

# James Point Stage One Port, Kwinana

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**James Point Pty Ltd**

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

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## Summary and recommendations

James Point Pty Ltd (JPPL) proposes to construct and operate Stage 1 of a private container and general cargo Port (consisting of a reclaimed land-backed cargo wharf, associated cargo handling facilities and an offshore breakwater) to the north of James Point in Cockburn Sound. The Environmental Protection Authority (EPA) is aware that the ultimate Port proposal at James Point may involve further stages. However, at this point in time, the EPA is only providing advice and recommendations to the Minister for the Environment and Heritage on Stage 1 of the James Point Port.

The proposed Stage 1 Port is located north of James Point and immediately north of the existing bulk handling jetties now owned by Fremantle Ports in an area known as Barter Road Beach in Cockburn Sound. The proposed development site is set within the Kwinana Industrial Area (KIA), in the Town of Kwinana. The subject land is vested with Landcorp for the purpose of industrial development and the area is zoned accordingly under the Metropolitan Region Scheme. The EPA understands that the Stage 1 Port area in Cockburn Sound would need to be excised from the area currently controlled by Fremantle Ports.

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

### Relevant environmental factors

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

- (a) Marine biota and habitats – impacts of the construction and operation phases of the proposal on marine biota and habitats;
- (b) Coastal processes – impacts of the constructed elements of the proposal on natural coastal processes along the eastern shores of Cockburn Sound;
- (c) Odour – impacts associated with the proposed handling of livestock at the Stage 1 Port;
- (d) Noise – impacts of noise generated by construction and operation phases of the Stage 1 Port, including consideration of cumulative noise impacts;
- (e) Marine water and sediment quality – impacts of the proposal on existing environmental quality of Cockburn Sound waters and the management of the proposal in the context of recent EPA positions on this factor; and
- (f) Coastal access and coastal activities – impacts of the proposal on people’s continued access to Barter Road Beach and the water area in the vicinity of the proposal.

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

In addition, the EPA has provided Other Advice on environmental matters related the export of livestock from Western Australian facilities, cumulative impacts of noise from industrial premises in Kwinana on surrounding residential areas, coastal access and the removal of the proposed offshore breakwater.

## **Conclusion**

The EPA has considered the proposal by JPPL to construct and operate Stage 1 of a private, multi-purpose Port (consisting of a cargo wharf, associated cargo handling facilities and an offshore breakwater) north of James Point, Kwinana.

### *Marine biota and habitats*

In answer to the broad question about the protection of the remaining seagrass in Cockburn Sound, the EPA notes that information provided by the proponent indicates that existing seagrass will not be directly impacted by the proposal. The remaining seagrass meadows in Cockburn Sound are important for the maintenance of key ecological functions and provide important habitat for marine fauna, including juvenile fish and marine invertebrates.

The total reclamation and/or fill area is proposed to occupy approximately 17 hectares (ha) of seabed and beach. Of this total area, approximately 8.2 ha are currently shallow sandy habitat (sandy seabed <10 m deep). This shallow sandy habitat is likely to have once supported seagrass and, if water and sediment quality conditions are suitable in the future, has the potential to support the re-establishment of seagrass. A further 1.7 ha of sandy seabed greater than 10 m deep will also be reclaimed. This deeper area is a combination of previously dredged and naturally deep seabed. The balance of the reclamation/fill area is between Reference Level (RL) -1 m and RL +4.5 m (i.e. intertidal and beach areas).

Dredging to construct channel and port areas is proposed over an area of approximately 80 ha. Of that area, approximately 9 ha are currently shallow sandy habitat less than 10 m deep, which probably once supported seagrass. The balance of the area to be dredged is a mixture of previously dredged areas and sandy seabed deeper than 10 m.

The EPA recognises that the loss of shallow sandy habitat caused by this proposal will remove the potential for seagrass re-establishment in the future and will impact other ecological values including juvenile fish habitat in the vicinity of the proposal. However, the shallow sandy seabed habitat is not unique in Cockburn Sound or on a regional scale. In view of this, and noting that the proposal will not result in the direct removal of living seagrass, the EPA considers that the proposal will not compromise its objective for this factor.

Since the development of industry along the shores of Cockburn Sound in the 1950's, significant areas of shallow sandy habitat that once supported seagrass have been modified to the extent that their environmental values have been substantially changed. In view of this, the EPA expects that the proponent should contribute to the maintenance and protection of the broader environmental values of marine habitats in Cockburn Sound. The EPA acknowledges that off-sets may not be achievable in the local area of the development, but there are opportunities to implement management

actions to achieve the maintenance or improvement of the ecological and/or social values of the broader Cockburn Sound. A condition has been recommended to achieve this outcome.

#### *Coastal processes*

The proposed breakwater may cause waves to be reflected onto beaches to the north of the proposal, resulting in erosion. Therefore, it is important that the management of the potential impacts of the proposal is of a 'best practice' standard to ensure that the social and environmental values of coastal areas in Cockburn Sound are protected on an on-going basis.

To address this matter, the proponent has committed to undertake a detailed wave and sediment transport study (commitment 1) to derive the optimum Stage 1 Port configuration with respect to minimising impacts on coastal processes and protecting recreational and industrial values of coastal areas. The final configuration will be presented to the EPA, Fremantle Ports, Cockburn Sound Management Council (CSMC) and Western Power for review prior to submission of the Construction Environmental Management Programme (EMP).

In addition, the proponent has committed to prepare and implement a Coastal Stability Management Plan during the operations phase to protect the recreational amenity of local beaches and to minimise and manage the impact of the Port on local coastal processes.

In view of the proponent's commitments, the EPA considers that the proposal could be managed to meet environmental objectives for this factor.

#### *Odour*

The proposed trade in livestock will result in the emission of 'agricultural type' odours from the proposed Stage 1 Port. Potential odour impacts were raised as matters of considerable concern to the community during the assessment.

Since the release of the PER, the proponent has undertaken revised qualitative modelling of odour emissions. This modelling utilised odour information gathered from livestock handling operations at Fremantle Inner Harbour. In assessing this factor, the EPA has considered the advice of the Department of Environmental Protection and an independent specialist commissioned by the EPA to provide a professional opinion of the proponent's work on odour.

After considering the information before it, the EPA arrived at the view that the odour impacts predicted by the proponent are likely to be conservative and may not reflect the potential for greater impacts in nearby areas under some conditions. The EPA also notes that there are likely to be a number of technical difficulties in making accurate predictions of odour impacts from livestock export activities. Among these difficulties are variations in deck layouts between ships, the continuously changing numbers of animals on ships during loading, types of animals on board during sampling, the various times animals are on board, whether animals are wet or dry and meteorological conditions.

Being a new facility, the Stage 1 Port at James Point provides opportunities for the incorporation of ‘best practice’ design and management into the proposed livestock export activities from the outset. The proposal’s location in the KIA also provides for a considerable buffer to areas zoned for residential use. The EPA recognises that there is potential for people working within the KIA to be adversely affected at times by odour, but at this time, a reasonable level of amenity for an industrial setting has not been established. Odour work carried out by the proponent during the operations phase may assist in the derivation of criteria for an appropriate level of amenity in relation to odour in the KIA.

In view of the proposal’s location, and challenges in making very accurate predictions of odour emissions from livestock vessels, the EPA has recommended a set of rigorous environmental conditions relating to the management of odour from the proposed livestock export operations. These conditions require the proponent to undertake quantitative assessments of odour emissions from ships during operations and to develop a ‘best practice’ Odour Management Plan with a review of environmental performance being undertaken by the EPA. The proponent has also committed to convene a Livestock Export Environmental Management Consultative Committee to provide for community and industry feedback on the issue of odour management to JPPL and the broader livestock export industry.

#### *Noise*

Noise will be generated during both the construction and operation phases of this proposal.

In view of the temporary nature of construction noise and provided the proponent’s commitments, including implementation of a Noise Management Plan for construction and other undertakings relating to the movement of construction traffic, are satisfactorily implemented, the EPA considers that the issue of construction noise can be managed to meet the EPA’s objective.

With respect to noise associated with the operations phase of the Stage 1 Port proposal, activities arising from the proposed livestock exporting operations are likely to be important contributors to noise levels emitted from the Port.

The proponent assessed noise from livestock vessels using noise data collected from ships that visit Fremantle Inner Harbour. This assessment found that, without rigorous management, some livestock vessels and fodder loading plant could generate considerable amounts of noise.

During the course of the assessment, the proponent undertook additional work on noise. The proponent found that it could reduce noise emissions to meet the assigned noise levels under the *Environmental Protection (Noise) Regulations 1997* (Noise Regulations) by imposing operating restrictions on vessels while in port and by refusing entry to ships that cannot comply with noise requirements. The proponent also made undertakings with respect to the purchase and operation of fodder loading equipment to minimise noise.

The EPA has recommended a number of conditions to ensure that the proponent’s commitments in relation to noise management can be given effect.

The EPA recognises that the application of the Noise Regulations in the Hope Valley townsite is complicated by the recent proclamation of the *Hope Valley-Wattleup Redevelopment Act 2000 (HVWR Act)*. Accordingly, the EPA has recommended a condition that reinstates the noise levels prescribed in the Noise Regulations for the Hope Valley-Wattleup areas to provide some level of protection to residents who remain in the townsites. It is likely that the assigned noise levels will be reviewed at some stage in view of the changing land uses in the redevelopment area. The EPA notes that, even if assigned noise levels increase in the redevelopment area, residential areas such as Medina will constrain noise levels that could be emitted from the proposal in the longer term.

The EPA recognises that, although the Stage 1 Port could be managed to meet the requirements of the Noise Regulations, it will contribute in a cumulative way to noise levels emitted from the KIA. In view of this, the EPA has provided other advice on cumulative noise impacts from Kwinana industry.

#### *Marine water and sediment quality*

Construction and operation phases of the proposal have the potential to impact water quality in Cockburn Sound.

#### Construction

Construction of this proposal will result in a temporary deterioration in water quality. Dredging, placement of breakwater materials and reclamation activities will result in temporary disturbance of fine marine sediments that cause turbidity plumes and potential release of nutrients and contaminants, such as tributyltin.

The EPA considers that the key environmental attributes that must be protected from the effects of turbidity are seagrass as well as aesthetic, aquaculture and industrial use values.

The EPA has recommended a condition which builds on a commitment made by the proponent in the Public Environmental Review (PER) requiring the preparation of a Dredging and Reclamation Management Plan. This Plan provides for the derivation of criteria for monitoring the effects of dredging on seagrass, nutrients and contaminants in the dredge plume, seafood quality and water quality for industrial use. The Plan also provides for implementation of adaptive management if criteria may not be met.

While information presented in the proponent's PER suggests that the sediments to be dredged are unlikely to contain high levels of contamination, the proponent has made a commitment to undertake additional surveys for contaminated sediments as part of the construction EMP. The EPA has recommended that sediment surveys and management should be undertaken consistent with the Ocean Disposal Guidelines developed by the Australian and New Zealand Environment Conservation Council for the purposes of assessing sediment quality for dredging and ocean disposal projects.

The risks associated with the introduction of marine pests in dredging plant have been acknowledged in previous EPA assessments. It is important that the environmental attributes of Cockburn Sound and the broader Perth Metropolitan coastal waters are protected from any exotic marine species on dredging plant. The EPA has recommended a condition that requires that an inspection of the dredge plant for exotic marine species be undertaken by the proponent.

### Operations

The existing water quality in the vicinity of the Stage 1 Port proposal is relatively poor in comparison with most other parts of Cockburn Sound.

The proposal will have the effect of increasing the residency time of water within the proposed Port area as well as causing shadow effects in the lee of the breakwater, where water flushing will be reduced. It is likely that these effects will result in a further deterioration of water quality in the Port relative to the current situation.

The EPA articulated its objective for the protection of ecosystem health in marine waters along the eastern margin of Cockburn Sound in the document *Perth's Coastal Water: Environmental Values and Objectives*. The water quality objective for the nearshore area in the vicinity of the Stage 1 Port is to maintain a 'moderate' level of ecosystem protection. A 'moderate' level of protection means that moderate changes in key indicators of ecosystem health can occur. The EPA has also depicted the location and spatial extent of the 'moderate' protection area in the draft *Environmental Protection (Cockburn Sound) Policy* (Cockburn Sound EPP). The EPA has recommended a condition reiterating its position with respect to the maintenance of environmental quality of Cockburn Sound waters.

The EPA expects that all social values related to fishing and aquaculture, recreation and aesthetics, and industrial water supply would be protected within the moderate protection area even if some uses of the port area were excluded for safety reasons.

The proponent suggests that, due to the relatively efficient flushing characteristics of the Stage 1 Port proposal, it could manage the proposal consistent with the EPA's objective. However, due to the relatively poor water quality in areas of the Sound in the vicinity of the proposal, some of the draft water quality criteria presented in the draft Cockburn Sound EPP are unlikely to be met within the Port boundary, at least until water quality improvements are achieved in the broader area in the vicinity of the proposal. Consistent with EPA and community expectations and the environmental quality in other port and harbour facilities in Perth's coastal waters, moderate changes in ecosystem processes are expected to occur in the Stage 1 Port.

In view of the proponent's commitments, the EPA's recommended conditions and the cooperative management framework being facilitated by the CSMC for the broader area of the Sound and its catchment to achieve long-term objectives for environmental quality, the EPA is of the opinion that the proposal could be managed with a view of achieving the EPA's objectives for marine water quality in Cockburn Sound as set out in the draft Cockburn Sound EPP in the longer term.



### *Coastal access and coastal activities*

The proposal will result in the loss of approximately 600 m of a coastal area known as Barter Road Beach located between the Kwinana Bulk Terminal (Berths 1 and 2) managed by Fremantle Ports (formally BHP Jetties) and the Kwinana Power Station. Approximately 350 m of beach that is currently used by the public to the north of the proposal will not be directly impacted.

The EPA notes that many members of the public have presented cases that the proposal should not proceed on the basis that it would further restrict the community's access to beaches and the Sound from the mainland.

The EPA has considered this issue in the context of the vesting and planning of the surrounding land as well as the existing land uses. The EPA also notes the role of the CSMC in considering opportunities and constraints for multiple use management of Cockburn Sound.

The majority of the area known as Barter Road Beach is vested with Landcorp for the purpose of industrial development. This use is consistent with the Metropolitan Region Scheme. The northern section of the beach area is owned by Western Power.

The current uncontrolled informal use of the beach may present important public liability issues for the owners of the beach area in the event of an industrial incident in the KIA.

Notwithstanding, preliminary risk assessment undertaken by the proponent suggests that the remaining area of beach between the Stage 1 Port proposal and the Western Power facility would remain outside the 10 in a million ( $1 \times 10^{-5}$ ) individual fatality risk contour. The EPA considers that for any non-industrial related activity or active open spaces located within buffer areas between industrial facilities and residential areas a  $1 \times 10^{-5}$  level of individual fatality risk is so small as to be acceptable to the EPA.

The EPA has recommended that the proponent prepare a Public Access Management Plan to provide risk-dependent access to land and water areas of the Stage 1 Port. In view of the potential acceptability of continued recreational use of the remainder of the Barter Road Beach from an individual risk perspective, the EPA also suggests that the proponent should liaise with Landcorp and the CSMC to investigate opportunities for some non-industrial use of Barter Road Beach, subject to detailed assessment of cumulative individual and societal risk issues in the area.

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

## **Recommendations**

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

1. That the Minister notes that the proposal being assessed is for the construction and operation of Stage 1 of a land-backed general purpose port north of James Point, Kwinana.
2. That the Minister considers the report on the relevant environmental factors as set out in Section 3.
3. That the Minister notes that the EPA has only considered the noise emissions and potential impacts of two livestock vessels in Port at any one time. Accordingly, and unless demonstrated that three vessels can be managed to meet the statutory criteria set out in the *Environmental Protection (Noise) Regulations 1997*, the proposal should only operate with two livestock vessels at berth at any one time.
4. That the Minister notes that the EPA has concluded that it is unlikely that the EPA's objectives would be compromised, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 4, and summarised in Section 4, including the proponent's commitments.
5. That the Minister notes that, while it is beyond the ambit of the EPA to assess the operational requirements of shipping channels, the EPA recommends that any contract between the Government and the proponent for the Stage 1 Port proposal should include arrangements to clearly establish respective responsibilities for maintenance of existing shipping infrastructure, including channels.
6. That the Minister notes that because the issue of financial compensation to commercial fishers for the loss of fishing grounds at the proposed Stage 1 Port site is beyond the scope of the EPA's assessment, the EPA recommends that this matter would be most appropriately addressed by negotiating between proponent, relevant commercial fishing groups and the Department of Fisheries as necessary.
7. In view of the potential significant noise, air quality and risk issues which would be relevant to residents in Naval Base and noting the Government's intent to develop surrounding areas for general industry, the EPA recommends that appropriate planning controls should be implemented to address and avoid potential conflicts between incompatible land uses.
8. That the Minister imposes the conditions and procedures recommended in Appendix 4 of this report.
9. That the Minister notes the EPA's other advice presented in Section 5 in relation to partially loaded livestock vessels, cumulative noise from Kwinana Industry, the need to maintain the community's access to coastal areas in Cockburn Sound which are appropriate for recreational use and arrangements for the removal of the proposed offshore breakwater if necessary in the future.

## Conditions

Having considered the proponent's commitments and the information provided in this report, the EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by James Point Pty Ltd to construct and operate Stage 1 of a private Port near James Point, Kwinana is approved for implementation.

These conditions are presented in Appendix 4. Matters addressed in the conditions include the following:

- (a) that the proponent be required to fulfil the commitments in the Consolidated Commitments statement set out as an attachment to the recommended conditions in Appendix 4;
- (b) the public availability of Environmental Management Programmes for construction and operations phases of the proposal;
- (c) the management of dredging and reclamation activities required for construction of the Stage 1 Port proposal;
- (d) meeting environmental quality objectives for marine waters of Cockburn Sound, including Stage 1 Port waters;
- (e) a contribution to the maintenance and protection of the broader environmental values of marine habitats in Cockburn Sound;
- (f) the management of odour associated with the proposed trade in livestock at the Stage 1 Port;
- (g) the management of noise emissions from the operation of the Stage 1 Port; and
- (h) the provision of safety-dependent access to the Stage 1 Port area, including marine and land areas.

It should be noted that other regulatory mechanisms relevant to the proposal are:

- any trade of 100 tonnes or more per day requiring the loading or unloading of bulk materials is prescribed under Part V of the *Environmental Protection Act 1986* and therefore requires a Works Approval and License.

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# **1. Introduction and background**

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for the Environment and Heritage on the environmental factors relevant to the proposal by James Point Pty Ltd (JPPL) to construct and operate Stage 1 of a private container and general cargo Port to the north of James Point in Cockburn Sound.

In the late 1980's, the Government of the day undertook a study to identify sites for container and general cargo Port development to supplement Fremantle Port inner-harbour when that facility reached its capacity. In relation to the broad question of location, the EPA notes that the then Government endorsed a location for new port infrastructure between Naval Base and James Point (WAPC 1999, 2000).

Following a call for expressions of interest by the Government of the day, JPPL was selected as the preferred tenderer to develop a private Port in the Naval Base/Kwinana area. The Government subsequently entered into an agreement with JPPL for the provision of private port facilities north of James Point, Kwinana. The agreement is conditional on, among other things, JPPL gaining relevant approvals including environmental and planning.

The proposed Stage 1 Port is located in the Kwinana Industrial Area (KIA) adjacent to, and within, Cockburn Sound. Cockburn Sound is an area of considerable environmental and social importance.

The marine environment of Cockburn Sound was severely impacted by the development of heavy industry in Kwinana in the 1950's. The loss of the majority of seagrass from the eastern margin of Cockburn Sound is well documented (see DAL et al. 2000). These impacts have been attributed to a persistent deterioration in water quality, particularly because of nutrient enrichment. High nutrient loads caused a proliferation of marine algae in the water column and on the leaves of seagrass. The growth of these algae resulted in a reduction of light reaching the photosynthetic tissues in seagrass leaves, causing the plants to be starved of light necessary for the production of energy. Elevated nutrients and associated deterioration in water quality over the period between the 1950's to the 1970's caused Cockburn Sound to shift from being an ecosystem driven by production on the seafloor (e.g. seagrass, macroalgae on reefs and microalgae in sediments) to an ecosystem driven by production in the water column (phytoplankton – planktonic marine algae). From an ecological perspective, this has been a profound change.

Since the late 1970's and early 1980's, attention has been given to the levels of nutrients entering Cockburn Sound from industry and the catchment.

The community has assigned a high level of importance to the social values of Cockburn Sound. The Sound is one of the most heavily utilised water bodies for marine-based recreation in Western Australia (WA). It supports recreational and commercial fisheries as well as other incidental recreational activities focused on the marine environment (e.g. swimming, diving, dolphin tours). Public access to beaches and coastal waters of the mainland coast of the Sound is also considered important.

The EPA, recognising that a series infrastructure proposals along the eastern margin of Cockburn Sound could not be considered in isolation, either from each other or from already existing pressures on the environment of Cockburn Sound, prepared strategic environmental advice to the Minister for the Environment on the marine environment of Cockburn Sound (EPA 1998). The EPA Bulletin 907 examined the issue of cumulative impacts of infrastructure proposals on water quality and marine ecology in the Sound.

In Bulletin 907, the EPA drew a number of conclusions specifically relevant to future harbour development proposals, including that:

- a series of harbours and maritime structures will reduce flushing of water enclosed within and between neighbouring developments, having implications for water quality and marine ecosystems;
- it is paramount that any further loss of seagrass from the Sound be avoided;
- it is important to retain the sand banks and sandy margins of Cockburn Sound, where seagrass once grew, so as not to lose future opportunities for seagrass re-establishment; and
- the EPA expects that proponents of new proposals which have the potential to affect the marine environment of Cockburn Sound, should consider the cumulative environmental implications on the Sound, taking into account the relationship between the proposal and the existing and planned future uses of Cockburn Sound.

Other outcomes of Bulletin 907 include the development of the draft *Environmental Protection (Cockburn Sound) Policy* (Cockburn Sound EPP) and the formation of the Cockburn Sound Management Council (CSMC) to oversee management of the marine environment of the Sound as well as its immediate catchment, via an Environmental Management Plan (EMP).

Although the Cockburn Sound EPP is currently in draft form, the draft document (including supporting criteria documents), as well as information contained in Bulletin 907, reflects the current positions of the EPA. Therefore, the EPA considers that these documents provide appropriate objective contexts for the assessment of potential impacts of the Stage 1 Port proposal on Cockburn Sound.

JPPL referred a proposal for its Stage 1 Port to the EPA in December 1999. The EPA determined that the proposal should be assessed at the level of Public Environmental Review (PER). During the preparation of the PER, JPPL determined that the proposal would require revision. JPPL advised the EPA of the revisions to its original proposal in August 2000, the most notable of which was the inclusion of an offshore breakwater. It was agreed that the revised Stage 1 Port proposal was sufficiently different to the original design to warrant readvertising, however, the EPA

recommended that the level of assessment of PER should remain. Appeals were received by the former Minister for the Environment against the EPA's decision on the level of assessment. In determining appeals, the then Minister decided that the Stage 1 Port proposal should continue to be assessed at the level of PER.

The proposal presented in JPPL's PER (JPPL 2001a) accords with the revised proposal advertised by the EPA in August 2000.

The EPA has received a large number of submissions on this proposal from a broad spectrum of the community including, Government agencies, industry, concerned public groups and individuals. An opportunity was also provided for the community to express its views on the proposal to the EPA at a public meeting held in Kwinana in July 2001.

Further details of the proposal are presented in Section 2 of this report. Section 3 discusses the environmental factors relevant to the proposal. The recommended conditions and commitments to which the proposal should be subject, if the Minister determines that it may be implemented, are set out in Section 4. Section 5 provides Other Advice by the EPA, Section 6 presents the EPA's conclusions and Section 7, the EPA's Recommendations.

The compact disc attached to this report contains supporting information related to the EPA's assessment of this proposal, including the PER, the proponent's responses to submissions and other supporting technical documents. This information is included as a matter of information only and does not form part of the EPA's report and recommendations. Issues arising from this process and which have been taken into account by the EPA appear in the report itself.



## 2. The proposal

JPPL propose to construct and operate Stage 1 of a container and general cargo Port north of James Point, Kwinana. This report presents the EPA's findings in relation to the proposed James Point Stage 1 Port only.

The EPA is also assessing a separate proposal for a Livestock Holding Facility, located in the vicinity of the Stage 1 Port proposal. The EPA is awaiting further information from the proponent before it can complete its assessment of that project. The EPA's recommendations in relation to the Livestock Holding Facility proposal will be the subject of a separate report.

The main characteristics of the Stage 1 Port proposal are summarised in Table 1 below. A detailed description of the proposal is provided in Section 3 of the PER (JPPL 2001a)

**Table 1: Summary of key proposal characteristics**

Element	Quantities/Description
Reclamation	<p>Approximately 172,000 square metres of filled land and seabed to create a 600 metre long land-backed wharf.</p> <p>Of this area, approximately 151,000 square metres would be reclaimed below low water mark, including approximately 82,000 square metres of seabed that is currently less than 10 metres deep.</p>
Dredging	<p>Dredging of approximately 1,274,700 cubic metres of marine sediments to create a berthing pocket dredged to -13 metres Chart Datum (CD) immediately west of the reclaimed land backed wharf, an entrance channel dredged to approximately -12.2 metres CD, and an increase in the depth and width of the Stirling Channel approach to -12.2 metres CD with a final width of approximately 175 metres.</p> <p>This dredging will occur over an area of approximately 800,000 square metres, including approximately 90,000 square metres of seabed that is currently less than 10 metres deep.</p>
Offshore breakwater	<p>Approximately 800 metres long in 10 metre deep water extending from approximately 200 metres offshore in an arc to approximately 500 metres offshore.</p> <p>Breakwater construction requiring approximately 574,000 cubic metres of imported limestone core and armour material.</p>
Target trades	<p>Exports may include:</p> <ul style="list-style-type: none"> <li>• bulk trades—silica sand, mineral sand;</li> <li>• scrap steel;</li> <li>• livestock—sheep, cattle, fodder; and</li> <li>• general cargo—containers, bulka bags, project cargoes.</li> </ul> <p>Imports may include:</p> <ul style="list-style-type: none"> <li>• bulk trades—fertiliser products, grain, cement clinker; and</li> <li>• general cargo—steel products, project cargo.</li> </ul>
Transport	<p>Construction</p> <p>Transport of rock armour, core material and fill requiring approximately 56,000 truck movements over a period of approximately 9 months.</p> <p>Operations</p> <p>Transport of livestock from farms and existing holding facilities at Mundijong and Wellard on an on-going basis. Livestock transport will result in an increase of heavy vehicle traffic on Anketell Road west of the Kwinana Freeway, and on Rockingham Road and Beard Street, Kwinana.</p>

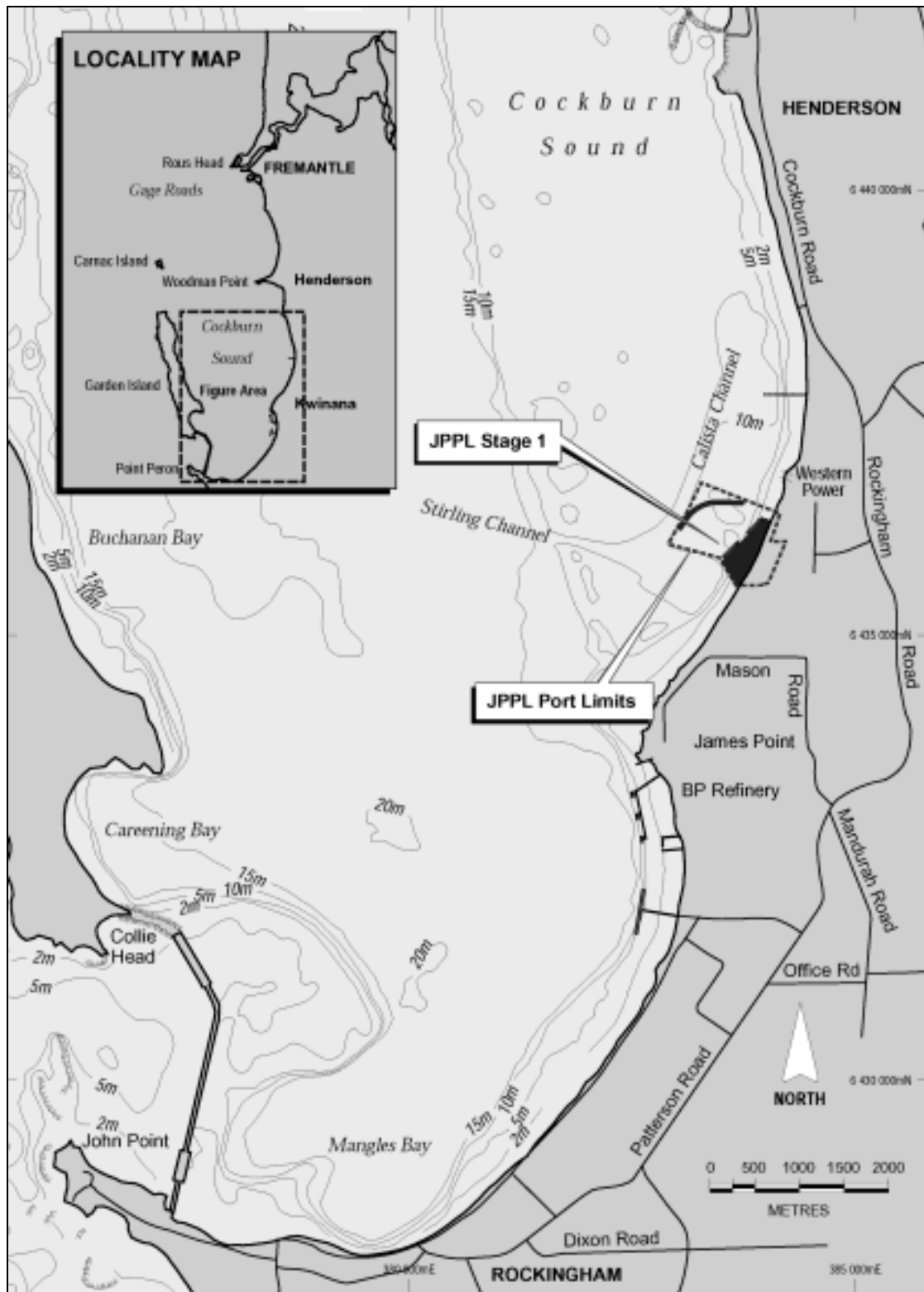
Since the release of the PER, the proponent has made a number of modifications to the proposal. These include:

- a reduced indicative Stage 1 Port area within Cockburn Sound; and
- a revision of the Stage 1 Port conceptual layout with the deletion of Reclamation Area 2A shown in Figure 3.1 in the PER (JPPL 2001), reducing the size of the reclaimed area; and
- a revised proposed dredging area, reduced from approximately 89 ha to approximately 80 ha

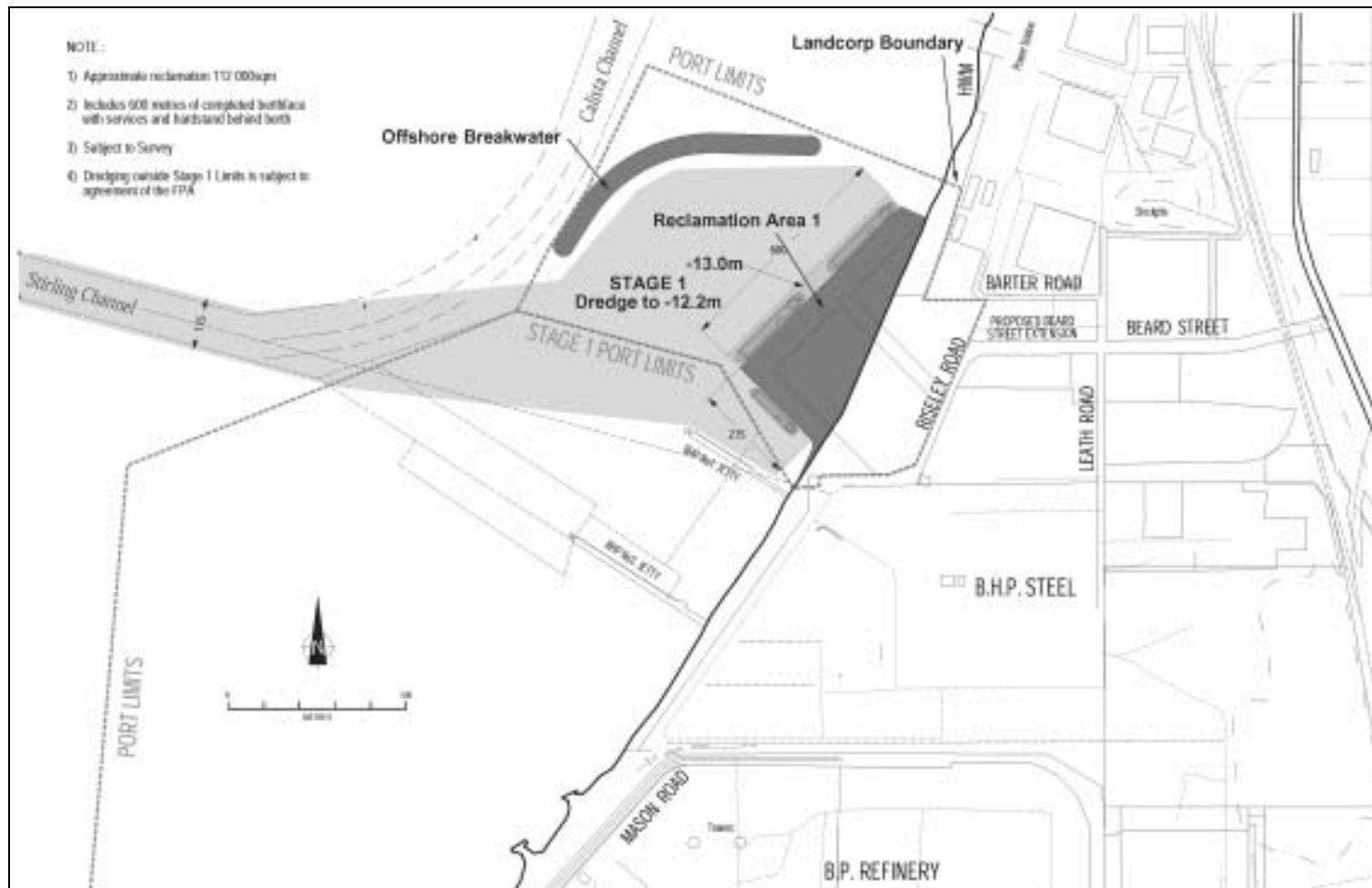
The location of the revised conceptual layout for the proposed Stage 1 Port is shown in Figure 1. The revised Stage 1 Port conceptual layout is shown in Figure 2.

A possible future rail loop and a proposed extension of Beard Street in the KIA, which were shown in Figure 3.2 of the PER, do not form part of the Stage 1 Port proposal.

The EPA is aware of a Stage 2 Port proposal at James Point. This Stage 2 proposal has not been referred to the EPA at this time. The EPA understands that any proposal to progress to Stage 2 would need to be approved by Government and assessed by the EPA.



**Figure 1:** Location Map



**Figure 2:** Revised Stage 1 Port layout.

### **3. Relevant environmental factors**

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

The identification process for the relevant factors selected for detailed evaluation in this report is summarised in Appendix 3. The reader is referred to Appendix 3 for the evaluation of factors not discussed below. The EPA is of the view that the information set out in Appendix 3 provides sufficient evaluation in relation to a number of these factors, such as dunes and vegetation, surface water quality, air quality (dust) and risk.

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

- (a) Marine biota and habitats – impacts of the construction and operation phases of the proposal on marine biota and habitats;
- (b) Coastal processes – impacts of the proposal on natural coastal processes along the eastern shores of Cockburn Sound;
- (c) Odour – impacts associated with the proposed handling of livestock at the Stage 1 Port;
- (d) Noise – impacts of noise generated by construction and operation phases of the Stage 1 Port, including consideration of cumulative noise impacts;
- (e) Marine water and sediment quality – impacts of the proposal on existing environmental quality of Cockburn Sound waters and the management of the proposal in the context of recent EPA positions on this factor; and
- (f) Coastal access and coastal activities – impacts of the proposal on people's continued access to Barter Road Beach and the water area in the vicinity of the proposal.

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

Details on the relevant environmental factors and their assessment are contained in Sections 3.1 - 3.6. The description of each factor shows why it is relevant to the proposal and how it will be affected by the proposal. The assessment of each factor is where the EPA decides whether or not a proposal meets the environmental objective set for that factor.

### 3.1 Marine biota and habitats

#### Description

Two key elements of the proposal will result in direct impacts on benthic habitat in Cockburn Sound. These elements are dredging and reclamation.

The total area proposed to be reclaimed and/or filled is approximately 17 hectares (ha). Of this total area, approximately 8.2 ha are currently shallow sandy habitat between -1 metre (m) and -10 m below reference level. This area of shallow sandy habitat is relevant because it is likely to have once supported seagrass and if water and sediment quality conditions are suitable in the future, it has the potential to support the re-establishment of seagrass. A further 1.7 ha of sandy seabed greater than 10 m deep will also be reclaimed. This area is a combination of previously dredged areas and naturally deep depressions. The balance of the reclamation/fill area is between Reference Level (RL) -1 m and RL +4.5 m.

Dredging will occur over an area of approximately 80 ha. Of that area, approximately 9 ha are currently shallow sandy habitat less than 10 m deep, which probably once supported seagrass. The balance of the area to be dredged is a mixture of previously dredged areas and sandy seabed deeper than 10 m.

At a regional scale, the major marine habitats have been mapped and described in the *Southern Metropolitan Coastal Waters Study* (DEP 1996). The results of more detailed marine habitat mapping in Cockburn Sound are presented in *Seagrass Mapping Owen Anchorage and Cockburn Sound 1999* (DAL *et al.* 2000). This work showed that, within the mapping area in the vicinity of James Point Stage 1 Port proposal, there was little or no seagrass present over the period 1967 to 1999.

The surveys undertaken by the proponent as part of the PER (JPPL 2001a) suggest that seagrass will not be directly impacted as a result of the proposal. Some seagrass was observed growing on the bank that extends north-north-west of James Point. A dense meadow of the long-lived seagrass *Posidonia sinuosa* was found approximately 400 m south of the Stirling Channel, while several patches of *P. sinuosa* were observed north of the Channel. Some outcrops of limestone reef and scattered clumps of brown algae were also found.

The surveys undertaken by the proponent found that the majority of the substrata in the vicinity of James Point were sand, silt or shell rubble deposits on sand. These areas were inhabited by a range of benthic invertebrates including sea stars, feather stars, sea pens and anemones. Fish and blue manna crabs were also observed during the surveys.

## Submissions

In relation to dredging, submissions focused on issues including:

- the extent to which issues related to potential threats to seagrass beds from dredging, port construction and operations were addressed in the PER;
- whether seagrass health would be monitored during the dredging;
- limitations of the proponent's habitat mapping. Submissions consider that small areas of seagrass are a significant resource if seagrass is to re-establish in Cockburn Sound in the long term;
- concern about the impacts and management of dredging in relation to patches of seagrass to the northwest of James Point which have shown signs of stress;
- the potential effects of changing the existing shallow sandy environment to a deeper environment on fish species; and
- whether fauna (such as dolphins) and flora (apart from seagrasses) will be impacted directly by dredging and indirectly from the turbidity and sedimentation.

In relation to the proposed reclamation, submissions focused on:

- how much seagrass potential habitat will be lost and whether the loss of seagrass habitat is consistent with the recommendations of EPA Bulletin 907;
- commitments to re-establish seagrass in remaining shallow habitat should be considered;
- the impact of the proposal on juvenile fish given that the results of extensive work undertaken in near shore marine and estuarine habitats of south-western Australia shows that the 0+ year classes of most economically important coastal finfish species utilise protected marine shoreline habitats;
- the loss of shallow sandy habitat and the effect of its loss on the recognised values as a fish nursery area;
- whether the proponent will offset the loss of shallow sandy habitat; and
- the view that further detail should be provided by the proponent to demonstrate how habitat loss is to be mitigated through the design and construction of the breakwater, including the investigation of options to maximise the area of rock placed below low tide level to create the maximum reef habitat possible.

Key issues raised relating to on-going Port operations included:

- concern about the impacts of spills on marine flora and fauna;
- concern about the level of information provided in the PER and the possibility of impacts on dolphins that feed in the area;
- questions regarding the potential impact of decreased light levels at the seabed in harbour areas on the primary production by microscopic plant communities that inhabit marine sediments on the seabed. A reduction or loss of these communities may cause significant impacts on sediment oxygen levels, nutrient recycling (particularly nutrient release) and ecosystem function generally within the harbour; and
- how maintenance dredging would be managed to reduce environmental impacts.

## **Assessment**

The area considered for assessment of this factor is the sandy banks and shallow margins of eastern Cockburn Sound, including the proposed development area.

The EPA's environmental objective for this factor is to maintain the ecological function, abundance, species diversity and geographic distribution of marine flora and marine fauna.

The proposal will result in irreversible disturbance of the seabed near the proposed Port. The types of activities that will impact on benthic flora and fauna have been identified as dredging, breakwater construction and land reclamation.

The EPA notes that dredging and reclamation activities are not likely to result in direct loss of seagrass from Cockburn Sound. However, the EPA recognises that dredging and reclamation activities pose indirect risks to the health and survival of seagrass by generating turbidity plumes that cause a temporary reduction of light reaching the seafloor. As noted in Bulletin 907 (EPA 1998), the protection of the remaining seagrass in Cockburn Sound is a high priority of the EPA. Water quality impacts, and turbidity in particular, associated with dredging will require rigorous management of a 'best practice' standard to ensure that the remaining seagrass in Cockburn Sound is protected from the indirect effects of turbidity. The EPA considers that the protection of seagrass from the potential impacts of turbidity dredging should be a key objective of the proposed dredging program. As this matter is primarily associated with water quality it is given detailed attention in Section 3.5 of this report.

It is noted that dredging outside the Stage 1 Port area would require agreement with Fremantle Ports.

Although the proposal is not likely to cause direct impacts on living seagrass, it will modify shallow sandy habitat (shallow sandy areas less than 10 m deep) to the extent that opportunities for the re-establishment of seagrass will be reduced or removed. This was noted in Bulletin 907 and in this context, the EPA concluded that it is important to retain the sand banks and sandy margins of the Sound so as not to lose future opportunities for seagrass to re-establish. It was not an objective of the EPA to avoid further loss of shallow sandy habitat where seagrass once grew.

The EPA recognises that the proposal will cause a loss in the order of 17 ha of shallow sandy habitat less than 10m deep. It is highly likely that, in the past, seagrass would have grown on sandy substrata near the proposal, including the areas where channels and turning basins have now been dredged. Given the appropriate conditions, the EPA considers that sandy habitat within the 10 m depth contour in Cockburn Sound could provide opportunities for re-establishment of seagrass in the future.



The extent to which the Stage 1 Port proposal causes a further cumulative loss of shallow sandy habitat that once supported seagrass is a matter of judgement. This is partly because the question of an accurate baseline seagrass distribution upon which to determine cumulative loss is difficult to address at this time. DAL *et al.* (2000) also noted that problems are commonly encountered with seagrass mapping based on aerial photography.

Notwithstanding, Cambridge and McComb (1984) and DAL *et al.* (2000) have documented significant losses of seagrass. While both of these studies have suggested mechanisms for the disturbance or direct loss of seagrass habitat since the industrialisation of the eastern margin of Cockburn Sound, there is currently no accurate published estimation of the cumulative loss of potential seagrass habitat (i.e. shallow sandy margins and sand banks).

Based on information presented in the PER, DAL *et al.* (2000) and environmental management plans prepared for the Jervoise Bay Southern Harbour project, the EPA has made preliminary estimates that the cumulative loss of shallow sandy habitat (where seagrass may once have grown) in Cockburn Sound may be somewhere in the order of 7% - 10% if the Stage 1 Port proposal proceeds. The EPA does not consider that this loss is inconsistent with the EPA's conclusion in Bulletin 907 (EPA 1998). However, the EPA holds the view that the level of cumulative loss is significant and any proposals for further loss would need to demonstrate that existing and potential ecological values would be maintained and protected.

The EPA also notes the value of shallow sandy habitat along the margins of Cockburn Sound for marine biota other than seagrass. In this regard, submissions and the proponent's responses in relation to the potential impacts on marine fauna, particularly finfish and dolphins, as a result of the proposal are noted.

In relation to potential impacts on dolphins, the proponent commissioned a desktop study by Dr M. Calver, P Waterson and H. Finn of the School of Biological Sciences, Murdoch University. The Calver *et al.* (2001) report identifies a number of threats to dolphins in Cockburn Sound, which may be associated with the James Point Stage 1 proposal. Noting scientific uncertainties, Calver *et al.* (2001) conclude that on the basis of current understanding of dolphin ecology in Cockburn Sound, "*...it is unlikely that impacts arising from the James Point (Stage 1) development, if managed using best environmental practice methods to minimise habitat degradation, will initiate population decline*".

With respect to potential impacts of the proposal on finfish, the Department of Fisheries (Fisheries) advised that sheltered beaches are important nursery areas in southwest WA. Fisheries suggest that the value of the altered habitat as a fish nursery is not known, however it is likely that deepening the site will make a significant difference in terms of the value of the site as a fish nursery area. Fisheries advise that although the offshore habitat to be impacted by the proposal is not unique, its loss and that of "*...productive areas such as seagrass beds, shallow sand areas that could potentially be recolonised by seagrass, and reef areas represent an incremental loss to fisheries and the marine environment*".

The EPA also notes that advice from Fisheries suggests that the proposal is unlikely to have significant impacts on species that migrate along the shores of Cockburn Sound.

The EPA recognises that the area known as Barter Road Beach is used for recreational and commercial fishing. This matter is given attention in Section 3.6 of this report.

During operations phase, the Port is unlikely to result in direct impacts on marine flora and fauna. However, the issues raised in submissions regarding the potential impacts of spills and marine pest incursions on marine flora and fauna of Cockburn Sound are noted. To address these issues, the proponent has committed to prepare and implement a number of management plans including an Oil Spill Management Plan (commitment 35), an Introduced Species Management Plan (commitment 33) and a Ballast Water Management Plan (commitment 31).

In response to issues raised regarding maintenance dredging, the proponent has made a commitment to prepare and implement a Maintenance Dredging Management Plan (commitment 29) for approval prior to undertaking any maintenance dredging within the Stage 1 Port area.

### **Summary**

The EPA notes that the irreversible modification of shallow sandy habitat that is likely to have once supported seagrass on the eastern margin of Cockburn Sound is primarily determined by the extent of the proposal's footprint. The EPA also notes that some of the area proposed to be impacted has been previously modified for shipping channels and turning basins. Of the total area to be dredged, reclaimed and/or filled (approximately 97 ha), approximately 17 ha are seabed currently less than 10 m and therefore have the potential to support the re-establishment of seagrass in the future.

Having particular regard to:

- the results of surveys undertaken for the proponent that suggests the proposal is unlikely to directly impact seagrass in Cockburn Sound;
- the specialist advice in relation to issues raised about potential impacts on dolphins; and
- the proponent's commitments in relation to spills, marine pests and maintenance dredging that will set in place frameworks for the management of these issues,

the EPA considers that the incremental impact of this proposal on shallow sandy habitat is not of such consequence that the EPA's objective for this factor would be compromised.

Since the development of industry along the shores of Cockburn Sound in the 1950's, significant areas of shallow sandy habitat have been modified to the extent that their environmental values have been substantially changed. In view of this, the EPA expects that the proponent should contribute to the maintenance and protection of the broader environmental values of marine habitats in Cockburn Sound. The EPA acknowledges that off-sets may not be achievable in the local area of the development, but there are opportunities to implement management actions to achieve

the maintenance or improvement of the ecological and/or social values of the broader Cockburn Sound. Condition 9 has been recommended to achieve this outcome with the scope of works to be finalised in consultation with the EPA and the CSMC.

## **3.2 Coastal processes**

### **Description**

The Stage 1 Port proposal includes the construction of a reclaimed land-backed berth and an offshore breakwater, and deepening and widening of Stirling Channel. These elements of the proposal have the potential to interrupt coastal processes and local wave climate.

An investigation by the proponent of aerial photography over annual and decadal time scales suggested that the net sediment transport along the coast near James Point is relatively small.

The proponent summarized the impacts of the proposal on coastal processes in the PER as follows:

- The development is situated in a very low energy environment, as such, the effects of altered wave reflection and refraction patterns will be greatest during severe events when incident waves are largest.
- The largest waves will arrive from the northwest. Under these conditions net sediment transport will be to the south, reflected wave energy will be to the north and both processes will affect the existing shoreline equilibrium, including the region around the Kwinana Power Station cooling water discharges.
- The beaches to the south of the Stage 1 development will generally be unaffected due to the breakwaters at James Point and the additional protection of the proposed offshore breakwater.
- Highly localised changes to the beaches south of the development may occur as the result of both trapping of sand moving north and wind-wave reflection off the south end of the land-backed berth.
- Under prevailing southwest conditions, transport to the north will be blocked by the development. As a result, net sediment transport to north should decrease.
- Construction of a temporary breakwater is likely to increase the reflected wave energy arriving at the beach north of the Port.

### **Submissions**

Key issues raised in submissions include:

- concern about the level of detail provided in the PER regarding coastal impacts;
- concern about the proponent's undertaking to carry out detailed modelling after the approvals process;
- the view that the impacts of the proposal on coastal processes should be described in the context of the environmental values and objectives identified by the EPA in *Perth's Coastal Waters: Environmental Values and Objectives*;

- the opinion that JPPL’s commitment to “monitor beach profiles in the region and implement remedial works if required” does not address the possible coastal problems and that contingency measures should be fully examined for their impact on the rest of the coastline before implementation occurs;
- the view that the use of structures (e.g. groynes) to control erosion should not be permitted. A preference was expressed for a sand bypass method;
- what reassurances can be provided by JPPL that increased beach erosion north of the Port will not occur to the same extent as that occurring in other areas of Cockburn Sound; and
- questions as to whether the proposal will cause increased sedimentation within the existing Stirling and Calista Channels. Submissions consider JPPL’s construction environmental management programme should address measures required to minimise the impact of construction on the existing channels, including contingency measures should the channels be adversely affected.

### **Assessment**

The area considered for assessment of this factor is the coastal area along the eastern margin of Cockburn Sound.

The EPA’s environmental objectives for this factor are to maintain the stability of beaches and dunes and to maintain the integrity function and environmental values of any foreshore/dune areas.

An analysis of aerial photography suggests that the shoreline immediately north and south of James Point has remained relatively stable and that the existing jetties north of James Point appear to have had minimal impact on shoreline position (DAL 2001).

Although the shoreline near James Point appears to be relatively stable, the preliminary assessment of the impacts of the proposal on coastal processes indicates that the Stage 1 Port will interrupt current patterns of sediment transport (JPPL 2001a). The proposed Port structures, particularly the offshore breakwater, have the potential to cause reflected waves to reach the shoreline up to 1,700m north of the proposal (i.e. in the general vicinity of the Alcoa Jetty).

Coastal areas within 1,700 m north of the proposal have been developed for industry, including maritime infrastructure such as the Western Power cooling water structures and the Alcoa Jetty. The EPA notes that Challenger Beach, which is an important local recreational asset (DEP 1996, WAPC 1999, CSMC 2001), is located immediately north of the Alcoa Jetty. Therefore, it is important that both existing maritime infrastructure and recreational amenity of this Challenger Beach are protected from potential impacts of the proposal.

In response to issues raised regarding the first principles approach used to determine the impact of the proposal on coastal processes, the proponent advised that it is yet to undertake detailed modelling of wave reflection and refraction. The proponent indicated that this approach was taken because the land tenure and operational requirements are yet to be finalised and that these factors could influence the final design parameters of the proposal.

JPPL has committed to undertake a detailed wave and sediment transport study to derive optimum Stage 1 Port configuration with respect to minimising impacts on coastal processes prior to the finalisation of the Construction EMP (commitment 1). Objectives of this work include:

- minimising wave focusing onto the shore and increasing energy dispersion offshore having regard for possible effects on the Western Power cooling water infrastructure;
- maximising marine water circulations in and through the proposed Port area; and
- preserving the recreational amenity of local beaches.

The work required by this commitment will be made available to the public on request and the final configuration will be presented to the EPA, Fremantle Ports, CSMC and Western Power for review prior to commencement of construction to confirm earlier predictions that potential impacts on coastal processes will be minimised and managed appropriately.

Submissions also identified the temporary causeway to be used during the construction of the offshore breakwater as a possible cause of coastal impacts. The proponent anticipates that the temporary causeway will be in place for a period of approximately three months, after which time it will be removed. In response to this issue, the proponent advised that detailed design phase of the offshore breakwater, which will rely on wave modelling results, will examine the issue of the causeway and likely impacts on coastal processes. The proponent has also committed to monitor potential impacts and implement management actions in relation to the proposed temporary causeway as part of a Dredge and Reclamation Management Plan (commitment 4).

In terms of coastal management during the operations phase, the proponent has committed to prepare and implement a Coastal Stability Management Plan (commitment 27 and 28) on advice of the CSMC and the relevant local authorities. The joint objectives of this Plan are to protect the recreational amenity of local beaches and to minimise and manage the impact of the Port on local coastal processes. The EPA expects that the proposed coastal monitoring program, including criteria, will be developed and agreed in consultation with the relevant parties to ensure that decisions in relation to management actions are made in the context of a clear and agreed framework.

With respect to concerns expressed about the use of structures to manage of coastal problems that may arise due to the proposal, the EPA concurs with the proponent that this option should only be considered as a last resort. Proposals for the use of built structures as coastal management tools in Cockburn Sound may need to be referred to the EPA for consideration.

In response to issues raised regarding the potential impacts of the proposal on Stirling and Calista Channels, the proponent suggested that the protected nature of Cockburn Sound means that siltation of channels within the Sound has not been a major problem in the past. JPPL does not envisage the need to undertake a significant program of maintenance dredging nor expect that its development will have any impact on the existing channels. This assumption has not been supported by technical information.

The proponent has also indicated that the Stirling and Calista Channels will remain the responsibility of the owners, Fremantle Ports, and that the Fremantle Ports charges for the use of channels to cover their maintenance. Notwithstanding, the EPA expects that the proponent's detailed design work on coastal processes should give attention to the potential effects of Stage 1 Port structures on existing shipping channels.

While it is beyond the ambit of the EPA to assess the operational requirements of shipping channels, the EPA considers that the contract between the Government and JPPL for the Stage 1 Port proposal should give attention to the establishment of respective responsibilities for maintenance of existing shipping infrastructure.

Any maintenance dredging proposal that is clearly beyond the scope of the Stage 1 Port proposal should be referred to the EPA for consideration.

### **Summary**

Having particular regard to the:

- proponent's commitment to undertake detailed wave and sediment transport study to derive optimum Stage 1 Port configuration with respect to minimising impacts on coastal processes and Western Power's cooling water infrastructure;
- the proponent's commitment to monitor and manage the effects of the temporary breakwater during construction;
- the proponent's commitment to have this detailed modelling reviewed by relevant agencies and the EPA; and
- the proponent's commitment to prepare and implement a Coastal Stability Management Plan which provides for monitoring and management of the potential impacts of the proposal on coastal processes,

it is the EPA's judgement that the proposal could be managed to meet the EPA's environmental objective for this factor provided that the commitments outlined above are satisfactorily undertaken by the proponent.

## **3.3 Odour**

### **Description**

The proponent proposes to undertake trade in livestock as part of the Stage 1 Port proposal. This trade has the potential to cause odour impacts.

The proponent suggests that its proposal is unlikely to increase the net export of livestock from the metropolitan area. Rather, the proposal aims to compete for the existing trade volume and shift it from Fremantle to the Stage 1 Port.

Information provided by JPPL suggests that, during the 2000/01 financial year:

- approximately 4.4 million sheep and 150,000 cattle were exported from Fremantle Port;
- there were 85 visits by large livestock vessels giving a total of 116 vessel days in Port with livestock on board;
- there were 60 visits by small vessels giving 39 vessels days in Port with livestock on board; and
- if the times when more than one vessel was in Port simultaneously are accounted for, the number of vessel days when one or more vessels was in Port with livestock on board was approximately 118.

In the PER, the proponent presented results of a semi-quantitative assessment of odour emissions and their potential impacts. Odour modelling undertaken as part of this assessment utilised odour information gathered during livestock export operations at Fremantle Inner harbour. The predicted odour contours shown in the PER were generated using an assumed odour emission rate per animal with livestock located on a vessel berthed at the port and at a proposed livestock holding facility within the proposed development area.

Livestock will not be housed at the proposed Stage 1 Port. The livestock holding facility referred to in the PER is subject to a separate assessment by the EPA. The impacts of that proposal have not been considered by the EPA in its assessment of the Stage 1 Port proposal.

The EPA's Guidance No. 47 *Assessment of Odour Impacts from New Proposals* (EPA 2002a) notes that in the case of poultry farms, it will be assumed that the odour concentration of 7 Odour Units (OU) corresponds to a 'distinct' odour intensity rating. The proponent has assumed a similar relationship between odour concentration and odour intensity rating for livestock.

### **Submissions**

Submissions in relation to the proponent's assessment of odour impacts focused on:

- concern that the semi-quantitative odour modelling undertaken by the proponent was inadequate to assess the potential impacts of the Port proposal;
- the effect of prevailing winds on the extent of potential odour impacts on residents;
- the reliability of the assessment approach used by the proponent, which considered both a livestock ship and a holding facility, if only the Port proposal proceeds;
- the relevance of an odour assessment using information from Fremantle;
- concern that the proponent's modelling was underpinned by too many assumptions to gain any certainty about impacts on residents;
- concern that the proponent has highlighted several factors/limitations which could cause significant variability in predict odour impacts;
- the view that further work was required by the proponent to be consistent with the EPA's draft Guidance for the Assessment of Odours;

- the expectation and concern that ‘plant upset’ and shipping delays will result in offensive odours at a frequency and duration that would be unacceptable to both workers and residents;
- the opinion that the odour modelling study should have provided significantly more data on odour complaints received due to the operations at Fremantle;
- concern that odour modelling study has not considered odour impacts from cattle or other animals;
- the view that a confidence interval should be placed around the 7 OU contour to define some level of statistical certainty with respect to model outputs;
- the need to clarify how odour detection distance and meteorological data were used to back calculate an odour emission rate from the sheep ship of between 1 and 2 OU/sheep/sec. Details of the calculation used to estimate meteorological conditions (stability class in particular) should be provided; and
- the limited consideration of cumulative odour impacts and how the odour from the proposed Port interacts with the existing odour sources.

Issues regarding potential impacts on residential and other ‘odour-sensitive’ land uses included:

- considerable community concern about the impact of the proposal on surrounding residents. Submissions consider that the odour emitted from the export of livestock from the Stage 1 Port would be intolerable/objectionable/unacceptable;
- the view that the proponent should provide a map showing the extent of the 5 OU and 3 OU contours, including at sea, so that the community could understand the broader implications of the proposal in relation to odour;
- the opinion that information in the PER on odours is incomplete as there is no information as to the likely odour levels that will be experienced in Rockingham;
- questions about how odours from the proposal may impact upon the recreational activities at Wells Park or Challenger Beach and whether the proposal will impact recreational amenity generally; and
- concern regarding the potential impacts of the proposal on people who reside in Naval Base, including the occupants of the Naval Base Hotel.

Submissions raising issues about potential odour impacts on surrounding industrial/commercial land uses focused on:

- potential impacts at adjacent industrial facilities may be greater than that suggested by the modelling;
- objections to JPPL’s opinion that workers in the KIA would be desensitised to the smell from the operation of the proposal and the opinion that workers in the KIA should not be treated differently to other people;
- concern that it will be impossible to ensure there is no impact on the KIA and that any increase in odour emissions, particularly a new ‘rural’ odour, will be to the detriment of existing industries and businesses;
- the view that levels of 3 OU/m<sup>3</sup> would be an appropriate criteria for adjacent industrial premises;



- the lack of discussion in the PER on acceptable odour criterion in the work place;
- the odours from the proposed development are typical of an industrial area and therefore are likely to be especially noticeable resulting in complaints;
- response procedures that would be implemented in managing the complaints from surrounding industrial premises, given that offensive odour from the proposal is likely to result in a window of complaints lasting several days; and
- issues relating to compliance with section 49 of the *Environmental Protection Act* which relates to unreasonable emissions of pollution, including odour.

Issues/questions raised in submissions about the proponent's proposed odour management included:

- design changes that could be made to the structure of the loading facilities to reduce the impacts of odour;
- whether the proponent has considered the available odour control technologies and 'best-practice' management methods of odour control;
- concern that no amelioration measures have been identified to minimise odour impacts from the proposal;
- the view that the proponent should commit or be required to undertake continuous monitoring, verification, reporting and follow up action in relation to odour;
- the view that the proponent should commit to maintaining a detailed and comprehensive complaints register; and
- how the 7 OU odour criteria proposed in the PER can be adopted and enforced if the proposal is approved for implementation.

Submissions raising issues regarding odour impacts from transport focused on:

- how the proponent proposes to manage the potential impacts of livestock transport during Port operation on the amenity of residents who live along the transport routes; and
- the lack of consideration given in the PER to the possible odour impacts on future residential population along Anketell Road, particularly potential impacts on a number of Special Rural properties.

### **Assessment**

The area considered for assessment of this factor is the KIA and surrounding residential areas.

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

- protect residential areas from unreasonable odour levels in accord with the EPA's Guidance No 47 - *Assessment of Odour Impacts from New Proposals*; and
- protect people in the KIA from unreasonable odour.

In assessing the potential impacts of odour emissions from the proposal, the EPA has drawn on the results of revised odour modelling provided by JPPL (ERS 2002), the EPA's Guidance No. 47 *Assessment of Odour Impacts from New Proposals* (EPA 2002a), expertise from within the Department of Environmental Protection (DEP) and an independent review of the proponent's odour assessment and management by Consulting Environmental Engineers (CEE).

The EPA recognises that odour emissions from livestock exporting operations, and their impacts on residents and other nearby premises, can be significant under certain operational and weather conditions. It is understood that, from time to time, complaints are received by the DEP and Fremantle Ports about odour levels in areas surrounding the Fremantle Inner Harbour due to odour emitted from livestock export operations at the port.

From an operational perspective, the risk of odour impacts is thought to increase when partially laden livestock ships carrying animals loaded in the eastern states visit port to 'top-up' and when other ships experience operational problems which cause delays to their departure.

The proponent has advised that the time required to load a large livestock vessel is generally between 30 and 40 hours. For small vessels, the time between the commencement of loading and the vessel setting sail is commonly in the order of 12 hours. It is noted that livestock vessels could be in port for approximately one third of the year.

#### *Odour assessment*

Recognising the considerable level of public concern regarding the odour assessment presented in the PER, the proponent undertook further odour modelling. This additional odour modelling utilised additional data including:

- the schedule of livestock shipping operations for the proposed Stage 1 Port, including the numbers of livestock loaded per ship during 2000/01;
- olfactometry measurements on a ship loaded at Fremantle Inner Harbour; and
- an updated version of the Ausplume model.

The 'Livestock Export Odour Modelling' report prepared by Environmental Risk Consultants (ERS 2002) differs from that presented in the PER, particularly in that modelling used different odour level inputs and considered the proposed livestock export activities only. The report is included in full on the compact disk attached to this report.

The DEP have pointed out that there are a number of limitations to the proponent's work. It has also be noted that a number of factors can influence the odour emission rate from livestock export vessels. The EPA notes that some of the factors that have the potential to create uncertainty with respect to predictions of odour impacts include loading rates, type of animals, numbers of animals on board, the time animals have been on board, whether animals are wet or dry and meteorological conditions.

In view of the potential influence of these factors on predicability of odour impacts, the EPA notes that a quantitative odour assessment using dynamic olfactometry, while being more rigorous and in accord with the EPA's Guidance No. 47, may not necessarily have been able to account for the full range of variability in odour emission rates from livestock vessels.

In response to the considerable concern about potential odour impacts, the EPA engaged CEE to provide a professional opinion of proponent's assessment of odour. The report by CEE is included as Appendix 5 of this report.

In general, the CEE concluded that the extent of the proponent's predicted 7 OU contour (which would represent the EPA's 'distinct' criteria for poultry odours set out in the EPA's Guidance No. 47) is probably reasonable. The CEE report also suggests that, although the proponent has not determined the relationship between odour concentration and the 'distinct' intensity level for sheep, the emission rate used is considered to provide a reasonable estimate.

The CEE report is also critical of the proponent's commitments with respect to odour management. The EPA notes that CEE also reported that the proponent is not likely to have taken full account of the possibility of greater impacts under some conditions.

Notwithstanding this, CEE concluded that the EPA could recommend conditional approval for the proposed Stage 1 Port on the basis that when the sea breeze is the prevailing wind with speed exceeding 1 m/s, the number of sheep should be limited, the number of ships should be limited and a best practice odour management plan is adopted.

In order to account for the possible influence of weather conditions on predicted odour dispersion, the proponent undertook a 'sensitivity' analysis of its revised modelling by running the odour model under a range of weather conditions (1995, 1996, 1997 meteorological data). The results of the 'sensitivity' analysis suggest that weather conditions did not greatly affect the aerial extent of the 7 OU odour contour, particularly in the direction of residential areas to the east of the proposed Port.

The EPA notes that JPPL has not modelled the two-part 'green light' criterion outlined in EPA Guidance No. 47. However, the proponent's 'sensitivity' analysis for modelling using olfactometry data from a livestock ship at Fremantle Inner Harbour indicates that the part B screening criterion (4 OU/m<sup>3</sup> 3 minute average, 99.9<sup>th</sup> percentile) presented in Guidance Statement No. 47 could be met at nearby odour-sensitive locations for the conditions modelled (Figure 3).

#### *Potential impacts on surrounding land uses*

In its Guidance Statement No. 47 (EPA 2002a), the EPA considered sensitive land uses to be 'residences, hospitals, hotels, caravan parks, schools aged care facilities, child care facilities, shopping centres, play grounds and recreational centres etc'.

The EPA Guidance Statement No. 47 states that if generic buffer distances set out in EPA draft Guidance No 3. (EPA 1997) are met and the proposal is designed for 'best practice' emission control, then no further assessment of odour is required.

There is no generic buffer distance for livestock export activities. However, the description of stockyards provided in EPA (1997) corresponds closely with the proposal export activities (i.e. holding of animals prior to slaughter, sale or shipment). The EPA (1997) recommends a buffer distance of 1000 m between stockyards and residential areas.

The Naval Base Hotel and the nearest residences in Naval Base, and on Anketell Road are greater than 1000 m from the proposed berth face where livestock export ships and loading activities are proposed to be located.

The EPA has not defined odour criteria that should be met in order to protect amenity within industrial areas. However, the EPA does not concur with the proponent's suggestion in the PER, that workers in the KIA would generally be less likely to be sensitive to occasional sheep odour.

The review of the proponent's odour assessment by CEE provided some guidance on possible odour criteria for the KIA. The suggested criterion would allow for considerably greater odour concentrations within the KIA than those recommended by the EPA for odour-sensitive locations (EPA 2002a).

After considering advice from the DEP on this issue, the EPA does not consider it appropriate to adopt the numerical odour criteria suggested by CEE at this time. This is primarily because an odour criterion for the whole KIA zone based on odour concentration alone does not recognise that levels of amenity within the zone may vary depending on land use.

Despite the EPA's reservations about adopting an odour criterion for the KIA at this time, it is noted that the proponent's most recent qualitative modelling (Figure 3) indicates that the 7 OU/m<sup>3</sup> 3 minute average, 99.9<sup>th</sup> percentile contour (considered to be a distinct odour level for poultry odours) is confined within the proposed Stage 1 Port boundary for the conditions modelled.

The EPA notes that there are limitations to the modelling work undertaken by the proponent, and based on the capacity of the proposed Port for livestock export being similar to that currently occurring in Fremantle, it is likely that the proposed James Point facility will be the source of odours which impact at times on surrounding areas in the KIA

However, the EPA notes that there is a considerable air quality buffer between 'odour-sensitive' residential areas and the KIA. With respect to the maintenance of this buffer, the Government has signalled its intent to adopt a modified version of Option 4 (see WAPC 2000) identified in the FRIARS public comment document (WAPC 1999) though the implementation of the *Hope Valley-Wattleup Redevelopment Act 2000* (HVWR Act) and a commitment to review the Kwinana Air Quality Buffer. In its submission on FRIARS, the EPA considered that Option 4 would provide an adequate buffer between the existing/proposed heavy industrial area and surrounding sensitive land uses so that the EPA's environmental objectives and criteria in relation to air quality, odour, noise and risk can be met provided that additional planning controls are implemented to manage remaining rural/residential areas within the buffer (EPA 1999).

Being a new facility, and considering the views provided in the CEE report and the advice of the DEP regarding the need for the highest standard of management to minimise potential impacts, the EPA is of the view that all opportunities to incorporate 'best practice' into the design and operation of the proposal should be taken from the outset.

Application of auditable conditions to the 'best practice' aspects of the Port design and operation are seen by the EPA as a reasonable way to manage odour in this industrial location.

The EPA has recommended that the proponent should prepare and implement an Odour Management Plan during the detailed design phase of the proposal. The Odour Management Plan is recommended to have the dual objectives:

- to ensure that the amenity, health, welfare and comfort of residents and workers in the industrial area are protected from unreasonable odour levels; and
- to detail 'best practice' design and operation for the facility, based on national and international benchmarking (recommended condition 10-1 and 10-2).

On the basis of the advice provided by CEE and the DEP and noting experience of odour problems related to the livestock trade at Fremantle, the EPA considers that a key element of 'best practice' should include procedures to minimise the time vessels are in Port and limit the numbers of partially laden vessels which use the proposed facilities at Kwinana. The EPA has also provided other advice regarding visits by partially loaded livestock vessels in Section 5. These matters are addressed in the provisions of the Odour Management Plan recommended in condition 10-1.

The proponent has also advised that the maximum number of sheep handled at the Port will be limited to two vessels loading concurrently. The proponent suggests that the proposed Stage 1 Port would generally handle a maximum of approximately 150,000 head of sheep at one time, with up to 200,000 head if the two largest-capacity vessels are in Port at the same time.

In addition, to address the limitations in knowledge about the variability of odour emissions from livestock ships, and to assist the proponent in determining where odour management should be focused and implemented, a condition requiring additional quantitative odour assessment work during operation has also been recommended (condition 10-3).

The information collected by the proponent in fulfilling the requirements of these conditions will assist in the management of odour from the proposal and may assist the EPA in adopting a position with respect to odour in an industrial setting.

*Potential impacts associated the transport of livestock to the Port*

The EPA notes that no quantitative assessment of odour impacts from the transport of livestock was provided by the proponent.

If the proposal is approved for implementation, the proponent has advised livestock transport routes will change from current practice to the extent that trucks carrying livestock will be removed from Leach Highway, Stirling Street, Tydeman Road, and the majority of livestock will be transported to the proposed Stage 1 Port from the Kwinana Freeway via Anketell Road. Other changes to transport routes include the transfer of cattle and sheep to the Port via Tonkin Highway and Albany Highway to Thomas Road and Anketell Road. The EPA understands that these roads have been designated by Main Roads WA for use by heavy vehicles.

The EPA considers the key impact arising from the change to transport routes brought about by the proposal will be along Anketell Road between the Kwinana Freeway and Rockingham Road. At present, this activity does not occur along this stretch of Road.

The proponent has advised that there are three residences on Anketell Road between the Kwinana Freeway and Rockingham Road, which could be impacted by the transport of livestock to the proposed Port.

The Town of Kwinana has advised that the predominant zoning along the above mentioned stretch of Anketell Road is 'Rural B' with some 'Rural A' (standard rural) between the Freeway and Alcoa's operation and between Alcoa's operation and Rockingham Road. The 'Rural B' zone is essentially the Alcoa tailing ponds zoning.

The EPA notes that the zoning table for the Town of Kwinana Town Planning Scheme indicates that rural activities, including general rural industries and stables, and, in the case of 'Rural A', intensive agriculture and piggery developments could be considered by Council and potentially granted planning approval. Accordingly, these rural-type zonings have the potential to support land-uses which may result in the emission of agricultural/rural type odours similar to those associated with the proposed livestock transport operations.

Areas north and south of Anketell Road between the Freeway and Rockingham Road are zoned rural under the Metropolitan Region Scheme, with the exception of the Spectacles, which is reserved as Parks and Recreation (WAPC 2000).

The Port proposal also includes a truck wash-down facility, which if used appropriately, is likely to reduce some odour associated with trucking operations by removing animal wastes from trucks. The EPA has recommended that matters relating to the design and management of zero-discharge vehicle wash-down facilities, as well as the treatment and disposal of wastes from vehicle wash-down, be included in a condition relating to odour management (condition 10).

The management of livestock transport operations may not be within the direct control of the proponent because animals may be delivered to the Port by transport companies contracted to parties other than the proponent. Accordingly, and acknowledging the need to ensure there is a mechanism in place to provide feedback and incentives to transport companies to apply 'best practice' management to livestock transport activities associated with Port operations, the proponent has committed to convene a Livestock Export Environmental Management Consultative Committee (commitments 45 and 46). The Committee would have membership chosen from relevant local Government authorities, Government agencies, community

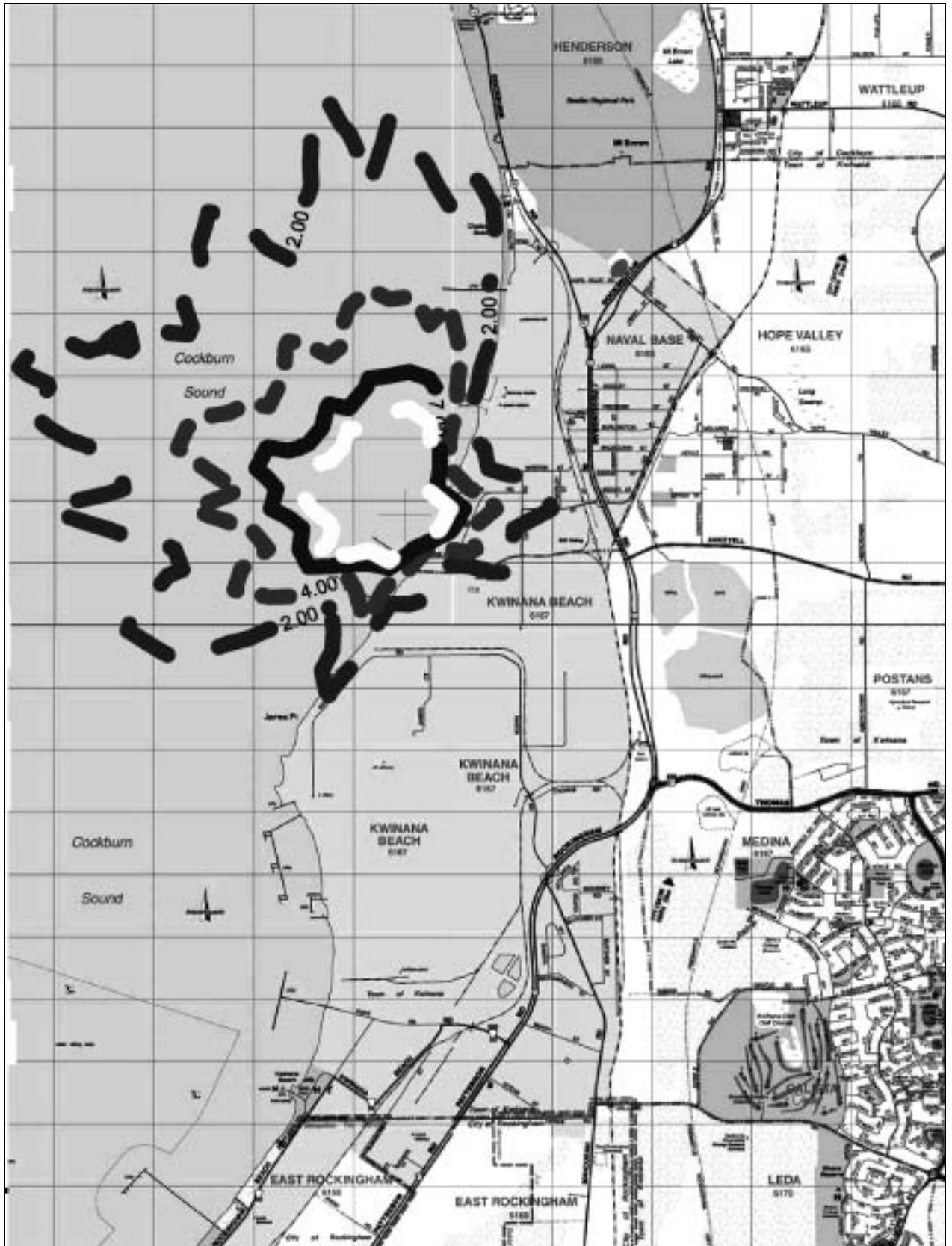
groups, Kwinana Industry and the members from the livestock export industry. A key objective of the Committee would be to provide advice/recommendations to the proponent, which it shall have regard for in the continual improvement of the Odour Management Plan required by recommended condition 10.

### **Summary**

Having particular regard to the:

- results of the proponent's revised modelling using olfactometry data collected from a livestock vessel at Fremantle Inner Harbour which indicated that the 4 OU/m<sup>3</sup> minute, 99.9<sup>th</sup> percentile part of the EPA's two part 'green light' criterion could be met;
- separation distances between residential areas and the proposed Stage 1 Port which are greater than 1000 m which has been previously identified as a generic buffer distance for livestock holding yards;
- established air quality buffer surrounding the KIA;
- advice from the DEP which indicates that odour impacts from livestock export operations could be managed in the proposed location using 'best practice' management;
- 'rural' type zoning of land adjacent to Anketell Road where the proposal will result in an increase in livestock transport activities;
- proponent's commitment to convene a Livestock Environmental Management Consultative Committee to provide feed back from the community and nearby industry to the proponent and the broader livestock export industry about odour management; and
- measures proposed by the proponent to manage odour-generating aspects of the proposal (eg truck wash-down facilities, management and removal of wastes),

it is the EPA's view that the proposal could be managed to meet the EPA's environmental objective for this factor provided that recommended condition 10, which provides for the development of a 'best practice' Odour Management Plan and on-going odour measurement using dynamic olfactometry, is satisfactorily implemented by the proponent.



**Figure 3:** Results of revised odour modelling using olfactometry data from Fremantle Ports.



## 3.4 Noise

### Description

Noise will be generated during the construction and operations phases of the proposal.

#### *Construction noise*

The PER stated that construction noise will be produced by pile driving, dredging and land-based mobile and stationary equipment (JPPL 2001a). The results of acoustic modelling shown in the PER indicate that construction activities would generally meet the assigned noise levels in surrounding residential areas. An exception to this would occur if pile driving was undertaken at night. Under these circumstances, construction noise would contribute significantly to an exceedance of the assigned noise levels at Hope Valley. The proponent noted that construction noise is not covered by the *Environmental Protection (Noise) Regulations 1997* (hereafter referred to as the Noise Regulations).

During the construction phase, noise will also be generated by heavy vehicles delivering construction materials to the proposed development site. In the PER, JPPL anticipated that construction would require approximately 72,000 truck movements over an 18 month period. Noise from construction traffic was not specifically addressed in the PER.

The route proposed in the PER for the delivery of breakwater material to the proposed Stage 1 Port development site is Postans Road, Abercrombie Road, Anketell Road, Patterson Road and Beard Street. The proponent stated that this route would be discussed and agreed with the Town of Kwinana and presented in the Construction Environmental Management Program (JPPL 2001a).

#### *Operations noise*

The PER notes that the highest operational noise levels are likely to be produced by livestock vessels that operate high volume ventilation systems to maintain airflow to protect the welfare of the stock on-board. Other sources of operational noise would include the shore-based stockfeed loading systems and mobile equipment.

To provide a basis for modelling, noise emissions from a range of livestock vessels that currently use Fremantle Port were measured by the proponent. The measured noise profiles were back-calculated to establish each vessel's acoustic characteristics and sound power level.

The proponent considered that its modelling of noise from livestock ships represented a 'worst case' scenario where the two noisiest livestock vessels were berthed at the proposed Stage 1 Port at the same time with their ventilation systems operating (JPPL 2001a).

The proponent's noise modelling predicted that operational noise emitted from the proposed Stage 1 Port:

- would be below the assigned levels at Medina at all times and at Hope Valley below the assigned levels for daytime and evening, but possibly exceeding for 0.2% of the night-time;
- may significantly contribute to noise levels at Medina 0.1% of the night-time and at Hope Valley 1% of the evening hours and 0.8% of the night-time; and
- if perceived as tonal at Hope Valley, would exceed the assigned levels 1.5% of the evening hours and 0.7% of the night time and would be a significant contributor to noise levels received 2.4% of the daytime, 2.2% of the evenings and 1.9% of the night time.

With respect to management of noise from livestock vessels, the proponent, recognising limitations to its authority to manage issues related to vessels, indicated that it would liaise with the operators of noisy vessels with the objective of mitigating potential noise impacts (JPPL 2001a).

The PER suggested that management of noise from on-site plant would include a review of products and the specification of maximum source noise levels. The proponent has undertaken to include noise level specifications on invitations to tender on equipment where practicable. The PER also noted that consideration would be given to methods to attenuate noise levels.

### **Submissions**

Submissions raising issues regarding noise from construction activities focused on:

- the limited attention given to the potential impact of the 72,000 truck movements likely to be associated with construction of the proposal;
- the view that noise from construction traffic should be addressed in accord with the preliminary draft EPA Guidance Statement No. 14 Road and Rail Transportation Noise;
- how the proponent will address the concerns of affected residences in relation to excessive noise from construction-related transport;
- the view that the proponent should describe the proposed piling works in greater detail and that that alternatives to drop hammer methods of piling should be investigated; and
- concern that using a higher value for noise from a drop-hammer pile driver, an estimated sound level of 50 dB(A)<sub>max</sub> in Hope Valley could result causing problems if not appropriately managed.

Submissions on noise from ongoing Port operations raised issues including:

- concern that a figure in the noise report accompanying the PER did not adequately present noise contours for comparison with the 65dB<sub>L<sub>A10</sub></sub> assigned level for industrial noise receivers;
- concern that the sound power levels of ships may well cause exceedances of assigned noise levels the north and south of the proposal that this matter needs to be addressed quantitatively and commitments identified for management;

- the view that, in light of the requirements under the Noise Regulations, the noise modelling should indicate the predicted noise levels at the boundary of adjacent industrial premises;
- the suggestion that the proponent should commit to noise management measures, including noise specifications for the feed blowers, air slide conveyors, sheep ship fans and other fixed or mobile plant;
- concern that PER did not consider the potential impacts of the proposed Stage 1 Port on existing residential premises in Naval Base;
- concern that there may be discrepancy between the acoustic analysis presented in a previous Works Approval application prepared by the proponent and the PER, particularly in relation to a vessel named 'Livestock Express';
- concern that there were no commitments in the PER to manage noise emissions from the sheep ships. Submitters considered such commitments are necessary to adequately manage noise from the proposal;
- the view that proponent's noise modelling may have underestimated potential impacts because it is not uncommon for there to be three livestock ships berthed concurrently, rather than the two ships considered in the PER;
- questions regarding the regulatory powers to prevent noise nuisance from ships berthing in the proposed Port if it is found to be a problem;
- given that there is a 10 dB(A) difference between the quietest and loudest ships, what confidence can the community have that a particularly noisy ship will not visit the proposed Stage 1 Port in future?;
- the view that noise from the animals, including cattle needs to be addressed;
- concerns regarding the potential cumulative impacts of the proposal were underestimated, considering that people in Wattleup are currently disturbed by the noise (and odour) from the Motorplex facility;
- the view that noise levels for Medina should be considered alongside current noise levels from industry and transport, general traffic and the Kwinana Motorplex facility; and
- the view that, considering the degree of recreation undertaken on and around the Sound and the present, elevated noise on the Sound is undesirable in the context of maintaining multiple use.

Submissions focusing on operational traffic noise:

- raised concerns about 120 livestock truck movements per day, most of which will use Anketell Road, passing within 100m of about 30 residences; and
- considered that the impacts of truck noise on residences and industrial premises during livestock delivery should be addressed in accord with EPA Guidance No. 14.

### **Assessment**

The area relevant to the assessment of this factor is the KIA and surrounding residential areas.

The EPA's objectives for noise are to meet statutory criteria and acceptable standards. Statutory criteria as prescribed in the Noise Regulations.

The EPA is of the view that the construction and operations phases of the proposed Stage 1 Port is likely to generate noise levels which have the potential to impact on surrounding noise sensitive areas and contribute to cumulative noise emissions from the KIA unless managed rigorously and effectively by the proponent.

*Construction noise*

During the course of the assessment, the proponent revised its estimates of truck movements required for construction. Transport of armour material and fill from an existing quarry at Postans Road, Kwinana will require approximately 56,000 truck movements over a period of approximately 9 months (c.f. 72,000 movements over 18 months in the PER). The proponent anticipates that this activity is likely to increase heavy vehicle movements from approximately 20% to 27% of total traffic movements along the route (estimated from 1998/99 Main Roads WA traffic counts for Hope Valley Road).

The EPA recognizes that the mobile and distributed nature of transport noise means that it is difficult to control through regulations and indeed, the Noise Regulations specifically exclude road and rail transportation noise. In order to address the matter of transport noise, the EPA is preparing guidance that includes noise criteria for transportation noise. The EPA’s Guidance No. 14 *Road and Rail Transport Noise* is currently in preliminary draft form, but has been used here as a framework for the consideration of transport noise associated with this proposal.

The preliminary draft Guidance No. 14 outlines a series of Noise Amenity Ratings (NAR) defined in terms of  $L_{Aeq}$ , or average noise level ranges. For noise-sensitive premises, the impact may be said to increase with rating number, from ‘acceptable’ at N0 to ‘substantial’ at N3 and above. For each NAR, the preliminary draft Guidance proposes acceptable increases in  $L_{Aeq}$  noise levels that should be achieved to minimise potential noise impacts. The draft NAR and acceptable noise level increases proposed in preliminary draft Guidance No. 14 are shown in Tables 2 and 3 respectively.

**Table 2: Noise Amenity Ratings, dB(A)**

Noise Amenity Rating (NAR)	$L_{Aeq}$ Day	$L_{Aeq}$ Night
N0	< 50	<40
N1	51-55	41-45
N2	56-60	46-50
N3	61-65	51-55
N4	66-70	56-60
N5	>70	>60

**Table 3: Acceptable Increase in  $L_{Aeq,T}$  noise level**

Rating before increase	Acceptable Increase in $L_{Aeq,T}$ noise level
N0	4 dB, or to top of N0, whichever is greater
N1	3
N2	1.5
N3	0.5
N4	0

In response to issues raised about the potential noise impacts associated with construction traffic, the proponent undertook an assessment of noise from construction traffic in accord with the EPA's preliminary draft Guidance No. 14. The proponent determined that the current NAR is likely to fall within the N3 range; 60.8 dB(A) rounded to 61 dB(A) (Table 2).

The anticipated increase in traffic due to construction was predicted to cause an increase in noise levels of 1 dB(A). This increase is greater than the draft acceptable increase for a 'N3' NAR, which is 0.5 dB(A), shown in Table 3. Based on the preliminary estimates by the proponent of traffic increases associated with construction, the potential noise impacts on the amenity of residents could be significant during the period of construction without appropriate management.

The EPA notes that the proponent has recognised this and has made commitments to prepare a Rock Armour and Fill Extraction and Transport Plan (commitment 6) and Noise Management Plan for construction (commitment 8), which includes assessments of noise at noise sensitive premises and management of construction traffic such that the requirements of preliminary draft Guidance No. 14 are met. The Noise Management Plan for construction also proposes to establish a complaints mechanism to record and respond to any noise complaints from neighbours or the public.

The proponent has also made undertakings to minimise noise from construction traffic by adhering to daytime transport of construction materials, using nuisance-mitigating measures such as speed limiting if necessary and sourcing material from alternative supplies if necessary.

Notwithstanding the proponent's commitments, the EPA is mindful that stronger measures may also be necessary to mitigate against potential impacts. For example, measures may include requiring the truck fleet to meet stringent noise emission requirements, using noise attenuation devices on trucks or implementing amelioration measures on residences along the proposed trucking route. The EPA understands that the DEP is likely to require the proponent to give detailed attention to these measures in fulfilling requirements of commitments 6 and 8.

In view of the marginal exceedance of the draft criteria, the limited period of construction and the management options available to minimise noise from trucks, the EPA considers that this objective is likely to be achievable with rigorous management of the construction transport activities.

With respect to issues raised about noise from pile driving, noise modelling was based on measurements of piling noise made during construction of the Narrows Bridge, which required a considerable piling program. Using this information, the PER indicated that noise levels from piling associated with the proposed Stage 1 Port would contribute significantly to noise in Hope valley during night time. Recognising this, and consistent with the requirements of Regulation 13 of the Noise Regulations, JPPL has committed to limit pile driving to day-time hours (prescribed as 7am to 7pm in the Noise Regulations) Monday to Saturday, and not on Sundays and public holidays. JPPL has indicated that construction work would only be carried out outside the above hours if there were "...compelling reasons for operating outside

these hours arise and prior approval has been obtained from the Department of Environmental Protection” (JPPL 2001b). The EPA notes that, although assigned noise levels in Regulations 7 and 8 of the Noise Regulations do not apply to construction noise, the noise emissions modelled in the PER indicate that construction noise could meet the assigned day time noise levels in surrounding residential areas.

As set out in Regulation 13 of the Noise Regulations, JPPL has committed to ensure that all reasonable and practicable measures are taken to control construction noise, in accordance with section 6 of AS 2436-1981. The proponent has not demonstrated to the EPA that it has considered alternative pile driving methods at this time. Accordingly, the EPA expects that the proponent would investigate all reasonable and practicable alternatives to drop hammer methods for piling during the development of its Noise Management Plan (commitment 8) so that the quietest available equipment is used for this project in accord with AS 2436-1981.

#### *Operations noise*

The major contributors to noise emissions from the Stage 1 Port during operations are likely to be on-site plant (eg feed loading equipment), livestock vessels and traffic associated with the transport of material to and from the proposed Stage 1 Port, in particular, the transport of livestock to the Port.

The EPA notes that a recent study undertaken by the Kwinana Industries Council (KIC) estimated that the current worst-case noise levels experienced in Hope Valley and Medina as a result of combined Kwinana industry noise are in the order of 49 dB(A) and 48 dB(A) respectively. Accordingly, as a result of cumulative noise emissions from existing industry in the KIA, the assigned noise levels are being exceeded in surrounding residential areas during some times of the day and under some conditions.

The Noise Regulations define a noise source to ‘significantly contribute’ to an exceedance of assigned levels if that noise emission exceeds a value that is 5 dB(A) below the assigned level at the point of reception. Therefore, given that the assigned noise levels are already being exceeded in surrounding residential areas, any additional noise from proposed activities at the Stage 1 Port must be 5 dB(A) less than the assigned noise level when received in surrounding residential areas.

The EPA notes that the acoustic assessment presented in the PER showed that noise from livestock vessels and on-site plant could cause exceedances of statutory noise criteria (including being a significant contributor to exceedances) in Hope Valley and Medina under some conditions and times of the day.

During the course of the assessment, the proponent determined that it could meet a noise level of 40 dB(A) in Hope Valley by limiting the maximum sound power level of each livestock vessel to 118 dB(A) when a maximum of two ships are in port simultaneously. By limiting the maximum sound power level of each of two ships to 118 dB(A), the proposal could also meet the night time noise requirements set out the Noise Regulations with respect to Media [30 dBL<sub>A10</sub>].

In response to concerns about JPPL's limited commitments to manage noise from livestock vessels, the proponent advised that as manager of the proposed Port it is able to establish noise emission criteria and impose operational restrictions as conditions of entry to the proposed Port. In view of this, the proponent committed to place conditions of entry to the Port on vessels to limit the single point power level for any vessel to 118 dB(A) for unrestricted operation and impose operating restrictions on vessels with noise emissions greater than 118 dB(A).

The EPA considers that this is an appropriate commitment to manage noise from ships. To this end, the proponent has provided information to show that if two vessels are in the Port concurrently and each vessel is operating with a sound power level no higher than 118 dB(A), noise from the proposed shipping activities could meet statutory criteria at the boundary and at the nearest areas zoned residential.

While these commitments are appropriate, the DEP has advised that it would be necessary for the proponent to gain detailed understanding of individual vessels' noise emission characteristics in order to give effect to its commitment. In view of this advice, a recommended condition requiring the proponent to prepare a Noise Assessment Report for each livestock vessel entering the Port for the first time is provided in Appendix 4 (condition 11-4). The Noise Assessment Reports shall include a sound power calculation for vessels and identify operational restrictions for vessels with sound power levels greater than 118 dB(A). The EPA also recommends that, a Noise Management Plan should be prepared to, among other things, set out procedures for the implementation of operational restrictions identified in the Noise Assessment Report. In addition, where there are no practicable and reasonable measures that can be taken by the proponent to reduce the sound power level of a ship below 118 dB(A), the EPA recommends that that vessel should not operate in the Stage 1 Port (condition 11-5).

The EPA has only considered the noise emissions and potential impacts of two livestock vessels in Port at any one time. Accordingly, and unless demonstrated that three vessels can be managed to meet the statutory criteria set out in the Noise Regulations, the proposal should only operate with two livestock vessels at berth at any one time. It is also noted that JPPL has undertaken to manage the numbers of livestock handled at the Stage 1 Port by limiting the number of livestock ships operating concurrently at the proposal to two.

With respect to concern about a possible discrepancy between noise information presented in a Works Approval application and the PER, the proponent advised that the vessel referred to in the Works Approval application as the 'Livestock Express' is more correctly named the 'Cormo Express' and that noise emissions from that vessel were included in the PER (JPPL 2001b). The proponent recognises that the sound power level determined for the 'Cormo Express' in October 2000 was lower than previously available. JPPL contends that the October 2000 measurements, which were included in the PER, are more thorough and the results are more accurate than the values used previously.

The proponent has determined that noise emissions from feed loading equipment should be less than 115 dB(A) in order to meet statutory criteria at Hope Valley, the location it considers the most critical with respect to noise. The proponent has made a commitment to limit the single point equivalent noise source power level for the fodder loading equipment to less than 115 dB(A). JPPL proposes to achieve this by using measures including:

- shielding of engines and motors;
- improved silencing of air compressor and delivery systems for blowers;
- maximized use of elevators, which were determined to be considerably quieter than blowers; and
- the implementation of design modifications to loading systems as necessary to achieve noise reduction targets.

The EPA notes that the JPPL's acoustic consultant anticipated further noise reductions to the environment of a least 10–15 dB(A) to meet the requirements of the *Occupational Safety and Health Regulations 1996*. The DEP considered that such reductions are reasonably practicable.

On advice of the DEP, the EPA has recommended that the proponent should prepare an Acoustic Test Report for fodder loading equipment (condition 11-6). The objective of the Acoustic Test Report is to demonstrate that fodder loading equipment used at the port does not exceed a maximum allowable sound power level of 115 dB(A), as determined by the proponent. Fodder loading equipment with a sound power level greater than the maximum allowable level should not be used at the Stage 1 Port (condition 11-7).

With satisfactory implementation of environmental conditions and commitments by the proponent it would generally be considered that the proposal could be managed to meet the first part of the EPA's objective for noise-meeting statutory criteria. However, the application of statutory criteria to this proposal is complicated by the proclamation of the *Hope Valley-Wattleup Redevelopment Act 2000* (HVWR Act). The HVWR Act has the effect of repealing planning schemes within the redevelopment area, affecting the application of the Noise Regulations to Hope Valley.

In order to address this problem, the EPA has recommended conditions that reinstate the intent of the Noise Regulations in the redevelopment area noise (condition 11-8 and 11-9). The conditions include provision for review when assigned noise levels in the redevelopment area are amended in the future.

The proponent has not specifically determined whether noise from the proposal will impact noise-sensitive premises in Naval Base. However, JPPL advised that its acoustic assessment (HSA, 2001) recognised the various land uses and premises radiating out from the proposal and determined that the most constraining noise sensitive premises were those on the south-western margin of Hope Valley, where the influencing factor is zero. Estimates by the DEP suggest that night time  $L_{A10}$  assigned noise levels for residential premises closest to the proposal on Bickley Street and Western Street, Naval Base are likely to be in the order of 50 dB(A). The proponent determined that the influencing factor for the Naval Base Hotel was 24 dB(A), resulting in a night time  $L_{A10}$  assigned noise level of 59 dB(A) at that location. The



noise level contours provided in the proponent's acoustic assessment (HSA 2001) indicate that assigned noise levels could be met during operations. With further controls on vessel operations committed to by the proponent since the release of the PER, it is the EPA's view that noise emissions from the Port could be managed to meet the assigned noise levels for the above residences in Naval Base located closest to the proposed Port.

The EPA recognises that noise levels in Naval Base from industrial activities are considerable. It is understood that residential developments currently located in this area, which is zoned General Industry under the Town of Kwinana Town Planning Scheme, are non-conforming uses. The *Towards Optimising Kwinana Final Report* (Dames and Moore 1996) and Option 4 in the draft FRIARS document (WAPC 1999) recommended the progressive removal of residences from Naval Base. While this is a desirable objective from an environmental management perspective, the EPA notes that the Hope Valley-Wattleup redevelopment project does not appear to provide for the progressive removal of residences from Naval Base. In view of the potential significant noise, air quality and risk issues which would be relevant to residents in Naval Base and noting the Government's intent to develop surrounding areas for general industry, the EPA recommends that appropriate planning controls should be implemented to address and avoid potential conflicts between incompatible land uses

While the proponent has shown that the operations of the proposal could be managed to meet the EPA's objective for noise by demonstrating that it can minimise noise emissions to meet night time levels required under the Noise Regulations, the EPA considers that all practicable and reasonable measures should be taken by the proponent at all times to minimise noise emissions. The Noise Management Plan recommended in condition 11-1 requires that the proponent identify these noise control measures, as well as show revised noise modelling contours based on operations since commencement and using the results of modelling, identify reference positions for the measurement and monitoring of noise levels.

The importance of taking all practicable and reasonable measures to reduce noise is further stressed in the context of cumulative noise impacts. The DEP has determined that even if the proposal is managed to meet the requirements of the Noise Regulations, the cumulative noise level at Hope Valley because of all Kwinana industry would increase by approximately 0.45 dB(A). In view of this broader noise management issue, the EPA has provided other advice in Section 5 of this report.

The EPA notes that JPPL's assessment of transport noise in accordance with preliminary draft Guidance No. 14 indicates that the increase in  $L_{Aeq}$  noise levels resulting from noise generated by trucking livestock to the proposed Port would be 0.9dB(A), over an existing  $L_{Aeq}$  level of 59.2 dB(A). This increase is considered acceptable under preliminary draft Guidance No. 14. It is noted that the assessment undertaken by the proponent's acoustic consultants states that livestock transport would operate between 7am and 10pm (i.e. the 'day time' hours used in preliminary draft Guidance No. 14). However, the proponent indicated that trucks would run between 6am and 10pm, that is, for one hour during 'night time'.

It is the EPA's view that the proponent's analysis of transport noise has only demonstrated compliance with acceptable standards for the 'day time' hours set out in preliminary draft Guidance No.14. Accordingly, trucking operations proposed for both construction and operation phases should only occur between the 'day time' hours of 7am to 10pm, unless compliance can be demonstrated by the proponent via the Noise Management Plan for construction (commitment 8), condition 11 and/or operations phase Traffic Management Plan (commitment 47).

Recognising that the transport of livestock to the Stage 1 Port would probably be carried out under contractual arrangements with parties other than the proponent, JPPL has made a commitment to convene a Livestock Export Environmental Management Consultative Committee with the intent of providing a feedback mechanism from the community to the proponent and the livestock export industry on environmental management issues, including noise (see commitments 45 and 46).

### **Summary**

Having particular regard to the:

- duration of noise associated with construction traffic (nine months) and the proponent's commitments to prepare a Noise Management Plan and a Rock Armour and Fill Extraction and Transport Management Plan to control noise from transport operations and other construction activities;
- the commitments by JPPL to undertake construction activities during day-time hours;
- JPPL's commitment to manage noise from livestock vessels by imposing conditions of entry to the proposed Port on noisy ships; and
- JPPL's commitment to convene a Livestock Export Environmental Management Consultative Committee to provide a feedback mechanism from the community to the livestock export industry on environmental management issues,

it is the EPA's view that the proposal could be managed to meet the EPA's environmental objective for this factor provided that the recommended condition 11, which provides for a Noise Management Plan and detailed noise studies of livestock vessels and other equipment to give effect to the proponent's commitments, is satisfactorily undertaken by the proponent.

## **3.5 Marine water and sediment quality**

### **Description**

The Stage 1 Port proposal will impact marine water and sediment quality on the eastern margin of Cockburn Sound north of James Point. Impacts will occur as a result of construction and operation of the proposal.

During the construction phase, the key activities impacting water quality will be reclamation of the berth area, construction of the offshore breakwater and dredging (JPPL 2001a).

The PER notes that reclamation of the berth area and construction of the offshore breakwater will generate the following impacts:

- highly visible turbidity plumes due to tipping of rock armour and fill;
- dust from tipping also settles on water surface causing visible 'stain';
- potential for increased turbidity causing stress on adjacent marine flora;
- potential for additional release of nutrients to the water column; and
- increased residence time of waters within the Stage 1 Port and immediately north while a temporary causeway is in place for construction of the offshore breakwater. The temporary causeway will be constructed to reach the northern end of the offshore breakwater and then removed on completion to allow the flow of water through the Stage 1 Port area (JPPL 2001a).

The Stage 1 Port will involve dredging of approximately 1.27 million m<sup>3</sup> of marine sediment. The PER indicated that the dredge is likely to be a 'cutter-suction' type dredge, which tends to produce less turbidity than other types of dredge as dredged material is pumped directly from the seabed to the reclamation site.

The issues considered by the proponent to be associated with dredging include:

- potential for increased turbidity causing stress on adjacent marine flora due to reduced light availability;
- settling of re-suspended sediment on adjacent habitat containing marine flora;
- release of nutrients to the water column;
- release of contaminants to the water column; and
- surface water runoff and potential for spills on the wharf construction site (JPPL 2001a).

The PER suggests that, during the operations phase, the following impacts may occur:

- increased residence times within the Port region may result in increased nutrient concentrations and corresponding increases in phytoplankton production;
- an increase in deposition of organic material may result from: increased residence times, calmer waters and increase in production of phytoplankton;
- increased organic build-up in the sediments may increase sediment nutrient release in the Port area and productivity in the water column;
- deepening of the waters may decrease the frequency of vertical mixing of the water column, potentially resulting in reduced dissolved oxygen concentrations near the sediment and promoting ammonium fluxes from the sediments if oxygen levels become low enough; and
- shipping and loading activity will increase the potential for contamination of Port waters.

The proponent used a combination of modelling and existing knowledge about the ecology of Cockburn Sound to make predictions about the potential impacts of the proposal on marine water and sediment quality. The hydrodynamic modelling presented in the PER considered reclamation areas 1 and 2A (JPPL 2001a).

## Submissions

Submissions on the issue of water quality modelling focused on:

- the uncertainty inherent in environmental modelling and how the precautionary principle could be applied to the project to avoid and mitigate the proposal's impacts on Cockburn Sound's hydrology;
- whether the proponent has verified its results against hydrodynamic modelling for similar Ports;
- discrepancies between annual nitrogen loads and summer chlorophyll *a* concentrations shown in the PER and in The State of Cockburn Sound report (DAL 2001), and whether data presented in the PER were used to predict water quality in the proposed Port;
- the environmental impacts of increased nutrients in the marine water column and longer residence times as a result of construction, dredging and shipping movements, which will result in more nutrients in the water column;
- the potential to impact of the proposal on algal populations in Cockburn Sound which, in turn, could impact mussel farms if blooms are toxic; and
- concern about statements made in the PER regarding flushing times for marine waters in the proposed Port and whether water quality problems can be expected as a result of the 5 to 6 day flushing time.

Comments in submissions about dredging and construction focused on:

- questions about the water quality criteria (eg turbidity, suspended sediment concentration, and size and orientation of plumes) that should be used to monitor the impact of construction activities on the marine environment;
- the lack of an assessment of water quality if the offshore breakwater is not constructed;
- the need to consider the potential environmental impacts of the temporary causeway which would be required during breakwater construction;
- the impacts of dredging on water quality if it were undertaken in summer as opposed to during winter;
- the need to understand anticipated dispersal patterns of TBT and the expected concentrations of this contaminant in water during dredging;
- how sediments plumes generated by dredging and end-tipping will be managed and monitored;
- concern that previous experience in Cockburn Sound indicates that turbidity plumes may have a significant negative impact on the ecology of adjacent areas such as seagrass meadows; and
- the contingency measures proposed by the proponent to prevent excessive suspended silt/sand adversely impacting the mussel farms at Kwinana Grain Terminal and Southern Flats.

Issues raised in submissions regarding potential impacts of the operations phase on marine water and sediment quality included:

- the view that the proponent should be required to commit to a detailed water quality contingency plan which would require remedial action where monitoring shows that water quality deteriorates below acceptable standards because of Port related activities;
- concern that the proposal will result in an increased amount of stormwater run-off into Cockburn Sound and that this could affect species of algae such as *Dinophysis acuminata* and *Gymnodium breve*;
- questions about the contingency measures that the proponent would employ to mitigate the impacts of phytoplankton blooms that may occur following Port construction;
- whether nutrient contributions from groundwater and point sources, south of the proposal were considered within the PER's water quality impact predictions;
- concern that, noting the present water quality adjacent to the proposal in Cockburn Sound is not satisfactory in terms of phytoplankton levels, this proposal would make it incrementally harder to achieve the environmental values and objectives for water quality detailed in Perth's Coastal Waters: Environmental Values and Objectives (EPA 2000);
- concern that the Port area will not be managed to meet primary contact recreational criteria (EQO 3) as this does not meet the expectations expressed by the community and identified by the EPA in Perth's Coastal Waters Environmental Values and Objectives;
- concern about the contamination of Cockburn Sound due to the cleaning of livestock vessels;
- questions about to what extent the proposal will impact on the processes of nitrogen recycling from sediments;
- the level of information provided by the proponent in relation to the expected frequency of conditions which result in reduced vertical mixing of water within the Port basin and shipping channels; and
- the need to assess the potential impacts of turbidity generated by shipping movements.

Submissions regarding potential impacts of shipping focused on:

- concerns about the environmental impacts of substances such as tributyltin (TBT), marine pest incursions and oil spills in view of the predicted increase in ship visits to Cockburn Sound;
- concern that contamination from TBT is beyond the capacity of the proponent to control; and
- the view the ballast water on ships entering the Sound must be monitored to ensure that contamination of the Sound with introduced species does not occur. This should include a publicly available monitoring program. Submissions also suggest that the program should identify any emergency response procedures that will be necessary should some form of pest, viral or any other contaminants be identified.

## Assessment

The area considered for the assessment of this factor is the marine waters and sediments of Cockburn Sound, including the waters and sediments within the proposed harbour.

The EPA's objectives for this factor are to protect the Environmental Values (EVs) and achieve the Environmental Quality Objectives (EQOs) set out in the EPA document *Perth's Coastal Waters: Environmental Values and Objectives* (EPA 2000), and to meet the requirements of water quality guidelines provided in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC and ARMCANZ 2000).

While the EVs, EQOs and Environmental Quality Criteria (EQC) for Cockburn Sound are not in a legal policy framework at this time, the narrative EQOs and numerical EQC set out in the draft Cockburn Sound EPP (EPA 2001a) and *Draft Environmental Quality Criteria Reference Document* (EPA 2001b) represent the current position of the EPA in relation to the maintenance of environmental quality of Cockburn Sound waters. The EPA recognises that the consultation processes associated with the further development and finalisation of the Cockburn Sound EPP may cause some changes to be made to the draft documents and it has noted this in the recommended conditions in Appendix 4.

The EVs, EQOs and EQC set out in draft Cockburn Sound EPP and EPA (2001b) are considered to provide appropriate objective guidance for the assessment of this proposal.

### *Assessment of water quality*

The proponent sought peer review of its hydrodynamic modelling by reputable Australian modellers. The EPA is using the same model as part of the Cockburn Sound EPP development. In particular, the model has assisted in generating EQC and the areas of Cockburn Sound for their application.

In view of the peer review undertaken by the proponent and the EPA's experience using the same model, the EPA considers that that the overall approach to hydrodynamic modelling taken by the proponent is acceptable.

The EPA notes that the proponent's assessment of potential ecological impacts was based on first principles using existing information from the Sound. While the EPA recognises that predictive modelling, by its nature, has inherent errors, it is mindful that the predictions made by the proponent were based on a considerable amount of data collected in Cockburn Sound with results presenting a range of possible ecological outcomes.

In a broad sense, the potential impacts of the proposal on water quality, which were listed in the PER, are relevant to marine infrastructure developments that alter flushing characteristics and water depths. The EPA has considered the potential impacts of the Stage 1 Port proposal noting that the proponent has predicted a range of ecological outcomes in relation to water quality.

The EPA notes that the relationship between summer nitrogen loads and summer chlorophyll *a* concentrations presented in the State of Cockburn Sound Report (DAL 2001) differs from that presented in the PER. However, the proponent has advised that data underlying the figure shown in the PER were not used as the basis for predicting water quality in the Port. The water quality in the Port was predicted using data collected in the region of the Port and on the basis of estimated nitrogen loads within the Port area.

#### *Dredging and construction impacts*

Dredging, land reclamation and breakwater construction will cause turbidity plumes consisting mainly of suspended sediments. The EPA considers that the key environmental attributes requiring protection from the effects of turbidity are seagrass and aesthetic values, though maintenance of seafood quality and aquaculture production values are also recognised.

Turbidity plumes caused by dredging and dumping of breakwater/land reclamation materials reduce the amount of light that reaches the seafloor. Benthic primary producers, such as seagrass and algae, convert sunlight to energy by photosynthesis. Therefore, a reduction in the amount of light at the seafloor affects the ability of benthic primary producers to carry out photosynthesis, thus affecting production, growth and potentially survival.

The settling of sediments that become suspended in the water column due to dredging and dumping can also result in reduced photosynthetic capacity in primary producers and smothering of non-mobile organisms that live on the seafloor.

The EPA notes that the health of seagrass near areas to be dredged has declined over the period 1998-2000. Recent surveys indicate that seagrasses near the proposed development site continue to show signs of stress (Lavery and Westera 2002). Data presented in recent seagrass surveys indicates that it may be unlikely that the draft Environmental Quality Standard (EQS, EPA 2001b) adjacent to the proposal would be currently met. Where EQS are not met, there is significant risk that the relevant EQO may not be being achieved. This requires a subsequent precautionary management response restore to environmental quality such that the EQO can be achieved.

In this instance, rigorous management of turbidity will be required to ensure the ecological value of seagrass is protected from the effects of construction activities.

It is noted that the draft Environmental Management Plan for Cockburn Sound (CSMC 2001) suggests that dredging and reclamation activities must meet the EQC for ecosystem integrity. However, the draft EQC for Cockburn Sound have not been developed to monitor transient impacts such as those associated with dredging and reclamation. Rather, the draft EQC presented in EPA (2001b) are intended for monitoring of ambient environmental quality in Cockburn Sound.

In order to deliver the rigorous management required to protect seagrass, the EPA has recommended that monitoring of metabolic light requirements and seagrass health be conducted against 'alert' and 'action' criteria developed as part of a Dredging and Reclamation Management Plan (condition 7). Light requirements for seagrass

photosynthesis have been previously determined by Masini and Manning (1994) and work has recently been undertaken on seagrass health during the dredging operations for the Jervoise Bay Southern Harbour project. This information should assist the proponent in fulfilling the requirements of condition 7. This approach to management of dredging is broadly in accord with that recommended by the EPA for the Geraldton Port expansion project (EPA 2002b).

The EPA notes that the proponent suggested in the PER that management measures to be considered if turbidity criteria were exceeded could include deployment of silt curtains, reassessment of dredge operating procedures and reassessment of dredging plant. The EPA has recommended that temporary cessation of dredging would also need be considered if relevant turbidity and light requirement criteria are exceeded. The EPA expects that these and other adaptive management options will be considered and implemented as necessary by the proponent in the Dredging and Reclamation Management Plan required by condition 7.

Although the dredging method has not be finalised, it would be the EPA's preference that, if the proposal proceeds, dredging be undertaken using a suction cutter type dredge as this dredging method tends to produce less turbidity than other methods such as trailer hopper dredges.

In terms of issues raised regarding potential re-suspension of sediments and potential release of nutrients and contaminants, the EPA notes that the limited sediment sampling undertaken in the vicinity of the proposal suggests that, overall, sediments to be dredged are likely to meet criteria set out in Australian and New Zealand Environment and Conservation Council (ANZECC) document Interim Ocean Disposal Guidelines (ANZECC 1998). Notwithstanding, and complimentary to an undertaking by the proponent, the EPA has recommended that additional sediment sampling be undertaken in the areas proposed to be dredged as part of the Dredging and Reclamation Management Plan recommended in condition 7.

In view of the relatively low levels of contaminants in the sediments sampled by the proponent and noting the proponent's undertaking to carry out additional sampling and management of sediments to be dredged (given effect through condition 7), the EPA considers that concerns regarding potential impacts of the proposal on aquaculture operations in Cockburn Sound could be managed as part of the Dredging and Reclamation Management Plan required by condition 7. Accordingly, the EPA has recommended that its objectives for the maintenance of aquatic life safe for humans consumption (EPA 2000) and maintenance of aquaculture production (EPA 2001b) should be included in the Dredging and Reclamation Management Plan. Achieving these objectives should be determined by monitoring relevant parameters and comparing measured data against relevant seafood quality criteria set out in the Draft Environmental Quality Criteria Reference Document (EPA 2001b) with advice sought from the Department of Health, Fisheries and Department of Conservation and Land Management.

With respect to concerns about the potential for algal blooms caused by dredging, the EPA notes that algal cysts may be suspended in greater numbers by dredging. The risk of algal blooms from these cysts is a function of a number of factors including temperature and the availability of nutrients. Monitoring of nutrient levels within the



dredge plume during the construction of the Jervoise Bay Southern Harbour project indicated that the levels of bioavailable nutrients (required for algal growth) were similar within the plume and at control locations (DAL 2002). Based on experience gained during the dredging of the Jervoise Bay Southern Harbour project, and provided the requirements of condition 7-1 are satisfactorily implemented by the proponent, the EPA considers that the risk of significant environmental impacts associated with algal blooms triggered by dredging could be managed.

The proponent suggested that the causeway required for breakwater construction would be in place for approximately 3 months (JPPL 2001b). The EPA notes that the proponent has not undertaken a quantitative assessment of the effects of the causeway, but the detailed design phase of the offshore breakwater, which will rely on wave modelling results, will examine the issue of the causeway and likely impacts on coastal processes and Port flushing (commitment 1). The proponent's commitment in relation to dredging and reclamation management (commitment 4) requires that potential impacts of the temporary causeway be monitored and managed by JPPL to ensure that the causeway does not cause adverse impacts on coastal area and construction does not adversely impact on the operations of any adjacent industries or activities.

#### *Operations phase impacts*

The results of ongoing monitoring in Cockburn Sound suggest water quality near James Point is relatively poor in comparison with other parts of the Sound. By way of example, the draft Environmental Quality Guideline (EQG) for chlorophyll *a* in water (EPA 2001a) at a long-term water quality monitoring station nearest to the proposal is currently not met.

As the predominant current direction in the vicinity of the proposal is to the north, the proponent recognised that relatively poor quality waters south of the proposed development site are likely to be source waters for the inner harbour (JPPL 2001a, 2001b). The EPA notes that the proposed Stage 1 Port has been designed with a large opening to the south and a narrow opening to the north, causing a slight throttling effect on exiting waters. The modelling presented in the PER suggests that this design, if implemented effectively, could be flushed relatively efficiently, minimising the risks of water quality problems during operation of the proposal.

The EPA notes that JPPL's hydrodynamic modelling indicated that, under Autumn conditions (when residency times are generally longest due to calm wind conditions), the greatest effect of the proposed structures is on the flushing of bottom waters. The modelling predicted little effect of the proposal on the flushing of surface waters. Flushing of bottom waters was predicted to increase from approximately four days under existing conditions to five to six days for Port waters. The EPA also notes that the modelling suggests that the average residency time of all waters in the Port under calm autumn conditions is likely to be less than 4 days, which JPPL (2001a) suggest is similar to existing conditions for bottom waters.

Under Summer conditions (when flushing of Cockburn Sound is most strongly influenced by sea breezes), it has been predicted that the proposal would cause an increase in the flushing times of water from approximately six hours to approximately one day or less. The EPA considers that changes in flushing times of this magnitude alone are not likely to bring about significant changes in water quality.

While the Stage 1 Port may have relatively efficient flushing characteristics, the EPA recognises that water quality within the proposed Port is unlikely to improve above existing conditions. The range of expected chlorophyll *a* concentrations in the Stage 1 Port waters will increase above current ambient levels and will exceed draft EQC for this parameter.

The proponent has also predicted that the upper range of chlorophyll levels in the proposed Port may be comparable to the chlorophyll *a* levels considered to represent a phytoplankton bloom (EPA 2001b). However, it is not possible to establish whether the persistence component of the phytoplankton bloom criteria set out in EPA (2001b) would be compromised because the proponent has not predicted how long high chlorophyll *a* levels may persist during the non-river flow period (see EPA 2001b for numerical and narrative criteria). In this regard, the EPA notes the advice of the Department of Health that there is insufficient information available to develop good predictive models of changes for particular species of algae.

The proponent has predicted that the average residence time for all waters in the Stage 1 Port proposal would be in the order of 1-2 days, which is comparable to the doubling times (a measure of growth rate) for some small phytoplankton species, lowering the risk of phytoplankton-related impacts relative to other semi-enclosed water bodies in Cockburn Sound (e.g. Jervoise Bay Northern Harbour). Nevertheless, if phytoplankton bloom criteria set out in the Draft Environmental Quality Criteria Reference Document (EPA 2001b) or any amended criteria are compromised in the future, the proponent will be required by recommended condition 8-3 to develop and implement appropriate adaptive management actions.

With respect to potential ecological effects associated with creating deep channels and berthing pockets, the EPA notes the predictions made by the proponent that the frequency of vertical mixing would be reduced. Reductions in the frequency of vertical mixing of the water column can lead to depletion of dissolved oxygen in waters close to the seabed. This can be caused when benthic organisms consume available oxygen that is not replaced by the exchange of oxygen-rich water from near the surface.

Using 1995 meteorological data, the proponent predicted that there were six occasions when bottom waters in the harbour and channel were unmixed for five days or longer (JPPL 2001a). The modelling also found that the longest period when no vertical mixing of water took place was seven days.

The EPA recognises that the proposal's effect on vertical mixing is likely to result in a reduction of dissolved oxygen levels under some conditions and this will cause changes in ecological processes in deeper parts of the Port (DEP 1996, EPA 1998). However, in view of:

- the predictions of vertical mixing made by the proponent; the results of other studies in Cockburn Sound (eg Bastyan and Paling 1995, DEP 1996) which suggest that where regular vertical mixing occurs in the naturally deep basin of Cockburn Sound, sediment anoxia and subsequent problems associated with nutrient release are unlikely to occur;
- JPPL's undertaking to monitor dissolved oxygen profiles, sediment organic content and nutrient levels; and
- if monitoring does not validate predictions about water/sediment processes, adaptive management such as physical mixing of the water column would be undertaken (see Response to DEP further queries dated 19 February 2002 on attached Compact Disc),

the EPA considers that the impact of the Port on vertical mixing alone is unlikely to cause significant water quality impacts.

The proponent has indicated that it would commit to managing the marine environment of the proposed Stage 1 Port to achieve the final EQOs determined to be appropriate for Stage 1 Port areas (JPPL 2001a). The EPA expects that the Port will be managed to meet a 'moderate' level of protection as set out in the EPA's draft Cockburn Sound EPP and it has recommended a condition to this effect (condition 8). Although the Stage 1 Port waters are unlikely to meet the draft water quality criteria in the short-term, the EPA considers that, with an improvement in the quality of marine waters and sediments in the south eastern part of Cockburn Sound, the proposal could be managed to achieve the EPA's objective for the maintenance of ecosystem integrity in the 'moderate' protection area in the longer term.

In its responses to submissions, JPPL suggested that the proposed Port waters will not be used for contact recreation and therefore they will not be managed as such (JPPL 2001b). The EPA notes that restrictions on recreation activities may need to be in place within the inner harbour area due to safety reasons. However, this does not mean that the proponent should not manage to ensure that all social values set out in EPA (2000) are protected. Accordingly, the EPA has included the social values and their respective EQOs set out in EPA (2001b) in the requirements of a marine management condition for operations (condition 8). In this regard, the EPA notes that the proponent does not expect that water quality in the Port would cause seafood to be unsafe to eat if caught in the Port or that swimming is unsafe from a public health perspective. Indeed, experience in other Port areas in WA suggests that social values are generally protected although recreational activities may be restricted at times for operational reasons.

With respect to concerns raised about the potential impact of contaminated wastewater and stormwater run-off entering the marine environment, the proponent has revised its proposal by replacing the proposed evaporation ponds with sealed collection areas for liquid waste from livestock handling and other Port activities, and soak wells will only be used for uncontaminated water from road runoff. The Port

area will be sealed and curbed such that runoff and spills are directed to design holding points. As the site is not connected to a reticulated sewerage system, JPPL will also install a package wastewater treatment plant to handle day-to-day wastewater generated by Port activities. The treated wastewater is proposed to be recycled, pumped or trucked offsite. The EPA notes that there may be additional special requirements for the management of runoff imposed under any Works Approval and License issued for the proposed Port under Part V of the *Environmental Protection Act*.

As part of the Operations EMP, JPPL has committed to prepare and implement a Surface Water Quality Management Plan with the objective of minimising and managing any impacts of surface water drainage from the Port on Cockburn Sound water quality (commitment 37). Other management plans relevant to the protection of water quality during Port operations include a Maintenance Dredging Management Plan (commitment 30) and an Oil Spill Management Plan (commitment 35).

Recognising that contaminated groundwater could affect environmental quality of the Stage 1 Port during operations, the proponent has committed to prepare and implement a Groundwater Quality Management Plan (commitment 22) as part of the Construction EMP. This Plan has an objective to ensure that groundwater flows and quality will not have an impact on the water quality in the Port. This plan will address management of any contaminated groundwater flowing within the Port boundaries early in the implementation phase of the proposal. It should be recognised that, in the event that groundwater management is required at the site, the proponent may need to continue implementation of the Groundwater Quality Management Plan on an ongoing basis during the operations phase, or until such time as groundwater issues can be fully addressed. In addition, the EPA recognises that the requirements of recommended condition 9 could provide opportunities to address habitat restoration in the broader Cockburn Sound area by managing groundwater-related problems elsewhere in the Sound, particularly in waters that are likely to flow into the Stage 1 Port under prevailing wind conditions.

In terms of the concern about the potential impact of cleaning livestock vessels in Cockburn Sound waters, JPPL advised that ship exteriors would not be cleaned down in the Port. The proponent also advised that while internal cleaning is highly unusual while vessels are in Port, if there is a need for any cleaning, wastewater will be piped ashore and sent for treatment offsite. These activities, if undertaken in the proposed Stage 1 Port, would need to be in accord with appropriate quarantine and Department of Health requirements.

### *Potential impacts of shipping*

Vessels less than 25 m in length can legally use tributyltin (an organotin compound applied to ship hulls as an agent to control the growth of 'fouling organisms') as an antifouling paint. However, the EPA understands that a new international convention on the control of harmful anti-fouling systems on ships was adopted in October 2001. The new convention sets out an effective implementation date of 1 January 2003 for a ban on the application of organotin-based antifouling systems such as TBT. It is also understood that the convention states that by 1 January 2008 (effective date), ships either:

- shall not bear organotin-based compounds on their hulls or external parts or surfaces; or
- shall bear a coating that forms a barrier to such compounds leaching from the underlying non-compliant anti-fouling systems.

The EPA is of the view that the adverse impacts of some anti-fouling systems used on ships needs to be weighed up against the benefits gained by reducing the risk of introducing marine species from other parts of the world to Western Australian waters.

In relation to issues raised about risks associated with the translocation of marine species in ballast water, the EPA notes that all ships visiting Australian Ports from international Ports must manage ballast water in accord with the Australian Quarantine Inspection Service (AQIS) requirements. The proponent has committed to prepare a Ballast Water Management Plan to implement the International Maritime Organisation and Commonwealth (AQIS and Australian Maritime Safety Authority) arrangements for ballast water control (commitment 31). There are currently no nationally consistent regulations for the management of ballast water from coastal shipping (ships carrying cargo from one Australian Port to another).

An Introduced Species Management Plan (commitment 33) will also be prepared and implemented by JPPL on advice of AQIS and the CSIRO which are key agencies in relation to introduce marine species research and management. The objective of this Plan is to protect coastal waters by monitoring and management of introduced species (including phytoplankton). The proponent advised that the Introduced Species Management Plan will include contingency plans for the event that previously unrecorded targeted species are found in Port waters.

### *Cumulative impacts*

In relation to the effect of the proposal on inter-harbour areas, the EPA notes that the Stage 1 Port has the effect of re-orientating the Western Power cooling water plume. Western Power's plume is directed further offshore, causing slight surface water temperature increases over a greater area than if the Port was not present. The proponent modelled the effect of its Port on the Western Power plume using maximum discharges from Western Power. This is likely to have overestimated the influence of the Port in the behaviour of the plume.

The proponent's modelling under maximum discharge conditions in Autumn suggests that the effect of the Port is unlikely to cause surface water temperatures to exceed draft EQG for the high protection zone for Autumn conditions. It is unclear as to the

effect of the Port on the size of Western Power's mixing zone. The proponent has committed to give attention to this matter by undertaking further modelling of the effect of the Port on the dispersion of contaminants from Western Power and BP as part of its Water and Sediment Quality Management Plan. The EPA notes that the outcomes of this modelling may affect the delineation of the Western Power mixing zone in the final Cockburn Sound EPP.

The Stage 1 Port also has the effect of increasing water residency times to the north of the breakwater by a matter of hours. While these effects are not likely to cause significant short term changes in water quality between the James Point and Southern Harbour, the risks of the Port causing deteriorations in water quality in the longer term to the north will be a function of the quality of water leaving the Port.

### **Summary**

Having particular regard to the:

- JPPL's commitment to undertake a detailed wave and sediment transport study to ensure coastline stability and maximise water circulation through the Port area prior to the finalisation of the Construction EMP;
- JPPL's commitment to prepare and implement a Water and Sediment Quality Management Plan for the operations phase of the proposal to monitor water and sediment quality;
- the international and national conventions and controls on antifouling paints and ballast water control; and
- the proponent's commitments to prepare and implement management plans to address groundwater quality, surface water quality, oil spills, introduced marine species and ballast water which would assist in the overall management of water quality in the proposed Port area and Cockburn Sound,

it is the EPA's view that the proposal could be managed to meet the EPA's environmental objective for this factor provided that the recommended conditions 7, 8 and 9 as well as the relevant commitments are satisfactorily undertaken by the proponent. The recommended conditions address the management of dredging and reclamation to protect environmental values of Cockburn Sound, water quality management objectives and adaptive management during the operations phase and contributions to the maintenance of environmental objectives in Cockburn Sound respectively.

## **3.6 Coastal access and coastal activities**

### **Description**

The proposal will result in the loss of approximately 600 m of Barter Road Beach between the Kwinana Bulk Terminal (Berths 1 and 2) managed by Fremantle Ports (formally BHP Jetties) and the Western Power Kwinana Power Station. Use is currently made of the beach for horse exercising, other recreational activities and commercial bait fishing.

The proponent proposes to restrict public access to the Port area to the extent necessary to protect public safety and to ensure the safety of operations.

Approximately 350 m of beach to the north of the proposal, which is currently used by the public, will not be directly impacted by the proposal.

There is no foreshore reserve along the Barter Road Beach, with the land to the low water mark being vested with Landcorp for the purpose of industrial development.

### **Submissions**

Submissions raising issues about beach access focused on:

- concern that the proponent's analysis of the impacts on recreational use of the beach was inadequate;
- questions about the alternative beaches available to residents for recreation on the shores of Cockburn Sound;
- the zoning of the Barter beach area as Local Parks and Recreation Reserve and the possibility, if the risks and hazard issues are resolved satisfactorily, to allow public access to the area in the future;
- concern that if use of the Barter Road Beach was further restricted, the result is likely to be increased conflict between users of other beach areas;
- the impact of the proposal on ability to achieve multiple use in Cockburn Sound in the future versus the range of potential future use options that would be left open if the proposal was not developed;
- the view that the proposal offers an opportunity to rationalise the shipping facilities at Kwinana and make available beaches that are currently not able to be access by the public. If the proposal is to be approved in its current design, then it should be a requirement that the proponent enter into an agreement with the nearby industries to relocate existing shipping activity to this new facility. The existing berthing structures and groynes could then be removed and the beaches re-established;
- the view that the enduring recreational access and use of Barter Road Beach should be maintained and either the Port should not be constructed; the Port should be relocated; or if approved, the Port should be redesigned to accommodate continued access to Barter Road Beach for recreational users and commercial bait fishermen; and
- the view that a process aimed at the provision of an alternative horse (animal) beach within the region involving all stakeholders including local government and horse industry representatives should be established.

Issues raised in submissions relating to commercial activities in the vicinity of the proposal included:

- concerns that the proposal will impact access to approximately one kilometre of beach by fishermen, who have fished the area for over thirty years. Coupled with the other beaches, which they have lost in Cockburn Sound, this proposal will affect their incomes and livelihood. Although the PER states that the breakwater would provide fish habitat, this would not replace the beach for commercial beach fishing;
- the opinion that the proponent should consult with the fishermen's representative association (the Cockburn Sound Professional Fishermen's Association) with a view to cover the potential impacts of the Port proposal, management and mitigation options and compensation;
- concern that increased phytoplankton blooms, including phytoplankton species that produce bio-toxins that can affect local mussels and shellfish, could lead to the closure of mussel farms in the Cockburn Sound. A series of questions were posed about the assurances and procedures to be in place in the event of a potentially toxic phytoplankton bloom; and
- the view that the proposed Port limits should be restricted to the minimum area necessary to accommodate recreational and commercial fishers.

Submissions raising issues about recreational fishing and boating focused on:

- why, in the event that stage 1 is approved, fishing should be excluded from the Port area including the proposed breakwater;
- how the proposal is likely to impact upon the fishing and crabbing activities in the James Point area;
- whether fish and crustaceans that have fed in the Port waters be safe to eat when captured outside the harbour;
- the lack of acknowledgement in the PER that the BP cooling water plume acts as a fish aggregation site in winter and is fished by fishermen at the site known as "Kay's Bank". Concern was expressed that proponent intends to include this area in the Port limits despite the fact that it is not close to the stage 1 development; and
- the impacts of increased shipping in Cockburn Sound on recreational safety and amenity.

### **Assessment**

The area considered for assessment of this factor includes Barter Road Beach and the nearshore waters in the vicinity of the proposed development in Cockburn Sound.

The EPA's objectives for this factor are to:

- maintain the quality of the broader area in relation to boating, fishing, swimming and coastal use; and
- to ensure that risk is as low as is reasonably achievable.



The EPA has previously noted that coastal access has been severely restricted along the eastern margins of Cockburn Sound (Bulletin 907 and 908). The community has expressed concern to the EPA during the assessment that more people want to access the coast in Cockburn Sound for a range of activities, while fewer areas are available. Similar views were expressed in the State of Cockburn Sound Report by DAL (2001). In addition, the EPA notes that the CSMC draft Environmental Management Plan for Cockburn Sound (CSMC 2001) recommends:

“A guiding principle for future proposals should be that there is no net loss of ecological or social function in Cockburn Sound” (Page 14).

CSMC (2001) did not identify Barter Road Beach as a popular beach (see Figure 3 in CSMC 2001), however it notes that the Kwinana area presents a high potential for conflict between users. The Barter Road Beach was also not identified as a popular recreation beach in the Southern Metropolitan Coastal Water Study, which examined beach usage in Cockburn Sound (DEP 1996). The draft FRIARS document (WAPC 1999) noted that port infrastructure should avoid impacts on the operation and recreational functions of Challenger and Kwinana Beaches, which are considered as important local, rather than regional, recreation areas.

The EPA understands that in response to the public concern expressed regarding the impact of the James Point proposal on coastal access as well as the gaps identified in the management of this issue in DAL (2001), the CSMC has convened a sub-committee to investigate opportunities and constraints for multiple use in Cockburn Sound. The EPA supports this initiative. It is understood that the CSMC sub-committee has made a draft recommendation that it should form a position on the future use of Barter Road Beach if the Stage 1 Port is not approved for implementation.

The Barter Road Beach area is vested in Landcorp for industrial development, a use consistent with the Metropolitan Region Scheme. Although informal use has been made of Barter Road Beach for exercising animals and for commercial and recreational fishing, and the Kwinana Town Planning Scheme currently being reviewed identifies the area as being zoned for local parks, recreation and drainage, the EPA understands that Landcorp have some concern regarding public safety and subsequent liability issues.

The EPA acknowledges that there are risks to the public within the KIA which are associated with surrounding industrial activities. Indeed, the individual fatality risk contours associated with the full development scenario presented in FRIARS (WAPC 2000) indicate that risk may be a key constraint to future non-industrial uses of beach areas in the KIA.

The EPA has given attention to the matter of working with Landcorp and CSMC to investigate opportunities for some non-industrial use of the remaining beach area between the north of the Stage 1 Port and the Kwinana Power Station in the Other Advice section of this report.

In relation to the general concerns about the proponent's proposal to restrict access to the proposed Port area, the EPA notes that JPPL clarified in its response to submissions that it will restrict public access within Port boundaries only to the extent necessary to ensure the safety of operations and of the public. The EPA also notes that JPPL has limited the proposed Stage 1 Port area to that required for the implementation and operation of the Port.

With respect to the impact of the proposal on beach access for activities including horse exercising, fishing and swimming, the EPA notes that the proponent has advised that an alternative exercise beach allocated for horses in the Rockingham Shire exists immediately north of the Kwinana Grain Jetty. The Barter Road Beach is a resource that is frequently utilised by the horse fraternity. Animal exercising is not always compatible with other recreational uses and conflicts could result with increasing pressure to use new areas for animals. This matter is most appropriately pursued through appropriate local regional and planning processes and should be addressed accordingly.

The EPA notes that other beaches are available within Cockburn Sound for recreation. These areas include the southern side Woodman Point, Challenger Beach, Kwinana Beach and Mangles Bay.

Notwithstanding, the EPA notes the recent findings presented in a Multiple Use Management Draft Working Paper prepared by the CSMC sub-committee that indicates that, of a 14.2 km stretch of the eastern foreshore of Cockburn Sound, only 6.2 km of foreshore is available for recreational purposes. A loss of approximately 600 m of Barter Road Beach because of the proposed Stage 1 Port will further reduce the area available for recreation to approximately 5.6 km.

In order to minimise the potential impacts of this loss on the recreational potential from the eastern foreshore, the EPA considers that the proponent should prepare and implement a Public Access Plan (condition 12) to give effect to its undertaking to restrict the public's access to the Port area to the extent necessary to protect public safety and ensure the safety of operations. The objective of the Public Access Plan outlined in recommended condition 12 is to provide for public access to the Port area, including the breakwaters and water area subject to public safety considerations.

The proponent has also indicated that its proposal will leave in the order of 350 m of Barter Beach to the north of the proposal available for alternative uses such as swimming of horses and bait fishing. The preliminary risk modelling undertaken by the proponent suggests that the beach area to the north of the proposed land-backed berth area would be outside of the  $1 \times 10^{-5}$  individual risk contour suggesting that individual fatality risk associated with non-industrial use in that area could be managed to be so small as to be acceptable to the EPA.

With respect to concerns expressed by the Fisheries about the impacts of the proposal on commercial bait fishing, the EPA notes that the proponent provided little information on how it proposes to mitigate the impacts on fishermen. It is noted that the West Coast Beach Bait (Fish Net) Managed Fishery extends from Lancelin in the north to Tim's Thicket in the south and accordingly, the Barter Road Beach is not the only fishing ground used by license holders in the fishery. Nevertheless, the loss of Barter Road Beach represents a partial loss of fishing opportunity and may consequently have a direct commercial cost to fishermen.

The issue of compensation is beyond the scope of this environmental assessment and the EPA considers that this issue would be most appropriately addressed by negotiation between the proponent, the relevant fisherman's bodies and the Department of Fisheries.

### **Summary**

Having particular regard to the:

- the industrial setting and intended use of land adjacent to and including Barter Road Beach, which are consistent with the Metropolitan Region Scheme;
- the availability of opportunities, though somewhat limited, for recreational beach use at other locations in Cockburn Sound;
- the availability of other commercial fishing grounds within the West Coast Purse Seine fishery; and
- the initiative by the CSMC to convene a working group to investigate opportunities and constraints for multiple use in Cockburn Sound,

it is the EPA's view that the proposal could meet the EPA's environmental objective for this factor provided that the recommended condition 12, which is intended to facilitate safety-dependent access to the Port area, including the breakwater and Port waters, is satisfactorily undertaken by the proponent.

## **4. Conditions and Commitments**

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

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

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

#### **4.1 Proponent's commitments**

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

#### **4.2 Recommended conditions**

Having considered the proponent's commitments and the information provided in this report, the EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by James Point Pty Ltd to construct and operate Stage 1 of a private Port near James Point, Kwinana is approved for implementation.

These conditions are presented in Appendix 4. Matters addressed in the conditions include the following:

- (a) that the proponent be required to fulfil the commitments in the Consolidated Commitments statement set out as an attachment to the recommended conditions in Appendix 4;
- (b) the public availability of Environmental Management Programmes for construction and operations phases of the proposal;
- (c) the management of dredging and reclamation activities required for construction of the Stage 1 Port proposal;
- (d) meeting environmental quality objectives for marine waters of Cockburn Sound, including Port waters;
- (e) furthering the knowledge and providing for the maintenance of the environmental values of Cockburn Sound;
- (f) the management of odour associated with the proposed trade in livestock at the Stage 1 Port;
- (g) the management of noise emissions from the operation of the Stage 1 Port; and
- (h) the provision of safety-dependent access to the Port area, including marine and land areas.

It should be noted that other regulatory mechanisms relevant to the proposal are:

- any trade of 100 tonnes or more per day requiring the loading or unloading of bulk materials is prescribed under Part V of the Environmental Protection Act 1986 and therefore requires a Works Approval and License.

## 5. Other Advice

### *Future livestock loading facilities*

The EPA is concerned about problems associated with partially loaded livestock vessels that visit Western Australian ports. Under certain conditions, livestock that have been shipped from eastern States ports, and therefore have been on board vessels for several days, can be the main cause of odour impacts on the community surrounding ports.

Also of concern is the extent of management control that port managers have over odour emissions from these vessels.

The EPA does not expect that moving livestock exports to Kwinana would completely address this problem, but the buffer distance between residential zones and livestock loading activities is considerably greater in Kwinana than in Fremantle, resulting in lesser impacts on residents.

The EPA recommends that the Government consider the future of livestock export facilities at both Fremantle and James Point, with a view to developing and implementing mechanisms to alleviate the problem of partially loaded livestock ships in the future. The commercial and infrastructure implications would require careful consideration.

### *Cumulative noise emissions from Kwinana Industries*

The EPA notes that, whilst this individual proposal has demonstrated that it could be managed to comply with the Noise Regulations, it will form part of the broader KIA, from which cumulative noise has been found to be a substantial concern within surrounding residential areas. The EPA understands, from research recently conducted for the KIC, that cumulative noise emissions from Kwinana industries exceed the noise limits prescribed in the Noise Regulations from time to time in some surrounding residential locations. In the main, this is due to the cumulative emissions of noise from a large number of heavy industries in this region.

The residential areas surrounding the KIA have evolved with heavy industry in close proximity over many years. In view of the time period over which industry has developed in Kwinana and given that the Noise Regulations are relatively new, it is perhaps not surprising to find that, on detailed inspection, industry is not complying with the prescribed noise limits at all times. However, it was evident during the assessment of this proposal that existing cumulative noise levels are beyond normally acceptable limits and that noise levels from the KIA need to be reduced over time. The EPA notes that the Noise Regulations review process is looking at noise policy in this region and is considering the matter of appropriate noise emission targets for Kwinana industries.

The EPA acknowledges the strategic State significance of the KIA and recognises attempts by Government to secure a buffer between industrial and residential land uses in this region. It also notes the considerable effort recently made by the KIC to quantify cumulative noise emissions from industry, identify the key sources of noise, and prepare a strategy for cumulative noise reduction from the KIA (including a program for individual industries to develop and implement their own noise control plans).

The EPA is aware that new industrial proposals for the KIA, including the Stage 1 Port proposal, have the potential to make it more difficult for existing industries to reduce the cumulative noise level received at surrounding residences. Ideally, future proposals for the KIA will be able to demonstrate that their individual noise emissions will be at a level that will ensure the sustainability of KIC's longer-term strategy to reduce cumulative noise emissions to more acceptable levels for the community.

In conclusion, the EPA considers that cumulative noise emissions from the KIA need to be progressively reduced over time, to ensure an improved level of amenity for the surrounding residential areas. The EPA supports the whole-of-industry approach adopted by the KIC and recommends the ongoing involvement of the community and Government in this noise reduction process.

#### *Coastal access*

The EPA notes that a portion of the Barter Road Beach between the northern boundary of the proposed Stage 1 Port and the Western Power Kwinana facility is not intended to be developed at this time.

Whilst the EPA recognises that the issue of public safety should be considered as priority, the EPA suggests that the proponent should liaise with Landcorp and the CSMC to investigate opportunities for some non-industrial access to the remaining beach area via the Port site. Access for non-industrial users should only occur if detailed operational risk assessment indicates that cumulative individual and societal risk levels at the beach would be acceptable.

#### *Breakwater removal*

The EPA notes that JPPL has indicated that it would consider removing the offshore breakwater if necessary to facilitate potential future shipping facilities in Cockburn Sound.

Although the proponent has made a commitment to this effect, the EPA believes that there should be an agreed procedure involving all relevant parties which sets out the rules and criteria for negotiating the removal of the offshore breakwater. The EPA considers that it is a matter of sufficient importance that the Government should consider setting out a set of agreed 'rules' for negotiation on the need to remove the breakwater.

Decommissioning or significantly modifying the proposed offshore breakwater associated with the Stage 1 Port proposal could raise significant environmental issues related to the ecology of Cockburn Sound. Any proposal to remove or significantly modify the proposed offshore breakwater would constitute a change to the proposal assessed by the EPA. Accordingly, any proposal to vary the proposal assessed in this report by deleting or significantly modifying the offshore breakwater in this proposal or to remove the proposed structure from Cockburn Sound after it has been constructed would need to be referred to the EPA for consideration.

## 6. Conclusions

The EPA has considered the proposal by JPPL to construct and operate Stage 1 of a private, multi-purpose Port (consisting of a cargo wharf, associated cargo handling facilities and an offshore breakwater) north of James Point, Kwinana.

### *Marine biota and habitats*

In answer to the broad question about the protection of the remaining seagrass in Cockburn Sound, the EPA notes that information provided by the proponent indicates that existing seagrass will not be directly impacted by the proposal. The remaining seagrass meadows in Cockburn Sound are important for the maintenance of key ecological functions and provide important habitat for marine fauna, including juvenile fish and marine invertebrates.

The total reclamation and/or fill area is proposed to occupy approximately 17 ha of seabed and beach. Of this total area, approximately 8.2 ha are currently shallow sandy habitat (sandy seabed <10 m deep). This shallow sandy habitat is likely to have once supported seagrass and, if water and sediment quality conditions are suitable in the future, has the potential to support the re-establishment of seagrass. A further 1.7 ha of sandy seabed greater than 10 m deep will also be reclaimed. This deeper area is a combination of previously dredged and naturally deep seabed. The balance of the reclamation/fill area is between RL -1 m and RL +4.5 m (i.e. intertidal and beach areas).

Dredging to construct channel and port areas is proposed over an area of approximately 80 ha. Of that area, approximately 9 ha are currently shallow sandy habitat less than 10 m deep, which probably once supported seagrass. The balance of the area to be dredged is a mixture of previously dredged areas and sandy seabed deeper than 10 m.

The EPA recognises that the loss of shallow sandy habitat caused by this proposal will remove the potential for seagrass re-establishment in the future and will impact other ecological values including juvenile fish habitat in the vicinity of the proposal. However, the shallow sandy seabed habitat is not unique in Cockburn Sound or on a regional scale. In view of this, and noting that the proposal will not result in the direct removal of living seagrass, the EPA considers that the proposal will not compromise its objective for this factor.

Since the development of industry along the shores of Cockburn Sound in the 1950's, significant areas of shallow sandy habitat that once supported seagrass have been modified to the extent that their environmental values have been substantially changed. In view of this, the EPA expects that the proponent should contribute to the maintenance and protection of the broader environmental values of marine habitats in Cockburn Sound. The EPA acknowledges that off-sets may not be achievable in the local area of the development, but there are opportunities to implement management actions to achieve the maintenance or improvement of the ecological and/or social values of the broader Cockburn Sound. A condition has been recommended to achieve this outcome.

#### *Coastal processes*

The proposed breakwater may cause waves to be reflected onto beaches to the north of the proposal, resulting in erosion. Therefore, it is important that the management of the potential impacts of the proposal is of a 'best practice' standard to ensure that the social and environmental values of coastal areas in Cockburn Sound are protected on an on-going basis.

To address this matter, the proponent has committed to undertake a detailed wave and sediment transport study (commitment 1) to derive the optimum Stage 1 Port configuration with respect to minimising impacts on coastal processes and protecting recreational and industrial values of coastal areas. The final configuration will be presented to the EPA, Fremantle Ports, CSMC and Western Power for review prior to submission of the Construction EMP.

In addition, the proponent has committed to prepare and implement a Coastal Stability Management Plan during the operations phase to protect the recreational amenity of local beaches and to minimise and manage the impact of the Port on local coastal processes.

In view of the proponent's commitments, the EPA considers that the proposal could be managed to meet environmental objectives for this factor.

#### *Odour*

The proposed trade in livestock will result in the emission of 'agricultural type' odours from the proposed Stage 1 Port. Potential odour impacts were raised as matters of considerable concern to the community during the assessment.

Since the release of the PER, the proponent has undertaken revised qualitative modelling of odour emissions. This modelling utilised odour information gathered from livestock handling operations at Fremantle Inner Harbour. In assessing this factor, the EPA has considered the advice of the Department of Environmental Protection and an independent specialist commissioned by the EPA to provide a professional opinion of the proponent's work on odour.

After considering the information before it, the EPA arrived at the view that the odour impacts predicted by the proponent are likely to be conservative and may not reflect the potential for greater impacts in nearby areas under some conditions. The EPA also notes that there are likely to be a number of technical difficulties in making accurate predictions of odour impacts from livestock export activities. Among these



difficulties are variations in deck layouts between ships, the continuously changing numbers of animals on ships during loading, types of animals on board during sampling, the various times animals are on board, whether animals are wet or dry and meteorological conditions.

Being a new facility, the Stage 1 Port at James Point provides opportunities for the incorporation of 'best practice' design and management into the proposed livestock export activities from the outset. The proposal's location in the KIA also provides for a considerable buffer to areas zoned for residential use. The EPA recognises that there is potential for people working within the KIA to be adversely affected at times by odour, but at this time, a reasonable level of amenity for an industrial setting has not been established. Odour work carried out by the proponent during the operations phase may assist in the derivation of criteria for an appropriate level of amenity in relation to odour in the KIA.

In view of the proposal's location, and challenges in making very accurate predictions of odour emissions from livestock vessels, the EPA has recommended a set of rigorous environmental conditions relating to the management of odour from the proposed livestock export operations. These conditions require the proponent to undertake quantitative assessments of odour emissions from ships during operations and to develop a 'best practice' Odour Management Plan with a review of environmental performance being undertaken by the EPA. The proponent has also committed to convene a Livestock Export Environmental Management Consultative Committee to provide for community and industry feedback on the issue of odour management to JPPL and the broader livestock export industry.

#### *Noise*

Noise will be generated during both the construction and operation phases of this proposal.

In view of the temporary nature of construction noise and provided the proponent's commitments, including implementation of a Noise Management Plan for construction and other undertakings relating to the movement of construction traffic, are satisfactorily implemented, the EPA considers that the issue of construction noise can be managed to meet the EPA's objective.

With respect to noise associated with the operations phase of the Stage 1 Port proposal, activities arising from the proposed livestock exporting operations are likely to be important contributors to noise levels emitted from the Port.

The proponent assessed noise from livestock vessels using noise data collected from ships that visit Fremantle Inner Harbour. This assessment found that, without rigorous management, some livestock vessels and fodder loading plant could generate considerable amounts of noise.

During the course of the assessment, the proponent undertook additional work on noise. The proponent found that it could reduce noise emissions to meet the assigned noise levels under the Noise Regulations by imposing operating restrictions on vessels while in port and by refusing entry to ships that cannot comply with noise requirements. The proponent also made undertakings with respect to the purchase and operation of fodder loading equipment to minimise noise.

The EPA has recommended a number of conditions to ensure that the proponent's commitments in relation to noise management can be given effect.

The EPA recognises that the application of the Noise Regulations in the Hope Valley townsite is complicated by the recent proclamation of the *Hope Valley-Wattleup Redevelopment Act 2000*. Accordingly, the EPA has recommended a condition that reinstates the noise levels prescribed in the Noise Regulations for the Hope Valley-Wattleup areas to provide some level of protection to residents who remain in the townsites. It is likely that the assigned noise levels will be reviewed at some stage in view of the changing land uses in the redevelopment area. The EPA notes that, even if assigned noise levels increase in the redevelopment area, residential areas such as Medina will constrain noise levels that could be emitted from the proposal in the longer term.

The EPA recognises that, although the Stage 1 Port could be managed to meet the requirements of the Noise Regulations, it will contribute in a cumulative way to noise levels emitted from the KIA. In view of this, the EPA has provided other advice on cumulative noise impacts from Kwinana industry.

#### *Marine water and sediment quality*

Construction and operation phases of the proposal have the potential to impact water quality in Cockburn Sound.

#### Construction

Construction of this proposal will result in a temporary deterioration in water quality. Dredging, placement of breakwater materials and reclamation activities will result in temporary disturbance of fine marine sediments that cause turbidity plumes and potential release of nutrients and contaminants, such as tributyltin.

The EPA considers that the key environmental attributes that must be protected from the effects of turbidity are seagrass as well as aesthetic, aquaculture and industrial use values.

The EPA has recommended a condition which builds on a commitment made by the proponent in the PER requiring the preparation of a Dredging and Reclamation Management Plan. This Plan provides for the derivation of criteria for monitoring the effects of dredging on seagrass, nutrients and contaminants in the dredge plume, seafood quality and water quality for industrial use. The Plan also provides for implementation of adaptive management if criteria may not be met.

While information presented in the proponent's PER suggests that the sediments to be dredged are unlikely to contain high levels of contamination, the proponent has made a commitment to undertake additional surveys for contaminated sediments as part of the construction EMP. The EPA has recommended that sediment surveys and management should be undertaken consistent with the Ocean Disposal Guidelines developed by the Australian and New Zealand Environment Conservation Council for the purposes of assessing sediment quality for dredging and ocean disposal projects.

The risks associated with the introduction of marine pests in dredging plant have been acknowledged in previous EPA assessments. It is important that the environmental attributes of Cockburn Sound and the broader Perth Metropolitan coastal waters are protected from any exotic marine species on dredging plant. The EPA has recommended a condition that requires that an inspection of the dredge plant for exotic marine species be undertaken by the proponent.

### Operations

The existing water quality in the vicinity of the Stage 1 Port proposal is relatively poor in comparison with most other parts of Cockburn Sound.

The proposal will have the effect of increasing the residency time of water within the proposed Port area as well as causing shadow effects in the lee of the breakwater, where water flushing will be reduced. It is likely that these effects will result in a further deterioration of water quality in the Port relative to the current situation.

The EPA articulated its objective for the protection of ecosystem health in marine waters along the eastern margin of Cockburn Sound in the document *Perth's Coastal Water: Environmental Values and Objectives*. The water quality objective for the nearshore area in the vicinity of the Stage 1 Port is to maintain a 'moderate' level of ecosystem protection. A 'moderate' level of protection means that moderate changes in key indicators of ecosystem health can occur. The EPA has also depicted the location and spatial extent of the 'moderate' protection area in the draft Cockburn Sound EPP. The EPA has recommended a condition reiterating its position with respect to the maintenance of environmental quality of Cockburn Sound waters.

The EPA expects that all social values related to fishing and aquaculture, recreation and aesthetics, and industrial water supply would be protected within the moderate protection area even if some uses of the port area were excluded for safety reasons.

The proponent suggests that, due to the relatively efficient flushing characteristics of the Stage 1 Port proposal, it could manage the proposal consistent with the EPA's objective. However, due to the relatively poor water quality in areas of the Sound in the vicinity of the proposal, some of the draft water quality criteria presented in the draft Cockburn Sound EPP are unlikely to be met within the Port boundary, at least until water quality improvements are achieved in the broader area in the vicinity of the proposal. Consistent with EPA and community expectations and the environmental quality in other port and harbour facilities in Perth's coastal waters, moderate changes in ecosystem processes are expected to occur in the Stage 1 Port.

In view of the proponent's commitments, the EPA's recommended conditions and the cooperative management framework being facilitated by the CSMC for the broader area of the Sound and its catchment to achieve long-term objectives for environmental quality, the EPA is of the opinion that the proposal could be managed with a view of achieving the EPA's objectives for marine water quality in Cockburn Sound as set out in the draft Cockburn Sound EPP in the longer term.

*Coastal access and coastal activities*

The proposal will result in the loss of approximately 600 m of a coastal area known as Barter Road Beach located between the Kwinana Bulk Terminal (Berths 1 and 2) managed by Fremantle Ports (formally BHP Jetties) and the Kwinana Power Station. Approximately 350 m of beach that is currently used by the public to the north of the proposal will not be directly impacted.

The EPA notes that many members of the public have presented cases that the proposal should not proceed on the basis that it would further restrict the community's access to beaches and the Sound from the mainland.

The EPA has considered this issue in the context of the vesting and planning of the surrounding land as well as the existing land uses. The EPA also notes the role of the CSMC in considering opportunities and constraints for multiple use management of Cockburn Sound.

The majority of the area known as Barter Road Beach is vested with Landcorp for the purpose of industrial development. This use is consistent with the Metropolitan Region Scheme. The northern section of the beach area is owned by Western Power.

The current uncontrolled informal use of the beach may present important public liability issues for the owners of the beach area in the event of an industrial incident in the KIA.

Notwithstanding, preliminary risk assessment undertaken by the proponent suggests that the remaining area of beach between the Stage 1 Port proposal and the Western Power facility would remain outside the 10 in a million ( $1 \times 10^{-5}$ ) individual fatality risk contour. The EPA considers that for any non-industrial related activity or active open spaces located within buffer areas between industrial facilities and residential areas a  $1 \times 10^{-5}$  level of individual fatality risk is so small as to be acceptable to the EPA.

The EPA has recommended that the proponent prepare a Public Access Management Plan to provide risk-dependent access to land and water areas of the Stage 1 Port. In view of the potential acceptability of continued recreational use of the remainder of the Barter Road Beach from a risk perspective, the EPA also suggests that the proponent should work with Landcorp and the CSMC with the objective of facilitating non-industrial use of Barter Road Beach subject to detailed cumulative risk assessment.

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

## **7. Recommendations**

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

1. That the Minister notes that the proposal being assessed is for the construction and operation of Stage 1 of a land-backed general purpose port north of James Point, Kwinana.
2. That the Minister considers the report on the relevant environmental factors as set out in Section 3.
3. That the Minister notes that the EPA has only considered the noise emissions and potential impacts of two livestock vessels in Port at any one time. Accordingly, and unless demonstrated that three vessels can be managed to meet the statutory criteria set out in the *Environmental Protection (Noise) Regulations 1997*, the proposal should only operate with two livestock vessels at berth at any one time.
4. That the Minister notes that the EPA has concluded that it is unlikely that the EPA's objectives would be compromised, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 4, and summarised in Section 4, including the proponent's commitments.
5. That the Minister notes that, while it is beyond the ambit of the EPA to assess the operational requirements of shipping channels, the EPA recommends that any contract between the Government and the proponent for the Stage 1 Port proposal should include arrangements to clearly establish respective responsibilities for maintenance of existing shipping infrastructure, including channels.
6. That the Minister notes that because the issue of financial compensation to commercial fishers for the loss of fishing grounds at the proposed Stage 1 Port site is beyond the scope of the EPA's assessment, the EPA recommends that this matter would be most appropriately addressed by negotiating between proponent, relevant commercial fishing groups and the Department of Fisheries as necessary.
7. In view of the potential significant noise, air quality and risk issues which would be relevant to residents in Naval Base and noting the Government's intent to develop surrounding areas for general industry, the EPA recommends that appropriate planning controls should be implemented to address and avoid potential conflicts between incompatible land uses.
8. That the Minister imposes the conditions and procedures recommended in Appendix 4 of this report.

9. That the Minister notes the EPA's other advice presented in Section 5 in relation to partially loaded livestock vessels, cumulative noise from Kwinana Industry, the need to maintain the community's access to coastal areas in Cockburn Sound which are appropriate for recreational use and arrangements for the removal of the proposed offshore breakwater if necessary in the future.

# **Appendix 1**

## **List of submitters**

**Government agencies:**

Cockburn Sound Management Council c/- Waters and Rivers Commission  
Health Department of Western Australia  
Western Power  
Fremantle Port Authority  
Department of Resources Development  
Department of Environmental Protection

**Local Government authorities:**

Town of Kwinana  
City of Cockburn  
City of Rockingham  
Shire of Serpentine-Jarrahdale

**Organisations:**

Conservation Council of WA  
Environment Centre of WA  
Recfishwest  
Cockburn Sound Professional Fishermen's Association (Inc)  
Kwinana Progress Association Inc.  
Kwinana Watchdog Group  
Com-Net  
The Byford Trotting Training Complex  
Western Australian Trotting Association  
Western Australian Horse Industry  
Magenup Equestrian Centre Management Committee  
Aquaculture Council of Western Australia Inc  
Cockburn Power Boat Association

**Individuals:**

G & M Claridge  
CCrook  
AHerlihy  
J McNair  
J Massam  
R Mazzucchelli  
D & J Meyrick  
H Nore  
M & S Slattery  
J Steele  
M Thomson  
E Zumbo  
R Jamieson  
O Borlaug  
S Edwards  
B Horn  
G Lawrence  
K Low  
K Lowe



T & F Bush  
D Carr  
J Carr  
D & W Chandler  
P Chapman  
B Cole  
E Creasey-Chapman  
M Curran  
F Geal  
M Jennings  
C Johnstone  
G Paine  
J Parker  
I Parker  
G Piper  
J Renisch  
T Winter  
A Martin  
C Fawcett  
R Greaves &  
C Anthony  
C Adams  
S Taylor  
D Healy  
G Rigden  
J Davidson  
J Egitto  
J Ellis  
M Hoehn  
B Harvey  
S Poole

# **Appendix 2**

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## **Appendix 3**

**Summary of identification of relevant environmental factors**

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
<b>BIOPHYSICAL</b>			
Marine biota and associated habitat	<p><u>Dredging</u></p> <p>Dredging of approximately 1.274 mill m<sup>3</sup> of marine sediment over an area of approximately 80 ha.</p> <p><u>Reclamation</u></p> <p>800 m long breakwater extending from approximately 200 m offshore.</p> <p>Reclamation to create hardstand wharf, including reclamation of approximately 8.2 ha of seabed less than 10 m deep.</p> <p><u>Ongoing port operations</u></p> <p>Increased residence time within port waters, which may result in reduced water quality and light penetration.</p>	<p>In relation to <u>dredging</u>, submissions focused on issues including:</p> <ul style="list-style-type: none"> <li>• the extent to which issues related to potential threats to seagrass beds from dredging, Port construction and operations were addressed in the PER;</li> <li>• whether seagrass health would be monitored during the dredging;</li> <li>• limitations of the proponent's habitat mapping. Submissions consider that small areas of seagrass are a significant resource if seagrass is to re-establish in Cockburn Sound in the long term;</li> <li>• concern about the impacts and management of dredging in relation to patches of seagrass to the northwest of James Point which have shown signs of stress;</li> <li>• the potential effects of changing the existing shallow sandy environment to a deeper environment on fish species; and</li> <li>• whether fauna (such as dolphins) and flora (apart from seagrasses) will be impacted directly by dredging and indirectly from the turbidity and sedimentation.</li> </ul> <p>In relation to the proposed <u>reclamation</u>, submissions focused on:</p> <ul style="list-style-type: none"> <li>• how much seagrass potential habitat will be lost and whether the loss of seagrass habitat is consistent with the recommendations of EPA Bulletin 907;</li> <li>• commitments to re-establish seagrass in remaining shallow habitat should be considered;</li> <li>• the impact of the proposal on juvenile fish given that the results of extensive work undertaken in near shore marine and estuarine habitats of south-western Australia shows that the 0+ year classes of most economically important coastal finfish species utilise protected marine shoreline habitats;</li> <li>• the loss of shallow sandy habitat and the effect of its loss on the recognised values as a fish nursery area;</li> <li>• whether the proponent will offset the loss of shallow sandy habitat; and</li> <li>• the view that further detail should be provided by the proponent to demonstrate how habitat loss is to be mitigated through the design and construction of the breakwater, including the investigation of options to maximise the area of rock placed below low tide level to create the maximum reef habitat possible.</li> </ul> <p>Key issues raised relating to <u>on-going operations</u> included:</p> <ul style="list-style-type: none"> <li>• concern about the impacts of spills on marine flora and fauna;</li> <li>• concern about the level of information provided in the PER and the possibility of impacts on dolphins that feed in the area;</li> <li>• questions regarding the potential impact of decreased light levels at the seabed in harbour areas on the primary production by microscopic plant communities that inhabit marine sediments on the seabed. A reduction or loss of these communities may cause significant impacts on sediment oxygen levels, nutrient recycling (particularly nutrient release) and ecosystem function generally within the harbour; and</li> <li>• how maintenance dredging would be managed to reduce environmental impacts?</li> </ul>	<p><b>The EPA considers that marine biota and habitat is a relevant environmental factor.</b></p>

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
Coastal processes	Development of a wharf and an offshore breakwater that will alter existing sediment transport and erosion and deposition patterns.	Key issues raised in submissions include:	<b>The EPA considers that coastal processes is a relevant environmental factor.</b>
Dunes and associated vegetation and fauna	Loss of approximately 900 m of Quindalup Dunes Complex vegetation.	<p><u>Construction</u></p> <p>Submissions raising issues about the impact of construction of the proposal on coastal dunes and vegetation focused on:</p> <ul style="list-style-type: none"> <li>• concern that the proposal will result in the loss of <i>Lepidosperma gladiatum</i> sedgeland, which was noted in PER as an unusual vegetation association. Accordingly, the proponent should consider designs that minimise the impact on dunes or compensate for their removal, such as revegetation of nearby coastal dunes;</li> <li>• the view that it would be inappropriate, particularly for the purpose of a new port, to lose 900 m of coastal dunes in the James Point area;</li> <li>• concern that the reclamation of dunes will result in a loss of locally rare Quindalup Vegetation complex, identified in the Green Link Concept Plan as locally significant; and</li> <li>• concern that the threatened Southern Brown Bandicoot, <i>Isodon obesulus</i> may occur on the dunes to be impacted and a number of bird species protected under international migratory bird treaties may also utilise the area on a transitory basis.</li> </ul> <p>Submissions raising issues about the impact of on-going operations of the proposal on coastal dunes and vegetation focused on concerns that sheep droppings and other matter falling off trucks will increase the risk of introducing weeds to these sensitive areas along truck routes.</p>	<p>The development of the proposed port will involve the loss of coastal dunes.</p> <p>Of the 48 percent of the Quindalup Complex remaining in the Perth metropolitan area, approximately 30 percent (3,527 ha) is afforded some existing protection (Bush forever, WA Government 2000).</p> <p>The vegetation on the dunes to be impacted by the proposal has not been identified in <i>Bush Forever</i> as regionally significant.</p> <p>The coastal strip near James Point is not included in <i>Perth's Greenways Final Report</i> (ATA 1998).</p> <p>The EPA notes that two Priority Four flora species are known to occur in the area. <i>Dononacae hackettiana</i> and <i>Grevillea olivacea</i> are distinctive tall shrubs, which were not recorded from the proposal area during the proponent's flora survey. Due to their size and form, the proponent suggests that the presence of these species could be expected to be established with a degree of confidence if either were on the site.</p> <p>In response to issues raised regarding <i>L.</i></p>



Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
			<p><i>gladiatum</i> sedgeland, the proponent has made a commitment to assess the local vegetation condition as part of the detailed design of the port, with the objective of retaining vegetation such as the <i>L. gladiatum</i> sedgeland where this can be achieved. Measures to protect terrestrial vegetation to the greatest extent practicable and to protect remaining vegetation will be addressed in a Dune and Vegetation Management Plan (commitment 12) as part of the Construction EMP.</p> <p>A small area of <i>L. gladiatum</i> sedgeland occurs in the southern part of the proposed Stage 2 Port area, which will not be impacted by the Stage 1 proposal.</p> <p>The proponent has also committed to prepare and implement a Landscape Management Plan (commitment 51) as part of the Operations EMP which will include bush regeneration and landscape procedures utilizing locally occurring native species.</p> <p>The proponent has not undertaken fauna trapping on the site. It is also noted that the Southern Brown Bandicoot <i>Isodon obesulus</i> is not listed on the Wildlife Conservation (Specially Protected Fauna) Notice 2002, which is created under the provisions of the <i>Wildlife Conservation Act 1950</i>.</p> <p>The proponent holds the view that migratory bird species are not likely to be reliant on the areas affected by this proposal for key breeding or foraging resources, using the project area on a transitory basis only. The EPA notes that the proposed development site has not been recognised as having ecological significance warranting inclusion on Australia's list of Ramsar sites. The high levels of disturbance from industrial and recreational activities adjacent to and on Barter Road Beach may also discourage the use of the area by migratory birds for key life history functions (e.g. breeding), though they may visit the area.</p>

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
			<p>The proponent contends that the transport of livestock along Anketell Road, west of the Kwinana Freeway will not increase the risk of weed invasion in sensitive bushland sites such as the Spectacles.</p> <p>The risks will be minimised by measures including transportation of livestock which have been fed a controlled diet of pellets for five days prior to loading, heel boards to prevent spillage from trucks and truck cleaning.</p> <p>JPPL's commitment to convene a Livestock Export Environmental Management Consultative Committee is also noted (commitments 54 &amp; 46).</p> <p>As the vegetation on the site has not been identified as regionally significant, the priority flora could be readily accounted for in surveys if present and noting the proponent's commitments it is considered that the impacts on dunes and terrestrial flora could be managed to meet the EPA's objectives.</p> <p><b>The EPA considers that dunes and terrestrial vegetation does not require further evaluation in the EPA's report.</b></p>
Introduced marine species	The number of ships visiting James Point will increase the risk of marine pest incursions in Cockburn Sound.	<p>Submissions regarding the issue of introduced marine species focused on:</p> <ul style="list-style-type: none"> <li>• whether the risk associated with the introduction of exotic marine organisms to Cockburn Sound will increase if a reliable substitute for traditional antifouling paints such as TBT is not found before restrictions are in place;</li> <li>• concern about the level of work undertaken by the proponent to identify the presence of any introduced species in the area of the proposed development;</li> <li>• the inspection procedures that would be in place to prevent and manage the introduction of exotic organisms; and</li> <li>• JPPL's accountability should toxic algae or marine pests become established in the proposed port or its surrounds.</li> </ul>	<p>The proponent does not foresee that the Stage 1 Port will result in a significant net increase in commercial shipping within Perth's coastal waters. The proponent anticipates that the vessels which could visit the proposal would visit Fremantle/Kwinana regardless of whether the proposal proceeds. JPPL predicts that of these vessels, approximately 120 ships per annum could be redirected from the Fremantle Inner Harbour to Cockburn Sound if the port proceeds.</p> <p>An increase in vessel movements to and from Cockburn Sound will increase the risk of marine pest incursions to the Sound.</p> <p>The regulation of ballast water from international shipping is a Federal issue under the control of the Australian Quarantine and</p>

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
			<p>Inspection Service (AQIS). Since July 2001, all vessels entering Australian waters from overseas ports must comply with mandatory ballast water management requirements, which are overseen by AQIS. The proponent has made a commitment to prepare and implement a Ballast Water Management Plan (commitment 31) to implement the International Maritime Organisation and Federal arrangements for ballast water management. The Ballast Water Management Plan will be prepared on advice from AQIS and the Australian Marine Safety Authority.</p> <p>The proponent has advised that it will prohibit in-water hull and propeller cleaning within its port area.</p> <p>In addition to ballast water, marine species can be translocated on the hulls of ships. The CSIRO Centre for Research in to Marine Pests (CRIMP) has developed standard protocols for marine pest surveys in port areas.</p> <p>The proponent has made a commitment to prepare and implement an Introduced Species Management Plan (commitment 33) for the monitoring and management of introduced species, including a contingency plan in the event that a previously unrecorded target species is found in port waters. The plan will be prepared on advice from CSIRO and AQIS and can be used to measure the effectiveness of other measures to reduce the risk of marine pest incursions.</p> <p><b>In view of the existing national controls on ballast water from international shipping and the proponent's commitments to manage ballast water and introduced marine species, the EPA considers that introduced marine species does not to require further evaluation in the EPA's report.</b></p>

<b>Preliminary Environmental Factors</b>	<b>Proposal Characteristics</b>	<b>Government Agency and Public Comments</b>	<b>Identification of Relevant Environmental Factors</b>
Feral pigeon management	Storage, transport and management of livestock fodder (including wastes).	Government agencies, local government and industry stakeholders have discussed measures to control the feral pigeon population in the Rockingham / Kwinana area on a regular basis since 1997. The Department of Conservation and Land Management (DCLM) advise that feral pigeon populations are causing management issues in the Kwinana and Rockingham areas, including the Shoalwater Islands Marine Park. In the long term, reducing the pigeon population to a manageable level will be dependent upon reducing available food sources.	DCLM has advised that feral pigeons have the potential to impact on birds, including the Bridled Tern that is protected under international agreements with China and Japan, which roost in the Shoalwater Islands Reserve ('A'-Class Nature Reserves managed by DCLM).
<b>POLLUTION</b>			
Groundwater quality	<p>The proposal could cause contamination of groundwater beneath the proposed development site due to inadequate and/or inappropriate management of stormwater run-off, wash down waters and spills.</p> <p>The groundwater currently flowing beneath the site could be contributing to nutrient and other contaminant level in Cockburn Sound waters.</p>	<p>Public submissions expressed concern that:</p> <ul style="list-style-type: none"> <li>• the proposal may affect the flow and dilution of existing contaminated groundwater plumes into Cockburn Sound;</li> <li>• the proposal may result in additional contamination of groundwater which will in turn impact on the marine environment of Cockburn Sound; and</li> <li>• additional information is required with respect to existing status of groundwater and soils as well as proposed management responses.</li> </ul>	<p>The proponent has committed to ensure that no groundwater contamination occurs as a result of the port operations, by adopting the following management principles:</p> <ul style="list-style-type: none"> <li>• holding areas for stock and for potential contaminants to be fully sealed and contained;</li> <li>• areas to be cleaned after use; and</li> <li>• collected waste to be disposed of by approved means.</li> </ul> <p>The EPA considers that the risk of the Stage 1 Port proposal causing additional contamination to groundwater is small, provided that the</p>

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
			<p>proponent satisfactorily implements its commitments to prepare relevant groundwater, surface water and waste management plans.</p> <p>The proponent has identified a number of potential sources of groundwater contamination near the proposed port site. The proponent acknowledges that it is probable that groundwater flowing through the site will contain contamination.</p> <p>JPPL contend that due to delayed resolution of access to land backing the proposed port, the extent of possible groundwater contamination at the site is yet to be ascertained.</p> <p>The EPA notes that the coastal geology of the site causes groundwater to discharge to the Sound at tens to hundreds of meters from the shoreline. JPPL suggest that the dredging and reclamation work may alter the location of groundwater discharges into the Sound by changing the shape of the coastline and deepening some nearshore areas to accommodate shipping. The proponent contends that its proposal will not accelerate the discharge of groundwater and contaminants to the Sound.</p> <p>It is also noted that the permeability of the Tamala Limestone is greater than the Safety Bay Sand, and therefore discharges more water (by a factor of up to 10) per unit length of coast to the Sound than the Safety Bay Sand.</p> <p>The WRC have advised that the proponent's responses in regard to groundwater issues were generally sound, however the proponent has not discussed the effects of the permeability of the aquifer sediments or included a contingency measure for groundwater diversion or remediation in the event that the port is shown to contribute to algal blooms.</p> <p>Investigations and detailed nutrient modelling carried out in the Jervoise Bay Northern Harbour have indicated that nitrogen levels</p>

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
			<p>entering the harbour from groundwater may still be sufficiently high to trigger some algal blooms even if the existing two contaminated groundwater plumes were remediated. Accordingly, WRC advised that JPPL should consider this possibility and either ensure that the final design of the harbour allows sufficient flushing to prevent blooms, or include a contingency measure for groundwater diversion or remediation to prevent blooms being triggered.</p> <p>In response to this issue, JPPL has committed to undertake detailed wave modelling during the final design phase of the proposal with one objective to maximise water circulation in and through the area of the proposed port.</p> <p>As part of its construction EMP, JPPL has also committed to carry out a detailed survey of the local groundwater quality at the site as well as to prepare and implement a Groundwater Quality Management Plan (commitment 22) to address:</p> <ul style="list-style-type: none"> <li>• a survey to establish the groundwater quality within the port site;</li> <li>• berth design; and</li> <li>• management of any contaminated groundwater flowing within the port boundaries.</li> </ul> <p>The potential impacts of groundwater quality on marine water quality in the port is given attention in Section 3.5 of the report.</p> <p><b>In view of the above, the EPA considers that groundwater quality does not require further evaluation in the EPA's report.</b></p>

<b>Preliminary Environmental Factors</b>	<b>Proposal Characteristics</b>	<b>Government Agency and Public Comments</b>	<b>Identification of Relevant Environmental Factors</b>
Surface water quality	Increase in run-off catchment due to development of impermeable surfaces (e.g. hardstand, buildings and wharf).	Submissions on the issue of surface water quality focused on:	Following its consideration of public submissions, JPPL reviewed its proposal and elected to replace evaporation ponds with sealed collection areas for liquid waste from port operations and soak wells for uncontaminated runoff. JPPL advises that these systems will be designed by a specialist hydraulic engineer during the detailed design phase of the proposal.

<b>Preliminary Environmental Factors</b>	<b>Proposal Characteristics</b>	<b>Government Agency and Public Comments</b>	<b>Identification of Relevant Environmental Factors</b>
Marine water and sediment quality	<u>Dredging and port construction</u>	Submissions on the issue of <u>water quality modelling</u> focused on:	<b>The EPA considers that marine water and sediment quality is a relevant environmental factor.</b>



Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
		Environmental Values and Objectives (EPA 2000);	
Contamination	<p><u>Construction – dredge spoil / fill</u></p> <p>Potential contamination of reclaimed areas from disposal of dredged material and placement of imported fill.</p> <p><u>Ongoing port operations</u></p> <p>Increase in commercial shipping activities will increase the risk of oil / fuel spills</p>	<p><u>Construction – dredge spoil / fill</u></p> <p>A contamination survey has not been conducted of either the soils or the groundwater.</p> <p>Has the contamination status of the sediments to be dredged been characterised with adequate number of samples? What will the effects of dredging/construction be on these contaminants? Will these contaminants be dispersed throughout Cockburn Sound?</p> <p>Will a long-term dredge spoil disposal strategy be prepared? Can the proponent confirm that <i>all</i> dredged material will meet national standards for suitability as landfill? What methodology was used to determine whether the dredged material is within the acceptable standards?</p> <p>Will fill, in addition to dredge spoil, be required for reclamation? Where will the additional fill be sourced?</p>	<p>The site for the revised Stage 1 Port is largely occupied by beach and associated dunes. The EPA understands that the site of the proposed Stage 1 Port has not been previously developed. Therefore, the risks of soil contamination are considered to be small.</p> <p>Notwithstanding, JPPL has advised that in its negotiations with Landcorp for the purchase of land, will seek certification to ensure that the land is free of contamination. JPPL has committed to forward information on the contamination status of the land to the DEP as part of the construction EMP.</p> <p>Notwithstanding, the proponent has committed to prepare and implement a Contaminated Land Management Plan (commitment 20) as part of the Construction EMP which addresses:</p> <ul style="list-style-type: none"> <li>• a survey to establish the level of any soil contamination within the port site;</li> <li>• the preparation of management plans in consultation with DEP in the event that contaminated soil is discovered; and</li> <li>• provisions of certification to DEP that land meets appropriate contamination guidelines</li> </ul>

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
			<p>prior to construction.</p> <p>The issue of contamination of marine sediments is discussed in the context of Marine Water and Sediment Quality.</p> <p><b>In view of the above, the EPA considers that contaminations does not require further consideration in the EPA's report.</b></p>
<p>Air quality – Dust/particulates</p>	<p><u>Construction</u></p> <p>Dust generated during land preparation works may impact on surrounding industrial, commercial and residential premises.</p> <p><u>Ongoing port operations</u></p> <p>Dust generated during port operation (particularly livestock fodder handling) may impact on surrounding industrial, commercial and residential premises.</p>	<p>Submissions on raising issues about the impact of <u>construction</u> activities on dust/particulates focused on:</p> <ul style="list-style-type: none"> <li>concern about inadequate detail in the PER in relation to the potential impacts of dust from construction;</li> <li>whether monitoring would be undertaken to ensure that dust generated by construction activities do not adversely impact upon welfare and amenity of residents and employees; and</li> <li>Western Power's (Generation) Kwinana Power plant and associated switchyard equipment is vulnerable to dust and other airborne contaminants and insufficient information was provided in the PER as to the anticipated loadings or how dust will be managed.</li> </ul> <p>Submissions on the issue of dust/particulates emitted during ongoing port <u>operations</u> focused on:</p> <ul style="list-style-type: none"> <li>the view that the transport of livestock and feed to the facility and the disposal of wastes will create significant amounts of dust that will impact on the amenity of residents;</li> <li>concern that from the proposal has the potential to cause a nuisance to adjacent premises especially when sensitive activities are being carried out such as painting;</li> <li>Western Power's (Generation) Kwinana Power plant and associated switchyard equipment is vulnerable to dust and other airborne contaminants. Insufficient information is provided in the PER as to the anticipated loadings or how dust will be managed; and</li> <li>the understanding that the Cockburn Sound EPP currently being formulated will address aesthetic quality of Cockburn Sound waters. Users of Cockburn Sound rate water colour and clarity as highly important to amenity. Will dust emanating from the proposal affect the clarity and colour of Cockburn Sound's waters?</li> </ul>	<p>The proponent has committed to prepare and implement a Dust Management Plan for the construction phase of the proposal (commitment 10). The Dust Management Plan will address dust from trucks, procedures for managing dust on the construction site and procedures for dust monitoring.</p> <p>The proponent will also prepare an Air Quality Management Plan for the operations phase (commitment 43) which will include procedures to reduce the impact of the port operations on air quality. It will include the following:</p> <ul style="list-style-type: none"> <li>material conveying: to the extent practicable, 'Best Practice' materials handling systems will be adopted;</li> <li>dust collectors to be installed and maintained on handling systems for dusty materials; and</li> <li>good "house-keeping" procedures to be developed and applied to limit dust generation.</li> </ul> <p>JPPL also advised that it is prepared to work with adjacent industries to ensure that it minimizes any impacts of its operation. The proponent also indicated that it will work cooperatively with Western Power to address all concerns regarding potential impacts on the operations of the Kwinana Power station.</p> <p>JPPL advises that cargos that have the potential to generate dust and may impact on the aesthetic quality of Cockburn Sound are fodder associated with livestock and bulk cargoes.</p> <p>The proponent contends that fodder is currently handled through Fremantle Port with little</p>

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
			<p>impact on surrounding land or water. The Stage 1 Port proposal will provide permanent facilities with dust and spillage control to be implemented via the Air Quality Management Plan.</p> <p>Bulk cargoes are currently handled at existing facilities in Cockburn Sound. Dust are managed through Works Approval and License issued by the DEP where the port intends to load and/or unload bulk granular materials. A works approval and licence would be required by the port if it undertakes activities prescribed under Part V of the <i>Environmental Protection Act 1986</i>.</p> <p><b>Dust is not considered to require further consideration in the EPA's report.</b></p>
Noise	<p><u>Construction</u></p> <p>Noise generated by construction activities including transport, pile driving, dredging and land preparation may impact noise-sensitive premises surrounding the port.</p> <p><u>Ongoing port operation</u></p> <p>Noise generated by ships, fixed plant (e.g. conveyors, loaders), mobile equipment; and transport of materials associated with trade to and from the port may impact noise-sensitive premises surrounding the port.</p>	<p>Submissions raising issues regarding noise from <u>construction</u> activities focused on:</p> <ul style="list-style-type: none"> <li>the limited attention given to the potential impact of the 72,000 truck movements likely to be associated with construction of the proposal;</li> <li>the view that noise from construction traffic should be addressed in accord with the preliminary draft EPA Guidance Statement No. 14 Road and Rail Transportation Noise;</li> <li>how the proponent will address the concerns of affected residences in relation to excessive noise from construction-related transport;</li> <li>the view that the proponent should describe the proposed piling works in greater detail and that alternatives to drop hammer methods of piling should be investigated; and</li> <li>concern that using a higher value for noise from a drop-hammer pile driver, an estimated sound level of 50 dB(A)<sub>max</sub> in Hope Valley could result causing problems if not appropriately managed.</li> </ul> <p>Submissions on noise from ongoing Port <u>operations</u> raised issues including:</p> <ul style="list-style-type: none"> <li>concern that a figure in the noise report accompanying the PER did not adequately present noise contours for comparison with the 65dB<sub>L<sub>A10</sub></sub> assigned level for industrial noise receivers;</li> <li>concern that the sound power levels of ships may well cause exceedances of assigned noise levels the north and south of the proposal that this matter needs to be addressed quantitatively and commitments identified for management;</li> <li>the view that, in light of the requirements under the Noise Regulations, the noise modelling should indicate the predicted noise levels at the boundary of adjacent industrial premises;</li> <li>the suggestion that the proponent should commit to noise management measures, including noise specifications for the feed blowers, air slide conveyors, sheep ship fans and other fixed or mobile plant;</li> <li>concern that PER did not consider the potential impacts of the proposed Stage 1 Port on existing residential premises in Naval Base;</li> <li>concern that there may be discrepancy between the acoustic analysis presented in a Works Approval application and the PER, particularly in relation to a vessel named 'Livestock Express';</li> <li>concern that there were no commitments in the PER to manage noise emissions from the sheep ships.</li> </ul>	<p><b>Noise is considered to be a relevant environmental factor.</b></p> <p>The livestock at the port will be either in the process of loading, in which case they would not normally be resting, or aboard ship. While JPPL has not undertaken a quantitative acoustic assessment of noise from livestock, it suggests that its experience in handling livestock for export provides no support to the view that animals will generate noise due to operational lighting. JPPL suggests that noise from livestock is relatively insignificant compared with noise from on site plant and vessels.</p> <p>Moreover, the management of overall port noise is addressed in the Noise Management Plan required by recommended condition 11.</p>

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		<p>Submitters considered such commitments are necessary to adequately manage noise from the proposal;</p> <ul style="list-style-type: none"> <li>• the view that proponent’s noise modelling may have underestimated potential impacts because it is not uncommon for there to be three livestock ships berthed concurrently, rather than the two ships considered in the PER;</li> <li>• questions regarding the regulatory powers to prevent noise nuisance from ships berthing in the proposed Port if it is found to be a problem;</li> <li>• given that there is a 10 dB(A) difference between the quietest and loudest ships, what confidence can the community have that a particularly noisy ship will not visit the proposed Stage 1 Port in future?;</li> <li>• the view that noise from the animals, including cattle needs to be addressed;</li> <li>• concerns regarding the potential cumulative impacts of the proposal were underestimated, considering that people in Wattleup are currently disturbed by the noise (and odour) from the Motorplex facility;</li> <li>• the view that noise levels for Medina should be considered alongside current noise levels from industry and transport, general traffic and the Kwinana Motorplex facility; and</li> <li>• the view that, considering the degree of recreation undertaken on and around the Sound and the present, elevated noise on the Sound is undesirable in the context of maintaining multiple use.</li> </ul> <p>Submissions focusing on <u>operational traffic</u> noise:</p> <ul style="list-style-type: none"> <li>• raised concerns about 120 livestock truck movements per day, most of which will use Anketell Road, passing within 100m of about 30 residences; and</li> <li>• considered that the impacts of truck noise on residences and industrial premises during livestock delivery should be addressed in accord with EPA Guidance No. 14.</li> </ul>	
Odour	Odour from livestock carriers and trucks transporting livestock from feedlots to the port will generate odour, which may cause impacts at nearby industrial and residential areas.	<p>Submissions in relation to the proponent’s <u>assessment of odour impacts</u> focused on:</p> <ul style="list-style-type: none"> <li>• concern that the semi-quantitative odour modelling undertaken by the proponent was inadequate to assess the potential impacts of the Port proposal;</li> <li>• the effect of prevailing winds on the extent of potential odour impacts on residents;</li> <li>• the reliability of the assessment approach used by the proponent, which considered both a livestock ship and a holding facility, if only the Port proposal proceeds;</li> <li>• the relevance of an odour assessment using information from Fremantle;</li> <li>• concern that the proponent’s modelling was underpinned by too many assumptions to gain any certainty about impacts on residents;</li> <li>• concern that the proponent has highlighted several factors/limitations which could cause significant variability in predict odour impacts;</li> <li>• the view that further work was required by the proponent to be consistent with the EPA’s draft Guidance for the Assessment of Odours;</li> <li>• the expectation and concern that ‘plant upset’ and shipping delays will result in offensive odours at a frequency and duration that would be unacceptable to both workers and residents;</li> <li>• the opinion that the odour modelling study should have provided significantly more data on odour complaints received due to the operations at Fremantle;</li> <li>• concern that odour modelling study has not considered odour impacts from cattle or other animals;</li> <li>• the view that a confidence interval should be placed around the 7 Odour Unit (OU) contour to define some level of statistical certainty with respect to model outputs;</li> <li>• the need to clarify how odour detection distance and meteorological data were used to back calculate an odour emission rate from the sheep ship of between 1 and 2 OU/sheep/sec. Details of the calculation used to estimate meteorological conditions (stability class in particular) should be provided; and</li> </ul>	<b>Odour is considered to be a relevant environmental factor.</b>

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		<ul style="list-style-type: none"> <li>• the limited consideration of cumulative odour impacts and how the odour from the proposed Port interacts with the existing odour sources.</li> </ul> <p>Issues regarding <u>potential impacts on residential and other ‘odour-sensitive’ land uses</u> included:</p> <ul style="list-style-type: none"> <li>• considerable community concern about the impact of the proposal on surrounding residents. Submissions consider that the odour emitted from the export of livestock from the Stage 1 Port would be intolerable/objectionable/unacceptable;</li> <li>• the view that the proponent should provide a map showing the extent of the 5 OU and 3 OU contours, including at sea, so that the community could understand the broader implications of the proposal in relation to odour;</li> <li>• the opinion that information in the PER on odours is incomplete as there is no information as to the likely odour levels that will be experienced in Rockingham;</li> <li>• questions about how odours from the proposal may impact upon the recreational activities at Wells Park or Challenger Beach and whether the proposal will impact recreational amenity generally; and</li> <li>• concern regarding the potential impacts of the proposal on people who reside in Naval Base, including the occupants of the Naval Base Hotel.</li> </ul> <p>Submissions raising issues about <u>potential odour impacts on surrounding industrial/commercial land uses</u> focused on:</p> <ul style="list-style-type: none"> <li>• potential impacts at adjacent industrial facilities may be greater than that suggested by the modelling;</li> <li>• objections to JPPL’s opinion that workers in the KIA would be desensitised to the smell from the operation of the proposal and the opinion that workers in the KIA should not be treated differently to other people;</li> <li>• concern that it will be impossible to ensure there is no impact on the KIA and that any increase in odour emissions, particularly a new ‘rural’ odour, will be to the detriment of existing industries and businesses;</li> <li>• the view that levels of 3 OU/m<sup>3</sup> would be an appropriate criteria for adjacent industrial premises;</li> <li>• the lack of discussion in the PER on acceptable odour criterion in the work place;</li> <li>• the odours from the proposed development are typical of an industrial area and therefore are likely to be especially noticeable resulting in complaints;</li> <li>• response procedures that would be implemented in managing the complaints from surrounding industrial premises, given that offensive odour from the proposal is likely to result in a window of complaints lasting several days; and</li> <li>• issues relating to compliance with section 49 of the <i>Environmental Protection Act 1986</i> which relates to unreasonable emissions of pollution, including odour.</li> </ul> <p>Issues/questions raised in submissions about the proponent’s <u>proposed odour management</u> included:</p> <ul style="list-style-type: none"> <li>• design changes that could be made to the structure of the loading facilities to reduce the impacts of odour;</li> <li>• whether the proponent has considered the available odour control technologies and ‘best-practice’ management methods of odour control;</li> <li>• concern that no amelioration measures have been identified to minimise odour impacts from the proposal;</li> <li>• the view that the proponent should commit or be required to undertake continuous monitoring, verification, reporting and follow up action in relation to odour;</li> </ul>	

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		<ul style="list-style-type: none"> <li>the view that the proponent should commit to maintaining a detailed and comprehensive complaints register; and</li> <li>how the 7 OU odour criteria proposed in the PER can be adopted and enforced if the proposal is approved for implementation.</li> </ul> <p>Submissions raising issues regarding odour impacts from <u>transport</u> focused on:</p> <ul style="list-style-type: none"> <li>how the proponent proposes to manage the potential impacts of livestock transport during Port operation on the amenity of residents who live along the transport routes; and</li> <li>the lack of consideration given in the PER to the possible odour impacts on future residential population along Anketell Road, particularly potential impacts on a number of Special Rural properties.</li> </ul>	
Waste management	Port construction and operation will generate waste, including litter, manure, sewage and other waste materials.	<p>In general submissions have expressed broad concern regarding the management of solid and liquid waste, the potential for spillage of waste and impacts on groundwater quality and Cockburn Sound. Accordingly, it is suggested that proponent be required to contain and isolate all waste from ground and surface water for treatment and disposal. Submissions believe that detailed waste management procedures should be outlined up-front in the EIA process to be confident that risks of any spillage can be managed.</p> <p>What design and management procedures are proposed to avoid contamination of groundwater and marine waters of Cockburn Sound? The management of all potential waste material should be considered including the removal and disposal of the 132 tons of animal waste per week that will be generated during livestock export activities. What contingency measures would be in place to ensure any incidents regarding solid and liquid waste handling are minimised and quickly controlled and ameliorated?</p> <p>Particular concern has been expressed in relation to the management of wastes generated during transport to and from the proposed port. How will spillages of waste from transportation of livestock and other goods be managed? Suitable containers, which are compatible with transport requirements, should be used to minimise handling and risks of spillage.</p>	<p>In relation to concerns about contamination of Cockburn Sound with wastes generated by port operations, particularly livestock export, the proponent proposes that truck marshalling areas will be designated and designed to include sealed surfaces and isolated runoff collection points. The wharf area will be sealed and curbed to minimise the risk of spills to Cockburn Sound.</p> <p>JPPL has committed to prepare and implement Prepare a Waste Management Plan which will include:</p> <ul style="list-style-type: none"> <li>detail of the method for treatment and disposal;</li> <li>operating procedures associated with the on-site storage of waste;</li> <li>transfer of waste off-site; and</li> <li>contingencies.</li> </ul> <p>This Plan will be prepared on advice of Local Government Authorities and the Department of Health.</p> <p>JPPL has also committed to provide mobile pumping and sullage such that vessel waste is not discharged to port waters.</p> <p>JPPL will install a package wastewater treatment plant to treat wastewater generated by day-to-day port operations. The wastewater will be recycled, pumped or trucked offsite for disposal. It is noted that the Department of Health advised that Ecomax systems are only approved to remove phosphorus and not nitrogen.</p>

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			<p>Most livestock will be transported by truck from existing holding facilities in Mundijong and Wellard to James Point in a similar manner to that currently used to deliver animals to Fremantle Port. In response to issues raised by the DEP, JPPL advised that it would undertake regular inspections of livestock transport routes to detect problems associated with spillages from trucks. In its response to issues raised by the DEP JPPL undertook to address spillage problems by tightening control measures.</p> <p><b>In view of the above, the EPA considers that liquid and solid waste management does not require further consideration in the EPA's report..</b></p>
Light spill	The port may operate on a 24- hour basis. Considerable artificial lighting may be necessary for night operations.	The use of high-density lighting at the facility can disrupt the amenity of nearby residents and encourage noise and movement from the animals when they might be normally resting. Will high-density lighting be used at the facility?	<p>The proposal is located on the coast in the heart of the KIA. This area is currently brightly lit for operational purposes.</p> <p>JPPL advised that lighting at the Stage 1 Port will be sufficient to provide for safe operations and security and will be operated only on an as-needed basis. Lighting will be designed and constructed so as not to unreasonably impact beyond the port boundary.</p> <p>Noise from animals is considered above in the context of port Noise.</p> <p><b>Light spill is considered not to require further consideration in the EPA's report.</b></p>
<b>SOCIAL SURROUNDINGS</b>			
Recreation and commercial activities	<p><u>Beach access</u> Development of the Stage 1 Port proposal will result in the direct loss of approximately 900 m of Barter Road beach, currently used for exercising horses, recreational fishing and general recreation.</p> <p><u>Commercial activities</u> The proposal may result in</p>	<p>Submissions raising issues about <u>beach access</u> focused on:</p> <ul style="list-style-type: none"> <li>• concern that the proponent's analysis of the impacts on recreational use of the beach was inadequate;</li> <li>• questions about the alternative beaches available to residents for recreation on the shores of Cockburn Sound;</li> <li>• the zoning of the Barter Beach area as Local Parks and Recreation Reserve and the possibility, if the risks and hazard issues are resolved satisfactorily, to allow public access to the area in the future;</li> <li>• concern that if use of the Barter Road Beach was further restricted, the result is likely to be increased conflict between users of other beach areas;</li> <li>• the impact of the proposal on ability to achieve multiple use in Cockburn Sound in the future verses the range of potential future use options that would be left open if the proposal was not developed;</li> <li>• the view that the proposal offers an opportunity to rationalise the shipping facilities at Kwinana and make available beaches that are currently not able to be access by the public. If the proposal is to be approved in its current design, then it should be a requirement that the proponent enter into an</li> </ul>	<p><b>Public access is considered to be a relevant environmental factor.</b></p>

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	<p>the loss of fishing grounds off Barter Road beach currently used by commercial baitfish fishermen.</p> <p><u>Boating</u> Restrictions on access to port waters will be enforced to facilitate safe shipping and to protect public safety.</p>	<p>approved in its current design, then it should be a requirement that the proponent enter into an agreement with the nearby industries to relocate their shipping activity to this new facility. The existing berthing structures and groynes could then be removed and the beaches re-established;</p> <ul style="list-style-type: none"> <li>• the view that the enduring recreational access and use of Barter Road Beach should be maintained and either the Port should not be constructed; the Port should be relocated; or if approved, the Port should be redesigned to accommodate continued access to Barter Road Beach for recreational users and commercial bait fishermen; and</li> <li>• the view that a process aimed at the provision of an alternative horse (animal) beach within the region involving all stakeholders including local government and horse industry representatives should be established.</li> </ul> <p>Issues raised in submissions relating to <u>commercial activities</u> in the vicinity of the proposal included:</p> <ul style="list-style-type: none"> <li>• concerns that the proposal will impact access to approximately one kilometre of beach by fishermen, who have fished the area for over thirty years. Coupled with the other beaches, which they have lost in Cockburn Sound, this proposal will affect their incomes and livelihood. Although the PER states that the breakwater would provide fish habitat, this would not replace the beach for commercial beach fishing;</li> <li>• the opinion that the proponent should consult with the fishermen’s representative association (the Cockburn Sound Professional Fishermen’s Association) with a view to cover the potential impacts of the Port proposal, management and mitigation options and compensation;</li> <li>• concern that increased phytoplankton blooms, including phytoplankton species that produce biotoxins that can affect local mussels and shellfish, could lead to the closure of mussel farms in the Cockburn Sound. A series of questions were posed about the assurances and procedures to be in place in the event of a potentially toxic phytoplankton bloom; and</li> <li>• the view that the proposed Port limits should be restricted to the minimum area necessary to accommodate recreational and commercial fishers.</li> </ul> <p>Submissions raising issues about <u>recreational fishing and boating</u> focused on:</p> <ul style="list-style-type: none"> <li>• why, in the event that stage 1 is approved, fishing should be excluded from the Port area including the proposed breakwater;</li> <li>• how the proposal is likely to impact upon the fishing and crabbing activities in the James Point area;</li> <li>• whether fish and crustaceans that have fed in the Port waters be safe to eat when captured outside the harbour;</li> <li>• the lack of acknowledgement in the PER that the BP cooling water plume acts as a fish aggregation site in winter and is fished by fishermen at the site known as “Kay’s Bank”. Concern was expressed that proponent intends to include this area in the Port limits despite the fact that it is not close to the stage 1 development; and</li> <li>• the impacts of increased shipping in Cockburn Sound on recreational safety and amenity.</li> </ul>	



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Social Impact Study		<p>There is considerable community concern that the PER did not include a social impact study because it is considered that the proposal has far-reaching social implications. The PER should include a social impact study to enable an analysis of the socio economic impacts predicted due to this proposal. The study should address questions and matters such as:</p>	<p>A range of issues were raised in relation to the social impact of the proposal and the livestock trade <i>per se</i> in particular. The EPA is aware that members of the community have strong opposition to the proposal to export livestock, however, Government policy currently provides for this trade to occur.</p>
Heritage	<p><u>Aboriginal heritage</u></p> <p>Cockburn Sound is part of an Aboriginal site associated with the mythology about the creation of islands in Perth's coastal waters.</p> <p>Dredging will disturb the seabed in Cockburn Sound.</p> <p><u>European heritage</u></p> <p>No impact.</p>	<p>Department of Indigenous Affairs (DIA) recommends that prior to any developments commencing that archaeological surveys and ethnographic consultations be conducted with local Aboriginal Communities and Native Title claimants. Reports detailing these investigations should be lodged with the DIA.</p> <p>DIA advises that Native Title claimants are not the only individuals who should be consulted regarding the proposed development. Rather, any people who claim to have knowledge about the heritage values of an area should be given the opportunity to be consulted.</p> <p>If an Aboriginal site is to be impacted by any proposed development it will be necessary for a Section 18 permit to be obtained from the Minister for Indigenous Affairs on advice from the Aboriginal Cultural Material Committee to ensure that the proponent is not in breach of the Aboriginal Heritage Act (AHA).</p> <p>As yet a field survey of the proposed development area has not been undertaken. Appropriate surveys and consultation with Aboriginal groups and individuals need be undertaken to ensure that a breach of the AHA does not occur.</p>	<p>JPPL advise that it has undertaken an ethnographic consultation and archaeological survey of the site. The results of this survey have been lodged with the DIA. The study did not identify any Aboriginal sites within the project area.</p> <p>Notwithstanding, all Aboriginal sites are protected under the auspices of the <i>Aboriginal Heritage Act 1972</i> whether they are/are not listed on the Sites Register maintained by the DIA.</p> <p>The EPA notes that the proponent will prepare and implement a Aboriginal Heritage Management Plan in consultation with the Department of Indigenous Affairs to:</p> <ul style="list-style-type: none"> <li>• ensure that the proposal complies with the requirements of the <i>Aboriginal Heritage Act 1972</i>; and</li> <li>• ensure that changes to the biological and physical environment resulting from the</li> </ul>

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			<p>project do not adversely affect cultural associations with the area.</p> <p>The DIA advises that matters of Indigenous heritage significance should be addressed prior to project approval.</p> <p><b>In view of the proponent's commitments and the requirements to obtain approvals under native title and heritage protection legislation, EPA considers that Heritage does not require further consideration in the EPA's report.</b></p>
Risk	<p>Operation of a port facility will generate risk.</p> <p>The proponent proposes to facilitate trade in a number of materials including some dangerous goods.</p>	<p>Submissions raising issues about risk focused on:</p> <ul style="list-style-type: none"> <li>• the view that the PER provided inadequate information on potential dangerous goods pipeline corridors and that this needs to be addressed in a Quantitative Risk Assessment;</li> <li>• concern that the port may be used to accept and export nuclear wastes.</li> <li>• whether the risk modelling included all possible dangerous goods that will be imported and exported from the port;</li> <li>• the view that management plans, emergency response plans and contingency plans to address the storage of dangerous and hazardous goods and potential spillage should be developed by the proponent to the requirements of the Department of Mineral and Petroleum Resources (DMPR);</li> <li>• under the <i>Navigation Act and the Port Authorities Act 1999</i>, the Fremantle Ports has the responsibility to ensure the safe and efficient transit of all commercial shipping operations within FPA Gazetted waters. The absence of any negotiated arrangements on pilotage and vessel movement controls is considered to be a serious deficiency in the proponent's environmental risk planning;</li> <li>• the view that comparison of the proponent's public risk assessment with public risk assessments conducted for Fremantle Port is inappropriate and misleading. Valid comparisons cannot be drawn between Fremantle Port's facilities, equipment and operations even if an up to date report were referenced. Comments were requested on the validity of the PER's public risk assessment and how comparisons to Fremantle Port Authority's assessment could be justified;</li> <li>• concern that no reference to contingency plans or any consideration of what works may be required within the Kwinana Power Station that would guarantee personnel safety and power system security in the event of a mishap were considered in the PER. Of particular concern is the lack of control that the port operators have over shipping activities;</li> <li>• the view that more detail is required about the transport routes for hazardous materials. Detailed management plans, emergency response plans and contingency plans should be developed prior to approval being granted to manage the impacts associated with hazardous goods;</li> <li>• queries about how transport risks would be managed; and</li> <li>• high level of concern placed on public safety by surrounding industries. No undertakings are made by JPPL to make road improvements, to accommodate increased traffic because of the proposal, even though reference to what could be done is made.</li> </ul>	<p>The dangerous goods that the port would transport would be the same as the existing port and these are:</p> <ul style="list-style-type: none"> <li>• Class 1 - Explosives.</li> <li>• Class 2 - Compressed and Liquefied Gases.</li> <li>• Class 3 - Flammable Liquids.</li> <li>• Class 4 - Flammable Solids.</li> <li>• Class 5 - Oxidising Substances.</li> <li>• Class 8 - Toxic Substances.</li> <li>• Class 7 - Radioactive Substances.</li> <li>• Class 8 - Corrosive Substances.</li> <li>• Class 9 - Miscellaneous Dangerous Goods.</li> </ul> <p>The proponent states that the port would be a transit area and dangerous goods would not be stored on site. Should dangerous goods be stored on site, a license needs to be sought from the DMPR.</p> <p>Since DMPR is the agency responsible for the management of dangerous goods in WA, the EPA notes its advice that the use of projected risk levels for the Fremantle Port and BP Refinery provide a reasonable representation for the preliminary assessment of risk posed by the James Point Stage 1 project.</p> <p>The proponent's plots of risk contours suggest that the EPA's criteria for risk could be met.</p> <p>JPPL or its selected berth operator must, by law, undertake management of dangerous goods in accord with the new Australian Standard AS</p>

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			<p>3846 (<i>The Handling and Transport of Dangerous Cargoes in Port Areas</i>) and the <i>Dangerous Goods (Transport) (Dangerous Goods in Ports) Regulations 2001</i> created under the <i>Dangerous Goods (Transport) Act 1998</i>. The Regulations address matters including Safety Management Systems and emergencies associated with the transport of dangerous goods through ports.</p> <p>Nuclear wastes are subject to controls under the <i>Radiation Safety Act 1975</i>, which is administered by the Department of Health. JPPL do not envisage that it would handle such material via the Stage 1 Port proposal.</p> <p>With respect to road transport of dangerous goods of dangerous goods by road to and from a port, a port operator (i.e. JPPL) may not be the transport agent. Land transport of dangerous goods by third party transport agents is regulated by the DMPR in accordance with the <i>Dangerous Goods (Transport) (Road and Rail) Regulations 1999</i> though licensing arrangements with individual carriers.</p> <p>The EPA is not aware of a corridor for a dangerous goods pipeline as part of this proposal. The EPA considers that any such proposal in the future should be referred to the EPA for consideration.</p> <p>JPPL has made a commitments to prepare and implement Construction (commitment 14) and Operations Risk Management Plans (commitment 41).</p> <p>Construction Risk Management Plan will address:</p> <ul style="list-style-type: none"> <li>• the identification of hazards;</li> <li>• a safety management system;</li> <li>• an emergency management system;</li> <li>• an induction process, and</li> <li>• Procedures for auditing the plan.</li> </ul> <p>JPPL has also committed to present the plan to Kwinana Industries Mutual Aid committee and</p>

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			<p>regulators for approval.</p> <p>The Operations Risk Management Plan will include:</p> <ul style="list-style-type: none"> <li>• a detailed assessment of port operating risk;</li> <li>• procedures for minimisation of risk;</li> <li>• contingency procedures for emergency events;</li> <li>• an assessment of combined on-site and off-site risks</li> <li>• Compliance with KICC, ADGC, IMO, AMSA, and DMPR procedures;</li> <li>• service corridors so that cumulative risk is not increased;</li> <li>• monitoring of dangerous goods and transport routes by destination;</li> <li>• liaison with SES for residual risk; and</li> <li>• procedures for review of quantitative risk assessment every two years.</li> </ul> <p>This Plan will be prepared on advice from the Australian Maritime Safety Authority, Kwinana Industries Council, Fire and Emergencies Authority and the DMPR.</p> <p>In regard to impacts of the proposal on operational shipping safety, the Stage 1 Port is required to operate in accord with the provisions of the <i>Shipping and Pilotage and Act 1967</i>.</p> <p>The EPA understands that navigation matters are also being given attention though a separate ship simulation modelling exercise jointly commissioned by the Department for Planning and Infrastructure and Fremantle Ports.</p> <p>The EPA considers that the issue of pilotage arrangements for the JPPL are beyond the scope of this assessment. JPPL have advised that pilotage into its area of control would be carried out by accredited pilots in accordance with State Government contract conditions.</p> <p>In view of the advice of DMPR on JPPL's preliminary risk assessment, the proponent's commitments, relevant statutory requirements</p>

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			<p>relating to handling and transport of dangerous goods and the EPA's understanding that provisions in the contract between JPPL and the Government could address shipping issues, the EPA is of the view that risk could be managed to meet the EPA's objective.</p> <p><b>Accordingly, it is considered that risk does not require further consideration.</b></p>
<b>OTHER</b>			
Management	The proposal will require the establishment of a management structure to ensure environmental impacts are appropriately managed in the future.	Submissions consider it essential in order to maintain community confidence and expectations, that the proponent demonstrate the capability, expertise and commitment of resources to adhere to ongoing environmental responsibilities. In the absence of demonstrated responsible environment performance as a port operator, the proponent should commit to achieving standards such as ISO14001 certification, prior to commencement of operation.	<p>The EPA notes that the proponent considers that it has a demonstrable record as port operators with an exemplary record with respect to their environmental responsibilities.</p> <p>In addition, JPPL suggests that it has demonstrated to the Government through the selection process that it has the competency, experience and capacity to develop and operate the port.</p> <p>The EPA understands that JPPL's contract with Government requires it to arrange an independent review of port management and performance in relation to port services.</p> <p>The EPA notes that JPPL has committed to the preparation of an Environmental Management System (commitment 57) to be completed prior to the commencement of port operations. An effective EMS should assist JPPL in monitoring controlling and integrating aspects of environmental management required during port operations.</p> <p><b>Management is considered not to require further consideration in the EPA's report.</b></p>
Cumulative impacts	The proposal may cause interactions within, between and among existing developments in Cockburn Sound which lead to a greater extent of impacts than if the proposal was not to cause impacts in a cumulative way.	<p>Cumulative impacts are formed by successive additions, which may be small in isolation but considered together, increase to constitute a significant impact. The PER's consideration of James Point Port in isolation from the proposed FPA Port at Naval Base, Port Catherine development, Jervoise Bay Southern Harbour, Fremantle Port and numerous industrial jetties, ignores the important issue of cumulative impacts; an issue central to any evaluation of environmental impact in Cockburn Sound.</p> <p>EPA Bulletin 907 stated the EPA's expectation that 'proponents developing proposals which have the potential to affect the marine environment of Cockburn Sound, should consider the cumulative environmental implications on the Sound, taking into account the relationship between the proposal and the existing and planned future uses in Cockburn Sound.' This has not been attempted in the PER and</p>	<p>The EPA requested that JPPL consider cumulative impacts of its Stage 1 Port proposal in its PER.</p> <p>The cumulative impacts were addressed by JPPL at a preliminary level in its PER. The proponent has also addressed further technical comments from the EPA Service Unit.</p> <p>The model used by the proponent to assess the</p>

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
		<p>therefore does not comply with the EPA's objectives documented in the guidelines, which are required to be addressed in the public review document. The proponent should be required to undertake research and investigation into cumulative environmental impacts, and should be implemented prior to any assessment of the proposed port. To what extent can the PER's water quality impact predictions on Cockburn Sound be relied upon, in the absence of adequate research and investigation into proposal's cumulative environmental impacts on Cockburn Sound?</p> <p>There is a deficiency in the PER by the separate consideration of the stages of development for the port, which exemplifies the lack of an integrated approach towards planning for port facilities in Cockburn Sound. The PER does not provide sufficient information about later stages of port development (stage 2). Neither does the James Point website, despite an EPA guideline asking for a description of all stages of the proposed port development and outline at a preliminary level, the likely combined impacts of the ultimate port development. Importantly, the cumulative impact was not considered in models determining environmental impacts. Submitters consider the lack of consideration of Stage 2 impacts to be a major deficiency. While each stage will be subject to environmental review, it is considered that the impact of the <i>entire</i> port (Stage 1 and 2) should be considered in context, with the other ports proposed for Cockburn Sound.</p> <p>What is the status of the separate document that the proponent is required to develop in regard to Stage 2 impacts? Will it be available for public review? What are the impacts of Stage 2 in terms of loss of beach and shallow waters, reduction in water quality along the coast from James Point to Jervoise Bay, and decline of social values (eg. Fishing, boating, aesthetics) in the Kwinana Beach area?</p> <p>The proposal, once operational, has the potential to introduce additional toxicants from increased shipping movements and land-based activities to the marine environment. Increased frequency of phytoplankton blooms in the harbour may also introduce further toxicants to the Sound. In this regard, the proponent should undertake modelling of cumulative toxicological impacts on marine ecosystems and shellfish industries.</p> <p>It is believed that the Southern Harbour development will receive source waters from the completed James Point Port. Hence, the nutrient related water quality of the 'source' waters might be expected to decline. To what extent will water quality in James Point Port impact on water quality at the Northern and Southern Harbour Developments in Jervoise Bay?</p> <p>Should approval be granted for reclamation area 2A, such a development would interfere with the usefulness of the existing Jetty No 1 from a navigational viewpoint. Has consultation occurred with the users and owners of Jetty No 1 regarding the impacts of the proposal on the broader usage of Jetty No. 1 and 2.</p> <p>The construction of the offshore breakwater would cause environmental and safety conflicts with the future FPA Outer Harbour development plans. The alternative is for the breakwater to be re-located prior to the FPA outer harbour being constructed, and situated in a manner that will not cause such conflict. Should the proposal be approved, a commitment would be necessary in respect of removal of the breakwater if it conflicts with future developments. To what extent has the proponent demonstrated that the proposal at James Point will not compromise the future developments proposed by FPA and others?</p> <p>Submissions understand that the Fremantle Port Authority (FPA) is also planning to build new port</p>	<p>impacts of its proposal on Cockburn Sound incorporated existing and approved maritime developments in the model domain.</p> <p>The model used is similar to the one used by the EPA to assist in the development of draft Environmental Quality Criteria for Cockburn Sound.</p> <p>The proponent has also undertaken a preliminary cumulative impact assessment of its entire proposal, including Stage 2, at the request of the EPA. The preliminary impact assessment document was not intended to form an element of the assessment of the Stage 1 proposal, but rather to provide information to the EPA on the broader cumulative impacts of a larger port development concept at James Point. A copy of the report has been lodged in the DEP library.</p> <p>The EPA has not formed a view on this supplementary cumulative impact assessment work at this time.</p> <p>Cumulative impacts of the port as they relate to water quality and habitat are addressed under these factors.</p> <p><b>Cumulative impacts are not considered to be a relevant environmental factor.</b></p>

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
		<p>facilities in Cockburn Sound, to the north of James Point. The likely impacts of this proposal are not known at this time, but it would be expected that the impacts would be similar to the James Point port.</p> <p>The FPA proposal raises further issues, which affect the James Point proposal:</p> <ul style="list-style-type: none"> <li>• Can two ports be justified on economic and planning grounds?</li> <li>• Would the cumulative environmental and social impacts of both ports be unacceptable, but the impacts of a single port manageable?</li> <li>• Which site is best suited for a port and which site would cause fewer and less environmental and social impacts?</li> <li>• Which port offers the best opportunity to rationalise and consolidate the existing berthing facilities at Kwinana thus allowing greater public access to beaches in the Kwinana area?</li> </ul>	
Amenity	The port will be visible from Cockburn Sound and possibly Rockingham with possible impacts on visual amenity.	<p>The PER provides no details of how heavy vehicle traffic going in and out of the port is to be controlled so that residential areas are not adversely affected by the environmental impacts associated with odour, noise, dust and visual amenity. Furthermore, submissions asks whether the transport arrangements will remain unchanged in the event that the stockholding yards proposal is not approved but the port is given approval to export livestock.</p> <p>The proposed Stage 1 Port area extends for a considerable distance into Cockburn Sound and will be clearly visible from the Sound, Garden Island, and Rockingham. Visual amenity is not addressed in the PER, and it should be a requirement. What are the visual impacts of the port on the view shed from the shores of Cockburn Sound, Garden Island, and Rockingham? How will the proponent ensure that the visual amenity of Cockburn Sound is not unduly affected?</p>	<p>The routes proposed by the proponent for the transport of animals to the port are likely to reduce the public's exposure to the trade.</p> <p>In response to submissions, the proponent provided photographs of the project area with the port superimposed on the images. In the absence of the proposed livestock holding facility, the Stage 1 Port would be a relative low profile structure and would not be inconsistent with the industrial and port facilities already established in Kwinana.</p> <p>Increased ship movements in Cockburn Sound will contribute to the visual impact of the proposal. However, the EPA recognises that commercial shipping in Cockburn Sound is a fundamental activity for industry in Kwinana and a considerable amount of commercial shipping would occur in Cockburn Sound regardless of whether the proposal proceeds.</p> <p>The EPA notes that the proponent has committed to prepare and implement a Landscape Management Plan to minimise the visual impact of the proposal (commitment 51).</p> <p><b>Visual amenity is not considered to require further examination in the EPA's report.</b></p>
Quarantine (Introduction of disease)	The trade in livestock through the port may increase the risk of disease introduction.	<p>The increased likelihood of disease transfer/introduction, eg foot and mouth is of considerable concern with little attention given to quarantine issues in the PER. What quarantine and disease control measures will be in place to minimise the risk of disease transmittal from vessels arriving from foreign ports?</p> <p>Some animal diseases, including 'foot and mouth', are believed to be transmitted in wind blown dust from manure. The proposed location is extremely unprotected and exposed to prevailing winds that will</p>	<p>The risks of disease introduction via shipping at the port is a matter dealt with at a coordinated Federal level by AQIS and Australian Customs.</p> <p>The proponent's view is that, based on precedent set by current livestock transport to</p>

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
		<p>distribute dust inland. In addition, there are significant numbers of workers on adjacent industrial premises that may be exposed to both zoonotic (animal to human) diseases and Legionella bacteria.</p> <p>It is considered that there is a real risk of disease to residents and passers by who are generally not exposed to farm animals. Dust and associated microbes in faeces which is emitted from trucks <i>en route</i>, are of most concern in this regard.</p> <p>Should a significant outbreak of disease be detected in the livestock holding facility or the port area, then access to and from this area may need to be restricted for lengthy periods for quarantine reasons. The number of roads to the port is restrictive and access by trucks to and from other industries, including the Kwinana Power Station, in the area may be compromised by any quarantine order. Clearly, it would be disastrous for the Kwinana Industrial Area if power or other services could not be supplied to industry due to quarantine induced shut down.</p> <p>While it may be unlikely, a significant disease outbreak occurring within the stock facility could result in stock having to be disposed of in the event that quarantine prevents transport of stock away from the facility. Such an event would be extremely offensive and quarantine requirements could impact the operations of nearby industrial premises.</p>	<p>Fremantle Inner Harbour and exporting operations at the port, there appears to be negligible disease risk to humans who reside near transport routes to the port or in residential areas surrounding the port.</p> <p>Human health issues associated with transport and export of livestock are best addressed through the Health Act.</p> <p><b>The EPA considers that, in light of Federal controls on livestock export and imports and the present at Fremantle Ports, disease risk from livestock transport and export does not require further consideration in the EPA's report.</b></p>
Rail transport	The rail link to the port as shown in the PER may impact on adjacent landowners and surrounding land uses.	Concern was expressed regarding the proposed rail system that was shown in Figure 3.2 of the PER document.	<p>JPPL has advised that the proposed future rail link depicted in its PER does not form part of the Stage 1 Port proposal.</p> <p>The EPA considers that, should the proposed rail link be considered further and is likely, if implemented, to have a significant impact on the environment, it should be referred to the EPA for consideration.</p> <p><b>In view of the above, the EPA considers that rail transport does not require further consideration in the EPA's report.</b></p>
Impacts on roads	Increase in heavy vehicle movement associated with the port may impact on the condition of roads.	<p>Submissions raising issues about potential impacts of the proposal on roads focused on:</p> <ul style="list-style-type: none"> <li>• concern that the proposed truck numbers will negatively affect the condition of roads along the routes proposed in the PER;</li> <li>• questions about who will cover the cost of road maintenance;</li> <li>• concern that the proposed traffic movements documented in the PER will result in truck movements being reassigned from State roads to local roads and will consequently lead to nuisance in the form of road safety, noise and odour to adjoining properties;</li> <li>• the view that the use of local roads for livestock cartage movements is considered to be inappropriate;</li> <li>• questions about the potential impact of the proposal on the capacity on existing heavy vehicle routes to sustain further growth of transport into the KIA in the context of the importance of the area for the State; and</li> <li>• the view that the environmental and social impacts of any program for road building to accommodate the port proposal be assessed, as the quality of life of residents and communities in the area will be degraded.</li> </ul>	<p>The roads most significantly affected by increased heavy vehicle traffic for construction and operation of the port will be Anketell Road and Beard Street. Main Roads WA manages neither of these roads. Accordingly, both roads are the responsibility of the relevant Local Government Authority, which in this case is the Town of Kwinana.</p> <p>Information gathered by the proponent suggests that Anketell Road is currently used as an important route for heavy vehicles.</p> <p>Construction of the port could result in up to 56,000 additional heavy vehicle movements over a period of approximately 9 months.</p>



Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Relevant Environmental Factors
			<p>Ongoing operations will also cause an increase in traffic in the Kwinana area.</p> <p>The EPA understands that the issue of transportation access to the Stage 1 port is addressed by an agreement between the Government and the proponent.</p> <p>Future road and rail proposals would need to be considered on their individual merits.</p> <p>JPPL has made no commitment to assist in the maintenance of roads that are the responsibility of the local authority despite the proposal causing a considerable increase in the volumes of traffic.</p> <p>While the EPA notes that the proposal is likely to create additional road maintenance burdens, the provision of financial resources or financial arrangement for the maintenance of road infrastructure are beyond the scope of the EPA and its assessment.</p> <p><b>Accordingly, impacts on roads are considered not to require further consideration in the EPA's report.</b></p>
Livestock trade	The proponent intends the livestock trade to be a principle business for the port.	<p>Considerable opposition has been expressed in public submissions regarding the animal welfare aspects of the livestock trade generally. Issues raised focused on:</p> <ul style="list-style-type: none"> <li>• the view that it is unethical to export Australian animals to countries whose animal welfare standards are lower than our own;</li> <li>• concern that each year over a hundred thousand sheep die during the long journey to the Middle East;</li> <li>• concern about inhumane slaughter in foreign countries; and</li> <li>• the opinion that it would be more appropriate, both environmentally and economically, to slaughter animals in Australia and export frozen meat only.</li> </ul>	<p>The EPA understands that a sector of the community find the livestock export trade unpleasant. However, it is acknowledged that Government policy currently provides for the activity to occur.</p> <p>Ethical, animal welfare and economic issues are beyond the scope of the EPA's assessment of this proposal.</p> <p><b>The livestock trade per se is considered not to require further consideration in the EPA's report.</b></p>

# **Appendix 4**

## **Recommended Environmental Conditions and Proponent's Consolidated Commitments**

RECOMMENDED CONDITIONS AND PROCEDURES

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

JAMES POINT STAGE 1 PORT, COCKBURN SOUND, KWINANA

**Proposal:** The proposal is to construct and operate Stage 1 of a container and general cargo port, consisting of dredged channels, turning basin and berthing pocket, a cargo wharf on reclaimed land, an off-shore breakwater and associated cargo handling facilities, to the north of James Point in Cockburn Sound, as documented in schedule 1 of this statement.

The land area to be developed is located in the Kwinana Industrial Area within the Town of Kwinana. The Stage 1 Port proposal envisages handling a range of cargoes, notably livestock, though other material currently traded through port facilities in the Perth Metropolitan area may also be handled in the future. The proposal also includes the transport of materials along designated heavy vehicle transport routes to and from the Stage 1 Port during the construction and operations phases.

**Proponent:** James Point Pty Ltd

**Proponent Address:** PO Box 140, North Fremantle WA 6160

**Assessment Number:** 1353

**Report of the Environmental Protection Authority:** Bulletin 1076

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

*Procedural Conditions*

**1 Implementation and Changes**

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

1-2 Where the proponent seeks to change any aspect of the proposal as documented in schedule 1 of this statement in any way that the Minister for the Environment and

Heritage determines, on advice of the Environmental Protection Authority, is substantial, the proponent shall refer the matter to the Environmental Protection Authority.

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

## **2 Proponent Commitments**

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

## **3 Proponent Nomination and Contact Details**

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

## **4 Commencement and Time Limit of Approval**

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

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

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

The application shall demonstrate that:

- the environmental factors of the proposal have not changed significantly;

- new, significant, environmental issues have not arisen; and
- all relevant government authorities have been consulted.

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

### *Environmental Conditions*

## **5 Compliance Audit and Performance Review**

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

Note: Under Sections 48(1) and 47(2) of the Environmental Protection Act 1986, the Chief Executive Officer of the Department of Environmental Protection is empowered to audit the compliance of the proponent with the Statement and should directly receive the compliance documentation, including environmental management plans, related to the conditions, procedures and commitments contained in this Statement.

Usually, the Department of Environmental Protection prepares an audit table which can be utilised by the proponent, if required, to prepare an audit program to ensure that the proposal is implemented as required. The Chief Executive Officer is responsible for the preparation of written advice to the proponent, which is signed off by either the Minister or, under an endorsed condition clearance process, a delegate within the Environmental Protection Authority or the Department of Environmental Protection that the requirements have been met.

- 5-2 The proponent shall submit a performance review report every five/six years after the start of the operations phase, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority, which addresses:
- the major environmental issues associated with the project; the targets for those issues; the methodologies used to achieve these; and the key indicators of environmental performance measured against those targets;
  - the level of progress in the achievement of sound environmental performance, including industry benchmarking, and the use of best available technology where practicable;
  - significant improvements gained in environmental management, including the use of external peer reviews;
  - stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed; and
  - the proposed environmental targets over the next five/six years, including improvements in technology and management processes.

## **6 Public Availability of Environmental Management Programmes**

6-1 Prior to the implementation of the environmental management programmes and plans referred to within the commitments, the proponent shall make the management plans which constitute the following programmes publicly available to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority:

1. Construction Environmental Management Programme (commitment 2); and
2. Operations Environmental Management Programme (commitment 24).

## **7 Dredging and Reclamation Management**

7-1 Prior to the commencement of dredging and reclamation activities, and in addition to meeting the requirements of commitments 4 and 5, the proponent shall prepare a 'best practice' Dredging and Reclamation Management Plan, which is in addition to the requirements of commitments 4 and 5, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

Note: In preparation of advice to the Minister, the Environmental Protection Authority expects that advice of the following management body and agencies will be obtained:

- Cockburn Sound Management Council;
- Department of Planning and Infrastructure (Maritime);
- Fremantle Ports;
- Department of Health;
- Department of Fisheries; and
- Department of Conservation and Land Management.

The objectives of this Plan are:

- to protect seagrass from the effects of sedimentation and deterioration in light climate;
- to ensure dredging and reclamation have no long term effects on the health and distribution of seagrasses in Cockburn Sound;
- to protect seafood quality, aquaculture production and recreational values in Cockburn Sound;
- to ensure dredging and reclamation do not unreasonably impact the aesthetic values of Cockburn Sound; and
- to protect existing industrial water supply values in Cockburn Sound.

This Plan shall address management measures to protect ecological and social values of Cockburn Sound and shall include:

1. type of dredge to be used;
2. timing and duration of dredging and reclamation activities;
3. derivation of 'alert' and 'action' criteria for:
  - protection of seagrasses from the effects of reduced water clarity and sedimentation which have a temporal component and which are based on the metabolic light requirements of seagrass;
  - maintenance of sufficient light at the seabed to enable photosynthesis in benthic primary producers (e.g. benthic microalgae) in areas devoid of seagrass;
  - nutrients and tributyltin in the dredge plume;

- protection of aesthetic values of Cockburn Sound waters during dredging;
  - suspended sediments at the Western Power Kwinana Power Station and British Petroleum Kwinana Refinery cooling water intakes, to protect the environmental value 'Industrial Water Supply', as agreed with Western Power and BP;
4. procedures for monitoring against all 'alert' and 'action' criteria developed as required by item 3 above, as well as relevant seafood quality criteria and aquaculture production criteria set out in the Environmental Protection Authority document *Draft Environmental Quality Criteria Reference Document (2001)* and its updates and revisions;
  5. adaptive management actions and contingency strategies to be implemented where 'alert' and 'action' criteria as well as designated Environmental Quality Criteria monitored as required by item 4 above may not be met, including the implementation of actions, such as additional turbidity controls and temporary cessation of dredging, to minimise the extent of turbidity plumes ;
  6. procedures for seagrass health monitoring against Environmental Quality Criteria specified in the Environmental Protection Authority document *Draft Environmental Quality Criteria Reference Document (2001)*, including collection of baseline data;
  7. sampling and analysis of contaminants in sediments within the area to be dredged prior to the commencement of dredging consistent with the requirements of the Australian and New Zealand Environment and Conservation Council (ANZECC) document *Interim Ocean Disposal Guidelines (1998)* and its updates and revisions;
  8. adaptive management actions to be implemented where ANZECC (1998) criteria may not be met, including alternative spoil containment and disposal options;
  9. return water control; and
  10. reporting procedures.

Note: The above Environmental Quality Objectives, the areas to which they apply and the draft Environmental Quality Criteria are subject to review, and may be varied from time to time by the Environmental Protection Authority.

- 7-2 The proponent shall implement the Dredging and Reclamation Management Plan required by condition 7-1, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.
- 7-3 The proponent shall make the Dredging and Reclamation Management Plan required by condition 7-1 publicly available, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.
- 7-4 In addition to the Dredging and Reclamation Management Plan required by condition 7-1, the proponent shall arrange for an inspection by an appropriately qualified expert to ensure that there is no sediment in the dredging equipment; that ballast water (if any) has been managed according to the Australian Quarantine Inspection Service ballast water requirements; and that any fouling organisms on the dredging equipment do not present a risk to Perth's coastal waters, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

Note: In preparation of advice to the Minister, the Environmental Protection Authority expects that advice of the following agencies will be obtained:

- Australian Quarantine Inspection Service; and
- Commonwealth Scientific and Industrial Research Organisation.

7-5 The proponent shall manage any sediment or fouling organisms found as a consequence of the inspection required by condition 7-4, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

## **8 Marine Management - Operations**

8-1 In addition to the requirements included in commitment 25 (Marine Water and Sediment Quality Management Plan), and consistent with the Environmental Protection Authority document *Draft Environmental Protection Policy for Cockburn Sound* (2001), the proponent shall monitor and manage water and sediment quality within the Stage 1 Port area and the nearby waters of Cockburn Sound during the operations phase to achieve the following Environmental Quality Objectives, until such time as a statutory document, detailing management objectives for port/harbour areas in Cockburn Sound is gazetted:

1. Maintenance of ecosystem integrity;
  - The waters within the Stage 1 Port area managed to achieve a ‘moderate’ level of ecosystem protection; and
  - The waters east of the boundary between ‘moderate’ and high’ protection areas delineated in the Environmental Protection Authority Document *Draft Environmental Protection (Cockburn Sound) Policy 2001* managed to achieve a ‘high’ level of ecosystem protection.
2. Maintenance of aquatic life for human consumption
3. maintenance of aquaculture production;
4. Maintenance of primary contact recreation;
5. Maintenance of secondary contact recreation;
6. Maintenance of aesthetic values; and
7. Maintenance of industrial water supply,

to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

Note: The above Environmental Quality Objectives, the areas to which they apply and the draft Environmental Quality Criteria are subject to review, and may be varied from time to time by the Environmental Protection Authority.

8-2 The proponent shall establish whether the Environmental Quality Objectives referred to in condition 8-1 are achieved within its stage 1 port waters by monitoring environmental quality against the draft Environmental Quality Guidelines and Standards presented in the Environmental Protection Authority document *Draft Environmental Quality Criteria Reference Document* (2001), to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

8-3 In meeting the requirements of condition 8-1, the proponent shall develop and implement adaptive management strategies in the event that monitoring (required by commitment 25) establishes that Environmental Quality Guidelines and Standards referred to in condition 8-2 may not be met, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.



## **9 Marine Habitat Restoration and Management**

9-1 Prior to construction, the proponent shall develop a Marine Habitat Restoration and Management Plan:

1. to investigate the restoration of marine habitat lost as a consequence of the proposal, including investigations into major constraints, opportunities and threatening processes in relation to seagrass growth and re-growth in Cockburn Sound; and
2. to implement management actions with the objective of achieving the maintenance or improvement of the ecological and/or social values of Cockburn Sound,

to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

Note: In preparation of advice to the Minister, the Environmental Protection Authority expects that advice of the Cockburn Sound Management Council will be obtained.

9-2 The proponent shall implement the Marine Habitat Restoration and Management Plan required by condition 9-1, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

9-3 The proponent shall make the Marine Habitat Restoration and Management Plan required by condition 9-1 publicly available, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

9-4 The proponent shall monitor and manage the effectiveness of any remedial action(s) taken in response to the findings of the restoration program referred to in conditions 9-1 to 9-3, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

## **10 Odour Management**

10-1 During the detailed design phase and prior to the operations phase, the proponent shall prepare an Odour Management Plan, incorporating adaptive management strategies, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

The objectives of this Plan are:

- to ensure that the amenity, health, welfare and comfort of residents and workers in the Kwinana Industrial Area are protected from unreasonable odour levels; and
- to detail 'best practice' design and operation for the facility, based on national and international benchmarking.

This Plan shall address:

1. procedures to minimise the time required for vessel loading;
2. procedures to minimise the odour emitted by livestock while in transit to the port and during vessel loading, including procedures to minimise animal stress;
3. vessel scheduling to minimise the frequency of visits to the Stage 1 Port by partially loaded livestock vessels;
4. procedures for the frequent collection, temporary holding and daily removal of animal wastes from the port;

5. the establishment and maintenance of logs to record circumstances (see note) during livestock transport and export activities at the Port;
6. routine monitoring of odour emissions from the Port;
7. the establishment and maintenance of a complaints register;
8. procedures for response to and reporting of odour complaints;
9. the design and management of zero-discharge vehicle wash-down facilities;
10. the treatment and disposal of wastes from vehicle wash-down;
11. the treatment and disposal of surface water run-off from port areas used for livestock export activities;
12. the use of information gathered in fulfilling the requirements of items 5 and 7 above to identify any individual ships, trucks, activities or conditions which result in odour problems;
13. the measures taken to address odour problems identified in item 12 above;
14. review procedures for continual improvement of odour management; and
15. independent external audit of the implementation of the Odour Management Plan, including complaint response.

Note: The ‘circumstances’ referred to in item 5 include such factors as meteorological conditions, time of day, loading rate, duration of loading, vessel name, whether vessels are partly loaded, time that animals loaded at other ports have been on board, estimates of the volumes of animal waste stored on board partially loaded vessels, how and where those wastes are managed on individual ships, and system or equipment failures.

Note: In preparation of advice to the Minister, the Environmental Protection Authority expects that the advice of the following party will be obtained:

- The Livestock Export Environmental Management Consultative Committee required by commitment 45.

10-2 The proponent shall implement the Odour Management Plan required by condition 10-1, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

10-3 From time to time within the first 12 months and periodically during the next three years following the commencement of livestock export operations, in addition to the requirements of the Odour Management Plan referred to in condition 10-1, the proponent shall undertake odour sampling of livestock exporting operations, having regard for worst-case conditions, and shall assess the odour levels in the samples collected, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

Note: In assessing the odour levels in the samples collected, the proponent shall use dynamic olfactometry methods and appropriate modelling to ensure that odour concentration equivalent to an intensity level of ‘distinct’, averaged over three minutes, 99.5<sup>th</sup> percentile is met at odour-sensitive premises.

10-4 The proponent shall provide the Odour Management Plan required by condition 10-1 and results arising from condition 10-3 to the Environmental Protection Authority for review after 15 months of livestock export operations, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

Note: This review shall be repeated after a further three years of livestock export operations.

- 10-5 In the event that the Environmental Protection Authority determines that modifications to odour management are desirable, the proponent shall amend the Odour Management Plan (required by condition 10-1) accordingly, to the requirements of the Minister for the Environment and Heritage.
- 10-6 The proponent shall make the Odour Management Plan required by condition 10-1 and the results arising from condition 10-3 publicly available, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

## 11 Noise Management

- 11-1 Prior to the commencement of port operations, the proponent shall develop a Noise Management Plan, incorporating adaptive management strategies, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

The objectives of the Plan are:

- to ensure that the amenity, health, welfare and comfort of residents in surrounding areas is protected; and
- to ensure that the noise levels from the proposal comply with the noise levels prescribed in the *Environmental Protection (Noise) Regulations 1997* and the requirements of conditions 11-8 and 11-9.

This Plan shall:

1. identify all sources of noise emissions from the proposal;
2. show revised noise modelling contours based on operations since commencement;
3. use results from item 2 to identify reference positions for the measurement and monitoring of noise levels;
4. set out procedures for the implementation of operational restrictions for livestock vessels identified in the Noise Assessment Reports required by condition 11-4;
5. include procurement strategies and policies for port equipment;
6. set out procedures to restrict the operation of fodder loading equipment at night (2200 hours to 0700 hours);
7. identify noise control measures required to minimise and reduce noise emissions from the proposal as far as practicable and reasonable;
8. include a complaints register;
9. set out procedures for response to and reporting of noise complaints;
10. include procedures for review and continual improvement of noise management; and
11. set out reporting procedures.

Note: In preparation of advice to the Minister, the Environmental Protection Authority expects that the advice of the following party will be obtained:

- The Livestock Export Environmental Management Consultative Committee required by commitment 45. .

- 11-2 During operations at the port, the proponent shall implement the Noise Management Plan required by condition 11-1, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.
- 11-3 The proponent shall make the Noise Management Plan required by condition 11-1, including the results of, and all inputs to, the noise model used, publicly available, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.
- 11-4 During the operations phase, the proponent shall prepare and submit a Noise Assessment Report for each livestock vessel which berths at the Stage 1 Port for the first time, within 60 days following entry of the vessel into the Stage 1 Port, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

The preparation of a Noise Assessment Report shall include/address the following:

- (1) Engagement of a suitably qualified acoustic consultant to prepare the Report;
  - (2) Measurements of emitted noise under known operational conditions;
  - (3) Calculation of the single point sound power level for the livestock vessel; and
  - (4) If (3) above is determined to be greater than 118 dB(A), then the Noise Assessment Report shall set out operational restrictions to be applied to that vessel on subsequent visits to ensure compliance with a maximum single point sound power level of 118 dB(A);
- 11-5 The proponent shall not allow a livestock vessel to operate in the Stage 1 Port if the Noise Assessment Report required by condition 11-4 identifies that there are no practicable operational restrictions that can be applied to the vessel with a single point sound power level greater than 118 dB(A) which would permit it to operate at sound power levels below this value.

Note: A noise level from a livestock vessel that exceeds the maximum single point sound power level of 118 dB(A) is not taken as a breach of the condition if it was the result of noise emitted from a vessel entering the Stage 1 Port for the first time for the purpose of undertaking a Noise Assessment Report required by condition 11-4.

- 11-6 Prior to the commencement of the operations phase, the proponent shall engage a suitably qualified acoustic consultant to prepare an Acoustic Test Report for fodder loading equipment, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

The objective of this Report is to demonstrate that the single point sound power level of fodder loading equipment to be used does not exceed 115 dB(A).

- 11-7 During the operations phase, the proponent shall not use fodder loading equipment, other than that determined by the requirements of condition 11-6 to have a sound power level less than 115 dB(A), to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.
- 11-8 When noise emissions resulting from the operation of the proposal are received within the boundary of Area B of the Kwinana Policy Area within the meaning of the *Environmental Protection (Atmospheric Wastes) Policy Approval Order 1992*, the proponent shall determine the influencing factor according to Schedule 3 Clause 2 (2) of

the *Environmental Protection (Noise) Regulations 1997*, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

Notes:

1. This requirement shall lapse at such time as an amendment to the *Environmental Protection (Noise) Regulations 1997* takes effect in relation to such emissions.
2. The influencing factor has the same meaning as in the *Environmental Protection (Noise) Regulations 1997*.

11-9 The proponent shall ensure that when noise emissions from the Stage 1 Port are received within the boundary of Area B of the Kwinana Policy Area within the meaning of the *Environmental Protection (Atmospheric Wastes) Policy Approval Order 1992*, the levels comply with the noise levels determined using the methods required by condition 11-8, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

## **12 Public Access**

12-1 Prior to the commencement of construction, the proponent shall prepare a Public Access Management Plan which makes provision for public access to the port area, including breakwaters and water area, subject to meeting acceptable levels of individual and societal risk, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

Note: In preparation of advice to the Minister, the Environmental Protection Authority expects that advice of the following management body, Port Authority and agency will be obtained:

- Cockburn Sound Management Council;
- Fremantle Ports; and
- Department of Mineral and Petroleum Resources.

12-2 The proponent shall make the Public Access Management Plan required by condition 12-1 publicly available, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

12-3 The proponent shall implement the Public Access Management Plan required by condition 12-1, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

## **Procedures**

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

## **Notes**

- 1 The Minister for the Environment and Heritage will determine any dispute between the proponent and the Environmental Protection Authority or the Department of Environmental Protection over the fulfilment of the requirements of the conditions.
- 2 The proponent is required to apply for a Works Approval and Licence under the provisions of Part V of the *Environmental Protection Act 1986* if it is to undertake activities associated with bulk material loading or unloading or any other activity prescribed under Part V of the *Environmental Protection Act 1986*.

## Schedule 1

### The Proposal (Assessment No.1353)

James Point Pty Ltd (JPPL) propose to construct and operate Stage 1 of a port facility consisting of dredged channels, turning basin and berthing pocket, a cargo wharf on reclaimed land, an off-shore breakwater and associated cargo handling facilities, to the north of James Point in Cockburn Sound, Western Australia.

The ultimate project may involve other stages, however, at this time the proponent is only seeking environmental approval for Stage 1 and therefore the recommended conditions set out in this Statement only relate to the Stage 1 Port proposal.

Stage 1 Port proposal comprises:

- Creation of approximately 172,000 m<sup>2</sup> of land-back wharfed area, of which approximately 151,000 m<sup>2</sup> would be reclaimed below low water mark, to create 600 m of land-backed wharf north of the existing BHP jetty No. 1;
- dredging of approximately 1,180,400 m<sup>3</sup> of marine sediments to create a berthing pocket dredged to -13 m Chart Datum (CD) immediately west of the reclaimed land backed wharf, an entrance channel dredged to approximately -12.2 m CD, and an increase in the depth and width of the Stirling Channel approach to -12.2 m CD with a final width of approximately 175 m. The dredging program is expected, as far as practicable, balance the reclamation requirements;
- import of additional clean fill as required to complete the reclamation; and
- an offshore breakwater approximately 850 m long, with a gap of 200 m between the land backed wharf and the eastern end of the breakwater requiring the importation of approximately 574,000 m<sup>3</sup> of core and armour material;
- road transport of armour materials to the port;
- anticipated exports including livestock, scrap metals and general bulk cargoes, including dangerous goods which are currently handled by other port facilities in the Perth Metropolitan area; and
- anticipated imports including general cargoes, product steel and bulk products, including dangerous goods which are currently handled by other port facilities in the Perth Metropolitan area.

The location of the Stage 1 Port proposal is shown in Figure 1. The constructed elements of elements of the proposal are shown in Figure 2.

**Table 1: Key Characteristics**

Element	Quantities/Description
Reclamation	Approximately 172,000 square metres of filled land and seabed to create a 600 metre long land-backed wharf.  Of this area, approximately 151,000 square metres would be reclaimed below low water mark, including approximately 82,000 square metres of seabed which is currently less than 10 metres deep.

Element	Quantities/Description
Dredging	<p>Dredging of approximately 1,274,700 cubic metres of marine sediments to create a berthing pocket dredged to minus 13 metres Chart Datum (CD) immediately west of the reclaimed land backed wharf, an entrance channel dredged to approximately minus 12.2 metres CD, and an increase in the depth and width of the Stirling Channel approach to minus 12.2 metres CD with a final width of approximately 175 metres.</p> <p>This dredging would occur over an area of approximately 800,000 square metres, including approximately 90,000 square metres of seabed that is currently less than 10 metres deep.</p>
Offshore breakwater	<p>Approximately 800 metres long in 10 meter deep water extending from approximately 200 metres off-shore in an arc to approximately 500 metres off-shore.</p> <p>Breakwater construction requiring approximately 574,000 cubic metres of imported limestone core and armour material.</p>
Target trades	<p>Exports may include:</p> <ul style="list-style-type: none"> <li>• Livestock—sheep, cattle, fodder</li> <li>• Bulk trades—silica sand, mineral sand</li> <li>• Scrap steel</li> <li>• General cargo—containers, bulka bags, project cargoes.</li> </ul> <p>Imports may include:</p> <ul style="list-style-type: none"> <li>• Bulk trades—fertiliser products, grain, cement clinker</li> <li>• General cargo—steel products, project cargo.</li> </ul>
Transport	<p><b>Construction</b>  Transport of rock armour, core material and fill requiring approximately 56,000 truck movements over a period of approximately 9 months.</p> <p><b>Operations</b>  Transport of livestock from farms and existing holding facilities at Mundijong and Wellard on an on-going basis. Livestock transport will result in an increase of heavy vehicle traffic on Anketell Road west of the Kwinana Freeway, and on Rockingham Road and Beard Street, Kwinana.</p>

### Figures

Figure 1: Location map, Stage 1 Port, Kwinana

Figure 2: Conceptual layout showing land-backed wharf (including dimensions), dredging area and depths and offshore breakwater, Stage 1 Port, Kwinana



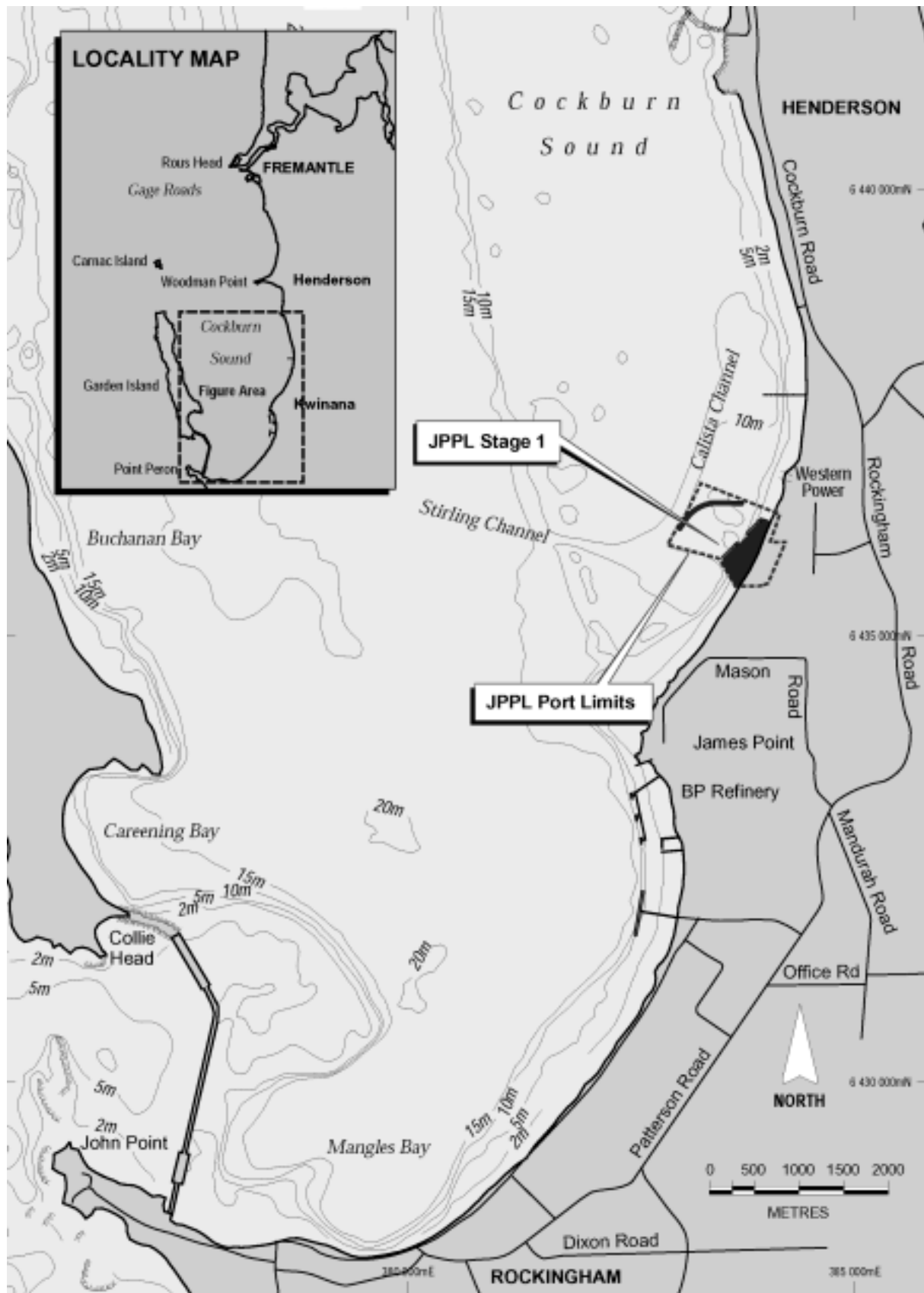
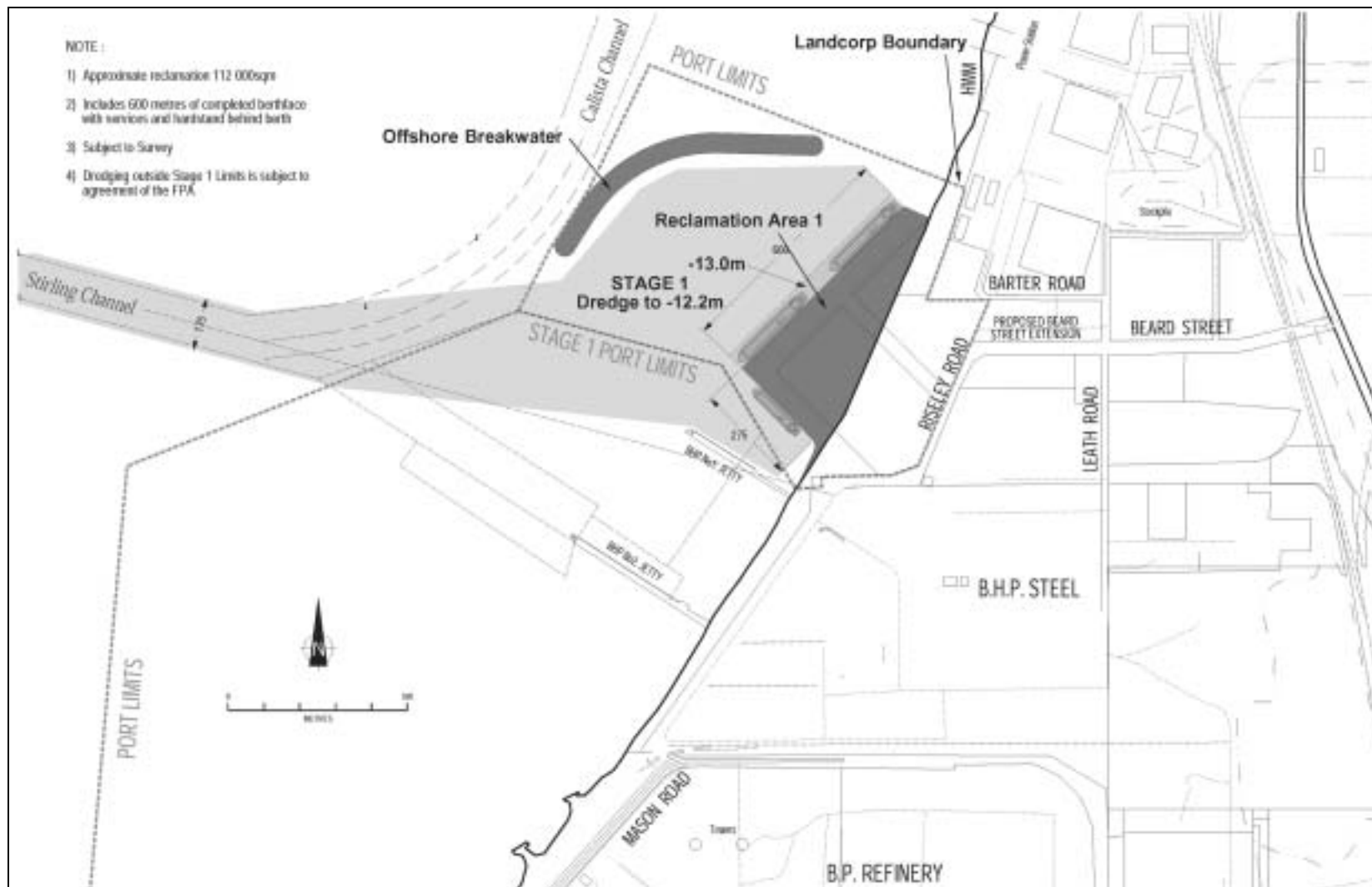


Figure 1: Location map, James Point Stage 1 Port, Kwinana



**Figure 2: Conceptual layout of the James Point Stage 1 Port showing land-backed wharf (including dimensions), dredging area and depths and offshore breakwater, Stage 1 Port, Kwinana**

## **Schedule 2**

### **Proponent's Environmental Management Commitments**

November 2002

**James Point Port, Stage 1, Cockburn Sound, Kwinana**  
(Assessment No. 1353)

**James Point Pty Ltd**

## **PROPONENT'S CONSOLIDATED ENVIRONMENTAL COMMITMENTS**

### **Preamble to Table of Commitments**

James Point Pty Ltd (JPPL; the proponent) recognises that its proposal to construct and operate a Port Facility at Kwinana has the potential to impact on the environment of Cockburn Sound, the surrounding area, and on the amenity of people working and living within the area.

The following Table of Commitments summarises the proponent's specific commitments made for each of the environmental issues which have been identified as potentially impacted by the proposal.

In addition to the commitments outlined in the table, JPPL undertakes to adopt 'best practice' in its Management Planning and the design, construction and operation of the Port.

Particular areas to be addressed and relevant principles to be adopted are as follows:

#### **Surface Water and Runoff**

Ensure no spillage or contaminated runoff into Cockburn Sound

- Areas to be graded to collection points to ensure runoff is controlled;
- Loading and unloading systems to minimize the potential for spillage into the water; and
- Wash down procedures to ensure no washing is permitted to directly enter the water.

#### **Groundwater Protection**

Ensure no groundwater contamination

- Holding areas for stock and for potential contaminants to be fully sealed and contained;
- Areas to be cleaned after use; and
- collected waste to be disposed of by approved means.

#### **Seagrass Protection**

Ensure seagrasses are protected during construction

- Identify and define areas subject to potential threat;
- Agree and implement a monitoring program to apply during and after construction;
- Agree monitoring criteria and 'alert' and 'action' levels to apply to construction operations such as dredging and breakwater construction;
- Develop a strategy for response should the action level be exceeded; and
- Ensure that all environmental monitoring and response conditions are reflected in the Construction Program and relevant contracts.

#### **Noise Control**

Ensure noise levels are within acceptable limits

- Agree limits to apply at boundary and at noise sensitive premises;
- Analyse existing modelling and undertake further modelling to ensure predicted levels are within acceptable limits;
- design equipment and operations to meet acceptable limits;
- Establish a monitoring program to ensure compliance; and
- Undertake modifications if and as necessary to achieve acceptable limits.

## Odour Control

Ensure odour levels are within acceptable limits.

The principles to be adopted to ensure odour limits are within acceptable limits include:

- Minimize stock holding time in Port (both on vessel and on land);
- Fast turn around time for vessels;
- Efficient loading systems;
- Good coordination of vessel arrival with delivery of stock to port;
- minimize waste spillage;
- Early collection and effective disposal of waste;
- Minimise loading stress on animals;
- Use of odour neutralizers (either in feed or on waste products).

Proponent's environmental management commitments

Stage One Development of Port Facilities at James Point, Kwinana (Assessment Number 1353)					
	TOPIC	ACTION	OBJECTIVE/S	TIMING	ADVICE
1	Coastal processes	Undertake detailed wave and sediment transport study to derive optimum Stage 1 port configuration with respect to minimising impacts on coastal processes. The final configuration will be presented to the EPA, FPA, CSMC and Western Power for review.	To minimise the impact of the port and offshore breakwater on adjacent beaches and the Western Power cooling water outfall.  Additional objectives set out in correspondence from the proponent dated 8 October 2002, include: <ul style="list-style-type: none"> <li>To maximise water circulation in and through the area of the proposed port; and</li> <li>To get the best design for the offshore breakwater that will optimise the operational conditions of the Stage 1 Port.</li> </ul>	Prior to finalisation of the Construction EMP.	FPA, Western Power, CSMC
2	Construction Environmental Management Programme (EMP)	Prepare an EMP for construction phase of the project which includes management plans for: <ol style="list-style-type: none"> <li>Dredging and reclamation activities;</li> <li>Extraction and transport of limestone and fill;</li> <li>Minimising construction noise;</li> <li>Minimising dust associated with construction;</li> <li>Minimising impacts on dunes and vegetation and rehabilitation of same;</li> <li>Risk;</li> <li>Public safety;</li> <li>Aboriginal Heritage; and</li> <li>Groundwater quality.</li> </ol>	To provide an effective framework for environmental management of the construction phase of the project, such that: <ul style="list-style-type: none"> <li>DEP can audit commitments to environmental management;</li> <li>Detailed management plans for each commitment can be reviewed and approved by DEP prior to implementation;</li> <li>Any adverse impacts can be revealed in a timely manner; and</li> <li>Provide contingency plans to deal with any adverse impacts.</li> </ul>	Prior to commencement of construction.	Local Government Authorities: <ul style="list-style-type: none"> <li>ToK</li> <li>CoR</li> <li>CoC</li> </ul>
3	Construction Environmental Management Programme (EMP)	Implement Construction Environmental Management Programme.	As per 2.	During construction	Local Government Authorities <ul style="list-style-type: none"> <li>ToK</li> <li>CoR</li> <li>CoC</li> </ul>
4	Construction EMP: Dredge and Reclamation Management Plan	Prepare Dredge and Reclamation Management Plan which addresses: <ol style="list-style-type: none"> <li>Monitoring and management of impacts of temporary causeway on coastal processes; and</li> <li>Reporting of monitoring results.</li> </ol>	Manage impacts on coastal processes such that beach erosion does not cause adverse impacts.  Ensure that construction does not adversely impact on the operations of any adjacent industries or activities.	Prior to commencement of construction	CALM, DPI, CSMC, FPA Local Government Authorities (ToK, CoC, CoR)
5	Construction EMP: Dredge and Reclamation Management Plan.	Implement Dredge and Reclamation Management Plan.	As per 4.	During construction	CALM, DPI, CSMC, FPA Local Government Authorities (ToK, CoC, CoR)

Stage One Development of Port Facilities at James Point, Kwinana (Assessment Number 1353)					
	TOPIC	ACTION	OBJECTIVE/S	TIMING	ADVICE
6	Construction EMP: Rock Armour and Fill Extraction and Transport Plan.	Prepare Rock Armour and Fill Extraction and Transport Plan which addresses: 1. Transport route(s); 2. Duration of trucking activities; 3. Hours of transport; and 4. Suitability of source of fill and armour.	Minimise the impact on noise-sensitive premises of increased traffic movement.  Minimise impacts of transport activities on local residents  Ensure additional fill required for reclamation works is of acceptable standard, compatible with intended end use and surrounding environment, and consistent with DEP criteria.	Prior to commencement of construction.	Local Government Authorities
7	Construction EMP: Rock Armour and Fill Extraction and Transport Plan.	Implement Rock Armour and Fill Extraction and Transport Plan.	As per 6.	During construction	Local Government Authorities
8	Construction EMP: Noise Management Plan	Prepare Noise Management Plan which will include the following: 1. Qualitative noise assessments to be conducted near closest noise-sensitive premises during construction. If considered unduly intrusive, quantitative noise measurement will be conducted; 2. Management response to unacceptable noise levels will include restrictions on times of day or wind directions under which pile driving is conducted; 3. Management of construction traffic such that the requirements of the EPA Preliminary Draft Guidance Statement #14 "Road and Rail Transport Noise" are met; and 4. Establishment of a complaints mechanism to record and respond to any noise complaints from neighbours or the public.	Ensure noise impacts emanating from construction activities comply with statutory requirements and acceptable (and appropriate) standards.  Minimise impacts of construction activities on nearby noise-sensitive locations.	Prior to commencement of construction.	Local Government Authorities
9	Construction EMP: Noise Management Plan	Implement Noise Management Plan	As per 8.	During construction	Local Government Authorities
10	Construction EMP: Dust Management Plan	Prepare Dust Management Plan which will address: 1. Dust control on trucks; 2. Procedures for dust control on site; 3. Procedures for dust monitoring; and 4. Contingencies plans/strategies.	Protect the surrounding land users such that dust and particulate emissions will not adversely impact upon their welfare and amenity or cause health problems by meeting the <i>Guidelines for the Prevention of Dust and Smoke Pollution from Land Development Sites in WA and the Environmental Protection (Kwinana)(Atmospheric Wastes) Policy 1999</i> .  Minimise impacts of construction activities on dust levels away from the site	Prior to commencement of construction	Local Government Authorities
11	Construction EMP: Dust Management Plan	Implement Dust Management Plan	As per 10	During construction	Local Government Authorities

Stage One Development of Port Facilities at James Point, Kwinana (Assessment Number 1353)					
	TOPIC	ACTION	OBJECTIVE/S	TIMING	ADVICE
12	Construction EMP: Dune and Vegetation Management Plan.	Prepare a Dune and Vegetation Management Plan which addresses: 1. Construction impact on dunes (minimised beyond that required for reclamation); and 2. Construction impact on vegetation (minimised beyond that required for reclamation).	Keep loss of terrestrial vegetation and dunes to the minimum required to construct the port. Retain and protect remaining vegetation.	Prior to commencement of construction	Local Government Authorities
13	Construction EMP: Dune and Vegetation Management Plan.	Implement Dune and Vegetation Management Plan.	As per 12	During construction.	
14	Construction EMP: Construction Risk Management Plan.	Prepare Construction Risk Management Plan which: 1. Identifies hazards; 2. Includes a safety management system; 3. Includes an emergency management system; 4. Includes an induction process, and 5. Procedures for auditing the plan. Present the plan to Kwinana Industries Mutual Aid committee and regulators for approval.	Ensure that the site is operated in a safe manner and that risks from neighbouring hazardous facilities in the Kwinana Industrial Area are allowed for during construction.	Prior to construction.	DMPR
15	Construction EMP: Construction Risk Management Plan.	Implement Construction Risk Management Plan.	As per 14	During construction.	
16	Construction EMP: Public Safety Plan	Prepare Public Safety Plan which addresses: 1. Restriction of public access to the construction site; 2. Marine equipment complies with relevant regulations; and 3. Public notification of any restrictions.	Maintain public safety during construction.	Prior to commencement of construction	Local Government Authorities DPI
17	Construction EMP: Public Safety Plan	Implement Public Safety Plan.	As per 16	During construction	Local Government Authorities
18	Construction EMP: Aboriginal Heritage Management Plan	Prepare Aboriginal Heritage Management Plan which addresses: 1. Aboriginal heritage; 2. Uncovering of skeletal material; and 3. Uncovering of artefacts.	Ensure 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.	Prior to commencement of construction	Department of Indigenous Affairs
19	Construction EMP: Aboriginal Heritage Management Plan	Implement Aboriginal Heritage Management Plan	As per 18	During construction	



Stage One Development of Port Facilities at James Point, Kwinana (Assessment Number 1353)					
	TOPIC	ACTION	OBJECTIVE/S	TIMING	ADVICE
20	Construction EMP: Contaminated Land Management Plan	Prepare a Contaminated Land Management Plan which addresses: 1. A survey to establish the level of any soil contamination within the port site; 2. the preparation of management plans in consultation with DEP in the event that contaminated soil is discovered; and 3. provision of certification to DEP that land meets appropriate contamination guidelines prior to construction.	Ensure that soil quality meets the appropriate guidelines.	Prior to commencement of construction	Local Government Authorities
21	Construction EMP: Contaminated Land Management Plan	Implement Contaminated Land Management Plan	As per 20	Prior to commencement of construction	Local Government Authorities
22	Construction EMP: Groundwater Quality Management Plan	Prepare a Groundwater Quality Management Plan which addresses: 1. A survey to establish the groundwater quality within the port site; 2. Berth design; and 3. Management of any contaminated groundwater flowing within the port boundaries.	Protect quality of the groundwater and ensure that any existing contamination does not affect the construction of the port.  Determine whether further sediment sampling may be required if significant groundwater contamination is detected.  To ensure that groundwater flows and quality will not have an impact on the water quality in the port.  Protect the agreed Environmental Quality Objectives for the port waters.	Prior to commencement of construction	WRC
23	Construction EMP: Groundwater Quality Management Plan	Implement Groundwater Quality Management Plan.	As per 22	During construction	

Stage One Development of Port Facilities at James Point, Kwinana (Assessment Number 1353)					
	TOPIC	ACTION	OBJECTIVE/S	TIMING	ADVICE
24	Port Operations EMP	The proponent will prepare an Environmental Management Programme (EMP) for the operation phase which will address the following specific issues via separate management plans: <ol style="list-style-type: none"> <li>1. Water and sediment quality;</li> <li>2. Coastal stability;</li> <li>3. Maintenance Dredging;</li> <li>4. Ballast water;</li> <li>5. Introduced species;</li> <li>6. Oil spill planning;</li> <li>7. Surface water quality;</li> <li>8. Waste;</li> <li>9. Risk;</li> <li>10. Air quality;</li> <li>11. Livestock Export Environmental Management Consultative Committee</li> <li>12. Traffic;</li> <li>13. Feral pigeons;</li> <li>14. Landscaping; and</li> <li>15. Community consultation.</li> </ol>	Provide a framework for environmental management of the port, such that: <ul style="list-style-type: none"> <li>• DEP can audit commitments to environmental management;</li> <li>• Detailed management plans for each commitment can be reviewed and approved by DEP prior to implementation;</li> <li>• Any adverse impacts can be revealed in a timely manner;</li> <li>• Provide contingency plans to deal with any adverse impacts; and</li> <li>• The public may be kept informed of environmental management activity at the port.</li> </ul>	Prior to commencement of operations.	CSMC, CALM, Local Government Authorities
25	Port Operations EMP: Water and Sediment Quality Management Plan	Prepare a Water and Sediment Quality Management Plan which addresses the following: <ol style="list-style-type: none"> <li>1. Monitoring programmes for contaminants in the sediments, seafood and sessile fauna in the vicinity of the development;</li> <li>2. Sediment and water quality monitoring programmes which have the ability to measure long-term changes in sediment and water quality, including changes in productivity and dissolved oxygen status;</li> <li>3. Monitoring of phytoplankton species within the port;</li> <li>4. Modelling the effect of the port on the dispersion of heat and contaminants from Western Power and BP; and</li> <li>5. Reporting procedures.</li> </ol>	Maintain marine water and sediment quality consistent with agreed Environmental Quality Objectives and Environmental Quality Criteria.	Prior to commencement of operations	CSMC, Dept. of Health
26	Port Operations EMP: Water and Sediment Quality Management Plan	Implement Water and Sediment Quality Management Plan.	As per 25.	For five years after completion of construction, after which time the programme will be reviewed.	

Stage One Development of Port Facilities at James Point, Kwinana (Assessment Number 1353)					
	TOPIC	ACTION	OBJECTIVE/S	TIMING	ADVICE
27	Port Operations EMP: Coastal Stability Management Plan	Prepare a Coastal Stability Management Plan which addresses the effects of the port on the local coastal processes, including: 1. Detailed design of the offshore breakwater such that reflected wave energy reaching the coast north of the development is minimised; 2. A coastal monitoring programme to measure impacts of the development on local beaches; and 3. Contingency plans in the event that impacts are unacceptable.	To protect the recreational amenity of local beaches.  To minimise and manage the impact of the port on local coastal processes.	Prior to construction.	CSMC, DPI, Local Government Authorities
28	Port Operations EMP: Coastal Stability Management Plan	Implement Coastal Stability Management Plan and contingency plans, if required.	As per 27	For five years after completion of construction, after which time the programme will be reviewed.	CSMC, DPI, Local Government Authorities
29	Port Operations EMP: Maintenance Dredging Management Plan	Prepare a Maintenance Dredging Management Plan which addresses: 1. Onshore disposal of spoil arising from maintenance dredging; and 2. Protection of the marine environment during dredging.	To ensure that maintenance dredging is undertaken in an environmentally appropriate manner.	Prior to undertaking any maintenance dredging	FPA, DPI
30	Port Operations EMP: Maintenance Dredging Management Plan	Implement Maintenance Dredging Management Plan	As per 29		FPA, DPI
31	Port Operations EMP: Ballast Water Management Plan	Prepare a Ballast Water Management Plan based on the Australian Quarantine and Inspection Service (AQIS) Mandatory Ballast Water Arrangements, including implementing a Ballast Water Decision Support System.	To implement the International Maritime Organisation (IMO) and Commonwealth (AQIS and AMSA) arrangements for ballast water control.	Prior to commencement of operations	AMSA and AQIS
32	Port Operations EMP: Ballast Water Management Plan	Implement Ballast Water Management Plan.	As per 31	Prior to commencement of operations	AMSA and AQIS
33	Port Operations EMP: Introduced Species Management Plan	Prepare an Introduced Species Management Plan which addresses: 1. the monitoring and management of introduced species (including phytoplankton);and 2. contingency plans for the event that previously unrecorded targeted species are found in port waters.	Protect coastal waters by taking early action in the event of the detection of new exotic species.	Prior to commencement of operations	CSIRO and AQIS
34	Port Operations EMP: Introduced Species Management Plan	Implement Introduced Species Management Plan	As per 33	Prior to commencement of operations	CSIRO and AQIS

Stage One Development of Port Facilities at James Point, Kwinana (Assessment Number 1353)					
	TOPIC	ACTION	OBJECTIVE/S	TIMING	ADVICE
35	Port Operations EMP: Oil Spill Management Plan	Prepare an Oil Spill Management Plan which will: 1. be aligned with the National Plan to Combat Pollution of the Sea by Oil and other Noxious and Hazardous Substances; 2. be based on the Western Australian Marine Oil Pollution Emergency Management Plan; and 3. will include agreements of mutual cooperation with relevant organisations.	Minimise the impacts of fuel or oil spillage during port operations and efficiently manage their cleanup.	Prior to commencement of operations	FPA, DPI, AMSA and WA Mussel Producers Association
36	Port Operations EMP: Oil Spill Management Plan	Implement Oil Spill Management Plan	As per 35	Prior to commencement of operations	FPA, DPI, AMSA, and WA Mussel Producers Association
37	Port Operations EMP: Surface Water Quality Management Plan	Prepare a Surface Water Quality Management Plan which includes procedures to: 1. Monitor quality and quantity of runoff entering Cockburn Sound; 2. Maintain effectiveness of drains; 3. Contain and clean-up spills; and 4. Minimise impact of surface drainage on port water quality.	Minimise and manage impact of surface water drainage on port and Cockburn Sound water quality.	Prior to commencement of operations	WRC, Local Government Authorities
38	Port Operations EMP: Surface Water Quality Management Plan	Implement Surface Water Quality Management Plan.	As per 37	Prior to commencement of operations	Local Government Authorities
39	Port Operations EMP: Waste Management Plan	Prepare a Waste Management Plan which includes: 1. Detail of the method(s) for the treatment and disposal of wastes; 2. Operating procedures associated with the on-site storage of waste; 3. Operating procedures for the transfer of waste off-site; 4. Contingencies.  Provide mobile pumping and sullage such that vessel waste is not discharged to port waters.	To ensure port wastes are stored, transported and disposed of in a manner consistent with best practice and statutory requirements. To minimise risk of spills and pollution.	Prior to commencement of operations	Local Government Authorities, Dept. of Health
40	Port Operations EMP: Waste Management Plan	Implement Waste Management Plan.	As per 39	Prior to commencement of operations	Local Government Authorities, Department of Health

Stage One Development of Port Facilities at James Point, Kwinana (Assessment Number 1353)					
	TOPIC	ACTION	OBJECTIVE/S	TIMING	ADVICE
41	Port Operations EMP: Operations Risk Management Plan	Prepare Operations Risk Management Plan which will include: 1. Detailed assessment of port operating risk; 2. Procedures for minimisation of risk; 3. Contingency procedures for emergency events; 4. Assessment of combined on-site and off-site risks 5. Compliance with KICC, ADGC, IMO, AMSA, and DMPR procedures; 6. Service corridors so that cumulative risk is not increased; 7. Monitoring of dangerous goods and transport routes by destination; 8. Liaison with SES for residual risk; and 9. Procedures for review of quantitative risk assessment every two years.	Quantify and manage risks associated with port operations. Ensure that risk is assessed and managed to meet the EPA's criteria for individual fatality risk off-site and the DMPR's requirements in respect of public safety.	Prior to commencement of operations	AMSA, FESA, KICC and DMPR.
42	Port Operations EMP: Operations Risk Management Plan	Implement Operations Risk Management Plan.	As per 41	Prior to commencement of operations	AMSA, FESA, KICC and DMPR
43	Port Operations EMP: Air Quality Management Plan	Prepare Air Quality Management Plan which will include procedures to reduce the impact of the port operations on air quality. It will include the following: 1. Material conveying: to the extent practicable, 'Best Practice' materials handling systems will be adopted; 2. Dust collectors to be installed and maintained on handling systems for dusty materials; and 3. Good "house-keeping" procedures to be developed and applied to limit dust generation.	Protect the surrounding land users such that dust and particulate emissions will not adversely impact upon their welfare and amenity or cause health problems by meeting the <i>Environmental Protection (Kwinana)(Atmospheric Wastes) Policy 1999</i> .	Prior to commencement of operations	KICC
44	Port Operations EMP: Air Quality Management Plan	Implement Air Quality Management Plan.	As per 43	Prior to commencement of operations	KICC

Stage One Development of Port Facilities at James Point, Kwinana (Assessment Number 1353)					
	TOPIC	ACTION	OBJECTIVE/S	TIMING	ADVICE
45	Port Operations EMP: Livestock Export Environmental Management Consultative Committee	<p>Convene a Livestock Export Environmental Management Consultative Committee with membership and chair elected from the following parties:</p> <ul style="list-style-type: none"> <li>• relevant community groups from the Kwinana area;</li> <li>• Kwinana industry (e.g. Kwinana Industries Council, unions);</li> <li>• LiveCorp</li> <li>• Livestock Transporters Association of WA (Inc);</li> <li>• James Point Pty Ltd;</li> <li>• relevant local government authorities;</li> <li>• Cockburn Sound Management Council;</li> <li>• Department of Environmental Protection (involvement as and when required); and</li> <li>• Department for Planning and Infrastructure.</li> </ul> <p>The Terms-of-Reference of this Committee will be as follows:</p> <ol style="list-style-type: none"> <li>1. to provide advice and recommendations to the proponent on management of noise associated with livestock export activities, including transport and shipping of livestock to and from the port;</li> <li>2. to provide advice and recommendations to the proponent on management of odour associated with livestock export activities, including transport and shipping of livestock to and from the port; and</li> <li>3. to advice to the proponent on other issues relevant to environmental management of livestock export activities.</li> </ol>	To provide opportunities for community and industry feedback on the effectiveness of environmental management, particularly noise and odour associated with the trade in livestock through the Stage 1 Port.	Prior to finalisation of the Operations EMP.	
46	Port Operations EMP: Livestock Export Environmental Management Consultative Committee	<p>The proponent will have regard for the advice and recommendations of the Livestock Export Environmental Impact and Management Consultative Committee and will advise the following parties of management actions taken to address the findings and recommendations of the Committee:</p> <ol style="list-style-type: none"> <li>1. livestock owners/agents of livestock shipping lines;</li> <li>2. livestock holding yard operators; and</li> <li>3. livestock transport companies/contractors.</li> </ol>	As per 45.	Ongoing	Relevant Local Government Authorities, including the Town of Kwinana
47	Port Operations EMP: Traffic Management Plan	<p>Prepare Traffic Management Plan which will:</p> <ol style="list-style-type: none"> <li>1. Designate major road transport routes for the port within the Perth Metropolitan Area;</li> <li>2. Detail the use of the truck wash-down facility at the port;</li> <li>3. Provide for the conduct regular inspections of Anketell Road west of the Kwinana Freeway; Rockingham Road and Beard Street to detect any spillages from livestock trucking and their causes; and</li> <li>4. Provide for reporting of incidents and likely causes to the Livestock Export Environmental Management Consultative Committee. .</li> </ol>	<p>Minimise traffic related impacts on noise-sensitive premises.</p> <p>Minimise port related spillage along port transport routes.</p>	Prior to commencement of operations	Relevant Local Government Authorities, MRWA

Stage One Development of Port Facilities at James Point, Kwinana (Assessment Number 1353)					
	TOPIC	ACTION	OBJECTIVE/S	TIMING	ADVICE
48	Port Operations EMP: Traffic Management Plan	Implement Traffic Management Plan.	As per 47	Prior to commencement of operations	Relevant Local Government Authorities
49	Port Operations EMP: Feral Pigeon Management Plan	Prepare Feral Pigeon Management Plan which addresses: 1. "housekeeping" measures to reduce potential food sources and 2. methods to prevent roosting or to destroy pigeons.  The proponent will become an active participant in any local Feral Pigeon control measures.	Manage any increase in feral pigeon numbers in the Kwinana area.  Protect the ecological values of Shoalwater Islands Marine Park.	Prior to commencement of operations	CALM Dept. of Health
50	Port Operations EMP: Feral Pigeon Management Plan	Implement Feral Pigeon Management Plan.	As per 49	Prior to commencement of operations	
51	Port Operations EMP: Landscape Management Plan	Prepare a Landscape Management Plan for the port which will include: 1. Bush regeneration; 2. Landscaping plans; and 3. Utilising local native species for areas not required for port facilities.	To maximise the visual appeal of the port area and compensate for the loss of the foredune area.		
52	Port Operations EMP: Landscape Management Plan	Implement Landscape Management Plan.	As per 51		
53	Port Operations EMP: Community Consultation Plan	Prepare Community Consultation Plan to include: 1. The formation of a community consultation group or provision of additional support to an existing forum; and Procedures for responding to and acting on public enquiries and complaints on a 24 hour a day basis	To keep the local community well informed regarding the operations of the port.  To obtain regular feedback on community concerns regarding the Port operations.	Prior to commencement of operations	Relevant Local Government Authorities
54	Port Operations EMP: Community Consultation Plan	Implement Community Consultation Plan.	As per 53	Prior to commencement of operations	Relevant Local Government Authorities
55	Offshore Breakwater Modification or Removal Plan	If any future development proposal demonstrates that a conflict will arise by the proposed breakwater remaining in place, then the proponent will commit to following the instructions of an independent inquiry which has the capacity to consider: legal, environmental, engineering, navigation and safety issues.  Prior to removal or modification of any portion of the breakwater, the proponent will prepare an Offshore Breakwater Modification or Removal Plan.	To ensure the waters of the port remain safe and environmentally acceptable.  To ensure that any subsequent modification or removal of the offshore breakwater is undertaken in an environmentally acceptable and safe manner.	If required.	DPI FPA
56	Offshore Breakwater Modification or Removal Plan	Implement Offshore Breakwater Modification or Removal Plan	As per 55	If required.	DPI FPA OMP

Stage One Development of Port Facilities at James Point, Kwinana (Assessment Number 1353)					
	TOPIC	ACTION	OBJECTIVE/S	TIMING	ADVICE
57	Environmental Management System (EMS)	Prepare an EMS which is consistent with current international standards and which addresses the environmental management procedures required to operate the port.  The EMS will be subject to regular audits and reviews to ensure that it remains up to date with operations and best practice.	To ensure that the port is operated in a manner consistent with current best practice.	Prior to commencement of operations.	
58	Environmental Management System (EMS)	Implement the EMS.	As per 57	Prior to commencement of operations.	

Abbreviations

ADGC–Australian Dangerous Goods Code

AMSA–Australian Marine Safety Authority

AQIS–Australian Quarantine Inspection Service

CALM–Department of Conservation and Land Management

CoR–City of Rockingham

CSIRO–Commonwealth Scientific and Industrial Research Organisation

CSMC –Cockburn Sound Management Council

DEP–Department of Environmental Protection

DMPR–Department of Mineral and Petroleum Resources

DPI–Department for Planning and Infrastructure

Dept. of Health–Western Australian Department of Health

EMP–Environmental Management Plan

EMS– Environmental Management System

FPA–Fremantle Ports (formerly Fremantle Port Authority)

IMO–International Maritime Organisation

KICC–Kwinana Industries Coordinating Committee

MRWA–Main Roads Western Australia

FESA–Fire and Emergency Services Authority

Transport–Department of Transport

WRC–Water and Rivers Commission

ToK–Town of Kwinana

CoC–City of Cockburn

OMP–Office of Major Projects, Department of Mineral and Petroleum Resources



# **Appendix 5**

**Specialist Advice on Odour Issues Concerning the  
Proposed Livestock Loading Port at James Point, Kwinana**

**By**

**Consulting Environmental Engineers**

# Consulting Environmental Engineers

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30 May 2002

Dr Bernard Bowen  
Chairman  
Environmental Protection Authority  
141 St Georges Terrace  
PERTH WA 6842

Dear Dr Bowen

## **re: Specialist Advice on Odour Issues Concerning the Proposed Livestock Loading Port at James Point, Kwinana**

I have considered the issues raised in your letter dated 5 April 2002 concerning odour arising from the possible export of livestock from the proposed port at St James Point, Kwinana. I have studied the reports and other written material provided and inspected the proposed site. The answers to the questions you asked in your letter are set out below.

### **Summary of the Proposal**

There is no succinct description of the proposal. From the information provided, it is expected that the proposal involves the following aspects.

- Annual export of 4,200,000 live sheep and 50,000 live cattle.
- Sheep vessels carry between 30,000 and 120,000 sheep; average of 60,000.
- Hence there will be about 70 sheep export vessels each year.
- Loading typically takes 2 to 3 days, with another day to clean up.
- Cattle vessels average 3,000 cattle.
- Hence there will be about 17 cattle export vessels each year.
- Loading typically takes 1 day, with another day to clean up.
- Overall, odour emissions can be expected for about 300 days per year.
- Delivery to the ship will involve about 60 trucks per day.
- Each truck is washed before leaving the site.
- Sheep manure removed dry by sweepers, and carted from site.
- Cattle manure absorbed on sawdust, then removed by scrapers.
- Other wastewater treated onsite in package secondary treatment plant.
- Odour Management Plan proposed, but no specific control measures.
- No information provided on manure or odour control on vessels.
- Little information provided on specific management procedures.
- No information provided on contingency measures or plans.

## 1. Appropriate Odour Guideline

There is considerable discussion concerning an appropriate odour criterion or limit. The PER and the odour modelling for the proposal are based on an assumed odour limit of 7 OU to be met 99.9 per cent of the year (that is, no nearby site would have an odour level exceeding 7 OU for more than 8 hours per year).

In my view, odour criteria would provide the greatest benefits to the community by balancing the need for protection against odour with the need to designate (and delimit) areas with an elevated level of odour. Hence there should be:

- High level of protection against odour nuisance in residential areas (and related areas such as hospitals, motels, restaurants, etc);
- Lower level of protection in areas zoned and used for industrial purposes or for intensive rural production (feedlots, poultry farms, horticulture);
- Lowest level of protection in noxious industry zone, where it may be expected that there will frequently be moderate to strong odours.

I have proposed a set of odour criteria which incorporate this balance while at the same time conforming with the current EPA Guidelines for the assessment of odour impacts of new facilities in residential areas. These criteria are set out below.

Land Use Zone	Odour Limit <sup>a</sup>	Percentile <sup>b</sup>	Intensity
Residential	2 OU	99.9 %	Weak
Commercial/warehouse	4 OU	99.9 %	-
Light Industrial/Rural	7 OU	99.5 %	Distinct
Heavy Industrial	10 OU	99.3 %	-
Noxious Industry	20 OU	99.0 %	Strong

Note a: Limit for threshold odour, not distinct odour.

Note b: Limit for high expected emission rate, not average rate.

The odour limit is set in terms of the threshold odour. The *threshold* odour is the odour concentration at which 50 per cent of an odour panel (and by extension 50 per cent of the population) can just detect an odour.

From inspection, the proposed site for the port is surrounded by mostly heavy industry (power station, coal stockpile, steel pipe manufacture, scrap steel, bulk minerals export dock, cement manufacture, steel blasting and coating). There is one commercial premise (Ciba). Thus the immediate area could be classified as a heavy industry zone. I would accept a 10 OU limit in this area. Commercial and residential areas commence about 1.3 km northeast and somewhat further east of the site. I would expect a 4 OU limit in this area.

If odour limits specific to the various land use zones are not adopted, the odour limit of 7 OU at 99.9 per cent used in the proposal represents a reasonable compromise.

The EPA should expect any new development to comply with the odour criteria. In addition, the facilities should be designed and operated using best practice to achieve, wherever possible, a performance better than the odour criteria.

## 2. Assessment of Proponent's Odour Predictions

The proponent's odour predictions are based on several key assumptions:

- Odour emission from each sheep is 1.3 OU/s;
- Hence odour emission from 60,000 sheep is 78,000 OU/s;
- Number of sheep varies each hour over a year (Fremantle data);
- Using Ausplume, the proponent predicts that the 7 OU contour (99.9 %) extends only 300 m east; and the 2 OU contour extends only 670 m east.

The DEP Air Quality Studies Branch has been critical of the odour modelling on four occasions. Their criticisms are valid. In particular, the Air Quality Branch questioned the odour emission rate, the exclusion of other odour sources in the region, the use of the model configuration (and whether 'worst-case' odour emission rates had been used) and the statistical method used to represent sheep loading (and 'non-loading' periods).

The two key issues are:

1. Is 1.3 OU/s a reasonable estimate of odour emission from each sheep? and
2. Is it reasonable to vary sheep numbers hour by hour?

Based on the information provided by the proponent, in submissions from the community and in comparison to other feedlot measurements, I consider that 1.3 OU/s per sheep is a reasonable estimate.

I do not consider it reasonable to base the modelling on an hour by hour variation in sheep numbers while calculating automatically the 99.9 percentile odour level. The ERS report (Figure A1) shows that there were no sheep on about 30 per cent of days, but a peak of 290,000 sheep (almost five times the expected shipload of 60,000 sheep).

To clarify this point, I have calculated the odour levels corresponding to 60,000 sheep for several conditions of weak winds, to establish the higher levels of odour that could occur with a single large vessel being loaded in the port. As far as possible, the Ausplume model parameters used by the proponent were followed.

In my odour model, the odour emissions from 60,000 sheep were represented by a volume source of 78,000 OU/s (60,000 sheep x 1.3 OU/s per sheep) extending 112 m horizontally and 16 m vertically, and centred at 8 m above the ground. This arrangement roughly represents a ship full of sheep. The meteorological conditions were assumed to be constant over an hour, with the wind speed and atmospheric stability (dispersion) conditions listed in the table below. The *Ausplume* model was then used to calculate the odour concentration at various distances downwind of the ship. The results are summarised in the table below.

Case	Wind Condition	Odour at 0.5 km east	Odour at 1.0 km east	Odour at 1.5 km east	Odour at 2.0 km east
Proponent	99.9 %	3 OU	1 OU	-	-
Ship 8 m high	2 m/s Class E	5 OU	2 OU	1 OU	1 OU
Ship 8 m high	1 m/s Class E	9 OU	4 OU	2 OU	1 OU
Ship 8 m high	1 m/.s Class F	16 OU	7 OU	4 OU	3 OU
Ship 8 m high	0.5 m/s Class F	33 OU	15 OU	9 OU	6 OU
Low emission	0.5 m/s Class F	37 OU	16 OU	9 OU	6 OU
Ship - 3 vents	0.5 m/s Class F	41 OU	17 OU	10 OU	6 OU

From these additional predictions, the following conclusions are drawn:

- The 99.9 percentile odour prediction by the proponent probably is correct, but underplays the peak odours that could occur;
- Elevated odours could occur at times but the levels are not greatly excessive for the case of 60,000 sheep;
- The way the ship is represented in the model has a small influence on the results, but the largest factor is the frequency of low wind speeds.

### 3. Limitations and Cautions as to Predicted Odour Impacts

The odour modelling presented by the proponent and extended by me above represents the sheep on the ship as the only emission of odours from the site. This clearly is a considerable over-simplification – the sheep themselves are one source of odour but the manure collected beneath the sheep on the ship, in the loading races, in the holding pens and on the delivery trucks must also be considered as separate odour sources. In addition, the proponent will have a wastewater treatment plan, truck washing bays and possibly piles of manure that are additional sources of odour.

Other factors that have influence odour emissions are:

- Whether the sheep are wet or dry;
- Duration of loading;
- Cleanliness of ship on arrival at the port;
- Whether ship is partly loaded on arrival;
- How quickly loading area is cleaned;
- Extent and outlet of ventilation;
- Type of feed sheep are given; and
- Extent of odour from transport trucks.

I consider that the odour model submitted by the proponent was simplistic and optimistic, as it neglected many of the odour sources and presented a greatly simplified picture of the operations of the facility, the odour sources and emissions and the factors that influence odour emissions.

Depending on the level of effort in management of odour, I consider that emission could be 50 to 100 per cent greater than assumed in the proponent's odour model.

#### **4. Expected Impacts of Odour on People of WA**

I assume the intent of this question is for me to state whether or not I consider the project can proceed without causing an unacceptable odour impact. This question can be translated to asking whether the proposal will generally:

- Keep within 10 OU at 1 km (at least 99.3 % of the time); and
- Keep within 4 OU at 1.3 km (at least 99.9.3 % of the time).

My answer is a qualified YES, on the basis that:

- The SW seabreeze normally is Class E with a speed exceeding 1 m/s;
- The number of sheep must be limited;
- The number of ships must be limited; and
- A best practice odour management plan is adopted.

I recommend that EPA accept the proposal subject to conditions that limit the size of the activity, as described below, and specific limitations and conditions to control odour emissions. If after three years the proposal can be shown to be operating without causing any odour nuisance, then I would permit the size of the project (in terms of number of sheep and number of ships) to be increased.

#### **5. Proposed Management Procedures**

The only management measures referred to in the documents supplied are:

1. To prepare and implement an Odour Management Plan;
2. To remove sheep manure (every five days!);
3. To wash all livestock trucks prior to them leaving the site.

#### **6. Adequacy of Management Commitments**

The management procedures set out by the proponent are, in my view, insufficient and inadequate.

#### **7. Recommended Controls and Additional Management Procedures**

I recommend the EPA consider the following as possible conditions of approval:

##### Size of Facility

1. The facility can only have 1 ship in port at any time;
2. The facility can load only sheep or cattle, not both at the same time;
3. No animals can be housed at the facility; they must be loaded within 4 hours of delivery by truck to the site;

### Operation of Vessels

4. Only empty vessels can be loaded at the site;
5. All vessels must be fully cleaned before arrival (this must be verified before loading is permitted);
6. Vessels must have satisfactory ventilation arrangements with discharge through the top of the vessel;
7. Vessels must have satisfactory cleaning arrangements with solids or sludge discharge to the port facility (not to Cockburn Sound) or through a treatment system on the vessel;
8. Once loading commences, vessels must be loaded and depart within 3 days (except for unusual circumstances beyond the control of the port operator);

### Trucks Transporting Animals

9. Trucks must be cleaned before loading animals for transport to the site;
10. Trucks must be cleaned immediately after unloading at the site.

### Loading Arrangements

11. Loading facilities (sheds, temporary holding pens and loading ramps) shall be ventilated with the air discharged through a 12 m high stack;
12. Loading facilities shall be cleaned (dry method) at least once each day between the hours of 9 am and 2 pm;
13. Loading facilities shall be cleaned thoroughly as soon as loading has been completed;
14. All manure removed from loading facilities and trucks shall be stored in an enclosed vessel;
15. All manure shall be removed from the site within 24 hours of collection;

### Wastewater Treatment

16. The first flush stormwater (for 5 mm of rainfall) from areas used by trucks and animals shall be directed to the wastewater treatment plant.
17. Unless the site is connected to sewerage, a package biological secondary treatment plant shall be provided;
18. All wastewater, including wet material from trucks, vessels and loading shall be conveyed and treated in the wastewater treatment plant;
19. The treatment plant shall be covered and have a suitable odour scrubber for discharged air;

### Environmental Management Plan

20. The proponent shall prepare and implement an Odour Management Plan;
21. The Plan will include an independent external audit each year by an auditor approved by the EPA;
22. The proponent shall maintain a complaint register for audit each year.

### Best Practice

23. The proponent shall design and operate the facility in accordance with best practice to minimise adverse environmental impacts.

### Buffer Zone

24. The proponent shall ensure that all animal unloading and loading operations are conducted within a 300 m buffer zone owned by the Proponent.
25. The proponent shall ensure that the facility has a minimum 1000 m buffer zone zoned heavy industry.

### **8. Advice on Contingency Measures to Mitigate Odour Impacts**

Initiation of contingency measures will mean that the source of a problem has been identified, and can be related to an appropriate control measure. I suggest the following sequence for contingency measures:

- An independent external audit to establish the source of the problem.
- The size of the facility can be reduced (eg, vessels for only 60,000 sheep);
- Extra controls can be placed on the vessels allowed to be loaded, eg, quicker loading, more frequent cleaning, better capture of ventilation air);
- Extra controls can be placed on trucks;
- Loading can be upgraded to a fully enclosed area;
- Scrubbers can be installed on all ventilation air;
- High stacks can be required for ventilation air;
- Wastewater can be sent to sewer.

**Yours faithfully**

**Dr Ian Wallis  
Consulting Environmental Engineers**