



Decision Document

Environmental Protection Act 1986, Part V

Proponent: Mid West Ports Authority

Licence: L4275/1982/15

Registered office: 298 Marine Terrace
GERALDTON WA 6530

ABN: 73 384 989 178

Premises address: Geraldton Port
Part of Lot 503 on plan 57801
GERALDTON WA 6530

Issue date: Thursday, 12 March 2015

Commencement date: Wednesday, 18 March 2015

Expiry date: Tuesday, 17 March 2020

Decision

Based on the assessment detailed in this document the Department of Environment Regulation (DER), has decided to issue a licence. DER considers that in reaching this decision, it has taken into account all relevant considerations and legal requirements and that the Licence and its conditions will ensure that an appropriate level of environmental protection is provided.

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Licensing Officers

Decision Document authorised by: Alana Kidd
Manager Licensing



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1 Purpose of this Document

This decision document explains how DER has assessed and determined the application and provides a record of DER's decision-making process and how relevant factors have been taken into account. Stakeholders should note that this document is limited to DER's assessment and decision making under Part V of the *Environmental Protection Act 1986*. Other approvals may be required for the proposal, and it is the proponent's responsibility to ensure they have all relevant approvals for their Premises.

Works approval and licence conditions

DER has three types of conditions that may be imposed on works approvals and licences. They are as follows;

Standard conditions (SC)

DER has standard conditions that are imposed on all works approvals and licences regardless of the activities undertaken on the Premises and the information provided in the application. These are included as the following conditions on works approvals and licences:

Works approval conditions: 1.1.1-1.1.4, 1.2.1, 1.2.2, 5.1.1 and 5.1.2.

Licence conditions: 1.1.1-1.1.4, 1.2.1-1.2.4, 5.1.1-5.1.4 and 5.2.1.

For such conditions, justification within the Decision Document is not provided.

Optional standard conditions (OSC)

In the interests of regulatory consistency DER has a set of optional standard conditions that can be imposed on works approvals and licences. DER will include optional standard conditions as necessary, and are likely to constitute the majority of conditions in any licence. The inclusion of any optional standard conditions is justified in Section 4 of this document.

Non standard conditions (NSC)

Where the proposed activities require conditions outside the standard conditions suite DER will impose one or more non-standard conditions. These include both premises and sector specific conditions, and are likely to occur within few licences. Where used, justification for the application of these conditions will be included in Section 4.



2 Administrative summary

Administrative details		
Application type	Works approval <input type="checkbox"/>	
	New licence <input checked="" type="checkbox"/>	
	Licence amendment <input type="checkbox"/>	
	Works approval amendment <input type="checkbox"/>	
Activities that cause the premises to become prescribed premises	Category number(s)	Assessed design capacity
	58	44,000 tonnes per day
Application verified	Date: 6/2/2015	
Application fee paid	Date: 19/2/2015	
Works Approval has been complied with	Yes <input type="checkbox"/>	No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
Compliance Certificate received	Yes <input type="checkbox"/>	No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
Commercial-in-confidence claim	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Commercial-in-confidence claim outcome		
Is the proposal a Major Resource Project?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the <i>Environmental Protection Act 1986</i> ?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is the proposal subject to Ministerial Conditions?	Yes <input checked="" type="checkbox"/>	Referral decision No: Managed under Part V <input type="checkbox"/> Assessed under Part IV <input type="checkbox"/> Ministerial statement No: 367 EPA Report No: 411 and 1050
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the <i>Environmental Protection Act 1986</i>)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
	Department of Water consulted Yes <input type="checkbox"/> No <input type="checkbox"/>	
Is the Premises within an Environmental Protection Policy (EPP) Area Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
If Yes include details of which EPP(s) here.		
Is the Premises subject to any EPP requirements? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
If Yes, include details here, e.g. Site is subject to SO ₂ requirements of Kwinana EPP.		



3 **Executive summary of proposal and assessment**

The Geraldton Port is managed by the Mid West Ports Authority (MWPA) and is located to the north west of the city centre of Geraldton, approximately 430 km north of Perth. The Port is located on the northern shores of Point Moore and situated within the south-eastern corner of Champion Bay.

The Port is surrounded by land zoned Industrial, Commercial and Residential. The nearest residence is located at Crowther St, Beachlands, approximately 100 m south of the port boundary.

The Geraldton Port consists of a shipping channel, a 7-berth inner harbour, a fishing boat harbour, a small work boat base and related storage facilities, infrastructure and industries.

This licence regulates activities associated with the loading/unloading and storage of bulk granular material. Other prescribed activities occurring at the port such as boat building and seafood processing are regulated through separate DER instruments held by the various occupiers of these premises.

The handling of the following bulk granular products is regulated under this licence:

- Iron ore
- Lead sulphide concentrate
- Copper concentrate
- Zinc concentrate
- Nickel concentrate
- Talc
- Coal
- Mineral sands
- Mineral sands concentrate

Other products are also handled at the Port, which, due to legal advice on the nature of 'bulk granular material' have not been historically regulated under the licence. These include:

- Grains
- Petroleum
- Fertilisers
- General cargo
- Stockfeed
- Livestock

The Port has a maximum bulk granular product handling capacity (not including grain) of 16,000,000 tonnes per annum (tpa) which is largely determined by the limitations of the predominantly rail-based delivery system. Over 14,000,000 tpa of this capacity is centred on iron ore exports through berths 5 and 7. The highest risk bulk granular products handled by the Port are metal concentrates (particularly lead sulphide) which have been historically exported at combined rates of up to approximately 550,000 tpa. Currently the Port handles lead, copper and zinc concentrates through the Berth 4 conveyor system and nickel, copper and zinc concentrates via 'Rotainer' loading at Berth 6.



All products, with the exception of talc and Rotainer-loaded concentrates, are stored within sheds onsite. Material can be delivered to the Port via train (grain and iron ore only) or via truck. The Port owns and operates one iron ore train unloader, whilst Karara Mining Limited (KML) own and operate a second iron ore train unloader. There are several truck unloaders for iron ore, mineral sands and talc are unloaded directly into the storage sheds or stockpile (for Talc) after transport to the Port via trucks. Co-operative Bulk Handling own and operate a grain train unloading facility and a single truck unloader which are not currently regulated under this licence as described above. Rotainer-loaded concentrates are loaded into the containers at the minesite and delivered to the port on a campaign basis. There is no storage of Rotainer-loaded product onsite.

Storage sheds for high volume (iron ore) and moderate - high risk (metal concentrates) products are fully sealed with dedicated dust extraction systems. There are two metal concentrates storage sheds onsite, however only one is currently in use. Only one company (MMG) currently stores its metal concentrates (copper, lead and zinc) onsite. The MMG concentrates are loaded at Berth 4 via a conveyor system which has been upgraded significantly since the 1960's.

Other metal concentrate exports (copper, nickel and zinc) are conducted using the Rotainer loading system, which involves the tipping of crane-loaded containers directly into the hold of vessels and represents current best practice in small-volume bulk loading.

The main emissions of note from the Port are lead, copper and nickel dust from the loading and handling of metal concentrates, as well as the fugitive discharge of these materials into the harbour. These emissions are managed via the licence through a comprehensive dust monitoring and analysis programme from four air quality monitoring stations onsite; annual sediment monitoring; general housekeeping conditions, and reporting and notification requirements.

This licence reissue is required for continued operation of the port and includes a conversion to the current DER 'Refire' format. As a result, changes to the licence format and wording have occurred. As part of the Refire conversion process, a number of standard conditions have also been introduced.

The licence reissue also includes changes as follows:

- Removal of the requirement for monitoring ambient air concentrations of zinc due to insignificant levels demonstrated in historical monitoring.
- Replacement of monthly air quality reporting requirements with requirements based on target exceedances and quarterly reporting of lead levels.
- The renaming of several of the sediment monitoring sites in line with MWPA protocol.

A detailed overview of Port operations is provided in Appendix B.



4 Decision table

All applications are assessed in line with the *Environmental Protection Act 1986*, the *Environmental Protection Regulations 1987* and DER's Operational Procedure on Assessing Emissions and Discharges from Prescribed Premises. Where other references have been used in making the decision they are detailed in the decision document.

DECISION TABLE				
Works Approval / Licence section	Condition number W = Works Approval L= Licence	OSC or NSC	Justification (including risk description & decision methodology where relevant)	Reference documents
General conditions	L1.2.1 – L1.2.5	OSC	<p>Standard general conditions have been applied to Licence.</p> <p>OSC 1.2.5 has been added to the Licence to implement all practical measures to minimise the contamination of stormwater and for all contaminated water to be treated prior to discharge as required.</p> <p>Currently, all contaminated stormwater is treated prior to discharge. Contaminated stormwater from Berth 4 and washdown water from the metal concentrates circuit is directed to Hume Inceptor Pits onsite. Previous sampling has identified that this system does not effectively remove contaminants to a level suitable for marine discharge. The Humeceptors have therefore been sealed and are used as collection sumps which are pumped into storage tanks with water returned to the minesite or used in dust suppression in the metal concentrates storage sheds.</p> <p>NSC 1.2.6 relating to the operation of dust extraction systems in product storage sheds replaces condition 11 in the previous licence.</p>	
Premises operation	1.3.1 – 1.3.6	NSC	<p>Non-standard premises operation conditions have been directly transferred from the previous Licence to the REFIRE conversion.</p> <p>NSC 1.3.1 outlines the notification requirements for new cargo and replaces condition 1 in the previous licence.</p> <p>NSC 1.3.2 requires ship's masters to be notified as to clean-up requirements and replaces condition 10 in the previous licence.</p> <p>NSC 1.3.3 requires the collection of spillage in the berths and replaces condition</p>	



DECISION TABLE

Works Approval / Licence section	Condition number W = Works Approval L= Licence	OSC or NSC	Justification (including risk description & decision methodology where relevant)	Reference documents
			3 in the previous licence. NSC 1.3.4 requires measures to prevent spillage between the vessel and the berth which replaces condition 11 in the previous licence.	
Emissions general	L2.1.1	OSC	Descriptive limits will be set through condition 2.7.1 of the licence and therefore OSC regarding recording and investigation of exceedances of limits or targets has been included.	N/A
Point source emissions to air including monitoring	L2.2	N/A	No significant point source emissions to air are anticipated during the operation of the Port. As the previous licence contained no conditions relating to point source emissions to air, no such conditions have been added to the reissued licence.	General provisions of the <i>Environmental Protection Act 1986</i>
Point source emissions to surface water including monitoring	L2.3.1	OSC	Point source emissions to surface water have not been reassessed as part of this licence reissue. OSC 2.3.1 has been included in the licence to identify stormwater discharge points. MWPA have advised DER that an audit of their stormwater system will be undertaken shortly to verify the status and location of stormwater discharge points. Once the port's stormwater management plan has been updated, DER intends to amend the licence to include a hydrocarbon limit on stormwater discharge.	<i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i>
Point source emissions to groundwater including monitoring	L2.4	N/A	No significant point source emissions to groundwater are anticipated during the operation of the Port. As the previous licence contained no conditions relating to point source emissions to groundwater, no such conditions have been added to the reissued licence.	General provisions of the <i>Environmental Protection Act 1986</i>
Emissions to land including monitoring	L2.5	N/A	Emissions to land have not been reassessed as part of the licence reissue. As the previous licence contained no conditions relating to emissions to land, no such conditions have been added to this reissued licence.	General provisions of the <i>Environmental Protection Act 1986</i>
Fugitive emissions	L2.6.1	NSC	Emissions for general dust and metal concentrates dust (except zinc) have not been reassessed as part of this licence reissue. DER's assessment and decision making in relation to fugitive emissions of zinc is outlined in Appendix A.	General provisions of the <i>Environmental Protection Act 1986</i>



DECISION TABLE

Works Approval / Licence section	Condition number W = Works Approval L = Licence	OSC or NSC	Justification (including risk description & decision methodology where relevant)	Reference documents
			<p>NSC 2.6.1 replaces condition 9 in the previous licence and requires the proponent to undertake reasonable and practicable measures to prevent dust from crossing the premises boundary.</p> <p>This condition excludes dust from metal concentrates loading/handling as the parliamentary 'Inquiry into the cause and extent of lead pollution in the Esperance area' identified that DER should not be regulating hazardous dust (i.e. metals) emissions from ports through general dust management conditions.</p>	
Odour	L2.7.1	OSC	<p>Sources of odours onsite include nickel concentrates and metal concentrates containing xanthates.</p> <p>Odour has not been reassessed as part of the licence reissue.</p> <p>OSC 2.7.1 replaces condition 2 in the previous licence which prohibits odours generated onsite from impacting the health or amenity of receptors offsite.</p>	General provisions of the <i>Environmental Protection Act 1986</i>
Noise	L2.8	N/A	Noise emissions have not been reassessed as part of the licence reissue. As the previous licence contained no conditions relating to noise, no such conditions have been added to this reissued licence.	<i>Environmental Protection (Noise) Regulations 1997</i>
Monitoring general	L3.1.1 – L3.1.4	OSC	<p>OSC 3.1.1 has been added to the licence to require testing to be performed by a NATA accredited laboratory.</p> <p>OSC 3.1.2 has been added to the licence to specify timeframes for monitoring.</p> <p>OSC 3.1.3 and 3.1.4 have been added to ensure monitoring equipment is correctly calibrated and to outline measures to be taken where calibration cannot be undertaken.</p>	
Monitoring of inputs and outputs	L3.6	N/A	There are no specified conditions relating to the monitoring of inputs and outputs required to be added to this licence.	General provisions of the <i>Environmental Protection Act 1986</i> .
Process	L3.7	N/A	There are no specified conditions relating to process monitoring required to be	N/A



DECISION TABLE

Works Approval / Licence section	Condition number W = Works Approval L= Licence	OSC or NSC	Justification (including risk description & decision methodology where relevant)	Reference documents
monitoring			added to this licence.	
Ambient quality monitoring	L3.8.1 L3.8.2 - L3.8.3	OSC NSC	<p>Requirements for ambient monitoring have not been reassessed as part of this licence reissue with the exception of zinc ambient air quality monitoring which is covered under 'fugitive emissions' above and Appendix A to this document.</p> <p>Condition 3.8.1 outlines ambient quality monitoring requirements for air and sediment and replaces conditions 5(a), 5(b), 7 and 13(a) in the previous licence.</p> <p>The sixteen sediment monitoring sites nominated in the previous licence have been carried over to the reissued licence in condition 3.8.1 however some of the site designations have been updated in accordance with current MWPA protocol. NSC 3.2.1 and 3.8.3 related to sediment monitoring reporting requirements replace conditions 15(a) and 15 (b) in the previous licence.</p> <p>DER has identified that the sediment monitoring conditions, methodology and trigger values are in need of review. This will be conducted in consultation with the MWPA and their marine consultant with any changes captured via licence amendment.</p>	
Meteorological monitoring	L3.9	N/A	<p>Requirements for meteorological monitoring have not been reassessed as part of this licence reissue. As the previous licence did not contain specified conditions relating to meteorological monitoring, no such conditions have been added to the required to be added to this licence.</p> <p>Meteorological monitoring requirements have not historically been included on the licence as the location of the monitoring station in the vicinity of product loading (Transfer Tower 501) was not able to be installed in accordance with Australian Standards due to the amount of infrastructure in the area. MWPA currently do not have a procedure for meteorological monitoring.</p>	N/A
Improvements	L4	N/A	Requirements for improvement conditions have not been reassessed as part of this licence reissue. There are no specified conditions relating to improvements required to be added to the licence.	N/A



DECISION TABLE

Works Approval / Licence section	Condition number W = Works Approval L = Licence	OSC or NSC	Justification (including risk description & decision methodology where relevant)	Reference documents
Information	L5.2.2	OSC	<p>Condition 16 of the previous licence required submission of a monthly air quality report related to metal concentrates loading. The need for monthly reporting has diminished since the amendment of the lead limit to 0.5 µg/m³ (as 3 month rolling average) in 2013 as recommended by the Department of Health (DoH). Lead levels have been consistently under 0.03 µg/m³ since this time.</p> <p>Condition 16 has been replaced in the reissued licence by OSC 5.2.3 which requires quarterly reporting of the three-month rolling average for lead and notification of metal concentrate target exceedances including associated air quality, meteorological and shiploading data. OSC 5.3.1 also requires the notification of any breach of licence limits by 5pm on the next working day.</p>	N/A
Licence Duration	N/A	N/A	The licence is proposed to be issued for a period of five years in accordance with standard DER procedure. There are no factors that warrant the limiting of the licence duration.	N/A



5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
02/03/2015	Application advertised in <i>West Australian</i> newspaper	None	N/A
06/03/2015	Proponent sent a copy of draft instrument	Minor corrections relating to infrastructure and operational descriptions in decision document	Decision document updated accordingly



6 Risk Assessment

Note: This matrix is taken from the DER Corporate Policy Statement No. 07 - Operational Risk Management

Table 1: Emissions Risk Matrix

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Severe
Almost Certain	Moderate	High	High	Extreme	Extreme
Likely	Moderate	Moderate	High	High	Extreme
Possible	Low	Moderate	Moderate	High	Extreme
Unlikely	Low	Moderate	Moderate	Moderate	High
Rare	Low	Low	Moderate	Moderate	High



Appendix A

Fugitive emissions

MWPA export a number of concentrates which contain a zinc fraction, including zinc concentrate. MWPA have been monitoring ambient zinc at the premises boundary since September 2010 against a Licence target of 50.0 µg/m³ as PM₁₀ which was provided to DER by the Department of Health (DoH). Over 2800 zinc samples have been analysed in that time with a maximum recorded concentration of 8.2 µg/m³ which was recorded prior to the introduction of improved metal concentrates loading and monitoring practices in April 2011. In the last 12-months, the maximum zinc concentration recorded was 1.7 µg/m³. Average monthly zinc concentrations have been below 0.3 µg/m³ since April 2011. On 2 April 2013 DoH advised DER that they supported the removal of zinc ambient air quality monitoring from the Geraldton Port licence.

Zinc concentrate shiploading/handling is subject to the same monitoring requirements and management controls as all other metal concentrates as it potentially contains lead, copper and other hazardous fractions.

Operation

Emission Description

Emission: Fugitive emissions of zinc dust from metal concentrates loading/handling.

Impact: Contamination of surrounding land and marine environment. Limited impacts expected as zinc is relatively low toxicity and monitoring has shown that zinc dust levels from the port are significantly under the recommended target.

Controls: Most product transported in kibbles and in-shed unloading within dedicated storage sheds with a number of pollution control features. Remainder is loaded via 'best-practice' Rotainer system. Product conditioning to 8-9% moisture to limit dust generation. Controls during product loading including dust extraction at transfer points, foam applied to conveyors, maximum product loading rates, wind speed/direction loading protocols and continuous vacuum sweeping of berth and vessel deck during loading.

Risk Assessment

Consequence: Minor

Likelihood: Rare

Risk Rating: Low

Regulatory Controls

Condition 7 of the previous licence required the monitoring and analysis of zinc dust during shiploading events. Zinc dust emissions from the port have been assessed as low risk to and the zinc monitoring requirement has been removed as part of this licence reissue as agreed to by DoH. Zinc concentrate shiploading/handling events are still subject to the same monitoring and management requirements under the licence as for all other metal concentrates including continuous monitoring for lead, copper and general dust.

Residual Risk

Consequence: Minor

Likelihood: Rare

Risk Rating: Low



Appendix B

GERALDTON PORT OVERVIEW

The Geraldton Port consists of a shipping channel, an inner harbour, a fishing boat harbour, a small work boat base and related storage facilities, infrastructure and industries.

Activities at the Geraldton Port include:

- Transfer of product to the port by truck and rail
- Bulk loading/unloading
- Product storage
- Boat building/maintenance
- Local fishing industry base (wet line, rock lobster, prawn and scallop vessels)
- Seafood processing
- Miscellaneous businesses such as seafood and marine equipment retailers
- Mooring pens for commercial craft

This licence regulates activities associated with the loading/unloading and storage of bulk granular material. Other prescribed activities occurring at the port such as boat building and seafood processing are regulated through separate DER instruments held by the occupiers of these premises.

The Geraldton Port Authority inner harbour currently has 7 berths with normal use as follows:

- Berth 1: Maintenance, occasional Rotainer metal concentrates loading
- Berth 2: Misc. use, bunkers, inloading of fertiliser and mineral sands concentrates, occasional Rotainer metal concentrates loading
- Berth 3: Grain
- Berth 4: Metal concentrates, mineral sands, talc
- Berth 5: Iron ore
- Berth 6: Miscellaneous cargo, fuel, fertiliser, Rotainer metal concentrates loading
- Berth 7: Iron ore

Product is transported from the bulk storage facilities at the southern end of the Port via a network of conveyors and transfer towers. Transfer towers enclose the points of directional change of product (from one conveyor to another), which are the most significant sources of dust generation in the transport network. They also typically house pollution control equipment such as dust extraction and suppression systems, belt scrapers and the like. The common use transport and shiploader infrastructure is operated by a third party stevedore. The Berth 7 iron ore facility is operated by Karara Mining Limited.

The layout of the berths at Geraldton Port as shown in figure 1 below:



Figure 1: Geraldton Port Layout



Metal Ore Concentrates (Berths 4 and 6)

Concentrates are conglomerates of minerals and are typically identified by their main metal component. Lead, zinc, copper and nickel concentrates are currently exported through the Geraldton Port. In addition to the main metal component, these concentrates may contain lead, copper, zinc, iron, arsenic, sulphur and silica in varying proportions. The metal ore concentrates present the largest risk of all prescribed materials handled by MWPA in terms of human health and environmental impacts. Metal concentrate products handled by MWPA are typically low-bioavailability sulphides which present a lower risk to human health and the environment than other forms.

Up to approximately 550,000 tpa of concentrates have historically been exported through the Geraldton Port. The bulk of these (all lead and most copper and zinc concentrates) are exported via Berth 4 by MMG.

Other metal concentrate exports (copper and zinc and a small number of nickel loads) are conducted at Berth 6 using a 'Rotainer' loading system (Qube Rotabox), which involves the tipping of loaded containers via crane directly into the vessel's hold and represents current best practice in small-volume bulk loading.

Much of the Berth 4 infrastructure and transport network was constructed in the 1960s and has been significantly upgraded over the years. The Berth 4 shiploader conveyor, CV4, is only partially enclosed and has been the subject of unsuccessful attempts to progress to full cover. Engineering



reports have indicated that the berth itself is not able to support significant additional weight on the shiploader which along with wind loading concerns has limited available options for Berth 4 upgrades.

Nonetheless, a large number of smaller infrastructure upgrades to the concentrates circuit and significant improvements in housekeeping and product handling/loading have resulted in satisfactory performance from Berth 4 loading in recent years.

In June 2007, DER conducted an assessment of the concentrate handling practices at the Geraldton Port and determined that whilst metal contamination outside of the premises boundary was not detected in significant levels, the infrastructure and handling practices for concentrates (lead in particular) was substandard. Since that time, MWPA have introduced a number of improvements to the mineral concentrate conveyor network and in mineral concentrate handling, loading and storage practices.

Improvements were validated in early 2011 when an interagency investigation lead by DoH identified that onsite contamination impacts from metal concentrates had reduced since 2007 and that again, no significant offsite contamination was discovered.

Metal concentrate storage

There are two metal concentrates storage sheds onsite, however only one is currently in use. Only one company (MMG) currently stores its metal concentrates (copper, lead and zinc) onsite. Metal concentrate storage incorporates a number of controls to minimise potential emissions such as:

- Door interlock systems to prevent simultaneous opening of both doors (which may cause a wind tunnel effect within the shed)
- Sheds operate under negative pressure
- Automated tripper systems
- Internal fogging systems
- Product delivered on a campaign basis with relatively high moisture content of 7-9% (moisture content is retained – only very short term storage)
- Active (baghouse/wet scrubber) dust extraction systems
- Ore trucked from the mine in kibbles (enclosed storage vessel). Kibbles are moved to the appropriate storage location within the shed (as opposed to bulk dumping on the floor) thereby minimising handling and tracking out of material
- Wheel cleaners are utilised on trucks prior to exiting the sheds
- Motorised floor sweeper based permanently within the sheds

There is no storage of Rotainer-loaded product onsite. Concentrates are loaded into the Rotainers at the minesite and delivered to the port on a campaign basis.

Mineral Sands (Berth 4)

Mineral sands are currently exported through Berth 4 by Iluka Resources Ltd and GMA Garnet Ltd. Iluka products historically handled are zircon sands, synthetic rutile, synthetic rutile enhanced product, ilmenite and rutile. Since 2010, Iluka imports a Heavy Mineral Sands Concentrate (HMC) from its Jacinth-Ambrosia project in Eucla, South Australia for processing at its Narngulu facility. GMA Garnet export garnet sands and ilmenite.

In June 2008 MWPA commissioned a Cleveland Cascade Chute for the loading of Mineral Sands. This chute comprises a series of cascading buckets which deliver product into the ship's hold at low exit velocity. The chute was installed to help combat dust issues from the loading of synthetic rutile products, which are typically of small particle size, dark in colour and loaded with a very low moisture content. To date, the operation of the chute has been very effective in controlling dust emissions. All of the mineral sands currently handled by MWPA has been assessed as posing a low risk to health and the environment



Mineral sands storage

GMA Garnet operates a single segregated shed for storage of their products. DER has not identified any issues with the storage of GMA Garnet product.

Iluka stores its various products in a number of sheds in the bulk storage area. The Iluka storage sheds have been recently upgraded.

Iron Ore (Berths 5 and 7)

Iron ore (hematite and magnetite) is currently unloaded via rail or truck, stored in dedicated sheds and loaded at Berths 5 and 7. The iron ore truck and rail unloaders are equipped with dust extraction systems. The Berth 5 shiploader and conveyor system was constructed under works approval W4183 and was commissioned in January 2008. Berth 5 currently exports principally hematite iron ore.

Karara Mining Limited operates Berth 7 for the export of hematite and magnetite iron ore. The Karara storage shed and shiploader were constructed under works approval W4461 and commissioned in late 2012.

Iron ore dust has historically been a source of community concern, particularly in relation to nuisance impacts on the adjacent fishing boat harbour. However, with improvements to infrastructure and environmental management, there have been no complaints received by DER on this issue for a number of years.

Iron ore storage

There are currently five dedicated storage sheds for iron ore in use at the Port. Three are located in the 'Bulk Handling Facility' area and two in the area behind Berths 5 and 6.

Iron ore storage facilities outload via front end loaders and internal hoppers and are directly connected to shiploading conveyors. The existing sheds share a number of features to help minimise the release of dust from product handling activities, such as:

- Sealed construction
- Active internal dust collection/extraction through wet scrubbers or baghouses
- Active dust suppression at key external transfer points
- Negative pressure environment during operation

Berth 5 shiploader

The Berth 5 shiploader is mostly enclosed with openings in the gallery to facilitate movement of the shiploader along the berth and at the chute and incorporates dust extraction and suppression throughout. This includes

- enclosure of critical dust generating points
- baghouse dust extraction at transfer points
- conveyor misting sprays
- conveyor scrapers and brushes
- a shiploader chute fogger

Berth 7 shiploader

Karara operate the Berth 7 bulk storage facility and shiploader is mostly enclosed with openings in the gallery to facilitate movement of the shiploader along the berth and at the chute and incorporates dust extraction and suppression throughout. This includes

- enclosure of critical dust generating points
- baghouse dust extraction at transfer points
- conveyor misting sprays
- conveyor scrapers and brushes
- a shiploader chute fogger
- real-time infrared ore moisture content sensors



Talc (Berth 6)

Talc (along with other general products) is exported from Berth 4. Talc is stored in open lump stockpiles (with minimal fines content) near the mineral sands concentrates storage sheds. Dust generation is minimised through general housekeeping and wetting of the ore prior to handling.

Wastewater infrastructure

The following outlines the key wastewater infrastructure at the Geraldton Port:

Location	Current Management
Iron ore/mineral sands drainage/washdown sumps	There are four sumps for the washdown of handling equipment and/or runoff associated with minerals sands and iron ore located adjacent to potentially contaminated areas (e.g. truck and train unloaders, transfer towers). Three of these sumps incorporate filtration screens and a weir system and discharge to soak wells. There is one sump (adjacent to transfer tower 2) which incorporates filtration screens and a weir system and disposes of water to the stormwater system.
MMG western washdown bay	The bay located between the MMG Minerals shed and the iron ore storage sheds receives concentrate washdown from the MMG loadout conveyor and associated transfer tower as well as iron ore washdown from loaders. Washdown water is contained within sumps and typically reused within the iron ore sheds for dust suppression. Settled solids are removed from the sump as required, stored in kibbles and returned to the MMG Scuddles and Gossan Hill mine site
Berth 4 washdown bays	<p>There are two washdown bays on Berth 4 for the cleaning of ship loading and other equipment. Currently, contaminated washdown water is directed to Hume Inceptor Pits under Berth 4. This is sufficient to remove sediment from non hazardous cargo loading such as mineral sands and talc.</p> <p>Previous sampling has identified that this system does not effectively remove metal concentrates to a level suitable for marine discharge. The interceptors are therefore sealed and are used as collection sumps during metal concentrates washdown. Contents of the interceptors are pumped into storage tanks with water returned to the minesite or used in dust suppression in the metal concentrates storage sheds.</p>

Stormwater management

The Port’s stormwater system discharges stormwater to the inner harbour via a number of outfalls.

The Port stormwater system collects and directs stormwater runoff from the port precinct and is also connected to municipal systems outside of the port boundaries. Stormwater from residential and industrial areas of the suburbs of Geraldton and Beachlands is discharged to the harbour via the MWPA’s stormwater system. Historical monitoring of stormwater has occasionally shown elevated nutrient and hydrocarbon levels which maybe attributable to activities outside of the port precinct.

MWPA employs the following measures to minimise discharge of product to the environment via the stormwater system:

- MWPA lease contracts require leaseholders to manage stormwater appropriately
- Leaseholders are inspected on a regular basis (up to once per day) for housekeeping and general compliance
- Stormwater runoff from the Iluka lease passes through a triple interceptor trap prior to discharge



- Sweeping of common use areas is contracted to a commercial road sweeper.

MWPA has developed an engineering 'Drainage Master Plan' to assist in the management of any drainage and stormwater issues.

Hydrocarbon storage

MWPA maintains a 2,000 litre diesel storage tank behind the workshop at Berth 1. The tank is situated on hardstand and is located such that any spills are not expected to impact the marine environment.

Contractors also maintain a 2,000 litre diesel tank near the mineral sands storage sheds. The tank is contained within a bunded compound and surrounded by bitumen hardstand. It is located near the southern boundary of the port, quite removed from the harbour.

Air Quality Monitoring

The MWPA maintains four air quality monitoring stations at the premises boundary. The location of the stations was selected with input from DER Air Quality Branch to meet (as far as possible) the requirements of AS/NZS 3580.1.1: 2007 *Methods for sampling and analysis of ambient air – Part 1.1: Guide to siting air monitoring equipment*. Each monitoring station houses a TEOM, a HiVol with PM₁₀ inlet and a HiVol with TSP inlet.

Continuous (as 10 minute average) TEOM data for dust as PM₁₀ is logged on a central computer and is able to be monitored in real-time by the Port's environmental and operational staff to assist in mitigating and investigating dust issues.

The current configuration of the Air Quality Monitoring Network was reached on 28 March 2012 when the historic Berth 6 Monitoring station was relocated to its current site at Connell Road. The remainder of the Air Quality Monitoring Stations have been in their current locations since August 2011. Prior to 9 May 2011 the Port Way site was referred to as the "BP" site and the Lemmon Road site as "Fishing Boat Harbour" site. The change in naming conventions was implemented to more accurately define the dust monitor locations.

An additional offsite air quality monitoring station was commissioned during January 2013 which comprises a BAM1020 real-time air quality monitor able to collect general, unspesiated dust data. . This site is been located at Bluff Point several kilometres north of the Port and is not subject to licence requirements. This location was selected as modelling identified that it was outside the area of impact from the port's operations and it is used to collect background/regional data. Monitoring results from the offsite station are available to DER on request.

Air quality monitoring at the Port is conducted in accordance with the MWPA Air Quality Sampling and Analysis Plan (current version 5, January 2014). MWPA have advised that the plan will be submitted for independent review shortly.

Sediment Monitoring

Sediment sampling and analysis is conducted at 16 sites in accordance with the MWPA Sediment Sampling and Analysis Plan. The programme was developed by Oceanica marine consultants and covers the main contaminants in products handled at the Port as well as those potentially introduced by other activities onsite.

Historically, elevated levels of metals have been detected to varying degrees in the inner harbour, however these have been attenuating in recent years due to improved loading and handling practices onsite.



In 2014, the MWPA changed the site identification nomenclature for sediment monitoring sites as per table below. These changes have been reflected in the current licence.

Sediment Monitoring Sites

Current Site Identification	Previous Site Identification	Location	Easting (MGA z 50)	Northing (MGA z 50)
ORA1	ORA1	North of outer reclamation area	264610	6815170
ORA2	ORA2	Outside mouth of FBH	264903	6815043
FBH1	OF1	FBH	264642	6814483
FBH2	OF2	FBH	264644	6814650
CH1	B31	Berth 3 Pocket	265465	6814441
CH2	B41	Berth 3 Pocket	265373	6814420
CH3	B42	Berth 4 Pocket	265271	6814425
CH4	B43	Berth 4 Pocket	265133	6814394
CH5	B51	Berth 5 Pocket	265091	6814535
CH6	B61	Berth 5 Pocket	265123	6814630
CH9	MH2	Main Harbour	265374	6814658
CH10	MH3	Main Harbour	265662	6814999
YM1	YM1	Tug Pens	265873	6814503
TB1	TB1	Town Beach	266094	6814790
CS1	CS1	Control Site	266265	6817839
CS2	CS2	Control Site	266163	6817924

Meteorological Monitoring

MWPA maintain two continuous meteorological monitoring stations at the Geraldton Port. Stations are located at Tower 501 (at the western end of Berth 4) and offshore to the north west of Berth 7

Operators monitor real time data during shiploading with regard to the MWPA's internal wind loading parameters for ships loading metal concentrates. These limits take into account the distance of the berth from the port boundary, wind speed and wind direction. These limits are outlined in the following MWPA procedures.

- Procedure 4.4 Loading Metal Concentrates – Berth 4 BHF
- Procedure 4.4D Loading Metal Concentrates via Containers

Meteorological monitoring requirements have not historically been included on the licence as the location of the monitoring station in the vicinity of product loading (Transfer Tower 501) was not able to be installed in accordance with Australian Standards due to the amount of infrastructure in the area. MWPA currently do not have a procedure for meteorological monitoring.

Stormwater Monitoring

MWPA implement a stormwater monitoring programme largely focussed on collection and analysis of 'first flush' stormwater caused by rainfall events following extended dry periods. Due to the difficulties in collecting first flush stormwater, the significant rainfalls required to cause flow in the stormwater system and difficulties in interpreting sampling results, stormwater and surface water monitoring requirements were removed from the licence in 2009 in favour of a comprehensive sediment monitoring programme which includes sampling locations designed to capture stormwater outfalls.