# Port Hedland Port Authority Utah Point Berth Project

## RESPONSE TO PER SUBMISSIONS

- Rev 2
- 10 November 2008

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# Contents

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# 1. Introduction

## 1.1. Background

The Port Hedland Port Authority (PHPA) proposes to develop the Utah Point area on Finucane Island for the operation of stockpiling and ship-loading facilities at Port Hedland, Western Australia (WA). This proposed facility will cater for the expected increase in tonnage through Port Hedland and is known as the Utah Point Berth Project (UPBP). The proposal was subject to the requirements of the *Environmental Protection Act 1986*, and required a formal assessment and approval in accordance with Part IV of the Act (Environmental Impact Assessment). The EPA determined that the proposal was to be assessed at the level of a Public Environmental Review (PER). A PER was submitted to the Environmental Protection Authority (EPA) on the 6 June 2008.

Numerous government agencies including various branches of the Department of Environment and Conservation (DEC) responded to the PER with a number of queries, issued on the 28 July 2008. All of these queries have now been addressed in a number of responses from the technical specialists. This document represents a compilation of those responses and as such does not contain any additional information to what has previously been submitted.

## 1.2. Scope of work

The scope of work of this document relates directly to a compilation of the questions raised by the various government agencies and the responses to those questions. As a result each question (grouped into sub-sections representing each government body) has been transcribed in full and is followed directly by its response.

# 2. Mangroves

## 2.1. Department of Environment and Conservation: Environmental Management Branch

### 2.1.1. Query 1 – Location of the stockyard in a sensitive mangrove community

*"Environmental Protection Authority (EPA) Guidance Statements No. 1 and No. 29 identify the EPA's expectation that proponents should minimise impacts on mangroves and depended habitats to a minimum practical level. The proponent should explain the rationale and assessment process used to determine the current location of the stockyard and indicate why the stockyards component of the proposal could not be located outside the sensitive mangrove communities."*

PHPA have carefully considered mangrove losses in determining the location and design of the proposal. The proposed stockyard development is centred on a limestone ridge with sparse mangrove coverage and partially cleared areas are utilised for the wharf development. Existing disturbed land to the west of Utah Point was considered unsuitable for the proposal because it has insufficient capacity for the size of stockyard required to support a trucking operation.

PHPA was required by the State Government to allow for the export of material transported by means other than road transport through the Utah Point berth. The area to the north of the proposed stockyard site was seen as an ideal location for supporting this as it has a greater level of access when compared to the proposed site for this proposal. Subsequently, this area of land was viewed as unavailable for this proposal, and after lengthy review the existing location was chosen. This selection process is outlined in **Section 3** of the PER.

### 2.1.2. Query 2 – Direct and indirect impacts on mangrove communities

*"The proponent should investigate and address the avoidance, minimisation, mitigation and management of both direct and indirect impacts on mangrove communities in the PER, and commit to ongoing monitoring of the health of mangrove communities in the vicinity of the proposed development (and within the wider port area if this is not occurring)."*

The UPBP was specifically designed to avoid and minimise mangrove losses, in particular the loss of closed canopy mangroves. Mitigation and management measures to minimise impacts to mangrove communities for the proposed development are outlined in the Framework Mangrove Management Plan (MMP) (**Appendix K**). The Final MMP will be developed in consultation with the Department of Environment and Conservation (DEC) and will detail specific monitoring to be undertaken.

### 2.1.3. Query 3 – Prediction of the area of mangroves that may be affected

*"The proponent should provide a map and a scientifically robust and conservative prediction of the area of mangroves that may be affected by both direct and indirect factors to be used as the basis for conditions of approval."*

**Figure 6.10** of the PER maps, shows the mangrove communities that will be directly impacted by the proposed development and the surrounding mangroves that could potentially be indirectly impacted (by dust and/or alteration of water flow). GIS spatial analysis for the project determined that approximately 18.7 ha of mangroves within the development footprint will be directly impacted by the UPBP. Due to the implementation of management measures outlined in **Section 7.6.4** of the PER and within the MMP it is anticipated there will be limited indirect impacts to mangrove communities outside the development footprint.

### 2.1.4. Query 4 – Potential direct and indirect impacts on mangroves

*"The proponent should clearly identify the range of potential direct and indirect impacts on mangroves that are expected from the development, as mentioned in the Appendix F report by V and C Semeniuk Research Group (May 2007). Impacts of the proposal are unlikely to be limited to the direct clearing of mangroves (as identified in the PER), but may also include potential alterations to hydrology, increased turbidity and sedimentation (during construction and ongoing from propeller wash), increased dust levels, and runoff from ore stockpiles."*

**Section 7.6.3** of the PER identifies the key potential impacts the proposal may have on mangroves within and surrounding the development area (which are also identified in **Appendix F**). These impacts include:

- Alteration of water flow, including surface, ground and tidal water flow to mangroves;
- Dust deposition on mangroves;
- Increased water turbidity and sedimentation; and
- Potential contamination of surface and marine waters due to accidental spillage, leakage and/or leaching of potentially hazardous materials.

These impacts and the subsequent management measures are addressed in **Sections 7.6.3** and **7.6.4** of the PER, with the exception of alteration of water flow (discussed in **Section 7.4**) and dust deposition on mangroves (discussed in Sections **7.5** and **7.7**). In reference to these potential impacts, ongoing monitoring of mangrove health and responsive management measures to reduce impacts (as required) will be implemented as part of the Final MMP.

### 2.1.5. Query 5 – Potential cumulative impacts on mangrove communities

*"The Port Hedland area is an important area for conservation of marine fauna (particularly associated with nesting and refuge habitat for marine turtles) and as indicated, this area has reached the acceptable cumulative habitat loss threshold (10%) for loss of mangrove benthic primary producer habitat. The PER does not fully and accurately identify and address the potential cumulative impacts of the development and surrounding approved developments on mangrove communities."*

It is acknowledged that mangroves provide important habitat for marine fauna. Importantly, mangroves that will be cleared as part of the proposed development are predominantly located inland on Stanley Point, rather than on the seaward fringe of mangroves which are more productive and provide significant habitat to marine fauna.

Whilst the loss of mangroves due to the proposed development exceeds the cumulative loss threshold of 10% for the Port Hedland Management Unit, limited impacts are expected on the conservation status of marine fauna.

The mangrove communities within the Port Hedland harbour, including at the UPBP site, have been substantially influenced by previous industrial developments such as:

- existing port development on Finucane Island;
- dredging of the harbour; and
- land reclamation and construction of the causeway across West Creek.

This means that consequently, mangroves within the Port Hedland harbour already exist within a highly modified environment. However, outside of the harbour, less modified and more pristine mangrove habitat exists for marine fauna. An offset strategy to compensate for the loss of mangroves and associated marine fauna habitat as a result of the proposed development is currently being developed by PHPA in consultation with the DEC. See **Section 2.1.6** for further detail.

### 2.1.6. Query 6 – Mangrove clearing associated with the Hope Downs development

*"Prediction and assessment of the cumulative mangrove community loss in the Port Hedland management area in the PER currently does not include 88 ha of mangrove clearing associated with the previously approved Hope Downs development, on the basis that it is unlikely that this development will proceed. Unless it is definite that the Hope Downs development will not proceed, the additional loss of 88 ha of mangroves should be included in cumulative mangrove loss calculations as a "worst case" estimate of mangrove loss. This would allow for the inclusion of*

*the area of mangrove loss that may potentially be required for an equivalent scale development by Hope Downs Joint Venture (HDJV) to that previously approved."*

Issues surrounding the Hope Downs Port Project are currently being resolved at a government ministerial level. From a PHPA perspective, environmental approvals for the Hope Downs project lapsed in November 2007 and the Hope Downs development cannot proceed as was previously approved. The Hope Downs development is not aligned with the updated Ultimate Development Plan for Port Hedland, in which there is an increased focus on limiting mangrove loss. Consequently, mangrove losses attributed to the Hope Downs project are not included in the assessment of cumulative mangrove losses for the proposal. Future development plans by HDJV, including potential mangrove loss, will need to be reassessed by PHPA and will be subject to future assessment by the EPA. Overall impacts are therefore anticipated to be less than the previous "worst case" estimate of mangroves losses for the region.

### 2.1.7. Query 7 – Development of a mangrove management plan

*"An outcome-based mangrove management plan should be developed to provide a framework for managing impacts and ensure that detrimental impacts on surrounding mangrove communities are managed to within acceptable limits. This plan would need to incorporate a rigorous monitoring component to provide objective information to trigger appropriate remedial action and measure compliance. DEC should be consulted in the development of this plan."*

A final outcome based MMP will be developed in consultation with the DEC and will detail specific monitoring to be undertaken, trigger levels for remedial action and measures for assessing compliance with objectives.

### 2.1.8. Query 8 – Provision of offsets for mangrove losses

*"It is unclear if the mitigation sequence / hierarchy identified in EPA Position Statement No. 9 has been taken into consideration with regard to the provision of offsets for mangrove losses attributed to the proposed development. DEC supports the principle of provision of offsets to address residual impacts on mangrove habitat and would be available to assist with detailed discussion of specific offset proposals if and when this was considered appropriate by the EPA. Offset options for impacts on mangrove communities and associated fauna species need to be adequately considered and developed by the proponent in consultation with DEC."*

Offset options are currently being investigated at a strategic level as part of the Ultimate Development Plan. PHPA are committed to providing offsets, which will be developed in consultation with the DEC, to compensate for the clearing of mangroves at the UPBP site and associated with further developments in the harbour. PHPA are currently working with Vic Semenuik to develop a mangrove offset strategy. PHPA will be meeting with the DEC to discuss

the strategy and any issues that may arise. The strategy will then be referred to the EPA for assessment and approval. It is anticipated that the strategy will commence with a pilot project to determine the effectiveness of the offset plan and then if the pilot is successful proceed to full implementation.

# 3. Water management

## 3.1. Department of Water

### 3.1.1. Query 1 – Implementation of water efficiency and water management plans

*"The Department of Water (DoW) (Pilbara Region) considers that more information is required from the proponent in regards to water management on site. Water supply is an emerging issue as industry and community demand continues to grow in the Pilbara. Industry expansion is placing pressure on the Water Corporation to deliver secure water supplies and there is increased risk that in drought periods it will be necessary to implement contingency strategies to meet requirements. To minimise this risk it is crucial that large volume users are maximising their water use efficiency. The DoW would like to emphasize the importance of the proponent committing to maximise water use efficiency through the implementation of Water Management Plans."*

PHPA are committed to improving water efficiency in port operations and in the development of the UPBP. Specific design measures regarding water use efficiency that have been incorporated in the UPBP include:

- full containment of the wharf to collect all surface water runoff and washdown runoff;
- a wharf settlement pond capable of containing a minimum of 1000m$^3$ for reuse;
- design of the stockyards to contain all surface water in sub-catchments enclosed by bunding and the elevated stockyard perimeter road;
- a recirculation water pond with an approximate storage capacity of 50,000m$^3$ (able to contain a 1:10 year rainfall event) from which surface water collected can be reused in operations (once settled/treated as required); and
- a fully contained truck wash facility including sumps, an oil separator tank for water treatment and storage tanks for water reuse.

PHPA will continue to participate in Water Corporation's Water Wise Program. In accordance with the WA State Government's new water efficiency requirements, PHPA will also undertake an annual water management assessment. This will include preparing and annually updating a Water Efficiency Management Plan (WEMP), which will be submitted to the Water Corporation.

### 3.1.2. Query 2 – Requirements for the surface and groundwater management plan

*"The DoW would like the following points to be incorporated into the Surface and Groundwater Management Plan (SGMP):*

- *A water balance analysis for the tonnages proposed;*

- *A summary of the water delivery and recycling infrastructure including metering and measurement capacity by location and water use activity;*
- *Estimates of the efficiency returns from water recycling activities;*
- *A management system that shows how monitoring activities are linked to efficiency targets and improvement plans so that continuous improvement can occur;*
- *Schedules for review of the Plan and Water Balance;*
- *A clear strategy for continuous improvement in water use efficiency; and*
- *A reporting commitment to provide this information to Government.*

A water balance analysis for the UPBP is included in **Appendix C** (p9) of the PER. Operational water usage requirements detailed in the Water Balance are as follows:

- 470 000 L (66%) - ongoing dust suppression;
- 103 000 L (14%) - reclaiming & shiploading;
- 90 000 L (13%) - truck unloading & stacking;
- 38 000 L (5%) - truckwash down;
- 5 000 L (1%) - ship water;
- 4 000 L (1%) - washdown between ships;
- 3 500 L (<1%) - conveyor wash stations; and
- 2 000 L (<1%) - other facilities.

As noted in **Section 3.1.1**, PHPA will prepare and annually update a WEMP, which will directly address water use efficiency (rather than the SGMP). The WEMP will include the following:

- results of the annual water management assessment, including a review of water delivery and recycling infrastructure, water metering and water usage details (water balance) for each of the key port activities;
- estimates of increased water use through growth;
- details of water savings opportunities, including an estimates water efficiency returns from water recycling; and
- a water use efficiency action plan including targets (including timeframes) and measures to monitor water use efficiency improvements.

### 3.1.3. Query 3 – Detailing of water requirements for construction

*"The proponent has stated operational water requirements in the PER, but has not clearly stated construction supply requirements. Water requirements for construction should be clearly stated in*

*the project proposal and it should be stated whether this will also be sourced from the scheme supply."*

Approximately 56,000 kL of water will be required for the proposed 14 month construction phase. This water will be sourced from the scheme supply.

## 3.2. Department of Health

### 3.2.1. Query 1 – Use of industrial area runoff for wash down

*"The Department of Health (DOH) is concerned about the use of the industrial area runoff for wharf and other elements wash down. It is not clear how potentially contaminated water will be treated, sampled, monitored and regulated to ensure that reuse does not present a risk to public health."*

Water quality in the wharf settlement pond and the recirculation pond from runoff from the wharf and stockyards will be regularly monitored to ensure that water collected is of sufficient quality for reuse and/or in an extreme storm event meets specified water quality discharge criteria. Water suitable for reuse in dust suppression will be stored in tanks which will be regularly monitored in reference to ANZECC water quality guidelines. Water collected will be supplemented with potable water as necessary to comply with ANZECC guidelines and/or will be treated in a wastewater treatment plant. The proposed wastewater treatment plant will be licensed under Part V of the *Environmental Protection Act 1986*.

### 3.2.2. Query 2 – Treatment of sewage and the disposal of effluent

*"The treatment of sewage and disposal of effluent requirements for the proposed facility have not been addressed in the PER. Given the distance of Finucane Island from Port Hedland infrastructure, the high ground water table and concerns about the suitability of mangrove mud for onsite effluent disposal, this is an aspect of site development which requires attention. The proponent should clarify whether a sewer extension is intended or how onsite effluent disposal is to be achieved."*

Due to the lack of sewage reception facilities in the Finucane Island area, Port Hedland Port Authority will install an Alternative Treatment Unit (ATU) at the site for the treatment of all domestic wastewater. The ATU will be certified by the Department of Health and as per requirements, maintained by a registered plumber. Recycled water will be used for irrigation of landscaping.

# 4. Traffic

## 4.1. Department of Planning and Infrastructure

### 4.1.1. Query 1 – General comments on traffic concerns

*"There should be no major traffic concerns associated with the proposed development provided that the proposed MRWA road network improvements are implemented in coordination with the UPBP and that the proposed traffic management measures detailed in the PER are implemented.*

*The proposed road haulage route for the UPBP is considered to have a number of existing deficiencies and traffic volumes associated with the UPBP are predicted to produce levels of service that are unacceptable if the existing road network is not modified. Main Roads Western Australia (MRWA) is presently working towards providing the necessary short and long term road network improvements. In particular, state funding to MRWA has been announced to upgrade the Great Northern Highway, which is to be re-aligned to reduce noise and congestion around Wedgefield in order to provide a safer and more direct route. These road network improvements will cater for both the UPBP and for the various expansions in the port and surrounding area.*

*Traffic modelling undertaken for the PER indicates that congestion and delays will be within acceptable limits during off-peak times and morning peak periods, but that afternoon peak times may present a problem. Discussions have been held with at least one Utah Point exporter with regard to the introduction of a trucking curfew system which limits access to the road network during the afternoon peak period. Further discussions are required with other exporters but this is considered to be a potential opportunity to mitigate the impacts of traffic on the community.*

*Whilst the traffic report produced for the PER shows that the rail crossings do not present a significant issue based on predicted traffic volumes, congestion and traffic delays at rail crossings may in future become a problem as trains are expected to become longer, heavier and slower. It is likely that it may be necessary in future to focus planning on a single rail corridor leading to Finucane Island, and a multi-span grade separation.*

*It is understood that traffic management and mitigation measures are to be detailed in a Traffic Management Plan and PHPA will continue to liaise with DPI, MRWA and other parties to improve traffic management."*

PHPA are committed to continuing to liaise with DPI, MRWA, Town of Port Hedland (ToPH) and other parties with regard to improving the road network, traffic safety and management. A Traffic Management Plan will be prepared for the UPBP in consultation with MRWA prior to the commencement of construction activities. PHPA will also continue to discuss current and future

traffic issues and management with Utah Point exporters and other port operators and industries within the Port Hedland region.

# 5. Noise

## 5.1. Department of Environment and Conservation: Noise Branch

### 5.1.1. Query 1 – Cumulative noise impacts in Port Hedland

*"It is predicted that the noise emissions either from the proposed Utah Point Berth Project (UPBP) or from the future PHPA operations at three public berths in Port Hedland will not be able to comply with the assigned noise levels, even though the PER document states in Section 7.8.1 Noise Management Objectives that one of the key objectives is 'to ensure that noise emission, both individually and cumulatively, comply with the appropriate statutory requirements'.*

*The Noise Branch understand that as a busy port adjacent to a town, non-compliance with noise regulations has been the case in Port Hedland for years. Noise emissions from a variety of industries including the BHP port operations and PHPA operations are all exceeding the assigned noise levels in the town. As a result, the existing noise in Port Hedland is already at an elevated level. However, the Noise Branch are reluctant to accept an argument that since the existing noise is already over the noise limits, the noise from the new proposed development project should not be required to comply with the noise regulations.*

*Though the Noise Branch agree that the noise impact from the proposed new berth at Utah Point should be assessed together with the PHPA port operations in Port Hedland, the new berth at Utah Point is obviously new infrastructure, and should be designed to meet the noise regulations. According to EPA draft Guidance No. 8 – Environmental Noise (Page 7): "Where a proponent proposes an upgrade to an existing facility that does not comply with the assigned levels, the proponent must, as part of the EPA assessment:*

- *provide and commit to a Noise Improvement Plan, detailing measures that will be taken, and timelines for completion, to ensure that existing noise emissions will be brought into compliance; and*
- *provide a detailed assessment demonstrating that the proposed new plant to be installed will, by itself, emit noise below the assigned levels, such that the overall plant noise emissions will eventually comply."*

*The Noise Branch believe that a uniform strategy to manage the noise non-compliance problem should be developed in Port Hedland, especially for new development proposals such as the UPBP in the area. The EPA may consider recommending that a Noise Management/Reduction Plan for the whole area be developed, which would involve setting noise targets for all the major existing and new noise emitters in the area. This approach would eventually result in a special noise regulation for Port Hedland.*

*The Noise Branch would recommend:*

*(1) The UPBP be designed to achieve compliance with the noise regulations;"*

Achieving the Assigned Noise Levels due to the Utah Point and PHPA development together is not practically possible with current technology. However, the UPBP alone can achieve assigned levels with best practice noise treatments at locations except in the area of the 'Backpackers'. The following sections provide evidence for this response. Section A is an inventory of noise sources at the site of current operations and is the basis for modelling. Section B details best practice noise controls and compares these to noise controls presented in the PER. Section C presents updated modelling of existing berth sources showing achievable levels relative to assigned levels. Section D presents updated best practice noise controls for the Utah Point Berth Project and compares these to noise controls presented in the PER. Section E presents updated modelling of UPBP sources showing achievable levels relative to assigned levels.

**Section A) PHPA Plant In/Out – Plant to be decommissioned**

The following items will be decommissioned as part of the proposed Utah Point expansion:

- The use of Front End Loaders at the Wharf and stockpile area (and the use of a FEL at the Gilbert St stockpile) and associated truck movements along Gilbert Street (up to 300 truck movements when a ship was being loaded)
- CV-08 conveyors
- Consolidated Minerals equipment (screening plant & conveyors)
- Transfer towers associated with decommissioned conveyors
- Hoppers (x2)

**Plant to be Retained**;

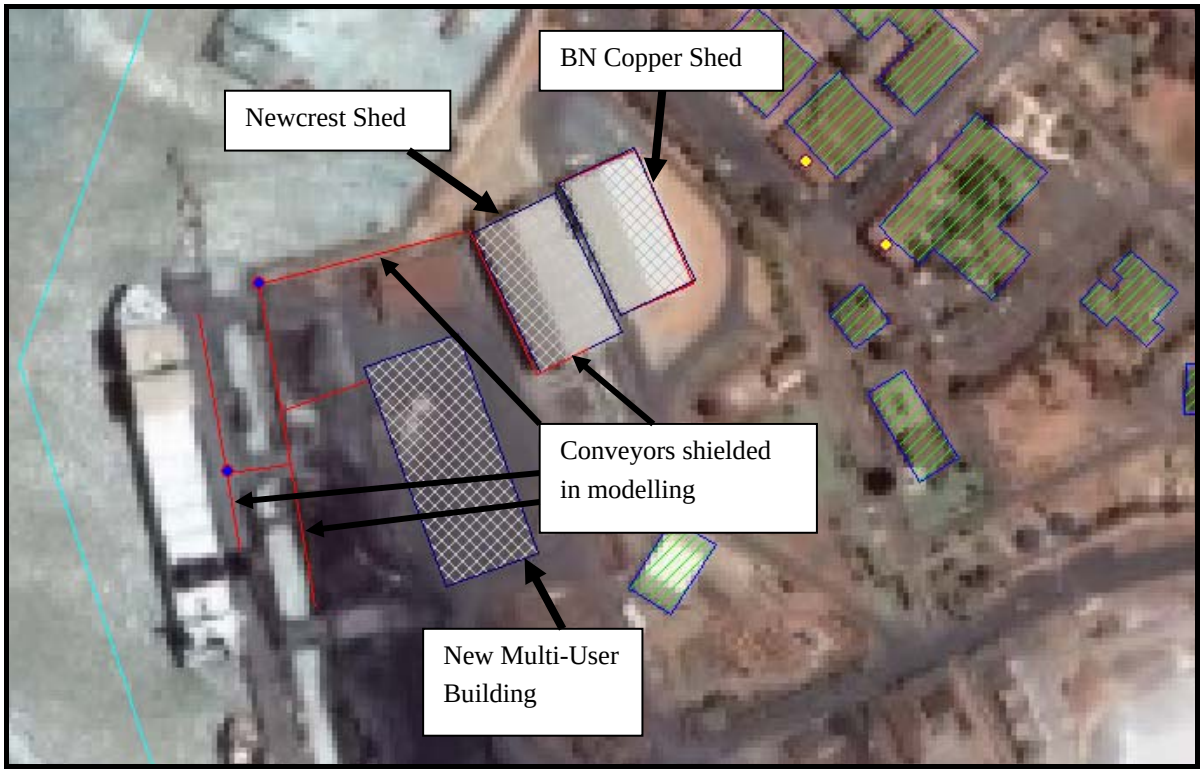
- Shiploader, with associated conveyors and drives
- Birla Nifty stockpile shed (containing 1 Front end Loader, excavator and bobcat operating inside an enclosed shed with doors closed)
- Newcrest stockpile shed (containing 2 x Front End Loaders, excavator and bobcat operating inside an enclosed shed with doors closed)

**Proposed Plant (included in the modelling)**

- Multi-User Concentrate Shed, approx 115 m long and 20 m high (containing a number of mobile plant that will operate inside an enclosed shed with doors closed)
- Conveyor from proposed shed to existing shiploading conveyors

**Section B) PHPA operations noise modelling**

For PHPA operations, best practice noise level reductions can be achieved by a combination of selection of low noise equipment (ie Front End Loaders), by shielding noise emissions due to conveyors and drives and also treatments such as installing internal acoustic linings on various faces of the buildings in the area. **Figure 5-1** shows the locations of the building and conveyors in the Port Hedland wharf area.




- **Figure 5-1 Location of noise sources and noise receptors**

**(Yellow dots indicate Pier and Esplanade Hotels)**

Data for the Power Sound Level (PWL) for the conveyors has been based on measurements taken in Port Hedland of the existing conveyor system which compares well with best practice data. Shielding of noise from the conveyors has been included in the modelling on the assumption that it achieves approximately 12 dB noise reduction in noise emissions. This reduction is considered readily feasible with best practice noise barrier construction practice.

**Table 5-1** shows the *untreated/unshielded* PWL (dBA per metre) assumption for all conveyors and conveyor drives and shiploader motors. By comparison, the best practice results and the original Vipac assumptions are also shown (The power drives for the conveyors and shiploaders are assumed to be enclosed with at least a 10dB enclosure and the resulting PWL is shown in the table below). Vipac assumptions were assumed to be based on measured noise at the receptors but it appears these assumptions were optimistically low for a 'base conveyor' and may have used measurements for smaller or lower speed conveyors than are in place at the existing wharf.

**Table 5-1 Sound power levels for existing operations**

| PHPA Wharf Sound Power Levels – dBA | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Octave Band Centre Frequency (Hz) | | | | | | | | |
| | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k | Overall |
| Vipac untreated Conveyor | 34 | 54 | 65 | 78 | 80 | 80 | 73 | 59 | 85 |
| Base Conveyor | 39 | 59 | 70 | 83 | 86 | 85 | 78 | 64 | 90 |
| Best practice Shielded Conveyor | 36 | 54 | 63 | 73 | 74 | 71 | 61 | 45 | 78 |
| Vipac Conveyor Drive | 69 | 80 | 86 | 95 | 101 | 103 | 93 | 81 | 106 |
| Typical Conveyor Drive | 77 | 89 | 95 | 98 | 107 | 98 | 92 | 82 | 108 |
| Best practice Enclosed Drive | 70 | 80 | 82 | 80 | 85 | 70 | 58 | 48 | 88 |

The best practice noise controls would achieve lower noise levels than those assumed by Vipac for the conveyor drives and motors.

The PWL assumed for the faces of the *untreated* individual buildings are shown in **Table 5-2** as PWL in dBA per metre squared. To attempt to achieve the noise criteria at the nominated reference locations due to the PHPA Operations, it will be necessary to install additional treatments to selected faces of the buildings. Vipac originally assumed the following noise controls for the PHPA wharf area:

- Eastern wall in Multi-User shed to be filled concrete block (15 dB)
- Roof and sides of Multi-User shed to be lined (5 dB)
- Shielding of noisy transfer towers that will remain in use (10 dB)
- Northern wall and roof of the Newcrest shed to be lined (5 dB)
- Roof of the Birla Nifty Copper shed to be lined (5 dB)

Best practice will result in the additional transmission loss as shown **Table 5-2**. The treatment proposed is an additional internal lining of 50 mm thick Rockwool with 9 mm cement sheeting/villa board lining or equivalent. This treatment will achieve at least a 10 dB reduction in transmitted noise through the face element.

- **Table 5-2 PHPA Buildings sound power levels**

| Buildings Sound Power Level/metre$^2$ of face area – dBA | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Octave Band Centre Frequency (Hz) | | | | | | | | |
| | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k | Overall |
| Newcrest Building (Vipac) | 64 | 64 | 62 | 61 | 56 | 50 | 38 | 21 | 69 |
| BN Copper Building (Vipac) | 62 | 62 | 61 | 59 | 54 | 48 | 37 | 19 | 67 |
| Planned multi-user Building (Vipac) | 60 | 60 | 58 | 57 | 52 | 46 | 34 | 17 | 65 |
| Expected noise reduction from adding internal lining to building wall and roof surfaces | 8 | 8 | 13 | 14 | 14 | 16 | 9 | 12 | - |

**Section C) PHPA modelling results**

This section presents updated modelling of existing berth sources taking into account decommissioned plant and new facilities and shows achievable levels relative to assigned levels.

The following items will be decommissioned as part of the proposed Utah Point expansion:

- Consolidated Minerals equipment;
- The use of un-enclosed Front End Loaders at the Wharf and stockpile area;
- CV-08;
- Transfer Towers associated with decommissioned conveyors

The resultant predicted noise levels at the various sensitive receivers are shown in **Table 5-3**. The noise emissions from the buildings are calculated on the assumption that there are no significant open areas in the faces and that doors etc are primarily kept closed. Where the table refers to selected building faces, this means the east, south and roof of the Newcrest and BN Copper shed and the roof and east face of the new multi-user building. The additional acoustic lining is assumed to be applied to the whole face or roof in those cases.

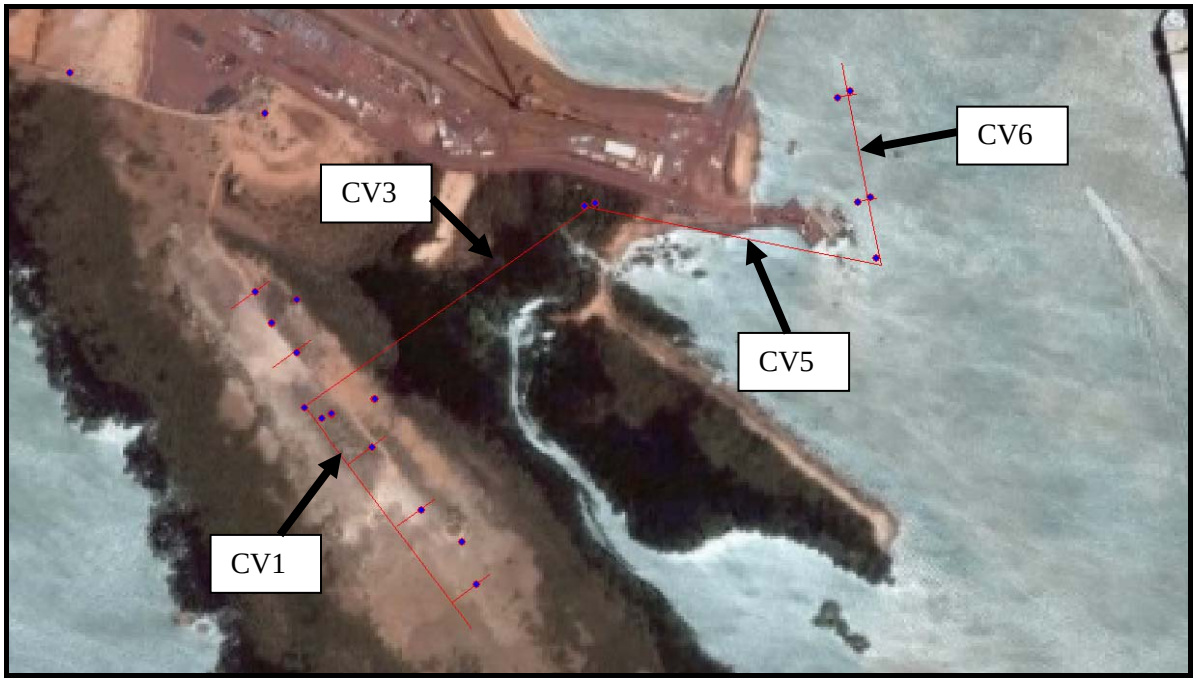
From reviewing the source contribution list, it was found that some faces of the buildings contribute more to the noise level at the receivers than others. These 'critical' faces were modelled with additional lining as opposed to all faces with additional lining, to give the option of selecting the most suitable noise abatement program.

- **Table 5-3 Predicted levels at sensitive receptors (existing berth)**

| **Port Hedland Sources Alone - dBA** | | | | |
|---|---|---|---|---|
| | Esplanade | Pier Hotel | Backpackers | Hospital |
| ***Assigned Noise Level*** | ***41*** | ***41*** | ***37*** | ***32*** |
| All Noise Sources Untreated | 58 | 56 | 49 | 31 |
| Only the Conveyors (as shown in **Figure 5-1**) Shielded | 57 | 56 | 46 | 30 |
| Only the Selected Building Faces Lined | 53 | 49 | 47 | 27 |
| All Building Faces and Roofs Lined (only) | 52 | 47 | 47 | 26 |
| Conveyors Shielded (as shown in **Figure 5-1**) and Selected Faces Lined | 49 | 48 | 43 | 23 |
| Conveyors Shielded (as shown in **Figure 5-1**) and All Faces and Roofs Lined | 48 | 47 | 41 | 21 |

**Section D) Utah Point operations**

**Figure 5-2** shows the arrangement of the Utah Point noise sources.




- **Figure 5-2 Utah Point noise sources**

Best practice noise control for the Utah Point Berth Project involves using enclosed drives for conveyors, stackers and ship loaders. Shielding conveyor emissions by means of acoustic barriers will also reduce noise levels. The barriers are assumed to provide 12 dB reduction for the conveyor noise emissions and the drive enclosures are modelled to provide at least 10 dB reduction in the overall PWL of each drive.

**Table 5-4** shows the *untreated/unshielded* PWL (dBA per metre) assumption for all conveyors. For each conveyor the majority of its length is at approximately 1 m above ground level. At the ends the elevation rises to 15 m for CV1, 17.5 m for CV3, 31 m for CV5 and 24.5 m for CV6. For each conveyor, the ground level portion has been modelled with an assumed 12 dB of shielding and the resulting PWL is also shown in the table below. The elevated end portions of CV5 and CV6 have also been modelled as enclosed. The power drives for the conveyors and shiploaders are assumed to be enclosed with at least a 10 dB enclosure and the resulting PWL is shown in **Table 5-4**.

The FEL that operates in the stockpile/hopper area of the Utah Point operations is assumed to be either a smaller quieter model or partially shielded by the height of the ore stockpile that lies between the operation area and the Port Hedland community. For the purpose of the modelling, this net noise improvement was assumed to be 5 dB. The PWL of the FEL is shown in **Table 5-4.**

- **Table 5-4 Utah Point source sound power levels**

| Utah Point Sound Power Levels – dBA | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Octave Band Centre Frequency (Hz) | | | | | | | | |
| | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k | Overall |
| Base Conveyor | 39 | 59 | 70 | 83 | 86 | 85 | 78 | 64 | 90 |
| **Vipac** untreated Conveyor | 34 | 54 | 65 | 78 | 80 | 80 | 73 | 59 | 85 |
| Best practice Shielded Conveyor | 36 | 54 | 63 | 73 | 74 | 71 | 61 | 45 | 78 |
| Typical Conveyor Drive | 77 | 89 | 95 | 98 | 107 | 98 | 92 | 82 | 108 |
| **Vipac** Conveyor Drive | 69 | 80 | 86 | 95 | 101 | 103 | 93 | 81 | 106 |
| Best practice Enclosed Drive | 70 | 80 | 82 | 80 | 85 | 70 | 58 | 48 | 88 |
| Partially noise reduced FEL | 51 | 72 | 83 | 92 | 98 | 97 | 93 | 81 | 102 |

**Section E) Utah Point operations modelling results**

The resulting SPL dBA at the nominated reference locations at Port Hedland are shown in **Table 5-5**. The criterion is slightly exceeded at the Backpackers hotel location.

- **Table 5-5 Utah Point berth noise sources**

| Utah Point Sources Alone - dBA | | | | |
|---|---|---|---|---|
| | Esplanade | Pier | Backpackers | Hospital |
| ***Assigned Noise Level*** | ***41*** | ***41*** | ***37*** | ***32*** |
| No Conveyors Shielded and Conveyor Drives Not Enclosed | 42 | 33 | 45 | 33 |
| Ground Level Segment of CV 1, 3, 5 & 6 Shielded and Best Practice Enclosed Drives | 40 | 30 | 41 | 30 |
| As above but including shielding for raised segments of CV 5&6 | 37 | 28 | 40 | 29 |

It can be seen that the Assigned Noise Level is met for most locations and that it is exceeded only at locations around the Backpackers Hostel. Acoustically enclosing the raised portions of CV5 and CV6 is not considered operationally feasible and, in practice, does not result in a significant noise reduction improvement.

*"The Noise Branch would recommend:*

*(2) The proponent be required to prepare a Noise Improvement Plan to address practicable noise reduction from the existing public berths;"*

A Noise Improvement Plan (NIP) will be implemented over the next 10 years to implement noise control on existing operations at PHPA-operated facilities and this is predicted to result in a noise reduction of 1-2 dBA in total emitted noise level. This NIP will implement practically possible noise control measures. Regular and effective monitoring and maintenance of all equipment, vehicles and other materials, will be undertaken to ensure the ongoing effectiveness of equipment at reducing noise emissions.

**Section C** (detailed above) also predicts the outcomes of a series of noise improvement measures that will be considered for inclusion in a NIP depending on practicability and feasibility.

*"The Noise Branch would recommend:*

*(3) The EPA consider developing a policy position for Port Hedland township, involving a series of practicable noise targets for existing and proposed industries at the port."*

The PHPA supports this proposed approach.

### 5.1.2. Query 2 – Clarification that noise emissions will be lower with the UPBP

*"It is predicted in the PER that the noise emissions from both the UPBP and the future PHPA port operations in Port Hedland, though exceeding the noise standard, will generally be lower than if the UPBP is not constructed. This statement is not convincing to the Noise Branch, and the evidence/information for supporting this statement in the PER document is not adequate.*

*To the Noise Branch, this proposal is more an expansion development than purely a relocation of the port operations. Though the implementation of the project will involve the relocation of some operations from the public berths in Port Hedland to the more distant UPBP, it is clear that alternative, new port operations will be introduced to the PHPA public berths. As a result of the UPBP, the number of noise sources in the area will be increasing, rather decreasing.*

*The relocation of some noisier operations from the public berths to the UPBP may have some benefits for the noise emission levels in the town; and the Vipac report briefly illustrated what plant would be decommissioned, what would be retained, and what would be proposed in the existing Port Hedland wharf operations. However, the Noise Branch need more information to agree that this relocation will cause lower noise emission in the town. For instance, Vipac should include the following information that was used for its noise modelling in its report, such as the distribution of the noise sources to be moved out, retained and introduced; their sound power levels; and the proposed noise controls in more detail.*

*"The Noise Branch would recommend:*

*(1) The proponent be required to provide more evidence/information to support its claim that the noise emissions in Port Hedland will be lower due to the UPBP."*

PHPA confirms that the noise model includes all relevant noise sources and that the list of relocated noise, decommissioned plant and new plant is accurate. **Section C** and **Section E** in **Section 5.1** above, present the findings of modelling to show how noise can be reduced with the development of UPBP. **Table 5-4** shows noise reductions possible from reduced activities at the existing berths and as a result of noise controls. **Table 5-5** shows noise levels associated with various configurations of UPBP and these noise levels are well below improved noise levels of existing berths.

**Table** 5-6 summarises the changes in noise level that could occur and shows that potentially, the noise level after introduction of UPBP is significantly lower than previously at most locations.

- **Table 5-6 Summary of noise improvement following introduction of the UPBP**

| | Esplanade | Pier Hotel | Backpackers | Hospital |
|---|---|---|---|---|
| Existing Berth All Noise Sources Untreated (does not include some noise sources decommissioned) | 58 | 56 | 49 | 31 |
| Existing Berth Conveyors Shielded (as shown in the Figure above) and Selected Faces Lined | 49 | 48 | 43 | 23 |
| UPBP Ground Level Segment of CV 1, 3, 5 & 6 Shielded & Shielded Conveyor Drives | 40 | 30 | 41 | 30 |
| Total Post UPBP | 49 | 48 | 45 | 31 |
| **Reduction from pre UPBP to post UPBP** | **9** | **8** | **4** | **0** |

### 5.1.3. Query 3 – Commitment for minimising noise emissions

"*The engineering control of noise emission from both UPBP and PHPA Port Hedland port operations is discussed in the Vipac report. An example set of engineering noise controls that when implemented will produce a reduction of 3-4 dB(A) from the Utah Point Berth Project is also drafted in the Vipac report. It is predicted that as a result, the combined noise of the proposed Utah Point operations and the PHPA Port Hedland Port Operations will be further reduced by 2dB(A).*

*However, instead of the generic discussion of possible noise control measures, the proponent does not seem to adopt these specific engineering recommendations in the PER. The Noise Branch would expect that firm commitment for engineering controlling and minimising the noise emission from the UPBP be made in the PER."*

PHPA is committed to reducing noise emissions where possible and will involve a qualified acoustic consultant in the design and construction process where appropriate. Tender specifications for design will include noise reduction measures such as those outlined in the PER (p152).

### 5.1.4. Query 4 – Reducing impacts on residences affected by traffic noise

*"It was predicted in the Vipac report that the traffic noise increase due to the UPBP may exceed the noise criteria in Wedgefield and South Hedland. As a solution, Vipac recommended to assess the indoor noise levels at any affected noise sensitive receiver in that area and treat those affected premises with simple and appropriate architectural treatment if required. Because the number of potentially affected premises is very limited, the Noise Branch regard this recommendation reasonable and achievable. However, it does not seem in the PER that this recommendation will be adopted by the proponent. The Noise Branch would expect that the proponent adopt this recommendation, and make it one of the commitments for the proposed project.*

*The Noise Branch would recommend:*

*(1) The proponent adopt as a Commitment Vipac's recommendation for reducing the impacts on the residences that might be potentially affected by the increased traffic noise in Wedgefield and South Hedland.*

Eleven residences have been identified, mostly, if not all are caretaker dwellings associated with the Industrial Estate at Wedgefield. We note that Wedgefield is an industrial area in which roadways have been designed to cater for road train traffic. We also note that the current Town Planning Scheme (No5) does allow for caretaker dwellings to be built in the area. However, the Scheme states that Town of Port Hedland may require occupiers of caretaker dwellings to enter into formal agreements acknowledging their awareness of the industrial nature of the location and that ToPH will not take responsibility "for any damage caused by exposure to emissions…" (Clause 7.5.5).

The proposed upgrade to the main road network that will occur prior to UPBP, will reduce the number of caretaker dwellings potentially affected by the UPBP from 11 to 8

PHPA is committed to instituting noise control treatments to affected caretaker dwellings. Treatments may vary from dwelling to dwelling and need only reduce the noise level by up to 4 dBA maximum. It is expected that the treatments required will be practically achievable and PHPA will discuss these treatments with each of the caretaker dwellings identified.

# 6. Contaminated sites and acid sulphate soils

## 6.1. Department of Environment and Conservation: Contaminated Sites Branch

### 6.1.1. Query 1 – Details of potential sources of soil and groundwater contamination

*"It is noted that the proposed development includes a truck wash-down area, workshops, fuel storage facility, settlement pond, ore stockpile and ablutions including water storage and treatment. Details of the design and construction of these elements is not provided but these elements are potentially sources of soil and groundwater contamination and should be located, designed and constructed in a manner so as to minimise potential environmental impacts."*

The facilities will be located, designed and constructed in a manner to address potential environmental impacts in order to minimise any potential impacts.

The detailed design of these facilities will address environmental management objectives consistent with applicable legislation. The construction activities will be addressed in a Construction Environmental Management Plan (CEMP) and tender documents will specify design elements to be incorporated into the infrastructure that will minimise environmental impacts.

### 6.1.2. Query 2 – Assessment of site soil conditions (including potential site contamination)

*The soil investigations were limited to four (4) on-site sampling locations.*

The investigations undertaken met relevant standards. Soil investigations were conducted at (4) on-site sampling locations and these were situated across the footprint of the stockpile facility. This number is sufficient for characterisation of soils for a baseline investigation (in which the objective is to document background concentrations as a bench-mark for future monitoring), and this approach is consistent with the Department of Environment and Conservation's guideline "Development of Sampling and Analysis Programs: Management Series #5".

*Several contaminants were detected in concentrations exceeding the assessment levels adopted by the proponent, including, arsenic, cadmium and chromium.*

The detected concentrations were below appropriate assessment levels. Arsenic, cadmium and chromium concentrations in the soil exceeded ecological assessment levels (EILs) but not health investigation level (HIL-F industrial). The relevant assessment level is HIL-F as the proposed future land use is heavy industrial. HIL-F assessment levels are significantly greater than the concentrations of arsenic, cadmium and chromium found in the soils on site.

The Project will not create new pathways for contamination to exist. Construction of the proposed stockyards will not require disturbance of existing soils. Construction will consist of a layer of clean fill across the whole site, with a layer of impervious geosynthethic material in some areas.

Construction methods will push clean fill over the existing ground level thus creating a barrier between existing soils and human receptors. The clean fill will be approximately 2.5m in depth. Fill material will be pushed from the existing access track out across the surface by machinery to create a working platform. As the existing soil surface is exceptionally soft, no vehicles or machinery (including light vehicles) will traverse this surface hence the working platform will be constructed in a manner that does not affect the existing soil surface.

The impervious geosynthetic layer will be placed below the area identified for chromite stockpiles, as this was perceived to be the area of greatest environmental risk. This lining will be placed on top of the 2.5m to 3m fill. Hence, two layers will be created between the existing soil surface and the base of the chromite stockpile.

Removal of vegetation will be undertaken on foot by hand using chainsaws and loppers. Large limbs will be hand dragged back to the working platform that will be constructed behind the vegetation clearers. With the soft surface being impassable to vehicles, this vegetation removal activity will work closely in conjunction with the clean fill operation to minimise the distance required to drag vegetation material off the site back to vehicles. Smaller limbs and vegetative material will be left in-situ to lie beneath the clean fill being placed on top to form a solid base.

The risk to human health during the construction period will be minimal as there will be no disturbance of soil surface through machinery operations. These minor risks will be managed through the Project's CEMP. Appropriate management of the layering of the fill material will separate equipment and people from the existing soil surface and will ensure disturbance to soils in the construction process is minimal and insignificant.

The Project will not affect the existing pathways and will not cause existing contaminants to be mobilised or create additional pathways.

The concentrations in the soil appear to be background levels. As the site is undeveloped, the data obtained from the recently installed up-gradient offsite groundwater monitoring wells suggest the contamination sources are from offsite. The apparent pathways are marine-derived surface and groundwater. With the proposed construction methodology (see above) ensuring the soil surface is not disturbed, it is highly unlikely that these contaminants will become mobile during the construction period or afterwards during operations. Remediation of the site before construction is not feasible and may not be effective as disturbance to the soils and groundwater may possibly cause an increase in the mobility of contaminants into other nearby areas. The proposed placement

of fill over the surface will contain the contaminants to this area and reduce the possibility of movement offsite.

*"Other contaminants, including dibutyltin, 2-bromonaphthalene and 2-fluorobiphenyl were also detected; however, the report provided no assessment criteria for these contaminants. Where substances are present at a site for which assessment levels are not included within the DEC document "Assessment levels for soils, sediment and water (Department of Environment, November 2003)", the proponent needs to provide alternative assessment levels with appropriate justification for these criteria."*

Concentrations in the soil appear to be district background levels. The samples were collected 1.2 m to 2 m below ground and up-gradient from offsite groundwater monitoring wells. This data in conjunction with the knowledge that the site is undeveloped, suggest the source of contamination is off-site. Hence it could be inferred that the concentrations found are widespread, rather than associated with this particular site.

The Project will not create new pathways for contamination to exist. The Project is not expected to disturb existing concentrations or make them mobile. There will be no additional risk to human health as a result of the Project.

The detected concentration of dibutyltin is below the appropriate assessment level. The following assessment levels have been adopted as the most robust available:

- Dutch Intervention Levels: dibutyltin = 2.5mg/kg

Concentration of dibutyltin was found to be below this adopted criterion.

Detected concentrations of 2-bromonaphthalene and 2-fluorobiphenyl appear to be background levels.

The equivalent action levels for other contaminants of concern are not considered appropriate in this situation because district background levels were found to be higher. It is these background levels that are relevant to monitoring for contamination rather than the Dutch guidelines below:

- Dutch Intervention Levels: 2-bromonaphthalene 5mg/kg (Based on EIL concentrations of naphthalene)
- Dutch Intervention Levels: 2-fluorobiphenyl = 1 mg/kg (Total phenols).

The results from the proposed stockpile location were found to be above these guideline levels reflecting industrial harbour conditions.

*The proponent needs to provide further comment, including a risk assessment, on all exceedences of the adopted assessment criteria.*

The site is an intertidal area, which becomes inundated with sea water at regular intervals. Given the site has not been subject to development, the levels of contaminants found are deemed to originate offsite or are naturally occurring within the harbour area.

The potential primary sources are likely to be up-gradient since the site is affected by intertidal conditions. This can be demonstrated with the data collected from the four up-gradient offsite wells (**Appendix M** in the PER). Concentrations of heavy metals and tributyltin at the off-site locations are consistent with findings from sampling points at the site of the proposed stockyard.

The pathway from any offsite source is most likely the tidal seawater. Organo-tin is associated with antifouling agents for ships hulls and is present within sediments in many harbour environments that have been in operation for 40 years or more. Evidence of the widespread presence of organo-tin and metals within sediments in the region is presented in 'The Port Facility Upgrade – Anderson Point, Port Hedland: Dredging and Wharf construction – Third Berth' (Fortesque Metals Group, 2008).

Further evidence of high regional background levels of these compounds in the vicinity of Utah Point were found during mangrove studies conducted for this PER. Results (available for review but not included in **Appendix F** of the PER) indicated elevated concentrations of metals within sediments at SW Creek, Burgess Point and Stingray Creek consistent with the soil analysis presented in the PER Groundwater Report. These results are indicative of natural conditions found within a working industrial harbour.

The soils on site are predominantly clay. Properties of clay particles include the natural bonding that occurs with chemicals and metals. The concentrations of these chemicals/metals will therefore build up over time as the anaerobic soils become submerged by tidal surface water (marine water) and as the shallow marine groundwater peculates through the soils.

The Project will not cause the contaminants to become mobile in the environment or to come into contact with construction or operating staff via a pathway, as the soils will be buried beneath 2.5 to 3 m of fill.

It is concluded that the sources of potential contamination are regional and therefore can be considered background conditions with no additional pathway being created. Therefore the risk to the environment and human health can be said to be low.

*"Other contaminants were also detected, including naphthalene and tributyltin, at concentrations below the adopted assessment criteria. Whilst the concentrations detected may not be of significant concern, it is likely that these contaminants may also be present elsewhere on the site. Any future investigations need to include these contaminants of concern. In particular, given the highly toxic nature of organotin and the environmental sensitivity of the area, the Site should be further investigated to determine the degree and extent of organotin impact."*

Given the presence of background concentration levels of contaminants found in these soil materials, the risk assessment conclusion above, and the proposed restricted industrial nature of the proposed land use, a detailed site investigation is not considered to be necessary at this time. However, a detailed site investigation will be required to validate and, if necessary, remediate the site to baseline condition at the end of the commercial life of the proposed facilities. The site investigation to be conducted upon decommissioning of the site will include all contaminants of concern.

"*As soil investigations to date have been limited, but have detected the presence of several contaminants, further investigations should be undertaken in accordance with DEC's Contaminated Site Management Series of guidelines to determine the contamination status of soils at the Site and the potential risk to human health, the environment or any environmental value."*

The proposed land-use is to be restricted to industrial and therefore the appropriate assessment criteria to be applied for the site is HIL-F. Concentrations found were below this investigation trigger level and are assessed to be background natural levels for this harbour. Given the site will be constructed to operate with an effective barrier between receptors and materials of concern, further detailed site investigation is not deemed necessary.

"*It is likely that this site will be classified under the Contaminated Sites Act 2003 (the Act) as possibly contaminated – investigation required, pending the results of further investigations. In accordance with the Contaminated Sites Regulations 2004, 31(1)(c), any contamination investigations of the Site will need to be overseen by an accredited contaminated sites auditor appointed under the Act."*

Concentrations in the soil appear to be background levels. As discussed previously in this section, the concentrations of contaminants found only exceed EILs but not HIL-F industrial levels. These levels are likely to represent background concentrations in the Port Hedland harbour area. From the risk assessment undertaken, it has been deemed unnecessary and not feasible at this stage to conduct further investigations.

Based on the Contaminated Sites Auditors: Guidelines for Accreditation, Conduct and Reporting (DEC, August 2006), there is no statutory requirement for a Mandatory Auditor's Report under the

*Contaminated Sites Act 2003* or Voluntary Auditor's Reports until the source of the contamination has been established.

No disturbance of residual soils is expected to occur during development (see construction methodology detailed above), therefore no mobilisation of contaminants will occur. It is considered that there is a low risk for onsite human and environmental receptors (site workers and groundwater) to be impacted by residual background contamination.

### 6.1.3. Query 3 – Assessment of groundwater (including exceedences of contaminants)

*"Several contaminants were detected in groundwater at concentrations exceeding the assessment levels adopted by the proponent, including, copper, zinc and lead."*

Concentrations appear to be district background levels. Concentrations exceeding HIL-F levels included copper, zinc and lead. Similarly to the above findings for the soil risk assessment, concentrations of concern in groundwater are likely to be from off site and up-gradient sources.

Concentrations found in this study are consistent with background levels found within other studies conducted in the inner and outer harbour area of Port Hedland (Background Water Quality for the Coastal Marine Waters of Port Hedland, Western Australia, SKM 2008; and FMG Pilbara Iron Ore Project; Port Facilities Acid Sulphate Soil Management Plan. URS March 2006).

*"Other contaminants, including arsenic and manganese, were also detected, however, the report provided no assessment criteria for these contaminants. Where substances are present at a site for which assessment levels are not included within the DEC document "Assessment levels for soils, sediment and water (Department of Environment, November 2003)", the proponent needs to provide alternative assessment levels with appropriate justification for these criteria."*

As previously noted no additional pathways will be created by the Project. Where there are pathways the following assessment levels would be used:

- Arsenic: ANZECC 90% Trigger Values for Freshwater ($\mu gL^{-1}$): 94
- Manganese: 0.53 mg/L for a highly disturbed system (i.e., 90%, lower protection).

The above manganese adopted levels have been determined from an eco-toxicological assessment commissioned by the Proponent (SKM, 2008). Arsenic levels were found to be below the adopted ANZECC assessment levels.

Manganese exceeded the adopted eco-toxicological assessment level at one of the eight monitoring locations (BH3). This site is located up-gradient of the proposed stockyards and lies closest to the existing iron ore handling operations.

*"The proponent needs to provide further comment, including a risk assessment, on all exceedences of the adopted assessment criteria."*

Similarly to the soil risk assessment conducted (see **Section 6.1.2**), the source of contaminants appears to be offsite and can be considered to be representing background levels found in an industrial port. The construction methodology will not disturb the existing soils and hence the groundwater will also not be affected as there will be no dewatering operations. Appropriate management of the layering methodology for fill material and the minimisation of soil disturbance during the construction period will significantly reduce the risk.

The risk to groundwater from leached stockpiled ores within the proposed stockpile facility is low due to the compacted base upon which the stockpile will be located. The inclusion of a geosynthetic clay layer in the concept design under the chromite stockpiles and incorporation of a stormwater collection system will eliminate the risk of contaminants leaching into the groundwater. Similarly, if further studies demonstrate that manganese ores have the potential to produce leachate at concentrations exceeding (the above) trigger levels, PHPA will modify the design to eliminate the risk of contamination.

*"As groundwater investigations have detected the presence of several contaminants, further investigations should be undertaken in accordance with DEC's Contaminated Site Management Series of guidelines to determine the contamination status of groundwater at the Site and the potential risk to human health, the environment or any environmental value."*

Based on the above background information and risk assessment, in addition to the proposed industrial land use for the site, a detailed site investigation at this stage will not improve environmental management. With a commitment to validate and, if necessary, remediate the site at the end of the proposed facilities' life span, a detailed site investigation will be conducted upon decommission of the site.

### 6.1.4. Query 4 – Groundwater monitoring and bore positioning

*"The PER recommends that groundwater monitoring be continued throughout construction at the facility on a monthly basis including the installation of two new monitoring bores to replace BH1 and BH3 and monitoring to continue post-construction on a 6-monthly basis."*

PHPA will submit a groundwater monitoring program as part of the Works Approval application process.

*"A network of monitoring bores needs to be established for this purpose with bores carefully positioned in order to be able to determine whether construction activities are impacting groundwater quality. The existing bores are located very close together in a central portion of the site and do not provide a good spatial indication of groundwater quality."*

The four onsite bores are distributed along the extent of the site, and provide representative hydraulic gradient and chemical data and are consistent with Development of Sampling Analysis Programs (DEC 2001). Four offsite bores are located up-gradient and provide representative background data for the site. In addition, groundwater monitoring bores will be placed around the site boundary and down gradient, and outside the perimeter of the site, prior to construction commencing to detect any concentrations leaving the site during construction and operations.

"*The groundwater monitoring programme should be updated based on the results of the further investigations as required above."*

The groundwater monitoring program will be flexible and will be regularly updated if and when required.

### 6.1.5. Query 5 – Commitment to protect soils and sediments

*"The Contaminated Sites Branch (CSB) previously provided the following advice in a memo to the Environmental Impact Assessment Branch dated 4 February 2007:*

*The LWQB would wish that appropriate safeguards are put in place to ensure that following the cessation of the operational life of the facility and/or prior to the decommissioning of individual structures within the facility that soils and groundwater are subject to investigation in accordance with the guidelines contained with the Contaminated Sites Management Series. In the event that soil or groundwater contamination is identified the contamination should be investigated and if necessary remediated and works validated to the satisfaction of DEC. The proponent should provide a binding commitment to undertaken these works as part of any development approval and this commitment should be submitted to DEC as part of the PER assessment process.*

- *The proponent has provided a commitment for groundwater only, but not for soils and/or sediments.*
- *The proponent's commitments should be expanded to include groundwater, soils and sediment as above"*

PHPA commits to investigating soils, sediments and groundwaters at the cessation of the operational life of the facility and/or prior to the decommissioning of individual structures within the facility. If necessary, based on the findings of these investigations, remediation and validation

works will also be completed to return the site to baseline conditions appropriate to an industrial facility and to the satisfaction of the DEC.

### 6.1.6. Query 6 – Commitment to testing fill material

*"CSB previously provided the following advice in a memo to the Environmental Impact Assessment Branch dated 4 February 2007:*

*The draft Scoping Report indicates that a quantity of "fill" material will be imported into the site to raise levels within the proposed stockyard area by a minimum of 1.5m to above the tidal limit. The LWQB recommend any imported fill material to be subject to appropriate sampling and analysis and comply with ecological and human health assessment criteria for soils as set out in DoE guideline "Assessment Levels for Soil, Sediment and Water" (draft November 2003). The fill analysis data should be submitted to DEC as part of the PER assessment process. CSB can find no reference to this issue within the PER."*

PHPA is proposing to excavate a borrow pit in an area adjacent to the Finucane Island access road. The borrow pit will cover an approximate area of 25 ha (250,000 $m^2$) with an average 1.5 m in depth. An appropriate sampling and analysis plan will be adopted, including chemical and Acid Sulphate Soil investigations, to assess the suitability of this proposed fill material. Sampling and analysis will follow the DoE Guideline "Assessment Levels for Soil, Sediment and Water" (draft November 2003). Detailed actions will be managed by the Project's Construction Environmental Management Plan.

### 6.1.7. Query 7 – Further assessment of PASS

*"It is understood that only preliminary ASS investigations, as part of a geotechnical assessment, have been carried out to date. These preliminary investigations identified no AASS but indicated that PASS is expected to be present in the proposed stockyard area. This report has not been provided within the PER.*

- *The PER contains only a two (2) page outline of the proposed ASS management approach.*
- *As per previous advice, CSB requires the proponent to carry out appropriate investigations in accordance with the DEC guideline "Draft Identification and Investigation of Acid Sulfate Soils" (June 2006), to determine the extent and severity of potential ASS and Actual ASS materials and to submit an ASS Management Plan to DEC prepared in accordance with DEC guidelines and current Best Management Practice."*

Up to 3 metres of clean fill will be imported onto the stockpile site therefore no oxidisation of soils and no impact on groundwater will occur. No disturbance of soil is planned for the site (see

construction methodology outlined above) hence no PASS investigation is required for the proposed stockpile site.

A PASS study has been commissioned to establish the useability of material from the proposed borrow pits along the existing access road. Should the PASS study show that the material needed for fill requires an ASS Management Plan, this will be submitted to the DEC.

### 6.1.8. Query 8 – Disturbance of ASS during construction

*"CSB previously provided the following advice in a memo to the Environmental Impact Assessment Branch dated 18 December 2007:*

*Construction of raised roads and causeways across tidal flats can result in environmental harm because this obstructs normal tidal flows/water circulation causing the oxidation of ASS behind the obstruction along with the potential release of metals and nutrients into the environment. Any barriers such as this would need to have lots of culverts to maintain water circulation.*

- *The PER (p102) states that "Tidal water flow will be maintained to mangrove areas surrounding the access road through provision of culverts and due to the development of the access road , increased surface and tidal water flow will be retained in these areas surrounding mangrove growth. Tidal flow will not be restricted to mangrove areas surrounding the UPBP stockyard site and, for this reason, the restriction of surface run-off from the UPBP site to surrounding mangrove areas is not expected to substantially impact on these areas.*
- *The proponent needs to make a clear statement as to whether the construction of the access roads has the potential to cause the oxidation of ASS behind the obstruction along with the potential release of metals and nutrients into the environment and long-term monitoring programs will need to be put in place to determine whether any detrimental effects are occurring in this regard."*

During the construction of the access road, no soils will be disturbed. Construction methodology will include a geo-blanket to be placed on existing soils, avoiding any disturbance to these soils. The base of the culverts will be at or above the natural surface level and will also not disturb any surface soils. In the unlikely event of any disturbance of soils, a management plan will be prepared to address containment and treatment of the disturbed soils.

The design of the raised access road will incorporate an adequate number of culverts to simulate current surface and tidal water flows in order to minimise environmental impact on mangrove areas. As the surface soils up-gradient of the access road will not be disturbed, there is a very low

potential for oxidation of ASS behind the obstruction to occur. In addition, the design, number and location of culverts will enable tidal flows to be as near natural as possible and will allow water movement to replicate current tidal patterns. Long- term monitoring of marine waters will be implemented to determine if any detrimental effects are occurring as a result of this raised access road.

### 6.1.9. Query 9 – Potential impacts to fauna which may access settlement pond areas

*"CSB previously provided the following advice in a memo to the Environmental Impact Assessment Branch dated 18 December 2007:*

*Settling ponds for the drying out of dredged sediments are likely to have high levels of metals and metalloids. Wildlife access to these structures should therefore be restricted.*

- *CSB can find no reference to this issue within the PER."*

Fencing will be erected around the parameter of the settling ponds and fauna deterrent mechanisms will be installed when and where appropriate. An Operations Environmental Management Plan will incorporate regular checks of this facility, especially when filled (approx. 30-40 days/year), and will respond accordingly to prevent access by fauna and to minimise impact.

# 7. Air quality

## 7.1. Department of Health

### 7.1.1. Query 1 – Metal dusts as a potential health impact to residents

"*The DOH is concerned that the health and amenity of residents in the 'west end' of Port Hedland is not protected from adverse impacts of dust arising from cumulative port operations. The DOH acknowledges that a detailed health risk assessment may be outside the scope of individual proposals and that a more strategic approach for air quality in Port Hedland is required. Notwithstanding, the current proposal failed to identify metal dusts as a potential health impact to residents nearby and nor has it been demonstrated that the re-location of manganese and chromate ore from the current port to the Utah Port proposal will not impact on the health of nearby residents.*"

SKM has undertaken a comparison of contributions to ambient manganese and chromium dust ($PM_{10}$) for two operational scenarios being the current PHPA operations and proposed Utah Point development in order to address the abovementioned query. The analysis included the separation of manganese and chromium activities at all sources, which then allowed for the modelling of the contributions from each operational scenario using AUSPLUME version 6. The model assumptions made for each scenario in the original report remain unchanged aside from the operational separation.

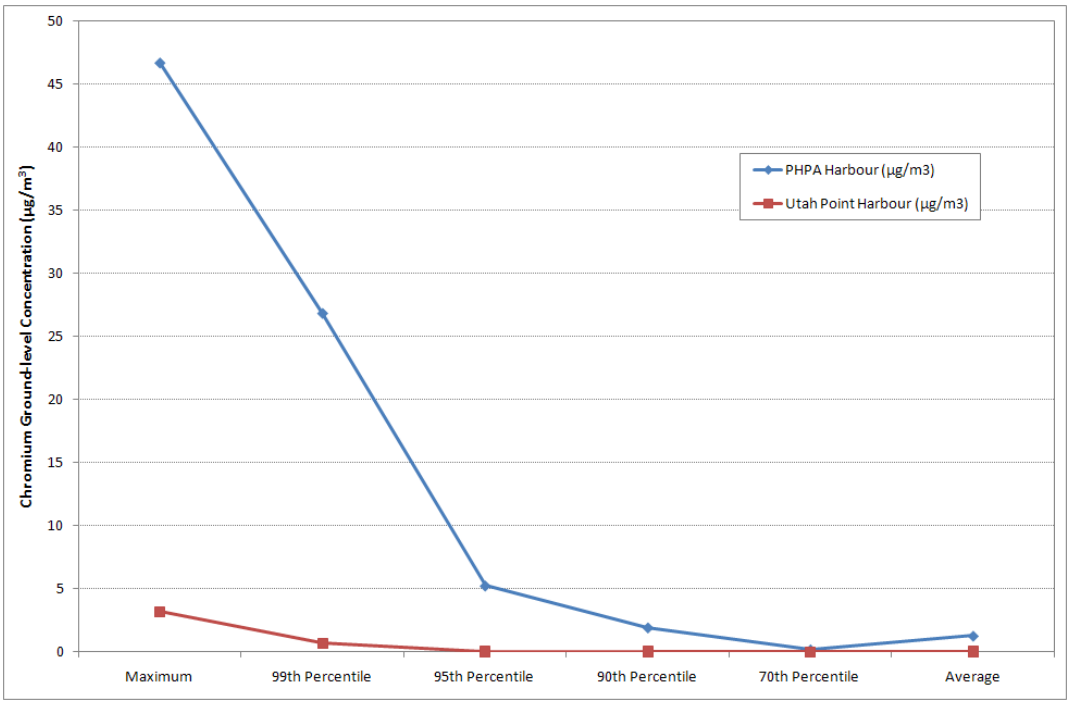
The data presented by the blue line in each figure represent the current PHPA chromium and manganese $PM_{10}$ operational contributions as measured at the respective receptor monitoring stations (in other words, the harbour and hospital). The red line indicates the predicted operational contributions of chromium and manganese as $PM_{10}$ at the same monitoring stations for the proposed Utah Point development.

It is apparent from these figures that there is a significant reduction in chromium and manganese concentrations under the proposed Utah Point development scenario across all the modelled statistics.

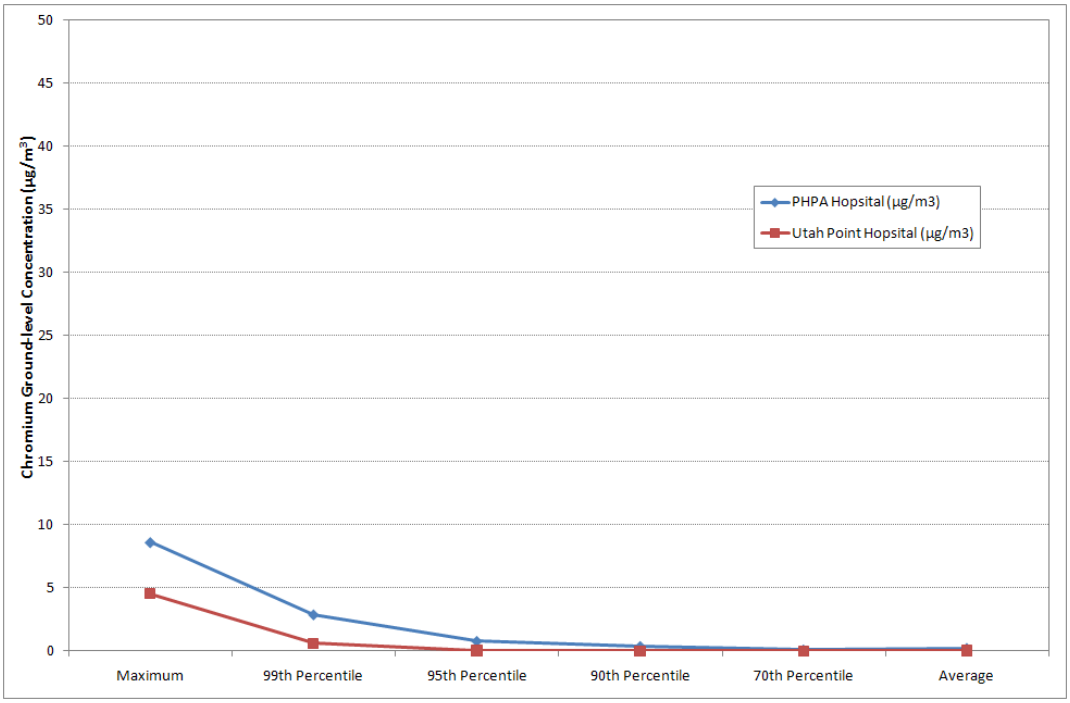
**Figure 7-1** and **Figure 7-2** show the predicted change in operational contribution to ambient chromium concentrations at the harbour and hospital receptors respectively. Note that these concentrations do not take into account existing background $PM_{10}$ concentrations, but reflect the effective change in chromium concentrations resulting from the proposed Utah Point scenario.

The World Health Organisation (WHO) specifies an ambient long-term (annual) average concentration of $1\mu g/m^3$ for atmospheric chromium VI (there is no specified concentration for total chromium) (WHO, 2000), while the Texas Commission on Environmental Quality (TCEQ)

recommends a screening level value of 0.01µg/m3. From the data presented in **Figure 7-1** and **Figure 7-2**, it can be observed that the predicted annual average chromium operational contributions at the Harbour and Hospital monitoring sites is approximately 0.03µg/$m^3$ in the Utah Point Development scenario. This predicted annual average concentration is below that specified by the WHO (2000) though above the TCEQ screening level. It should be noted that the predicted concentration represents the impact associated with chromate operations and does not represent ground level concentrations of chromate.



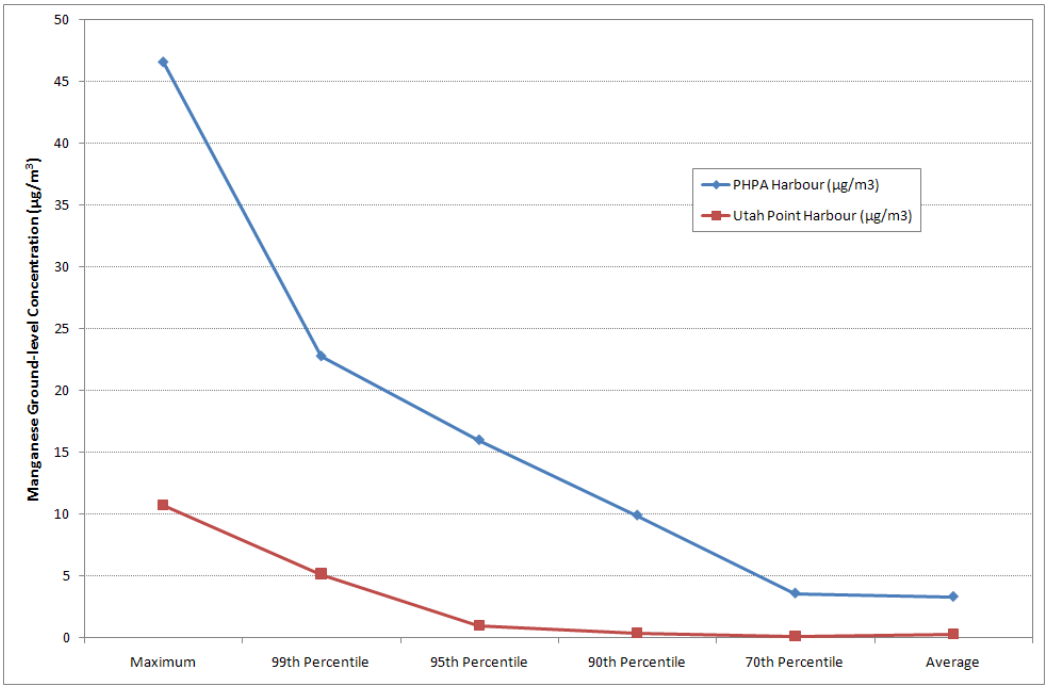

- **Figure 7-1 Predicted 24-hour average operational chromium ($PM_{10}$) concentrations at the harbour monitoring site, excluding background $PM_{10}$ concentrations**



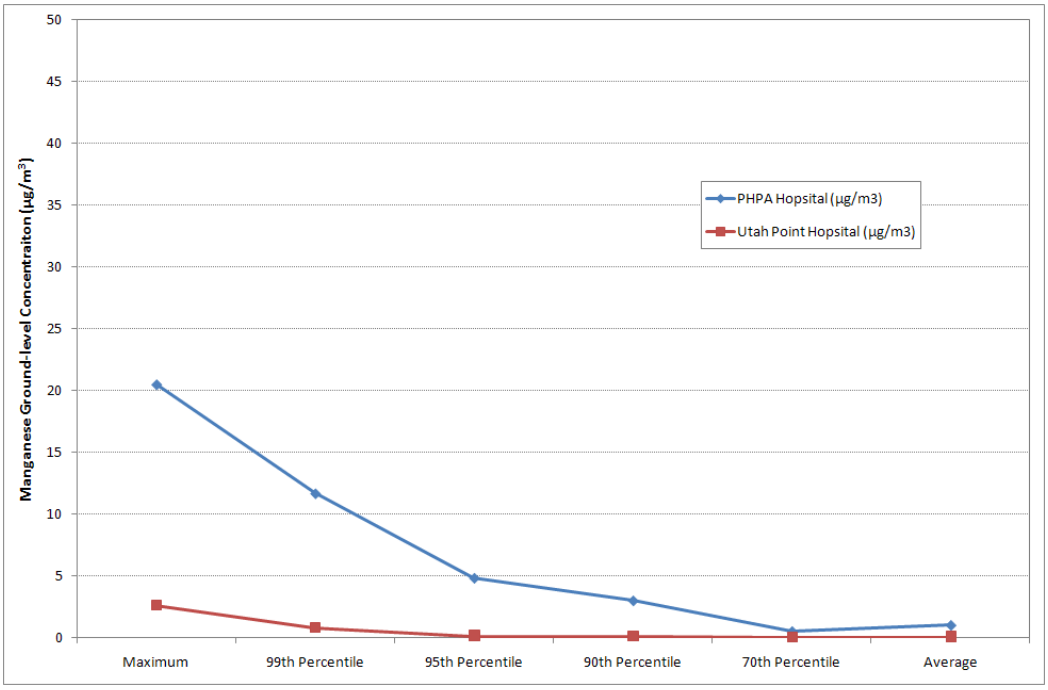

- **Figure 7-2 Predicted 24-hour average operational chromium ($PM_{10}$) concentrations at the hospital monitoring site, excluding background $PM_{10}$ concentrations**

**Figure 7-3** and **Figure 7-4** show similar data for the predicted change in operational contribution of ambient manganese concentrations at the harbour and hospital receptors respectively. As with the predicted chromium concentrations, these do not take into account existing background $PM_{10}$ concentrations, but rather show the effective change in manganese concentrations resulting from the proposed Utah Point scenario.

The WHO specifies a guideline annual average concentration for manganese of 0.15µg/m$^3$ (WHO, 2000) while the TCEQ recommends a screening level value of 0.2µg/m$^3$. From the data presented in **Figure 7-3** and **Figure 7-4**, it can be observed that the predicted annual average of manganese at the Harbour and Hospital receptors with Utah Point is 0.27 and 0.06µg/m$^3$. These concentrations are significantly less than the existing scenario, where the operational contributions at these sites are predicted at 3.31 and 0.99µg/m$^3$ respectively. It should be noted that the predicted concentration represents the impact associated with manganese operations and does not represent actual ground level concentrations of manganese.




- **Figure 7-3 Predicted 24-hour average operational manganese ($PM_{10}$) concentrations at the harbour monitoring site, excluding background $PM_{10}$ concentrations**




- **Figure 7-4 Predicted 24-hour average operational manganese ($PM_{10}$) concentrations at the hospital monitoring site, excluding background $PM_{10}$ concentrations**

### 7.1.2. Query 2 – The omission of background particulate matter data

"Previous comments by the DOH regarding the following issues have not been addressed by the proponent. These include:

*'The omission of background particulate matter data in Port Hedland in the assessment strategy. DOH would like to reiterate that historic and recent (2006) dust monitoring data and modelling results indicate that particulate matter in the 'west end' of Port Hedland is problematic. The use of background data obtained from Port Hedland airport as confirmation for background levels for the port precinct of Port Hedland is inappropriate as it does not reflect the air shed of the port area. DOH reiterates that the current proposal will significantly add to the overall burden of particulate matter in the air shed over the 'west end' of Port Hedland.'"*

It should be observed that 'background' data in industrial air quality impact modelling are typically those levels representative of the region as unaffected by industrial development. Data representative of the existing port area represents 'cumulative impacts' which is not usually referred to as background data.

The original report did not include background concentrations. This was supporting the argument that a reduction in ground level concentrations were predicted to occur by re-locating sources in the existing PHPA operational area to Utah Point.

The following discussion refers to figures that were included in the original Section 7 of the PER Air Quality Technical report and now contains background concentrations.

The background concentrations file used in this assessment was obtained from BHP Billiton Iron Ore (Pty) Ltd (BHPBIO) and is a composite of monitoring results taken from their Harbour, Hospital and Bureau of Meteorology monitoring locations during the 2004/2005 financial year. This background file, as well an emission file representing BHPBIO's 2004/2005 operations, was used by BHPBIO to validate the model. This model validation is outlined in the BHPBIO Section 46 report (BHPBIO 2006) submitted to the Minister for Environment in 2006 and shows an excellent correlation between modelled emissions and monitored air quality in the port vicinity.

A comparison between the maximum predicted $PM_{10}$ concentrations (including background concentrations) for the 2004/2005 financial year is presented in **Table 7-1**. This table shows that the maximum ground level concentrations at the Hospital and Harbour monitoring locations are predicted to decrease with the introduction of the proposed Utah Point export facility.

The DOH assertion that the proposal will "*significantly add to the overall burden of particulate matter in the air shed over the west end of Port Hedland*" is contrary to all model results presented

in the PER and is not supported by the modelling predictions shown here. The modelling shows a predicted decrease which is due to a combination of reasons including:

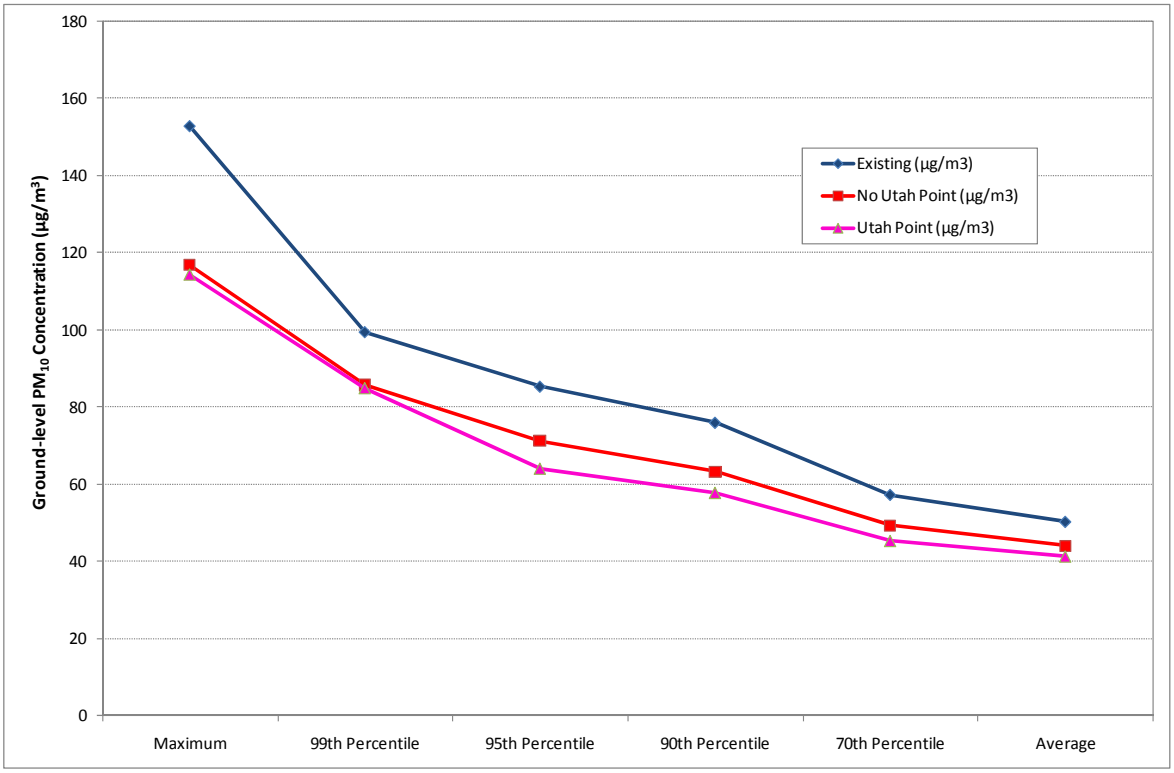
- The increased distance between the proposed Utah Point export facility and the Harbour and Hospital monitoring locations
- The location of the proposed Utah Point export facility is outside of the prevailing wind direction
- Changes in BHPBIO operations including:
  - BHPBIO ceasing operations at the Goldsworthy stockyard on Finucane Island
  - All crushing and screening operations at the BHPBIO Nelson Point operations will cease
  - Certain stackers/reclaimers and transfer stations at Nelson Point will be decommissioned (BHPBIO 2006)

The reason that the concentrations at the Port Hedland Primary School and South Hedland Senior High School do not change across the various scenarios is that this is the maximum concentration contained within the background data. This does not mean that the proposed Utah Point facility will not impact these receptors, however, it does indicate that this proposed facility will not contribute to increasing the maximum concentration, as these maxima result from other sources.

**Table 7-1 Comparison of predicted $PM_{10}$ concentrations in Port Hedland**

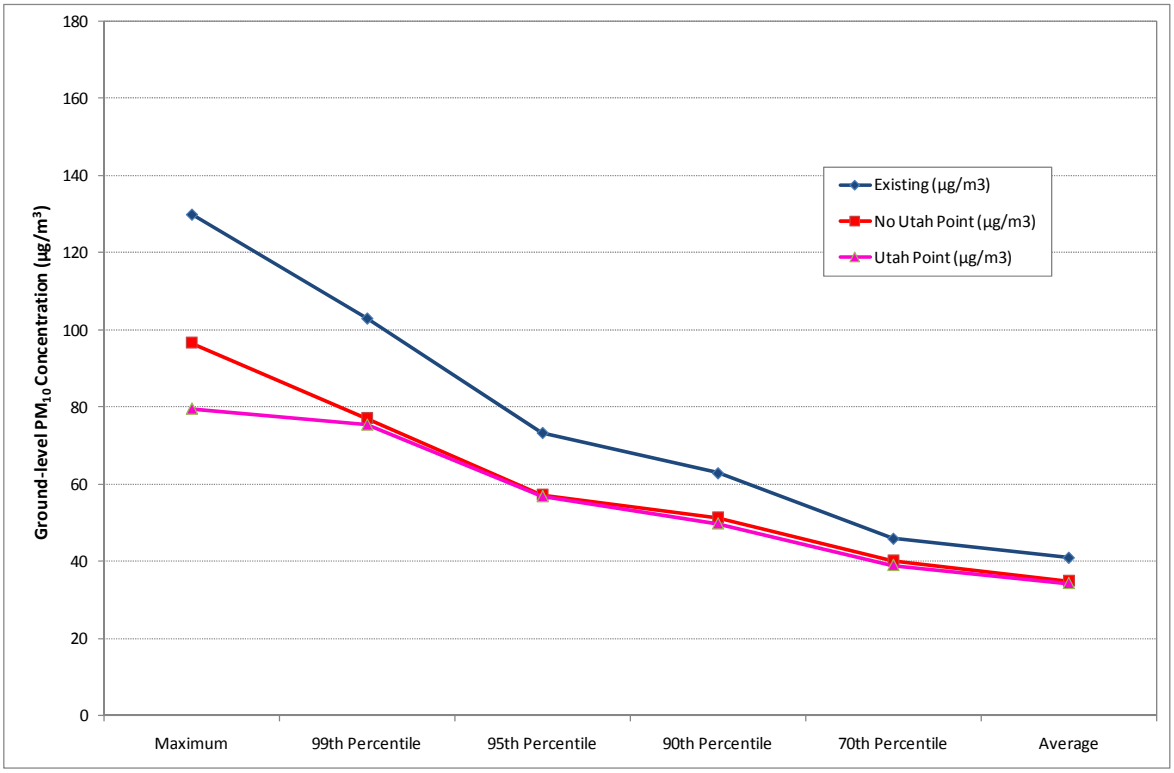
| | Maximum 24-hour Average (µg/m$^3$) | | |
|---|---|---|---|
| **Statistic** | **Current operation** | **Future Development – No Utah Point** | **Proposed Utah Point Development** |
| Harbour Monitoring Location | 153 | 117 | 114 |
| Port Hedland Primary School | 71 | 71 | 71 |
| Hospital Monitoring Location | 130 | 97 | 80 |
| Wedgefield | 71 | 72 | 73 |
| Hedland Senior High School | 71 | 71 | 71 |

A statistical comparison between the predicted $PM_{10}$ concentrations from the current scenario, Proposed Utah Point development scenario, and the No Utah Point development scenario at the Harbour monitor is presented in **Figure 7-5**. The results in this figure include the background concentration file supplied by BHPBIO. From this figure it is evident that it is predicted that the proposed Utah Point development will result in lower concentrations at the Harbour monitoring station.



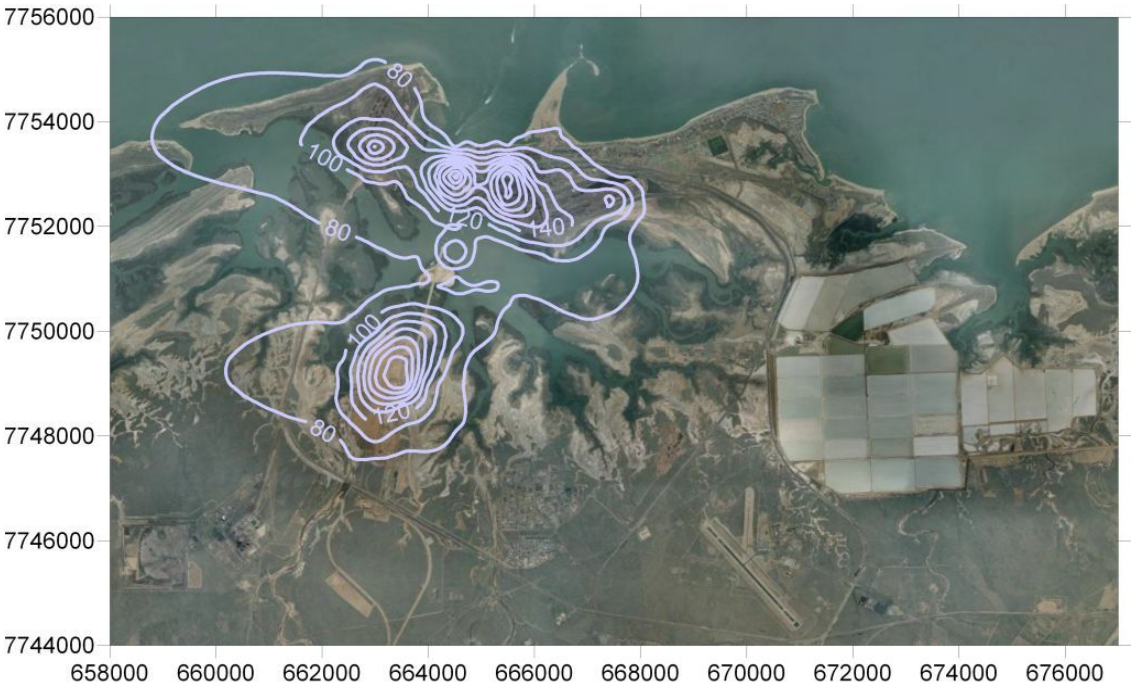

- **Figure 7-5 Predicted 24-hour average $PM_{10}$ at the Harbour monitoring site including background concentrations**

A statistical comparison between the predicted $PM_{10}$ concentrations from the current scenario, Proposed Utah Point development scenario, and the No Utah Point development scenario at the Hospital monitor is presented in **Figure 7-6**. The results in this figure include the background concentration file supplied by BHPBIO. From this figure it is apparent that both the Utah Point and No Utah Point scenarios will result in a reduction in ground level concentrations at the Hospital monitor, primarily due to the changes in BHPBIO operations. The main difference occurs at the maximum ground level concentration where the proposed Utah Point development has a predicted concentration significantly lower than the No Utah Point option.

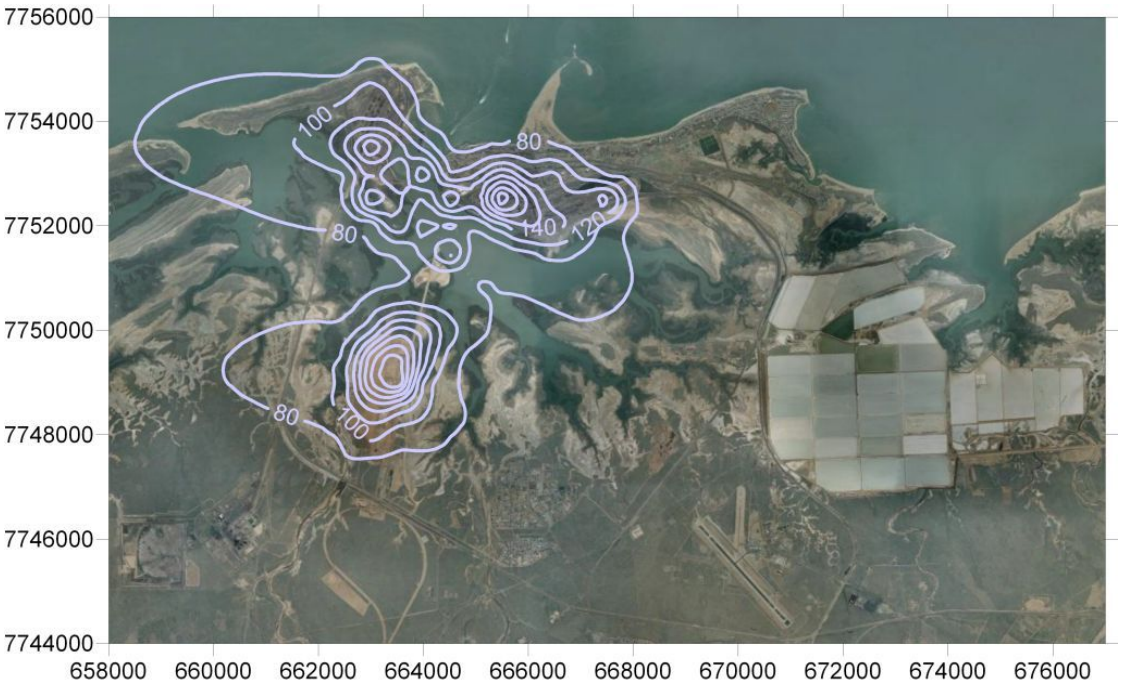



- **Figure 7-6 Predicted 24-hour average $PM_{10}$ at the Hospital monitoring site including background concentrations**

Isopleths of the predicted maximum $PM_{10}$ ground level concentrations for the No Utah Point development and the proposed Utah Point development scenarios are presented in **Figure 7-7** and **Figure 7-8** respectively. Both of these figures include the background concentration file supplied by BHPBIO. These figures highlight the predicted change in ground level concentrations within Port Hedland that will occur with the introduction of the proposed Utah Point facility.

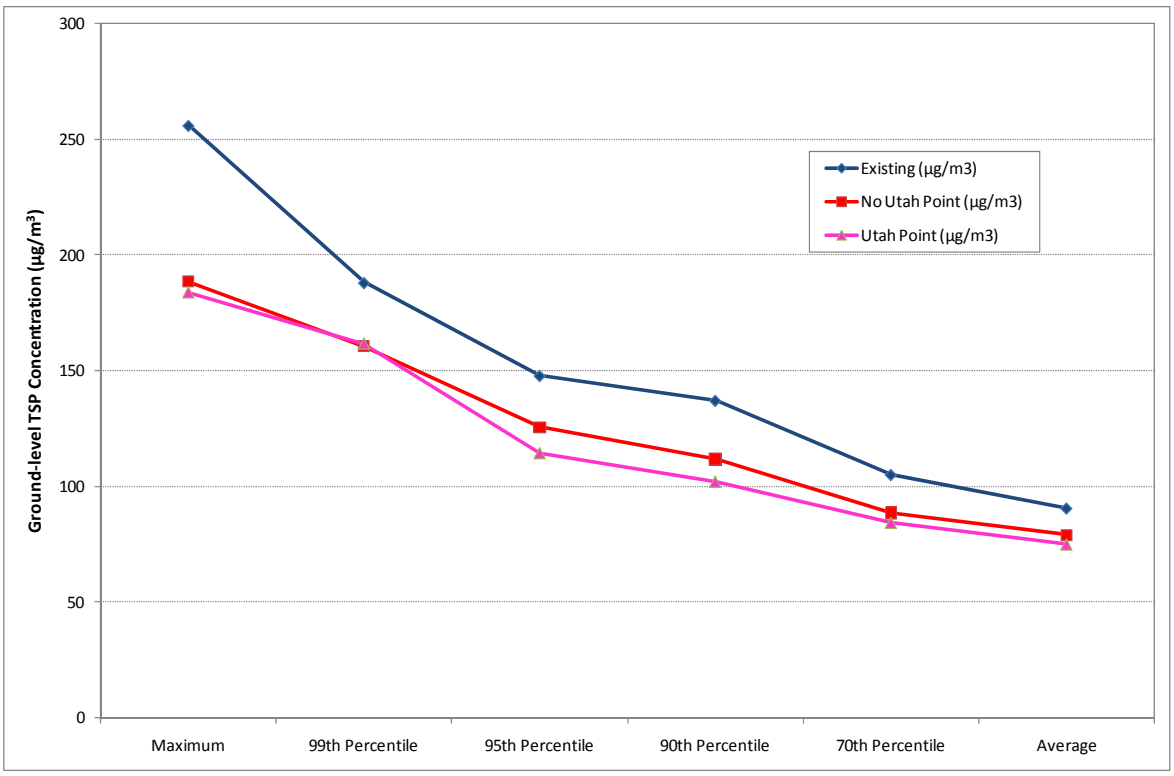



- **Figure 7-7 No Utah Point development (maximum $PM_{10}$ 24 hour average) including background concentrations**



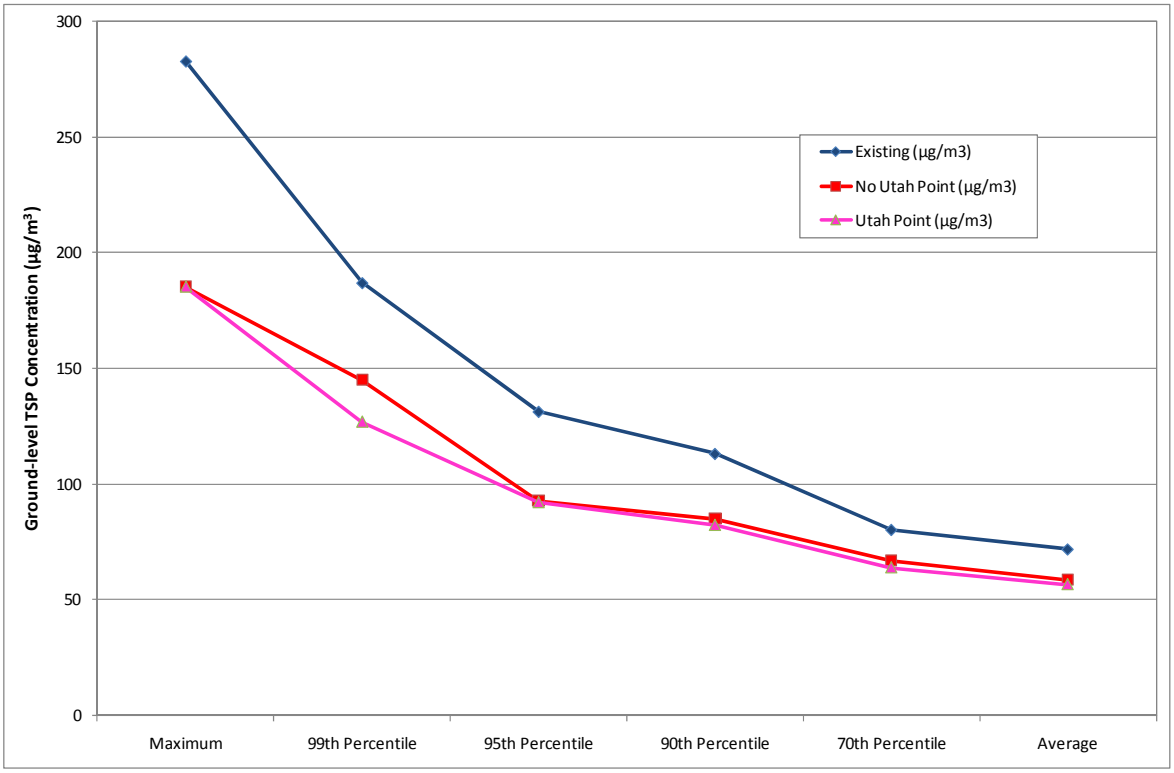

- **Figure 7-8 Proposed Utah Point development (maximum $PM_{10}$ 24 hour average) including background concentrations**

A statistical comparison between the predicted TSP concentrations from the current scenario, Proposed Utah Point development scenario, and the No Utah Point development scenario at the Harbour monitor is presented in **Figure 7-9.** The results in this figure include the background TSP concentration file supplied by BHPBIO. From this figure it is evident that it is predicted that the proposed Utah Point development will result in lower concentrations at the Harbour monitoring station, particularly at the lower percentiles.



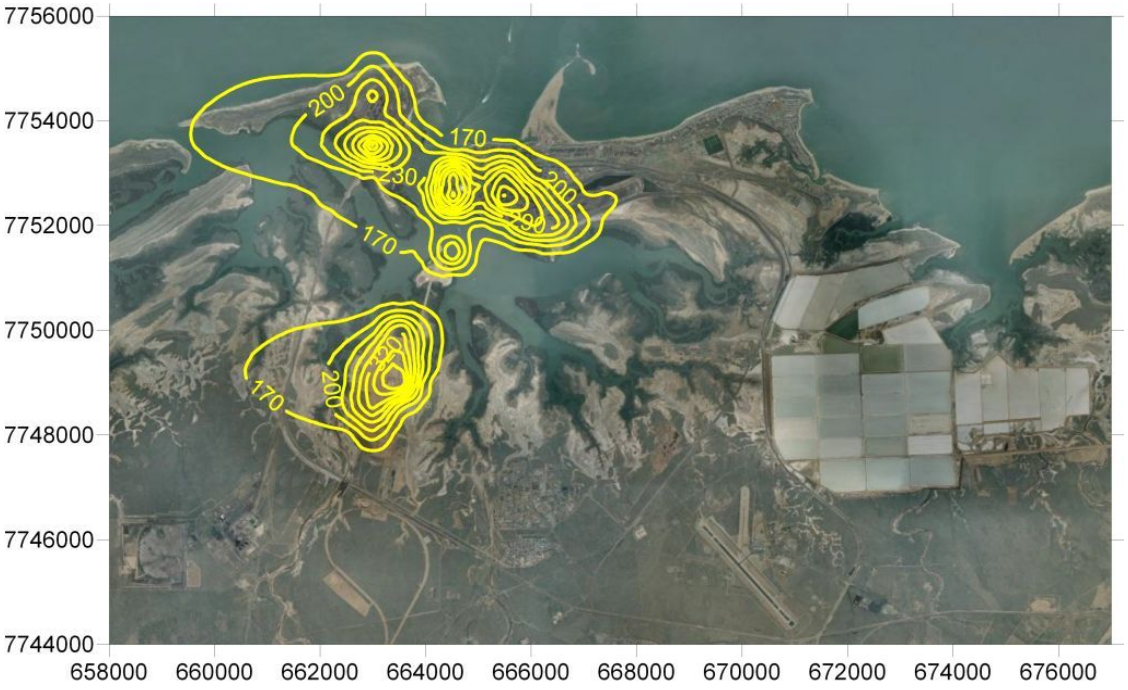

- **Figure 7-9 Predicted 24-hour average TSP at the Harbour monitoring site including background concentrations**

A statistical comparison between the predicted TSP concentrations from the current scenario, Proposed Utah Point development scenario, and the No Utah Point development scenario at the Hospital monitor is presented in **Figure 7-10**. The results in this figure include the background TSP concentration file supplied by BHPBIO. From this figure it is apparent that both the Utah Point and No Utah Point scenarios will result in a reduction in ground level concentrations at the Hospital monitor, primarily due to the changes in BHPBIO operations. The main difference occurs at the predicted 99$^{th}$ percentile ground level concentration where the proposed Utah Point development has a predicted concentration lower than the No Utah Point option.

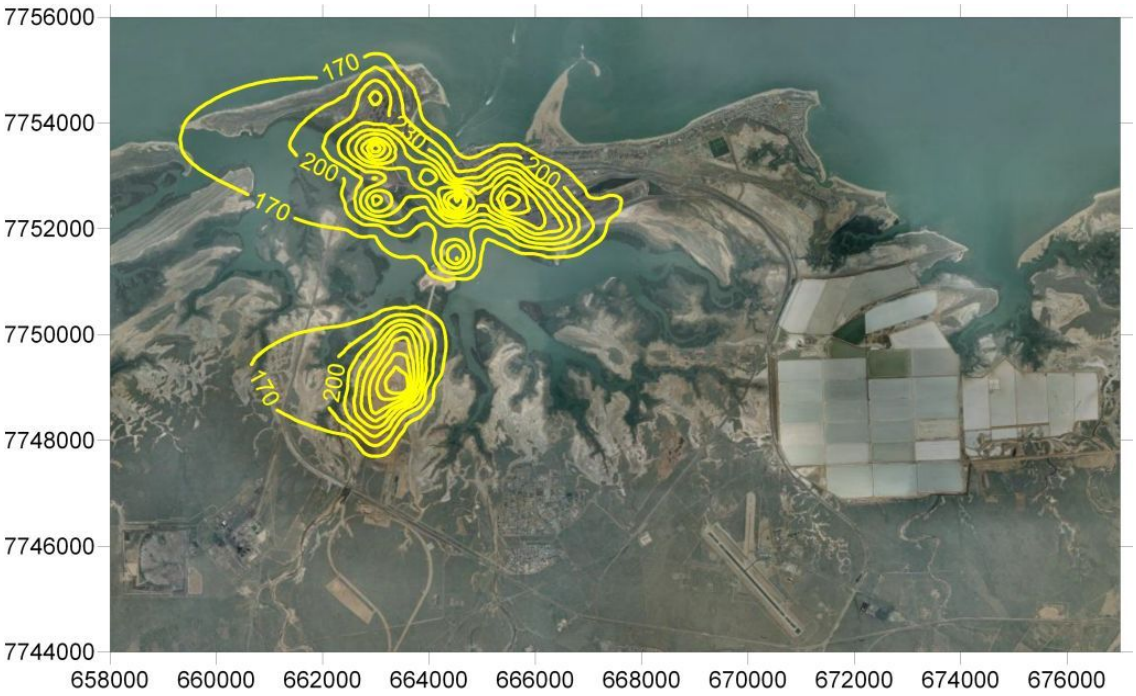



- **Figure 7-10 Predicted 24-hour average TSP at the Hospital monitoring site including background concentrations**

Isopleths of the predicted maximum TSP ground level concentrations for the No Utah Point development and the proposed Utah Point development scenarios are presented in **Figure 7-11Error! Reference source not found.** and **Figure 7-12** respectively. Both of these figures include the background concentration file supplied by BHPBIO.




- **Figure 7-11 No Utah Point development (maximum TSP 24 hour average) including background concentrations**




- **Figure 7-12 Figure 7-13 Proposed Utah Point development (maximum TSP 24 hour average) including background concentrations**

"*Cumulative impacts of port activities have not been considered in the air modelling. From the isopleths figures, all 5 receptor sites would be well above the NEPM criteria if cumulative impacts were considered in the predicted PM10 emissions for present and future scenarios.*"

The modelling of activities in the region includes the existing BHPBIO operations (2004/2005 financial year), proposed BHBPIO operations (RGP4 operations) and the current FMG operations at Anderson Point at 45 Mtpa, and therefore represents cumulative impacts when the Utah Point predictions are included.

*"It is still unclear from the PER how and where the monitoring will take place and at what trigger level dust abatement measures will be put into place. In addition, given that dust is an ongoing issue in Port Hedland, the proponent needs to justify a level of particulate matter that is acceptable to the DOH given that it is unlikely that NEPM levels can be met."*

PHPA will commit to installing an operational dust monitoring system. This will involve real time dust monitoring equipment placed around the boundary of the facility which will feed into the operational control system. The program will include dust management levels which will trigger alarms on the system which will require specific management actions to reduce dust emissions. A high level alarm will result in activities being suspended until the issue is identified and rectified. This is similar to the process used by Fremantle Port Authority. Appropriate trigger levels will be developed following the implementation of the monitoring system.

PHPA, as part of the Port Hedland Air Quality Reference Group and the Port Hedland Industries Council, are also making progress towards developing an integrated ambient air quality monitoring subsystem that is open to the public via the internet. This system will input into DEC Air Quality Management Branch's efforts to develop a Policy Framework for air shed management in Port Hedland and towards ensuring consistent and significant steps are taken to demonstrate continuous improvement in reducing dust emissions.

## 7.2. Department of Environment and Conservation: Air Quality Branch

### 7.2.1. Query 1 – Investigation of the impact of $NO_x$ and $SO_2$ emissions

*"The draft PER did not investigate the impact of $NO_X$ and $SO_2$ emissions from increased shipping and road transport."*

PHPA have identified that emissions of $NO_X$ and $SO_X$ is a potential issue at Port Hedland that has not been considered in detail. PHPA propose to implement a monitoring program in the harbour area to determine current levels of these pollutants within the air shed. Additionally, in cooperation with Ports Australia, PHPA is planning to undertake a study to classify the levels of $NO_X$ and $SO_X$ emissions from port operations in Australia to gain a better understanding of the potential impacts

of port operations on air quality and to allow ports to better predict the impacts of future operations on levels of $NO_X$ and $SO_X$.

PHPA, as manager of the Port, will work in conjunction with AMSA to identify and blacklist any vessel found to be in contravention of the 1997 Annex VI to MARPOL. Under the 1997 Annex VI to MARPOL 1973/78, restrictions have been placed on the permissible $NO_X$ emissions from marine engines on ships, a global cap of 4.5% sulphur content in bunker fuels will be introduced and progressive reductions in $NO_X$ and $SO_X$ emissions will be implemented.

PHPA are adopting the policy of reducing road traffic associated with port operations through the Port Hedland town site, with the goal of seeing the majority of road traffic either diverted to the western side of the harbour or removed from the road system. This policy will greatly assist in reducing $NO_X$ and $SO_X$ emissions from road transport. PHPA is also working closely with Rio Tinto Minerals to determine a solution to convert from road train transport to direct conveyor to the port.

### 7.2.2. Query 2 – Individual concentration of chromite and manganese

*"The modelling does not examine individual concentrations of chromite and manganese. Although Appendix C (of Appendix 1) [of the Air Quality Assessment Report] briefly discusses manganese and chromite ores, the treatment is superficial."*

See **Section 7.1.2**

### 7.2.3. Query 3 – Status of ore shipments from the current public access berth

*"The modelling assumes that ore shipments from the current public access berth will cease: this should be clarified."*

Ore shipments of Manganese and Chromite will cease from the current public access berth once the proposed Utah Point facility has been constructed and commissioned, though shipments of copper concentrate will continue from the current public access berth. Copper concentrate is currently stored in a fully enclosed shed that is negatively pressurised. The only emissions associated with copper concentrate will be during shiploading operations.

Emissions associated with copper concentrate shiploading were determined by the following methodology:

- Total export of copper concentrate is 1 Mtpa
- Average loading rate of 1 000 tonnes per hour
- Loading times have been randomised to occur at any hour throughout the modelled year

- Emission sources include one shiploader and 12 transfer stations
- Emission factor for 'Handling, transferring and conveying' for high moisture content ores from Table 2 of the Emission Estimation Technique Manual for Mining Ver2.3 (DEWHA 2001).

The emissions from copper concentrate handling were including in more recent modelling of cumulative emissions and are reported in Section 2.2. Copper concentrate distribution was not modelled individually and has not been subject to a health risk assessment. The UPBP does not affect existing handling of copper concentrate and therefore is impact neutral.

### 7.2.4. Query 4 – Inclusion of background particle levels

*"The modelling does not explicitly include background particle levels and as such the modelling does not accurately reflect total particulate concentrations in ambient air but is used in a comparative sense to indicate where reductions and increases, resulting from the changes to the port, will occur."*

See **Section 7.1.2**.

# 8. General

## 8.1. Department of Environment and Conservation: Industry Regulation Branch

### 8.1.1. Query 1 – Requirement for a Category 58 license and works approval

*"Under the Environmental Protection Act 1987, a Category 58 bulk material loading or unloading license may be required for the project, with a works approval also being required if the loading capacity of the facility is 100 tonnes or more per day."*

PHPA will obtain a Category 58 license and a works approval for the development of the UPBP.

## 8.2. Department of Water

### 8.2.1. Query 1 – Requirement for a beds and banks permit

*"The PER refers to the alteration of surface drainage and flow pathways. A Permit to Interfere with Bed and Banks under the RIWI Act 1914 will be required for any proposed works that interfere with the waters, bed or banks of any watercourse or drainage line in the area."*

PHPA will liaise with the Department of Water and obtain a Permit to Interfere with Bed and Banks as required under the *RIWA Act* 1914.

## 8.3. Department of Health

### 8.3.1. Query 1 – Requirements for the treatment and application of pesticides

*"The treatment and application of pesticides for the project must be applied in accordance with the Health (Pesticides) Regulations 1956. Contractors / persons who are applying the pesticides must be appropriately trained and hold a current Pesticide Licence and be employed by a Registered Commercial Pest Firm. Employees which apply pesticides as part of a company's Pest Management Program should be provided with sufficient knowledge, skills, training and the personal protective equipment to safely apply the pesticide(s)."*

Should the use of pesticides be required for existing and proposed operations, PHPA will require that contractors and/or persons that carry out this work be appropriately trained, hold a current license and are employed by a Registered Commercial Pest Firm. The use of pesticides will be carried out in accordance with Health (Pesticide) Regulations 1956. Employees who may apply pesticides will also receive appropriate training and be provided with personal protective equipment as appropriate. This information has been included in the Framework Environmental Management Plans (EMPs) for mosquito, surface water, contaminant, terrestrial flora and fauna management.

## 8.4. Department of Environment and Conservation: Environmental Management Branch

### 8.4.1. Query 1 – Potential impacts from fill material from proposed borrow pit locations

*"If the proponent is seeking to obtain fill material and/or limestone from proposed borrow pit locations, there is the potential risk of impacts on significant flora species and troglofauna. If borrow pits are to be approved as part of this proposal, the proponent should commit to undertaking a flora and fauna investigations and to developing a Borrow Pit Management Plan in consultation with DEC. Alternatively, it may be appropriate for impacts associated with the proposed use of borrow pits to be assessed separately as an application to the DEC for the clearing of native vegetation."*

It is expected that fill requirements for the UPBP will be obtained from dredged spoil. The use of borrow pit areas to provide fill material for the UPBP, will only be required if future dredged spoil material is unavailable at the time of construction.

Previous flora and fauna surveys undertaken for the UPBP did include the proposed borrow pit locations (**Appendix E** of the PER). No priority flora species were identified within the proposed borrow pit locations, which comprise approximately 24.7 ha of hummock grassland (*Triodia epactia* and *Triodia secunda*). This represents approximately 6 % of the total area of hummock grasslands within the Port Hedland locality as mapped by Biota and Trudgen (2002) (**Appendix E** of the PER).

PHPA will investigate potential impacts to troglofauna as part of further investigations of the borrow pit locations. Further investigations will assess a range of key environmental factors including potential acid sulfate soils (PASS) and the suitability of soil for use as clean fill material. This investigation will include the sampling of 52 soil bores, which will provide information on the site soil / geophysical environment and potential habitats for troglofauna. If potential habitats for troglofauna are identified within the proposed borrow pit locations, a Borrow Pit / Troglofauna Management Plan will be developed for the project in consultation with the DEC.

### 8.4.2. Query 2 – Requirements of the turtle management plan

*"Given that marine turtles are listed as specially protected (threatened) fauna under the Wildlife Conservation Act 1950, the turtle management plan for the Utah Point Berth Project should be prepared in consultation with and to the satisfaction of DEC.*

*The turtle management plan should be properly integrated with other turtle conservation programs in the region and should include detail on the monitoring program/s and research initiatives that the proponent will implement and/or support."*

PHPA will consult with the DEC in the development of the final Turtle Management Plan (TMP). The final TMP will detail the proposed monitoring and research initiatives to be undertaken (discussed and approved by the DEC). The Framework TMP provided in **Appendix K** gives an outline of monitoring/research initiatives that will be supported and/or implemented by PHPA.

# 9. References

BHPBIO (2006). Revision of the Dust Management Program for Finucane Island and Nelson Point Operations: Section 46 Amendments to Ministerial Statement 433. http://ironore.bhpbilliton.com.

Biota Environmental Sciences & M. E. Trudgen (2002), *Hope Downs Rail Corridor, Port Hedland to Weeli Wolli Creek – Vegetation and Flora Survey*. Prepared for Hope Downs Management Service (unpublished).

DEC (2001) Development of Sampling Analysis Programs

DEC (2006) Contaminated Sites Auditors: Guidelines for Accreditation, Conduct and Reporting

DEWHA (2001). Emission Estimation Technique Manual for Mining Ver 2.3. http://www.npi.gov.au/handbooks/approved_handbooks/pubs/mining.pdf (accessed 17/9/2008)

Fortesque Metals Group (2008) The Port Facility Upgrade – Anderson Point, Port Hedland: Dredging and Wharf construction – Third Berth'

SKM (2007). *Proposed Utah Point Development: Air Quality Assessment*. Report prepared for Port Hedland Port Authority.

SKM (2008). *Background Water Quality for the Coastal Marine Waters of Port Hedland, Western Australia*, Appendix N prepared for Port Hedland Port Authority as part of the UPBP PER.

Texas Commission on Environmental Quality (2008). *Effects Screening Levels Lists.* http://www.tceq.state.tx.us/implementation/tox/esl/list_main.html#esl_1, accessed 3 October 2008.

URS (2006) *FMG Pilbara Iron Ore Project; Port Facilities Acid Sulphate Soil Management Plan*

V & C Semeniuk Research Group (2007), *The Mangroves of Utah Point, Port Hedland.* Prepared for Sinclair Knight Merz and Port Hedland Port Authority.

WHO (2000). Air Quality Guidelines for Europe. Second Edition. WHO Regional Publications, European Series, No. 91