

6 REGIONAL & SOCIAL ENVIRONMENT

6.1 REGIONAL CONTEXT

The Pilbara region comprises of four local government authorities (Town of Port Hedland, Shires of Ashburton, East Pilbara and Roebourne) and is recognised for its significant contribution to both State and Federal wealth.

The Town of Port Hedland includes both the original Port Hedland town site, South Hedland (located 15 km inland) and Wedgefield (located 4 km inland). The original Port Hedland settlement was gazetted as a townsite in 1896 and as a result of growing pressure on the existing townsite South Hedland was established in 1966 (WAPC 2003b).

Port Hedland is a key export centre for many mines in the Pilbara region and a range of commodities are exported including iron ore, salt, manganese ore, chromite ore, copper concentrate and general cargo.

6.2 PORT HEDLAND OPERATIONS

In addition to BHPBIO operations at Nelson Point and Finucane Island, the PHPA and FMG operate berths within the Port Hedland Harbour. The ever increasing overseas demand for minerals from the Pilbara has led to a number of port expansions within the harbour. In addition to the proposed BHPBIO expansions at Harriet Point (subject of this referral), the proposed PHPA Utah Point Berth Project is currently being assessed by the EPA at a PER level of assessment and FMG is expanding their existing Anderson Point operations (Third Berth Dredging and Wharf Construction).

6.2.1 Port Hedland Port Authority

The Port of Port Hedland covers an area of approximately 42,000 ha and encompasses the inner harbour and the seaward area in a 10 nm radius of Hunt Point, from the entrance of the inner harbour to the high water mark at the shoreline. The Port is the largest bulk tonnage port in Australia (PHPA 2006a).

Currently the PHPA manages three berths within the West End area of the harbour to support the export of iron ore, salt, manganese ore, chromite ore, copper concentrate and general cargo.

The PHPA is currently proposing to construct an additional berth at Utah Point on Finucane Island to meet growing market demand. The Utah Point facility will be designed to handle a maximum throughput of approximately 20 Mtpa of bulk cargo exports.

6.2.2 Fortescue Metals Group

In May 2008, FMG completed construction and commissioning of two berths at Anderson Point with the first shipment of ore in June 2008 (FMG 2008). The berths at Anderson point have an export capacity of 45 Mtpa.

In May 2007, FMG referred the proposal for an additional berth at Anderson Point to the EPA. In April 2008 the EPA set the level of assessment as ARI and released their report to the Minister for the Environment. Dredging of less than 3.5 Mm³ will be required for the construction of the third berth at Anderson Point and associated tug pen (EPA 2008a).

6.3 PORT HEDLAND REGIONAL PLANS

There are several existing State and Local Government plans and policies that apply to the Harriet Point dredging proposal.

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6.3.1 Town of Port Hedland Town Planning Scheme No. 5

Town of Port Hedland (ToPH) is responsible for the regulation of the use and development of land within its area. The main mechanism for controlling this land use is through the Council's Town Planning Scheme No.5. The Scheme zones and reserves land for a variety of uses and controls elements of development, such as building size, car parking and open space provision (ToPH 2008).

Under the Town Planning Scheme, DMMA A is zoned as 'conservation recreation and natural landscapes' and as 'rural'.

6.3.2 Port Hedland Landuse Master Plan

The future development of Port Hedland is also addressed in the ToPH 'Land Use Master Plan' 2007. The Land Use Master Plan has been developed by the ToPH as a guide to the growth and development of Port Hedland during the next 20-25 years (ToPH 2007). It defines the community's long range vision of how the town should develop and the plan will be incorporated into future statutory regulations controlling the location and forms of future development.

6.4 SOCIAL SETTING

6.4.1 Communities

The Pilbara region is sparsely populated, with a total population of approximately 40, 000 people. The majority of the population is located in the western third of the region, which includes the towns of Port Hedland, Karratha, Newman, Tom Price, Paraburdoo, Roebourne, Wickham, Dampier, Onslow and Marble Bar. The Town of Port Hedland is one of the largest towns in the Pilbara region and is the main centre of population in the region.

The combined township of Port Hedland and South Hedland has a total population of approximately 13 500 (ToPH 2006). Since the 1960s the population of Port Hedland has substantially increased and the population is expected to continue to grow at a rate of 1.5% per annum (WAPC 2005).

6.4.2 Recreation and Tourism

Coastal recreational activities, such as fishing and other marine-based activities, are very popular in Port Hedland. The Department of Fisheries estimates that there are approximately 2,000 recreational craft in the Port Hedland area (WAPC 2003b).

There are two major boat-launching areas in Port Hedland, one at Finucane Island which is located at the north western end of Finucane Island and the other is to the north of the PHPA berths (WAPC 2003b). The PHPA also has a jetty near the existing port area which allows commercial fishing boats access to the coast when commercial wharves are unavailable (WAPC 2003b).

Tourism is an expanding industry in the Pilbara and north-west Western Australia, with ecotourism becoming increasingly popular. Port Hedland acts as a "gateway" to the Pilbara region, especially for people travelling to Karijini National Park, Karratha and the Kimberley region (WAPC 2003b).

6.5 INFRASTRUCTURE AND TRANSPORT

Port Hedland's water supply is managed by the Water Corporation through the Port Hedland Regional Water Supply Scheme (ToPH 2006). Groundwater is extracted from wellfields located within water reserves on the Yule and De Grey Rivers and pumped to Port Hedland for industrial and domestic use (WAPC 2003b). The water is stored in tanks in South Hedland and then transferred to bulk storage tanks in the port area and on Finucane Island (ToPH 2006).

There are two sewage treatment facilities in Port Hedland, Spinifex Hill Waste Water Treatment Plant and South Hedland Waste Water Treatment Plant, which have the capacity to serve a population of up to approximately 15,000 people (ToPH 2006).

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Electricity is supplied to Port Hedland by Horizon Power from a gas-fired power plant in the Boodarie Industrial Estate which distributes electricity to sub-stations in Port Hedland, Wedgefield, South Hedland and Finucane Island (ToPH 2006).

6.6 ECONOMIC SETTING

The development of the Pilbara has primarily been driven by the discovery of vast deposits of iron ore in the region although more recent discoveries of oil and gas resources have boosted the Pilbara economy and population growth.

Iron ore is the largest individual mineral sector in Western Australia and accounts for 30% of the value of the overall mineral and petroleum sector's output in 2007. Sale of iron ore reached a record value of A\$16.1 billion in 2007, more than a nine percent rise from 2006 (DoIR 2008).

The economic development of Port Hedland is primarily linked to the development of the port and the export of iron ore and other materials from the port, including salt, manganese and chromium.

The dependence of the local economy on the resource sector means that Port Hedland is heavily influenced by specific resource projects (including construction, operation and closure phases) and the associated transient workforce (Environ 2004).

Other industries within Port Hedland and in the Pilbara region in general include pastoralism and aquaculture.

6.7 HERITAGE**6.7.1 Previous Surveys in the Vicinity**

The proposed Harriet Point Dredging Program falls within the Kariyarra Native Title Claim. BHPBIO has consulted extensively with the Kariyarra people regarding the proposed infrastructure developments at the port.

A desktop heritage review was completed to assess previous heritage work conducted in the region and identify any registered heritage sites within the project area. A comprehensive archaeological and ethnographic survey of the Boodarie area as part of the HBI development (Warren 1994; 1995a; 1995b) identified one heritage site identified within the vicinity of DMMA A (DIA site ID 12072). A recent heritage survey confirmed that this heritage site 12072 is located outside the development footprint.

6.7.2 Heritage Surveys in the Project Area

On 3 December 2007 BHPBIO entered into an agreement with the Kariyarra (Heritage Agreement), through a corporate entity Marapikurrinya Proprietary Limited (MPL), to survey the RGP5 Port expansion area both ethnographically and archaeologically.

Pursuant to the Heritage Agreement, Gavin Jackson P/L conducted an archaeological survey of the project area (Stedman and Jackson 2008). Nine archaeological sites were identified within DMMA A. Out of respect for the wishes of the Kariyarra the location of the archaeological sites are not identified.

Pursuant to the Heritage Agreement, Anthropos Australis conducted an ethnographic survey and cultural impact assessment (CIA) of the project area. The Port Hedland Harbour, including DMMA B1 and B2, was surveyed in December 2007, and DMMA A was surveyed in March 2008. Two potential ethnographic sites were recorded as a result of these surveys (Anthropos Australis 2008). Contemporary issues identified in the CIA focussed on access to the survey areas in order to pursue traditional camping and fishing activities (Anthropos Australis 2008).

6.7.3 European

Places of European heritage significance within the Port Hedland area are predominantly located within the Port Hedland townsite, in the West End area (ToPH 2006). This area encompasses the harbour and the original settlement along the coastline (ToPH 2006).

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A global search of the Database of Heritage Places listed 32 places of heritage significance existing within the Port Hedland local government area (HCWA 2008). However, only four places are listed on Register of the National Estate (with no formal assessment) and only two places are registered on the State Register of Heritage Places: Dalgety House and the former District Medical Officer's Quarters.

Both of these sites are located within the Port Hedland townsite, across the harbour approximately 1 km from Harriet Point. No places of European heritage significance are located within or in close proximity to the project area for the Harriet Point Dredging Program.

6.8 VISUAL AMENITY AND LANDSCAPE CHARACTER

6.8.1 Overview

Existing port facilities located at Finucane Island are currently uninterrupted by any topographical variances. As both Finucane Island and the Port Hedland township centre have a flat topography, the only interruptions provided to the views are from the built environment and ships.

Views of Finucane Island from Airey Point and the Port Hedland town centre are in keeping with the use of the island as a large scale shipping port. The port infrastructure is the dominant view, with a minor amount of vegetation visible. Large ships are almost always docked within the port area in front of the DMMA B1 and B2 which are subject to the proposed reclamation works. Consequently, it is considered that the current views do not have a high visual amenity value and the proposal will be in keeping with a large scale shipping port.

6.8.2 Surrounding Area

The Port Hedland townsite is located to the east of the proposed development across the harbour entrance and is comprised of several land use types. The Port Hedland town centre is located at the western most point of Port Hedland and is a predominantly commercial area providing for retail, service and office businesses.

One of the two main residential areas within the Port Hedland region is located approximately 1 km to the east of the Port Hedland town centre. The area has a residential density of R12.5/50 under the residential planning code.

6.9 AIR QUALITY

BHPBIO dust monitoring program have been ongoing in the vicinity of Port Hedland since the 1970's. Numerous monitoring sites have been installed with high volume (HiVol) samplers and Beta Attenuation Monitors (BAMs) that measure Total Suspended Particulates (TSP), particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$).

BHPBIO's port operations were previously bound by the conditions set in Ministerial Statement 433 'Upgrade Dust Management at Finucane Island and Nelson Point, Port Hedland' (Bulletin 955), issued in 1996. In August 2006, BHPBIO sought amendments to this Ministerial Statement under Section 46 of the EP Act. This amendment was progressed to ensure the Ministerial Conditions were more closely aligned with improvements to dust management at the site and ongoing expansions at the existing Nelson Point and Finucane Island operations. In summary, the aim of the Section 46 was to capture:

- Continued management and reduction of ambient dust levels;
- Assessment of dust emission performance against targets, to better reflect current community and regulator expectations;
- Initiatives to improve water-use efficiency; and
- Initiatives and developments in community consultation programs.

As a result of the Section 46, revised Ministerial Conditions (Statement 740) were set for the Nelson Point and Finucane Island operations. These conditions require the implementation of a revised Dust

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Management Program which sets the framework for a multi-faceted approach to dust management and improved water-use efficiency.

The Ministerial Conditions also set performance based targets (both air quality – PM₁₀ and amenity related – TSP) to measure the success of the BHPBIO Dust Management Program (**Table 6.1**). It is BHPBIO's intention that the Harriet Point Dredging proposal, together with BHPBIO's existing operations will meet the dust and water efficiency performance targets outlined in the Section 46 document and the resulting revised Ministerial Statement 740.

Table 6.1 – Dust and Water Use Performance Targets

Performance Aspect	Proposed Target
Air Quality Related – Long Term Average	Improvement in the annual average PM ₁₀ monitored at the Hospital site to a long-term average target of 30 µg/m ³
Air Quality Related – Short Term Average	Improvement in the 24 hour average PM ₁₀ monitored at the Hospital site to a long-term target of 70 µg/m ³ with less than 10 exceedences per year
Amenity Related	Improvement in the annual average TSP monitored at the Hospital site to a long-term target of 65 µg/m ³
Water-Use Efficiency	A 10% reduction in fresh water consumption per tonne of iron ore (produced) during the period 2006 to 2012

6.10 WATER USE

Water for BHPBIO's existing operations at Nelson Point and Finucane Island is supplied to by the Water Corporation from the Yule and De Grey borefields located in the region.

Water supply requirement for the Harriet Point Dredging Program are minimal and fall within the current allocation from the Water Corporation, BHPBIO recognises that the use of additional water will require a sustainable approach and is committed to improving water use efficiency.

This commitment to water use efficiency is also reflected in the Port Hedland operations Water Use Efficiency Plan, which includes a water use efficiency target of '10% reduction in fresh water consumption per tonne of ore (produced)' by 2012, with the baseline set in 2006. (**Table 6.1**)

6.11 NOISE

The Port Hedland port precinct (containing multiple industries) has historically given rise to community concerns regarding noise impacts, particularly for those community members living in close proximity to the port facilities.

Noise emissions from the port and associated infrastructure can vary considerably depending on the activities being undertaken. Traffic noise associated with major arterial roads in the vicinity also makes a considerable contribution to local noise levels during the day and into the evening.

Noise surveys of BHPBIO's operations have been undertaken progressively over the last six years, which indicate that environmental noise emissions from the existing facilities exceed the assigned noise levels under the *Environmental Protection (Noise) Regulations 1997* (at the Hospital Monitoring Site) by up to:

- Night-time (2200 – 0700): 23dB(A);
- Evening-time(1900-2200): 18 dB(A); and
- Day-time (0700-1900): 13dB (A).

The scale of the Port Hedland Port precinct industrial activities and closeness to residential premises means that meeting the Noise Regulation requirements will be an extremely onerous task.

It is BHPBIO's objective to reduce noise to as low as reasonably practicable with growth and, where possible comply with the requirements of the Noise Regulations, including seeking exemption.