



Report and recommendations of the Environmental Protection Authority



Bunbury Port Berth 14A expansion and coal storage and loading facility

Lanco Resources Australia Pty Ltd

Report 1486

July 2013

Public Environmental Review Environmental Impact Assessment Process Timelines

Date	Progress stages	Time (weeks)
03/05/2011	Level of Assessment set (date appeals process completed)	
22/09/2011	Final ESD approved	20
19/11/2012	Public Environmental Review document (PER) released for public review	60
16/01/2013	Public review period for PER closed	8
20/03/2013	Final Proponent's Response to Submissions Received	9
03/05/2013	EPA requested additional information	6
13/05/2013	Proponent submitted additional information requested by EPA	1
15/07/2013	Provision of the EPA Report to the Minister	9
17/07/2013	Publication of EPA report (3 days after report to Minister)	3 days
31/07/2013	Close of appeals period	2

STATEMENT ON TIMELINES

Timelines for an assessment may vary according to the complexity of the project and are usually agreed with the proponent soon after the level of assessment is determined.

In this case, the Environmental Protection Authority did not meet its agreed timeline objective for the completion of the assessment and provision of a recommendation to the Minister.



Dr Paul Vogel
Chairman

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Summary and recommendations

This report provides the Environmental Protection Authority's (EPA) advice and recommendations to the Minister for Environment on the proposal by Lanco Resources Australia Pty Ltd (Lanco Resources) to develop the Bunbury Port Berth 14A Expansion and Coal Storage and Loading Facility.

Section 44 of the *Environmental Protection Act 1986* (EP Act) requires the EPA to report to the Minister for Environment on the outcome of its assessment of a proposal. The report must set out:

- the key environmental factors identified in the course of the assessment; and
- the EPA's recommendations as to whether or not the proposal may be implemented, and, if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

The EPA may include in the report any other advice and recommendations as it sees fit.

The EPA is also required to have regard for the principles set out in section 4A of the EP Act.

Key environmental factors and principles

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

- (a) Marine environmental quality;
- (b) Marine fauna;
- (c) Benthic communities and habitat;
- (d) Air quality (dust emissions); and
- (e) Amenity (noise).

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

The following principles were considered by the EPA in relation to the proposal:

- (a) The precautionary principle;
- (b) The principle of intergenerational equity;
- (c) The principle of the conservation of biological diversity and ecological integrity;
- (d) Principles relating to improved valuation, pricing and incentive mechanisms; and
- (e) The principles of waste minimisation.

Conclusion

The EPA has considered the proposal by Lanco Resources to develop the Bunbury Port Berth 14A Expansion and Coal Storage and Loading Facility within the Bunbury Port Inner Harbour. The proposal is consistent with the Bunbury Port Authority's Inner Harbour Structure Plan, which is currently being assessed separately by the EPA as a Strategic Proposal. Key objectives of the Structure Plan are to guide future development and associated decision-making within the Inner Harbour. The Structure Plan conforms to the strategic planning requirements under the *Port Authorities Act 1999*. The construction and operation of Berth 14A will accommodate 15 million tonnes per year of coal exports from the Bunbury Port.

The EPA notes that the proponent has made a number of modifications to the proposal including:

- proposing to undertake dry-land piling and excavation wherever possible to minimise the need for marine pile driving;
- adjusting the dredge methodology to shorten the dredging period and utilising a backhoe bucket dredge;
- a commitment to the construction of one ship-loading facility; and
- ensuring the presence of marine fauna observers during marine construction activities and a commitment to undertaking long-term visual boat-based dolphin monitoring following construction.

Marine environmental quality

The area considered for assessment is the waters of the Bunbury Port Inner Harbour, including Koombana Bay, and the marine offshore waters out to the limits of the Port Authority controlled waters. The proposal has the potential to impact on marine environmental quality during marine construction activities and during the operations phase of the proposal when coal is being loaded onto ships for export.

Construction phase

The key issues that could affect the EPA's objective for this factor are associated with the dredging activities and include:

- adverse effects on water quality of contaminant release and mobilisation from sediments during dredging; and
- potential effects of dredging on community uses and aesthetic issues in Koombana Bay.

Capital (construction) dredging for the proposal involves the dredging of 1.9 million cubic metres of sediment to accommodate the construction of the berth pocket.

As all dredged material is proposed to be disposed of at an offshore disposal site in Commonwealth waters, the proponent is required to apply for a sea dumping permit under the *Commonwealth's Environment Protection (Sea Dumping) Act 1981*. The application process requires the applicant to

undertake sediment quality investigations to demonstrate whether the material is clean and suitable for ocean disposal. Analysis of sediment sampling carried out by the proponent has found that levels for all contaminants in the dredge material are below the relevant national assessment guideline thresholds.

Although the risk of contamination of marine water and sediment quality from the proposed dredging activities is low, the EPA considers it appropriate to monitor water quality during construction to ensure the protection of ecological and social values in Koombana Bay (recommended condition 8). Therefore, to manage potential impacts during dredging and any perceptions of public health issues relating to a visible dredge plume, the EPA has required the proponent to prepare and implement a Construction Marine Environmental Monitoring and Management Plan.

The Plan will require the proponent to implement a reporting protocol for the monitoring results including making the monitoring results publicly available, and to maintain close consultation with the Department of Health and stakeholders such as the City of Bunbury and the Dolphin Discovery Centre.

Dredge plumes and aesthetic issues

Based on the proponent's preliminary modelling, dredge plumes are expected to be highly visible and likely to affect aesthetic values to the extent that the community are likely to be concerned about swimming, boating and fishing in Koombana Bay. However, it is important to note that although there will be a temporary aesthetic impact, the dredge plume is not predicted to have an ecological or health impact, and the proponent will be required to monitor the extent and intensity of the plumes, and make the results publicly available.

To manage the potential aesthetic impact during dredging, the EPA has required condition 9 to be implemented during dredge activities, which requires the proponent to prepare and implement a Dredging Environmental Monitoring and Management Plan. The proposed monitoring plan will need to provide for:

- the modelling and validation of the likely dredge plume based on the revised dredging program;
- the establishment of reporting procedures to inform the general public of the actual extent and intensity of the dredge plumes in Koombana Bay; and
- a framework for developing management and contingency actions to be implemented if the dredge plume moves beyond what has been modelled by the proponent.

To further reduce the impact on the local community, the EPA recommends condition 9-1 which requires the proponent to avoid dredging between the months of November to March, in any year, when recreational usage is at its highest.

Operations phase

The key operational marine environmental quality issues associated with the proposal are considered to be ongoing contaminant inputs from coal spillages at the wharf from loading activities.

Spillage of coal product into the marine environment from the wharf and vessel hatches is one of the key threats from the proposal. The proponent has committed to best practice management of the storage and loading of coal material. The Department of Environment Regulation (DER¹) is required to regulate the proposal under Part V of the EP Act. The DER has advised that the works approval and licensing process will require the conditioning of appropriate emissions control technology to minimise risk of coal spillages and ensure that where spills do occur, they are recovered and disposed of appropriately.

Notwithstanding the above, the EPA has also included other advice in Section 5 in view of the need for the Bunbury Port Authority (BPA) to have a holistic and consultative approach to the ongoing management of marine waters in Bunbury Port (and portions of Koombana Bay) that goes beyond the impacts from just this proposal. This advice is about the need to establish a plan of spatially allocated environmental values (EVs), environmental quality objectives (EQOs) and levels of ecological protection (LEPs) consistent with the EPA's Environmental Quality Management Framework for the ongoing and long-term management of Port waters including Koombana Bay.

Marine fauna

Koombana Bay provides habitat for a variety of marine fauna, including cetaceans, pinnipeds, penguins and predatory fish, some of which are listed or protected under State and Commonwealth legislation. Koombana Bay is also a hub of human activity, and there are significant vessel movements as a result of an operating port and numerous private marinas.

Of the cetacean species, the Common Bottlenose dolphin (*Turisops truncatus*) is considered to be of particular significance to the region and most likely to be sighted near the proposal area. Australian sea lions, New Zealand fur seals and little penguins are also known to utilise the marine waters of Koombana Bay although less frequently.

Potential threats to marine fauna in Koombana Bay from the proposal include underwater noise generated from:

- dredging activities;
- marine pile-driving activities; and
- rock fracturing (blasting) activities.

The EPA has recommended condition 9-1, which aims to minimise the impacts of dredging activities on marine fauna in Koombana Bay. The recommended condition limits the timing of dredge activities to the months of

¹ The Department of Environment Regulation was part of the previous Department of Environment and Conservation (DEC) prior to 1 July 2013.

winter (1 April to 31 October) and therefore avoids the peak dolphin calving period and the majority of the blue swimmer crab spawning season.

To mitigate the potential impact on marine fauna the proponent has proposed a number of modifications to the proposal's marine construction methodology that aim to reduce underwater noise during the execution of the above activities, including:

- undertaking dry-land piling and excavation wherever possible to minimise the need for marine pile driving;
- implementing best management marine pile driving technologies, such as vibratory pile-driving techniques, to reduce the underwater noise associated with marine pile-driving;
- ensuring that if rock fracturing (blasting) of the Bunbury Basalt layer during dredging is necessary, only minimal blasting using best-practice technologies will be undertaken; and
- post-construction monitoring of the Bottlenose Dolphin community.

The EPA has recommended conditions 6 and 7 that apply to marine construction activities and post-construction dolphin monitoring. These conditions require the presence of marine fauna observers during marine construction activities to ensure exclusion zones are applied, as well as post-construction monitoring of dolphin abundance. The EPA has also recommended condition 6-7 which requires any rock fracturing (fracturing) to occur outside the dolphin calving period.

Furthermore, the EPA has also identified introduced marine pests as a potential source of risk relating to the proposal. The two primary mechanisms by which introduced marine pests can be introduced are through ballast water and biofouling. The EPA has recommended condition 11 to be implemented with the aim of managing the risk of introduced marine pest incursion in the waters of Koombana Bay.

Benthic communities and habitat

The proponent's benthic habitat surveys of Koombana Bay have shown the Bay is predominately characterised by a bare sand substrate and comprises a low biotic cover (less than two per cent) with trace amounts of foliose and turf algae.

During the proponent's surveys no seagrass was observed in Koombana Bay. However, one area of reef (about 15 hectares (ha)) located about two kilometres (km) from the berth pocket on the north-eastern margin of the bay was surveyed and observed to consist of approximately 30 per cent biotic coverage, mainly comprising foliose algae and filter feeders.

The EPA has identified the key issue facing these benthic communities and habitat to be impacts associated with a dredge plume resulting from dredging activities during the construction phase. The EPA is of the view that although the likelihood of impacting the benthic communities within Koombana Bay is low, a risk does present itself from the outer extent of the dredge plume (Zone

of Influence) having the potential to move over the reef area and potentially smother the benthic communities.

The EPA has recommended condition 10 to ensure that the health of these benthic communities is surveyed following construction. The condition provides for a baseline survey of benthic communities health before dredging and post-construction to confirm no detectable impact to benthic communities occurs.

Air quality (dust emissions)

Coal dust is the key atmospheric emission that could result from the operation of the proposal. The proponent proposes to implement world best management technologies at the site to help minimise fugitive dust emissions, including:

- fully enclosed coal stockpiles that incorporate dust suppression water spray systems;
- fully enclosed conveyors with provision for controlled wash-down of spillage;
- fully enclosed transfer points fitted with misting sprays; and
- a ship loading facility that will be fitted with fully enclosed boom conveyors and telescopic chutes, and covered rail wagons to minimise fugitive emissions.

The EPA supports the proponent's implementation of best management technologies to ensure the dust emissions are reduced to as low as practicable. When compared to other coal export facilities around Australia, these technologies represent best practice for coal export facilities in Australia.

The EPA has received advice from the DEC (now DER) indicating that coal dust emissions can be managed under Part V of the EP Act, specifically by conditioning appropriate emissions control technologies in the proponent's Works Approvals and Licences.

The EPA has identified spontaneous combustion of coal at the Port as a potential risk to the proposal. The proponent is aware of these risks and has incorporated technologies that will monitor the stockpiles for potential spontaneous combustion. Furthermore, the EPA has been advised that the risk of spontaneous combustion can be managed under the *Mines Safety and Inspection Act 1994*, which is administered by the Department of Mines and Petroleum.

In view of the measures proposed by the proponent and the controls available through Part V of the EP Act and other legislation, the EPA considers that its objectives for this factor can be met and has not recommended a condition for this factor.

Amenity (noise)

The proposal will be located in a busy operating Port that experiences noise emissions from a range of industries and activities including mineral sands, woodchips and alumina export operations.

The proponent's noise modelling of the facilities has shown that noise emissions from the proposal, when considered in isolation, can comply with assigned noise levels. However, accounting for noise from other Port users, it is likely that cumulative noise impacts will exceed the night-time assigned noise levels under certain conditions.

To reduce the risk of this non-compliance, the proponent has modified the proposal to incorporate only one ship loader as part of their operations. This modification has reduced the predicted noise emission level from ship loading by three decibels. The EPA has received advice from the DER stating that noise emissions from the proposal's operations can be managed to substantially comply with the Environmental Protection (Noise) Regulations 1997 (the Regulations).

The EPA notes that noise and vibrations associated with pile driving can be managed under the Regulations. Construction noise is exempt from meeting assigned noise levels but must be carried out during the appropriate hours in accordance with a noise management plan approved by the CEO of the City of Bunbury and/or the CEO of the DER.

In view of the measures proposed by the proponent and the requirements of the Noise Regulations, the EPA considers that its objectives for this factor can be met and has not recommended a condition.

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

The EPA has also included other advice regarding:

- the requirement for the Bunbury Port Authority to establish an Environmental Quality Management Framework for the Port-operated waters within the inner and outer harbour; and
- the management of existing and future cumulative noise emissions from the Port through a Regulation 17 application under the Regulations.

Recommendations

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

1. That the Minister notes that the proposal being assessed is for the development of the Bunbury Port Berth 14A Expansion and Coal Storage and Loading Facility within the Bunbury Port Inner Harbour;

2. That the Minister considers the report on the key environmental factors and principles as set out in Section 3;
3. That the Minister notes the EPA has concluded that it is likely that the EPA's objectives would be achieved, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 4 and summarised in Section 4; and
4. That the Minister imposes the conditions and procedures recommended in Appendix 4 of this report.

Conditions

Having considered the information provided in this report, the EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by Lanco Resources Australia to develop the Bunbury Port Berth 14A Expansion and Coal Storage and Loading Facility within the Bunbury Port Inner Harbour is approved for implementation. These conditions are presented in Appendix 5. Matters addressed in the conditions include the following:

- (a) minimising impacts to marine fauna during construction through requirements for Marine Fauna Observers to be present, and restricting rock fracturing (blasting) operational timing (condition 6);
- (b) requiring the development and implementation of a Dolphin Monitoring Plan with the aim of ensuring that there are no long-term adverse effects on the abundance and distribution of the Bottlenose Dolphin in Koombana Bay (condition 7);
- (c) monitoring and managing impacts to marine environmental quality from marine construction activities to achieve the relevant Environmental Quality Objectives within Koombana Bay (condition 8);
- (d) ensuring the marine construction activities are managed in a manner that minimises the extent of the dredge plume within Koombana Bay, and restricting the dredge operational timing (condition 9);
- (e) ensuring the health and distribution of any benthic communities and habitat in Koombana Bay are monitored post-construction (condition 10); and
- (f) prevention and control of 'Introduced Marine Pests' during construction (condition 11).

Contents

	Page
Summary and recommendations	i
1. Introduction and background	1
2. The proposal	2
3. Key environmental factors and principles.....	8
3.1 Marine environmental quality	9
3.2 Marine fauna	15
3.3 Benthic communities and habitat	17
3.4 Air quality (dust emissions)	20
3.5 Amenity (noise)	22
3.6 Environmental principles	25
4. Conditions	25
4.1 Recommended conditions.....	25
4.2 Consultation	25
5. Other advice	26
Recommendations	27
Tables	
Table 1: Summary of key proposal characteristics.....	3
Table 2: Assigned noise levels for selected receptors	22
Figures	
Figure 1. Proposal development envelope.....	4
Figure 2. Bunbury Port Inner Harbour Structure Plan	5
Figure 3. Proposal's key infrastructure components	6
Figure 4. Offshore spoil dredge disposal site location.....	7
Figure 5. Benthic communities and habitat of Koombana Bay.....	19
Figure 6. Receiver locations.....	24
Appendices	
1. List of submitters	
2. References	
3. Summary of identification of key environmental factors	
4. Identification of Decision Making Authorities and Recommended Environmental Conditions	
5. Proponent's response to submissions	

1. Introduction and background

This report provides the advice and recommendations of the EPA to the Minister for Environment on the key environmental factors and principles for the proposal by Lanco Resources Australia Pty Ltd (Lanco Resources) to develop the Bunbury Port Berth 14A Expansion and Coal Storage and Loading Facility within the Bunbury Port Inner Harbour. The proposal involves the development of a berth pocket and associated on-shore coal storage and export infrastructure to accommodate the export of 15 million tonnes of coal per year.

The proposal was referred to the EPA in April 2011. The EPA decided to assess the proposal at the level of Public Environmental Review (PER) with a six week public review period. This was due to the potential impacts to biodiversity including vegetation and fauna; marine environmental quality, benthic communities and habitat, marine fauna and inland waters environmental quality. The PER's public review period was extended by two weeks as a result of releasing the document over the Christmas period and was subsequently released for eight weeks from November 2012 to mid-January 2013.

2. The proposal

The proponent aims to progress the development of Berth 14A located within Bunbury Port Inner Harbour (Figure 1). The Bunbury Port Authority (BPA) has advised that the proposal is consistent with the Bunbury Port Authority's Inner Harbour Structure Plan, which is currently being assessed separately by the EPA as a strategic proposal at a level of Public Environmental Review. Key objectives of the Structure Plan are to guide future development and associated decision making within the Inner Harbour. The Structure Plan conforms to the strategic planning requirements under the *Port Authorities Act 1999* and the final proposed layout of the Inner Harbour is displayed in Figure 2. Berth 14A will have the capacity to export 15 million tonnes per year of coal from Bunbury Port.

The construction of the berth pocket will involve the dredging and excavation of up to 2.7 million cubic metres (m³) of material. Lowering the berth pocket and swing basin to -12.7 metres (m) chart datum (CD) and the associated approach navigational area to -12.2 m CD will involve the dredging of up to 1.9 million m³ of sediment. Dredging the berth pocket to the proposed depth may also require the removal of up to 20,000 m³ of Bunbury Basalt from the dredge profile, which may require rock fracturing (blasting). However, the proponent is of the view that there is a low likelihood that blasting will be required due to the weathered nature of the basalt layer. Further detailed geotechnical investigations will confirm the extent of the basalt layer that intersects with the dredge profile.

The offshore spoil disposal site for dredge material is located in Commonwealth waters (Figure 4), and as such does not form part of this assessment. The suitability of this site, as well as the disposal of spoil, will be assessed by the Commonwealth under the *Environmental Protection (Sea Dumping) Act 1981*.

The total development envelope of the proposal is up to 30 ha, of which about 2 ha has been identified as native vegetation. Site investigations of the vegetation and flora indicated the site is heavily degraded and no Threatened Ecological Communities or Declared Rare Flora were found. Terrestrial infrastructure will encompass various land uses including a rail loop, covered shed for coal storage, fully enclosed transfer station and conveyors, and one ship loading facility. The components of the proposal are shown in Figure 3.

The main characteristics of the proposal are summarised in Table 1 below. A detailed description of the proposal is provided in Section 3 of the PER (Parsons Brinkerhoff, 2012).

Table 1: Summary of key proposal characteristics

Marine Components	Description
Berth Pocket	Berth pocket dredged to -12.7 m CD and approach navigational area dredged to -12.2 m CD.
Dredging	Dredge volume up to 1.9 million m ³ . Underwater rock fracturing (blasting) may be required to remove up to 20,000 m ³ of Bunbury Basalt rock.
Land Based Excavation	The land based component of the berth pocket will involve the excavation of 0.8 million m ³ of soil. Depending on the soils characteristics, material will either be remediated and used on-site or disposed of to an approved landfill.
Berth Structure	The final quantities will be determined as the final designs for Berth 14A are prepared. It is likely that construction of a rock armour seawall with sheet pile walls along the berth length will be undertaken, in addition to rock armoured slope protection at the entrance to the basin and the construction of the wharf facility.

Terrestrial Components	Description
Material Handling Infrastructure	Train unloader, conveyors, stackers, coal storage facility and ship loading equipment.
Rail	New dump station and rail loop. The assessable section of the rail loop is located within the site boundary, beginning and terminating to the north west of the Preston River.

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

- proposing to undertake dry-land piling and excavation where ever possible to minimise the need for marine pile driving;
- adjusting the dredge methodology to shorten the dredging period and utilising a backhoe bucket dredge;
- a commitment to the construction of one ship loading facility; and
- ensuring the presence of marine fauna observers during marine construction activities and a commitment to undertaking long-term visual boat based dolphin monitoring post-construction.

The potential impacts of the proposal initially predicted by the proponent in the PER document (Parsons Brinckerhoff, 2012) and their proposed management are summarised in Table E.2 in the Executive Summary of the proponent's document.



Figure 1. Proposal development envelope

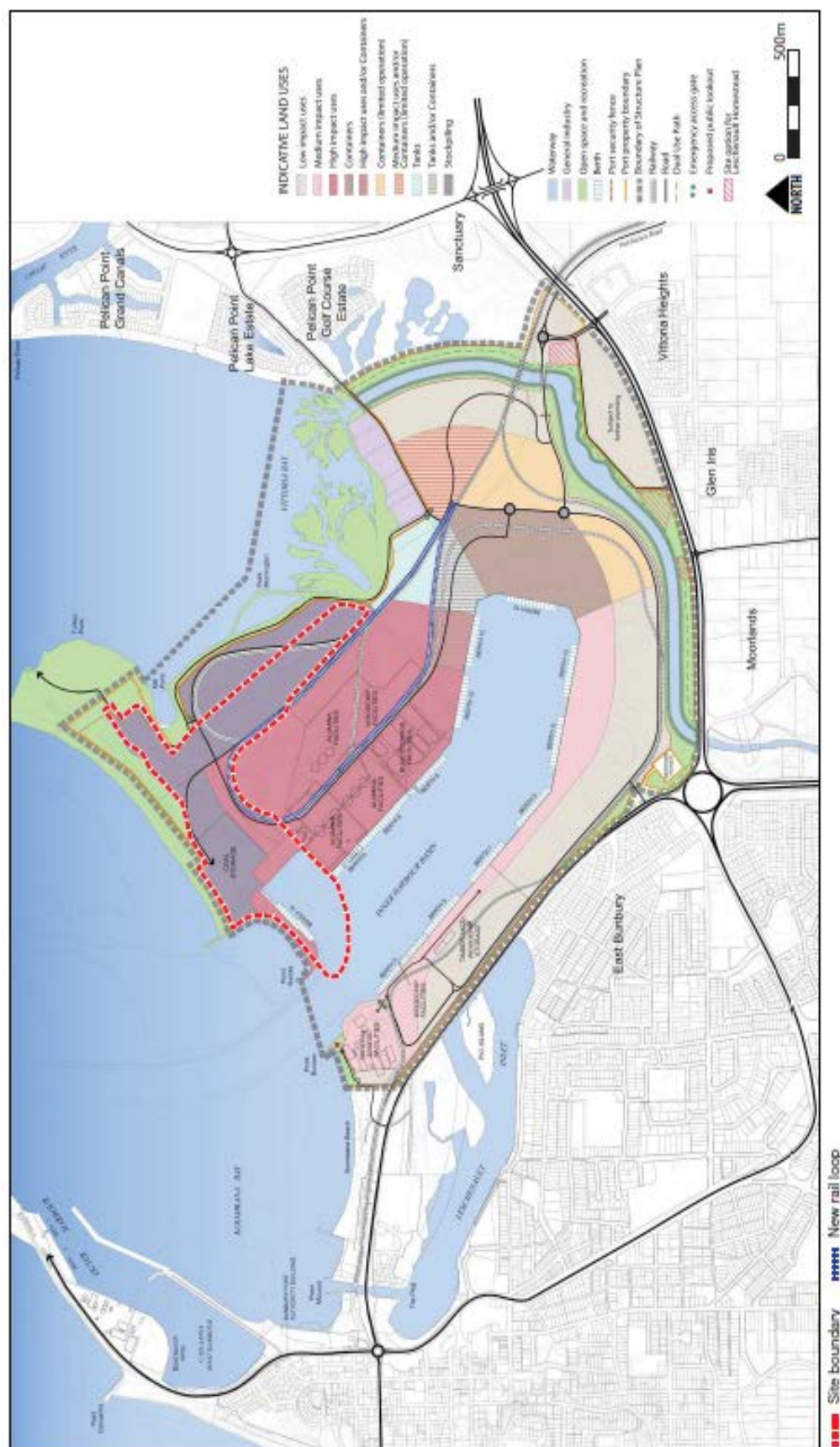




Figure 3. Proposal's key infrastructure components



Figure 4. Offshore spoil dredge disposal site location

3. Key environmental factors and principles

Section 44 of the EP Act requires the EPA to report to the Minister for Environment on the key 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 key factors selected for detailed evaluation in this report is summarised in Appendix 3. The reader is referred to Appendix 3 for the evaluation of factors not discussed below. A number of these factors, such as noise and air quality, heritage and traffic, are relevant to the proposal, but the EPA is of the view that the information set out in Appendix 3 provides sufficient evaluation.

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

- (a) Marine environmental quality;
- (b) Marine fauna;
- (c) Benthic communities and habitat;
- (d) Air quality (dust emissions); and
- (e) Amenity (noise).

The above key 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 key 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.

The following principles were considered by the EPA in relation to the proposal:

- (a) The precautionary principle;
- (b) The principle of intergenerational equity;
- (c) The principle of the conservation of biological diversity and ecological integrity;
- (d) Principles relating to improved valuation, pricing and incentive mechanisms; and
- (e) The principles of waste minimisation.

3.1 Marine environmental quality

The EPA's objective is *to maintain the quality of waters, sediment and biota so that the environmental values, both ecological and social, are protected.*

The proposal has the potential to impact on marine environmental quality during marine construction activities and during the operations phase of the proposal when coal is being loaded onto ships for export. As the threats and pressures from these two phases require different impact assessment methodologies and frameworks, the EPA's discussion of the potential environmental impacts of the proposal on marine environmental quality is set out below under the headings of *Construction phase* and *Operations phase*.

The area considered for assessment is the waters of the Bunbury Port Inner Harbour, including Koombana Bay, and the offshore marine waters out to the limits of the Port Authority controlled waters. The EPA notes that the waters of Koombana Bay are heavily utilised by the local community for recreational activities and Port users.

In the absence of an established plan of spatially allocated environmental values (EVs), environmental quality objectives (EQOs) and levels of ecological protection (LEPs) consistent with the EPA's Environmental Quality Management Framework, the EPA considers that in the interim the following EQOs apply to Koombana Bay:

- maintenance of ecosystem integrity
- maintenance of cultural and spiritual values
- maintenance of seafood safe for human consumption
- maintenance of aquaculture
- maintenance of primary contact recreation
- maintenance of secondary contact recreation
- maintenance of aesthetic values, and
- maintenance of industrial water supply values.

Although all the EQOs listed above are relevant, it is not necessary or possible for the proponent to demonstrate they have all been achieved. For example:

- there is no aquaculture facility close to the proposal
- the impacts from the dredge plume to aesthetics will be temporary
- if the proponent can maintain primary contact recreation objectives, then by default it has maintained secondary contact recreation objectives, and
- there are no environmental quality criteria for the Cultural and Spiritual or Industrial Water Supplies EVs.

The EPA therefore considers the most important, relevant and manageable EQOs to be achieved within Koombana Bay during the construction phase for this proposal are:

- maintenance of ecosystem integrity (high level of ecological protection)
- maintenance of seafood safe for human consumption, and
- maintenance of primary contact recreation.

For ongoing and long-term operations of the Port, the EPA considers that there is a need to develop an established plan of EVs and EQOs for Koombana Bay and Port waters which takes into account the users of the Port and the Bay, and the desires of the local community. The EPA has therefore provided advice on this issue in the other advice section of this report (Section 5).

Construction phase

The key issues that could affect the EPA's objective for this factor are associated with the dredging activities and include:

- adverse effects on water quality of contaminant release and mobilisation from sediments during dredging, and
- potential effects of dredging on community uses and aesthetic issues in Koombana Bay.

The proposal involves the dredging of 1.9 million m³ of sediments to accommodate the construction of the berth pocket. Dredged material is proposed to be disposed of at an offshore disposal site in Commonwealth waters shown in Figure 4. The proponent was required to apply for a sea dumping permit under the Commonwealth's *Environment Protection (Sea Dumping) Act 1981*. In accordance with the Commonwealth National Assessment Guidelines Dredging (NAGD) a detailed Sampling and Analysis Plan for the dredging component was prepared to assess sediment quality. Sediment samples were taken within the marine dredge footprint from a total of 16 sites, and all metals were found to be below the relevant NAGD screening levels (Wave Solutions, 2012).

As levels for all contaminants in the dredge material are below the screening levels, the proponent has concluded that the likely risk to ecosystem and human use environmental values contaminant release and mobilisation is low. The EPA notes, however, that the proponent has indicated sediments adjacent to the proposal footprint could be disturbed as a result of dredging activities and hence this issue will need to be carefully managed by the proponent.

The EPA considers it appropriate for the proponent to monitor water quality and, potentially, biota during the dredging program to confirm that ecological and social values in Koombana Bay are being protected. The EPA has

therefore recommended conditions 8-1 to 8-7. Recommended condition 8-2 requires the proponent to prepare and implement a Construction Marine Environmental Quality Monitoring and Management Plan. The proposed Plan will provide for:

- identifying the indicators, including metals of concern, to be monitored based on results of previous monitoring
- the establishment of monitoring sites for water quality (and potentially biota) to determine the achievement of EQOs, particularly in areas of high recreational usage
- the development of trigger levels based on the approach in the ANZECC Guidelines for a 'high' level of ecological protection
- the establishment of reporting procedures to inform the general public of water quality results, as well as the plume characteristics, and
- a framework for developing management and contingency actions to be implemented during dredging in the event trigger levels are not met.

The Plan will also require the proponent to implement a reporting protocol for ensuring the monitoring results are made publicly available. Close consultation will also be required with the Department of Health and stakeholders such as the City of Bunbury and the Dolphin Discovery Centre.

The EPA notes that the proponent has attempted to establish baseline conditions for water quality parameters (heavy metals) within Koombana Bay and the Bunbury Port Inner Harbour to inform the establishment of trigger values for management actions. The data that has been collected to date is provided in Technical Appendix No. 8 – Marine sediment sampling and analysis plan report (Wave Solutions, 2012). However, on reviewing the baseline data, the EPA has concluded that the results are at odds with the results of other surveys undertaken in the State which reported significantly lower levels of most of the metals measured.

The EPA considered these results to be indicative of problematic sampling or analytical practices rather than likely actual background values and assigns a low level of confidence to the background water quality data for heavy metals presented in Koombana Bay and the Bunbury Port Inner Harbour. The EPA has recommended condition 8-3 (ii) which will ensure the proponent undertakes future baseline surveys with appropriate quality assurance procedures, to better characterise the ambient environment and to design their monitoring and management plans accordingly.

Dredge plumes and aesthetic issues

The marine environment of the proposal area includes the waters of the Bunbury Port Inner Harbour and the marine waters of Koombana Bay (Figure 4). The marine waters of Koombana Bay are extensively used by the community and tourists for recreation including boating, fishing and swimming, and for tourism activities such as dolphin watching/interactions at Koombana Beach. Based on the proponent's preliminary modelling, turbidity plumes

would be expected to be highly visible from time to time. It also may affect aesthetic values to the extent that people may be concerned about swimming, boating and fishing in Koombana Bay.

The proponent initially modelled the extent of dredge-generated plumes based on the assumption that a cutter suction dredge would take 40 weeks to complete the berth pocket and approach channel. However, the proponent has subsequently advised the EPA that the final dredging technology to be adopted is likely to include a backhoe bucket dredge (rather than a cutter suction dredge) and be approximately 24 weeks in duration. The initial modelling in the PER is therefore considered to be a conservative assessment of the potential plume extent.

As there is some uncertainty about the final dredge program, the EPA has required the proponent to model and predict a revised Zone of Influence based on the final dredge technology, timing and duration (recommended condition 9-4 (ii)). The final dredging duration and technology will need to be consistent with condition 9-1 which requires the dredging program to avoid the spring-summer period. The revised Zone of Influence should bound the composite of all of the predicted maximum extents of dredge plumes and represents the point beyond which dredge-generated plumes should not be discernible from background conditions at any stage during the dredging campaign. Based on the proponent's advice during the assessment regarding the likely dredge technology and duration to be adopted, this revised Zone of Influence would be smaller than the one presented in the PER. The EPA has required the proponent to make this revised Zone of Influence publicly available prior to dredging commencing (recommended condition 9-4 (xii)). The EPA has also required that the revised Zone of Influence forms the basis of developing limits and targets which the proponent will need to monitor against during the dredging program. This is to ensure that the extent of the plumes is not greater than predicted.

To increase the confidence in the predictions about dredge-generated plumes, the proponent has committed to undertaking intensive sampling of total suspended solids during the initial stages of dredging to validate the assumptions in the plume modelling and re-run the model using the collected data. This commitment is supported by the EPA and has been included as a requirement in the Dredging Environmental Monitoring and Management Plan required by condition 9-3.

It is the EPA's view that the proponent would not be able to undertake the proposed dredging without causing some dredge plume within Koombana Bay. This means that the aesthetic values of Koombana Bay will be temporarily compromised during the term of the dredging campaign. However, it is important to note that although there will be a temporary aesthetic impact, the proponent's sediment analysis indicates that the dredge plume is not predicted to have an ecological or health impact.

To manage the potential aesthetic impact during dredging, the EPA has required condition 9 to be implemented during dredge activities. Condition 9

requires the proponent to prepare and implement a Dredging Environmental Monitoring and Management Plan to provide for:

- the modelling and model validation of the likely dredge plume that will result during the dredge activities
- the establishment of reporting procedures to inform the general public of the actual dredge plumes movement and characteristics within Koombana Bay, and
- a framework for developing management and contingency actions to be implemented if the dredge plume moves beyond what has been modelled by the proponent.

Operations phase

The key operational marine environmental quality issues associated with the proposal are considered to be ongoing contaminant inputs from coal spillages at the wharf from loading activities.

Other aspects that could potentially impact marine environmental quality include:

- liquid and solid waste disposal
- leaks and spills during operation, and
- discharge of stormwater.

The EQO for maintenance of ecosystem integrity has two LEPs that would apply in the Port waters – ‘High’ and ‘Moderate’. All of the Inner Harbour would be assigned a ‘Moderate’ LEP in recognition of existing port activities. The allocation of a moderate LEP in the Inner Harbour recognises that, around wharves, jetties and ship turning basins, there is enhanced potential for a range of uncontrolled contaminant inputs (e.g. shedding of antifouling paints, stormwater, product spillage) in addition to turbidity and sediment mobilisation during ship berthing. A ‘High’ LEP would apply directly outside the entrance of the Inner Harbour, in Koombana Bay.

As the proponent's proposal is located entirely in the Inner Harbour, it would need to be managed and monitored to meet a Moderate LEP. This is recognised by the proponent.

Spillage of coal product into the marine environment from the wharf and vessel hatches is one of the key threats from the proposal. The proponent has committed to best practice management of the storage and loading of coal material. Elements of best practice include enclosed conveyor infrastructure loading coal material directly into vessels. The proponent has also advised that drainage systems and procedures will be in place to ensure contaminants and coal materials spillage does not enter the marine environment during wash-down, and is recovered and disposed of appropriately. The DER is required to regulate the proposal under Part V of the EP Act. The DER has advised that the works approval and licencing process will require the conditioning of appropriate emissions control technology to minimise risk of

coal spillages and, where spills do occur, they are recovered and disposed of appropriately.

Accordingly, it is the EPA's view that the proposal can be managed to the meet the EPA's objectives for this factor during operations, without the requirement for Ministerial conditions provided that a works approval and licence is obtained from the DER.

Notwithstanding the above, the EPA has also included other advice in Section 5 in view of the need to have a holistic and consultative approach to the ongoing management of marine waters in Bunbury Port that goes beyond the impacts from just this proposal. This advice is about the need to establish a plan of spatially allocated EVs, EQOs and LEPs consistent with the EPA's Environmental Quality Management Framework for the ongoing and long term management of Port waters, including Koombana Bay.

Summary

Having particular regard to:

- (a) levels for all contaminants in the dredge material being below Commonwealth NAGD guideline thresholds and that the proponent has concluded the likely risk to ecosystem and human use environmental values to be low;
- (b) the dredge plume is likely cause a temporary aesthetic impact during the construction phase, however, the dredge plume is not predicted to have an ecological or health impact;
- (c) the requirement for water quality monitoring of Koombana Bay during marine construction activities, particularly in areas of high recreational usage, and publishing the monitoring results to inform the public and stakeholders of the results; and
- (d) dredging activities will be restricted to occur outside the summer period when recreational usage is expected to be at its highest,

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for this factor provided conditions 8 and 9 are imposed requiring the proposal to:

- manage the marine construction activities in a manner that meets the environmental quality objectives for maintenance of ecosystem health, seafood safe for human consumption and primary contact recreation
- manage the marine construction activities in a manner that minimises the extent of the dredge plume within Koombana Bay, and
- avoid dredging activities from November to March in any year.

3.2 Marine fauna

The EPA's environmental objective for this factor is *to maintain the diversity, geographic distribution and viability of fauna at the species and population levels*.

The marine environment of the proposal area includes the waters of Koombana Bay. Potential threats to marine fauna in Koombana Bay from the proposal include underwater noise generated from:

- dredging activities
- marine pile driving activities, and
- rock fracturing (blasting) activities.

Koombana Bay is already a hub of human activity, and there are significant vessel movements as a result of an operating Port and numerous private marinas. Koombana Bay supports a variety of marine fauna, including cetaceans, pinnipeds (sea lions and fur seals), penguins and predatory fish, some of which are listed or protected under State and Commonwealth legislation.

Of the cetacean species, the Common Bottlenose dolphin (*Turisops truncatus*) is considered to be of particular significance to the region and is most likely to be observed near the proposal area. The local dolphin community contributes to the region's tourism industry as dolphin interaction activities at the Dolphin Discovery Centre (DDC) are a major attraction for the City of Bunbury (Zeppel, 2007). The calving season beginning in December and peaking in February and March is a critical time to dolphin populations as newborn calves are particularly vulnerable to disturbance.

Australian sea lions, New Zealand fur seals and little penguins are also known to utilise the marine waters of Koombana Bay, although with less frequency. The blue swimmer crab fishery was identified as being particularly important in the Bunbury region. Potter and de Lestang (2000) identified that the mean monthly densities of crabs were highest between mid-spring and mid-autumn and declined to very low or zero levels during winter and early spring.

To mitigate the potential impact on marine fauna the proponent has proposed a number of modifications to the proposal's construction methodology to reduce the intensity of underwater noise emissions, including:

- re-designing the proposal's marine pile driving approach to ensure the need for marine pile driving is minimised. This is achievable by constructing Berth 14A in a manner that utilises dry-land pile insertion, and hence avoiding the in-water piling and underwater sound. Furthermore, the proponent aims to implement best management technologies, such as vibratory pile driving techniques, to reduce the intensity of underwater noise emissions associated with marine pile driving where it is unavoidable

- ensuring that if rock fracturing (blasting) of the Bunbury Basalt layer during dredging is necessary, only minimal blasting will be undertaken. Best practice technologies, such as low explosive devices, will also be investigated, and
- a commitment to extend the post-construction visual boat-based monitoring for a further 12 months by carrying out quarterly (every three months) visual boat-based dolphin monitoring from the conclusion of dredging. The visual boat-based monitoring program is also proposed to be carried out in partnership with the DDC to build on the data collected as part of the on-going South West Marine Research Program.

The EPA has recommended conditions 6 and 7 to protect marine mammals during the implementation of marine construction activities. Condition 6-7 provides for the protection of dolphins during peak calving periods by ensuring no rock fracturing (blasting) activities occur between October and May in any year. Marine construction activities that are permitted to occur within this period will be required to ensure exclusion zones are implemented. Marine fauna observers (condition 6-8) are required to monitor these exclusion zones for marine fauna and the activities will be suspended if cetaceans, pinnipeds or penguins are observed to enter these zones. Figure 2 of Appendix 5 shows the locations and extent of the exclusion zones as they apply to the relevant marine construction activities.

Based on the proponent's commitment and the controls in recommended condition 6, the EPA considers that there is a low risk of Bottlenose Dolphins being exposed to short-term acute impacts and physiological injury.

Also, based on the proposal's revised management approaches, the monitoring results from Binningup Southern Seawater Desalination proposal, as well as the proponent's proposal being located within a busy working port, the EPA considered that there is a low risk of Bottlenose Dolphins becoming permanently displaced and not returning to Koombana Bay as a result of this proposal.

The EPA has also identified introduced marine pests (IMP) as a potential source of risk to marine fauna and marine environmental quality. The two primary mechanisms by which IMP can be introduced are through ballast water and biofouling. The most likely sources of IMP are from dredge and construction equipment. The EPA has recommended condition 11 to manage the risk of IMP incursion in the waters of Koombana Bay.

It is therefore considered that the proposal can be managed to meet the EPA's objective for marine fauna.

Summary

Having particular regard to:

- (a) the proponent's revised approach to pile driving, which aims to minimise marine pile driving and utilise best management

technologies such as vibratory pile driving where marine pile driving is considered to be necessary;

- (b) requirement for marine fauna observers to monitor exclusion zones during dredging, marine pile driving and rock fracturing (blasting) activities;
- (c) post-construction monitoring of Bottlenose Dolphin community; and
- (d) provisions to ensure introduced marine pests are controlled and managed,

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for this factor provided conditions are imposed requiring the proponent to:

- ensure best management technologies are identified and implemented during marine pile driving and rock fracturing (blasting) activities (condition 6-3);
- limit the period of rock fracturing (blasting) to exclude the period from 1 October to 31 May in any year (condition 6-7);
- ensure marine fauna observers are present during all marine construction activities and exclusion zones are enforced (6-10); and
- manage the risk of incursion of introduced marine pests.

3.3 Benthic communities and habitat

The EPA's environmental objective for this factor is *to maintain the structure, function, diversity, distribution and viability of benthic communities and habitats at local and regional scales.*

The proponent has carried out benthic surveys of Koombana Bay. Results from survey work have shown that the bay is dominated by a bare sand substrate and comprises a low biotic cover (less than two per cent) with trace amounts of foliose and turf algae (Figure 5). No seagrass was observed in Koombana Bay during the habitat surveys. However, one area of reef (about 15 ha) located about 2 km from the berth pocket on the north-eastern margin of the bay (shown in figure 5), was surveyed and observed to consist of foliose algae and filter feeders (Wave Solutions, 2012a).

The EPA has identified the key issue relevant to benthic communities and habitat to be impacts associated with a dredge plume resulting from dredging activities. Dredging increases water turbidity levels through an increase in total suspended sediments (TSS) in the water column and an increase in sedimentation. Elevated TSS leads to a decrease in water transparency and a corresponding decrease in light that is available to primary producer benthic communities, which can affect their photosynthetic capacity.

The proponent has predicted and presented the potential impacts on benthic communities consistent with the framework provided in the EPA's Environmental Assessment Guideline No. 7 for Marine Dredging Proposals. The proponent's predicted zones of high and moderate impacts are located

close to the Inner Harbour. No benthic communities occur within these predicted zones. The zone of influence however, coincides with the benthic communities and habitats mentioned above (turf algae and filter feeder communities). Plumes in the zone of influence are not expected to be of an intensity which would have an ecological impact and hence there is a low risk that these communities will be impacted. Recognising this, the EPA has recommended condition 10 for benthic communities which is not linked to dredge management responses. The condition provides for baseline monitoring of benthic community health before and post-construction, to confirm no detectable impact to benthic communities occurs within the Zone of Influence.

Summary

The EPA considers the key environmental factor of benthic communities and habitat has been adequately addressed. The EPA's objectives for this factor are likely to be met provided that conditions are imposed requiring the proponent to:

- (a) undertake baseline monitoring of benthic communities health prior to dredging, and
- (b) undertake post-construction monitoring to confirm no impact to benthic communities occurs as a result of implementation of the proposal.

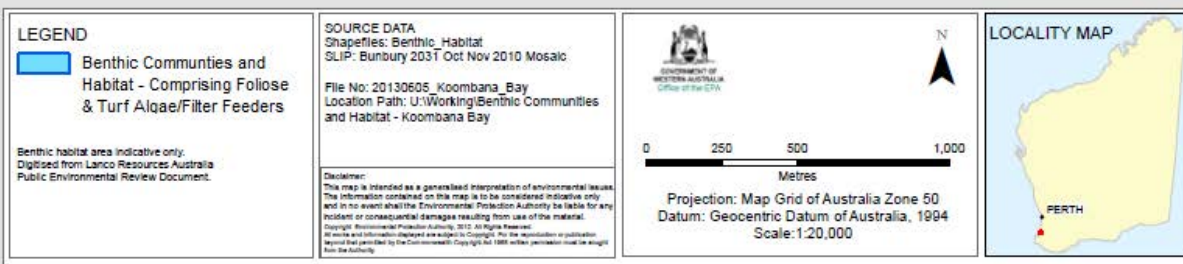
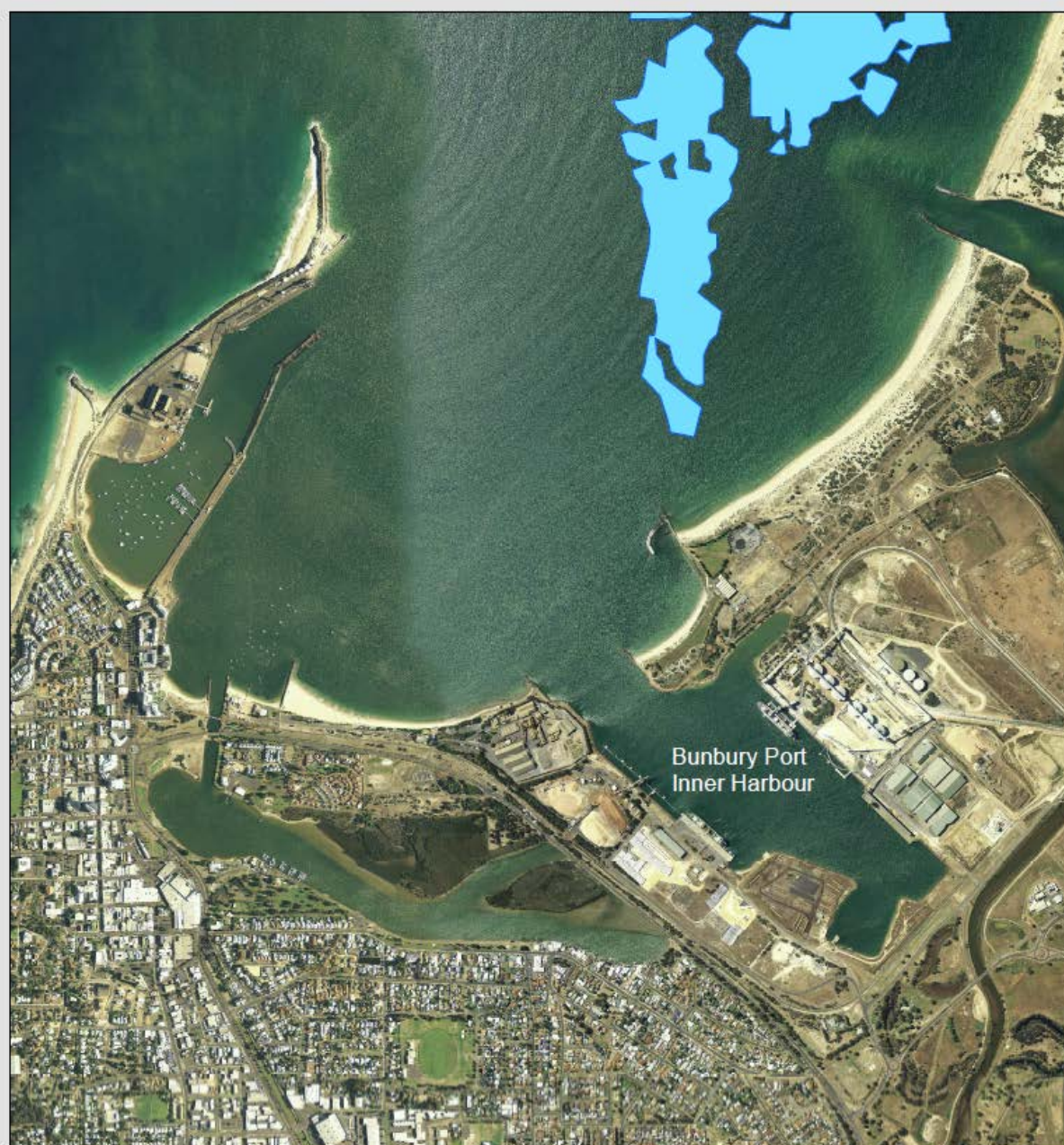


Figure 5. Benthic communities and habitat of Koombana Bay

3.4 Air quality (dust emissions)

The EPA's environmental objective for air quality is *to maintain air quality of the environment and human health and amenity*.

The proposal will be located in a busy operating Port that accommodates industries and activities including mineral sands, woodchips and alumina export operations.

Coal dust is the key emission that could result from the operation of the proposal and impact the EPA's objective. The proponent has identified the following potential operational dust emission sources associated with the proposal:

- fugitive emissions from the partially-enclosed train unloading facility
- conveyors and their transfer points
- ship load out facilities, and
- emissions from the dust extraction system associated with the storage sheds.

Noting this, the proponent proposes to implement world's best management technologies at the site to assist in minimising fugitive dust emissions. Best management technologies proposed by the proponent include:

- Coal stockpiles will be fully enclosed in a steel frame and clad building (large shed) and dust emissions shall be minimised through the use of a dust suppression spray water system with provision for negative pressurisation and dust extraction. It is considered best practice within Australia to cover coal stockpiles.
- Conveyors will be enclosed, with provision for controlled wash-down of spillage.
- Transfer points will be fully enclosed and fitted with misting sprays to suppress dust emissions at transfer points and dust extraction of conveyors at transfer points will use local ducted bag filters to collect any remaining airborne dust.
- The ship loading facility will be fitted with a fully enclosed boom conveyor, a washdown system and a telescopic spout with misting sprays designed to minimise the drop height of material into the holds of vessels.
- Rail wagons will be covered to minimise fugitive emissions.

Advice from the DEC (now DER) confirms that it is unlikely that zero air emissions of coal dust from the site will be achieved. However, the EPA supports the proponent's implementation of best management technologies to ensure the dust emissions are reduced to as low as reasonably practicable. When compared to other coal export facilities around Australia, these technologies represent best practice for coal export facilities in Australia.

The EPA has received advice from the DEC (now DER) indicating that coal dust emissions can be managed under Part V of the EP Act, specifically by conditioning appropriate emissions control technologies in the works approval and licences. The scope of the works approval will address the above coal dust management technology, as well as the requirement to identify dust monitoring locations, frequency of sampling, and sampling methodology, which will include real time monitoring and dust speciation.

Collie coal that will be processed through Berth 14A is classed as sub-bituminous and under certain conditions can be subject to spontaneous combustion. The proponent is aware of these risks and has incorporated technologies that will monitor for hot-spots in stored coal, fire detection and suppression systems, and a carbon monoxide (CO) gas detection system to monitor and mitigate the risk of fire.

The EPA has been advised that the risk of spontaneous combustion can be managed under the *Mines Safety and Inspection Act 1994*, which is administered by Department of Mines and Petroleum (DMP). In accordance with this Act the proponent will be required to prepare a Project Management Plan to the satisfaction of DMP, who will inspect the facility to ensure measures are in place that mitigate the potential for the combustion of coal.

In view of the measures proposed by the proponent and the controls available through Part V of the EP Act and under the *Mines Safety and Inspection Act 1994*, the EPA considers that its objectives for this factor can be met and has not recommended a condition for this factor.

Summary

Having particular regard to:

- (a) The best management technologies proposed for the proposal that aim to minimise fugitive dust emissions to as low as reasonably practicable
- (b) a fire detection and suppression system and CO gas detection system to monitor coal and mitigate the risk of fire
- (c) the DEC (now DER) indicating that coal dust emissions can be managed under Part V of the EP Act, and
- (d) the risk of spontaneous combustion able to be managed under the *Mines Safety and Inspection Act 1994*,

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for this factor, without the requirement for a Ministerial condition provided that a works approval and licence is obtained from the DER.

3.5 Amenity (noise)

The EPA's environmental objective for amenity is *to ensure that impacts to amenity are reduced as low as reasonably practicable*.

The proposal will be located in an operating port that experiences noise emissions from a range of industries and activities including mineral sands, woodchips and alumina export operations. The proposal's main sources of noise that could contribute to cumulative noise levels at the port include emissions from the coal stackers, conveyors and ship loading facility.

Noise management in Western Australia is implemented through the Environmental Protection (Noise) Regulations 1997 (the Regulations) which operate under the EP Act. The Regulations specify maximum noise levels (assigned levels) which are the highest noise levels that can be received at noise-sensitive premises, commercial and industrial premises. The assigned noise levels for the Bunbury area are shown in Table 2 and the locations of receptor sites are shown in Figure 4.

Table 2: Assigned noise levels for selected receptors

Time of Day	Assigned Noise Levels – LA10 dB(A)			
	Locations R1, R2, R4, R5	Location R3	Commercial Premises	Industrial Premises
0700 to 1900 hours Monday to Saturday	45	52	60	65
0900 to 1900 hours Sunday and public holidays	40	47	60	65
1900 to 2200 hours all days	40	47	60	65
2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays	35	42	60	65

The Regulations require that noise emissions must not exceed or significantly contribute to an exceedance of the assigned noise levels. Since there are other port users that can be considered as significant contributors, noise emissions from the proposed coal handling facility should be five decibels (dB) below the assigned noise levels when these other port users are operating. The noise limit accounts for cumulative noise impacts from other operating projects within the port.

The proponent's initial noise modelling of the proposal's facilities has shown that noise emissions, when considered in isolation, can comply with the assigned noise levels. However, accounting for noise from other port users, it

is likely that cumulative noise impacts will exceed the night-time assigned noise levels under certain operating and weather conditions (SVT, 2012).

The EPA understands that a risk of non-compliance would occur under worst case scenarios when the wind is blowing from the proposed berth to the affected residences and noise from other port operations is present and/or at high levels. Under these circumstances the noise from the proposed berth would likely result in exceedences on allowed night-time noise levels.

To reduce the risk of this non-compliance, the proponent has modified its proposal to incorporate only one ship loader as part of its operations. This modification has reduced the predicted noise emission level from ship loading by three decibels. Preliminary modelling conducted by the proponent has shown that there is now likely to be no exceedences at any receiver locations within the City of Bunbury.

The EPA has received advice from the DEC (now DER) stating that noise emissions from the proposal's operations can be managed to substantially comply with the Regulations. Furthermore, the DER recommends that the proponent continue work with the BPA to ensure that the cumulative noise emissions from the port, including that from the proposed Berth 14A expansion, are adequately managed.

In addition, the EPA notes that noise and vibrations associated with pile driving can be managed under the Regulations. Construction noise is exempt from meeting assigned noise levels if carried out during the appropriate hours under a noise management plan approved by the CEO of the City of Bunbury and/or the DER.

In view of the measures proposed by the proponent and the controls available under the Noise Regulations, the EPA considers that its objectives for this factor can be met and has not recommended a condition for this factor.

As a result of the assessment of this proposal, the EPA has also provided other advice in Section 5 of this report relating to cumulative noise emissions at Bunbury Port.

Summary

Having particular regard to:

- (a) modification of the proposal by the proponent to incorporate only one ship loader, reducing the predicted noise emission by three decibels; and
- (b) preliminary modelling conducted by the proponent has shown that there are now likely to be no noise exceedences,

it is the EPA's opinion that the proposal can be managed to meet the environmental objective for this factor without the requirement for a Ministerial condition in view of the Regulations available under the EP Act to manage noise emissions.



Figure 6 – Receiver locations

3.6 Environmental principles

In preparing this report and recommendations, the EPA has had regard for the object and principles contained in s4A of the EP Act. Appendix 3 contains a summary of the EPA's consideration of the principles.

4. Conditions

Section 44 of the EP Act requires the EPA to report to the Minister for Environment on the key 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.

4.1 Recommended conditions

Having considered the information provided in this report, the EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by Lanco Resources to develop the Bunbury Port Berth 14A Expansion and Coal Storage and Loading Facility within the Bunbury Port Inner Harbour is approved for implementation. These conditions are presented in Appendix 5. Matters addressed in the conditions include the following:

- (a) minimising impacts to marine fauna during construction through requirements for Marine Fauna Observers to be present, and restricting rock fracturing (blasting) operational timing (condition 6);
- (b) requiring the development and implementation of a Dolphin Monitoring Plan with the aim of ensuring that there are no long-term adverse effects on the abundance and distribution of the Bottlenose Dolphin in Koombana Bay (condition 7);
- (c) monitoring and managing impacts to marine environmental quality from marine construction activities to achieve the relevant Environmental Quality Objectives within Koombana Bay (condition 8);
- (d) ensuring the marine construction activities are managed in a manner that minimises the extent of the dredge plume within Koombana Bay, and restricting the dredge operational timing (condition 9);
- (e) ensuring the health and distribution of any benthic communities and habitat in Koombana Bay are monitored post-construction (condition 10); and
- (f) prevention and control of 'Introduced Marine Pests' during construction (condition 11).

4.2 Consultation

In developing these conditions, the EPA consulted with the proponent, the DEC (now DER), the DoF and the BPA in respect of matters of fact and matters of technical or implementation significance.

5. Other advice

Marine environmental quality

In 2008 the BPA undertook the development of a Long-term Marine Monitoring Program within the Authority's controlled marine waters. The Program aimed to document the status of any contaminants of concern in seawater, sediment and biota over time (annually) in accordance with the Commonwealth's National Assessment Guidelines for Dredging (SKM, 2011). The Program, although implemented, has not been designed or implemented in a manner that conforms with the EPA's Environmental Quality Management Framework (EQMF). This means that a spatial plan of Environmental Quality Objectives (EQOs) and Levels of Ecological Protection (LEPs) within the Inner Harbour, as well as a large portion of Koombana Bay, has not been developed and agreed with the community and the EPA.

If a marine monitoring program incorporating the EPA's EQMF was available for existing port activities, and was supported by a port-wide Environmental Management and Monitoring Plan (EMMP), it would allow for the integration of individual monitoring programs from all the operating port users/exporters in the BPA's controlled marine waters (i.e. Alcoa, Worsley, Hansol, Bemax, Talison, Tiwest, etc). Also, proponents of future export facilities, such as Lanco Resources Australia, would then be required to design a monitoring and management program in the context of the BPA's spatial plan of EQOs and LEPs and contribute towards the implementation of the BPA's port-wide EMMP.

The EPA has required the BPA to undertake work to identify EVs, EQOs and LEPs as part of its Environmental Scoping Document for the Strategic Proposal for the Bunbury Port Inner Harbour expansion plan (assessment number 1879). However, at this stage it is not likely to be submitted to the EPA until mid-2014. Therefore, it is the EPA's view that this work should be brought forward so that future proposals, as well as existing day-to-day operations in the Port, operate under an approved EQMF. The EPA will work closely with the BPA in the immediate future to develop a spatial plan of EQOs and LEPs and supporting EMMP, and will offer any required expertise and advice on the application of the EQMF in port waters.

Amenity (noise)

Through the assessment of this proposal it has become apparent to the EPA that there are cumulative noise issues at the Port. This has been confirmed through meetings with the BPA, who advised that it was its view that despite its best efforts, exceedences of noise standards, on occasion, may be occurring at the Port. These cumulative noise emissions are the result of all current port users carrying out their operations simultaneously. This issue is viewed as a particularly significant environmental matter for the community, and from the BPA's perspective it could constrain future port developments.

Advice received from the DEC's Noise Regulation Branch (now part of the DER) indicates that management of existing and future cumulative noise emissions from the Port could be evaluated through a Regulation 17 application under the Noise Regulations.

The BPA have discussed the possibility of submitting a Regulation 17 application as part of the Inner Harbour Structure Plan, with the view to have the noise issues dealt with before Lanco's Berth 14A proposal becomes operational. Further discussions are intended to be held with the DER and the BPA regarding the process of the Regulation 17 assessment and how this could be progressed in parallel with the EPA's assessment of the Inner Harbour Structure Plan. This includes the issue of timing and rationalising the opportunities for public review and comment on the BPA's strategic proposal and reporting.

Recommendations

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

- That the Minister notes that the proposal being assessed is to develop the Bunbury Port Berth 14A Coal Storage and Loading Facility within the Bunbury Port Inner harbour
- That the Minister considers the report on the key environmental factors and principles as set out in Section 3
- That the Minister notes the EPA has concluded that it is likely that the EPA's objectives would be achieved, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 4 and summarised in Section 4, and
- That the Minister imposes the conditions and procedures recommended in Appendix 4 of this report.

Appendix 1

List of submitters

Organisations:

Department of Fisheries
Department of State Development
Department of Planning
Department of Health
Department of Indigenous Affairs
Department of Environment and Conservation
Department of Transport
Department of Water
City of Bunbury
AqWest
Bunbury Port Authority
Bunbury Dolphin Centre
Cetacean Research Unit
WAPRES
Perdaman Chemicals
Pelican Point Estate
Bunbury Wellington Economic Alliance
Doctors for the Environment
ALCOA

Individuals:

M Johnson
M Keiley
J Burgin
A & T Franco
M Kneale
S Turner
P Bazzo
D Scott-Hamilton
H Freeman
M Doust
B Humble
G & K Ralph
P Chapman
M Blake
J Cicchillitti
R & J Hammersley
D Papalia
J Larmin
D Hill
K & G Ausden
J Waring
D Willis
J Jenkins
E L Parsons

Appendix 2

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Appendix 3

Summary of identification of key environmental factors and principles

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Key Environmental Factors
Marine environmental quality	Impacts to water quality through dredging during construction and ship movements and maintenance dredging during operation.	• Lack of sufficient information and evaluation about dredge disposal. • Not enough consideration of the cumulative impacts of previous and new dredge campaigns. • Mobilisation of contaminated sediments could affect human health. • Technical comments were made regarding the modelling.	Considered to be a key environmental factor discussed in section 3.1
Marine fauna	Injury or death of marine fauna due to rock fracturing (blasting) during construction. Indirect impacts due to avoidance behaviour during construction and operation	• Pile driving, rock fracturing (blasting), dredging, spoil disposal and reduced water quality has the potential to impact on the Koombana Bay dolphin population as well as other marine fauna such as fish. • Long-term adverse impacts on dolphins may be possible due to the duration of the dredge campaign and the significant disturbance posed by blasting/rock fracturing. • Better management and monitoring programs should be implemented.	Considered to be a key environmental factor, discussed in section 3.2.
Benthic habitat	Potential impact to macroalgae reef community within the Zone of Influence	No comments received.	Considered to be a key environmental factor, discussed in section 3.3.
Flora and vegetation	Loss of 6 ha of vegetation of which only	• Indirect impacts to the remaining vegetation from erosion and/or	Most of the site is completely degraded or degraded. The 2 ha of

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Key Environmental Factors
	2 ha is composed of native species.	contamination need to be addressed. • A landscape management plan should be required.	native vegetation is degraded with a small area in good condition but the area is fragmented and the project is unlikely to impact species viability. Landscape management and erosion will be addressed through management plans prior to construction. Not considered to be a key environmental factor
Terrestrial fauna	Loss of black cockatoo foraging habitat	• Management and mitigation measures are needed to address fauna entrapment in trenches.	Fauna habitats within the proposal area are generally poor in condition and provide only limited habitat for some opportunistic birds and common amphibian species. Black cockatoo foraging habitat is small (< 1 ha) and not all is likely to be lost as a consequence of the proposal. The environmental management plan for site will include a requirement for regular inspections of trenches for fauna. Not considered to be a key environmental factor

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Key Environmental Factors
Inland waters environmental quality (groundwater)	Reduced integrity of the confining Bunbury Basalt layer. Contamination and/or acidification of the groundwater due to construction and/or operation.	• Risk that rock fracturing (blasting) could result in pathways for water to flow between the harbour and the Yarragadee aquifer. • Surface water flows (including during flood events) should be managed. Any water discharged to the harbour must meet relevant Australian standards.	The thickness of the Bunbury Basalt layer beneath Berth 14A has been characterised by the proponent's geological surveys to be about 40 m thick. A review of DoW's bore logs has confirmed this. If rock fracturing (blasting) is required, the proponent has indicated that precision blasting techniques will be deployed by blasting experts. These techniques include using low explosive devices that expand the rock as opposed to blasting that causes fracturing. Noting this, it is considered that there is low risk of the proposal impacting the integrity of the Bunbury Basalt layer. The proposal area will be banded to cope with a 1 in 100 year event. Surface water will be collected and pumped into Waste Water Treatment Plant within the site to be recycled back into the system. Discharge to the estuary is not proposed. The final water management plan will be sent to the DoW and the DER prior to construction.

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Key Environmental Factors
			Not considered to be a key environmental factor
Terrestrial environmental quality	Disturbance of acid sulfate soils. Disturbance of contaminated soils.	• Soil sampling, analysis and reporting needs to be undertaken. • There is a risk that fugitive coal may cause contamination of other port users' stockpiles and infrastructure.	A detailed site investigation for contamination will be completed prior to any earthworks being undertaken on the site. Consultation with relevant authorities will also be undertaken if required. The <i>Contaminated Sites Act 2003</i> requires that sites must be investigated and if required, remediated to the satisfaction of the DER. The risk of coal contamination can be managed through infrastructure containment and regular inspections. Acid sulfate soils will be addressed through a management plan prepared to the satisfaction of the DER. Not considered to be a key environmental factor

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Key Environmental Factors
Air quality	Increases in the dust load in the air shed during construction and operation. Risk of spontaneous combustion.	• The proposal will result in increased dust levels at residential areas. • All coal transport and storage sheds need to be enclosed and have dust extraction systems in place. • Issues were raised concerning the dust modelling. • Risk of spontaneous combustion.	The proponent has committed to implementing best management technologies to assist in minimising fugitive dust emissions at the site to as low as reasonably practicable. The EPA has received advice from DEC indicating that coal dust emissions can be managed under Part V of the <i>Environmental Protection Act 1986</i>, specifically by conditioning appropriate emissions control technologies in the Works Approval and Licences. The site would be subject to the <i>Mine Safety and Inspection Act 1994</i> and the spontaneous combustion/fire risk this would need to be covered off under a Project Management Plan approval. Considered to be key environmental factor, discussed in section 3.4

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Key Environmental Factors
Noise and vibrations	Increased noise levels due to construction and operation.	The proposal will result in increases in noise levels during construction and operation.	In isolation, the proposal will meet the assigned noise levels however compliance for the cumulative impact is dependent on the port operating conditions and weather. Modelling indicates that exceedences will occur 20% of the time. A noise management plan will be prepared for the approval of the DER and the proponent will continue to work with the BPA and the DER to comply with the Regulations. Not considered to be a key environmental factor, discussed in section 3.5.

PRINCIPLES		
Principle	Relevant Yes/No	If yes, Consideration
1. The precautionary principle <i>Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.</i> <i>In application of this precautionary principle, decisions should be guided by –</i> <i>(a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and</i> <i>(b) an assessment of the risk-weighted consequences of various options.</i>		
	Yes	In considering this principle, the EPA notes the following: • Investigations of the biological and physical environment should provide background information to assess risks and identify measures to avoid or minimise impacts. • The assessment of these impacts and management is provided in Section 3 of this report. • Conditions have been recommended as considered necessary.
2. The principle of intergenerational equity <i>The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.</i>		
	Yes	The proposal would result in potential impacts to marine environmental quality from marine construction activities, and ongoing operational discharges. These values are relevant environmental factors and discussed in this report. Conditions have been recommended to ensure minimal impact.
3. The principle of the conservation of biological diversity and ecological integrity <i>Conservation of biological diversity and ecological integrity should be a fundamental consideration.</i>		
	Yes	The proposal has the potential to affect the marine environmental quality of Bunbury Port Inner Harbour and Koombana Bay. Marine environmental quality, benthic habitat

		and marine fauna are key environmental factors discussed in this report.
4. Principles relating to improved valuation, pricing and incentive mechanisms <i>(1) Environmental factors should be included in the valuation of assets and services.</i> <i>(2) The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement.</i> <i>(3) The users of goods and services should pay prices based on the full life-cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste.</i> <i>(4) Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structure, including market mechanisms, which enable those best placed to maximize benefits and/or minimize costs to develop their own solution and responses to environmental problems.</i>		
	Yes	The proponent should bear the cost of any potential pollution, containment, monitoring, management, decommissioning.
5. The principle of waste minimisation <i>All reasonable and practicable measures should be taken to minimize the generation of waste and its discharge into the environment.</i>		
	Yes	The marine waters of the Bunbury Port Inner Harbour and Koombana Bay have the potential to change marine environmental quality through the marine construction activities and operational activities of the proposal. This is a key environmental factor of this report and appropriate conditions have been recommended.

Appendix 4

Identified Decision-making Authorities and Recommended Environmental Conditions

Identified Decision-making Authorities

Section 44(2) of the EP Act specifies that the EPA's report must set out (if it recommends that implementation be allowed) the conditions and procedures, if any, to which implementation should be subject. This Appendix contains the EPA's recommended conditions and procedures.

Section 45(1) requires the Minister for Environment to consult with decision-making authorities, and if possible, agree on whether or not the proposal may be implemented, and if so, to what conditions and procedures, if any, that implementation should be subject.

The following decision-making authorities have been identified for this consultation:

Decision-making Authority	Approval
1. Minister for Water	Water extraction licence (<i>Rights in Water and Irrigation Act 1914</i>)
2. Department of Mines and Petroleum	<i>Dangerous Goods Safety Act 2004 and Mine Safety and Inspection Act 1994</i>
3. Bunbury Port Authority (CEO)	<i>Port Authorities Act 1999</i>
4. Minister for State Development	<i>Collie Coal (Griffin) Agreement Act 1979</i>
5. Department of Environment Regulation	Part V Licence and Works Approval under the <i>Environmental Protection Act 1986</i>
6. Minister for Transport	<i>Port Authorities Act 1999</i>

Note: In this instance, agreement is only required with DMAs 1, 4, and 6 as these DMAs are Ministers.

RECOMMENDED ENVIRONMENTAL CONDITIONS

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

Bunbury Berth 14A Expansion Project

Proposal: The proposal is to construct and operate a coal handling and export facility within the Bunbury Port Inner Harbour in the south-west region of Western Australia.

Proponent: Lanco Resources Australia Pty Ltd

Proponent Address: Level 1
677 Murray Street
West Perth WA 6005

Assessment Number: 1886

Report of the Environmental Protection Authority Number: 1486

This Statement authorises the implementation of the Proposal described and documented in Columns 1 and 2 of Table 2 of Schedule 1. The implementation of the Proposal is subject to the following implementation conditions and procedures and Table 3 of Schedule 1 details definitions of terms used in the implementation conditions and procedures.

1 Proposal Implementation

- 1-1 When implementing the proposal, the proponent shall not exceed the authorised extent of the proposal as defined in Column 3 of Table 2 in Schedule 1, unless amendments to the proposal and the authorised extent of the Proposal has been approved under the EP Act.

2 Contact Details

- 2-1 The proponent shall notify the CEO of any change of its name, physical address or postal address for the serving of notices or other correspondence within twenty eight (28) days of such change. Where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State.

3 Time Limit for Proposal Implementation

- 3-1 The proponent shall not commence implementation of the proposal after the expiration of five (5) years from the date of this statement, and

any commencement, within this five (5) year period, must be substantial.

- 3-2 Any commencement of implementation of the proposal, within five (5) years from the date of this statement, must be demonstrated as substantial by providing the CEO with written evidence, on or before the expiration of five (5) years from the date of this statement.

4 Compliance Reporting

- 4-1 The proponent shall prepare and maintain a compliance assessment plan to the satisfaction of the CEO.
- 4-2 The proponent shall submit to the CEO the compliance assessment plan required by condition 4-1 at least six (6) months prior to the first compliance assessment report required by condition 4-6, or prior to implementation, whichever is sooner.

The compliance assessment plan shall indicate:

- (i) the frequency of compliance reporting;
 - (ii) the approach and timing of compliance assessments;
 - (iii) the retention of compliance assessments;
 - (iv) the method of reporting of potential non-compliances and corrective actions taken;
 - (v) the table of contents of compliance assessment reports; and
 - (vi) public availability of compliance assessment reports.
- 4-3 The proponent shall assess compliance with conditions in accordance with the compliance assessment plan required by condition 4-1.
- 4-4 The proponent shall retain reports of all compliance assessments described in the compliance assessment plan required by condition 4-1 and shall make those reports available when requested by the CEO.
- 4-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of that non-compliance being known.
- 4-6 The proponent shall submit to the CEO the first compliance assessment report fifteen (15) months from the date of issue of this Statement addressing the twelve (12) month period from the date of issue of this Statement and then annually from the date of submission of the first compliance assessment report.

The compliance assessment report shall:

- (i) be endorsed by the proponent's Managing Director or a person delegated to sign on the Managing Director's behalf;

- (ii) include a statement as to whether the proponent has complied with the conditions;
- (iii) identify all potential non-compliances and describe corrective and preventative actions taken;
- (iv) be made publicly available in accordance with the approved compliance assessment plan; and
- (v) indicate any proposed changes to the compliance assessment plan required by condition 4-1.

5 Public Availability of Data

5-1 Subject to condition 5-2, within a reasonable time period approved by the CEO of the issue of this statement and for the remainder of the life of the proposal the proponent shall make publicly available, in a manner approved by the CEO, all validated environmental data (including sampling design, sampling methodologies, empirical data and derived information products (e.g. maps)) relevant to the assessment of this proposal and implementation of this Statement.

5-2 If any data referred to in condition 5-1 contains particulars of:

- (i) a secret formula or process; or
- (ii) confidential commercially sensitive information;

the proponent may submit a request for approval from the CEO to not make this data publically available. In making such a request the proponent shall provide the CEO with an explanation and reasons why the data should not be made publically available.

6 Marine Fauna (Construction)

6-1 Prior to the commencement of any marine pile driving and rock fracturing (blasting) activities, the proponent shall prepare a Marine Pile Driving and Rock Fracturing (Blasting) Plan subject to the approval of the CEO.

6-2 The objectives of the Marine Pile Driving and Rock Fracturing (Blasting) Plan are to:

- (i) minimise the need for marine pile driving and rock fracturing (blasting) in the inner harbour; and
- (ii) for elements of the proposal where marine pile driving and rock fracturing are necessary, ensure that it has been planned and designed to minimise underwater noise emissions.

6-3 The Marine Pile Driving and Rock Fracturing (Blasting) Plan required pursuant to condition 6-1 shall include:

- (i) the duration, timing and methodology of each activity; and

- (ii) best practice management technologies that will be implemented during marine pile driving and rock fracturing (blasting) activities to minimise the intensity of underwater noise emissions, including the use of vibratory pile drivers and low explosive devices.
- 6-4 During marine pile driving or rock fracturing (blasting) activities, unless otherwise agreed by the CEO, the proponent shall implement the approved plan required by condition 6-1.
- 6-5 Revisions to the Marine Pile Driving and Rock Fracturing (Blasting) Plan may be approved by the CEO.
- 6-6 The proponent shall implement the revised Marine Pile Driving and Rock Fracturing (Blasting) Plan required by condition 6-5.
- 6-7 No rock fracturing (blasting) activities shall occur between the dolphin calving periods defined as between 1 October to 31 May in any year.
- 6-8 Prior to construction and for the duration of the marine construction activities, as defined in table 4 of Schedule 1, the proponent shall engage dedicated Marine Fauna Observers (observers) who must:
 - (i) demonstrate a knowledge of marine wildlife species in the South-west Region of Western Australia, including Threatened and Migratory Species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), and Wildlife Conservation (Specially protected fauna) Notice 2010(2) (and their updates) and priority listing, and their behaviours;
 - (ii) have the capacity, subject to safety considerations, to move and make observations and other relevant records independently within 500 metres of marine construction activities;
 - (iii) be on duty during all marine construction activities; and
 - (iv) maintain a log of:
 - a. their observations of cetaceans in a format consistent with the National Cetacean Sightings and Strandings Database;
 - b. observations of cetaceans, pinnipeds and penguins, including injured or dead fauna within 500 metres (m) of the marine construction activities referred to in 6-8 (ii);
 - c. observations of cetaceans, pinnipeds and penguins behaviours, in particular any behaviour that could be interpreted as a display of disturbance or distress;
 - d. management responses by the proponent in relation to observation of disturbed or distressed fauna, and injured or dead fauna;
 - e. observation hours; and
 - f. the duration of the marine construction activities.

- 6-9 The proponent shall within six (6) months of completing marine construction activities, lodge cetacean records with the National Cetacean Sighting and Strandings Database at the Australian Antarctic Division and with the DPaW.
- 6-10 The Marine Fauna Observer as required by condition 6-8 is to be present on each vessel undertaking marine construction activities, or land-based location approved by the CEO, and will be trained in marine fauna observations and mitigation measures, including the requirements of the *Wildlife Conservation (Closed Season Marine Mammals) Notice 1998*, as amended or replaced from time to time, and maintain a watch and a log of fauna observed during transit and construction activity consisting of: GPS coordinates; species (if known); and behaviour. Logs are to be submitted to the DPaW on an annual basis at the same time as submitting the compliance assessment report required by condition 4-6 to the CEO.
- 6-11 Subject to condition 6-7, no marine construction activities, shall commence until the observer(s) required by condition 6-8 have verified that no cetacean(s), pinniped(s) or penguin(s) have been observed within the:
- (i) Marine Fauna Observation Zone delineated in Figure 2 of Schedule 1, during rock fracturing (blasting);
 - (ii) Marine Pile Driving Exclusion Zone delineated in Figure 2 of Schedule 1, during marine pile driving activities; or
 - (iii) Dredging Exclusion Zone delineated in Figure 2 of Schedule 1, during dredging activities,
- during the thirty (30) minute period immediately prior to commencement of the relevant marine construction activity.
- 6-12 Prior to commencement of full power marine pile driving, the proponent shall implement soft start-up procedures that slowly increase the intensity of noise emissions over a period of no less than fifteen (15) minutes.
- 6-13 If the observer(s) required by condition 6-8, or any other person, observes cetacean(s), pinniped(s) or penguin(s) within the:
- (i) Marine Fauna Observation Zone delineated in Figure 2 of Schedule 1, during rock fracturing (blasting);
 - (ii) Marine Pile Driving Exclusion Zone delineated in Figure 2 of Schedule 1, during marine pile driving activities; or
 - (iii) Dredging Exclusion Zone delineated in Figure 2 of Schedule 1, during dredging activities,

those activities are to be suspended.

6-14 Marine construction activities that have been suspended in accordance with condition 6-13 shall not recommence until the cetacean(s), pinniped(s) or penguin(s) has moved beyond:

- (i) the Marine Fauna Observation Zone delineated in Figure 2 of Schedule 1, for rock fracturing (blasting);
- (ii) Marine Pile Driving Exclusion Zone delineated in Figure 2 of Schedule 1, for marine pile driving activities; or
- (iii) Dredging Exclusion Zone delineated in Figure 2 of Schedule 1, for dredging activities,

for a period of thirty (30) minutes.

6-15 Marine pile driving that has been suspended for more than fifteen (15) minutes shall recommence with soft start-up procedures as required by condition 6-12.

7 Marine Fauna (Dolphin Monitoring)

7-1 Prior to the commencement of marine construction activities, the proponent shall prepare a Dolphin Monitoring Plan subject to the approval of the CEO in order demonstrate that condition 7-2 has been met.

7-2 The objective of the Dolphin Monitoring Plan is to ensure that marine construction activities are carried out with the aim of ensuring that there are no long-term adverse effects on the abundance and distribution of the Bottlenose Dolphin in Koombana Bay.

7-3 The Dolphin Monitoring Plan shall include:

- (i) procedures and protocols for a monitoring program to measure dolphin abundance and distribution, consistent with the studies and long-term monitoring programs that have been undertaken in Koombana Bay;
- (ii) visual boat-based dolphin monitoring, as a component of the dolphin monitoring procedures in 7-3 (i) above;
- (iii) the temporal and spatial scales at which the protocols and procedures in 7-3 (i) would apply;
- (iv) the reporting procedures, including the format, timing and frequency for the monitoring data and method of comparing against the available baseline data of dolphin abundance and distribution; and
- (v) protocol's for ongoing consultation with the Dolphin Discovery Centre on dolphin monitoring results.

7-4 Prior to the commencement of dredging, unless otherwise agreed by the CEO, the proponent shall implement the approved plan required by

Condition 7-3 and continue to implement the plan during marine construction activities and for 12 months following the completion of marine construction activities.

- 7-5 A report shall be submitted to the CEO which includes trends of the abundance and distribution of the local Bottlenose Dolphins as monitored by Condition 7-3 compared with the baseline data collected by the South West Marine Research Program - Cetacean Research Project, within 18 months following the completion of construction.

8 Marine Environmental Quality (Construction)

- 8-1 The proponent shall manage the marine construction activities in a manner that meets the environmental quality objectives listed in Schedule 2 within the area shown in Figure 3.
- 8-2 Prior to the commencement of dredging, the proponent shall prepare a Construction Marine Environmental Monitoring and Management Plan subject to the approval of the CEO to demonstrate that condition 8-1 has been met.
- 8-3 The Construction Marine Environmental Management and Monitoring Plan shall include for all environmental quality objectives:
- (i) the location of monitoring sites for monitoring water and biota quality, including at sites of high recreational usage;
 - (ii) a baseline water and biota quality survey plan, including contaminants of concern at monitoring sites identified pursuant to condition 8-3 (i), based on the guidelines and recommended approaches in the *Manual of Standard Operating Procedures for Environmental Monitoring against the Cockburn Sound Environmental Quality Criteria (2003-2004)*, as amended or replaced from time to time;
 - (iii) the development of trigger levels (total suspended solids not required) for the environmental quality objectives listed in Schedule 2;
 - (iv) protocols, procedures and frequency for monitoring and evaluating water and biota quality at monitoring sites required under condition 8-3 (i);
 - (v) procedures for publishing the monitoring results periodically throughout the marine construction activities to inform the stakeholders and public of the monitoring results;
 - (vi) reporting procedures, including the format, timing, and frequency for the reporting of monitoring data against the relevant trigger levels and environmental quality objectives; and
 - (vii) a framework for development of management and contingency actions to be implemented in the event that any trigger levels referred to in 8-3 (iii) are not met.

- 8-4 Prior to the commencement of dredging, unless otherwise agreed by the CEO, the proponent shall implement the approved plan required by condition 8-1.
- 8-5 Revisions to the Construction Marine Environmental Management and Monitoring Plan may be approved by the CEO.
- 8-6 The proponent shall implement approved revisions of the Construction Marine Environmental Management and Monitoring Plan required by condition 8-5.
- 8-7 In the event that monitoring required in condition 8-3 indicates that the trigger levels, are exceeded, or likely to be exceeded, due to construction, the proponent shall:
- (i) report such findings to the CEO within 48 hours of the exceedance being identified;
 - (ii) investigate to determine the likely cause(s) of the trigger levels in condition 8-3(iii) being exceeded;
 - (iii) if determined by CEO to be a result of activities undertaken in implementing the proposal, the proponent shall submit actions to be taken until the trigger levels in condition 8-3(iii) are no longer exceeded, to the CEO; and
 - (iv) the actions required by 8-7(iii) to meet the trigger levels shall be undertaken upon approval of the CEO.
- 8-8 The proponent shall provide spatial data for the constructed marine footprint as set out in Column 1, Table 2 of Schedule 1 to the CEO within 2 months of completion of construction.

9 Marine Environmental Quality (Dredge Plume Management)

- 9-1 The proponent shall not carry out any dredge activities as set out in Schedule 1 of this statement between 1 November and 31 March in any year.
- 9-2 The proponent shall manage the marine construction activities in a manner that minimises the extent of the dredge plume within Koombana Bay.
- 9-3 Prior to the commencement of dredging, the proponent shall prepare a Dredging Environmental Monitoring and Management Plan subject to the approval of the CEO.
- 9-4 The Dredging Environmental Monitoring and Management Plan shall include:
- (i) a baseline water quality survey for total suspended solid concentrations and turbidity (NTU);
 - (ii) the duration, timing and methodology of the dredging program;

- (iii) a spatial map of the modelled Zone of Influence in total suspended solid concentrations, based on the dredge program in (ii), above. This Zone of Influence shall be no greater than the Zone of Influence presented in Figure 10.3 of the Public Environmental Review (November 2012);
- (iv) a 'target' level which if exceeded trigger management responses in (viii);
- (v) a 'limit' level based on the modelled Zone of Influence in (iii), above, which if exceeded triggers the requirements of condition 9-9;
- (vi) the location of reference and impact monitoring sites to apply to the 'target' level in (iv) and 'limit' level in (v);
- (vii) protocols and procedures for monitoring and evaluating water quality at monitoring sites required in (vi);
- (viii) a framework for development of management responses to be implemented in the event that the 'target' levels in (iv) are exceeded;
- (ix) procedures for publishing the dredge program's modelled Zone of Influence in (iii), prior to the commencement of dredging to inform the stakeholders and public of the modelling results;
- (x) descriptions of the program for intensive field sampling to be carried out within the initial period (2 weeks) of dredging, to validate/calibrate the dredge model;
- (xi) protocols and procedures for the mapping of dredge plumes and reporting the realised extent of the Zone of Influence to the CEO; and
- (xii) procedures for publishing on a fortnightly basis, throughout the dredging program, the mapped dredge plumes in (xi), above.

9-5 Prior to the commencement of dredging, unless otherwise agreed by the CEO, the proponent shall implement the approved plan required by condition 9-3.

9-6 If intensive sampling required in condition 9-4 (x) and mapped dredge plumes in 9-4 (xi) show significant differences between the predicted and realised extent of the Zone of Influence then within six (6) weeks of the commencement of dredging activities the proponent shall submit a revised Dredge Environmental Monitoring and Management Plan to the CEO. The revised Dredge Environmental Monitoring and Management Plan shall include recommendations for alternative and/or additional monitoring sites as required in condition 9-4 (vi), and management measures as required in condition 9-4 (viii).

9-7 Revisions to the Dredge Environmental Monitoring and Management Plan may be approved by the CEO.

- 9-8 The proponent shall implement the revised Dredge Environmental Monitoring and Management Plan required by condition 9-6.
- 9-9 In the event that monitoring required in conditions 9-4 (vii) or 9-6, indicates that the 'limit' level in condition 9-4 (v), is exceeded, or likely to be exceeded, due to dredge activities, the proponent shall:
- (i) report such findings to the CEO within two working days of the exceedance being identified;
 - (ii) investigate to determine the likely cause(s) of the 'limit' level being exceeded;
 - (iii) if determined by CEO to be a result of activities undertaken in implementing the proposal, the proponent shall submit actions to be taken to the CEO, including the cessation of dredging, until the 'limit' level is no longer exceeded or as determined by the CEO; and
 - (iv) the actions required by 9-9(iii) shall be undertaken upon approval of the CEO.

10 Benthic Communities and Habitat

- 10-1 The proponent shall aim to ensure the implementation of the proposal does not cause any detectable effects on the health and distribution of any benthic communities and habitat shown in Figure 4.
- 10-2 Prior to the commencement of dredging, the proponent shall prepare a Benthic Community Monitoring Plan.
- 10-3 The Benthic Community Monitoring Plan required pursuant to condition 10-2 shall:
- (i) include criteria and measures for benthic community health and distribution;
 - (ii) confirm the extent and coverage of benthic communities and habitat located within Figure 4;
 - (iii) prior to the commencement of dredging, characterise the benthic community health and distribution within the area identified pursuant to condition 10-3(ii); and
 - (iv) protocols and procedures for monitoring of benthic community health and distribution following the completion of dredging to determine if condition 10-1 has been met.
- 10-4 Prior to the commencement of dredging, unless otherwise agreed by the CEO, the proponent shall implement the approved plan required by condition 10-2.
- 10-5 A report shall be submitted to the CEO following the completion of dredging detailing the health and distribution of benthic communities

and habitat surveyed in condition 10-3 and the extent to which condition 10-1 is achieved.

11 Introduced Marine Pests

- 11-1 The Proponent shall manage all non-trading vessel activities and immersible equipment activities whilst engaged for the construction, operation, maintenance and decommissioning of the Proposal so as to prevent the introduction of Introduced Marine Pests into and within State waters.
- 11-2 Prior to any non-trading vessels or immersible equipment entering the Bunbury Port Inner Harbour, the proponent shall prepare an Introduced Marine Pest Risk Assessment Procedure to the satisfaction of the CEO in consultation with the DoF which includes but is not limited to the following:
- (i) all factors to be considered in the risk assessment;
 - (ii) limits for unacceptable risk of introducing an Introduced Marine Pest;
 - (iii) a tool for performing Introduced Marine Pest Risk Assessments; and
 - (iv) measures to be implemented to reduce risks to an acceptable level, where the risk assessment identifies an unacceptable risk.
- 11-3 The proponent shall ensure any non-trading vessels or immersible equipment are subject to an Introduced Marine Pest Risk Assessment, prior to entering or demobilising from the Bunbury Port Inner Harbour, in accordance with the Introduced Marine Pest Risk Assessment Procedure approved pursuant to condition 11-2.
- 11-4 The proponent shall ensure that any Introduced Marine Pest Risk Assessment undertaken pursuant to condition 11-3 is recorded and that record is provided to the DoF within seven (7) days of the Introduced Marine Pest Risk Assessment being undertaken.
- 11-5 The proponent shall ensure that any non-trading vessels or immersible equipment that poses an unacceptable risk, as defined by the limits identified under condition 11-2(ii), of introducing Introduced Marine Pests, as determined by an Introduced Marine Pest Risk Assessment undertaken pursuant to condition 11-3, does not enter Bunbury Port Inner Harbour.
- 11-6 Prior to any non-trading vessels or immersible equipment entering the Bunbury Port Inner Harbour, the proponent shall prepare an Introduced Marine Pests Monitoring Program to the satisfaction of the CEO in consultation with the DoF that:

- (i) is consistent with monitoring design, implementation and reporting standards as set out in the *National System for the Prevention and Management of Marine Pest Incursions (National System²)*;
 - (ii) includes a minimum monitoring frequency of once per year and/or consistent *National System for the Prevention and Management of Marine Pest Incursions (National System)*; and
 - (iii) requires opportunistic sampling and analysis of specimens removed during port, vessel and immersible equipment monitoring activities.
- 11-7 The proponent shall implement the Introduced Marine Pests Monitoring Program approved pursuant to condition 11-6, or amended versions approved by the CEO for the life of the proposal, prior to any entry to the Bunbury Port Inner Harbour by any non-trading vessel or immersible equipment.
- 11-8 The proponent shall provide the results of monitoring undertaken pursuant to condition 11-7 to the CEO and the DoF annually.
- 11-9 Prior to any non-trading vessel or immersible equipment entering the Marine Project Area, the proponent shall prepare an Introduced Marine Pests Management Strategy to the satisfaction of the CEO in consultation with the DoF, to prevent wherever practicable, the establishment and proliferation of any Introduced Marine Pest, aiming to control and potentially eradicate that Introduced Marine Pest, and to minimise the risk of that Introduced Marine Pest being transferred to other locations within Western Australia.
- 11-10 The proponent shall notify the CEO, the DoF and any relevant Port Authority:
- (i) within 24 hours following initial detection of a suspected Introduced Marine Pest; and
 - (ii) within 24 hours following subsequent analysis and confirmation of species identification of the suspected Introduced Marine Pest.
- 11-11 In the event that any Introduced Marine Pest is suspected or detected, the proponent shall, in consultation with the DoF and the CEO, implement the Introduced Marine Pests Management Strategy.
- 11-12 The proponent is to submit a report detailing the outcomes of any implementation of the Introduced Marine Pests Management Strategy to the DoF and the CEO within thirty (30) days of the commencement of the implementation of the Introduced Marine Pests Management

² National System - The Intergovernmental Agreement on Biosecurity (IGAB)

Strategy and thereafter as required by the CEO in consultation with the DoF.

Schedule 1**Table 1: Summary of the Proposal**

Proposal Title	Lanco Bunbury Berth 14A Expansion Project
Short Description	The proposal is to construct and operate Berth 14A within the Inner Harbour of Bunbury Port to accommodate the storage and export of 15 Mtpa of coal. Marine infrastructure includes: • Berth structure with rock armour seawall and sheet pile wall and rock armour slope protection; • Jetty, wharf, two (2) dolphin mooring stations and a ship loading rail structure running the length of the jetty. Terrestrial infrastructure includes: • Material handling facility – including train unloader, conveyors and fully enclosed coal storage facility; • One (1) ship loading facility; and • Rail loops.

Table 2: Location and authorised extent of physical and operational elements

Column 1	Column 2	Column 3
Element	Location/Description	Authorised Extent
Terrestrial Elements	Includes coal storage facility, train unloader, conveyors, ship loader, rail loop, roads and supporting infrastructure within the proposal's Development Envelope shown in Figure 1.	• Terrestrial ground disturbance of up to 30 ha. • Clearing of up to 2 ha of native vegetation. • Rail loop beginning on the northern side of the Preston River.
Marine Elements	Includes a berth pocket, navigational channel, and berth structure consisting of a rock armour seawall with sheet pile wall and rock armour slope protection within the proposal's Development Envelope shown in Figure 1.	• Marine component of the proposal's Development Envelope.
Construction Activities	Clearing, dry-land excavation and marine dredging of the berth pocket and berth structure, and approach channel located within the proposal's Development Envelope shown in Figure 1.	• Marine dredging volume of up to 1.9 million m³. • Rock fracturing (blasting) of up to 20,000 m³ of Bunbury Basalt.

Table 3: Abbreviations

Abbreviation	Term
CD	Chart Datum
ha	Hectares
m ³	Cubic Metres
Mtpa	Million tonnes per year
DPaW	Department of Parks and Wildlife
DoF	Department of Fisheries

Table 4: Definitions

Term or Phrase	Definition
Marine Construction Activities	Dredging, marine pile driving and rock fracturing (blasting) activities as detailed in Table 2 – Construction Activities.
Marine Pile Driving	Means driving structural supports into the ground below the waterline.
Zone of Influence	As defined in Environmental Assessment Guideline No. 7 for Marine Dredging Proposals
Introduced Marine Pest	Means any marine species that poses a threat to the Western Australian environment or industry, if introduced, established or translocated. The marine species that are considered to pose a threat as outlined above include those detailed in the <i>Western Australian Prevention List for Introduced Marine Pests</i> , Department of Fisheries (2012), as amended from time to time and other species that appear to have clear adverse impacts or invasive characteristics.

Figures (attached)

Figure 1 – Location of Proposal and Development Envelope

Figure 2 – Exclusion zones for marine construction activities

Figure 3 – Environmental Quality Protection Area (Construction)

Figure 4 – Benthic Communities and Habitat within Koombana Bay



Figure 1 Location of Proposal and Development Envelope



Figure 2 Exclusion zones for marine construction activities

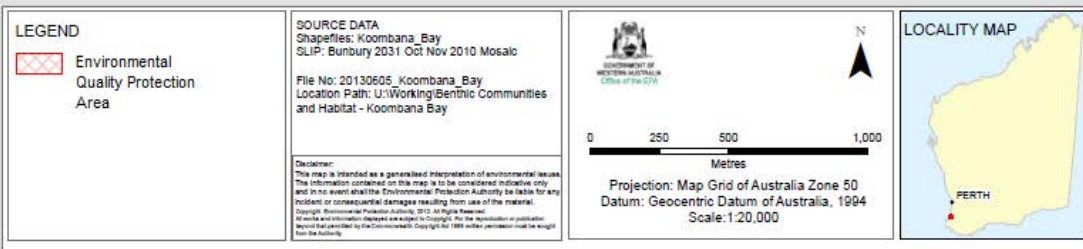


Figure 3 Environmental Quality Protection Area (Construction)



Figure 4 Benthic Communities and Habitat within Koombana Bay

Schedule 2

The Environmental Quality Objectives and Level of Ecological Protection to be achieved in marine waters of Koombana Bay during marine construction activities.

Environmental Values	ENVIRONMENTAL QUALITY OBJECTIVES AND THEIR DESCRIPTIONS
Ecosystem Health	<i>Maintenance of ecosystem integrity.</i> Ecosystem integrity is considered in terms of structure (eg. the biodiversity, biomass and abundance of biota) and function (eg. food chains and nutrient cycles). A high level of ecological protection shall apply to the marine waters of Koombana Bay. This means to allow small changes in the quality of water, sediment and biota (e.g. small changes in contaminant concentrations and toxicology with no resultant detectable changes beyond natural variation in the diversity of species and biological communities, ecosystem processes and abundance/biomass of marine life). For this protection level the 99% species protection guideline trigger values* for toxicants in water apply (except for cobalt for which the 95% species protection guideline should apply) and for other physical and chemical parameters the trigger values are based on the 80th percentile of natural background measurements. Trigger values should be derived in accordance with the recommended approaches in ANZECC & ARMCANZ (2000). For sediments the ISQG-low* apply.
Fishing and Aquaculture	<i>Maintenance of seafood for human consumption</i> Seafood is safe for human consumption when collected or grown in Port waters.
Recreation and Aesthetics	<i>Maintenance of primary contact recreation values</i> Primary contact recreation (eg. swimming) is safe to undertake in Port waters. <i>Maintenance of secondary contact recreation values</i> Secondary contact recreation (eg. boating) is safe to undertake in Port waters.

Notes

The following notes are provided for information and do not form a part of the implementation conditions of the Statement:

- The proponent for the time being nominated by the Minister for Environment under section 38(6) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal unless and until that nomination has been revoked and another person is nominated.
- If the person nominated by the Minister, ceases to have responsibility for the proposal, that person is required to provide written notice to the Environmental Protection Authority of its intention to relinquish responsibility for the proposal and the name of the person to whom responsibility for the proposal will pass or has passed. The Minister for Environment may revoke a nomination made under section 38(6) of the *Environmental Protection Act 1986* and nominate another person.
- To initiate a change of proponent, the nominated proponent and proposed proponent are required to complete and submit *Post Assessment Form 1 – Application to Change Nominated Proponent*.
- The General Manager of the Office of the Environmental Protection Authority was the Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the *Environmental Protection Act 1986* at the time the Statement was signed by the Minister for Environment.

Appendix 5

Proponent's response to submissions

This appendix is provided on CD in printed copies and is available on the EPA's website with this report.