Esperance Port Authority

Lead Removal Plan

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Abbreviations

ADGC – Australian Dangerous Goods Code

AS – Australian Standard

AS/NZS – Australian and New Zealand Standard

cu.m – Cubic Metre

CV ## – EsPA Conveyor number ##

DEC – Department of Environment and Conservation

DoCEP – Department of Consumer and Employment Protection

EP Act – Environmental Protection Act

EPN – Environmental Protection Notice

EsPA – Esperance Port Authority

EsPA/MM – Esperance Port Authority and Magellan Metals Pty Ltd

HVAS – High Volume Air Sampling

IMDG Code – International Maritime Dangerous Goods Code

IMO – International Maritime Organisation

GVM – Gross Vehicle Mass

kg - Kilogram

km/h – Kilometres per hour

L - Litre

Magellan – Magellan Metals Pty Ltd

M - Metres

mm – Millimetres

NOHSC – National Occupational Health and Safety Commission

NOx – Nitrogen Oxide

PPE – Personal Protective Equipment

t – Metric Tonne

TEOM – Tapered Element Oscillating Microbalance

TEU – Twenty-Foot Equivalent Unit (1 x 20 foot container)

TMH – Total Materials Handling Pty Ltd

Abbreviations (*Cont'd)*

TSP – Total Suspended Particulates

TWA – Time Weighted Average

UN – United Nations

µg – Micrograms

WA – Western Australia

Executive Summary

This Lead Removal Plan has been prepared to facilitate the amendment of the Section 73A Prevention Notice (DEC No. 4 of 2007) (in accordance with the *Environmental Protection Act 1986* (WA) (EP Act)) placed on the Esperance Port Authority (EsPA) by the Department of Environment and Conservation (DEC) that prevents the export of Magellan lead carbonate concentrate from the Port with a modified s73A notice. Specifically, the EsPA and Magellan Metals Pty Ltd (Magellan) are seeking DEC approval to export 9,000 tonnes of lead carbonate currently stockpiled in the Western Mining Corporation (WMC) shed within the Port of Esperance through the modified s73A notice.

Operations at the Magellan mine started in November 2004. Magellan exported lead carbonate concentrate in bulk from June 2005 until March 2007 through the Esperance Port pursuant to a Lease and Handling Agreement between the parties. Following a meeting of the Esperance Port Authority Board on 12 March 2007, the EsPA elected to stop the movement of lead carbonate concentrate through the Port. On 15 March 2007 DEC issued as s73A notice to prevent further export of lead carbonate from the Esperance Port. Subsequent to this, the Magellan Mine was put on care and maintenance, and currently remains at this status.

Approximately 9,000 tonnes of lead carbonate concentrate remains stockpiled in the old WMC shed at the Port which has been fully enclosed by a new concentrate shed.

The Lead Removal Plan details the joint proposal by the EsPA and Magellan for an environmentally acceptable, prudent and practicable method of exporting the 9,000 tonnes of lead carbonate. Specifically, this proposal has been prepared to provide the DEC information it requires to amend the current Section 73A Prevention Notice (DEC No. 4 of 2007) (in accordance with the *Environmental Protection Act 1986* (WA) (EP Act)) placed on the EsPA with a revised s73A notice allowing export of the stockpiled lead carbonate.

The objectives of this proposal are, therefore, to:

- Export the remaining lead carbonate from the Port of Esperance.
- Undertake all activities in accordance with relevant legislation, regulations, standards. codes of practice and Port procedures.

This Plan has been prepared to enable all stakeholders to assess the proposed method of managing the process, and it is part of the ongoing community information and consultation program on lead issues at Esperance Port.

The Lead Removal Plan provides details of the proposed bagging, containerisation and containerised export through the Port of Esperance of the stockpiled Magellan lead carbonate concentrate, and of the assessment of risks associated with the proposal. The methodologies developed and to be employed to control these risks and, in particular, dust emissions during that process, are described.

A bagging machine and work methods have been developed by Magellan to ensure all lead is fully contained within double lined sealed bags prior to loading into sea containers, and that any dust on the external surfaces of the bags will be vacuumed prior to loading into containers. An effective negative pressure system will be installed to control dust emissions from the process to the surrounding environment, and monitoring will be undertaken to meet all regulatory requirements. These actions will ensure that the project poses no threat to human or environmental health. All work inside the WMC shed will be conducted within the negative pressure atmosphere by employees fully protected with approved personal protective equipment.

Esperance Port Authority employees are experienced in moving containers within the Port premise, and in stevedoring of containers and container vessels.

Both the Esperance Port Authority and Magellan Metals have made extensive commitments in this plan to the safe export of the stockpiled lead carbonate, and to report openly to the community and regulatory authorities on progress and compliance with commitments made in all aspects of the work as it progresses. This plan contains a detailed list of those commitments and, for each proposed component of the proposal, specifically allocates responsibility for compliance with those commitments between the Esperance Port Authority and Magellan.

1. Introduction

This Lead Removal Plan has been prepared to facilitate the replacement of the current Section 73A Prevention Notice (DEC No. 4 of 2007) (in accordance with the *Environmental Protection Act 1986* (WA) (EP Act)) on the Esperance Port Authority (EsPA), preventing the export of Magellan lead carbonate concentrate placed upon the EsPA by the Department of Environment and Conservation (DEC) with a modified s73A notice. Specifically, the EsPA and Magellan Metals Pty Ltd (Magellan) are seeking DEC approval to export the final 9,000 tonnes of lead carbonate currently stockpiled in the Western Mining Corporation (WMC) shed within the Port of Esperance through the modified s73A notice allowing export of the lead carbonate as proposed in this document, and under conditions imposed on the export process by the DEC.

Other aspects of this program are briefly discussed in Sections 1.5 and 1.6 below

1.1 Background

EsPA is a State-owned Corporation of the Western Australian Government, operating under the *Port Authorities Act 1999* to manage the operations of the Port of Esperance.

The Port of Esperance has grown significantly in the last decade, particularly following a $52 million Port upgrade that was completed in February 2002. The Port is now the deepest in southern Australia, capable of handling Cape Class vessels up to 200,000 tonnes and Panamax class vessels.

The Magellan Mine is located near Wiluna, Western Australia (Figure 1). At target production, the Magellan Mine is expected to account for approximately two percent of the world's lead production. The majority of the lead carbonate concentrate is exported to China for the manufacture of car batteries.

Operations at the Magellan mine started in November 2004. Magellan exported lead carbonate concentrate in bulk from June 2005 until March 2007 through the Esperance Port pursuant to a Lease and Handling Agreement between the parties. Following a meeting of the Esperance Port Authority Board on 12 March 2007, the EsPA elected to stop the movement of lead carbonate concentrate through the Port. On 15 March 2007 DEC issued a s73A notice to prevent further export of lead carbonate from the Esperance Port. Subsequent to this, the Magellan Mine was put on care and maintenance, and currently remains at this status.

Approximately 9,000 tonnes of lead carbonate concentrate (hereafter referred to as 'lead carbonate') remains stockpiled in the old WMC shed at the Port which has been fully enclosed by a new shed (see Section 2.3.1)

1.2 Objectives of this Document

The Lead Removal Plan details the joint proposal by the EsPA and Magellan for an environmentally acceptable, prudent and practicable method of exporting the 9,000 tonnes of lead carbonate currently stockpiled at the Port. Specifically, this proposal has been prepared to provide the DEC information it requires to amend the current Section 73A Prevention Notice (DEC No. 4 of 2007) (in accordance with the *Environmental Protection Act 1986* (WA) (EP Act)) placed on the EsPA with a revised s73A notice allowing export of the currently stockpiled lead carbonate.

The Prevention Notice (Appendix 1) stipulates the following:

- To cease the unloading of lead carbonate from rail-cars at the Port.
- To cease the export of lead carbonate from the Port.

The Prevention Notice will remain in place until the DEC is satisfied that:

- Appropriate action has been taken to ensure that pollution is unlikely to arise.
- The operation will not contravene section 50A (causing serious environmental harm) or 50B (causing material environmental harm) of the *Environmental Protection Act 1986*.

The objectives of this proposal are therefore to:

- Export the remaining lead carbonate from the Port of Esperance.
- Undertake all activities in accordance with relevant legislation, regulations, standards, codes of practice and Port procedures.

This Plan has been prepared to enable assessment of the proposed method and management of the proposed export process by all stakeholders. It is part of the ongoing community information and consultation program on lead issues at Esperance Port, as detailed in Section 7.

1.3 Roles and Responsibilities

A detailed description of the proposal to remove the lead carbonate from the Port is provided in Section 2 of this document. A summary of the key components and the associated responsibilities are as follows:

- Bagging and containerising stockpiled lead carbonate – Magellan
- Container handling at the Port of Esperance - EsPA
- Ship loading at the Port of Esperance - EsPA
- Auditing and reporting – EsPA

1.4 Report Structure

The Lead Removal Plan (Part A) is structured as follows:

- Section 1 – Introduction.
- Section 2 – Proposal Description.
- Section 3 – Legislative Requirements.
- Section 4 – Assessment of Emission and Discharge Risks.
- Section 5 – Management of Emissions and Discharges.
- Section 6 – Emergency Response.
- Section 7 – Community Consultation.
- Section 8 – Proponent Commitments.

The appendices that include technical information and relevant procedures are included as attachments (Part B).

1.5 Other DEC Notices on the EsPA

Two Section 65 Environmental Protection Notices (EPN DEC Number 02 and 03 2007) were served on the EsPA in October 2007. EPN 02 specifically addresses the clean-up of lead from the Port, while EPN 03 addresses air monitoring in regards to nickel sulphide concentrate.

The Environmental Protection Notice Number DEC 02 of 2007 applies to the clean up of lead contaminated areas within the Port premises, and requires cleaning to be completed by 31 August 2008 with a final report submitted by 30 September 2008.

These notices are not directly relevant to the removal of the stockpiled lead concentrate; however, the air quality monitoring plan developed through this process will have broad benefits that are applicable to the lead carbonate bagging operation to be conducted by Magellan.

1.6 Removal of the WMC Shed

As part of addressing all lead related issues at the Port of Esperance, the EsPA and Magellan are committed to decontaminating both sheds, and decommissioning and removing the WMC shed safely, expeditiously and to regulatory standards once the stockpiled lead carbonate has been removed. Accordingly a Scope of Works for an experienced contractor to undertake this work once the bulk lead carbonate is removed from the shed has been publicly advertised.

Decommissioning and removal of the old WMC shed premises or the clean-up are not subject to the s73A notice.

2. Proposal Description

2.1 Overview

An overview of the lead carbonate bagging, containerisation and export process is provided in Figure 2 while the layout of the Port is shown in Figure 3. Each step of the process is described in detail below.

2.2 Schedule

A nominal operational timeframe for the removal of stockpiled lead carbonate is shown in Figure 4.

2.3 Bagging and Removal of Stockpiled Lead Carbonate

All stages of this proposal to bag, containerise, load and export the lead carbonate currently stockpiled at in the WMC shed at the Port of Esperance have been designed to ensure that operation and management of each of the activities at each stage are unlikely to cause pollution of material or serious environmental harm, and will provide a safe working environment.

2.3.1 Lead Shed

At the time lead carbonate shipments were suspended from the Esperance Port, a new concentrate storage shed was being built to fully enclose the WMC shed, in which approximately 9000 tonnes of lead carbonate is currently stockpiled. Construction of the new shed has subsequently been completed, completely enclosing the WMC shed (Figure 5). It was originally planned that on completion of the new shed and removal of the lead carbonate stockpile within the old shed, the WMC shed was to be decommissioned and removed from site, but this was not done as export of the lead carbonate was halted.

The two sheds (the old WMC shed and the new concentrate shed – collectively referred to as the 'lead shed' unless otherwise specifically noted) have adequate space to accommodate the necessary equipment and activities required to implement this Lead Removal Plan. The equipment required includes a bag-filling machine and conveyor system as described in 2.3.3.

2.3.2 Bulk Bags

The stockpiled lead carbonate will be packaged in bulk bags that are United Nations (UN) and State Government approved (approval by DoCEP) (Plate 2.1) (Appendix 5 Bulk Bag Specifications and Approval). The approved bulk bags were tested at the Indian Institute of Packaging as per the International Maritime Dangerous Goods (IMDG) Code (see Appendix 3). Special provision B3 of the IMDG Code and the UN packaging guideline requires the bulk bags to be sift-proof and water-resistant. The bulk bags have been manufactured and approved as sift-proof and water-resistant thus preventing the escape of dust particulates and the entry of water.

The bulk bags are manufactured with a sealed inner plastic liner enclosed within a woven plastic flexible outer liner (see Plate 2.1). The plastic liner has an extended throat which is clamped onto the bagging machine chute during bag filling. After the product is packaged within the bulk bags, the open throat of the inner liner is twisted, folded and tied, while the open end of the outer liner is tied with a plastic tie. Each bulk bag will be filled (with up) to a maximum of 2,000 kg of lead carbonate and then sealed and tied off in accordance with the manufacturer's

specifications. All bulk bags are labelled with the appropriate safety information on the outside of the bags, and the label will contain the relevant dangerous goods classification information (see Appendices 4). Filled bulk bags are to be stored in the concentrate shed (Figure 6).

Under this Lead Removal Plan, Magellan will procure all bags and ensure they are fit for the purpose.

2.3.3 Bagging

Bagging machine

The bulk bags will be filled by a bag-filling machine specifically developed by Magellan for its product (Plate 2.2). The machine has been constructed by Total Materials Handling (TMH) Pty Ltd in Western Australia and has been successfully trialled and commissioned at the Magellan Mine. It is a fully self-contained, portable bulk-bag loading system which has an integrative negative pressure dust extraction system, connected to all points where the product is moved by change of direction or by increased velocity, to minimize contamination on the exterior of the bags.

The machine has an inflatable neck seal and a clamp which is placed over the plastic throat of the bag to prevent the escape of fugitive dust as material is loaded from the enclosed conveyor system inside the machine via an enclosed chute into bags. Several regulatory agency inspections have been undertaken on the bagging machine.

The dust collection system that uses Ultra-Web (Registered) Cartridges which are filter engineered for dust collection. The filters have a nanofibre layer which ensure a longer filter life (approximately 12 months while operating 20 hours per day) and an efficiency of 99.9 percent on 0.2-2um dust particles (less than 1 percent of the Magellan lead carbonate is below 0.5um).

Before being moved from the minesite to the Esperance Port for the duration of the lead carbonate bagging operation, the machine will be thoroughly cleaned by vacuuming all dust from internal and external surfaces, and water- washed with a high pressure hose. Documentation and supporting evidence will be supplied to the DEC demonstrating that the machine has been properly cleaned.

Bagging

A skid steer loader will remain inside the old WMC shed at all times to transfer bulk lead carbonate from the stockpile to a hopper, which will feed the material via an enclosed conveyor belt to the chute and the bag attachment on the bag-filling machine (Figure 6). The skid steer loader is diesel powered and has an enclosed, pressurised cab and the operator must wear a P3 dust mask while operating inside the cabin.

Magellan will be responsible for all aspects of the bagging operation

2.3.4 Lead Emissions and Discharges Control

Conditioning of the Lead Carbonate

Before bagging starts and throughout the process, the lead carbonate will be inspected for moisture content and if deemed necessary ‘conditioned’ by addition of misted water to prevent excessive dust generation.

Magellan will continually monitor the lead carbonate for moisture content and evidence of dust and maintain the moisture content to an acceptable level (based on site experience this is estimated to be 5 percent or higher, a target bagging moisture of 7 percent is anticipated). Magellan will provide an instrument to determine moisture content and manage this process.

Magellan will be responsible for conditioning of the lead carbonate stockpiling before and during bagging operations

Dust Extraction System

The lead carbonate contained within the WMC shed is the main potential source of dust generation during bagging operations. To control airborne particulate lead emissions to air during bagging and containerisation, a negative air pressure system will be installed to maintain constant negative pressure inside both the WMC shed and the new shed. Following is a description of the negative pressure system air flow process.

A fan located after the primary dust collector provides air movement in the sheds. The air is drawn from the working environment through the primary dust collector. This will leave a managed air buffer between the two sheds which is dust free.

Air emissions to the atmosphere are controlled through the upgraded Mideco baghouse, which includes an after multiple filter system. Based on the Magellan lead carbonate particle size distribution, the primary dust collector will reduce dust levels to between 20 and 10 micrograms per cubic metre and the secondary and tertiary combined After Filter Unit to 0.5 micrograms per cubic metre.

The primary dust collector will collect the bulk of the dust. The collected dust is returned to the inside of the WMC shed via a screw conveyor. After being drawn through the dust collector, the air passes through the fan and into the secondary and tertiary combined “After Filter Unit”. This removes dust, down to 0.5ug/cm which is collected on filters that are periodically changed. The clean air then exits the system to the atmosphere (outside both sheds) via a small exhaust.

The exhaust standard of 0.5 ug/m3 in considered very conservative considering this is the national *ambient* standard and therefore applicable to sensitive receptors rather than the emission source. In Esperance sensitive receptors are located a minimum of 150 m from the emission source.

The Tertiary HEPA filter has a better than 99.95 percent efficiency and is expected to perform very effectively given the load on the filter has been reduced from the design rate of 44,000 m3/hr to a planned 10,000-15,000 m3/hr. The reduced air flow rate will reduce the exhaust flow rate to the environment while it is still adequate to maintain a negative pressure environment.

The differential pressure measured across the primary air filtration unit demonstrates air flow and can be read from an analogue and digital display. An alarm has been installed on the negative-pressure unit to ensure the unit is working effectively. The digital reading will be connected to a high/low alarm which is anticipated to be set at 1 kPa and 0.1 kPa respectively. The trigger points will be confirmed following commissioning of the dust extraction unit.

Appendix 7 articulates the relationship between reducing the exhaust flow rate and simultaneously maintaining negative pressure in the sheds. The system (Mideco, 25 August 2008) is designed to facilitate a 30,000 m3/hr exhaust flow. The rational of maintaining negative pressure is solely related to preventing emissions of lead carbonate dust. There are no changes to the level of personal protection equipment (PPE) or operating parameters at either full or reduced

airflow exhaust rate because the work environment is inherently hazardous and the same PPE and procedures are required irrespective of airflow.

The design 30,000m3/hr exhaust rate delivers 0.828 air changes per hour for the new concentrate shed and 1.15 air changes per hour for the WMC shed. The reduced 10,000m3/hr exhaust rate delivers 0.2484 air changes per hour for the new concentrate shed and 0.345 air changes per hour for the WMC shed.

The dust extraction system will operate at an exhaust rate of 10,000m3/hr for the planned operational period, being 12 hours per day for the nine weeks of lead bagging. These parameters maintain negative pressure, contain lead carbonate dust, and lower the total lead emissions at the exhaust. They do not make the work environment any more or less hazardous.

Daily dust monitoring conducted during the first two weeks of operation will quantify the theoretical dust emissions discussed above. Dust results will be collected in real time and lead carbonate samples will be collected on a filter paper for subsequent laboratory analysis. (Refer to Section 5.6.).

Further description and technical specifications of the negative pressure system and baghouse performance are provided in Appendix 2.

EsPA will procure the negative pressure system for the lead shed, as described above, and will be responsible for ensuring it operates at all times to meet all regulatory requirements

Clean' and 'Dirty' Work Areas

A clean working area to be established in the space between the WMC shed and the new shed by the installation of doors and seals in the opening between the WMC and new concentrate shed, and installation of the negative pressure system. This will ensure lead carbonate dust cannot escape from the WMC shed into the new shed, and the clean working area between the two will be maintained at all times. All 'dirty' work will be confined to the (inner) WMC shed. When entry or exit from the working environment is required, the air lock principle will be applied in the form of opening a door and closing it before opening the next door.

Vacuuming of filled bags

An industrial vacuum-cleaner will be operated by Magellan's trained personnel inside the airlock between the old and new concentrate sheds to vacuum lead carbonate from all filled bulk bags while on the forks of the forklift before they are placed in a temporary storage area inside the new shed (Figure 6). Material collected from the vacuum cleaner will be returned to the concentrate stockpile. The vacuum filters will be replaced regularly in accordance with the manufacturer's specifications.

Empty containers for the transport of the lead carbonate in bulk bags will be inspected to ensure that they are clean and free from anything that might damage the bags of lead carbonate.

Mobile Equipment

To reduce the potential for the escape of dust and 'tracking' of product on tyres from mobile equipment required in the WMC shed, access and egress to the shed will be limited and strictly controlled. Each piece of mobile equipment will only be used in designated areas and will not enter any other areas. This will assist in ensuring strict segregation of 'clean' and 'dirty' areas.

Pre-start checks and cleaning of all mobile equipment will also be performed in accordance with the Pre-start Check for Mobile Equipment Procedure (Attachment 15) and the Cleaning of Mobile Equipment Procedure (Attachment 16). The pre-start checks will include details of vehicles entering and exiting sheds (see Figure 2).

The dust extraction system will not be compromised by fume emissions because although all diesels fume damages barrier type filters the size of the equipment and the duration of this project result in insufficient fume to cause material damage.

Procedures have also been developed that address the management actions to be taken during refuelling of mobile equipment (Procedure OP.0.00.017) and fuel storage (OP.0.00.018).

Magellan will operate all mobile equipment inside the WMC shed and the forklift described below, and will be responsible for ensuring it meets requirements as specified in this document.

Operations of all other mobile equipment described in this document will be the responsibility of the EsPA. Refuelling of mobile equipment outside both sheds will be done in accordance with the normal Esperance Port refuelling operations.

Vacuum Road-sweeper

No spillage is anticipated on the container transport route between the lead shed, the designated secure storage area and the wharf (Figure 3 and Figure 4) given lead carbonate is sealed in bulker bags and in containers.

However, a vacuum road-sweeper (see Appendix 8) will be available to operate in the new concentrate shed if required to maintain the clean work area. The work methods to be used inside the designated clean area inside the new shed make it very unlikely that the vacuum road sweeper will be required; however, it will be available if required. To maintain high housekeeping standards, a vacuum road sweeper is routinely used as part of normal Port operations. The vacuum road sweeper was used extensively during the lead clean up activities undertaken under Environmental Protection Notice EPN 02 of 2007 and hence the equipment and operators are experienced and familiar with the high housekeeping standards expected.

Storm and Wastewater

Minimal wastewater will be generated due to dry cleaning methods and because there will be no movement of vehicle between dirty and clean areas.

Wastewater generated by the vacuum road-sweeper will be transferred to the heavy metals wastewater treatment plant. The treatment plant has been specifically designed to treat lead carbonate and uses pH control, flocculation and

aeration to treat water to a standard suitable for recycling on site (see Appendix 9). Water from the final wastewater treatment plant storage tank that is not recycled, overflows into the stormwater system, which flows via a Hume Interceptor that traps sediment prior to ocean discharge. The Hume Interceptor sediment traps are cleaned as an element of routine Port maintenance.

Routine maintenance of the water treatment plant includes daily inspection, monthly clean-out of the sump and a monthly site visit by an experienced supplier, which includes flushing solids from all tanks.

Berth Two at the Port has a storage tank, concrete bunding and associated drainage system to contain and divert storm or other drainage water contaminated by any product loaded or discharged on Berth Two. Dirty water is contained in a 34,000L storage tank and routinely discharged to the water treatment plant.

As the lead carbonate will be contained within water resistant liners of bulk bags, and placed in a sealed container, it is not anticipated that there will be any spillage outside the 'dirty' bagging area during the lead carbonate removal project.

When all the stockpiled lead carbonate within the WMC shed has been bagged, the bag-filling machine will be cleaned, dismantled and returned to the Magellan mine. All potentially contaminated mobile equipment will also be vacuum-cleaned and either returned to the Magellan mine or remain at the Port of Esperance. An inspection will be undertaken prior to the bagging machine being transported from the Port of Esperance. Documentation and supporting evidence will be supplied to the DEC demonstrating that the equipment has been properly cleaned.

2.3.5 Container Loading and Lifting

Loading

All bag lifting will be performed by forklifts lifting all four bag loops, with forklift tines protected to prevent abrasion and wear of the bag loops.

A diesel powered forklift will remain in the WMC shed at all times to lift vacuumed, filled bulk bags from the bag-filling machine and transport them to an area inside the WMC shed adjacent to the roller door negative pressure airlock between the WMC and new concentrate sheds. From there, the bags will be transferred by a second diesel forklift by opening the roller door airlock between the WMC and new concentrate sheds and transferring the bags to a clean holding space inside the new shed (see Figure 6). During these operations the roller door negative pressure airlock between the clean shed and the outside will remain closed.

The cab of the forklift used inside the WMC shed will be either fully enclosed or pressurised or the operator will wear suitable P3 air purifying mask.

The clean area forklift will operate only in the clean area inside the new shed, and collect only vacuumed filled bags from the WMC shed through the roller door airlock by extending its tines into the WMC shed to access the lifting loops of the bags. The clean area forklift will not enter the WMC shed at any time.

Once a sufficient number of filled bags have been accumulated inside the clean area, the roller door between the WMC and new sheds will be closed. An electrical interlock between the door to the WMC shed and the door to the concentrate shed will not allow the two doors to be open simultaneously.

The vehicle entry point from the outside into the new shed will have two doors – an interior roller door located immediately adjacent to an exterior swinging doorway (made up of two 'wing sealed doors').

With the roller door shut and the wing doors open, a container will be placed immediately outside and adjacent to the concentrate shed door on a designated pad fitted with container locators. The roller door will then be raised to approximately 100 mm above the height of the container. The two wing seal doors will then be closed around the container entry and the roller door will be lowered to the top of the wing seal door forming a seal around the container. This system is designed to minimise as far as reasonably practicable the air gap around the container, thus maintaining negative pressure within both the new and WMC sheds.

At this point the container doors will be opened and a ramp will be placed from the ground to the opening of the container to allow the clean area forklift to load bags into the containers. The bulk bags will be loaded evenly and block floor stowage will ensure that the bags are placed to prevent movement during transport. The containers will not be loaded with bulk bags in excess of the maximum rated container weight. Containers will be closed using full-length steel rods on the doors, which will be secured with a suitably numbered seal that will subsequently be reflected on the cargo documentation.

At the completion of loading the bags, the container doors will be closed and sealed. The concentrate shed roller door will then be raised approximately 100 mm above the height of the container and the wing doors fully opened. The roller door will then be lowered and the container moved.

The container will be removed from outside the new concentrate shed and loaded with a container toplifter onto a skeletal trailer for transport to the hardstand storage at the Port's container yard. No loaded container will be handled using a tined forklift in order to prevent any rupture of the container wall and potential spillage resulting from the rupture.

Magellan will be responsible for vacuuming of filled bags, loading and closing of filled containers as described in this document.

Figures 2 and 6 include a schematic representation of the proposed transfer arrangements between the bagging machine and containers.

Lifting and Movement of Containers

A container toplifter will place an empty container outside the door of the outer shed, and remove filled containers from that position. The toplifter will not enter the shed at any time

The container toplifter will be fitted with a spreader attachment suitable for lifting containers with a gross weight of up to 40 tonnes (Figure 2 and Figure 6).

Owing to overhead clearance restrictions (CV21) at the container transfer area outside both sheds, the container toplifter to be used in this area will be EsPA's 01SMV45 (or similar), which does not commence mast extension as soon as the spreader is raised.

Plate 2.3: View of EsPA's 01SMV45 Container toplifter

Road Vehicle

Plate 2.4: View of terminal tractor and skeletal trailer.

2.3.6 Transport Of Containers to and from Designated Laydown Areas

Empty Containers

A container toplifter will move an empty container from the empty container stack at the container laydown area and place it onto the leading slot of the road vehicle at the container transfer area adjacent to the container laydown area. The road vehicle will travel to the container transfer area adjacent to the concentrate shed.

The road vehicle combination consists of:

- prime mover (truck or terminal tractor); and
- skeletal trailer.

The skeletal trailer is fitted with corner brackets, which locate the container in the correct position on the trailer and restrain the containers while travelling at slow speed. Speed limit within the EsPA facility is 15 km/h for vehicles with a GVM of more than three tonnes (Figure 3 and Figure 6).

Loaded Containers

When the container at the outer airlock is full and the doors have been closed and sealed, the container toplifter will tram the loaded container to the road vehicle and place it into the rear slot of the road vehicle. The container toplifter will then take the empty container from the leading slot of the road vehicle and place it flush with the outer door of the airlock.

The tramming area outside the concentrate shed is also used to unload nickel trains and the EsPA operator will liaise with the contractor engaged in the unloading of the nickel trains to ensure positive separation between the various

pieces of mobile plant being deployed for each operation. Adequate communication between these parties will be maintained at all times, and by radio communication if considered necessary.

The road vehicle, with the loaded container, will proceed to the weighbridge where the road vehicle and container will be weighed. The empty road vehicle will be tare weighed at the start of each shift.

The road vehicle, with the loaded container, will then proceed to the container transfer area adjacent to the container laydown area where a container toplifter will remove the loaded container from the road vehicle, tram it to and place it onto the loaded container stack.

Block stacking technique will be utilised for both loaded and empty containers.

2.3.7 Designated Container Laydown Areas

Two container laydown areas have been designated for the storage of the loaded and empty containers. The loaded containers will remain in the designated laydown areas until ready for export. Pavement of these loaded container yards is constructed of compacted material that currently support containers heavier that the anticipated weight of the lead carbonate containers.

To facilitate outloading of the loaded containers, movement of the loaded containers between the designated areas may occur in order to consolidate the loaded containers onto Berth Two immediately before shipment in order to expedite the loading of the ship.

The eastern container laydown area has adequate drainage to ensure no water ingress into loaded containers.

2.3.8 Transport Of Containers to Wharf and Loading To Ship

A container toplifter will tram a loaded container from the loaded container stack at the container laydown area and place it onto the rear slot of the road vehicle at the container transfer area adjacent to the container laydown area.

The road vehicle will travel to and enter Berth Two via the western gate. Depending upon the congestion at the Berth Two container laydown area, the loaded containers can be either:

a) Loaded directly onto the ship via the portainer crane located on Berth Two; or

b) placed into the Berth Two container laydown area.

Option (a) - Loaded Containers Placed Directly Onto Ship From Road Vehicle (refer to Figure 4)

The road vehicle, with the loaded container, will proceed to the truck to ship transfer area where the loaded container will be lifted with the portainer crane and transferred onto the ship in accordance with the load plan provided by the vessel's Chief Officer.

The empty road vehicle will proceed from the eastern end of Berth Two to the container transfer area adjacent to the container laydown area, and then the process will be repeated until all loaded containers have been placed onto the ship.

Option (b) - Consolidating Loaded Containers in Berth Two Container Laydown Area (Refer to Figure 4)

The road vehicle, with the loaded container, will then proceed to the container transfer area adjacent to the container laydown area at the rear of Berth Two where a container toplifter will remove the loaded container from the road vehicle, tram it to and place it onto the loaded container stack.

Upon arrival of the ship, a container toplifter will tram and place the loaded containers onto a road vehicle at the container transfer area adjacent to the container laydown area at the rear of Berth Two.

The road vehicle, with the loaded container, will then proceed to the truck to ship transfer area where the loaded container is lifted from the road vehicle with the portainer crane and transferred onto the ship and placed in accordance with the load plan provided by the Chief Officer of the vessel upon arrival.

The empty road vehicle will proceed from the truck to ship transfer area to the container transfer area at the rear of Berth Two and the process will be repeated until all loaded containers have been placed onto the ship.

A combination of options (a) and (b) may be employed, dependant upon the congestion at the rear of Berth Two at the time of shipment.

Block stacking technique will be utilised for both loaded and empty containers.

To dispatch the 9,000 tonnes of lead carbonate, it is anticipated that there will be a maximum of 450 TEUs for shipment. Ship loading times depend on weather and swell conditions at the time of loading, configuration of the ship and ability to consolidate some loaded containers on Berth Two prior to the arrival of the ship.

EsPA employ experienced stevedoring personnel who will undertake stevedoring from the wharf to the vessel. Resource planning and shift rostering is a routine Port business process.

The EsPA will be responsible for all container movements as described in this document

2.3.9 Personnel Requirements

Magellan will provide adequate personnel to conduct bagging and container filling operations. The crew will include bagging machine operator/maintainers, mobile equipment operators and supervisors. Before bagging inside the WMC shed starts, compulsory site-specific inductions and training will be undertaken prior to implementation of the Lead Removal Plan to ensure that all personnel are familiar with health, safety and environment requirements**.**

The EsPA will provide adequately trained and inducted staff to perform operations ascribed to EsPA in this document. Training will be undertaken prior to implementation of the Lead Removal Plan to ensure that all personnel are familiar with health, safety and environment requirements.

3. Legislative Requirements

The legislative framework relevant to the handling and transport of the 9,000 tonnes of stockpiled Magellan lead carbonate through the Port of Esperance is outlined below.

3.1 Legislative Instruments

- **Port Authority Act (1999)**
- **Environmental Protection Act 1986**
- **Dangerous Goods Safety Act 2004 (replaces Explosives and Dangerous Goods Act 1961 and**
- **Dangerous Goods (Transport) Act 1998)**
- **National Environment Protection Council (Western Australia) Act 1996**
- **Health Act 1911**
- **Mine Safety and Inspection Act 1994**
- **Occupational Safety and Health Act 1984**
- **Wildlife Conservation Act 1950**
- **Navigation Act Australia 1912**

3.2 Handling, Storage, and Transport of Dangerous Goods

The Esperance Port regards the term 'dangerous goods' as having the same meaning in all contexts as under the Dangerous Goods Safety Act 2004 (WA) (DG Safety Act) and its regulations. Magellan and its contractors responsible for handling and storing lead carbonate will be required to obtain a Dangerous Goods Licence under the Dangerous Goods Safety (Storage and Handling of Non Explosives) Regulations 2007. Drivers of any vehicles transporting containers carrying Magellan lead carbonate will be required to obtain a Dangerous Goods Drivers Licence under the Dangerous Goods Safety (Road and Rail Transport of Non-explosives) Regulations 2007.

All relevant actions undertaken at the Port must comply with the DG Safety Act, specifically, the Dangerous Goods Safety (Goods in Ports) Regulations 2007 (Goods in Port Regulations) as well as the IMDG code.

Port Operators have until 1 March 2009 to comply with the new legislation (a concession to allow operators to make the transition from the repealed *Explosives and Dangerous Goods Act 1961* and *Dangerous Goods (Transport) Act 1998)*. Port operators are currently guided by the International Maritime Dangerous Goods Code (IMDG Code) administered by the United Nations International Maritime Organisation (IMO). The goods in Port Regulations require Port operators to comply with Australian Standard AS 3846-2005 (which is based on the IMDG Code).

Classification

The Australian Dangerous Goods Code (ADGC) and other international dangerous goods codes (such as the IMDG Code) require that goods be assigned a dangerous goods class according to the most significant risk presented by the goods, as determined by the criteria set out in the code. The dangerous goods classification applicable to lead carbonate produced at the Magellan mine is:

- United Nations (UN) Number: 2291
- Class 4
- 6.1: (Toxic Substances)
- Correct Shipping Name: Lead Compound Soluble N.O.S. (contains 77 percent to 82 percent lead carbonate)
- Packing Group 5: III (Low Danger)
- HAZCHEM Code 6:2Z (In case of incident: no danger of violent reaction or explosion; use water fog/fine spray, normal fire-fighting clothing and appropriate personal protective equipment [PPE, including breathing apparatus]; contain substance).
- The Material Safety Data Sheet (MSDS) for Magellan lead carbonate is provided in Appendix 2

3.3 Relevant Standards, Guidelines and Codes of Practice

There are no standards, guidelines or codes of practice specific to lead carbonate. However, a range of standards, guidelines and codes of practice exist that are, in general, relevant to the management of lead. Where relevant, standards, guidelines and codes of practice will be applied by EsPA and Magellan personnel and all contractors to prevent lead carbonate dust impacting on the public, employees and the environment.

Standards and their application

AS 3846-2005	The handling and transport of dangerous cargoes in port areas.
AS/NZS 4360:2004	Risk management.
A/NZS 5667.1:1998	Design of water sampling programs, sampling techniques and the preservation and handling of samples.
AS 2636 – 1984	Sampling of venous and capillary blood.
AS 3640 – 1989	Methods for sampling – inspirable dust.
AS 2985 – 1987	Methods for sampling – respirable dust.
AS 3580 – 1991	Determination of particulates – gravimetric methods.
AS 2724 – 1984	High volume sampler gravimetric method.
AS 2800 – 1985	Determination of particulate lead.
AS 4874 – 2000	Guide to investigation of potentially contaminated soil.
AS 4482 – 1997	Guide to sampling and investigation.
AS 1716 – 2003	Respiratory protective devices.
AS 2922 – 1987	Ambient air – siting of sampling units.
AS 4292 - 2006	Railway safety management.
AS 4452 – 1997	Storage of toxic substances. National Standard for the Control of Inorganic Lead at Work [NOHSC:1012(1994)] Occupational exposure to inorganic lead in lead processes.

Guidelines and their application

National Environmental Protection (Ambient Air Quality) Measure (NEPM) 1998 - Air quality standard for lead – committed to by the WA Government.

Biological Monitoring (DOIR 1997) - Measurement of hazardous substances in body fluids to gauge level of exposure to that substance.

Adjustment of Exposure Standards for Extended Work Shifts (Dept of Minerals and Energy WA 1999) - Exposure standards for airborne contaminants in the workplace.

CONTAM System Procedures (DoCEP 2008) - Requirements for mining operators to meet obligations for sampling, reporting and submitting results for resources safety's contaminant monitoring (CONTAM) system.

Health Surveillance Program for Mine Employees (DoCEP 2007) - Requirements for undertaking health assessments under the health surveillance system provisions of the Mines Safety; and

Inspection Regulations 1995. Applies to initial and periodic health assessments undertaken for the purpose of the health surveillance system that is stored in Resources Safety's MINEHEALTH database.

Occurrence, Accident and Occupational Disease Legislative Reporting Requirements (DOIR 2001) - Legislative reporting requirements under the Mines Safety and Inspection Act 1994 and the Mines Safety and Inspection Regulations 1995.

Safety and Health Risk Management (DOIR 1999) - The process to be followed when carrying out risk management in accordance with the Mines Safety and Inspection Act 1994 and Mines Safety and Inspection Regulations 1995.

Management of Hazardous Substances on Mine Sites (DOIR 1997) - Establishing hazardous substance management programs on mines.

A guideline for the development and implementation of a dust management program (DEC 2008) - How to develop and implement a dust management program.

Codes of Practice and their application

IMDG Code – shipment of dangerous goods by sea (IMO)

Australian Dangerous Goods and Explosives Code 7th Edition (ADG7) - Technical requirements and guidelines for the transport of dangerous goods by road and rail.

National Code of Practice for the Control and Safe Use of Inorganic Lead at Work [NOHSC: 2015 (1994)] - Occupational exposure to inorganic lead (not organic lead).

National Code of Practice for the Control of Workplace Hazardous Substances [NOHSC: 2007(1994)] - How to comply with the National Model Regulations for the Control of Workplace Hazardous Substances [NOHSC:1005(1994)] so as to minimise the risk of disease and injury due to exposure to hazardous substances in the workplace.

Enduring Value (Minerals Council of Australia 2005) - Australian Minerals Industry Framework for Sustainable Development.

4. Assessment of Emission and Discharge Risks

The EsPA and Magellan have assessed the potential risks of emissions and discharges for the lead carbonate removal operation. The assessment process used is based upon the DEC approach to environmental assessment, focussing upon risks of significant emissions and discharges from the operation within a social-political context.

The management of emissions is discussed in detail in Section 2 and Section 5. Commitments proposed by EsPA for the modified Section 73A Notice enabling stockpiled lead carbonate to be bagged and exported from Esperance are presented in Section 8.

The following table assesses emissions and discharges from the operation. The column titled Section of Report discussing management of emission provides guidance to the sections of the report which address the management of identified emission and discharges. The column titled 'Level of risk management proposed' for the significant emission/discharge risks lists the conditions that the EsPA proposes to adopt to during the removal of the lead carbonate.

Table 1 Assessment of Emissions/Discharges Risks

Assessment of Emissions/Discharges Risks from Lead carbonate Removal Operation				
Possible Emissions/ Discharges	**Significant Emission/ Discharge Risks**	**Social/Political context of the significant emission/discharge risks**	**Section of Report discussing the management of significant emission/discharge risks**	**Level of management proposed for the significant emission/discharge risks**
Air emission - Point-Source	Potential for lead carbonate dust emissions to atmosphere from the following point-sources: • Mideco baghouse exhaust • Roller door to new concentrate shed Specifically, the lead carbonate dust emissions from the air discharge point from the lead shed does not operate within the 95th percentile range below the 0.5µg/m^3 Ambient Air Quality NEPM Standard for lead carbonate dust in ambient air	High level of community interest. Sensitive receptors are adjacent to the Port <500m	Section 2 - operation of Old/New shed to prevent lead carbonate dust escape – roller door point-source Section 2 - design of the lead carbonate shed and dust extraction system to minimise point-source dust emissions. ▪ Reduced air flow rate of the tertiary HEPA filter (10,000 m3/hr) to reduce the exhaust flow rate to the environment whilst it is still adequate to maintain a negative pressure environment. ▪ Alarm on the negative-pressure unit to ensure the unit is working effectively ▪ Procedures in the Attachments section of the Appendices – housekeeping and audits/dust quantification to ensure baghouse performing i.e. not	EsPA commits to comply with the set of auditable conditions proposed for the Section 73A Notice, listed in detail is Section 8 The Port will also operate according to the following: • NEPM standards; • Unauthorised Discharge Regulations; • EsPA Air Quality Monitoring Plan; • EsPA Environmental Management Plan

Assessment of Emissions/Discharges Risks from Lead carbonate Removal Operation				
Possible Emissions/ Discharges	**Significant Emission/ Discharge Risks**	**Social/Political context of the significant emission/discharge risks**	**Section of Report discussing the management of significant emission/discharge risks**	**Level of management proposed for the significant emission/discharge risks**
			emitting significant lead carbonate dust emission, ensure roller door to new shed not a source of lead carbonate dust during operation. ▪ Section 5 discusses Air Quality Management proposed by EsPA/MM. Specifically, daily air quality monitoring during the first two weeks of lead carbonate bagging will quantify the emission sources to compare to theoretical value of less than 0.5 µg/m^3 at source	
Air emission – Fugitive Dust	*No fugitive lead carbonate dust emissions are expected at any stage of the operation because:* • *The dust-generating activity of bagging the stockpiled lead carbonate with the potential to mobilise lead carbonate dust to the atmosphere is contained within the WMC shed in a sealed shed inside a shed.* • *At no time will the outer roller door of the new concentrate shed be opened when the WMC Shed door is opened* • *The bulk-bags proposed meet world's best practice (United Nations Standards). The bags are double-lined and sealed to prevent lead carbonate dust escape* • *Once sealed inside the double-lined UN conforming bulk-bag the bags are vacuumed inside the WMC shed to prevent dust being tracked out into the new concentrate shed on the bulk-bag* • *The cleaned bulk-bag is transported to the New Shed by a forklift whose wheels are prevented from entering the new concentrate shed by a bund bolted to the floor* • *A road-sweeper truck will operate inside the shed to maintain the new concentrate shed to the baseline dust levels inside the new shed* • *The sealed double-lined UN conforming bulk-bags are to be loaded inside a certified container for storage and export* • *No loaded container will be handled using a tined forklift in order to prevent any rupture of the container wall and potential spillage resulting from the*			

Assessment of Emissions/Discharges Risks from Lead carbonate Removal Operation				
Possible Emissions/ Discharges	**Significant Emission/ Discharge Risks**	**Social/Political context of the significant emission/discharge risks**	**Section of Report discussing the management of significant emission/discharge risks**	**Level of management proposed for the significant emission/discharge risks**
	rupture • *The negative pressure system means the only potential dust emission sources are the point sources described above.* *Fugitive lead carbonate dust emissions are therefore not assessed, however the proposal will operate according to the EP Act and the Unauthorised Discharge Regulations. Refer also to the Air Emissions – Point-source (shown above) and the Emergency Response Plan (Attachment 4).t*			
Air emission – occupational exposure)	Personnel involved in the bagging and containerisation elements within 'underground conditions' (inside a shed) are exposed to significant fume and lead carbonate dust emissions at any stage of the operation because: • Exposure to dirty air will be reduced as a result of approximately 0.5 Air changes per hour. The time people spend in the shed is minimised to a 12 hours. operation • Conditioning of the stockpile to prevent lead carbonate dust emissions • A fogging unit will also be used to suppress dust to the shed floor as much as possible • 1*LPG bobcat operating in WMC shed • 1*Diesel Road-sweeper operating in Concentrate Shed • All mobile equipment will have enclosed, pressurised cabins	Level of community interest is high. Sensitive receptors are working in a confined dusty environment in which machines generating fumes operate.	Section 2 discusses the: • ventilation system • bagging operation and exposure hrs/day • Pb emissions of the bagging machine • Fume emissions of the Bobcat and Road-sweeper truck • Design of vehicles to prevent exposure to fumes/dust • PPE requirements to prevent fumes/dust exposure • Monitoring including dust, fume, paraoccupational and biological Section 5 discusses Occupational Safety and Hygiene see also Attachments section of the Appendices	The Port commits to operating to a set of auditable conditions proposed for the Section 73A Notice, listed in detail is Section 8 The Port will also operate according to the following: • Mine Safety and Inspection Act 1994 • Occupational Safety and Health Act 1984

Assessment of Emissions/Discharges Risks from Lead carbonate Removal Operation				
Possible Emissions/ Discharges	**Significant Emission/ Discharge Risks**	**Social/Political context of the significant emission/discharge risks**	**Section of Report discussing the management of significant emission/discharge risks**	**Level of management proposed for the significant emission/discharge risks**
	and the operator will wear appropriate PPE (including while in the cabin). Fume and lead carbonate dust emissions exposure is assessed due to the low level of community confidence following the previous bulk-lead carbonate operation.			
Odour emissions	*No increase in existing odour emissions at the Port from this activity is expected because:* • *the stockpiled lead carbonate and the bagging operation will occur inside a sealed shed within a sealed shed, which will prevent odour escape* • *the bulk-bags are sealed and double lined to prevent odour escaping* • *the double-lined bulk-bags will be loaded into containers providing an additional seal, further preventing odour escape* • *no odour complaints were recorded during previous bulk lead concentrate handling using the conventional shiploading operation. The lead carbonate being removed from the Esperance Port is the same as that previously exported, indicating there will be no change in odour emissions.* *Odour emissions are therefore not assessed, however the proposal will operate according to the EP Act*			
Noise emissions	*Noise emissions at the Esperance Port will remain at there current levels because:* • *no noise generating equipment additional to that currently used will operate at the Esperance Port for the lead carbonate removal operation other than the Magellan bagging machine* • *the bagging operation will operate within a shed within a shed preventing noise escape and only operate between the hours 7:00AM to 7:00PM* • *no equipment/infrastructure that operates at night, additional to that currently used for normal operations, will operate at the Esperance Port during night-time hours* *Noise emissions are therefore not assessed, however the proposal will operate according to the EP Act Regulation 17 Approval.*			
Light emissions	*Light emissions at the Esperance Port will remain at there current levels because:* • *the bagging operation will operate within a shed within a shed preventing light escape and only operate between the hours 7:00AM to 7:00PM*			

Assessment of Emissions/Discharges Risks from Lead carbonate Removal Operation				
Possible Emissions/ Discharges	**Significant Emission/ Discharge Risks**	**Social/Political context of the significant emission/discharge risks**	**Section of Report discussing the management of significant emission/discharge risks**	**Level of management proposed for the significant emission/discharge risks**
	• *no equipment/infrastructure that operates at night, additional to that currently used will operate at the Esperance Port during night-time hours* • *The EsPA is a 24/7 operating site and no incidents or complaints related to light have been previously reported* *Light emissions are therefore not assessed, however the proposal will operate according to the EP Act and the Unauthorised Discharge Regulations.*			
Discharges to water	*There are no planned discharges to water (marine, ground or surface) from this proposal.* *Minimal wastewater will be generated due to dry cleaning methods and no movement of vehicle between dirty and clean areas.* *Wastewater generated by the vacuum road-sweeper will be directed to the heavy metals wastewater treatment plant (see attachment 9).* *Discharges to water are therefore not assessed, however the proposal will operate according to the EP Act Unauthorised Discharge Regulations.*			
Discharges to Land: **Solid/liquid waste**	*No planned discharges to land are expected from this proposal because:* • *all solid waste (including contaminated PPE) generated from the lead carbonate removal operation will be disposed of to a licensed waste disposal facility transported by a controlled waste carrier where applicable.* *Discharges to land are therefore not assessed; however the proposal will operate according to the EP Act (Unauthorised Discharge Regulations), EP Act (Landfill Regulations) and the EP Act (Controlled Waste Regulations).*			

5. Management of Emissions and Discharges

5.1 Objectives

The Risk Assessment and this subsequent risk management section have been prepared to address effective management of the following general risks:

- Occupational safety and health risks associated with bagging and export of the lead carbonate stockpiled at the Port.
- Public safety and environmental risks associated with bagging and export of the lead carbonate stockpiled at the Port.

5.2 Approach

The management of risks associated with the removal of stockpiled lead carbonate from the Port of Esperance is described in detail in a series of operational procedures. A number of tasks that are routine activities at the Port are covered by existing document (e.g. container handling and ship loading, environmental monitoring and incident reporting). Procedures (which may be subject to minor amendments during implementation of the Lead Removal Plan due to operational necessities) developed specifically for lead carbonate handling are included in Attachments 1 to 18. Job Hazard Analysis will be undertaken for each work activity prior to the movement of any concentrates.

The implementation of controls to reduce or manage the risks associated with the removal of stockpiled concentrate has been undertaken using the following hierarchy:

- Elimination
- Substitution
- Engineering
- Administration
- Personal Protective Equipment

5.3 Performance Objectives, Standards and Criteria

The EsPA is committed to managing its operations in an environmentally responsible manner at all times. To that end, the Esperance Port will:

- Protect the environmental and social values of Esperance.
- Consider community expectations in the management of Port operations.
- Determine the responsibilities for environmental management, and communicate them clearly to all employees and contractors.
- Implement those responsibilities in the workplace.
- Integrate environmental protection measures into all Port activities, subject to practicability and environmental justification.
- Commit to continual improvement and prevention of pollution.

- Commit to compliance with applicable environmental legislation and associated regulations and any other relevant requirements including compliance with the EsPA Environmental Management Plan.

The EsPA is committed to maintaining a safe and healthy workplace for all employees, contractors and any other users of the Port. To this end, the Port Authority has:

- Committed the required resources to occupational health and safety management to ensure that all workplace hazards are addressed.

- Developed and maintain comprehensive health and safety management policies, plans and procedures, and ensure senior managers are aware of their responsibilities to implement them.

- Ensured mechanisms are in place for effective consultation between management and employees on matters of occupational health and safety.

- Established systems to identify hazards and to assess and control risks to ensure safe systems of work.

- Assessed training needs and develop an ongoing schedule that will be regularly evaluated for effectiveness.

The EsPA and Magellan Metals are committed to managing their operations in a responsible manner aligned with the values of their stakeholders.

5.4 Roles and Responsibilites

The allocation of specific responsibilities for each operational task described in this plan is as follows:

- **Bagging and Containerising of Stockpiled Lead**

  Magellan has responsibility for all tasks associated with the bagging and containerisation of the lead carbonate, including assembly, operation and maintenance of the bagging machine, bag filling, sealing and vacuuming, transport of the bags to the containers at the door of the new shed, placing bags in containers, and closing and bolting container doors. Magellan will provide all personnel resources and mandated PPE for this operation.

- **Container Movement and Ship Loading**

  EsPA will be responsible for moving the containers from the new shed to a designated and demarcated Dangerous Goods Storage area and then moving the containers to the Berth. Ship loading will be undertaken with the shore-based container crane, and experienced personnel will undertake stevedoring from the wharf onto the vessel.

- **Process Audit – Prior to Bagging**

  An independent process auditor appointed by EsPA will undertake an audit of the process for the packaging, storage and transport of lead carbonate from the WMC shed through to export from the Port. Refer to 5.7 for details. EsPA will be responsible for managing this task.

- **Ongoing Auditing Inspections and Reporting**

  An auditing team comprised of the following work areas within the Esperance Port will conduct weekly audits of activities, monitoring, recording and reporting in order to prepare reports in relation to progress and standards. Refer to 5.7 for details.

  - Harbour Master
  - OH&S Officer
  - Environmental Officer
  - Maritime Security Officer
  - Ventilation Officer.

5.5 Personnel and Procedures

5.5.1 Induction

All personnel and contractors involved in the handling, storage and transport of lead carbonate as part of this lead carbonate removal proposal at the Port of Esperance will undergo a site-specific induction. Ensuring this training is undertaken will be the responsibility of EsPA and Magellan for their respective employees. The induction will identify the risks associated with handling lead carbonate and management/mitigation measures to control these risks. It will also outline the regulatory requirements and licence conditions that apply to the Port. The inductions include the following:

- Lead awareness
- Exposure control
- Dust minimisation
- Personal Protective Equipment
- Monitoring
- Roles and Responsibilities

Magellan employees have gained considerable experience in operating of the bagging machine during commissioning at the mine. EsPA employees are experienced in moving containers within the Port premise, and in stevedoring of containers and container vessels.

5.5.2 Personal Protective Equipment (PPE)

PPE will be provided to all personnel by their respective employers as required by the Personal Protective Equipment and Entry Requirements Procedure (Attachment 15). The disposal of PPE will be as required by the Disposal of Personal Protective Equipment Procedure (Attachment 16).

The following PPE will be used as a minimum:

- Hard hat
- PVC or rubber gloves
- Disposable overalls
- Powered air-purifying respirator (PAPR) with P3 filters
- Steel-capped safety shoes
- Hearing and eye protection

All PPE supplied will conform to applicable Australian Standards. Personal Protective Equipment will be maintained regularly and will be replaced if it becomes defective. The use of PPE will be mandatory for all tasks. Signs will direct personnel to wear or use the appropriate PPE.

5.5.3 Procedures

Magellan and the EsPA will implement their existing procedures on health and safety and environment which include:

- The appropriate use of designated clean and dirty areas
- Relevant DoCEP procedures, in conjunction with:
    - Mines Safety and Inspection Regulations 1995:
    - Part 7, Division 3 – Hazardous substances
    - Part 9 – Ventilation and control of dust and atmospheric contaminants
    - National Model Regulations for the Control of Workplace Hazardous Substances [NOHSC:1005(1994)]
- Work Safe Standards
- EsPA Environmental Management Plan
- EsPA Air Quality Monitoring Plan

Procedures (which may be subject to minor amendments during implementation of the Lead Removal Plan due to operational necessities) developed specifically for lead carbonate handling are included in Attachments 1 to 18.

While the potential for fatigue is remote, a Fatigue Management Procedure has been developed and is available as Attachment 11 to cover that situation should it arise.

5.6 Monitoring

5.6.1 Environment

The Esperance Port undertakes an extensive range of environmental monitoring on a continuing basis. Monitoring data is interrogated to identify trends and implement proactive environmental management.

Through its Air Quality Monitoring Plan the EsPA is currently setting operational 'trigger limits' which are lower than applicable guidelines to enable corrective action before non-compliances are recorded in community monitors.

This section describes the existing EsPA Air Quality Monitoring that is relevant to the lead carbonate removal process, the additional monitoring program that will specifically focus on the lead carbonate removal process and the assessment that will quantify baseline lead concentrations in clean work and storage areas at the Port.

EsPA Air Quality Monitoring Program

The EsPA Air Quality Monitoring Plan provides the means of determining the impact Port operations have on the environment and public health. The Air Quality

Monitoring Plan was developed following an analysis of all historic air quality monitoring data. The plan is presented in its entirety on the EsPA website. Key components include the following:

- Continuous real time PM_{10} dust monitoring is undertaken using Tapered Element Oscillating Microbalance (TEOM) at four locations (Figure 7). Results of real time dust data measured at each TEOM are available via the EsPA website.

- Four high-volume air samplers (HVAS) are co-located with the TEOM units. Daily Total Suspended Particulates (TSP) HVAS are monitored for a period of 24-hours, with lead concentrations from every third filter paper analysed (see Figure 7).

- Monthly dust deposition monitoring is conducted at ten locations within the community and two locations on the Port premises (Figure 7). After each one month monitoring period samples are sent to a laboratory for analysis of dust and lead.

The results of dust monitoring are assessed against national air quality standards and analysed along with relevant factors such as concurrent Port activities and meteorological condition. Results are reported to the DEC and posted on the EsPA website.

Operational dust monitoring is undertaken close to potential emission sources with fixed and mobile real time dust monitors. If dust spikes are monitored, trigger levels initiate actions to verify and remedy elevated dust emissions. EsPA has adopted the DEC response level for PM_{10} particulates of 200 $\mu g/m^3$.

Equipment used for operational dust monitoring includes:

- Three fixed particle counters (E-Samplers) located within the Port premises (Figure 8)

- Two mobile Dust Track units will be used within the Port Premises (Figure 8) and operated at other locations around the Port when considered necessary.

Additional Air Monitoring Specific to Lead Carbonate Removal

Real Time Monitoring

Additional Real Time Monitoring will be undertaken at the two potential emission sources that have been identified for the lead carbonate removal process, being at the access door to the new concentrate shed and at the exhaust outlet from the shed's dust extraction system.

Monitoring will be undertaken by the audit team referred to in Section 5.7 using two DustTrak Aerosol Flow Monitors (real time units). These monitors can also be fitted with a filter to collect dust for subsequent laboratory analysis of lead.

Baseline data (dust and lead concentrations) will be collected during the process audit (prior to bagging), and sampling will continue on a daily basis throughout the first two weeks of bagging and on a weekly basis thereafter as part of and ongoing internal auditing program Laboratories will be asked to minimise the turnaround times for results. The two-week period of daily monitoring will ensure results of lead analysis measured when bagging operations begin will be received and reviewed prior to reducing the frequency of audit to a weekly basis.

The ongoing data collection will identify peaks (if any) in dust levels caused by the removal of stockpiled lead carbonate from the WMC shed. The purpose of the monitoring is to provide real-time data so that actions can be taken to minimise potential dust levels caused by operations.

Calibration of the DustTrak units will be undertaken in accordance with the DustTrak Operation and Service Manual. The results will be reported to the DEC and the community through weekly reports.

High-volume Monitoring

The EsPA undertakes high-volume sampling as part of its ongoing operations. In addition to the four established high-volume samplers, one high-volume samplers will be set-up as part of the removal of stockpiled lead carbonate (Site HV5 on Figure 7) to determine the concentration of air lead levels, in accordance with Australian Standard AS 2922-1987, Ambient Air: Guide for the siting of sampling units.

Sampling frequency and analysis will be identical to the existing EsPA HVAS program with daily operation, daily analysis of TSP and, every third day, analysis of lead. Sampling will occur for the duration of lead carbonate removal operations.

In addition, for two weeks from the time bagging begins sampling will be undertaken on a daily basis at each of the five HVAS monitoring sites. The two-week period of daily monitoring will ensure results of lead analysis measured at the commencement of bagging operations will be received and reviewed prior to reducing the frequency to daily dust analysis. Rapid laboratory turnaround of results is already in place, being five days after receipt of samples.

The EsPA will undertake sample collection and calibration as part of their ongoing high-volume sampling.

Baseline Lead Concentrations

Baseline lead concentrations will be determined for clean lead carbonate handling and storage areas before bagging operations begin.

Extensive baseline knowledge of lead concentrations of soil, hardstand surfaces and structures is available through the lead sampling and clean-up activities that were undertaken at EsPA from November 2007 to August 2008.

For the full site, a sampling grid of 50 meters was used. In the areas of most interest, along the rail line, storage buildings, beneath conveyors and sealed areas in the vicinity of these structures the nominal sampling grid was 25 metres. Where the sampling grid did not result in enough points of interest additional sampling points were selected. A total of 560 sample areas were analysed, comprising 350 soils (including concentrates), 134 bitumen and concrete surface areas and 76 swab samples.

Recent baseline data is available as a result of validation of cleaned areas which is largely completed, with final validation of some areas planned for 1 to 3 September 2008. This includes results demonstrating the proposed container storage area has a lead concentration of less than 300 mg/kg.

The baseline concentration of the clean area of the concentrate shed will be determined prior to lead carbonate bagging operations starting, nominally during clean-up validation activities planned for 1 September 2008.

5.6.2 Health and Safety

Fume Monitoring

Air quality monitoring will be undertaken inside the WMC shed before and during handling and transport of lead carbonate. Monitoring will be performed or supervised by the EsPA for diesel particulates, NOx and carbon monoxide**.**

Occupational Air Monitoring

Occupational monitoring means monitoring a person's breathing zone to measure their likely exposure to a hazardous substance. All personnel working in the WMC shed will be required to wear P3 respiratory protection so the occupational air results will be indicative of the environment without taking into account the protection provided by the personal protective equipment.

Daily occupational monitoring will be undertaken or supervised by the EsPA to measure inhalable lead dust concentrations that personnel working inside the WMC shed are exposed to (see Occupational Air Lead Monitoring Procedure – Attachment 6)**.**

Biological Monitoring

Blood lead levels of all personnel involved in the handling, transport and clean-up of Magellan lead carbonate from the Port will be monitored in accordance with the Biological Monitoring Procedure (Attachment 7). Monitoring will be undertaken before bagging begins and each fortnight thereafter. Trigger levels and actions are included in Figure 9.

The EsPA has processes in place whereby personnel who regularly work in classified dirty areas must undergo a blood-lead level test. Such testing occurs before work with lead concentrates starts in order to establish baseline blood lead levels, and is followed up by a regime of blood testing to monitor ongoing lead levels.

The test information allows the Port or contractors to further assess the risk of dealing with lead and introduce additional risk control measures if warranted. The Port has adopted occupational exposure limits that trigger action at limits below those set by WorkSafe WA guidelines.

Magellan and EsPA will be responsible for biological monitoring of their own employees and contractors.

5.7 Auditing

The safe removal of the stockpiled concentrate is a matter of government regulatory requirements and public interest. The containerisation of bagged lead carbonate will significantly reduce any emissions associated with the lead carbonate removal process. Significant emissions are identified in Section 4 namely, the potential point-source air emissions at two locations (access to concentrate shed and exhaust from shed baghouse).

An inspection program commensurate with the identified risks in the lead carbonate removal process is outlined.

Before bagging of Magellan lead carbonate begins, an independent process auditor will be engaged by EsPA and supported by a peer group from the following fields:

- Materials handling/bagging
- Container stuffing and logistics
- Environmental monitoring
- OH & S

The independent process auditor will have the following roles:

- Auditing the process for the bagging, containerising, storage and transport of lead carbonate from the WMC shed through to export from the Port.
- Reporting audit findings to the DEC, DoCEP, EsPA, and Magellan Metals.

An inspection team comprised of the following work areas within the Esperance Port will conduct weekly audits of activities, monitoring, recording and reporting in order to prepare reports:

- Harbour Master (Chairman) - Overall dangerous goods protocol compliance and shipment arrangements supported by terminal management as required.
- OH&S Officer – OH&S compliance and reporting.
- Environmental Officer – Environmental compliance and reporting as well as alignment to Lead Removal Plan.
- Maritime Security Officer - General security arrangements.
- Ventilation Officer – Management of negative pressure.

The audit will include the following:

- Safety labelling of bulk bags and shipping containers in accordance with the Australian Dangerous Goods Code.
- Filled bag sealing, cleaning and inspection in accordance with the Lead Removal Plan.
- Personal Protective Equipment is worn, maintained and stored appropriately and effectively.
- Clean and dirty area procedures are followed.
- Chain of custody information for bag and container record keeping are in place and in accordance with the Lead Removal Plan.
- Container loading, closure, sealing, identification and record keeping procedures and documents are in place in accordance with the Lead Removal Plan.

The results of the audits shall be discussed between EsPA and Magellan, and reported in the weekly progress reports provided to DEC. A summary will be posted on the EsPA website. Any incidents or non compliances with the requirements of the modified s73A notice or other applicable regulatory requirements observed during the audit will be reported to the DEC Director in a written report to the Director within 24 hours of a reportable incident, followed by an incident report within a further seven working days.

5.8 Reporting

In order to provide complete transparency throughout the lead carbonate removal project, the DEC will be provided with the following by the EsPA, and summary information will be posted posted on the EsPA website;

- The Process Audit undertaken before bagging of lead carbonate begins by an independent auditor.
- The weekly inspection of activities, monitoring, record keeping and reporting undertaken.
- The weekly progress of lead carbonate removal including the amount of lead concentrate packaged and the amount of lead concentrate remaining.
- Air monitoring results and comparison to standards.
- Any incident that requires reporting to relevant government agencies.
- Any other relevant document or information that is received or generated through the lead carbonate removal operations.

The results of ongoing monitoring performed as an element of the Port's Air Quality Monitoring Plan are also reported routinely to the DEC and posted on the EsPA website.

The EsPA will be responsible for preparing all reports referred to in this section, with all relevant information on Magellan's activities supplied to the EsPA by Magellan.

6. Emergency Response

The containerisation of bagged lead carbonate has significantly reduced the risk associated with the lead carbonate removal process, specifically the potential for any spill. The Environmental Protection Agency has assessed this process (for export of lead carbonate through Fremantle), and has found it to be very low risk. Lead carbonate will be removed from the WMC shed only in double lined sealed UN and DOCEP approved bags placed in a locked steel sea container

EsPA has a dedicated Emergency Response Plan for all Port operations (Attachment 5) which has been recently revised to cover lead related issues. The Emergency Response Plan is a high level document which provides a framework for managing an emergency and enabling recovery to normal operations. The plan provides guidance in the event of the following potential emergencies:

- Security threats.
- Natural disasters.
- Accidents.
- Fires.
- Chemical spillage or gas leak.
- Shipping emergencies or threats.
- Loss of containerised lead carbonate during transportation under the Lead Removal Plan.

7. Community Consultation

7.1 Introduction

7.1.1 Background

The community consultation program to be undertaken will inform stakeholders about the export of stockpiled Magellan lead carbonate from the Port of Esperance. The program provided stakeholders with the opportunity to ask questions and express opinions about the Lead Removal Plan and will be ongoing throughout the implementation of the plan.

7.1.2 Objectives

The objectives of the community consultation program are to:

- Identify stakeholders likely to have significant interest in the Lead Removal Plan.
- Inform stakeholders about the details of the plan.
- Maintain communication with stakeholders throughout the operational phase of the plan.

7.2 Stakeholders

Many individuals and groups have an interest in the export of stockpiled lead carbonate from the Esperance Port Groups with an interest were identified by public announcements and discussions with government agencies (Table 2).

Table 2 Relevant stakeholders

Interest Group	Stakeholder
Western Australian Government	Department of Consumer and Employment Protection (DoCEP) Department of Environment and Conservation (DEC) Environmental Protection Authority (EPA) Department of Health (DoH)
Industry Groups	Esperance Port Authority Esperance Chamber of Commerce and Industry Esperance Regional Tourism Authority
Community and Other Groups	Port Consultative Committee (PCC) (Formerly Port Development Consultative Committee (PDCC)) Esperance Community Reference Group (ECRG) (PDCC structure changed to incorporate ECRG issues as ECRG ceased) Locals for Esperance Development (LED) Esperance Probus Club Local Environmental Action Forum (LEAF) Shire of Esperance General public

7.3 Stakeholder Interaction and Engagement

A number of communication tools will be used to provide stakeholders with information about the lead carbonate removal operation, including:

- Meetings.
- Open Days/Workshops.
- Advertorials.
- Media releases.
- Media conferences.
- Newsletters.
- Direct correspondence.
- Public notices.
- Website.
- Telephone.
- Displays.

7.3.1 Meetings

Between March and August in 2007 a number of stakeholders meetings were held during the development of the Lead Removal Plan (Table 3).

Table 3 Stakeholder meetings

Date	**Stakeholder**
15 March 2007	Esperance Port Authority
15 March 2007	Department of Health
15 March 2007	Department of Environment and Conservation
29 March 2007	Department of Environment and Conservation
23 April 2007	Department of Environment and Conservation
26 April 2007	Esperance Port Development Consultative Committee
7 May 2007	Shire of Esperance
7 May 2007	Esperance Probus Club
8 May 2007	Esperance Port Authority
8 May 2007	Esperance Port Authority employees
9 May 2007	Esperance community
11 May 2007	Western Australian government departments
21 May 2007	Department of Consumer and Employment Protection
16 August 2007	Western Australian government departments
21 August 2007	Esperance Port Authority

At each meeting, a presentation was made that described the removal of Magellan's lead carbonate from the Port. Following the presentation, the audience was given the opportunity to ask questions and express their views and/or

concerns. The audience was also provided with a copy of a draft Risk Management Plan. A summary of each stakeholder meeting undertaken to date is provided in Appendix 8.

The status of the Lead Removal Plan was discussed at the following stakeholder meetings: ECRG (30 October 2007), PDCC (27 November 2007), PCC (19 December 2007) and PCC (30 July 2008).

The Lead Removal Plan has been further refined through meetings between Magellan and the EsPA on 1 November 2007, 9 January 2008, 18 January 2008, 13 August 2008 and 19-20 August 2008. The EsPA and Magellan met with representatives from DEC (19 August 2008) and DOCEP (20 August) to gain clarification on what is proposed prior to submission

7.3.2 Direct Correspondence

Direct correspondence was conducted on a number of occasions to communicate with specific stakeholders about specific matters. In particular, a draft Lead Removal Plan (previous titled, Proposal for Removal of Lead from Esperance Port) was sent to the following for comments:

- Esperance Port Authority.
- Department of Health.
- Department of Employment and Consumer Protection.
- Department of Environment and Conservation.

7.3.3 Public Notices

Public notices were published in the Esperance print media to advertise the public information session that was held on 9 May 2007 at the Esperance Civic Centre.

A number of media releases have also been made available regarding the removal of the stockpiled lead carbonate from the Port of Esperance. These include:

- 12 March 2007 – Ivernia Inc. Reports Temporary Suspension of Lead Concentrate Shipments.
- 14 March 2007 – Ivernia's Magellan Metals Message to the Community of Esperance and Port Employees.
- 27 April 2007 – Ivernia's Magellan Metals Briefs Esperance Community Consultative Group on Proposed Lead Concentrate Removal Plan.

7.4 Ongoing Consultation and Commitments

Consultation on the removal of Magellan lead carbonate from the Esperance Port is ongoing. Throughout the duration of the lead carbonate removal process, the status of the project has been included as an agenda item at PCC meetings, and additional meetings of the PCC will be scheduled as required.

During the three week public comment period required by the DEC for the Lead Removal Plan formal and informal meetings with community members interested in discussion of the plan will be undertaken.

7.4.1 Consultation

Upon acceptance of the Lead Removal Plan, the DEC will release the plan for a 21 day public comment and consultation process. This includes a PCC meeting.

7.4.2 Weekly Reports

Progress reports and monitoring results will be published on a weekly basis and a hard copy of the report will be displayed within the EsPA entrance foyer.

7.4.3 Website

EsPA's website (www.esperanceport.com.au) provides information on the export of Magellan's lead from the Port. Further information will be available in a weekly Community Update publication which will be posted on the website once the lead carbonate removal project begins.

7.4.4 Telephone

EsPA has established a toll-free telephone number (1800 880 798) for stakeholder questions and feedback.

7.4.5 EsPA Advertorial and Publications

EsPA will include details of activities in its local published advertorials and newsletter during the bagging, storage and export of the lead carbonate.

8 Proponent Commitments

8.1 General

EsPA commits to undertake lead carbonate removal in full compliance with the provisions of this Lead Removal Plan, which are summarised in this Section.

The following statements reflect important sections of the *Environmental Protection Act 1986* and govern the entire Lead Removal Plan:

- The licensee (EsPA) will take all reasonable and practicable measures to prevent pollution of the environment.
- EsPA will take all reasonable and practicable measures to prevent or minimise the discharge of waste and the emission of noise and odours from its premises.
- Noise emissions from operations on site will comply with Noise Regulation 17 Environmental Protection (Port of Esperance Noise Emissions) Approval 2001.
- EsPA will inform the Director (Environmental Management Division of the Department of Environment and Conservation) at least 24 hours before the bagging of Magellan lead carbonate begins in the WMC shed.

8.2 Lead carbonate Bagging, Emmisions Control and Emissions Monitoring

8.2.1 Bagging

Magellan will restrict all bagging operations to the WMC shed and conduct these operations using the bagging methods and equipment described in this proposal.

Magellan will load lead carbonate into bulk bags that are:

- United Nations certified.
- State Government (DoCEP) approved.
- Tested and certified as per the requirements of the Australian Flexible Intermediate Bulk Container Association.
- Labelled with safety information (including relevant dangerous goods classification information and placard).
- Fitted with a sift-proof and water resistant liner.
- Sealed and tied off in accordance with the manufacturer's specifications.

Furthermore –

- The weight of all bulk bags shall be checked automatically by the bag filling machine. If a bag is found to exceed target weight, filling shall be stopped and machine recalibrated and/or undergo maintenance as required.
- The weight and bag number of each bulk bag filled shall be recorded against the container identified number in which they are stored.
- The external service of each bag will be vacuumed before being loaded into containers.
- All bag vacuuming shall be performed inside the WMC shed.
- A barrier shall be bolted to the ground at the boundary between the WMC and new concentrate shed inside the new shed to prevent the forklifts wheels from entering the WMC shed.
- The vacuum filters on the bagging machine shall be replaced regularly in accordance with the manufacturer's specifications.

The movement of mobile equipment shall be limited and restricted to the following locations:

- A skid steer loader restricted to be operated only inside the WMC shed.
- A forklift restricted to be operated only outside the WMC shed.
- A road sweeper restricted to be operated only outside the WMC shed.

The party responsible for operating each item of equipment, as described in this document, will be responsible for ensuring it is fitted with an appropriate cabin air filtration system.

8.2.2 Dust Management

- EsPA will procure the negative pressure system for the lead shed, and will be responsible for ensuring it operates at all times to meet all regulatory requirements.

- EsPA will ensure the negative-pressure unit shall be on at all times during any stockpile disturbing activities within the WMC shed. An alarm shall be installed and used on the negative-pressure unit to ensure the unit is working effectively.

- Magellan Metals will moisten the stockpiles of lead carbonate during handling, as appropriate.

- EsPA and Magellan staff will be instructed to open only one set of the two sets of doors (WMC shed and new concentrate shed) at any one time.

- The EsPA will establish designated appropriate ‘dirty’ (rest, wash down, change room areas) and ‘clean’ areas for use by personnel involved in bagging and other activities inside the WMC shed to ensure lead carbonate is not transported by personnel outside the designated dirty areas into clean areas

- EsPA will employ routine maintenance and housekeeping practices to ensure that there is no accumulation of waste or raw materials around the WMC Shed which may lead to the generation of airborne dust.

- All activities described under this Lead Removal Plan are in accordance with the EsPA Environmental Management Plan.

8.2.3 Ambient Air Quality Monitoring – Community

EsPA will measure the parameters of ambient air quality in the community as stated in Column 2 of Table 4; and using the corresponding methods listed in Column 4 of Table 3.

Table 4 Ambient air quality monitoring - community

Column 1	Column 2	Column 3	Column 4
Monitoring locations	**Frequency**	**Parameter**	**Method**
High Volume Dust Samplers S1, S2, S3, S4, HV5 (as shown in Figure 7)	Daily Daily for first two weeks of operation. Every third day after the first two weeks of operation.	Total suspended particulate ($\mu g/m^3$) lead ($\mu g/m^3$)	AS/NZS 3580.9.3:2003
Static Dust Deposition Gauges DG1, DG3, DG4, DG5, DG6, DG7, DG8, DG9, DG10, DG11, DG12, DG13 (as shown in Figure 7)	Monthly	Total solids (mg/m^2/month) lead (mg/m^2/month)	AS/NZS 3580.10.1:2003
Tapered Element Oscillating Microbalance (TEOM) S1, S2, S3, S4 (as shown in Figure 7)	Continuous (Real Time)	PM_{10} concentration ($\mu g/m^3$)	AS/NZS 3580.9.8:2001.

EsPA will analyse HVAS and dust deposition samples taken in accordance with Table 4 in a laboratory holding NATA accreditation for the parameters specified in Table 4.

EsPA will maintain and calibrate the sampling instruments referred to in Table 4, in accordance with the manufacturer's specifications.

8.2.4 Ambient Air Quality Limits at Boundary

EsPA shall undertake the limit exceedance responses when a specified parameter in Column 1 of Table 5 exceeds an air quality limit specified in Column 2 of Table 5.

Table 5 Ambient air quality limits

Column 1	**Column 2**
Parameter	**Limit**
Total suspended particulate - Lead	0.5 µg/m^3 – 24hr average
PM_{10}	50 µg/m^3 – 24hr average

EsPA shall advise the Director in writing within 24 hours of becoming aware of an exceedance of the limit specified in Column 2 of Table 5.

EsPA shall provide the Director a written incident report within seven working days of becoming aware of an exceedance of a limit specified in Column 2 of Table 5, which shall specify, but not necessarily be limited to the following:

- The date, time and if known, the reason for the exceedence.
- The period over which the exceedance occurred.
- The potential or known environmental consequences.
- Corrective action taken or planned to mitigate adverse environmental consequences, if appropriate, including timeframes for implementation.
- Corrective action taken or planned to prevent a recurrence of the exceedance, if appropriate, including a timeline for implementation.

8.2.5 Ambient Air Quality Monitoring within the Port Boundary

EsPA will measure the parameters in the air stated in Column 3 of Table 6; at locations specified in Column 1 of Table 6; at the frequencies listed in Column 2 of Table 6; and using the corresponding methods listed in Column 4 of Table 6.

Table 6 Ambient air quality monitoring - operational

Column 1	Column 2	Column 3	Column 4
Monitoring locations	**Frequency**	**Parameter**	**Method**
Real-time Dust Monitor - R1 (as shown in Figure 8)	Daily for first two weeks of operation. A minimum of once in every seven day period after the first two weeks of operation.	- Lead (ppm) - Total suspended particulate (µg/m^3)	In accordance with the supplier operating manual.
Real-time Dust Monitor – R2 (as shown in Figure 8)	Daily for first two weeks of operation. A minimum of once in every seven day period after the first two weeks of operation.	- Lead (ppm) - Total suspended particulate (µg/m^3)	In accordance with the supplier operating manual.
Fixed Particle Counters (Esamplers) E1, E2, E3 (as shown in Figure 8)	Continuous (Real Time)	- Total suspended particulate (µg/m^3)	In accordance with the supplier operating manual.

EsPA shall respond immediately and proactively to elevated dust level results from operational monitoring. Elevated dust level results being described as PM_{10} particulates of 200 µg/m^3 or a trend of increasing dust results.

8.3 Containerisation of Bagged Lead Carbonate

Magellan will ensure that:

- All bulk bags shall be loaded upright and evenly distributed within the containers to minimise the risk of movement in transit.
- Containers shall not be loaded with bulk bags in excess of the maximum rated container weight.
- Containers shall be closed using the fitted door closing mechanism.
- Container doors shall be secured with a numbered container seal on each door latch that will be reflected on the cargo documentation.
- All containers carrying lead carbonate are placarded in accordance with (IMDG) dangerous goods regulations.

8.4 Dangerous Goods Container Storage Prior to Export

EspA will store all containers containing Magellan lead carbonate in a laydown area, which is licensed for the storage of dangerous goods of Class 6.1

8.5 Occupational Health and Safety

Each party undertaking each task described in this proposal will;

- Have a developed work procedure and/or JHA for tasks that have changed.
- Maintain good hygiene practices and utilise the appropriate facilities provided for such purposes.
- Wear, store and maintain the following minimum PPE: P3 respiratory protection for work in both the WMC shed and new concentrate shed: disposable overalls, impervious gloves, steel-capped boots, and safety glasses.
- Ensure protective clothing worn by personnel while working within the WMC shed and new concentrate shed is washed, cleaned or renewed once a week or more frequently where necessary to protect the health or safety of persons.

8.6 Training

Each party undertaking each task described in this proposal will ensure its personnel involved in the Lead Removal Plan will undertake an induction before any lead carbonate movement associated with the Lead Removal Plan begin.

The induction program shall include a 'lead awareness' program that provides information about and training on:

- The potential health risk and toxic effects associated with lead exposure.
- The control measures used to minimise the risk to health and safety.
- The correct use of methods used to minimise lead contamination in the workplace and persons at the workplace.
- The correct care and use of personal protective equipment.
- The need for, and details of, health surveillance.

8.7 Occupational Monitoring

8.7.1 Biological

Each party undertaking each task described in this proposal will

- Ensure its personnel working within both the WMC and new concentrate shed shall participate in a biological monitoring program, which includes monitoring blood lead levels prior to the person commencing work and again each month after the initial monitoring.
- All biological monitoring data for its personnel shall be delivered to the Health Management Branch of the Department of Consumer and Employment Protection within 72 hours of the results being received.

8.7.2 Air Quality

All personnel working within both the WMC and new concentrate shed shall participate in an atmospheric sampling program, which includes taking representative samples with a TWA exposure standard.

The atmospheric sampling program shall include, but not limited to, taking representative samples weekly during the bagging of Magellan lead carbonate within the WMC shed.

Atmospheric sampling shall be collected and analysed in accordance with i) in the case of inhalable dust, AS 3640; ii) in the case of respirable dust, AS 2985; iii) in the case of organic vapours, AS 2986.

All sampling data shall be provided to the Director, Health Management Branch, Department of Consumer and Employment Protection by the EsPA within 72 hours of the data being received.

8.8 Process Audit and Routine Inspections

8.8.1 Process Audit

Before bagging of Magellan lead carbonate begins, an independent process auditor will be engaged and managed by EsPA to:

- Audit the process for the packaging, storage and transport of lead carbonate from the WMC shed through to export from the Port.
- Report the findings of the auditing to the DEC, DoCEP, EsPA and Magellan Metals.

8.8.2 Routine Inspections

EsPA shall conduct or supervise the weekly inspections of the following:

- Safety labelling of bulk bags and shipping containers in Accordance with the Australian Dangerous Goods Code.
- Filled bag sealing, cleaning and inspection in accordance with the Lead Removal Plan.
- Personal Protective Equipment is worn, maintained and stored appropriately and effectively.
- Clean and dirty area procedures are followed.
- Chain of custody information for bag and container record keeping are in place and in accordance with the Lead Removal Plan.
- Container loading, closure, sealing, identification and record keeping procedures and documents are in place in accordance with the Lead Removal Plan.
- Monitoring undertaken and assessed in accordance with the Lead Removal Plan
- Any incidents are reported in accordance with all timeframes and requirements
- The status of any outstanding actions.

EsPA incorporate inspection findings into the weekly report provided to DEC and the community.

8.9 Emergency Response

Any release of lead carbonate to the environment outside the WMC shed not in accordance with the provisions of this Lead Removal Plan shall be dealt with under the provisions of the EsPA's Emergency Response Plan (see section 6) as updated to deal with lead carbonate releases.

8.10 Community Consultation

The EsPA and Magellan commit to implement the actions described under Section 7.4 of this proposal

8.11 Other

Any incidents or non compliances with commitments made in Section 6 of this proposal will be reported by the EsPA to the Director in writing within 24 hours of a reportable incident and followed by an incident report within a further seven working days.

A weekly summary report on compliance with the commitments made in Section 6 of this proposal will be provided to DEC and will be posted on the EsPA website, together with a progress report on removal of the stockpiled lead carbonate.

9 Amendments

The purpose of this Plan and its appendices is to provide the DEC with the information it requires to substitute the existing Prevention Notice. Some methods or equipment proposed in the Plan, however, may be subject to change because of unforeseen operational requirements. If the change will not materially increase the risk of the proposal causing material or serious environmental harm or pollution, and not materially increase the risk of there being an unsafe working environment, the change will be advised to DEC and then implemented. If there will be a material increase in these risks, however, DEC's approval will be obtained before the change is implemented.