

# LOADING PACKAGED BULK MINERALS PROCEDURE

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## 1 Purpose and Scope

This Procedure outlines the operational requirements for loading of packaged bulk minerals including copper, zinc, lead, nickel, iron concentrate and mineral sands. This operation can only be performed by a licenced Stevedore approved by Mid West Ports Authority (**MWPA**) and in accordance with best practice loading techniques as prescribed in MWPA Environmental Licence (L4275/1982/15), issued by the Department of Water and Environmental Regulation (**DWER**).

## 2 Pre-shipment Storage

Pre-filled containers / boxes (such as Rotainer or Rotaboxes) or bagged bulk minerals may be stored on Port land under a formal lease or licence agreement with MWPA or delivered to the vessel directly from third party storage outside the Port. During storage, no loading or unloading of boxes or bagged bulk minerals is permitted on Port land and the packages should remain sealed at all times. However, boxes may be opened temporarily for the purposes of product sampling or moisture determination using an auto-sampler approved by MWPA.

## 3 Transport to Port

Prior to the commencement of a shiploading operation with boxes, a Traffic Management Plan shall be submitted to MWPA for approval in accordance with Traffic Management Procedure – Geraldton Port and the associated Application for Traffic Management Permit. The traffic management documents are available from the MWPA website.

## 4 Shiploading Method

Berth 6 is the only berth currently approved for Stevedore shore-based crane(s) due to structural limitations of other berths. The crane and outriggers must be deployed in accordance with MWPA requirements. Refer to Wharf Specification Booklet.

### 4.1 ROTAINER BOXES

Product-filled specialised boxes are transported to the Port on the back of trucks. The boxes are then unloaded from the trucks and transferred into a position to be lowered into the hold of the vessel. Once partially lowered into the hold of the vessel by either a ship or shore-based crane, the lid is lifted by a specialised attachment and the box is rotated through 180 degrees to release the bulk product into the hold to form the cargo<sup>1</sup>. The crane driver is to ensure that the lifting of the lid and the rotation of the box takes place at the lowest practical point to the cargo stow to minimise particle emissions (see Section 6 Dust Management). The lid is then replaced and lifted back to the berth deck where any visible excess product is cleaned off the extremities of the box. The excess product is retained in a storage receptacle. The box is then relocated by forklift onto the back of a waiting truck for removal off the Port site. Refer to **Figure 1** below.

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<sup>1</sup> The design of certain boxes require the lid to be lifted on the berth prior to entering the vessel hold. Boxes with this design should only be used for zinc concentrate products. These boxes will be phased out in 2025.

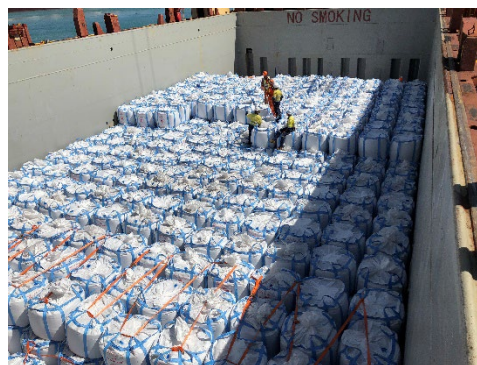


**Figure 1 – Responsible Stevedore Boxes**

Boxes suspended by a crane pose a risk to operational Workers on both the vessel and the berth. During box transfer operations, cargo-loading Workers must adhere to responsible Stevedore's Safe Work Method Statement for Box Operations (**SWMS**). This SWMS identifies the need to remain at a safe distance from the drop zone of an elevated container. Only when the container is at a safe height as indicated by the SWMS are Workers able to approach. Similarly, Stevedores or the ship's crew should not enter the ship's hold during the operation.

## 4.2 BAGGED BULK MINERALS

Sealed bagged bulk minerals are transported to the Port via trucks on the days of shipping. The truck is directed to position alongside the truck stand located on berth. Once the truck is in position, the crane operator lowers the spreader bar, and a team of Stevedores secure the bags to the spreader bar via lifting hooks. Once the bags are secured and Workers are outside the loading zone, a licenced rigger (who is located on the berth) directs the crane operator to lift the bags and move them over the ship's hold.



**Figure 2 – Bagged Bulk Mineral Loading**

A second licenced rigger (who is located in the ship's hold) directs the crane operator on the placement location of the bags within the hold. Once the bags are positioned in place, a team of Stevedores inside the hold removes the hooks. When the hooks have been removed and Workers are clear, the crane operator is directed by the licenced rigger to move the spreader bar out of the ship hold. This process is then repeated until loading is complete.

## 5 Communication and Information

The responsible Stevedore must ensure shift pre-start and hand-over meetings are held with their Workers. Safe work procedures and/or a job safety analysis / risk assessment developed by the Stevedore must be in place.

A pre-start meeting must be held with relevant stakeholders prior to loading commencing. It is the Shipper's responsibility to schedule these meetings and record minutes. If assistance is required from MWPA, the Wharf Supervisor is the MWPA contact during the loading process – Ph 0437 413 734.

A berth handover is to be conducted between the Wharf Supervisor and the berth operator representative before loading or unloading has commenced. The Berth Operator Handover Checklist is to be signed by both parties. The Berth Operator Handover Checklist is to be finalised on completion of loading or unloading activities.

Access to the berth during loading is to be limited to operational Workers only unless prior arrangements have been agreed upon. Signage must be deployed at all entrance points to the berth advising '**Hazardous Cargo Loading**' or similar, as well as details of any mandatory PPE. For products where an approved radiation management plan is in place, appropriate signage advising of radiological hazards must be in place at all entrance points to the berth. It is the operator's responsibility to ensure that no unauthorised Workers enter the area and that all Workers in the area are adhering to the PPE requirements.

All Workers on site must have completed the MWPA HSEQ and Contractor's inductions available on the MWPA website. Stevedoring services can only be undertaken by operators who have an approved MWPA Stevedore Licence.

All Workers involved in the operation must hold a Maritime Security Identification Card (**MSIC**) or have been sanctioned to be on site with an appropriate visitor's pass and comply with MWPA Geraldton Port Security Zone Access Procedure.

Any incidents occurring during operations on Berth 6 need to be reported promptly to MWPA and other regulatory authorities as required under relevant legislation.

## 6 Dust Management

Any product spillage on the berth must be contained and removed as soon as reasonably practicable via a method that minimises the risk of airborne dust generation (road sweeper with vacuum; or vacuum truck). Berth hygiene reduces the risk of fugitive emissions or contamination within the transport network. Trucks and boxes must be monitored to ensure any material on the external surface is contained and removed prior to transport. If required, the deck of the vessel must be cleaned by vacuum before the ship leaves the berth. Care must be taken when transferring material collected, utilising a method that minimises the risk of airborne dust generation. The removal and safe disposal of all products captured during berth hygiene operations (liquid and solid form) is the responsibility of the product owner.

When loading Metal Concentrates, a wet sweep of the berth is to occur on completion of loading.

Tipping of boxes in the ship's hold is to occur below deck level and no more than approximately two metres above the product stockpile.

A vessel hold dust suppression system, using dry fog, must be in place and utilised whilst loading high risk products including nickel, lead, and iron concentrate. Vessel hold fogging systems shall be operated continually to ensure a blanket of fog is sufficiently generated to prevent dust emissions escaping the hold. MWPA reserves the right to review this requirement in relation to acceptable air quality emissions from future data acquired.

MWPA has a responsibility to inspect operations to confirm all controls are in place to manage risk. MWPA reserves the right to safely pause loading of any product at any time to manage fugitive dust emissions within the Port and its surrounds.

## 6.1 DUST EXTINCTION MOISTURE (DEM)

Product is to be maintained in optimal condition (that is, minimal dust generated from product). The Environmental Licence requires all products to be adequately moisture conditioned by the product owner, such that the moisture content is at or greater than dust extinction moisture (**DEM**). Any product below DEM must not be loaded unless prior approval provided by MWPA. Where adequate moisture conditioning cannot be achieved, additional measures must be put in place to prevent excessive dust emissions during loading.

The Environmental Licence stipulates specific moisture content levels for iron concentrate and mineral sands concentrate:

- Iron concentrate must contain a product moisture content between 12% and 17% w/w, as averaged over each shipment.
- Mineral sand concentrate must contain a product moisture content between 4% and 8.5% w/w, as averaged over each shipment.

Prior to shiploading, moisture data and/or a moisture certificate must be provided to MWPA as a part of the pre-shipment form.

Product owners must submit a revised DEM analysis to MWPA annually.

## 7 Air Quality Monitoring

The Environmental Licence sets ambient air quality and metal concentration targets at the premises boundary. MWPA undertakes air quality monitoring during all concentrate shiploading activities at its air quality monitoring stations, shown on Attachment A. Refer to the **MWPA Air Quality Monitoring Sampling and Analysis Plan** for detailed information about air quality monitoring.

Table 1 lists the Environmental Licence air quality emission targets. Every endeavour is to be made to ensure that targets are not exceeded. In the event that a licence target is exceeded, MWPA has a responsibility to report the exceedance to DWER. MWPA will also notify the Stevedore and product owner.

An investigation into the cause of the exceedance is to be completed as soon as practical and corrective actions implemented to prevent reoccurrence. It is the responsibility of the product owner to coordinate the investigation in collaboration with MWPA and Stevedores.

Monitoring periods are for a 24 hour period from noon to noon. All monitoring results are summarised in quarterly Air Quality Monitoring reports which are reported to DWER and made publicly available via the MWPA website. Results for individual shipments can be made available to Stevedores and product owners upon request.

**Table 1 – Licence Air Quality Emission Targets**

| Parameter                        | Target                | Averaging Period   |
|----------------------------------|-----------------------|--------------------|
| Particulates as PM <sub>10</sub> | 50 µg/m <sup>3</sup>  | 10 minutes or less |
|                                  |                       | 24 hours           |
| Lead as PM <sub>10</sub>         | 0.5 µg/m <sup>3</sup> | 24 hours           |



| Parameter                     | Target                                   | Averaging Period       |
|-------------------------------|--|------------------------|
|                               | 2.0 µg/m <sup>3</sup> (CR <sup>1</sup> ) |                        |
| Copper as PM <sub>10</sub>    | 1.0 µg/m <sup>3</sup>                    | 24 hours               |
| Nickel as PM <sub>10</sub>    | 0.02 µg/m <sup>3</sup>                   | Annual Rolling Average |
| Manganese as PM <sub>10</sub> | 0.15 µg/m <sup>3</sup>                   | 24 hours               |

<sup>1</sup> Connell Road air quality monitoring station

## 8 Wind Limits

Specific licence conditions in relation to wind limits apply for loading of iron concentrate. No wind limits apply to loading of zinc, lead, nickel and copper. Dispersion modelling completed in 2023/2024, along with historic air quality monitoring data recorded during loading, demonstrate the risk of environmental licence targets being exceeded for zinc, lead, nickel and copper is low.

Iron concentrate loading must comply with wind limits as prescribed in the Environmental Licence –

- No loading can occur when wind conditions are 5m/s or higher (9.7 knots), and wind direction is westerly (between 225 and 337 degrees).
- Loading to only occur between 1 November to 1 May.

These wind limits are displayed graphically in Attachment B.

It is the responsibility of the Stevedore to ensure wind restrictions are followed at all times. MWPA may direct Stevedores to cease operations if the operating conditions exceed wind limits. Records of wind conditions and any actions taken to manage operations in accordance with wind limits are to be retained (such as daily logbooks). Live environmental conditions and decision indicator for the various products by berth, can be accessed on the MWPA website to assist in the decision-making process. Wind loading conditions on the MWPA website are based on the Port's Seaview weather monitoring system and calculated on a 10 minute average.

<https://www.midwestports.com.au/operations/berth-loading-rates/signals.aspx>

It is the Stevedore's responsibility to understand the Environmental Licence conditions and apply the appropriate mitigation measures identified in this document.

### 8.1 REVIEW OF WIND LIMITS

In considering wind limits, the following key risk factors must be considered at all times.

- Proximity of berth to boundary, air quality monitor and sensitive receptors.
- The composition of the metal concentrate product.

MWPA may review wind limits as based on updated modelling outcomes or at the request of parties involved, in accordance with the following principles.

- Wind limits will not be relaxed if dust concentrations exceed 80% of the licence emission target for lead, copper, nickel or manganese at any station during a 24-hour period.
- MWPA will utilise all air quality monitoring results from previous shipments, dispersion modelling, moisture data and detailed vessel loading records in the assessment of wind limits.

- If at any point in time a licence target is exceeded, these principles will be reviewed considering the incident investigation and outcomes.
- Any new metal concentrate products will be considered separately.
- These principles serve as a guide and do not guarantee that wind limits will be relaxed.

## 9 Odour

Some sulphide concentrates may have an associated odour. The Environmental Licence prohibits the emission of odours that unreasonably interfere with offsite persons.

Should odour be identified as a potential concern during a shiploading event, MWPA is to be promptly notified to enable observations to be made and action taken for future shipments so as to avoid a potential breach of the Environmental Licence. Additional monitoring may be required by the product owner and/or Stevedore during loading if odour generation is identified as a risk for a specific product.

## 10 Radiation Management

An approved radiation management plan [approved under regulation 641N(2)] must be provided to MWPA by the product owner prior to commencing storage or handling of any product found to contain radionuclide concentrations greater than 1 Bq/g in accordance with the *Work Health and Safety (Mines) Regulations 2022*. Transportation and export of products containing elevated concentrations of radiological elements is overseen by the product owner's Radiation Safety Officer (**RSO**) and carried out in accordance with the approved Radiation Management Plan (**RMP**).

The product owner is responsible for ensuring radiation awareness training is provided to all relevant individuals involved in export activities for the specific product, prior to commencing shipments.

Occupational and environment radiation monitoring programs are to be carried out in accordance with the requirements of the approved RMP. This may include requirements for Workers involved in the export activities to wear personal monitoring devices (for example, electronic gamma monitoring). The product owner's RSO is ultimately responsible for ensuring management controls and monitoring programs are completed in accordance with the product specific RMP. Within MWPA, trained Workers are available from the HSE team to provide general radiation advice or provide technical support for incident response.

Regular communications will be provided to MWPA Workers by the product owner in relation to radiation monitoring surveys and any changes to radiation management which is applicable to the exporting of the specific product through Geraldton Port.

## 11 Hazardous Substances – Training and Information

Shippers must provide MWPA with a copy of the current Product Safety Data Sheets (**SDS**) prior to shipping or upon request by MWPA.

Workers involved in the operation must have access to the relevant Product Safety Data Sheet (**SDS**) and be provided with training to ensure risks to health are understood and managed for each product handled. Copies of the Product Safety Data Sheet are available from [Chemalert](#). Where specific training is required, this training will be completed prior to commencement of shipping.

## 12 Occupational Exposure Limit

Atmospheric contaminants must be maintained below the exposure limit set by Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC: 3008(1995)].

For products containing elevated concentrations of radiological elements, atmospheric contaminants must be monitored for occupational exposure to Naturally Occurring Radioactive Material (**NORM**) and comply with the approved product specific RMP.

Occupational health monitoring for operators working on Berth 6 are the responsibility of the Stevedore or product owner in accordance with r.50 of the *Work Health and Safety (Mines) Regulations 2022*. Any exceedances of occupational exposure limits are to be reported to MWPA.

Berth Operators need to conduct their own biological monitoring if an assessment of risk demonstrates it is required. Berth Operators will need to plan for their own respiratory fit testing to ensure that respiratory protective equipment is effective.

## 13 Personal Protective Equipment

Personal Protective Equipment (**PPE**) must be worn in accordance with the relevant SDS. Boots and clothing must be checked for any contamination before entering any amenities buildings to avoid contaminating eating areas.

## 14 Mechanical Trimming of Vessels

As far as possible, the need to trim vessels should be avoided. This avoids creating contamination risks and washdown issues associated with cleaning down of plant and equipment used for trimming activities in the hold.

Refer to **Metal Concentrates – Mechanical Trimming of Vessel Procedure** for more detailed information.

## 15 Waste Materials

Designated bins which are light blue in colour (as per the MWPA **Waste Management Procedure**) will be provided by MWPA for the disposal of PPE used during loading. Coveralls, dust masks, gloves and other disposable items which become contaminated must be placed in the designated bin. Bins must be located in a position so as to avoid concentrates (when removing PPE) from being tracked beyond the control area. Other general waste streams must not be disposed of in the light blue bins.

Any waste material or items contaminated with product must be returned to the product owner. This includes any spilt product on Port land, and any product entrained in wastewater generated from wet sweeping after shiploading. This material is considered a 'controlled waste' under the *Environmental Protection (Controlled Waste) Regulations 2004* and accordingly if transported off site, must be transported by a licensed carrier (a controlled waste receipt must be obtained from the licensed carrier). Material must be disposed of as described in the MWPA Waste Management Procedure.



## 16 Attachments

| Document | Title                         |
|----------|-------------------------------|
| A        | MWPA Dust Monitoring Stations |
| B        | MWPA Wind Loading Limits      |

## 17 Associated Documents

| Document Title   |
|--|
| Air Quality Monitoring Sample and Analysis Plan              |
| Application for Traffic Management Permit                    |
| Geraldton Port Security Access Zone Procedure                |
| Metal Concentrates – Mechanical Trimming of Vessel Procedure |
| Safe Work Method Statement for Rotainer / Rotabox Operations |
| Traffic Management Procedure – Geraldton Port                |
| Waste Management Procedure                                   |
| Wharf Specification Booklet                                  |

Location – Mid West Ports Intranet – [Document Centre](#)

## 18 References

| Authority  | Title   |
|--|---|
| National Occupational Health & Safety Commission | [NOHSC:3008(1995)] Exposure Standards for Atmospheric Contaminants in the Occupational Environment                                  |
| Department of Water and Environmental Regulation | Licence Number: L4275/1982/15<br>Expiry date: 11 March 2035<br><a href="#">DWER Mid West Port Authority - Environmental Licence</a> |

Location – SAI Global – <https://www.saiglobal.com/online/>

| Act or Regulation  |
|--|
| <i>Environmental Protection (Controlled Waste) Regulations 2004</i>        |
| <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i> |
| <i>Environmental Protection Act 1986</i>                                   |
| <i>Environmental Protection Regulations 1987</i>                           |
| <i>Work Health and Safety (Mines) Regulations 2022</i>                     |

Location: Western Australian – <https://www.legislation.wa.gov.au/> Australian – <https://www.legislation.gov.au/>

## 19 Monitoring, Evaluation and Review

This document is required to be reviewed every **two years** from the last scheduled review date.

Minor updates made within this two year period, will not be taken as a *full review*.

The Document Custodian is responsible for conducting the review in accordance with **Controlled Documents Review and Approval Process Work Instruction**.

## 20 Administration

|                         |                    |
|-------------------------|--------------------|
| Document Custodian:     | Operations Manager |
| Document Approver:      | Operations Manager |
| Approval Date:          | 18 December 2024   |
| Document Review Period: | 2 yrs              |

## Attachment A – MWPA Dust Monitoring Stations



## Attachment B – MWPA Wind Loading Limits – Iron Concentrate

