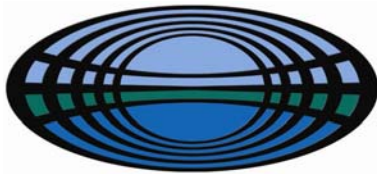


The following document is one of the key Management Plans prepared by Magellan that detail how the company will meet the stringent conditions imposed by the Western Australian Minister for Environment on its sealed shipment process for lead carbonate concentrate through the Port of Fremantle.

The Minister for Environment formally signed-off Magellan's key Management Plans, including the following document, on 13 August 2009.

The Minister for Environment's sign-off constituted the final stage in the approval process for Magellan to commence exports of lead carbonate concentrate sealed in bulk bags and locked in steel shipping containers through the Port of Fremantle.



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Emergency Response Plan

**Magellan Lead Carbonate
Concentrate**

Prepared for
Magellan Metals
by Strategen

June 2009

Emergency Response Plan

Magellan Lead Carbonate
Concentrate

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June 2009

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Client: Magellan Metals

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1. Magellan Lead carbonate concentrate Material Safety Data Sheet

1. INTRODUCTION

1.1 BACKGROUND

Magellan Metals Pty Ltd (Magellan) operates an open-cut lead carbonate mine and processing facilities approximately 30 km west of Wiluna, Western Australia.

The implementation of the original proposal was approved by the Minister for the Environment in November 2000, with the issue of Statement No. 559. The original proposal was for mining and processing facilities at Wiluna and for the bulk export of lead carbonate concentrate through the Port of Geraldton. On 29 December 2004, the Minister for the Environment approved a variation of the original proposal to export concentrate through the Port of Esperance rather than the Port of Geraldton. Mining commenced in November 2004 and bulk concentrate was exported through the Port of Esperance from June 2005 until 12 March 2007.

Magellan sought to change the export handling and transport procedures so that lead carbonate concentrate is shipped through Fremantle Ports in sealed bulk bags inside locked shipping containers. Under the changed proposal, concentrate produced at the mine site, bagged and locked in shipping containers, will be transported by road to Leonora and then by rail to Fremantle Ports, where it will be exported. Magellan received approval in February 2009 to export lead carbonate concentrate in sealed bulk bags inside locked shipping containers through Fremantle Ports.

1.2 PURPOSE AND SCOPE

Statement 783 was released in February 2009. Condition 12 of Statement 783 requires Magellan to develop a detailed Emergency Response Plan (ERP). Specifically, Condition 12 of the Statement requires:

“12 Emergency Response Plan

12-1 In the event that material containing lead carbonate is released from a shipping container into the environment at any point between the time the shipping container leaves the mine-site and the time it is removed from the State, the proponent shall ensure that all lead carbonate is removed from the affected environment.

12-2 Prior to removing shipping containers of lead carbonate concentrate from the mine-site at any time after 1 January 2009, the proponent shall develop a detailed Emergency Response Plan, to the requirements of the Minister for Environment on advice of the CEO, Fire and Emergency Service Authority, the Port Authority and relevant Local Governments. The Emergency Response Plan shall include:

- 1. emergency response procedures to respond to the release of material containing lead carbonate from the shipping containers at any point between the time the shipping container leaves the mine site and the time it is removed from the State;*
- 2. emergency response procedures to respond to the release of material containing lead carbonate from the sealed bags into the shipping container at any point between the time the shipping container leaves the mine site and the time it is removed from the State;*
- 3. post-incident clean up sampling to determine the effectiveness of the clean up; and*
- 4. procedures for reporting to the Department of Environment and Conservation, the relevant Local Government Authority*

12-3 The proponent shall implement the Emergency Response Plan required by condition 12-2.

12-4 Revisions of the Emergency Response Plan may be approved by the Minister for Environment on advice of the CEO, Fire and Emergency Service Authority, the Port Authority and relevant Local Governments.

12-5 The proponent shall implement revisions of the Emergency Response Plan required by condition 12-4.

This Emergency Response Plan is an overarching document outlining the responsibilities of all parties involved in the transport of lead carbonate concentrate from the point it leaves the mine site at Wiluna until it is loaded onto ships for export out of Fremantle Ports. The ERP has been developed to ensure that, regardless of scenario or location, adequate emergency response and subsequent clean up of a lead carbonate concentrate spill occurs.

1.3 PRODUCT DESCRIPTION

Magellan lead carbonate concentrate is a dark grey to light grey-brown soil-like amorphous solid material with a total lead content of 62-65%. The concentrate is produced at the minesite from processing blended mined ore with a lead content of up to 9%, and consisting predominantly of cerussite (lead carbonate) with some anglesite (lead sulphate).

The Australian Dangerous Goods Code (ADGC) 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 which is applicable to lead carbonate concentrate produced at Magellan Mine is:

- United Nations (UN) Number: 2291;
- Class: 6.1 (Toxic Substances);
- Correct Shipping Name: Lead Compound Soluble N.O.S. (contains 77% - 82% lead carbonate);
- Packing Group: III;
- Hazchem Code: 2Z.

The Material Safety Data Sheet (MSDS) for the lead carbonate concentrate is provided in Appendix 1 and provides a detailed description of lead carbonate concentrate, its effects and safety measures.

1.4 RELATED DOCUMENTS

This ERP is part of an integrated management program for the handling and transport of lead carbonate concentrate from the Magellan mine site to the time it is removed from the State. It has been prepared in accordance with Statement 783, and should be read in conjunction with the Health, Hygiene and Environmental Management Program (HHE Management Program) (Strategen 2009a) and the Health, Hygiene and Environmental Monitoring Program (HHE Monitoring Program) (Strategen 2009b).

1.5 RELEVANT LEGISLATION, POLICY AND GUIDELINES

The ERP has been developed, and will be implemented, in accordance with the following:

- *Dangerous Goods Safety Act 2004*;
 - Dangerous Goods Safety (Road and Rail Transport of Non-explosives) Regulations 2007
 - Dangerous Goods Safety (Goods in Ports) Regulations 2007
 - Dangerous Goods Safety (General) Regulations 2007
 - Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007
- *Emergency Management Act 2005*;
 - Emergency Management Regulations 2006
- *Fire Brigades Act 1942*.
- State Emergency Management Committee Policy Statement No. 7 – WA Emergency Management Arrangements (State Emergency Management Committee 2005)
- State Emergency Management Plan for WestNet Rail Emergencies 25 October 2006 WESTPLAN – WestNet Rail (WestNet 2006)
- Western Australian Hazardous Materials Emergency Management Plan WESTPLAN – HAZMAT 2005 (FESA 2005)
- Guidelines for the Preparation of a Transport Emergency Response Plan (National Road Transport Commission 2003)
- Australian Code for the Transport of Dangerous Goods by Road and Rail Edition 7

1.6 DEFINITIONS

Approved Responder: A company or person who is approved by the Chief Officer of the Department of Mines and Petroleum (formerly the Department of Consumer and Employment Protection) under regulation 184 of the Dangerous Goods Safety (Road and Rail Transportation of Non-explosives) Regulations 2007 to provide resources as soon as practicable to eliminate or reduce to an acceptable level, the risk associated with a dangerous situation involving the transportation of dangerous goods.

Emergency Responder: A company used by Magellan to respond to lead carbonate concentrate incidents and any subsequent clean up of lead carbonate concentrate and post-incident sampling within Fremantle Ports.

2. TRANSPORT OVERVIEW

2.1 TRANSPORT FROM MINE SITE TO FREMANTLE PORTS

The standard locked shipping containers (containing sealed bulk bags) will be loaded onto triple-road train trucks at the Magellan mine site. The trucks will travel approximately 400 km to Leonora, via Wiluna along the Goldfields Highway. At Leonora, a top-lifting container-handling machine will transfer the locked containers from the trucks to a designated secure storage area. The facility will be located at the end of the rail line, approximately 2 km north-west of the town. From the storage facility, the locked containers will be lifted with a top-lifting container-handling machine onto the rail wagons (two containers per wagon). The locked containers will then be transported approximately 850 km by rail to the Port at Fremantle, via Kalgoorlie, Southern Cross, Merredin, Northam and the Kewdale goods yard in Perth.

2.2 TRANSPORT AND STORAGE WITHIN THE PORT

At Fremantle Ports, the locked containers will be unloaded by Intermodal Link Services (ILS) at the rail terminal (near Berths 6 and 7) to a hardstand area using a top-lifting container handling machine.

ILS, responsible for the management of container delivery and transport within the Port, will coordinate the delivery of the containers from the rail terminal hardstand area to Patricks (Berths 7 – 10) and Dubai Ports (Berths 4 and 5) stevedore terminals.

The choice of stevedore is dependent on the choice of shipping operator which is determined prior to the arrival of locked containers at the Port, but may change overtime. Containers will be moved from the rail terminal hardstand area to the respective hardstand areas of each stevedore company using a top-lifting container-handling machine, where they will be placed in export stacks as determined by the Yard Planner in accordance with the vessel loading sequence.

2.3 SHIP LOADING

For ship loading, the containers will be lifted from the discharge stacks by rubber-tyred gantries (RTGs) and placed on mafi trailers (roll trailers used for terminal haulage and stowage of containers within a port), which will be towed into position beneath the loading crane at the wharf's edge. The locked containers will then be lifted from the trailers and stowed on the vessel by the loading crane.

3. OBJECTIVES AND PRIORITIES

3.1 OBJECTIVES

The objectives of this ERP are to:

- ensure adequate emergency preparedness in case of any spill of lead carbonate concentrate;
- facilitate a rapid and effective emergency response and recovery;
- minimise any adverse effects on people, damage to property or harm to the environment in an emergency;
- ensure satisfactory clean up of any areas affected during the spill or recovery process;
- communicate vital information in a timely manner to all relevant persons involved in the transport emergency (both internal personnel and external agencies).

This ERP specifically addresses the preparedness, response capability and recovery plans of Magellan and its contractors for dealing with lead carbonate concentrate spills during the transport and storage of lead carbonate concentrate from the mine site to Fremantle Ports.

3.2 SAFETY PRIORITIES

Magellan's safety priorities during an emergency are to:

- protect human life;
- prevent lead carbonate concentrate contact with surrounding environments;
- recover all lead carbonate concentrate where practicable;
- monitor impacts and recovery;
- review emergency response procedures;
- implement corrective action programs as necessary;
- report to relevant authorities.

4. ROLES AND RESPONSIBILITIES

This section outlines the specific responsibilities of emergency response personnel involved in the handling and transport of lead carbonate concentrate from the Magellan mine site to Fremantle Ports.

4.1 MAGELLAN METALS

Magellan is responsible for ensuring that all companies involved have the equipment, knowledge, capability and procedures in place to undertake their roles as described.

Specifically, Magellan is responsible for:

- providing specific product and safety/handling advice to all relevant parties including the Emergency Responder, emergency services and any other parties involved in managing any loss of product along the transport route;
- loading lead carbonate concentrate into locked containers, then onto trucks using top-lifting container-handling equipment;
- contracting an Approved Responder¹ to control the clean up response that may result from an incident at any location between the mine site and the entry point to land owned by Fremantle Ports;
- appointing an Emergency Responder for emergency response within Fremantle Ports;
- reporting all lead carbonate concentrate spills to FESA, the Department of Environment and Conservation (DEC)², Department of Mines and Petroleum, Department of Health (DoH) and relevant Local Government Authorities.

Magellan has direct responsibility for emergency response within its mine and mineral lease boundaries and is not addressed within this ERP. Magellan's responsibility to respond directly to an emergency ceases at the end of the lease boundary (truck entry/exit point to the Goldfields Highway).

4.2 ARG – A QR COMPANY

ARG – a Queensland Rail Company (ARG) is responsible for emergency response during:

- transport of locked shipping containers by truck from the mine site to Leonora;
- storage of locked shipping containers at Leonora before being loading onto trains
- loading of locked shipping containers onto trains at Leonora for transport to Fremantle Ports;

¹ Under the Dangerous Goods Safety (Road and Rail Transportation of Non-explosives) Regulations 2007 section 185, the rail operator must be an Approved Responder or have a contract with an Approved Responder to deal with dangerous situations when transporting placard loads. The Chief Officer (DMP) has the authority to approve an emergency responder (section 184). The transport of lead carbonate concentrate will not commence until an emergency responder has been approved.

² Magellan will contact both the DEC Head Office (Pollution Response Unit) and the relevant regional office depending on the location of the spill. Regional offices include DEC Goldfields, DEC Wheatbelt and DEC Swan.

- transport of locked shipping containers from Leonora to Fremantle Ports.

The responsibility of ARG to respond to an emergency commences at the end of the Magellan lease boundary (see above) (the truck entry/exit point on to the Goldfields Highway), and ends at the train entry point at Fremantle Ports (Tydeman Road Level Crossing).

ARG has applied to the Department of Mines and Petroleum to become an Approved Responder under the *Dangerous Goods Safety Act 2004*. This approval was granted in August 2008. This enables ARG to undertake a complete emergency response process including:

- notification of relevant stakeholders and isolation of the area;
- containment and prevention of further spill;
- remediation;
- validation sampling.

The roles and responsibilities for personnel within ARG to respond to an emergency are described in Table 1-3.

Table 1 Roles and Responsibilities for incidents during road transport and at Leonora storage facility

Role	Responsibility	Relevant section of ERP	Reporting to
ARG Business Manager	Contacts ARG Risk and Environment Manager and Magellan advising of product spills. Ensures post incident investigations are completed relevant authorities are notified and corrective and preventative actions taken.	4.2, 6.1, 8, 9	Magellan General Manager - Operations
ARG Risk and Environment Manager	Engages the ARG Spill Clean up Team (SCUT) to respond if product spill has occurred.	4.2, 6.1	ARG Business Manager
Trucking Supervisor	Attends incident site and determines scope and level of response required. Advises FESA, Magellan Mine Manager - Operations, ARG Business Manager of the incident. Remains on-site to supervise the emergency response until such time as the emergency response (including preventative and corrective actions) is completed or responsibility for the situation has been passed on to an appropriate authority or nominated representative.	4.2, 6.1	ARG Business Manager
Truck Driver	Reports details of incident during road transport or at the Leonora rail yard including any loss of product to Trucking Supervisor.	4.2, 6.1	Trucking Supervisor
FESA	Activates WESTPLAN-HAZMAT (FESA 2005). Responds and ensures emergency response actions are undertaken until the site is considered 'safe for recovery' by SCUT.	4.6, 6.1	NA
Spill Clean up Team (SCUT)	Clean up of lead carbonate concentrate spills.	4.2.2, 5.2.1, 5.2.2, 5.2.3, 6.1, 7	ARG Risk and Environment Manager

Table 2 Roles and Responsibilities for incidents occurring at ARG terminals or depots

Role	Responsibility	Relevant section of ERP	Reporting to
ARG Business Manager	Contacts ARG Risk and Environment Manager and Magellan advising of product spills. Ensures post incident investigations are completed relevant authorities are notified and corrective and preventative actions taken.	4.2, 6.3, 8, 9	Magellan General Manager - Operations
ARG Chief Warden	<ol style="list-style-type: none"> 1. Ascertains the nature of the emergency and ensures appropriate corrective action (clean up) is taken. 2. Ensures that FESA has been notified. 3. Ensures that Area Wardens are advised of the situation. 4. If necessary initiate evacuation procedures. 5. Briefs the emergency services personnel upon arrival, on type, scope and location of the emergency and thereafter acts on the Senior Officers' instructions. 6. Transmit and record instructions and information given to Area Wardens and staff. 	4.2, 6.3	Business Manager Goldfields (ARG)
ARG Risk and Environment Manager	Engages the ARG Spill Clean up Team (SCUT) to respond if product spill has occurred.	4.2, 6.3	Business Manager Goldfields (ARG)
ARG Area Warden	On becoming aware of an emergency: <ol style="list-style-type: none"> 1. Commence evacuation if the circumstances in their area warrant this. 2. Communicate with the Chief Warden by whatever means available and act on his instructions. 	4.2, 6.3	ARG Chief Warden
On-site personnel	Notifies Area Warden immediately if an incident has occurred.	4.2, 6.3	ARG Area Warden
FESA	Activates WESTPLAN-HAZMAT (FESA 2005). Responds and ensures emergency response actions are undertaken until the site is considered 'safe for recovery' by SCUT.	4.6, 6.3	NA
Spill Clean up Team (SCUT)	Clean up of lead carbonate concentrate spills.	4.2.2, 5.2.1, 5.2.2, 5.2.3, 6.3, 7	ARG Risk and Environment Manager

4.2.1 ARG and WestNet Rail roles and responsibilities for incidents on the main rail

WestNet Rail operates and maintains the main rail which ARG will use to transport lead carbonate concentrate to Fremantle Ports. WestNet Rail will respond to, and manage the incident site of any rail freight incidents occurring on the main rail including (but not limited to):

- Earthquake;
- fire (aboard train and/or surrounding area);
- flood (including washaways);
- derailments;
- spills and/or leaks;
- collision with infrastructure;
- collision with rail rolling stock;
- collision with vehicles (WestNet Rail, 2006).

ARG will cooperate with WestNet Rail to isolate and contain the lead carbonate concentrate spill and will then be responsible for the clean up of the spill and removing rolling stock (Table 3).

Table 3 Roles and Responsibilities for incidents occurring during rail transport on the main rail

Role	Responsibility	Relevant section of ERP	Reporting to
WestNet Rail Access Manager	Selects senior management person to act as Operations Area Manager.	4.2.1, 6.2	Magellan Occupational Health, Safety and Environment Manager
WestNet Rail Operations Area Manager	Liaises with Train Control Centre to determine extent of incident. Selects section commanders who will report to the Incident Manager. Notifies FESA of incident. Responsible for alerting public authorities as required.	4.2.1, 6.2	WestNet Rail Access Manager
WestNet Rail Incident Manager	Proceeds to site and determines the scope and type of assistance required from public authorities. The Incident Manager(s) remains on-site to supervise the emergency response until such time as the responsibility for the situation has been passed on to an appropriate authority (i.e. FESA) Develops preventative actions as required.	4.2.1, 6.2	WestNet Rail Operations Manager
Driver/on ground personnel	Contacts Operations Manager as soon as practicable after incident has occurred.	4.2.1, 6.2	Operations Manager in the first instance and then the Incident Manager, once appointed
ARG Risk and Environment Manager	Appointing a Spill Clean up Team to respond to spills.	4.2, 6.2	Magellan Occupational Health, Safety and Environment Manager
FESA	Activates WESTPLAN-HAZMAT (FESA 2005). Responds and ensures emergency response actions are undertaken until the site is considered 'safe for recovery' by SCUT.	4.6, 6.2	NA
Spill Clean up Team (SCUT)	Containment and clean up of lead carbonate concentrate spills.	4.2.2, 5.2.1, 5.2.2, 5.2.3, 6.2, 7	WestNet Rail Incident Manager

4.2.2 ARG Spill Clean up Team

ARG has assembled a Spill Clean up Team (SCUT), which will be an Approved Responder under the Dangerous Goods (Road and Rail Transport of Non-explosives) Regulations 2007 and will undertake or direct the implementation of the emergency response and clean up. The SCUT consists of a minimum of six ARG personnel located in Welshpool, Picton and Kalgoorlie. Following the notification of an emergency, an appropriately sized SCUT team will be appointed by the ARG Risk and Environment Manager as soon as practicable.

Additional resources, including clean up contractors, plant operating personnel, waste management contractors, environmental consultants and other specialists, will be engaged by this team as required to assist with the clean up and any required monitoring. The need for additional resources will be determined on an as needs basis if the immediate resources available to ARG (Section 5) are not suitable. This decision will be made by the SCUT Team Leader in consultation with relevant authorities which may include WestNet Rail, The ARG Derailment Response Team, FESA, DEC or DMP.

4.3 INTERMODAL LINK SERVICES

Intermodal Link Services (ILS) is responsible for the initial emergency response during:

- offloading containers from the trains at the rail terminal hardstand area at Fremantle Ports
- transport of containers to the hardstand areas at Patrick (Berths 7 – 10) and DP World (Berths 4 - 6).

ILS's responsibility to respond to an emergency commences at the train entry point at the Port (Tydeman Level Crossing) and ends after ILS has transported the containers to the hardstand areas at either Patrick or DP World.

Table 4 Roles and Responsibilities for personnel to respond to incidents at Intermodal Link Services

Role	Responsibility	Relevant section of ERP	Reporting to
Managing Director	Ensures post-incident investigations are conducted and preventative actions are taken as required and relevant authorities notified.	4.3, 6.4, 8, 9	Magellan Occupational Health, Safety and Environment Manager
Operations Manager	Proceeds to site and determines the scope and type of assistance needed from public authorities. Notifies FESA and Emergency Responder of incident. The Operations Manager(s) remains on-site to supervise the emergency response until such time as the responsibility for the situation has been passed on to an appropriate authority (i.e. FESA).	4.3, 4.4, 4.6, 5.2.2, 5.2.3, 6.4	Managing Director
Supervisor	As above, in the absence of Operations Manager.	See above	Operations Manager/Managing Director
On-site personnel	Notifies Operations Manager immediately if an incident has occurred.	4.3, 6.4	Operations Manager
FESA	Activates WESTPLAN-HAZMAT (FESA 2005). Responds and ensures emergency response actions are undertaken until the site is considered 'safe for recovery' by SCUT.	4.6, 6.4	NA

4.4 PATRICK AND DP WORLD

Patrick and DP World are responsible for the initial emergency response during:

- movement of containers into discharge stacks;
- storage of containers within discharge stacks;
- loading of containers onto ships for export.

The responsibility of Patrick and DP World to respond to an emergency begins once ILS has transported the containers to their hardstand areas and ends once the containers are loaded onto ships.

Table 5 Roles and Responsibilities for personnel to respond to incidents at Patrick and DP World

Role	Responsibility	Relevant section of ERP	Reporting to
Incident Manager	Provision of technical advice to advise emergency services of emergency. Ensures post-incident investigations are conducted and preventative actions are taken as required and relevant authorities notified.	4.4, 6.5, 8, 9	Magellan Occupational Health, Safety and Environment Manager
Shift Manager	Proceeds to site and determines the scope and type of assistance needed from public authorities. Notifies FESA and Emergency Responder of incident. The Shift Manager(s) remains on-site to supervise the emergency response until such time as the responsibility for the situation has been passed on to an appropriate authority (i.e. FESA).	4.4, 4.5, 4.6, 5.2.2, 5.2.3, 6.5	Incident Manager
Security	Provide control of access and support as required.	4.4, 6.5	Shift Manager
On-ground personnel	Notifies Shift Manager immediately if an incident has occurred.	4.4, 6.5	Shift Manager

4.5 EMERGENCY RESPONDER

An Emergency Responder will be appointed by Magellan and will be responsible for the clean up of any lead carbonate concentrate spill and the subsequent post-incident sampling should a spill occur within the Port under the jurisdiction of either ILS, Patrick or DP World. ILS, Patrick or DP World will be responsible for notifying an Emergency Responder immediately following an incident to ensure a spill is cleaned up before it has a chance to contaminate surrounding environments.

4.6 FESA

The Fire and Emergency Services Authority (FESA) is the designated Hazard Management Agency (HMA) under the Emergency Management Regulations 2006 for hazardous materials incidents for the whole of the State. Therefore under the Western Australian Hazardous Materials Emergency Management Plan (WESTPLAN – HAZMAT) (FESA 2005), FESA must be notified of any emergency involving hazardous materials. FESA will respond and undertake any mitigating actions required to render the situation ‘safe for recovery’ so that the designated SCUT and Emergency Responders can move in and undertake clean up and recovery. While WestNet Rail and ARG are recognised as the HMA for all rail incidents, they will call upon FESA, as a combat agency, to manage any aspects of the incident which involves hazardous materials.

FESA’s main priority will be to ensure that any lead carbonate concentrate spillage is contained and will not enter or harm the environment. FESA will not play any part in the clean up of spills, but will ensure that recovery aspects are instigated. FESA will leave the incident after it is deemed ‘safe for recover’ after any fires or unsafe structural issues are resolved.

4.7 FREMANTLE PORTS

Fremantle Ports shall be advised by ILS, Patrick or DP World of any lead carbonate concentrate incident occurring within Fremantle Ports. FPA staff will not be responsible for any containment or clean up; however they will be available to provide the following if required:

- port specific information and management of shipping operations;
- incident management support personnel as required;

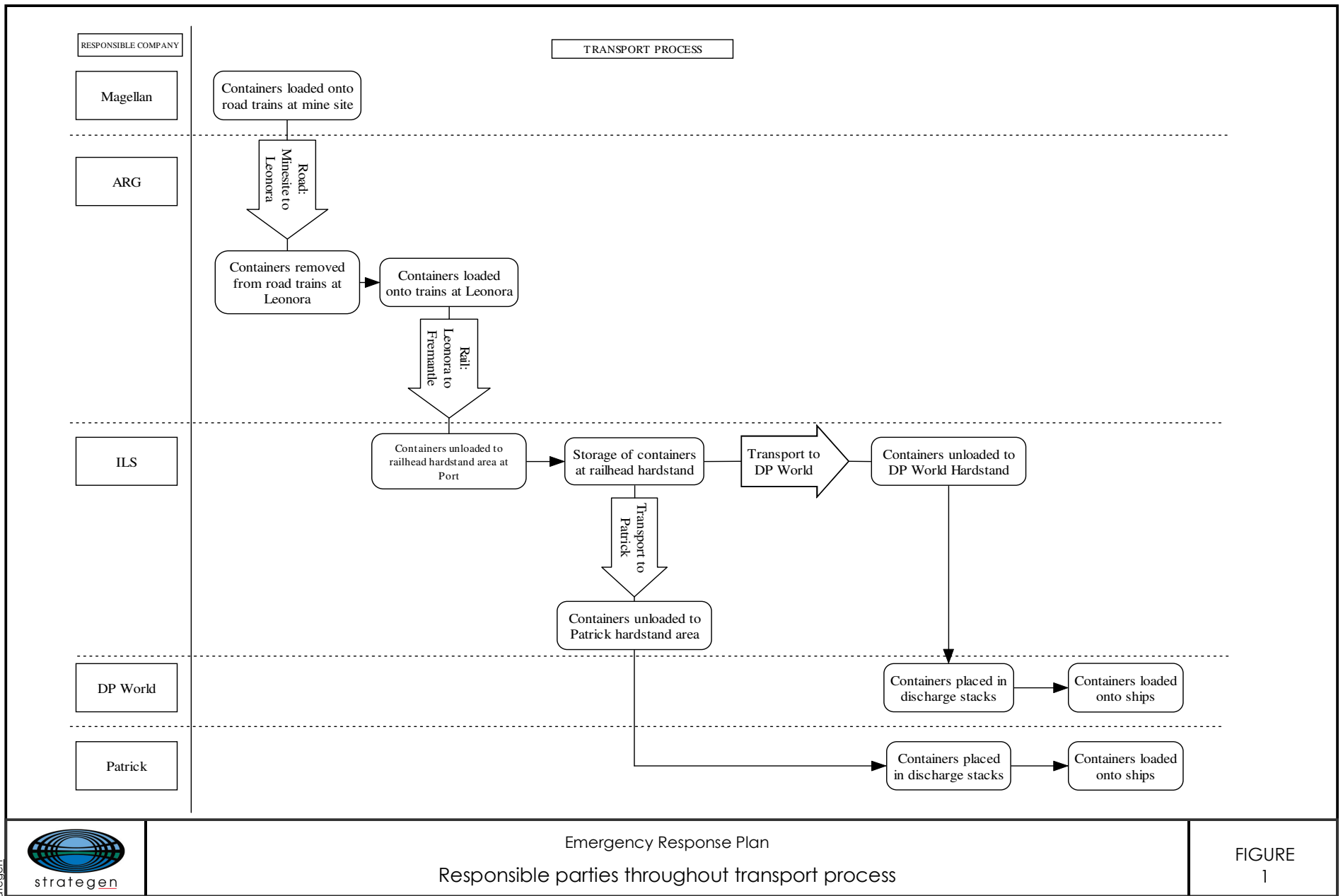
- a Emergency Liaison Officer in the Berth Operator Control Room if required;
- coordination of media management with Berth Operator.

Within Fremantle Ports, each operator has a designated area in which they are responsible for the emergency response to a lead carbonate concentrate spill (Figure 2).

4.8 DEPARTMENT OF CONSERVATION AND ENVIRONMENT (DEC)

The responsibilities of DEC in regards to notification, reporting and investigation are documented in the various sections of this ERP, and within the Environmental Protection Act 1986. After FESA has declared the incident as 'safe for recovery' and subsequently leaves the site, DEC becomes the lead regulatory agency for the clean-up and decontamination by virtue of the provisions of the Environmental Protection Act 1986. DEC also has responsibility under the WESTPLAN – HAZMAT.

Should there be a spill of lead carbonate concentrate, DEC will respond to the scene and issue a Clean-up Scope of Works and an Environmental Field Notice or Prevention Notice on the responsible party. DEC will also consult and advise the responsible parties on the arrangements for clean-up, decontamination of the area, transport of spilled product, required monitoring and validation sampling and analysis.





5. RESOURCES

5.1 EMERGENCY CONTACT LIST

Emergency contact lists will be provided to all personnel during inductions and will be displayed in prominent positions inside transport vehicles and within Fremantle Ports. The contact list will include:

- Magellan Metals;
- ARG – a QR Company (ARG);
- Intermodal Link Services (ILS);
- Patrick;
- DP World;
- Emergency Responder;
- Fire and Emergency Services Authority (FESA);
- Fremantle Port Authority (FPA);
- Department of Environment and Conservation (DEC);
- Department of Mines and Petroleum (DMP);
- Relevant Local Government Authorities.

5.2 EQUIPMENT AND MATERIALS

5.2.1 Personal Protective Equipment

ARG, ILS, DP World and Patrick will be required to have the following Personal Protective Equipment (PPE) available to their personnel in the event of a lead carbonate concentrate spill:

- disposable overalls;
- high visibility vests;
- gloves;
- eye protection;
- respirators (P3) in accordance with AS/NZS 1715 and AS/NZS 1716;
- steel cap boots.

PPE will be kept in central locations at several sites and in train and truck cabins to enable immediate access to PPE. The exact locations will be determined by each company and communicated to personnel during inductions.

The maintenance of PPE will be the responsibility of the company responsible for emergency response in each area (Section 4, Figure 1).

5.2.2 Spill kits

All organisations responsible for the emergency response to a lead carbonate concentrate spill will require spill kits to be readily available. Sites that will have spill kits are listed in Table 6. These kits

have been designed specifically to assist with the safe and efficient containment of lead carbonate concentrate spills. ARG's spill kits will also contain equipment for the clean up of a spill.

ARG spill clean up kits

ARG shall maintain mobile spill clean up kits on site at Picton, Kalgoorlie and Forrestfield. These kits will have equipment for initial containment and the subsequent clean up of spills. The kits shall include, but not be limited to the following items:

- HB76 Dangerous Goods Initial Emergency Response Guide;
- PPE (section 5.2.1);
- P3 respirators;
- first aid kit;
- sampling equipment (including jars, small esky, trowel, Chain of Custody forms);
- containment equipment (including heavy-duty plastic sheeting, gaffa tape, tarpaulins);
- sand bags for bunding;
- encrusting agent or water application equipment for dust suppression;
- soap and paper towels for personnel hygiene;
- water containers;
- rags and disposable clean up wipes;
- disposal bags for contaminated clothing and other disposable equipment;
- signage/flagging tape/spray paint for isolating contaminated areas or flagging key locations;
- pegs and mallet;
- shovels, scoops, brooms and other digging/clean up implements;
- copies of the Emergency Response Plan.

Spill kits at the Port

ILS, Patrick and DP World shall have spill kits available to personnel on-site. The spill kits shall have equipment suitable for the initial containment of a spill and shall include:

- PPE (section 5.2.1);
- first aid kit;
- containment equipment (including heavy-duty plastic sheeting, gaffa tape, tarpaulins);
- sand bags for bunding;
- encrusting agent or water application equipment for dust suppression;
- soap and paper towels for personnel hygiene;
- water containers;
- rags and disposable cleanup wipes;
- disposal bags for contaminated clothing and other disposable equipment;
- signage / flagging tape / spray paint for isolating contaminated areas or flagging key locations;
- pegs and mallet;

- copies of the Emergency Response Plan.

The clean up of a spill shall be carried out by an Emergency Responder and therefore equipment for clean up shall not be necessary in the spill kits within the Port.

Other clean up equipment

In addition to the above equipment held at the ARG depots, it may be necessary to obtain additional equipment for clean up (particularly for major spills), which may include but will not be limited to:

- vacuum cleaner;
- mobile plant (bobcat, front-end loader and crane);
- washdown facility which may include a water source/tanker and impervious material such as heavy duty plastic sheeting (may need to be constructed at incident site).

These items will not be immediately on hand but will be either constructed (washdown facility) or hired (vacuum, mobile plant equipment) for use in the event of a spill that is unable to be efficiently cleaned up by three or four personnel using equipment in the ARG spill clean up kits.

5.2.3 Equipment available at each stage of transport

Table 6 summarises the emergency response equipment needed at various stages of the transport process.

Table 6 Emergency response equipment available throughout transport process

Stage / Site	Equipment present
Leonora Storage Facility	PPE Spill clean up kit
ARG Kalgoorlie Depot	PPE Spill clean up kit
ARG Forrestfield Depot	PPE Spill clean up kit
ARG Picton Depot	PPE Spill clean up kit
ILS	PPE Spill clean up kit
Patrick	PPE Spill clean up kit
DP World	PPE Spill clean up kit

6. EMERGENCY RESPONSE PROCEDURES

The emergency response procedures outline the actions involved in the immediate response and subsequent clean up of a lead carbonate concentrate spill along the transport route from the mine site to ship loading at Fremantle Ports. They do not include procedures for other emergencies that may occur simultaneously, or first aid assistance.

6.1 TRANSPORT FROM MINE SITE TO LEONORA STORAGE FACILITY

The emergency response actions in Table 7 encompasses all incidents occurring during the transportation by truck of lead carbonate concentrate from the mine site to Leonora, and the storage of lead carbonate concentrate at the Leonora storage facility.

Table 7 Emergency response actions for incidents occurring during truck transport and storage at the Leonora storage facility

Trigger	Action	Responsibility
Incident which has potential to result in a lead carbonate concentrate spill (Driver unharmed)	The trucking supervisor shall be notified of incidents as soon as practicable, including the following details: <ul style="list-style-type: none"> • where the incident occurred; • the date and time of the incident; • the nature of the incident; • the dangerous goods being transported when the incident occurred; • any other details the Operations Manager may require. 	Truck Driver
	Trucking Supervisor shall attend the incident site as soon as practicable.	Trucking Supervisor
	Determine whether a spill has occurred and extent of the spill following notification.	Driver
	Determine scope of the incident and level of response required.	Trucking Supervisor
Spill detected	Notify FESA, Magellan and ARG Business Manager of spill. Ensure the words 'Hazmat Incident' are stated.	Trucking Supervisor
	Notify ARG Risk and Environment Manager of the spill.	ARG Business Manager
	Notify ARG's Spill Clean up Team (SCUT).	ARG Risk and Environment Manager
	Notify DEC (Pollution Response Unit) and DEC Goldfields Office. Ensure the words 'Hazmat Incident' are stated.	Magellan
	Control source of spill.	FESA
	Establish a hazard zone to exclude non-emergency personnel.	FESA
	If recovery of product is not immediately possible, prevent the further spread of product by one or a combination of the following depending on conditions: <ul style="list-style-type: none"> • waterproof tarpaulins or plastic sheeting; • sandbags or bunding; • chemical tarpaulin; • dampening of product with spray. 	FESA
	Secure spill site and ensure spill is contained and site is 'safe for recovery' and clean up to commence.	FESA
	Clean up spill as per clean up procedures (Section 7).	SCUT
Conduct post clean up sampling to ensure effective clean up of spill has occurred.	SCUT	
Investigate the cause of the incident and establish an action plan to reduce risk of incident re-occurring (Section 9).	ARG Business Manager Magellan	

Trigger	Action	Responsibility
	Complete incident report forms.	ARG Business Manager Magellan
	Provide an environmental incident report to DEC and DMP on incident response.	Magellan
Container compromised but no outside leak detected	Determine the risk of lead carbonate concentrate leakage within container.	Trucking Supervisor
Risk of broken bags within container confirmed	Notify Magellan and ARG Risk and Environment Manager of container damage.	Trucking Supervisor
	Return container(s), whether compromised or not, and bags safely to mine site via road for repackaging, should the sealed bags be compromised or lead carbonate concentrate be found outside the bags. Clean-up and containment of spilled lead carbonate concentrate to occur.	ARG/Magellan FESA SCUT

6.2 TRANSPORT FROM LEONORA TO FREMANTLE PORTS ON THE MAIN RAIL

Table 8 Emergency response actions for incidents occurring on the main rail

Trigger	Action	Responsibility
Incident which has potential to result in a lead carbonate concentrate spill (driver unharmed)	Notify WestNet Rail Operations Manager as soon as practicable and provide the following details: <ul style="list-style-type: none"> • where the incident happened; • the date and time of the incident; • the nature of the incident; • the dangerous goods being transported when the incident occurred; • any other details the Operations Manager may require. 	Train Driver
	Notify the WestNet Rail Incident Manager who will attend the incident site as soon as practicable.	Operations Manager Incident Manager
	Determine whether a spill has occurred and to what extent it has occurred following notification.	Driver
Spill detected	Notify FESA, Magellan and ARG Risk and Environment Manager of spill. Ensure the words 'Hazmat Incident' are stated.	Incident Manager
	Notify ARG's Spill Clean up Team (SCUT).	Risk and Environment Manager
	Notify DEC (Pollution Response Unit), appropriate Regional DEC Office and appropriate local Government. Ensure the words 'Hazmat Incident' are stated.	Magellan
	Control the source of spill.	FESA
	Establish a hazard zone to exclude non-emergency personnel.	FESA/ARG
	If recovery of the spill is not immediately possible, prevent the further spread of the spill by one or a combination of the following, depending on conditions: <ul style="list-style-type: none"> • waterproof tarpaulins or plastic sheeting; • sandbags or bunding; • chemical tarpaulin; • dampening of product with spray. 	FESA
	Secure spill site, and ensure spill is contained and site is 'safe for recovery' and clean up to commence.	FESA
Clean up spill as per clean up procedures (Section 7).	SCUT	
Conduct post clean up sampling to ensure effective clean up of spill has occurred.	SCUT	

Trigger	Action	Responsibility
	Investigate the cause of the incident and establish an action plan to reduce risk of incident re-occurring (Section 9).	ARG Magellan
	Complete incident report forms.	ARG Magellan
	Provide an environmental incident report to DEC and DMP regarding the incident response.	Magellan
Container compromised but no outside leak detected	Determine the risk of lead carbonate concentrate leakage within container.	FESA
Risk of broken bags within container confirmed	Notify Magellan and ARG Risk and Environment Manager of container damage.	Incident Manager
	Clean-up and containment of spilled lead carbonate concentrate to occur as per clean-up procedures (Section 7). Unbroken bags to be inspected to ensure integrity of bag and that there is no lead carbonate concentrate on the outside of the bags or within the container (if container is not compromised). If container is compromised, the clean and sealed bags will be transferred into another clean and non-compromised container, prior to any further transport commencing.	ARG/Magellan FESA SCUT

6.3 INCIDENTS AT ARG DEPOTS AND YARDS

The emergency response actions in Table 9 encompasses all incidents occurring within ARG's depots and yards.

Table 9 Emergency response actions for incidents occurring at ARG depots and yards

Trigger	Action	Responsibility
Incident which has potential to result in a lead carbonate concentrate spill	First on scene shall notify Area Warden as soon as practicable, and provide the following details: <ul style="list-style-type: none"> where the incident happened; the date and time of the incident; the nature of the incident; the dangerous goods being stored when the incident happened; any other details the Operations Manager may require. 	ARG personnel
	Notify the Chief Warden who will attend the incident site immediately.	Area Warden
	Determine whether a spill has occurred and to what extent it has occurred.	Chief Warden
Spill detected	Notify FESA, Magellan and ARG Risk and Environment Manager of spill. Ensure the words 'Hazmat Incident' are stated.	Chief Warden
	Notify ARG's Spill Clean up Team (SCUT).	Risk and Environment Manager
	Notify DEC (Pollution Response Unit) and appropriate Regional DEC Office. Ensure the words 'Hazmat Incident' are stated.	Magellan
	Control source of spill.	FESA
	Establish a hazard zone to exclude non-emergency personnel by: <ul style="list-style-type: none"> erecting physical barriers to cordon off and isolate area; displaying signs or post sentries at strategic points to ensure unauthorised persons or vehicles do not enter the area. 	FESA/ARG

Trigger	Action	Responsibility
	If recovery of product is not immediately possible, prevent the further spread of the product by one or a combination of the following, depending on weather conditions: <ul style="list-style-type: none"> • waterproof tarpaulins or plastic sheeting; • sandbags or bunding; • chemical tarpaulin; • dampening or product with spray. 	FESA
	Secure spill site, and ensure spill is contained and site is 'safe for recovery' and clean up to commence.	FESA
	Clean up spill as per clean up procedures (Section 7).	SCUT
	Conduct post clean up sampling to determine whether effective clean-up of spill has occurred.	SCUT
	Investigate the cause of the incident and establish an action plan to reduce risk of incident re-occurring (Section 9).	ARG Magellan
	Complete Incident report forms.	ARG Magellan
	Provide an environmental incident report to DEC and DMP.	Magellan
Container compromised but no outside leak detected	Determine risk of lead carbonate concentrate leakage within container.	FESA
Risk of broken bags within container confirmed	Notify Magellan of container damage. Clean-up and containment of spilled lead carbonate concentrate to occur as per clean-up procedures (Section 7). Unbroken bags to be inspected to ensure integrity of bag and that there is no lead carbonate concentrate on the outside of the bags or within the container (if container is not compromised). If container is compromised, the clean and sealed bags will be transferred into another clean and non-compromised container, prior to any further transport commencing.	Chief Warden ARG/Magellan FESA SCUT

6.4 INTERMODAL LINK SERVICES (ILS)

Table 10 Emergency response actions for incidents occurring within Intermodal Link Services jurisdiction at Fremantle Ports

Trigger	Action	Responsibility
Spill detected	Personnel first on scene shall immediately move up-wind then notify Operations Manager of the spill and provide the following details: <ul style="list-style-type: none"> • location of the spill; • description and extent of the spill (if known); • container number(s); • any other details that the Supervisor may require. 	ILS personnel
	Restrict access to area until area is deemed to be safe by implementing the following measures: <ul style="list-style-type: none"> • erecting physical barriers to cordon off and isolate area; • displaying signs or post sentries at strategic points to ensure unauthorised persons or vehicles do not enter the area. 	Operations Manager
	Prevent product entering any nearby drains using the barricade materials provided in the spill kit.	Operations Manager
	Determine the contents of container(s) by referring to: <ul style="list-style-type: none"> • consignment note; • package markings; • container number(s). 	Operations Manager

Trigger	Action	Responsibility
Lead carbonate concentrate spill confirmed	Immediately notify FESA and the Emergency Responder of incident and provide the following details: <ul style="list-style-type: none"> • who is calling; • where the emergency is; • what the emergency is and when it started; • what is being done to combat the emergency; • what resources are required; • which gate to use for entry. Ensure the words 'Hazmat Incident' are stated.	Operations Manager
	Notify Fremantle Port Authority (FPA) and Magellan of the spill.	ILS
	Notify DEC (Pollution Response Unit) and DEC Swan of the spill. Ensure the words 'Hazmat Incident' are stated.	Magellan
	Wear appropriate PPE until the spill has been cleaned up.	FESA
	Control the source of spill if possible to do so.	FESA
	If recovery of product is not immediately possible, prevent the further spread of the product by one or a combination of the following, depending on weather conditions: <ul style="list-style-type: none"> • waterproof tarpaulins or plastic sheeting; • sandbags or bunding; • chemical tarpaulin; • dampening or product with spray. 	FESA
	Secure spill site, and ensure spill is contained and site is 'safe for recovery' and clean up to commence.	FESA
	Clean up spill as per clean up procedures (Section 7).	Emergency Responder
	Conduct post clean up sampling to ensure effective clean- up of spill has occurred.	Emergency Responder
	Investigate the cause of the incident and establish an action plan to reduce the risk of the incident re-occurring (Section 9).	ILS Magellan
	Complete an incident report form.	Operations Manager
	Provide an environmental incident report to DEC and DMP of incident response.	Magellan
Container compromised but no outside leak detected	First on scene shall notify Operations Manager of incident and provide the following details: <ul style="list-style-type: none"> • location of the damaged container; • description and extent of the damage • container number(s); • any other details that the Supervisor may require. 	Employees
	Confirm contents of the container shall be by referring to: <ul style="list-style-type: none"> • consignment note; • package markings; • container number(s). 	Operations Manager
	Notify FESA, Magellan and Emergency Responder of damage to container.	Operations Manager
	Notify DEC (Pollution Response Unit) and DEC Swan of the incident. Ensure the words 'Hazmat Incident' are stated.	Magellan
	Determine extent of damage.	FESA
Risk of broken bags within container confirmed	Clean-up and containment of spilled lead carbonate concentrate to occur as per clean-up procedures (Section 7). Unbroken bags to be inspected to ensure integrity of bag and that there is no lead carbonate concentrate on the outside of the bags or within the container (if container is not compromised). If container is compromised, the clean and sealed bags will be transferred into another clean and non-compromised container, prior to any further transport commencing.	Magellan FESA Emergency Responder

Trigger	Action	Responsibility
	Complete incident report form.	Operations Manager

6.5 STEVEDORE COMPANIES (DP WORLD AND PATRICK)

Table 11 Emergency response actions for incidents occurring within DP World or Patrick jurisdiction at Fremantle Ports

Trigger	Action	Responsibility
Spill detected	Employee first on scene shall immediately move up-wind then notify the Shift Manager of the spill and provide the following details: <ul style="list-style-type: none"> location of the spill; description and extent of the spill if known; container number(s); any other details that the Supervisor may require. 	Employees
	Notify Incident Manager of spill.	Shift Manager
	Restrict access to area until area is deemed to be safe by implementing the following: <ul style="list-style-type: none"> erecting physical barriers to cordon off and isolate area; displaying signs or post sentries at strategic points to ensure unauthorised persons or vehicles do not enter the area. 	Shift Manager
	Determine contents of the container.	Shift Manager
Lead carbonate concentrate spill confirmed	Notify FESA and the Emergency Responder immediately of emergencies and provide the following details: <ul style="list-style-type: none"> who is calling; where the emergency is; what the emergency is and when it started; what is being done to combat the emergency; what resources are required; which gate to use for entry. Ensure the words 'Hazmat Incident' are stated.	Shift Manager
	Notify FPA and Magellan of the spill	DP World and/or Patrick
	Notify DEC (Pollution Response Unit) and DEC Swan of the spill. Ensure the words 'Hazmat Incident' are stated.	Magellan
	Wear appropriate PPE until the spill has been cleaned up.	FESA
	Control the source of spill if possible.	FESA
	If recovery of product is not immediately possible, prevent further spread of the product by one or a combination of the following, depending on weather conditions: <ul style="list-style-type: none"> waterproof tarpaulins or plastic sheeting; sandbags or bunding; chemical tarpaulin; dampening or product with spray. 	FESA
	Secure spill site, and ensure spill is contained and site is 'safe for recovery' and clean-up to commence.	FESA
	Clean up spill as per clean up procedures (Section 7).	Emergency Responder
	Conduct sampling post clean up to ensure effective clean- up of spill has occurred.	Emergency Responder
	Investigate the cause of the incident and establish an action plan to reduce the risk of the incident re-occurring (Section 9).	DP World/Patrick Magellan
Complete incident report forms.	DP World/Patrick Magellan	

Trigger	Action	Responsibility
	Provide an environmental incident report to DEC and DMP of incident response.	Magellan
Container compromised but no outside leak detected	First on scene shall notify Shift Manager of incident, and provide the following details: <ul style="list-style-type: none"> location of the damaged container description and extent of the damage; container number(s); any other details that the Supervisor may require. 	Employees
	Confirm contents of container as being lead carbonate concentrate.	Shift Manager
	Notify Incident Manager of damage to lead carbonate concentrate container.	Shift Manager
	Notify FESA and Magellan of incident. Ensure the words 'Hazmat Incident' are stated.	Incident Manager
	Notify DEC (Pollution Response Unit) and DEC Swan of the incident. Ensure the words 'Hazmat Incident' are stated.	Magellan
	Determine extent of damage.	FESA
Risk of broken bags within container confirmed	Clean-up and containment of spilled lead carbonate concentrate to occur as per clean-up procedures (Section 7). Unbroken bags to be inspected to ensure integrity of bag and that there is no lead carbonate concentrate on the outside of the bags or within the container (if container is not compromised). If container is compromised, the clean and sealed bags will be transferred into another clean and non-compromised container, prior to any further transport commencing.	Magellan FESA Emergency Responder
	Incident Report Form shall be completed and corrective action identified.	Operations Manager

6.6 FIRE EMERGENCIES

Lead carbonate concentrate is non combustible solid and therefore there is no fire or explosion hazard associated with the compound. However, if a fire breaks out as part of an incident where there is also a risk of a lead carbonate concentrate spill, the immediate response by FESA will be to contain and extinguish the fire. The containment of a lead carbonate concentrate spill will be secondary but efforts to prevent contamination of drains and waterways from runoff should occur through the application of sand or similar to runoff.

Full protective equipment should be worn including Self Contained Breathing Apparatus when combating fire as lead carbonate concentrate evolves highly toxic lead oxide fumes when heated to decomposition.

Water fog should be used to cool intact containers.

6.7 LOSS OF SHIPPING CONTAINER OVERBOARD

In accordance with the International Maritime Dangerous Goods Code 2008, should a shipping container fall overboard in State Waters, the Maritime Duty Officer of the Australian Search and Rescue Group of the Australian Maritime Safety Authority and the Department of Transport – Marine Safety Branch, will be notified without delay by the Master of the ship. The Westplan –Hazmat and the Westplan – Marine Transport Emergencies will be activated. The Master of the ship will report on the incident without delay, the particulars of the action undertaken or planned. The Maritime Duty Officer will be kept informed of developments. The Australian Search and Rescue Group will notify the Environmental Protection Branch of the Australian Maritime Safety Authority, who will be responsible for any action undertaken or planned. The Environmental Protection Branch will determine what procedures are necessary.

7. CLEAN UP PROCEDURES

Clean up and removal of lead carbonate concentrate from a spill site will be the responsibility of either the Emergency Responder or the ARG Spill Clean up Team, depending on the location of the spill. Both groups will be capable of undertaking the tasks described in Table 12.

Table 12 Actions for the clean up of a lead carbonate concentrate spill

Key Action	Description
Recovery of Product	Persons responsible for clean up will wear appropriate PPE (section 5.2.1)
	Collect all spilled product and any suspected contaminated soil by one or a combination of the following: <ul style="list-style-type: none"> • hand tools including shovels, scoops and brooms; • vacuums; • bobcat; • front-end loader; • mechanical lifting equipment.
	Place and seal in bulk bags all material (including containment equipment such as bunds, levees, sandbags tarpaulins, plastic sheeting and flagging tape) that may be contaminated.
	Place and seal any damaged bulk bags and their contents in new or repaired bulk bags.
Clean up of recovery equipment	Transfer all bulk bags to an undamaged freight container for transfer back to Magellan mine site.
	If not already available, construct a washdown facility in the area for the purpose of cleaning equipment. This may include a bunded impervious area with a sump to contain washdown water.
	Wash all mobile equipment used, prior to leaving the area.
	Remove residues and wipe down handtools and signage used in recovery using damp cloths or rags, and return to spill kits.
	Remove all PPE.
	Place overalls, gloves and head cover into a plastic bag for disposal at the Magellan mine site.
	Wipe down eye protection, respirators and steel cap boots and return to spill response kit.
	Place all rags, cloths and wipes into plastic bags for disposal at the Magellan mine site.
Seal and label all plastic bags containing contaminated material with: " <i>Clean up equipment for disposal at Magellan mine site: Contact OHS & E Manager</i> ". Write the contact details of the OHS&E Manager on the bags.	
Close, lock and placard all containers that will be returning to the Magellan mine site.	
Removal and disposal	Return all sealed bulk bags and plastic bags containing spilled product and contaminated material to the Magellan mine site in locked shipping containers, using an appropriately licensed vehicle.
Reporting	Provide progress reports to DEC and other relevant authorities under WESTPLAN – HAZMAT (FESA 2005).

8. POST CLEAN UP SAMPLING

Sampling will be carried out to validate the effectiveness of clean up in accordance with the Department of Environmental Protection (DEP) guideline *Development of Sampling and Analysis Program* (2001), with reference to the following Australian Standards:

- AS 4482.1-2005 “Guide to the investigation and sampling of sites with potentially contaminated soil”;
- AS 5667.1:1998 “Water Quality – Sampling Part 1: Guidance of the design of sampling programs, sampling techniques and the preservation and handling of samples”.

Initially, a visual assessment will be undertaken to determine that no evidence of contamination is present. A sampling program will then be developed to validate clean up. At a minimum, sampling will be undertaken at the site of the spill and within a 20 m radius around the spill site (Table 13).

Table 13 Post clean up sampling and analysis for lead carbonate concentrate in spill area

Objective	Parameter	Frequency/Duration	Location
To ensure that lead carbonate concentrate from spill has been effectively cleaned up	Lead content in soil	Field sampling and laboratory analysis after clean up has been conducted ¹	Soil at spill location (if present) and immediate surrounds (20 m radius zone)

¹ Number of samples required for field testing based on surface area (m²) as per Appendix C of *Development of Sampling and Analysis Program Guidelines* (DEP 2001), at a minimum.

The site specific sampling and analysis program will take into account the existence of nearby sensitive receptors (e.g. wetlands or public recreation areas) and weather conditions.

In the event that post clean up sampling indicates that Magellan lead is present in the surrounding environment, DEC will be notified immediately. Magellan and its contractors will cooperate with DEC Inspectors conducting enforcement investigations and collecting evidence as a result of a spill. In consultation with DEC, Magellan will develop a site management plan that will include:

- a detailed site investigation;
- risk assessment;
- validation and auditing.

On completion of the validation, a report shall be provided to DEC (Section 9.3).

9. POST-INCIDENT MANAGEMENT

Post-incident management shall include the following key steps:

1. Post incident review and analysis.
2. Further investigations into the cause of the incident, if required (including review of relevant training, management and incident response procedures).
3. Development of a Preventative Action Plan to address cause(s) of the incident and reduce risk of re-occurrence.
4. Preparation of an Environmental Incident Report and provide to the relevant authorities.

The level of detail undertaken at each stage will be dependent on the severity of the incident.

9.1 POST-INCIDENT ANALYSIS

For all major incidents, the General Manager of the organisation responsible for the emergency response, the Magellan OHS&E Manager and the FESA Incident Controller will have responsibility to organise a post-incident analysis workshop, and ensure that appropriate representatives from the following are invited:

- Magellan;
- organisations with primary emergency response and/or clean up responsibilities (ARG, ILS, DP World, Patrick);
- Fremantle Ports (if incident occurred within Fremantle Ports);
- FESA;
- Regulatory agencies (e.g. DEC, DMP, DoH);
- Emergency Responder (if incident occurred within Fremantle Ports).

The objectives of the workshop are to:

- assess the effectiveness of the emergency response;
- discuss/identify the cause(s) of the incident and preventative actions to be undertaken to minimise future risks;
- discuss/identify opportunities for improving planning and response;
- identify the need for further investigations.

9.2 INVESTIGATION AND ACTION PLAN

Magellan will be responsible for conducting any further investigation into the factors contributing to the incident and developing a Preventative Action Plan to address cause(s) of the incident and reduce risk of re-occurrence. This will be done in consultation with contractors and relevant agencies and will be included in the Environmental Incident Report.

9.3 REPORTING

An Environmental Incident Report shall be prepared by Magellan and will include:

- incident details and description;
- details of any environmental damage/impact;
- details of clean up and validation undertaken;
- cause(s) and factors contributing to the incident;
- outcomes of the review of training, management and response procedures;
- action plan (if required) to address causes(s) of the incident and reduce risk of re-occurrence.

The Environmental Incident Report will be prepared within 3 weeks of the incident and provided by Magellan to the DEC, DMP and relevant parties involved in the emergency. Environmental Incident Reports will be publicly available on the Magellan website and provided to Fremantle Ports Inner Harbour Community Liaison Group and Local Government Authorities.

10. PREPAREDNESS

10.1 TRAINING

The following training will be provided by each contractor to all staff involved in the transport of containers containing lead carbonate concentrate based on information provided by Magellan:

- Magellan Emergency Response Plan;
- awareness of the potential impact of lead on health and the environment.

ARG's SCUT will receive on-going training in all areas related to the emergency response of a lead carbonate concentrate spill in accordance with ARG's Training Competence Package.

10.2 EXERCISES

Emergency exercises are essential to test the Emergency Response Plan and Emergency Procedures. It will be Magellan's responsibility to ensure that ARG, ILS, Patrick and DP World conduct an annual simulated emergency response exercise. All exercises will include involvement by local emergency services and the local community. The exercise will involve a simulation of an emergency involving dangerous goods, implementation of emergency response actions and a post-exercise debrief and a review of the efficacy of the emergency response. The review will be undertaken by the Incident Manager (or similar) of each organisation and a report circulated to all relevant personnel and Magellan.

ARG's SCUT and the Emergency Responder will conduct more frequent exercises based on the requirements for Emergency Responder Accreditation from DMP.

A table-top exercise will be undertaken with one nominated Local Government in the metropolitan region every two years, and a table-top exercise with one nominated Local Government in a non-metropolitan region every two years. Both (metropolitan and non-metropolitan) table-top exercises may occur on alternate years or in the same year, depending on consultation with the Local Government, but must occur at least once every two years in both regions.

A simulation exercise will be undertaken with one nominated Local Government in the metropolitan region every four years, and a simulation exercise with one nominated Local Government in a non-metropolitan region every four years. Both (metropolitan and non-metropolitan) simulation exercises may occur on different years or in the same year, depending on consultation with the Local Government, but must occur at least once every four years in both regions.

10.3 INVESTIGATIVE FOLLOW-UP AND UPDATING OF ERP

An annual review of this ERP will be conducted and the plan updated accordingly in consultation with FESA, DEC and relevant Local Emergency Management Committee's along the transport route. This will be initiated by the Magellan OHS&E Manager.

10.4 PLAN AVAILABILITY AND DISTRIBUTION

The ERP has been prepared in consultation with DEC, DMP, FESA, DoH, FPA, ARG, ILS, Patrick, DP World and Local Governments along the transport route.

The plan has been reviewed by FESA, FPA and the relevant Local Government Authorities, as required under Condition 12 of Statement 783. The ERP will be made publicly available on the Magellan website and distributed to all relevant parties.

11. REFERENCES

Department of Mines and Petroleum (DMP) 2007, *Dangerous Goods Safety (Road and Rail Transport of Non-explosives) Regulations 2007*.

Department of Mines and Petroleum (DMP) 2007, *Dangerous Goods Safety (Goods in Ports) Regulations 2007*.

Department of Mines and Petroleum (DMP) 2007, *Dangerous Goods Safety (General) Regulations 2007*.

Department of Mines and Petroleum (DMP) 2007, *Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007*.

Department of Environmental Protection (DEP) 2001, *Development of Sampling and Analysis Programs*, DEP, Perth, December 2001.

Fire and Emergency Services Authority (FESA) 2005, *Western Australian Hazardous Materials Emergency Management Plan WESTPLAN – HAZMAT 2005*.

National Transport Commission 2007, *Australian Code for the Transport of Dangerous Goods by Road and Rail*, Seventh Edition, Commonwealth of Australia, Canberra.

National Road Transport Commission 2003, *Guidelines for the Preparation of a Transport Emergency Response Plan 2003*, Commonwealth of Australia, Melbourne.

State Emergency Management Committee (SEMC) 2005, *State Emergency Management Committee Policy Statement No. 7 – WA Emergency Management Arrangements*, SEMC, March 2005.

Strategen 2009a *Health, Hygiene and Environmental Management Program*, prepared for Magellan Metals Pty Ltd, April 2009.

Strategen 2009b. *Health, Hygiene and Environmental Monitoring Program*, prepared for Magellan Metals Pty Ltd, June 2009.

WestNet Rail 2006, *State Emergency Management Plan for WestNet Rail Emergencies 25 October 2006 WESTPLAN – WestNet Rail*.

12. SHORT TITLES AND ACRONYMS

Short title or acronym	Long title
ADGC	Australian Dangerous Goods Code
ARG	ARG – a QR Company
AS	Australian Standard
AS/NZS	Australian Standard/New Zealand Standard
DEC	Department of Environment and Conservation
DEP	Department of Environmental Protection (now DEC)
DMP	Department of Mines and Petroleum
DoH	Department of Health
ERP	Emergency Response Plan
FESA	Fire and Emergency Services Authority
HHE	Health, Hygiene and Environment
ILS	Intermodal Link Services
MSDS	Material Safety Data Sheet
OHS & E Manager	Occupational Health, Safety and Environment Manager
PPE	Personal Protective Equipment
SCUT	Spill Clean up Team
UN	United Nations

**Appendix 1
Magellan Lead
carbonate concentrate
Material Safety Data
Sheet**

Material Safety Data Sheet

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product name: MAGELLAN LEAD CONCENTRATE

Synonyms: LEAD CONCENTRATE.

CAS-No.: Not applicable.

Supplier: MAGELLAN METAL PTY LTD

ACN: 68 075 523 661

Address: 96 Welshpool Rd, Welshpool, 6106, Western Australia

Telephone: (08) 9267 7000 (Perth Office)

Emergency telephone number: (08) 9981 2144 (Magellan Mine)

2. HAZARDS IDENTIFICATION

HAZARDOUS according to NOHSC criteria.

Classified as a DANGEROUS GOOD, according to the Australian Dangerous Goods Code (ADG Code) for transport by road or rail.

Poisons Schedule: Classified as a Schedule 6 Poison by the criteria for the Uniform Scheduling of Drugs and Poisons (SUSDP).

Risk and Safety Phrases -

Risk and safety phrases are standard phrases used for the classification and labelling of hazardous substances. Risk phrases convey a general description of the physicochemical, environmental and health hazards of a substance. Safety phrases provide information on safe storage, handling, disposal, personal protection and first aid.

RISK PHRASES

R20/22 Harmful by inhalation and if swallowed.

R33 Danger of cumulative effects.

R61 May cause harm to the unborn child.

R62 Possible risk of impaired fertility.

R49(Category 1) May cause cancer by inhalation.

R50/53 Very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

SAFETY PHRASES

S13 Keep away from food, drink and animal foodstuffs.

S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

S53 Avoid exposure – obtain special instructions before use.

S45 In case of accident or if you feel unwell, contact a doctor or Poisons Information Centre immediately (show the label where possible).

S60 This container and its contents must be disposed of as a hazardous waste.

S61 Avoid release to the environment. Refer to special instructions/ material safety data sheets.

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3. COMPOSITION/INFORMATION ON INGREDIENTS

Recommended use: Industrial applications.

Appearance: Dark grey to light grey-brown soil-like solid. It is an amorphous solid ore consisting predominantly of lead mainly in the form of cerussite and anglesite (up to 15% lead content) as well as other silicates, minerals and trace metals found in soil/rock that are not readily separable into the individual components. The components of the ore have been identified and quantified by elemental analysis. The lead concentrate typically has 5-9% moisture content at time of shipping.

Component	CAS Number	Concentration % wt/wt
Lead (Pb) (mainly present as cerussite – lead carbonate but up to 15% may also be present as anglesite - lead sulphate). Other forms of lead minerals may be present at less than 0.05% including (Pyromorphite, plumbogummite and galena).	7439-92-1	60 - 70
Silica, Crystalline - Quartz (SiO ₂)	14808-60-7	3 - 10
Cadmium (Cd)	7440-43-9	<0.01
Nickel (Ni)	7440-02-0	0.0005 - 0.001
Sulphur (S)	7704-34-9	1 - 5
Iron (III) Oxide (Fe ₂ O ₃)	1309-37-1	1 - 3
Trace Metals	Not Available	Remainder
		100%

4. FIRST AID MEASURES

Ingestion: Rinse mouth with water. Give plenty of water to drink. If poisoning occurs, contact a doctor or Poisons Information Centre. *Phone Australia 131126.*

Eye contact: Irrigate with copious quantities of water for 15 minutes. In all cases of eye contamination it is a sensible precaution to seek medical advice, especially if irritation persists.

Skin contact: If skin contact occurs, remove contaminated clothing and wash affected skin thoroughly. If irritation occurs seek medical advice.

Inhalation: Avoid inhaling dust. Remove exposed person to fresh air if adverse effects are observed. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. Seek medical advice.

Notes to physician: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Specific hazards: Non combustible solid. Will evolve highly toxic lead oxide fume when heated to decomposition. Evacuate area and contact emergency services (000). Remain upwind and notify persons downwind of hazard.

Extinguishing Media

Use waterfog, foam, carbon dioxide or dry agent to cool intact containers and nearby storage areas and/or fight fire. Prevent contamination of drains, sewers and waterways and absorb runoff with sand (or similar).

Fire fighting further advice: Non-combustible solid. Fire fighters should wear AS/NZS approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.

Product name: Magellan Lead Concentrate

Issued: 18.05.2007

Version: 1.0

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Hazchem Code: 2Z

6. ACCIDENTAL RELEASE MEASURES

For large spills contact emergency services and supplier. Clear area of unprotected personnel; wear PVC/rubber gloves, dust proof goggles, a particulate respirator, coveralls and boots when cleaning spills. Collect and place into sealable containers for treatment and/or disposal. Avoid generating dust. Do not allow contamination to drains, sewers or waterways.

7. HANDLING AND STORAGE

Handling: Carefully read the product label prior to use. Safe work practices should be employed to avoid eye or skin contact and inhalation. Observe good personal hygiene, including thoroughly washing hands before eating. All eating, drinking and smoking should be prohibited in work areas.

Storage: Avoid generating dust. Store in a cool, dry, well ventilated area, and away from oxidising agents, acids and foodstuffs. Ensure product is adequately labelled.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

National Occupational Exposure Limits:

No value assigned for this specific material by the National Occupational Health and Safety Commission (NOHSC).

However, Exposure Standards for elemental components are as follows (1):

Lead (Pb) (7439-92-1)

TWA: 0.15 mg/m³ (inorganic lead dusts and fumes)

Biological monitoring of blood lead is required:

Females of reproductive capacity: 10 µg/dL

Males and females not of reproductive capacity: 30 µg/dL.

Refer to National Standard for the Control of Inorganic Lead at Work [NOHSC:1012(1994)] (2) for further details on monitoring frequency and other requirements.

http://www.ascc.gov.au/NR/rdonlyres/31042763-B7ED-4F51-B95D-191E3CA7D378/0/leadstandard_NOHSC1012_1994.pdf .

ACGIH Threshold limit value (TLV) (3)

TWA: 0.05 mg/m³ (and inorganic compounds as Pb)

BEI : 30 µg/dl.

Silica, Crystalline - Quartz (SiO₂) (14808-60-7)

TWA: 0.1 mg/m³

ACGIH Threshold Limit Value (TLV) (3)

TWA: 0.025 mg/m³ (as α-Quartz, measured as respirable fraction of the aerosol)

Cadmium (Cd) (7440-43-9)

TWA: 0.01 mg/m³ (cadmium and cadmium compounds)

Nickel (Ni) (7440-02-0)

TWA: 1 mg/m³ (metal nickel)

TWA: 0.1 mg/m³ (soluble nickel compounds)

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TWA - the Time-Weighted Average (TWA) airborne concentration over an eight-hour working day, for a five-day working week over an entire working life. According to current knowledge this concentration should neither impair the health of, nor cause undue discomfort to, nearly all workers.

STEL - Short Term Exposure Limits (STELs) are averaged over a period of 15 minutes and provide guidelines for the control of short-term exposure. STELs are important supplements to the eight-hour TWA exposure standards. STELs are generally established to minimise the risk in nearly all workers of the occurrence of: intolerable irritation, chronic or irreversible tissue change, and narcosis to an extent that could precipitate industrial accidents, provided the TWA exposure standards are not exceeded.

BEI – Biological exposure indices (BEI) are guidance values for assessing biological monitoring results. BEIs generally represent the level of determinants that are most likely to be observed in specimens collected from healthy workers who have been exposed to chemicals to the same extent as workers with inhalation exposure at the Threshold Limit Value (TLV). The BEI generally indicates a concentration below which nearly all workers should not experience adverse health effects.

The Occupational Exposure Standards (OES) are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These Exposure Standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Engineering measures: Ensure ventilation is adequate and that air concentrations of components are controlled below quoted Exposure Standards. Keep containers closed when not in use.

Personal Protection Equipment: The selection of PPE is dependant on a detailed site specific risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

Wear overalls, safety glasses and impervious gloves. Use with adequate ventilation. If inhalation risk exists wear particulate respirator (P3 filter respirator for toxic particles) meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use. Do not take working clothes home.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form / Colour / Odour: Dark grey to light grey-brown soil-like solid. Odourless.

Specific Gravity (t/m ³)	: 5.6	Bulk Density (t/m ³)	: 2.7-2.9
Vapour Density	: N App	Boiling Point	: N App
Vapour Pressure	: N App	Melting Point	: N Av
Flash Point	: N App	Decomp. Temp (°C)	: 315 (approx)
Flammability Limits	: Non Flammable	Sublimation Point	: N App
Autoignition Temp	: N Av	pH	: 7.5 - 8.5
% Volatile by volume	: N App	Viscosity	: N App
Solubility in water	: >50% ^a	Evaporation Rate	: N App

(Typical values only - consult specification sheet)

N Av = Not Available

N App = Not Applicable

^a Solubility, as determined (4) according to ISO 3711 (1990) by acid digest, EDTA titration, is >50% (52.3 - 53.2%).

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10. STABILITY AND REACTIVITY

Stability

Stable under normal conditions of use, storage, and transportation as shipped.

Conditions to Avoid

Incompatible with oxidising agents (e.g. peroxides) and strong acids (e.g. hydrochloric acid). Reacts violently with fluorine, causing fire hazard.

Hazardous Decomposition

Will evolve highly toxic lead oxide fume when heated to decomposition (315 °C).

Hazardous Polymerization

Will not occur.

11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet.

No toxicity information available for the product.

Health Effects of Ingredients

A: Lead Carbonate

The half-life of lead in blood is estimated to be 20–40 days. Lead is excreted mainly in urine, very slowly. As a result, chronic exposure leads to the accumulation of lead in the body (6).

Oral administration to humans at 214 mg kg⁻¹ (total dose) for 4 weeks induced jaundice and gastrointestinal changes (5).

B: Inorganic Lead

The main target for lead toxicity is the nervous system, both in adults and children. Long-term exposure of adults can result in decreased performance in some tests designed to measure nervous system function (blood lead concentration of greater than 30 µg/dl (6)). Exposure also causes small increases in blood pressure due to effects on the kidney (blood lead concentrations greater than 40 µg/dl), particularly in middle-aged and older people and can cause anaemia (clinical symptoms at blood lead levels of at least 80-100 µg/dl) (6). The most sensitive effects in young children and unborn children exposed to lead through their mothers includes decreased mental ability and learning difficulties (6,7,8). A clear exposure threshold for these effects has not been established however the effects are most consistently observed at concentrations greater than 10 µg/dl (6,7,8).

The International Agency for Research on Cancer (IARC) evaluation of lead concluded that lead is possible carcinogenic to humans (Group 2B). The evidence for the carcinogenicity of lead in humans was found to be inconclusive because of the limited number of studies, the small cohort sizes, and the failure to take adequate account of potential confounding variables. The IARC conclusion was based on carcinogenicity studies in rodents conducted with lead salts (lead arsenate and lead phosphate). At relatively high doses (in excess of 10mg/kg) renal toxicity and increases in renal tumours were observed (6,9).

B: Quartz – Crystalline silica

To date, there are no known adverse health effects associated with non-occupational exposure to quartz dust (10). Silicosis is indisputably causally related to occupational quartz exposure, and the dose-response assessments of the adverse health effects of quartz are based on epidemiological studies of occupational cohorts with silicosis. Although a causal association with respiratory cancer has been made from epidemiological studies of workers occupationally exposed to quartz the doses required to cause respiratory cancer is unclear

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(10). The International Agency for Research on Cancer evaluation of crystalline silica concluded that it is a human carcinogen (Group 1) (9).

12. ECOLOGICAL INFORMATION

Avoid contaminating drains, sewers and waterways.

Ecotoxicity

The toxicity of inorganic lead salts to aquatic organisms is strongly dependent on environmental conditions such as water hardness, pH and salinity, a fact that has not been adequately considered in most toxicity studies (8).

Lead is unlikely to affect aquatic plants at levels that might be found in the general environment (8).

Young stages of fish are more susceptible to lead than adults or eggs. Typical symptoms of lead toxicity include spinal deformity and blackening of the caudal region. The no observed effect concentrations for inorganic lead has been determined in laboratory tests for several species (fresh water as well as salt water) under different conditions, and range from 7-250 µg Pb/L (8).

Environmental Fate

Lead can accumulate in organisms, in particular those feeding primarily on particulate matter. Lead does not biomagnify in the aquatic food chain, as the levels of lead, as well as the bioaccumulation factors, decrease as the trophic level rises (8).

13. DISPOSAL CONSIDERATIONS

Dispose of in accordance with relevant local legislation. Contact manufacturer for additional information.

14. TRANSPORT INFORMATION

Classified as a Dangerous Good by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by road or rail.

UN Number: 2291

Class: 6.1

Correct Shipping Name: LEAD COMPOUND SOLUBLE N.O.S (contains 77-82% lead carbonate)

Packing Group: III

Hazchem Code: 2Z

International Maritime Dangerous Goods Code classification: Class 6.1, UN Number 2291, Lead compound soluble N.O.S. (contains 77-82% lead carbonate), packing group III.

Do not transport with chemicals of class: 1 (Explosives), 5.1 (Oxidising agents), 5.2 (Organic peroxides) and foodstuffs.

15. REGULATORY INFORMATION

Hazardous according to criteria of NOHSC.

Classified as a Class 6.1, Packing group III Dangerous Good by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by road or rail.

Poisons Schedule: Classified as a Schedule 6 Poison by the criteria for the Uniform Scheduling of Drugs and Poisons (SUSDP).

AICS: All chemical components listed on the Australian Inventory of Chemical Substances (AICS)

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16. OTHER INFORMATION

Literary reference

- (1) NOHSC: Exposure Standards for Atmosphere Contaminants in the Occupational Environment. 1995.
- (2) National Standard for the Control of Inorganic Lead at Work [NOHSC:1012(1994)].
- (3) 2006 Guide to Occupational Exposure Values. Compiled by American Conference of Governmental Industrial Hygienists (ACGIH).
- (4) SGS Mineral Services (2007). Solubility study conducted to ISO 3711: 1990(E). Internal Standard ISO 3711, Second Edition 1990-12-15. Lead chromate pigments and lead chromate-molybdate pigments - Specifications and methods of test. SGS Australia Pty Ltd Report No WM100264.
- (5) DOSE (2004). Substance profile Lead carbonate. The Dictionary of Substances and Their Effects (DOSE, 3rd Electronic Edition) 2005 by The Royal Society of Chemistry/Knovel Corp.
- (6) WHO (2000). Safety Evaluation Of Certain Food Additives And Contaminants Who Food Additives Series: 44 Prepared by the Fifty-third meeting of the Joint FAO/WHO Expert Committee on Food Additives (JECFA) World Health Organization, Geneva, 2000 IPCS - International Programme on Chemical Safety
- (7) ATSDR (2005) Draft Toxicological Profile for Lead. U.S. Department of Health and Human Services Public Health Service Agency for Toxic Substances and Disease Registry.
- (8) UNEP (2006). Interim Review Of Scientific Information On Lead Version Of October 2006 United Nations Environment Programme Dtie/Chemicals
http://www.chem.unep.ch/Pb_and_Cd/SR/Files/Interim_reviews/UNEP_Lead_review_Interim-Oct2006.pdf
- (9) IARC (1987). IARC Monographs on the Evaluation of Carcinogenic Risks to Humans Overall Evaluations of Carcinogenicity: An Updating of IARC Monographs Volumes 1 to 42. Supplement 7. World Health Organization. International Agency for Research on Cancer Lyon France.
- (10) WHO (2000). Concise International Chemical Assessment Document No. 24 Crystalline Silica, Quartz. World Health Organisation.

Contact Point: Registered Manager Magellan Mine
Within Australia: Telephone (08) 9981 2144
Facsimile (08) 9981 2164
Emergency No. (08) 9981 2144

Reason for Issue: First Issue.

Safety Data Sheets are updated frequently. Please ensure that you have a current copy.

This Material Safety Data Sheet is maintained by Magellan Metal Pty Ltd in consultation with Toxikos Pty Ltd.

This MSDS summarises at the date of issue our best knowledge of the health and safety hazard information of the product, and in particular how to safely handle and use the product in the workplace. Since Magellan Metal cannot anticipate or control the conditions under which the product may be use, each user must, prior to usage, review this MSDS in the context of how the user intends to handle and use the product in the workplace.

If clarification or further information is needed to ensure that an appropriate assessment can be made, the user should contact Magellan Metal Pty Ltd.

Our responsibility for products sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available upon request.