vegetation, terrestrial fauna, groundwater quality, noise, dust and visual amenity factors and other issues raised in the submissions do not require further evaluation by the EPA. The identification process is summarised in Table 2.

The relevant environmental factors are discussed in Sections 3.2 to 3.7 of this report, and are summarised in Table 3.

## 3.2 Subterranean fauna

### Description

*Diversity and significance of subterranean fauna of the Cape Range Peninsula*

The Cape Range Peninsula is considered to contain one of the world's most diverse subterranean faunas relative to other internationally significant karst provinces, despite limited and incomplete sampling. The Cape Range Peninsula was recently included in a 'Top Ten List of Endangered Karst Ecosystems' prepared by the US Karst Waters Institute (Culver, 1997).

The richness of the fauna reflects the diverse geomorphology of the province, supporting a rich terrestrial (troglobitic) and aquatic (stygo) subterranean fauna.

Troglobites and stygofauna are animals fully adapted to living in caves and are totally dependent on these environments for survival. Humphreys (1993a) states that troglobitic fauna not only occur in caves but also, probably mainly, inhabit interstitial and fissure habitats in the rock.

**Table 2: Identification of Environmental Factors Requiring EPA Evaluation**

| PRELIMINARY FACTOR | PROPOSAL CHARACTERISTICS | GOVERNMENT AGENCY AND PUBLIC COMMENTS | IDENTIFICATION OF RELEVANT FACTORS |
|---|---|---|---|
| **BIOPHYSICAL** | | | |
| Subterranean Fauna | Potential impacts on stygofauna through groundwater contamination.<br><br>Potential impacts on troglobitic fauna through surface clearing, minor excavation/filling associated with the construction of the onshore works and contamination of subsurface environment. | There is concern that the proponent will undertake subterranean fauna investigations only after approval has been given.<br><br>The clearance of 5ha of vegetation for the laydown area would directly affect the terrestrial subterranean fauna.<br><br>One submitter considered that protected subterranean fauna are likely to occur on, or close to, the onshore laydown area.<br><br>The submitter considered that the statement 'the area of these works is extremely small in the context of available range of habitat' made in the CER is misleading, as the terrestrial components of subterranean fauna typically have much more restricted ranges than stygofauna. | **Factor requires further evaluation.** |
| Karst systems | Potential for direct surface disturbance of coastal plain karst during construction.<br><br>Indirect contamination of the underlying groundwater during proposed operations. | The proponent made a commitment to undertake further investigations, and modify the proposal should significant features be found. There needs to be a clear definition of 'significant' and clear procedure for the handling of significant features.<br><br>If a karst feature is discovered, the proponent will hold discussions with CALM and the DEP on the need for subterranean fauna investigations. The proponent should make a commitment not to proceed if the construction is likely to unavoidably damage the feature.<br><br>One public submission considered that CALM is not the lead authority on karst systems. Accordingly, there should be a more appropriate authority appointed for the purpose of consulting on the results of karst reports.<br><br>There are known karst features in the vicinity of the project that have not been included in the CER. These features are worthy of protection, and the features should be provided on a map to show the locations and implications the proposal may have. | **Factor requires further evaluation.** |

| PRELIMINARY ENVIRONMENTAL FACTOR | PROPOSAL CHARACTERISTIC | GOVERNMENT AGENCY AND PUBLIC COMMENTS | IDENTIFICATION OF RELEVANT FACTORS |
|---|---|---|---|
| Marine flora | Proposal includes 650m rockfill causeway and 3ha storage and loading area at the end of the causeway. Total area of 6.5ha of seabed to be covered.<br><br>Potential for direct impacts through construction and operations of facility.<br><br>Potential for indirect impacts through changes to habitat, such as water quality, sediment load, water circulation. | No comment received from government agencies or the public. | There are no significant areas of seagrass meadows in the vicinity of the project.<br><br>Water quality is discussed under Marine Water Quality below.<br><br>**No further evaluation required.** |
| Marine fauna | Proposal includes 650m rockfill causeway and 3ha storage and loading area at the end of the causeway. Total area of 6.5ha of seabed to be covered.<br><br>Area does not appear to support significant marine fauna, such as dugongs.<br><br>Potential for direct impacts through construction and operations of facility, and indirectly through changes to habitat, such as water quality, sediment load, water circulation.<br><br>Potential impacts resulting from introduction of exotic fauna through ballast water. | The CER does not recognise dugong use of the project area and how the proposal may impact dugongs. The submitter considers that the proponent should identify potential impacts on this population and propose strategies to minimise such impacts.<br><br>There is concern about the impact of ballast water brought into the area by ships associated with the proposal. The submitters consider that there is currently no method of handling ballast water that eliminates the introduction of species. | **Factor requires further evaluation.** |

| PRELIMINARY ENVIRONMENTAL FACTOR | PROPOSAL CHARACTERISTIC | GOVERNMENT AGENCY AND PUBLIC COMMENTS | IDENTIFICATION OF RELEVANT FACTORS |
|---|---|---|---|
| Terrestrial vegetation | Proposal includes 20m wide haul route and a 5ha onshore laydown/plant area. The total area to be cleared will not exceed 15ha.<br><br>No Declared Rare Flora were identified in the vicinity of the project area, however two priority species were identified in the vicinity of the haul route. | The CER identifies two priority taxa that are likely to be impacted in the 'spur' habitat. How will the project impact the conservation status of these taxa? What is the population extent, locally and regionally? What percentage of the local populations will be directly or indirectly impacted? What are the alternatives and the related consequences? What strategies for the conservation of these taxa are needed if the impacts cannot be avoided?<br><br>The CER states that the laydown/plant area will be 5ha. Why will the total area cleared 'not exceed' 15ha? | Proponent committed to contain clearing to within areas specified in the CER. Disturbance kept to a practical minimum, maximum of 15 ha disturbed.<br><br>Priority species widely distributed within and around project area. Proponent will consult with CALM during clearing. Proponent will comply with the Wildlife Conservation Act.<br><br>**No further evaluation required.** |
| Terrestrial fauna | The total area to be cleared, including haul routes and laydown/plant area, will not exceed 15ha.<br><br>The haul route is not expected to restrict fauna movement and fauna deaths as a result of trucking activities are expected to be minimal. | No comment received from government agencies or the public. | The project is unlikely to have any significant impacts on local or regional fauna populations or habitats.<br><br>No threatened fauna species in the vicinity of the project area have been identified.<br><br>**No further evaluation required.** |
| Foreshore | Proposal includes 650m causeway out to a 3ha offshore storage area.<br><br>Some sediment may accumulate adjacent to causeway. No dunes will be impacted by the project. | A foreshore management plan should be developed to ensure disruption of dunes and vegetation is minimised. | **Factor requires further evaluation.** |

| PRELIMINARY ENVIRONMENTAL FACTOR | PROPOSAL CHARACTERISTIC | GOVERNMENT AGENCY AND PUBLIC COMMENTS | IDENTIFICATION OF RELEVANT FACTORS |
|---|---|---|---|
| **POLLUTION** | | | |
| Marine water quality | Potential impacts on marine water quality during construction of the project, including increased turbidity, and during operation of the facility, including potential fuel, oil and product spills, ballast water discharge and TBT from barge movements and ship loading.<br><br>Construction of causeway may result in modification to marine water circulation. Potential for modified circulation to impact on marine water quality.<br><br>Project area is located approximately 15 km south of the Ningaloo Marine Park. | Concern over impacts on marine water quality from dust and spillages of limestone and quicklime during loading. It is considered that a totally sealed operation should be used for loading and there should not be stockpiling of quicklime in the open.<br><br>There is concern about the impact of ballast water brought into the area by ships associated with the proposal. | **Factor requires further evaluation.** |
| Groundwater quality | Potential impacts on groundwater quality from operations, including trucking and handling of materials.<br><br>Potential for product spillage during trucking and loading and hydrocarbon spillage during truck refuelling. | No comment received from government agencies or the public. | Proponent has made a number of commitments relating to prevention and clean up of any spills on site.<br><br>Fuel, oil and lubricants will be stored within lined and bunded containment areas to requirements of the DEP and DME.<br><br>**No further evaluation required.** |
| Noise | Potential for noise output from construction and from trucking and materials handling throughout operations.<br><br>There are no nearby land users for significant noise impacts. | No comment received from government agencies or the public. | Noise from the project is unlikely to have any impacts on surrounding land users.<br><br>Proponent will ensure proposal meets criteria in Environmental Protection (Noise) Regulations 1997. Can be managed under Part V *Environmental Protection Act.*<br><br>**No further evaluation required.** |

| PRELIMINARY ENVIRONMENTAL FACTOR | PROPOSAL CHARACTERISTIC | GOVERNMENT AGENCY AND PUBLIC COMMENTS | IDENTIFICATION OF RELEVANT FACTORS |
|---|---|---|---|
| Dust | Potential for dust impacts from construction and from trucking and materials handling throughout operations.<br><br>There are no nearby land users for significant dust impacts. The potential for impacts on the terrestrial and marine environment from dust is considered to be minimal. | Concern over impacts on marine environment from dust and spillages of limestone and quicklime during loading. It is considered that a totally sealed operation should be used for loading and there should not be stockpiling of quicklime in the open.<br><br>What effect may wind drift of lime have on surrounding vegetation? | Barge/shiploading designed and operated to minimise dust generation.<br><br>Dust generation will be controlled on a needs basis.<br><br>Proposal will be managed in accordance with Part V of the EP Act, ensuring proposal meets EPA guidelines for Assessment and Control of Dust and Windborne Material from Land Development Sites (updated 1995).<br><br>**No further evaluation required.** |
| **SOCIAL SURROUNDINGS** | | | |
| Aboriginal heritage | Proposal includes 20m wide haul route and 5ha onshore laydown/plant area. Total area cleared will not exceed 15ha.<br><br>Potential for disturbance to archaeological material and ethnographic sites that may be located in the vicinity of the project area.<br><br>No registered heritage sites within project area. Aboriginal custodians confirmed that project location does not conflict with registered heritage sites in the vicinity of the project area. | The CER states that no archaeological or ethnographic sites are known to exist within the project area, largely contained within Lot 221. The Aboriginal Affairs Dept is unaware that a formal survey had been carried out for Lot 221.<br><br>The CER states that a formal survey will be carried out during the construction period. The submitter considers that this survey should be performed prior to any development. | **Factor requires further evaluation.** |
| Visual amenity | Storage areas of limestone and quicklime will be visible from the Exmouth-Minilya Road. | No comment received from government agencies or the public. | Visual impacts resulting from the proposal are, to an extent, unavoidable. Visual impacts will be comparable to other developments in the vicinity of the proposal, and are considered insignificant. No submissions were received regarding this issue.<br><br>**No further evaluation required.** |

## Table 3: Summary of Assessment of Relevant Environmental Factors

| RELEVANT ENVIRONMENTAL FACTOR | EPA OBJECTIVE | RELEVANT AREA | ASSESSMENT | EPA'S ADVICE |
|---|---|---|---|---|
| Subterranean fauna | Ensure that subterranean fauna are protected in accordance with the *Wildlife Conservation Act 1950*;<br><br>Maintain the abundance, diversity and geographical distribution of subterranean fauna; and<br><br>Improve our understanding of subterranean fauna through appropriate research including sampling, identification and documentation. | The karst landform of the central coastal area of the Cape Range Peninsula. | Direct disturbance to the coastal plain habitat confined to 5 ha, which represents less than 0.05% of the coastal plain habitat fronting Exmouth Gulf.<br><br>Proponent's commitments:<br>1. further investigation of the occurrence of karst features in the area of impact in consultation with CALM to DEP's satisfaction;<br>2. layout of onshore works designed to avoid any large or significant karst feature; &<br>3. if a karst feature cannot be avoided, discussions held with CALM and the DEP on the need for investigation of karst values, including subterranean fauna investigations. | Having particular regard to:<br>• the small area of the subterranean environment likely to be impacted upon;<br>• the proposal not requiring major excavation;<br>• the proponent being subject to the *Wildlife Conservation Act 1950*; &<br>• the proponent's commitments;<br>it is the EPA's opinion that the EPA's objective can be met. |
| Karst system | Ensure that recognised values of karst systems are adequately represented within the conservation estate; and<br><br>Ensure that where karst systems are outside of the conservation estate, land use activity is managed to maintain, as far as practicable, the recognised values. | The Cape Range Peninsula, which is the area approximately north of latitude 22°30'S. | Maximum area of karst directly disturbed by proposal is 15 ha. Potential for contamination of karst environment.<br><br>Proponent's commitments:<br>1. further investigation of the occurrence of karst features in consultation with CALM to DEP's satisfaction;<br>2. layout of onshore works designed to avoid any large or significant karst feature;<br>3. spills cleaned up with off-site disposal; &<br>4. onshore works constructed to be freely draining with retention of potential contaminants on site for collection prior to disposal. | Having particular regard to:<br>• the small size of the project area relative to the karst landform within Cape Range;<br>• the proposal not requiring major excavation in areas of karst; &<br>• the proponent's commitments;<br>it is the EPA's opinion that the EPA's objective can be met. |

| RELEVANT ENVIRONMENTAL FACTOR | EPA OBJECTIVE | RELEVANT AREA | ASSESSMENT | EPA'S ADVICE |
|---|---|---|---|---|
| Marine fauna | Maintain the abundance, species diversity and geographic distribution of marine fauna. | The Exmouth Gulf within a 5km radius of the project area. | The proposal will result in the direct loss of 6.9 ha of the benthic marine environment. The benthic environment in the vicinity of the facility does not appear to support significant fauna.<br><br>Proponent's commitments:<br>1. marine operations monitored in respect of water quality, potential limestone and quicklime spillage, TBT levels and general pollution to the satisfaction of the DEP; &<br>2. proponent will liaise with the Management Advisory Committee of the Exmouth Gulf prawn fishery. | Having particular regard to:<br>• the small area of the benthic marine environment directly impacted;<br>• the project being considered unlikely to support dugongs<br>• the barge loading facility being inshore of the trawl runs used by the prawn fishing industry, and outside any designated prawn nursery areas;<br>• the proponent's statutory obligations under the *Wildlife Conservation Act 1950*; &<br>• the proponent's commitments;<br>it is the EPA's opinion that the EPA's objective can be met. |
| Foreshore | Maintain the integrity, function and environmental values of the foreshore area. | The foreshore in the near vicinity of the proposed facility. | Approx 0.06 ha of rocky shore and 2.6 ha of nearshore platform directly impacted by construction of facility. Foreshore in vicinity of facility characteristic of foreshore of western side of Exmouth Gulf.<br><br>Foreshore in vicinity of facility relatively stable. Causeway construction therefore considered unlikely to significantly impact foreshore and coastal processes. The proposal will not impact upon beach or dune areas.<br><br>Proponent's commitments:<br>1. sediment accumulation on either side of the causeway will be monitored and, if the coastline is shown to be eroding, sediment accumulation will be mechanically bypassed to the downstream side of the causeway. | Having particular regard to:<br>• only a small area of foreshore being directly affected;<br>• the coast in the vicinity of the project area being considered stable; &<br>• the proponent's commitments;<br>it is the EPA's opinion that the EPA's objective can be met. |

| RELEVANT ENVIRONMENTAL FACTOR | EPA OBJECTIVE | RELEVANT AREA | ASSESSMENT | EPA'S ADVICE |
|---|---|---|---|---|
| Marine water quality | Maintain or improve the quality of marine water consistent with the draft WA Guidelines for Fresh and Marine Waters (EPA, 1993). | The Exmouth Gulf. | Construction of offshore components likely to cause temporary localised turbidity plumes. Handling and loading of quicklime fully enclosed and refuelling of tug boats carried out at Exmouth Boat Harbour to reduce potential for marine water contamination.<br><br>Proponent's commitments:<br>1. marine operations monitored in respect of water quality, potential limestone and quicklime spillage, TBT levels and general pollution to the satisfaction of the DEP;<br>2. Oil Spill Contingency Plan to satisfaction AMSA; &<br>3. Ballast Water Management Plan prepared and implemented to satisfaction of AQIS; | Having particular regard to:<br>• construction and operation of the barge loading facility being undertaken in a manner to reduce the potential for impacts on marine water quality; &<br>• the proponent's commitments<br>it is the EPA's opinion that the EPA's objective can be met. |
| Aboriginal Heritage | Demonstrate that the proposal complies with the requirements of the *Aboriginal Heritage Act 1972*; and<br><br>Ensure that changes to the biological and physical environment resulting from the project do not adversely affect cultural associations with the area. | The project area, including the haul route and the loading facility. | Loading facility specifically located to avoid recorded Aboriginal sites in the area. Previous research in the area indicates that the project area is unlikely to have any ethnographic significance.<br><br>Proponent's commitments:<br>1. proponent will undertake archaeological and ethnographic surveys of project area prior to commencement of construction, in consultation with the Aboriginal custodians of the area;<br>2. any identified sites reported to the Aboriginal Affairs Dept. If required, clearance to develop the facility under the Aboriginal Heritage Act 1972 will be obtained; &<br>3. contractors to be instructed of their obligations under the *Aboriginal Heritage Act 1972*. | Having particular regard to:<br>• the loading facility being specifically located to avoid recorded Aboriginal sites in the area;<br>• further archaeological and ethnographic surveys of the area being carried out prior to construction of the facility;<br>• the proponent's obligations under the *Aboriginal Heritage Act 1972*; &<br>• the proponent's commitments<br>it is the EPA's opinion that the EPA's objective can be met. |

The fauna is ancient and highly adapted to subterranean life. The troglobitic fauna shows evidence of having its origins as fauna from the litter of an ancient rainforest floor (Humphreys, 1993b). The origins of the stygofauna is believed (Humphreys, 1993c) to stem from the time the area was part of the Tethys Sea, formed by the disintegration of the former supercontinent Pangea. The closest relatives of the fauna are now found in the Caribbean and Canary Islands, showing evidence of the effects of continental drift.

The fauna has no close relationship to other faunas on the Southern Hemisphere and is entirely endemic to the Cape Range Peninsula and partly Barrow Island. The fauna contains the only southern hemisphere representatives of entire classes, orders, families and genera of crustaceans (ANCA, 1996).

*State of knowledge of subterranean fauna on the Cape Range Peninsula*

A good summary of current knowledge of subterranean fauna of the Cape Range is Humphreys (1993). The information on the subterranean fauna of the Cape Range is based mostly on sampling of caves and existing drill holes. The sampling is not extensive.

Currently some 55 species (33 terrestrial and 22 aquatic) have been identified from the area (EPA, 1997). The number of species is expected to increase substantially as more sampling is undertaken.

There are five stygofauna (aquatic) species and four troglobitic (terrestrial) species declared as Specially Protected (Threatened) fauna pursuant to the *Wildlife Conservation Act 1950*. Protected fauna, including those which are Specially Protected (Threatened), cannot be taken without authorisation.

The aquatic subterranean species of the coastal plains are likely to be more widely distributed than the terrestrial species because of the high degree of interconnectedness of the cavernous coastal plain limestone. The degree of connection between the eastern and western coastal plains is likely to be limited, and there is evidence of genetic differences (EPA, 1997).

The sampling to date indicates that the deep gorges of the northern part of the range that divide the cavernous Tulki Limestone, which normally lies between the Trealla Limestone and the Mandu Limestone, have isolated fauna populations, leading to speciation (EPA, 1997).

There have been several proposals to extend the Cape Range National Park, including the Cape Range National Park Management Plan (CALM, 1987), Legislative Council Select Committee Report (WA Parliament, 1995) and the Gascoyne Coast Regional Strategy (Ministry for Planning, 1996). In finalising proposals for extension of the Park consideration needs to be given to ensuring that subterranean fauna is likely to be well represented within the conservation reserve.

*Potential impacts from the barge loading facility on subterranean fauna*

On the coastal plain, the cave system in the coastal plain sediments and underlying Tulki limestone is partially or totally filled with water. The karst system of the coastal plain therefore predominantly supports aquatic stygofauna rather than troglobites (Allen, 1993). However, in its submission on the CER, the WA Museum outlined that it considered both stygofauna and troglobitic fauna are likely to occur beneath the project area.

The proponent has not carried out subterranean fauna sampling of the project area due to the small area which may potentially be impacted upon by the proposal and the fact that the proponent considers that such impacts are unlikely to occur.

In a submission to the EPA, the WA Museum stated that several protected species of subterranean fauna have been sampled from two karst features in the vicinity of the project area: the Mowbowra Well and the New Mowbowra Well. The Mowbowra Well and the New Mowbowra Well are located approximately 1.7 km north of the proposed barge loading facility (Figure 4).

The proposal has the potential to impact upon subterranean fauna directly through clearing and levelling associated with construction of the facility and indirectly through contamination of groundwater beneath the project area by fuel or other potentially polluting substances.

The proponent has indicated that direct impacts resulting from construction of onshore works will be negligible, in that the total terrestrial area which may potentially be disturbed will be kept to a practical minimum, and vegetation will only be removed if it is essential for construction purposes (Halpern Glick Maunsell, 1997a). The proponent has indicated that the maximum terrestrial area likely to be disturbed is 15 ha (accounting for potential changes in project layout for such reasons as identification of significant karst features), though is likely to be approximately 10 ha. The proposal will not require major excavation, with ground work limited to levelling off surfaces for construction of the laydown area and the haul route (Halpern Glick Maunsell, pers com).

Although contamination of the subterranean environment is considered by the proponent to be unlikely, a number of commitments to reduce the potential for such contamination to occur have been made.

In its submission, the WA Museum stated that it considered that the proponent's statement 'the area of these works is extremely small in the context of available range of habitat' made in the CER is misleading, as the terrestrial components of subterranean fauna typically have much more restricted ranges than stygofauna.

The WA Museum also states that protected subterranean fauna are likely to occur on or close to the proposed onshore lay down area, as they occur to the north, south and west of the site. This may include terrestrial fauna in addition to stygofauna, as the coastal plain supports a terrestrial troglobitic fauna that is distinct from that in Cape Range.

Concerns that the proponent will undertake subterranean fauna investigations only after approval has been given were also expressed in submissions.

**Assessment**

Subterranean fauna exists throughout the karst landform system of the Cape Range Peninsula. Species diversity of subterranean fauna is considered by Humphreys and Adams (1993) to be variable within three regions of the Cape, referred to as northern, central and southern provinces (Figure 2), and also between coastal and upland areas. Therefore, the area considered for assessment of this relevant environmental factor, subterranean fauna, is the karst landform of the central coastal area of the Cape Range Peninsula.

The EPA's environmental objective in regard to this factor is to: ensure that subterranean fauna are protected in accordance with the provisions of the *Wildlife Conservation Act 1950*; maintain the abundance, diversity and geographical distribution of subterranean fauna; and to improve our understanding of subterranean fauna through appropriate research including sampling, identification and documentation.

Subterranean fauna has been sampled in the vicinity of the project area, and the WA Museum considers that both stygofauna and troglobitic fauna are likely to occur beneath the project area.

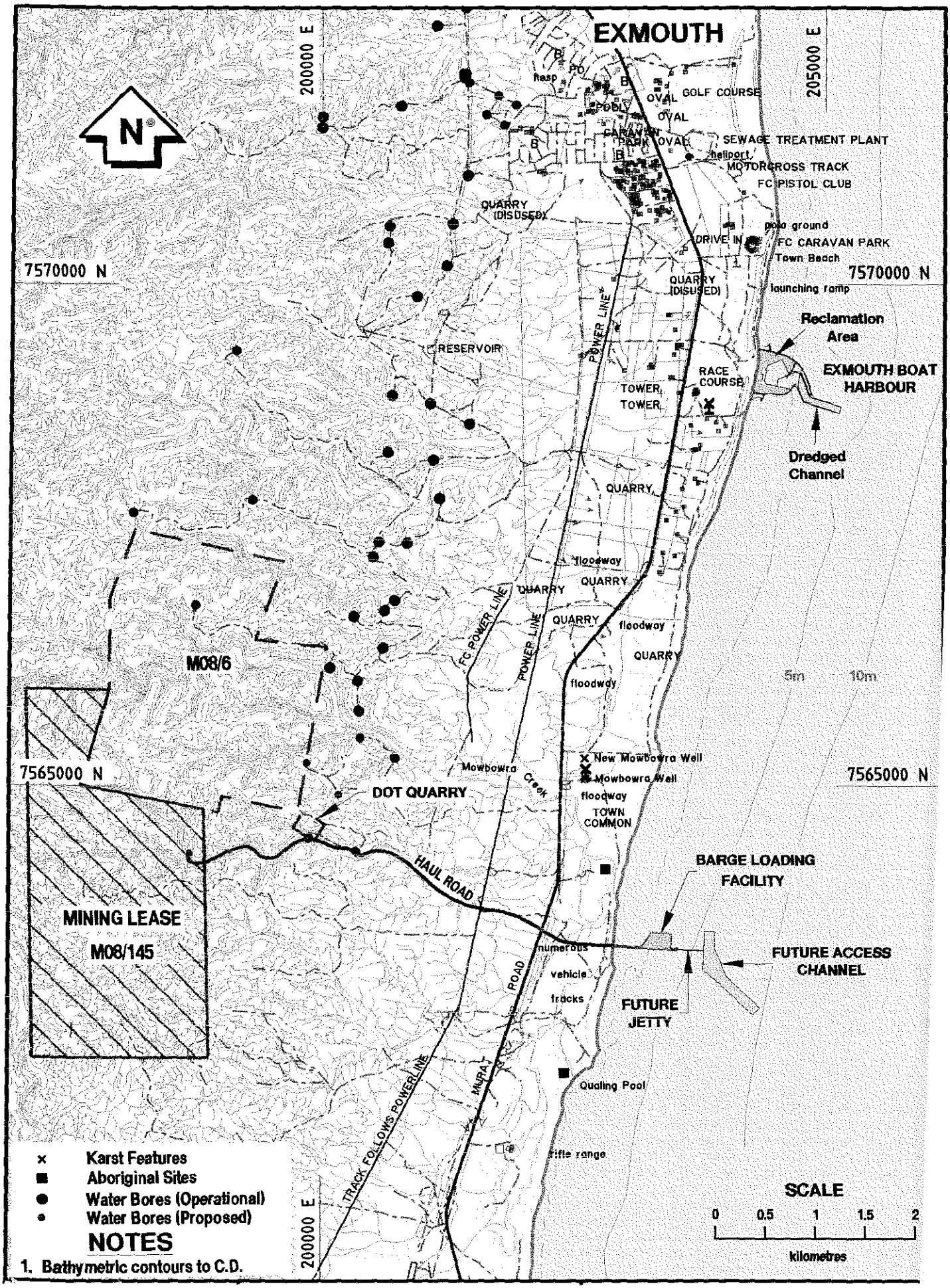


*Figure 4. Location of significant karst features and Aboriginal sites in relation to the barge loading facility (Source: Halpern Glick Maunsell, 1997a).*

The proposal has the potential to impact upon subterranean fauna directly through clearing and levelling associated with construction of the onshore works. The proponent has made a commitment to further investigate the occurrence of karst features in the area of impact in consultation with the Department of Conservation and Land Management (CALM), design the layout of onshore works to avoid any large or significant karst feature and if a karst feature cannot be avoided, hold discussions with CALM and the DEP on the need for investigation of karst values, including subterranean fauna investigations.

The EPA notes that direct disturbance to the coastal plain habitat will be confined to the laydown area, which will cover 5 ha. The proponent states that this area represents less than 0.05% of the coastal plain habitat fronting Exmouth Gulf, which is estimated as covering 15 000 ha (Halpern Glick Maunsell, 1997b).

The proposal also has the potential to indirectly impact the subterranean environment during construction and operation of the facility through contamination of groundwater and the subsurface environment beneath the project area by fuel or other potentially polluting substances.

To reduce the potential for contamination of the subsurface environment and groundwater in the vicinity of the project area, and thus reduce the potential for indirect impacts on subterranean fauna, the proponent has made a commitment to prepare and implement an Environmental Management Plan which will contain the following management measures:

- all fuel, oil and lubricants will be stored within lined and bunded containment areas designed to the requirements of the DEP and DME. All fuel will be stored in elevated tanks;
- spills from any plant or equipment will be cleaned up with any contaminated material taken off-site for disposal at a site appropriately licensed by the Department of Environmental Protection for the disposal of such wastes;
- the proponent will maintain sufficient equipment and absorbent material on-site for the clean up of any spills; and
- onshore works will be constructed to be freely draining with retention pits provided to retain any potential contaminants on site for collection and disposal in accordance with the requirements of the DEP, DME, the Water Corporation and the WRC.

Additional items that the DEP advised should be addressed in the EMP include:

- avoidance of surface drainage features when siting facilities; and
- sealing and providing sumps for plant and equipment areas with potential for contaminant spillage.

In addition to the commitments made by the proponent, as outlined above, the proponent must comply with the requirements of the *Wildlife Conservation Act 1950*, relating to the taking of any protected fauna, including that which is declared as Specially Protected (Threatened). The proponent would need to establish appropriate mechanisms with CALM, which administers the Wildlife Conservation Act, to ensure that these requirements are met.

Having particular regard to:

(a) the small area of the subterranean environment likely to be impacted upon by the proposal in comparison to the extent of the existing subterranean fauna habitat occurring, and including Cape Range, the Cape Range National Park and its proposed extensions;

(b) the proposal not requiring major excavation, with ground work being limited to levelling off surfaces for construction of the laydown area and the haul route;

(c) the proponent's statutory obligations to comply with the requirements of the *Wildlife Conservation Act 1950*; and

(d) the commitment by the proponent to prepare and implement an Environmental Management Plan which will contain a number of management measures to reduce potential impacts on subterranean fauna, as outlined above;

it is the EPA's opinion that the proposal can be managed to meet its objective for this factor provided that the proponent prepares and implements an Environmental Management Plan containing management measures to reduce potential impacts on subterranean fauna, which will be prepared to the requirements of the EPA on advice of the DEP and CALM, and provided the proposal can be undertaken in conformity with the *Wildlife Conservation Act 1950.*

## 3.3 Karst systems

### Description

*Regional description*

The Gascoyne Coast Regional Strategy (Ministry for Planning, 1996) describes the landform of Cape Range Peninsula as deeply dissected limestone ranges and outwash plains with extensive cave formations. The landscape is referred to as karst, the main characteristics of which include extensive underground drainage and cave systems formed by the percolation of water through limestone sinkholes and the subsequent dissolution of minerals.

A karst system has developed in the Tulki and Trealla Limestones in response to geological, climate and eustatic factors (Allen, 1993). On the crest of the range, cave systems in the limestone have been deeply eroded and are mainly inactive (except for recharge), but are still active on the flanks of the range and beneath the coastal plain (Allen, 1993). The CER indicates that the proposed barge loading facility lies on the eastern coastal plain of Cape Range Peninsula.

The regional water table occurs within a non-homogeneous karstic aquifer system formed by the Mandu Limestone on the crest of the range, the Tulki Limestone on the flanks of the range, and the Pliocene-Recent sediments and/or Tulki Limestone on the coastal plain, all of which are in hydraulic continuity (Allen, 1993). The Cape Range karst and subterranean groundwater system is the only subterranean wetland currently listed on the Australian Nature Conservation Agency (ANCA) register of wetlands of national significance (ANCA, 1996).

The biogeography of the Cape Range and the importance of the karst formation is discussed by Humphreys (1993). Subterranean fauna which inhabit the karst formation in many areas of the Cape Range Peninsula are discussed in Section 3.2: Subterranean fauna, above.

*Barge Loading Facility*

The proposed barge loading facility, including the haul road, is located on the eastern coastal plain of the Cape Range Peninsula. The Mowbowra Conglomerate and Tulki Limestone formations typical of the coastal plain in the project area exhibit karstic features with the underlying groundwater being in hydraulic continuity with the adjoining range (Halpern Glick Maunsell, 1997a). However, the CER states that inspections of the project area have not identified any karst feature that will be impacted by the proposed barge loading facility.

The proponent has indicated that further investigation of the occurrence of karst features in the area to be impacted by the facility are required, and will be undertaken prior to construction of the barge loading facility. The proponent has outlined that in the event that a karst feature of significance is identified, options to modify the proposal to conserve the feature will be investigated.

The issue of potential impacts on karst systems was raised in a number of submissions. One submitter expressed concern that, although the proponent has made a commitment to undertake further investigations and modify the proposal should significant features be found, there needs to be a clear definition of 'significant' and a clear procedure for the handling of significant features. Furthermore, the proponent makes no commitment to doing anything about the features of significance, but merely to investigate the options. The submitter considers that the proponent must be required to take action to avoid such features.

Another submission raised concerns that such investigations for significant karst features in the vicinity of the project area should be carried out before approvals are given and not following.

One submitter also considered that CALM is not the lead authority of karst systems and accordingly, there should be a more appropriate authority appointed for the purpose of consulting on the results of karst investigations.

A submission received from the WA Museum outlined that there are a number of known karst features in the vicinity of the project that have not been included in the CER. The Museum considers that these features are worthy of protection, and that the features should be provided on a map to show the locations and implications the proposal may have.

## Assessment

The area considered for assessment of this relevant environmental factor, karst systems, is the Cape Range Peninsula. This is the land north of a line between Ningaloo homestead on the west coast and the base of the Bay of Rest on the eastern side, including Cape Range and the Rough Range, an area of approximately 2 200 $km^2$. This area is approximately north of latitude 22°30'S. This is a defined geomorphological unit in which hydrogeology and other factors predisposes the area to karst development.

The EPA's objective in regard to this environmental factor is to ensure that the recognised values of karst systems are adequately represented within the conservation estate and to ensure that where karst systems are outside of the conservation estate, land use activity is managed to maintain, as far as practicable, the recognised values.

The values considered by the EPA in its assessment of this project are scientific, educational, recreational and cultural.

The proposed barge loading facility has the potential to disturb the karst system directly through disturbance associated with construction of the facility, and indirectly through contamination of groundwater and the subsurface environment during operations.

Onshore components of the barge loading facility consist of a 5 ha onshore laydown/plant area and a haul route. The 5 ha laydown area is located on the coastal plain, and represents less than 0.05% of the coastal plain habitat fronting Exmouth Gulf (Halpern Glick Maunsell, 1997b). The proponent has indicated that the maximum terrestrial area likely to be disturbed by the proposal, including the laydown area and haul route is 15 ha (accounting for potential changes in project layout for such reasons as identification of significant karst features), though is likely to be approximately 10 ha. This represents less than 0.007% of the Cape Range Peninsula, as defined above. The proposal will not require major excavation, with ground work limited to levelling off surfaces for construction of the laydown area and the haul route (Halpern Glick Maunsell, pers com).

The risk of indirect contamination of the karst system is limited to product and hydrocarbon spillages during operation.

The section of the haul road from the Whitecrest minesite to Murat Road, which was approved in the Whitecrest Mine PER, is proposed to be realigned to the south to provide more direct access to the loading facility. The haul road will be constructed along the bed of Stoney Creek from the mine to the coastal plain on the same alignment, and in the same form, as detailed in the PER (Halpern Glick Maunsell, 1995). The CER states that the two alignments traverse similar terrain with common biophysical characteristics.

In response to issues raised in government and public submissions, the proponent has outlined that a 'significant' karst feature is considered to be a large cave structure of at least 1.2 m minimum diameter and extending for some distance either vertically or horizontally. This is the classification that has been proposed by the proponent for the operation of the Whitecrest Mine, and reflects the known existence of larger and more significant features on Cape Range (Halpern Glick Maunsell, 1997b).

The commitment by the proponent to undertake further investigation of the occurrence of karst features in the area of impact and to design the layout of the onshore works to avoid any large or significant caves will be carried out prior to construction of the barge loading facility. The EPA considers that, in view of the nature and relatively small scale of the proposal, this issue can be adequately managed through the proponent's Environmental Management Plan, which must be prepared to the satisfaction of the EPA prior to construction of the facility.

The proponent has outlined that, while it is possible to realign the haul route to avoid any significant karst features, it would not be viable to relocate the onshore storage area adjacent to the loading causeway. If a significant feature cannot be avoided, the proponent has made a commitment to hold discussions with CALM and the DEP on the need for investigation of karst values, including subterranean fauna investigations.

The EPA notes that there are a number of karst values other than subterranean fauna, such as archaeological, geological and paleontological values. The proponent has made a commitment to hold discussions with CALM and the DEP on the need for investigation of karst values, should a significant feature be unavoidable.

The EPA also notes that the proposal does not involve the removal of large areas of the karst landform. Rather the proposed barge loading facility may cause minor disturbance to the karst landform through minor excavations associated with the construction of the facility and potentially cause impacts as a result of contamination of groundwater and the subsurface environment. Furthermore, the EPA notes that direct disturbance resulting from the proposal will impact approximately 0.05% of the coastal plain habitat fronting Exmouth Gulf, and less than 0.007% of the Cape Range Peninsula.

To reduce the potential for groundwater contamination and impacts on the karst system in the vicinity of the project area, the proponent has made a commitment to prepare and implement an Environmental Management Plan which will contain the following management measures:

- further investigation of the occurrence of karst features in the area of impact will occur in consultation with CALM to the satisfaction of the DEP;
- the layout of the onshore works will be designed to avoid any large or significant karst feature;
- should a significant karst feature be identified in the project area, the proponent shall report this finding to DME, CALM and the DEP, and investigate options to modify the proposal to conserve the feature;
- if a karst feature cannot be avoided, discussions will be held with CALM and the DEP on the need for investigation of karst values, including subterranean fauna investigations;
- all fuel, oil and lubricants will be stored within lined and bunded containment areas designed to the requirements of the DEP and DME;
- all fuel will be stored in elevated tanks;
- spills from any plant or equipment will be cleaned up with any contaminated material taken off-site for disposal at a site appropriately licensed by the Department of Environmental Protection for the disposal of such wastes;

- the proponent will maintain sufficient equipment and absorbent material on-site for the clean up of any spills; and
- onshore works will be constructed to be freely draining with retention pits provided to retain any potential contaminants on site for collection and disposal in accordance with the requirements of the DEP, DME, the Water Corporation and the WRC.

Additional items that the DEP advised should be addressed in the EMP include:

- avoidance of surface drainage features when siting facilities; and
- sealing and providing sumps for plant and equipment areas with potential for contaminant spillage.

Having particular regard to:

(a) the relatively small size of the project area in comparison with the extent of the existing karst landform within Cape Range, the Cape Range National Park and its proposed extensions;

(b) the proposal not requiring major excavation, with ground work being limited to levelling off surfaces for construction of the laydown area and the haul route. The extent of disturbance to the karst system can be managed through project design and the proponent's commitments; and

(c) the commitment by the proponent to prepare and implement an Environmental Management Plan which will contain a number of management measures to reduce the potential for groundwater contamination and impacts on the karst system in the vicinity of the project area, as outlined above;

it is the EPA's opinion that the proposal can be managed to meet its objective for this factor provided that the proponent prepares and implements an Environmental Management Plan containing management measures to reduce the potential for groundwater contamination and impacts on the karst system in the vicinity of the project area.

Further, to ensure that the recognised values of the karst landform are adequately represented within the conservation estate, the EPA recommends that the Government give priority to consideration of the proposals in the various reports to extend the Cape Range National Park and to consider additional extensions which conserve the karst formation and contribute to the EPA objective.

## 3.4 Marine fauna

### Description

The CER states that nine marine habitats have been described in the Exmouth Gulf, with four of these habitats occurring in the vicinity of the proposed barge loading facility (Figure 5). These habitats comprise of:

- rocky shores (Mowbowra Conglomerate): dominated by rock oysters;
- intertidal limestone pavement: supporting molluscs, holothurians, prawns and octopus, with deeper pools of the limestone pavement containing small isolated corals. Marine flora existing on the intertidal limestone pavement includes brown and green algae and sparse areas of seagrass;

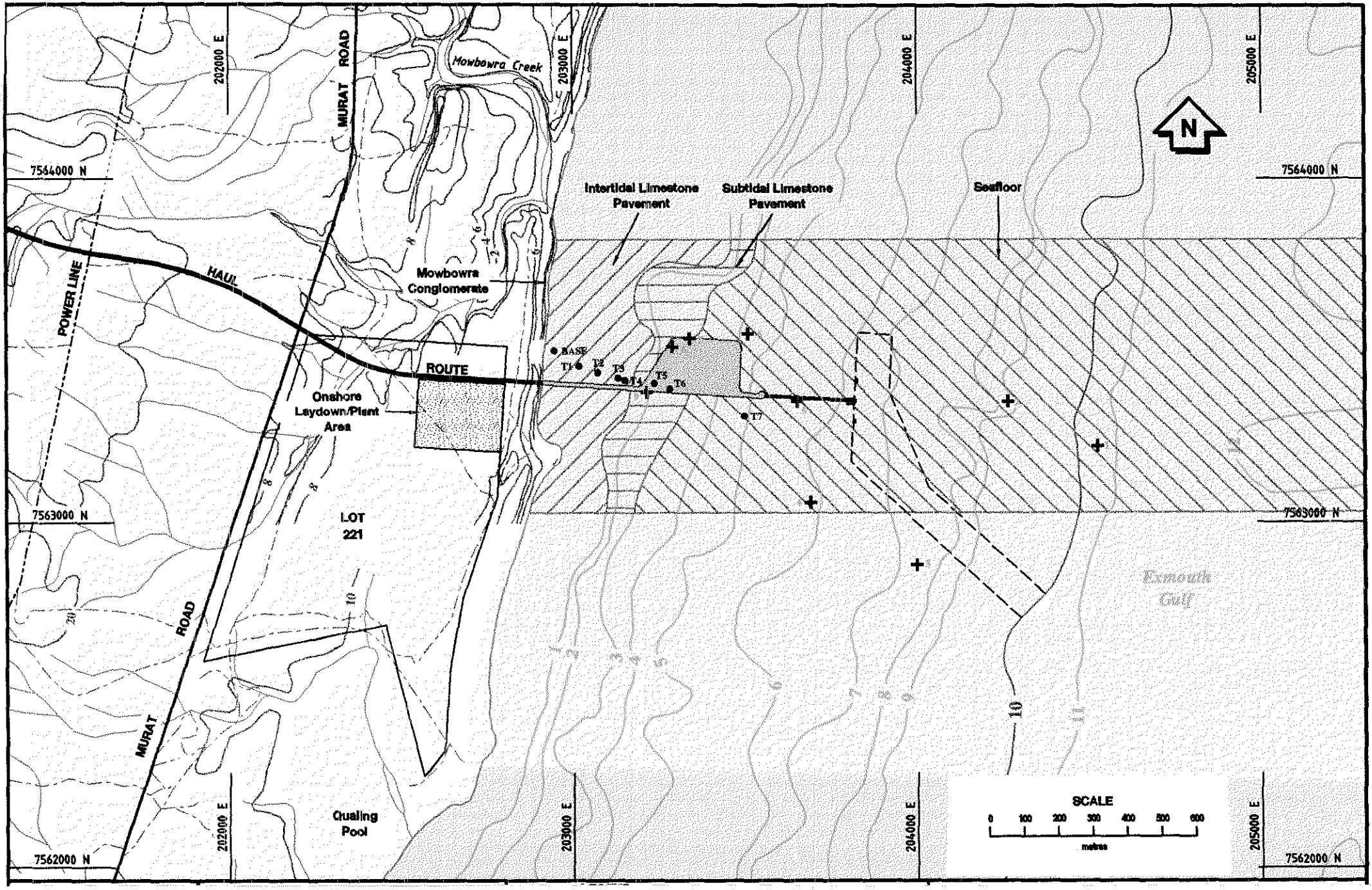


*Figure 5. Marine habitats in the vicinity of the barge loading facility (Source: Halpern Glick Maunsell, 1997a).*

- sub-tidal limestone pavement: supporting sponges, hydroids, tunicates, holothurians and isolated corals. Marine flora is dominated by brown algae, with some green algae also recorded; and
- seafloor: supporting holothurians, echinoids, molluscs and prawns. Flora is dominated by brown algae.

The proposal includes the building of a 650 m long rockfill causeway which will have a base width of up to 50 m, and a 3 ha storage and loading area at the end of the causeway. It is estimated that 6.9 ha of seabed will be directly lost as a result of the proposed barge loading facility. The area of these marine habitats directly impacted by construction of the facility are summarised below in Table 4.

**Table 4. Marine habitat directly impacted by barge loading facility (source: Halpern Glick Maunsell, 1997a)**

| Habitat type | Area impacted by facility (ha) |
|---|---|
| Rocky Shores | 0.06 |
| Inter-tidal Limestone Pavement | 1.0 |
| Sub-tidal Limestone Pavement | 1.6 |
| Seafloor | 4.2 |
| **TOTAL** | **6.86** |

The proposed construction and operation of the barge loading facility also has the potential to indirectly affect marine fauna through changes to habitat, such as water quality, sediment load and water circulation (see section 3.6: Marine water quality). There is also potential for exotic fauna introduced through ballast water to affect marine fauna.

Concern was expressed in public submissions regarding the potential for introduction of exotic species through ballast water. The proponent has made a commitment to prepare and implement a Ballast Water Management Plan to the satisfaction of the Australian Quarantine and Inspection Service (AQIS).

The issue of dugong use of the project area and how the proposal may impact dugongs was also raised in CALM's submission and public submissions. CALM estimates that the dugong population in the Gulf is about 1000 at a density of 0.32 per $km^2$.

Another submission raised concern regarding the potential for impacts on a king prawn recruitment area, specifically impacts resulting from the settling of colloidal material resulting from spillages during transportation and loading of limestone and other products. The issue of potential hazards to existing prawn trawling in the area resulting from vessel mooring was also raised.

### Assessment

The proposed barge loading facility has the potential to directly impact marine fauna through the construction of the causeway and offshore storage area, and indirectly through impacts on marine water quality over a larger area of the Exmouth Gulf. Therefore the area considered for assessment of this relevant environmental factor is the Exmouth Gulf within a five kilometre radius of the project area.

The EPA's environmental objective in regard to this factor is to maintain the abundance, species diversity and geographic distribution of marine fauna.

The proposal will result in the direct loss of 6.9 ha of the marine benthic environment. As described in the CER, the benthic marine environment in the vicinity of the proposed barge loading facility does not appear to support significant fauna. The Exmouth Gulf is described as being 40 km wide and 80 km long (Halpern Glick Maunsell, 1997a). Therefore a 6.9 ha area represents appropriately 0.002% of the Exmouth Gulf. It is therefore considered unlikely that the direct loss of 6.9 ha of this benthic environment will compromise the EPA's environmental objective in regard to this factor.

As outlined in the description above, brown and green algae dominate the marine flora in the vicinity of the project area, with little evidence of seagrass existing in the area. Therefore, the proponent considers that the marine habitat adjacent to the barge loading facility is unlikely to be a suitable habitat for dugongs. CALM has also advised the DEP that, based on the mapped substrate in the area, the project does not directly impact habitat which is likely to attract dugongs, nor is the project as assessed likely to cause significant impacts. However, CALM considers that, in the event of contingent activities such as dredging, potential impacts on dugongs should be taken into consideration.

To further reduce the potential for impacts on marine fauna, the proponent has outlined that the proposed barge loading facility will be constructed and operated in a manner to minimise potential impacts on marine water quality (see Section 3.6: Marine water quality). Furthermore, frequency of shipping associated with the proposal is estimated at one ship every two weeks at a production of one million tonnes per annum. Considering that over 1500 ships visit ports in the Pilbara region per annum (Halpern Glick Maunsell, 1997b) the addition of 30 ships per annum in the Exmouth Gulf is considered unlikely to result in any additional impacts on dugongs.

With regard to potential impacts on prawn recruitment areas and the prawn fishing industry, the CER states that advice from Department of Fisheries and Kailis Fisheries indicates that the barge loading facility is inshore of the trawl runs used by the prawn fishing industry, and outside any designated prawn nursery areas. Kailis Fisheries have responded to the statement by indicating that spillage of material during loading, and settling of this colloquial material, may cause impacts on prawn recruitment areas. The issue of product spillages during loading is discussed in Section 3.6 Marine water quality. Kailis also has concerns regarding mooring of vessels, specifically the potential damage to seafloor from mooring and the potential hazard such vessel mooring may present to prawn nets. It is considered that ongoing liaison between the proponent and the Exmouth Gulf prawn fishing industry will address the management of this issue.

The proponent has made the commitment to develop and implement an Environmental Management Plan to reduce and manage the indirect impacts on marine fauna. The plan will contain the following management measures:

- marine operations will be monitored in respect of water quality, potential limestone and quicklime spillage, TBT levels and general pollution to ensure compliance with the draft WA Guidelines for Fresh and Marine Waters (EPA, 1993).
- the proponent will liaise with the Management Advisory Committee of the Exmouth Gulf prawn fishery.

In addition to the commitments made by the proponent, as outlined above, the proponent is subject to the requirements of the *Wildlife Conservation Act 1950*, relating to the taking of any protected fauna, including that which is declared as Specially Protected (Threatened).

Having particular regard to:

(a) the small area of the benthic marine environment which will be directly impacted by the construction of the proposal and its wide representation elsewhere on western coast of the Exmouth Gulf;

(b) the area in the vicinity of the barge loading facility being considered as unlikely to be a suitable habitat for dugongs;

(c) the barge loading facility being inshore of the trawl runs used by the prawn fishing industry, and outside any designated prawn nursery areas;

(d) the proponent's statutory obligations to comply with the requirements of the *Wildlife Conservation Act 1950*; and

(e) the commitment by the proponent to prepare and implement an Environmental Management Plan which will contain a number of management measures to reduce the potential for direct and indirect impacts on marine fauna in the vicinity of the project area, including liaison with the prawn fishing industry, as outlined above;

it is the EPA's opinion that the proposal can be managed to meet its objective for this factor, provided that the proponent prepares and implements an Environmental Management Plan containing management measures to reduce potential impacts on marine fauna.

### 3.5 Foreshore

Quaternary deposits of the alluvial plain, dominated by a coarse gravel conglomerate, extend to the shoreline in the vicinity of Mowbowra Creek. This sequence adjoins the Mowbowra Conglomerate which occurs as an outcrop at Mowbowra Creek and extends along the shoreline within the project area. This conglomerate rises to a height of 1.5 to 2 m above the nearshore platform, comprised of both inter-tidal and sub-tidal units, which extends along the shoreline in the vicinity of the project area (Halpern Glick Maunsell, 1997a).

The proposed barge loading facility has the potential to directly impact the foreshore during construction of the facility. Table 4 above summarises that the construction of a 650 m causeway, proposed as part of the barge loading facility, will directly impact upon 0.06 ha of rocky shore and 2.6 ha of the nearshore platform, though it will not impact upon beaches.

The proposal may also result in indirect impacts upon the foreshore in the vicinity of the barge loading facility as a result of modification of foreshore and coastal processes adjacent to the facility. The CER states that previous studies (Riedel & Byrne, 1986) assessing sediment transport in this section of the coast have indicated that under prevailing wind and tide conditions, the net transport of sediment is very small with little change in the shoreline position observed over a period of 25 years. Riedel & Byrne (1986) considered that these observations indicated a very mild wave climate with the sub-tidal limestone platform absorbing much of the wave energy prior to reaching the shoreline. The CER reported that recent aerial inspections of the coastline indicate that there is evidence of relatively minor net northerly drift along the coastline in the vicinity of the barge loading facility.

it is the EPA's opinion that the proposal can be managed to meet its objective for this factor, provided that the proponent prepares and implements an Environmental Management Plan containing management measures to reduce the potential for impacts of the foreshore in the vicinity of the project area.

## 3.6 Marine water quality

### Description

The proposal has the potential to impact marine water quality during construction of the project, through increased turbidity, and during operation of the facility, as a result of potential fuel, oil and product spills, ballast water discharge and tributyl tin (TBT) from barge movements and ship loading.

*Turbidity during construction*

Construction of the causeway and offshore storage area will require end tipping of limestone rockfill core material followed by rock armouring of the core (Halpern Glick Maunsell, 1997a). The proponent has indicated that a localised increase in turbidity is expected to occur during placement of the core material. The extent and direction of such a turbidity plume will largely depend on prevailing tide and wind conditions. However, the CER states that there will be no long term turbidity generated from construction of the barge loading facility, and that there are no sensitive marine habitats adjacent to the facility that are likely to be impacted by short term increases in ambient turbidity.

*Limestone or quicklime spills*

The proponent has indicated that the hard nature of the lump limestone proposed to be exported from the barge loading facility is such that dust generation will be negligible (Halpern Glick Maunsell, 1997b). However, occasional minor limestone spillage has the potential to occur as a result of an accident while loading the barges or ships. The proponent has indicated that such spills would have a negligible effect on the water quality, as the limestone is unprocessed and inert, and is expected to settle immediately (Halpern Glick Maunsell, 1997b). The CER indicates that there is no significant flora or fauna inhabiting the seafloor in the vicinity of the loading operations.

The proponent has indicated in the CER that spillage of quicklime will be extremely unlikely as all loading and handling operations will be enclosed to prevent escape of dust and infiltration of moisture. The quicklime will be transferred from sealed storage to the barges via enclosed conveyors. Sheeting will be provided between the ship and the barge to prevent any spillage in this transfer operation. However, should quicklime spillage occur, the lime would rapidly convert to calcium bicarbonate and calcium carbonate, and any impacts would be temporary and localised.

*Hydrocarbon spills*

Refuelling of the tug will be undertaken at the fuel service jetty in the Exmouth Boat Harbour. The proponent has outlined that refuelling of ships moored in the Exmouth Gulf will not be necessary. The potential for hydrocarbon spillage is therefore confined to either ballasting activities or to ship or tug grounding.

An Oil Spill Contingency Plan covering all maritime activities associated with the barge loading facility will be prepared and implemented by Whitecrest in accordance with the requirements of the Australian Maritime Safety Authority (AMSA) and the DEP.

*Ballast water*

Exotic marine organisms have been introduced into Western Australia via ballast water and hull fouling from shipping (Government of WA, 1997). It has been estimated that over 27 exotic species have been introduced to WA (Furlani, 1996).

The frequency of shipping from the barge loading facility required for the shipment of limestone and quicklime from the Whitecrest Mine is estimated at one shipment every six weeks during initial production, then one shipment every two weeks when production reaches one million tonnes per annum.

AQIS has introduced a set of voluntary guidelines aimed at minimising the risk of introduction of these organisms (AQIS, 1995).

A Ballast Water Management Plan covering all maritime activities associated with the barge loading facility will be prepared and implemented by Whitecrest to the requirements of AQIS and the DEP. Ships chartered by Whitecrest will comply with all existing requirements of AQIS and all future regulations as they are enacted. Shippers will be required to establish a compliance arrangement with AQIS to ensure acceptable ballast water procedures are maintained through effective ship management.

## Assessment

The proposed barge loading facility has the potential to affect the near shore marine environment adjacent to the facility, whilst the proposed shipping operations have the potential to affect marine water quality over a larger area of the Exmouth Gulf. Therefore, the area considered for the assessment of this relevant environmental factor is the Exmouth Gulf.

The EPA's environmental objective in regard to this factor is to maintain or improve the quality of marine water consistent with the draft WA Guidelines for Fresh and Marine Waters (EPA, 1993).

The proponent has outlined that construction and operation of the barge loading facility will be undertaken in a manner to reduce the potential for impacts on marine water quality. Furthermore, the proponent has indicated that any impacts resulting from construction and operation of the facility are expected to be temporary and localised.

Construction of the offshore components of the proposal are likely to cause temporary, localised turbidity plumes. However, the proponent has indicated that, due to the larger size of limestone rocks proposed to be used for the construction of the offshore components of the barge loading facility, turbidity levels generated by construction of the facility will be significantly lower than turbidity levels generated during the recent construction of the Exmouth Boat Harbour.

Operation of the facility will incorporate management measures to reduce the potential for contamination of the marine water in the vicinity of the barge loading facility, such as fully enclosing the handling and loading of quicklime and refuelling tug boats at the Exmouth Boat Harbour. The proponent will also require shippers to establish a compliance arrangement with AQIS to ensure acceptable ballast water procedures are maintained through effective ship management.

To minimise the potential for contamination of marine water in the vicinity of the barge loading facility, the proponent has made a commitment to prepare and implement an Environmental Management Plan which will contain the following management measures:

- marine operations will be monitored in respect of water quality, potential limestone and quicklime spillage, TBT levels and general pollution to ensure compliance with the draft WA Guidelines for Fresh and Marine Waters (EPA, 1993);
- an Oil Spill Contingency Plan will be prepared to the satisfaction of AMSA; and
- a Ballast Water Management Plan will be prepared to the satisfaction of AQIS.

Having particular regard to:

(a) construction and operation of the barge loading facility being undertaken in a manner to reduce the potential for impacts on marine water quality; and

(b) the commitment by the proponent to prepare and implement an Environmental Management Plan which will contain a number of management measures to reduce the potential for contamination of marine water in the vicinity of the barge loading facility, as outlined above;

it is the EPA's opinion that the proposal can be managed to meet its objective for this factor, provided that the proponent prepares and implements an Environmental Management Plan containing management measures to reduce potential for impacts on marine water quality.

## 3.7 Aboriginal heritage

### Description

Onshore components of the proposed barge loading facility consist of a 20 m wide haul route and a 5 ha onshore laydown/plant area. The total area to be disturbed will not exceed 15 ha (Halpern Glick Maunsell, 1997a).

Onshore activities create the potential for disturbance to archaeological material and ethnographic sites that may be located in the vicinity of the project area.

The proponent states that no archaeological or ethnographic sites are known to exist on the new haul route corridor crossing the coastal plain or within the onshore laydown area, and that previous research in the area by McDonald Hales & Associates (1995) indicates that the development area is unlikely to have any ethnographic significance (Halpern Glick Maunsell, 1997a). Works for the haul route and onshore laydown area are largely contained within Lot 221. The CER states that Lot 221 does not contain any heritage sites or native title claims (Halpern Glick Maunsell, 1997a).

A number of Aboriginal sites have been recorded in the vicinity of the onshore components of the proposed barge loading facility, including at the mouth of Mowbowra Creek and at Qualing Pool (Figure 4). The CER states that a representative of the local Aboriginal custodians inspected the area in April 1997 and confirmed that the location does not conflict with the registered sites.

The proponent is required to comply with the requirements of the *Aboriginal Heritage Act 1972*.

In its submission, the Aboriginal Affairs Department states that it is unaware that a formal survey had been carried out for Lot 221, as stated in the CER. Furthermore, the department considers that the statement made by the proponent in the CER that a formal survey will be carried out during the construction period is inadequate. The department considers that a formal survey should be performed prior to any development. In response to this submission, the proponent has committed to undertake surveys of the project area prior to commencement of construction in consultation with the local Aboriginal custodians.

**Assessment**

The area considered for assessment of this relevant environmental factor is the project area, including the haul route and the loading facility.

The EPA's environmental objective in regard to this factor is to demonstrate that the proposal complies with the requirements of the *Aboriginal Heritage Act 1972* and ensure that changes to the biological and physical environment resulting from the project do not adversely affect cultural associations with the area.

The CER states that no archaeological or ethnographic sites are known to exist within the project area, largely contained within Lot 221. However, in it's submission, the Aboriginal Affairs Department stated that it was unaware that a formal survey had been carried out for Lot 221. In response to this submission, the proponent indicated that it understood that an Aboriginal heritage survey was undertaken in the process of securing freehold title for these lots in 1996. The EPA does not know if a formal survey of the project area has been undertaken to date. The proponent has also informed the DEP that, although there are presently no Native Title Claims over the project area, claims may yet be made through the process of securing an exploration lease for the site.

The EPA notes that the proponent has made a commitment to undertake surveys of the project area prior to commencement of construction in consultation with the local Aboriginal custodians. Any sites identified in these surveys will be reported to the Aboriginal Affairs Department and, if necessary, clearance obtained to develop the facility under Section 18 of the *Aboriginal Heritage Act 1972*. This commitment would be required to be fulfilled prior to commencement of construction of the barge loading facility.

EPA notes that the loading facility has been specifically located to avoid recorded Aboriginal sites to the north of the project area (Mowbowra Creek and Qualing Pool). Furthermore, the EPA notes that previous research in the area (McDonald Hales & Assoc, 1995) indicates that the development area is unlikely to have any ethnographic significance.

To minimise the potential for disturbance to archaeological material and ethnographic sites that may be located in the vicinity of the project area, the proponent has made a commitment to prepare and implement an Environmental Management Plan which will contain the following management measures:

- the proponent will undertake archaeological and ethnographic surveys of the project area prior to commencement of construction, in consultation with the Aboriginal custodians of the area to ensure significant heritage sites are identified;
- any identified sites will be reported to the Aboriginal Affairs Department. If required, clearance to develop the facility under the *Aboriginal Heritage Act 1972* will be obtained; and
- all contractors will be instructed in respect of their obligations under the *Aboriginal Heritage Act 1972*.

The DEP also advised that the EMP should include the provision that, if any sites are identified, then the proponent should consider alternative facility locations to avoid identified sites.

Having particular regard to:

(a) the loading facility having been specifically located to avoid recorded Aboriginal sites in the area (Mowbowra Creek and Qualing Pool);

(b) the commitment for further archaeological and ethnographic surveys of the area to be carried out prior to construction of the facility;

(c) the proponent's obligation to comply with the requirements of the *Aboriginal Heritage Act 1972*; and

(d) the commitment by the proponent to prepare and implement an Environmental Management Plan which will contain a number of management measures to reduce the potential for disturbance to archaeological material and ethnographic sites that may be located in the vicinity of the project area, as outlined above;

it is the EPA's opinion that the proposal can be managed to meet its objective for this factor, provided that the proponent prepares and implements an Environmental Management Plan containing management measures to reduce the potential for disturbance to archaeological material and ethnographic sites that may be located in the vicinity of the project area.

## 4. Conditions

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 then form part of the conditions to which the proposal should be subject if it is to be implemented.

The EPA may, of course, also recommend conditions additional to that relating to the proponent's commitments.

The EPA recommends that the conditions set out in Appendix 3, which are summarised below, be imposed if the proposal by Whitecrest Enterprises Pty Ltd to construct and operate a barge loading facility south of Mowbowra Creek in the Shire of Exmouth is approved for implementation:

(a) the proponent shall fulfil the commitments set out in the Summary of Commitments statement as an attachment to the recommended conditions in Appendix 3;

(b) in order to manage the relevant environmental factors and EPA objectives contained in this bulletin, and subsequent environmental conditions and procedures authorised by the Minister for the Environment, the proponent shall be required to prepare, prior to implementation of the proposal, environmental management system documentation with components such as those adopted in Australian Standards AS/NZS ISO 14 000 series;

(c) prior to commencement of construction, the proponent shall prepare and implement an Environmental Management Plan, to the requirements of the Environmental Protection Authority on advice of the Department of Environmental Protection and the Department of Conservation and Land Management.

This Plan shall address, but not be limited to the following:

1. Liaison and consultation;
2. Spillage, wastes and contaminants;
3. Noise, dust and emissions;
4. Vegetation disturbance;
5. Karst features and subterranean fauna;
6. Marine monitoring;
7. Heritage; and
8. Foreshore management.

(d) in order to successfully carry out the decommissioning of the project, removal of the plant and installations and rehabilitation of the site and its environs, the proponent shall prepare and implement a decommissioning and rehabilitation plan; and

(e) the proponent shall submit periodic Performance and Compliance Reports, in accordance with an audit programme prepared by the Department of Environmental Protection in consultation with the proponent.

## 5. Other advice

### 5.1 Integrated approach to management of the Cape Range peninsula and establishment of an environmental policy.

The Cape Range Peninsula is an area of special environmental importance for a number of reasons.

In reporting on a number of recent development proposals in the Exmouth-Cape Range area, (EPA Bulletins 843 and 846) the EPA has provided advice on the need for an integrated approach to land use planning and environmental management for the Cape Range Peninsula, and for priority to be given to consideration of extensions to the Cape Range National Park. The EPA maintains these views.

The EPA is now preparing an environmental policy on development within the Exmouth-Cape Range area to assist in the assessment of development proposals.

The need for protection of subterranean fauna has been recognised as a relevant environmental factor in assessment of this and recent proposals in the Cape Range area. However there is limited scientific information available on these species. The EPA proposes the Government take action to ensure resources are directed into research of subterranean fauna, in particular:

(i) species diversity;

(ii) population sizes and distribution (including areas outside Cape Range);

(iii) biology; and

(iv) ecology

## 6. Conclusion

The assessment of proposals by the EPA is usually a two-part process: firstly a consideration of the broad array of information available from the proponent's review documentation and public advice, which provides the basis for the EPA report to the Minister, and then later an examination of more detailed information obtained through an on-going environmental management plan (EMP) prepared by the proponent if conditional approval for the proposal to proceed is granted. This arrangement provides for an orderly process of environmental review of the information provided to the EPA followed by a sound programme of environmental management for consideration as to detail. However, care has to be taken to obtain sufficient information through the first part of the process to allow the EPA to be confident in its advice to the Minister.

The EPA has concluded, on the information available, that the proposal by Whitecrest Enterprises Pty Ltd to construct and operate a barge loading facility south of Mowbowra Creek in the Shire of Exmouth can be managed in a manner such that it does not impose an unacceptable impact on the environment, provided that the conditions recommended in Section 4, and set out in formal detail in Appendix 3, are imposed, and provided the proposal can be undertaken in conformity with the *Wildlife Conservation Act 1950.*

As for most development proposals on the Cape Range Peninsula, a critical element will be the potential for impact on the internationally significant subterranean fauna. The EPA has noted that the proposal will not require major excavation, as ground work will be limited to levelling surfaces for construction of the laydown area and the haul route, and thus the impact on the subterranean fauna is likely to be small. However, because of the cryptic and specialised nature of this important fauna, the proponent's consultation with the Department of Conservation and Land Management will be of special importance in relation to the requirements of the *Wildlife Conservation Act 1950.*

In summary, there appears to be no overriding environmental reason why the proposal should not proceed provided a sound programme of environmental management is approved and implemented.

## 7. Recommendations

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.

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

1. The Minister considers the report on the relevant environmental factors of Subterranean fauna (3.2), Karst systems (3.3), Marine fauna (3.4), Foreshore (3.5), Marine water quality (3.6) and Aboriginal heritage (3.7);
2. The Minister notes that the EPA has concluded that the proposal appears likely to be able to be managed to meet the EPA's objectives, and thus not impose an unacceptable impact on the environment, provided there is a satisfactory implementation by the proponent of the recommended conditions set out in Section 4 and Appendix 3;
3. That the Minister note that a critical element of the Environmental Management Plan proposed in the condition section will be the ability of the proponent to demonstrate that the proposal will be implemented in conformity with the *Wildlife Conservation Act 1950*;

4. That the Minister imposes the conditions recommended in Section 4 and set out in formal detail in Appendix 3 of this report;

5. That the Minister for the Environment notes that there has been a number of previous planning and scientific studies which have recommended extension of the Cape Range National Park. The EPA recommends that the Government give priority to consideration of the proposals in these various reports to extend the Cape Range National Park and to consider other extensions which may be relevant in light of additional information particularly covering the coastal plains and foothills;

6. That the Minister for the Environment notes the EPA's views on the need for an integrated approach to planning and environment for the Cape Range Peninsula referred to in Section 5 of the report, and takes appropriate action to address the EPA's proposals;

7. That the Minister for the Environment notes that the EPA is progressing the preparation of an environmental policy on development within the Exmouth-Cape Range area to assist in the management of the area and the assessment of development proposals.

# Appendix 1

## List of submitters

**State and local government agencies:**

Department of Minerals and Energy

Shire of Exmouth

Aboriginal Affairs Department

Ministry for Planning

Department of Conservation and Land Management

Western Australian Museum

Department of Transport

**Organisations:**

Conservation Council of Western Australia Inc

Ningaloo Action Group

Cape Conservation Group

# Appendix 2

## References

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# Appendix 3

## Recommended Environmental Conditions and Proponent's Commitments

Statement No.

November 1997

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

EXMOUTH LIMESTONE PROJECT BARGE LOADING FACILITY
MOWBOWRA CREEK, SHIRE OF EXMOUTH (1107)

WHITECREST ENTERPRISES PTY LTD

This proposal may be implemented subject to the following conditions:

## 1 Proponent Commitments

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

1-1 In implementing the proposal, the proponent shall fulfil the commitments made in the Consultative Environmental Review and those made as part of the fulfillment of the requirements of conditions in this statement requiring the preparation of an environmental management plan; provided that the commitments are not inconsistent with the conditions or procedures contained in this statement.

In the event of any inconsistency, the conditions and procedures shall prevail to the extent of the inconsistency.

The attached environmental management commitments form the basis for consideration by the Chief Executive Officer of the Department of Environmental Protection for auditing of this proposal in conjunction with the conditions and procedures contained in this statement.

Published on

## 2 Implementation

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

2-1 Subject to these conditions, the manner of detailed implementation of the proposal shall conform in substance with that set out in any designs, specifications, plans or other technical material submitted by the proponent to the Environmental Protection Authority with the proposal.

2-2 Where, in the course of the detailed implementation referred to in condition 2-1, the proponent seeks to change the designs, specifications, plans or other technical material submitted to the Environmental Protection Authority in any way that the Minister for the Environment determines, on the advice of the Environmental Protection Authority, is not substantial, those changes may be effected.

## 3 Proponent

These conditions legally apply to the nominated proponent.

3-1 No transfer of ownership, control or management of the project which would give rise to a need for the replacement of the proponent shall take place until the Minister for the Environment has advised the proponent that approval has been given for the nomination of a replacement proponent. Any request for the exercise of that power of the Minister shall be accompanied by a copy of this statement endorsed with an undertaking by the proposed replacement proponent to carry out the project in accordance with the conditions and procedures set out in the statement.

## 4 Environmental Management System

The proponent should exercise care and diligence in accordance with best practice environmental management principles.

4-1 In order to manage the environmental impacts of the project, and to fulfil the requirements of the conditions and procedures in this statement, prior to construction, the proponent shall prepare environmental management system documentation with components such as those adopted in Australian Standards AS/NZS ISO 14000 series, in consultation with the Department of Environmental Protection.

4-2 The proponent shall implement the environmental management system referred to in condition 4-1.

## 5 Environmental Management Plan

In order to plan for the Barge Loading Facility and to meet the Environmental Protection Authority's objectives, an Environmental Management Plan is required.

5-1 The proponent shall maintain the environmental values within the project area.

5-2 To achieve the objective of condition 5-1, prior to construction, the proponent shall prepare an Environmental Management Plan which addresses, but is not limited to the following:

1. Liaison and consultation;
2. Spillage, wastes and contaminants;
3. Noise, dust and emissions;
4. Vegetation disturbance;
5. Karst features and subterranean fauna;
6. Marine monitoring;
7. Heritage; and
8. Foreshore management.

to the requirements of the Environmental Protection Authority on advice of the Department of Environmental Protection and the Department of Conservation and Land Management.

5-3 The proponent shall implement the Environmental Management Plan required by condition 5-2.

## 6 Decommissioning

6-1 The proponent shall carry out the decommissioning of the project, removal of the plant and installations and rehabilitation of the site and its environs.

6-2 At least six months prior to decommissioning, the proponent shall prepare a decommissioning and rehabilitation plan to achieve the objectives of condition 6-1.

6-3 The proponent shall implement the plan required by condition 6-2.

## 7 Time Limit on Approval

The environmental approval for the substantial commencement of the proposal is limited.

7-1 If the proponent has not substantially commenced the project within five years of the date of this statement, then the approval to implement the proposal as granted in this statement shall lapse and be void. The Minister for the Environment shall determine any question as to whether the project has been substantially commenced.

Any application to extend the period of five years referred to in this condition shall be made before the expiration of that period to the Minister for the Environment.

Where the proponent demonstrates to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority that the environmental parameters of the proposal have not changed significantly, then the Minister may grant an extension not exceeding five years for the substantial commencement of the proposal.

## 8 Compliance Auditing

To help determine environmental performance and compliance with the conditions, periodic reports on the implementation of the proposal are required.

8-1 The proponent shall submit periodic Performance and Compliance Reports, in accordance with an audit programme prepared by the Department of Environmental Protection in consultation with the proponent.

## Procedure

1 Unless otherwise specified, the Department of Environmental Protection is responsible for assessing compliance with the conditions contained in this statement and for issuing formal clearance of conditions.

2 Where compliance with any condition is in dispute, the matter will be determined by the Minister for the Environment.

## Note

1 The Environmental Protection Authority reported on the proposal in Environmental Protection Authority Bulletin 86X (November 1997).

# Proponent's Environmental Management Commitments

**October 1997**

# EXMOUTH LIMESTONE PROJECT
# BARGE LOADING FACILITY
# MOWBOWRA CREEK
# SHIRE OF EXMOUTH (1107)

WHITECREST ENTERPRISES PTY LTD

# SUMMARY OF COMMITMENTS

## Environmental Management Plan

The proponent, Whitecrest Enterprises Pty Ltd, will prepare and implement an Environmental Management Plan (EMP) to manage potential environmental impacts resulting from the construction and operation of the proposal. The EMP will be prepared to the requirements of the Department of Environmental Protection prior to construction of the project, and will be implemented throughout the construction and operational phases of the project to the satisfaction of the Department of Environmental Protection.

The EMP referred to above will contain measures to address the following:

### *Liaison and Consultation*

1 A suitably qualified part time project officer will be employed during construction to liaise with relevant agencies, including the Shire of Exmouth, Department of Environmental Protection (DEP), Department of Minerals and Energy (DME), Water Corporation, Water and Rivers Commission (WRC), the Department of Conservation and Land Management and the Department of Transport (DOT), to ensure that project construction complies with the EMP.

2 The proponent will liaise with the Management Advisory Committee of the Exmouth Gulf's prawn fishery.

### *Spillage, Wastes and Contaminants*

3 An Oil Spill Contingency Plan will be prepared and submitted to the DEP after review by AMSA. This will complement the existing RAN oil spill contingency plan in place for operations at the Point Mural jetty.

4 A Ballast Water Management Plan will be prepared and submitted to the DEP after review by AQIS. This will be incorporated within compliance arrangements to be established between shipping operators and AQIS.

5 Quicklime storage and loading operations will be fully enclosed to prevent dust emissions and spillage.

6 Any spillage of limestone or quicklime during storage and transport will be cleared and disposed of off-site for disposal at a site appropriately licenced by the DEP for the disposal of such wastes, in accordance with the requirements of the Shire of Exmouth and DME.

7 Spills from any plant or equipment will be cleaned up with any contaminated material taken off-site for disposal. The proponent will maintain sufficient equipment and absorbent material on-site for the clean up of any spills.

8 The regional office and Managing Directors of the Water Corporation and the WRC will be informed in writing of any spillage.

9 All fuel, oil and lubricants will be stored within lined and bunded containment areas designed to the requirements of the DEP and DME. All fuel will be stored in elevated tanks.

10 Onshore works will be constructed to be freely draining with retention pits provided to retain any potential contaminants on site for collection and disposal in accordance with the requirements of the DEP, DME, the Water Corporation and the WRC.

11 Any solid and liquid wastes generated during operation and maintenance activities, including sanitary wastes, will be disposed of off-site in accordance with the requirements of the Shire of Exmouth and DME.

***Noise, Dust and Emissions***

12 All barge/shiploading activities will be designed and operated in accordance with the noise, dust and emission provisions required by the *Environmental Protection Act 1986* with appropriate monitoring as necessary.

13 Dust generation will be controlled on a needs basis with application of fresh water obtained from the Exmouth Town Water Supply.

***Vegetation disturbance***

14 Onshore construction and clearing activities will be confined to 15 ha.

15 Vegetation will only be removed if it is essential for construction purposes or the safe operation of the facility and associated infrastructure.

16 All construction vehicle movements outside of the construction areas will be restricted, where practicable, to designated roads and tracks through the construction of a fence around the construction site.

***Karst features and subterranean fauna***

17 Further investigation of the occurrence of karst features in the area of impact will occur in consultation with CALM to the satisfaction of the DEP. The layout of the onshore works will be designed to avoid any large or significant karst feature.

18 Should a significant karst feature be identified in the project area, the proponent shall report this finding to DME, CALM and the DEP and investigate options to modify the proposal to conserve the feature.

19 If a karst feature cannot be avoided, discussions will be held with CALM and the DEP on the need for investigation of karst values, including subterranean fauna investigations.

***Marine monitoring***

20 Marine operations will be monitored in respect of water quality, potential limestone and quicklime spillage, TBT levels and general pollution to the satisfaction of the DEP.

21 Sediment accumulation on either side of the causeway will be monitored and, if the coastline is shown to be eroding, sediment accumulation will be mechanically bypassed to the downstream side of the causeway.

***Heritage***

22 The proponent will undertake archeological and ethnographic surveys of the project area prior to commencement of construction, in consultation with the Aboriginal custodians of the area.

23 Any sites identified by the surveys required by commitment 22 above will be reported to the Aboriginal Affairs Department and, if necessary, clearance obtained to develop the facility under the *Aboriginal Heritage Act 1972*.

24 All contractors will be instructed in respect of their obligations under the *Aboriginal Heritage Act 1972*. The proponent will consult with the Aboriginal custodians of the area to ensure significant heritage sites are protected.

***Foreshore management***

25 To minimise disturbance to dunes and dune vegetation, areas to be avoided will be fenced during construction to prevent access.