POLLUTION INCIDENT RESPONSE MANAGEMENT PLAN

17 March 2020

Manuka Mine

NSW

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FOREWORD

This Pollution Incident Response Management Plan (PIRMP) has been prepared by Manuka Resources Pty Ltd ("the Company" or "Manuka Resources"). Manuka Resources Pty Ltd is the lease holder of Mining Lease (ML) 1659. The Manuka Silver Mine ("the mine"), commonly known as the Wonawinta Silver Mine and is located approximately 85km south of Cobar, on the Manuka property, via Bedooba Road (Shire Road 13) in New South Wales (NSW).

The Manuka Silver Mine was established by Cobar Consolidated Resources (CCR) in 2012, who conducted site development, mining and processing activities. CCR entered administration on 18 March 2014. PPB Advisory managed the site during liquidation and the proceeding sale to Southern Cross Goldfields Ltd in September 2014.

Southern Cross Goldfields Ltd changed its name to Black Oak Minerals Limited on 28 November 2014 and operated the site until it too entered administration on 27 November 2015. Black Oak Minerals had conducted mining before converting wholly to processing operations from September 2015, including the processing of gold ore from Mt Boppy. PPB Advisory managed the site during liquidation and the proceeding sale to Manuka Resources Ltd on 31 August 2016.

Manuka Resources Ltd currently operates the site. After several years of care and maintenance activities the company commenced refurbishment of the processing plant during September 2019 together with other site activities including commencing works for a lift on the tailings facility, hiring of a plant commissioning team, review of drilling plans on the mining lease and general infrastructure improvements.

This PIRMP has been prepared for the management of pollution events at the Manuka Mine, in accordance with the specific requirements set out in Part 5.7A of the POEO Act and the *Protection of the Environment Operations (General) Regulation 2009* (POEO (G) Regulation).

DEFINITIONS

Authority	For this PIRMP authority means a regulatory or other government or public authority.
Alert Phase	Means that stage of a pollution incident that is undertaken once it is established that the incident could escalate to a notifiable incident.
Call Out Phase	Means the stage of a pollution incident that is undertaken once the incident is deemed notifiable under the Protection of the Environment Operations Act 1997.
Clean Up Phase	Means the stage of a pollution incident that is undertaken once the area has been declared safe. This involves clean-up and environmental stabilisation.
Emergency	An emergency is a situation that is developing, or has developed, that poses a threat to Life, the Environment and Property, which necessitates immediate action.
Hazard	Any source, situation or condition of potential damage, harm or adverse health effects on someone, something or the environment under certain conditions.
Hazardous Material	Means anything that, when produced, sourced, moved, used or otherwise dealt with, and without adequate safeguards to prevent it from escaping, may result in / cause injury or death, damage to property or environmental harm.
Material Harm to the Environment	In accordance with the definition provided by Clause 147 of the *Protection of the Environment Operations Act 1997*, harm to the environment is material if: (i) it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or (ii) it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (or such other amount as is prescribed by the regulations).
Notifiable Incident	A pollution incident which occurs in the course of an activity so that material harm to the environment is caused or threatened.
Pollution Hazard	Any source, situation or condition from which spillage, leakage or emission of a hazardous material or contaminant may cause material harm to the environment or other adverse effects.
Pollution Incident	An incident resulting in the spillage, leakage or emission of a material which occurs in the course of an activity so that material harm to the environment is threatened.
Response	The process of addressing the effects of an incident and providing immediate relief for affected persons or the environment.
Stand By Phase	Means the stage of a pollution incident that is undertaken once it is established that the incident will more than likely escalate to a notifiable incident.
Stand Down Phase	Means the stage of a pollution incident that is undertaken once it is established that the incident has been controlled and no support services are required.

1. INTRODUCTION

This Pollution Incident Response Management Plan (PIRMP) has been prepared by Manuka Resources in accordance with Section 153A of the *Protection of the Environment Operations Act 1997* (POEO Act) for the Manuka Silver Mine (the Mine).

The Manuka Silver Mine ("the mine") is located within Mining Lease (ML) 1659, issued to Manuka Resources Ltd, and covers an area of 923 ha within the "Manuka Station" property, approximately 85km south of Cobar, via Bedooba Road (Shire Road 13) in New South Wales (NSW) (refer to **Figure 1**).

The Mine operates under Development Consents 2010/LD-00074, 2012/LD/00005 and 2012/LD/00035. DA 2010/LD-0004 relates to establishment of the mine and associated operations including two modifications approved on 29 February 2012 and 6 November 2012. Approvals were granted by the Western Region Joint Regional Planning Panel (the "JRPP"). Cobar Shire Council retains administrative responsibility for ensuring compliant operation of the mine against the conditions of the development consent.

DA's 2012/LD/00005 and 2012/LD/00035 relate to the establishment of a permanent mine camp upon the Manuka property, approved on 22 March 2012 and 10 August 2012 respectively. Cobar Shire Council retains administrative responsibility for ensuring compliant operation of the mining camp against the conditions of the development consents.

The site Environmental Protection Licence, EPL 20020, was issued by the NSW EPA under the *Protection of the Environment Operations Act* 1997. The current version of EPL 20020 allows for the following scheduled activities:

- Crushing, grinding or separating (>500,000t – 2,000,000t);
- Metal processing (0-100,000t);
- Mineral processing (>500,000t-2,000,000t); and
- Mining for metals (>500,000t-2,000,000t).

This PIRMP has been developed to ensure compliance with the relevant conditions of EPL 20020 and lists the processes to be adopted to ensure that any potential pollution incidents are managed in accordance with all regulatory requirements.

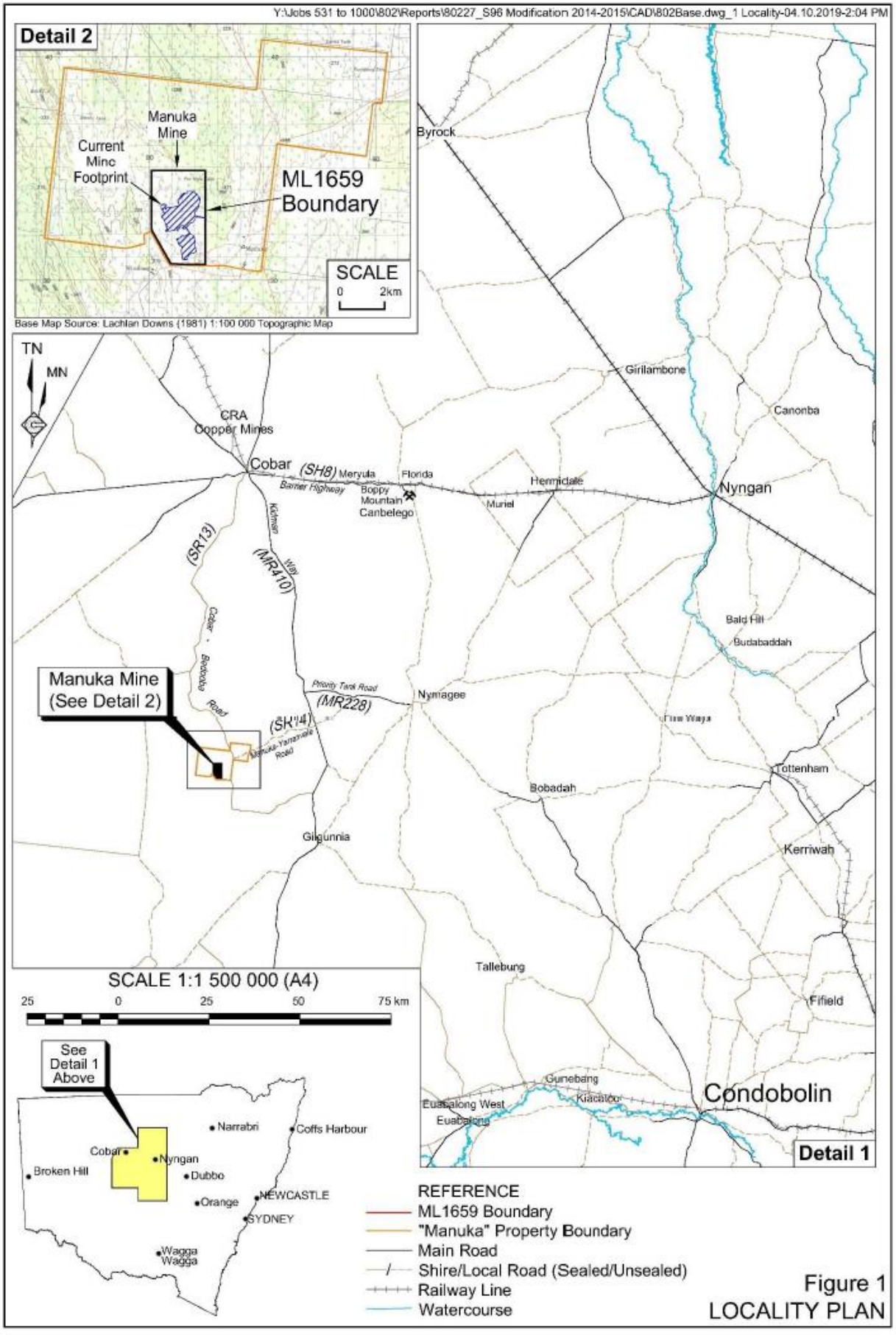

Figure 1: Locality Plan

1.1 BACKGROUND AND SCOPE

The *Protection of the Environment Legislation Amendment Act 2018* (PELA) received assent on 16 November 2011 resulting in changes to the *Protection of the Environment Operations Act 1997* (POEO Act). The intent of the PELA is to improve the way pollution incidents are reported and managed. Provisions include a requirement for holders of Environmental Protection Licences (EPLs) to prepare, keep, test and implement a Pollution Incident Response Management Plan (PIRMP). The specific requirements for PIRMPs are set out in Part 5.7A of the POEO Act and *the Protection of the Environment Operations (General) Regulation 2009* (POEO (G) Regulation). In summary, this legislation requires the following:

- holders of EPLs must prepare a pollution incident response management plan (section 153A, POEO Act);
- the plan must include the information detailed in the POEO Act (section 153C) and the POEO(G) Regulation (clause 98C) and be in the form required by the POEO(G) Regulation (clause 98B);
- licensees must keep the plan at the premises to which the EPL relates (section 153D, POEO Act);
- licensees must test the plan at least every 12 months and after a pollution incident in accordance with the POEO(G) Regulation (clause 98E); and
- if a pollution incident occurs in the course of an activity so that material harm to the environment is caused or threatened within the meaning of Part 5.7 of the POEO Act, licensees must immediately implement the plan (section 153F, POEO Act).

As the holder of EPL 20020, Manuka Resources Pty Limited is required to comply with the POEO Act; as such, this document has been developed to satisfy the PIRMP requirements documented above. This document also details the procedures for notification of pollution incidents resulting in or having the potential to cause material harm to the environment. ***The notification of environmental incidents under this PIRMP is only required for those incidents causing or threatening to result in material environmental harm (a material harm incident) as defined in the POEO Act*** (see Section 3.2.2).

1.2 REGULATORY REQUIREMENTS

Specific detail is required for inclusion in the PIRMP. **Table 1** lists the information mandated under Section 153C of the POEO Act and clause 98C of the POEO (G) Regulation and details where this information is located in this document.

Table 1. Compliance reference to information mandated under Section 153C of the POEO Act and clause 98C of the POEO (G) Regulation

Section 153C	Detail required	Location in document
(a)	The procedures to be followed by the holder of the relevant EPL in notifying a pollution incident to: i. The owners or occupiers of premises in the vicinity of the premises to which the EPL relates, and ii. The local authority for the area in which the premises to which the EPL relates are located and any area affected, or potentially affected, by the pollution, and iii. (iii) Any persons or authorities required to be notified by Part 5.7 (of the POEO Act)	 Section 3.3 Section 3.2.3 Section 3.2.3
(b)	A detailed description of the action to be taken, immediately after a pollution incident, by the holder of the relevant EPL to reduce or control any pollution,	Section 3.3

Section 153C	Detail required	Location in document
(c)	The procedures to be followed for co-ordinating, with the authorities or persons that have been notified, any action taken in combating the pollution caused by the incident and the persons through whom all communications are to be made,	Section 3.2.3
(d) *98C (1)(a)*	Any other matter required by the Protection of the Environment Operations (General) Regulation 2009 (as set out below): *A description of the hazards to human health or the environment associated with the activity to which the licence relates (the "relevant activity").*	 Section 2.2
98C (1)(b)	*The likelihood of any such hazards occurring, including details of any conditions or events that could, or would, increase that likelihood.*	Section 2.2
98C (1)(c)	*Details of the pre-emptive action to be taken to minimise or prevent any risk of harm to human health or the environment arising out of the relevant activity.*	Section 2.3
98C (1)(d)	*An inventory of potential pollutants on the premises or used in carrying out the relevant activity.*	Section 2.4
98C (1)(e)	*The maximum quantity of any pollutant that is likely to be stored or held at particular locations (including underground tanks) at or on the premises to which the licence relates.*	Section 2.4
98C (1)(f)	*A description of the safety equipment or other devices that are used to minimise the risks to human health or the environment and to contain or control a pollution incident.*	Section 3.0
98C (1)(g)	*The names, positions and 24-hour contact details of those key individuals who:* *i. are responsible for activating the plan, and* *ii. are authorised to notify relevant authorities under section 148 of the POEO Act, and* *iii. (iii) are responsible for managing the response to a pollution incident.*	Section 1.3 Section 3.2.3
98C (1)(h)	*The contact details of each relevant authority referred to in section 148 of the POEO Act.*	Section 3.2.3
98C (1)(i)	*Details of the mechanisms for providing early warnings and regular updates to the owners and occupiers of premises in the vicinity of the premises to which the licence relates or where the scheduled activity is carried on.*	Section 3.2.3
98C (1)(j)	*The arrangements for minimising the risk of harm to any persons who are on the premises or who are present where the scheduled activity is being carried on.*	Section 2.3 Section 3.0
98C (1)(k)	*A detailed map (or set of maps) showing the location of the premises to which the licence relates, the surrounding area that is likely to be affected by a pollution incident, the location of potential pollutants on the premises and the location of any stormwater drains on the premises.*	Figure 1 Figure 2
98C (1)(l)	*A detailed description of how any identified risk of harm to human health will be reduced, including (as a minimum) by means of early warnings, updates and the action to be taken during or immediately after a pollution incident to reduce that risk.*	Section 2.3 Section 3.0
98C(1)(m)	*The nature and objectives of any staff training program in relation to the plan.*	Section 4.1
98C (1)(n)	*The dates on which the plan has been tested and the name of the person who carried out the test.*	Section 4.4
98C (1)(o)	*The dates on which the plan is updated.*	Section 4.4
98C (1)(p)	*The manner in which the plan is to be tested and maintained.*	Section 4.4

This PIRMP has been prepared in accordance with the Environmental Guideline: Preparation of Pollution Incident Response Management Plans issued by the EPA in March 2012.

1.3 MINE CONTACTS

Mr Haydn Lynch is appointed Chief Operating Officer of Manuka Resources and is responsible for the overall environmental and operational performance of the mine during its ownership by Manuka Resources.

Mr David Power is the appointed Operations Manager and is responsible for the everyday activities on the mine site and achievement of the nominated and conditioned operational and environmental goals for the mine.

Table 2 identifies the names, position titles and 24-hour contact details of those key individuals who are responsible for activating the plans and managing the response, authorising the notification of relevant authorities, and managing the response to a pollution incident.

Name	Position	24 Hour Contact	Role / Responsibility
David Power	General Manager	0419 298 359	Distribution and enforcement of the PIRMP. Escalation from Stand-by to Call-out Phase. Notification of stakeholders. Implementation of Incident Response Procedures. Management of site evacuation. Review the testing of the PIRMP.
Haydn Lynch	Chief Operating Officer	0421 370 902	Provide assistance to Operations Manager and/or Processing Superintendent as required. Review the testing of the PIRMP.
Trevor Higgins	Processing Superintendent	0429 702 838	Assumes role of Operations Manager if Operations Manager unavailable. Implementation of Incident Response Procedures. Management of site evacuation. Review the testing of the PIRMP.
Tobi Hynes	Maintenance Superintendent	0418 460 755	Assumes role of Operations Manager if Operations Manager unavailable. (back up if the above is also absent) Implementation of Incident Response Procedures. Management of site evacuation. Review the testing of the PIRMP.
Andrew Pratt	Maintenance Superintendent	0424 629 825	Assumes role of Operations Manager if Operations Manager unavailable. (back up if the above is also absent) Implementation of Incident Response Procedures. Management of site evacuation. Review the testing of the PIRMP.

1.4 PREMISES DETAILS

Manuka Silver Mine (“the mine”), is an open cut mine located approximately 85 kilometres (km) south of Cobar in New South Wales (NSW) (see **Figure 1**).

The surrounding area which may potentially be impacted by a pollution incident occurring at Manuka Silver Mine, in addition to the Mine site premises itself may include the following:

- 4 surrounding land holders who neighbour the mine site:
  - ‘Manuka & Etawonda Station’ (Andrew Mosely)
  - ‘Lauchlan Downs’ (Dominic Prince)
  - Multagoona’ (Simon Prince)

  - ‘Wirlong’ (Gary McDonald)
- Community impacts for townships in the Shire (Cobar, Nymagee).

The mine site is located within the Barwon-Darling River catchment. The area surrounding the mine site is characterised by poorly defined ephemeral drainage lines that flow only immediately after times of heavy rainfall. **Figure 2** shows the current layout of the Manuka Mine Site. The majority of the mining lease is located within the Lachlan River catchment, with surface water flowing to the south and then west via a number of poorly-defined, ephemeral and unnamed creeks. The northern part of the mining lease lies within the Darling River catchment, with surface water flowing north into Sandy Creek which flows onto the floodplains of the Cobar Peneplain

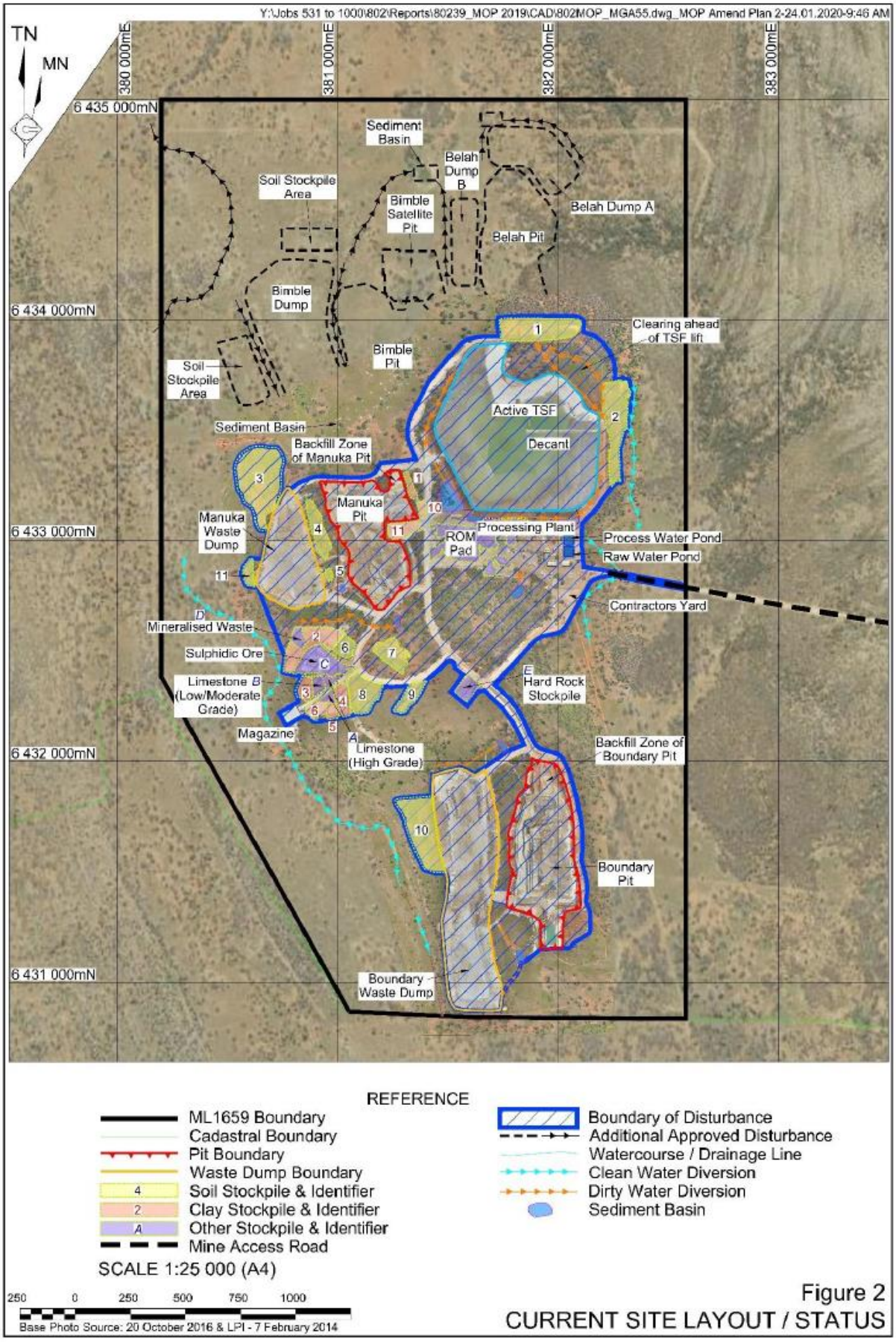

Figure 2: Manuka Silver Mine – Current Layout

2. MAJOR HAZARDS

2.1 DESCRIPTION OF HAZARDS

A hazard is any source, situation or condition of potential damage, harm or adverse health effects on someone, something or the environment under certain conditions. A Pollution Hazard relates to the source, situation or condition in which spillage, leakage or emission of a hazardous material or other contaminant causes harm or adverse effects (to individuals as health effects, to organisations as property or equipment losses, or to the environment).

In order to develop and implement controls and pre-emptive actions for pollution hazards, the likelihood of occurrence and any circumstances in which the likelihood may be increased should be identified. **Table 3** provides the definitions used to classify the likelihood of a pollution hazard resulting in a pollution incident.

Table 3: Qualitative Likelihood Rating

Level	Descriptor	Description
A	Almost Certain	Is expected to occur in most circumstances
B	Likely	Will probably occur in most circumstances
C	Possible	Could occur
D	Unlikely	Could occur but not expected
E	Rare	Occurs only in exceptional circumstances

2.2 HAZARD IDENTIFICATION

The potential major hazards which have been identified for Manuka Silver Mine include:

- Spills resulting in land contamination (e.g. hydrocarbons, hazardous chemicals, etc).
- Spills resulting in water contamination (e.g. hydrocarbons, hazardous chemicals, saline or sediment laden water etc) of nearby drainage lines / ephemeral watercourses.
- Major water or tailings discharge (e.g. dam failure).
- Excessive dust emissions.

Table 4 identifies the pollution hazards present at the Mine, the relevant sources, situations or conditions that would result in pollution, the existing controls/pre-emptive actions that are in place to reduce the likelihood of a pollution incident and any circumstances likely to increase the likelihood of occurrence.

Table 4 **Identified Pollution Hazards of Manuka Silver Mine site.**

Hazard	Source, Situation or Condition Resulting in Pollution	Likelihood	Controls / Pre-emptive actions	Additional Risk Factors
Cyanide Storage	Spillage of sodium cyanide during transfer resulting in land and/or water contamination.	**E**	▪ Cyanide delivered in sealed containers. ▪ Loading / unloading of containers undertaken within a secure zone. ▪ Transfer supervised by appropriately trained and qualified site personnel at all times.	▪ Site personnel not present during transfer of cyanide containers to the mine.
	Damage to container resulting in spillage of sodium cyanide resulting in land and/or water contamination.	E	▪ All Sodium Cyanide stored in locked shipping containers within a fenced and locked compound which have a 200t capacity.	▪ Equipment malfunction. ▪ Operator error.
Hydrocarbon and hazardous chemical storage (examples may include: Hydrochloric acid (HCl), Caustic Soda (NaOH), Activated Carbon, Hydrated Line and Zinc Powder).	Spillage of hydrocarbon or hazardous substance (for example, during transfer) resulting in land contamination.	E	▪ All Hydrocarbon and hazardous chemical products are stored within self-bunded tanks and/or within an impermeable bund. ▪ Hydrocarbon or hazardous substances and materials transfers take place within bunded storage location. ▪ Transfers always supervised by appropriately trained and qualified site personnel. ▪ Delivered by road in 1,000L sealed containers held inside shuttle bins.	▪ Site personnel not present during transfer of HCl containers to the mine. ▪ Equipment malfunction. ▪ Operator error.
	Storage vessel leak / rupture resulting in spillage of hydrocarbon or hazardous substance resulting in land contamination.	E	▪ Hydrocarbon or hazardous substances storage containers and contained areas comply with *AS 1940:2017 – Storage and handling of flammable and combustible liquids.* ▪ All Hydrocarbon and hazardous chemical products are stored within self-bunded tanks and/or within an impermeable bund. ▪ Hydrocarbon spills kits are maintained at designated storage areas. ▪ Storage areas are inspected regularly.	
Tailings Storage Facility	Overtopping the TSF resulting in release of potentially contaminated water and/or tailings material.	E	▪ Design and construction as per NSW Dam Safety Committee guidelines and specifications. ▪ Potential for overtopping reduced through maintenance of freeboard equivalent to a 72hr, 1 in 100 ARI rainfall events. Freeboard is identified by a surveyed marker peg.	▪ Operator (human) error during any transfers of tailings to the TSF or return water from the TSF. ▪ Seismic event. ▪ Operator (human) error during landform creation / earthworks.
	Failure of TSF wall resulting in loss of tailings material (potentially saline / cyanide contaminated material).	E		

Hazard	Source, Situation or Condition Resulting in Pollution	Likelihood	Controls / Pre-emptive actions	Additional Risk Factors
	Seepage through TSF floor or internal walls (potentially saline / cyanide contaminated material).	E	▪ Earthworks and Machinery operators trained, competent and experienced to ensure any works in this area do not impact integrity of existing TSF wall. ▪ Regular inspections undertaken (includes recording dam integrity checks, any free water present and its level/freeboard, any signs of leakage, etc). ▪ Prolonged inactivity of facility. ▪ Impermeability of internal lining equals a layer 600mm thick with permeability of 1 x 10^{-10m}/s. ▪ Shallow piezometers installed and monitored around the base of the TSF.	
Raw and Process Water Storage Dams	Overtopping of dam resulting in spillage of contaminated water (saline/cyanide contamination).	D	▪ Potential for overtopping reduced through maintenance of freeboard equivalent to a 72hr, 1 in 100 ARI rainfall event. Freeboard is identified by a surveyed marker peg. ▪ Water transfers to the Water Storage Dam will cease prior to water levels reaching the surveyed marker peg. ▪ If water levels are exceeded due to overlap with pumping and rainfall, water will be transferred out of the dam and back to the TSF (if capacity allows). ▪ Regular inspections undertaken whist dams remain operational (includes recording dam integrity checks, any free water present and its level/freeboard, any signs of leakage, etc). ▪ Process water dam located within the Processing Area which provides secondary containment (bunding).	▪ Operator (human) error during transfer of water to or from the dam.
	Leakage through dam floor resulting in release of contaminated water (saline/cyanide contamination).	E	▪ HDPE Liner.	-
Water Transfer pipelines (e.g. return water, raw water)	Rupture of pipeline resulting in spillage of potentially contaminated or saline water.	C	▪ Placement of pipeline within protected and bunded locations. ▪ Visible markers installed along length of the pipeline. ▪ Periodic inspections of pipelines. ▪ Restricted vehicular access around the Mine. ▪ Immediate cessation of pumping in the event that any leakage or line damage is identified.	▪ Water pumped at too high pressure. ▪ Lack of inspection, testing and maintenance.

Hazard	Source, Situation or Condition Resulting in Pollution	Likelihood	Controls / Pre-emptive actions	Additional Risk Factors
Tailings transfer pipelines	Rupture of tailings delivery pipeline resulting in spillage of contaminated tailings.	C	▪ Placement of pipeline within protected and bunded locations. ▪ Visible markers installed along length of the pipeline. ▪ Periodic inspections of pipelines. ▪ Restricted vehicular access around the Mine. ▪ Immediate cessation of pumping in the event that any leakage or line damage is identified.	▪ Poor installation of pipeline (e.g. poor connection of pipeline sections). ▪ Lack of inspection, testing and maintenance.
Mobile equipment / plant	Leakage / spillage of diesel from vehicle.	C	▪ Regular vehicle inspections. ▪ Refuelling confined to design locations. ▪ Restricted vehicular access around the Mine.	▪ Lack of regular inspections and vehicle maintenance.
ROM stockpiles	Runoff of water which is potentially saline/acidic and/or contains elevated heavy metal concentration.	C	▪ Stockpiles located within ROM pad area. ▪ Runoff directed to ROM Pad sump/sediment dam designed to store a 72hr, 1 in 100 ARI rainfall event. ▪ If required, water pumped from the sump to the Process Water Dam to prevent any overflows.	▪ Periods of high rainfall exceeding design capacity of sump/sediment dam.
Exposed surfaces	Runoff containing elevated sediment loads.	C	▪ Implementation of the Soil and Water Management Plan and Erosion and Sediment Control Plan.	▪ Periods of high rainfall exceeding design capacity of sediment basins.
Excessive dust emissions	Blasting and explosives use during active mining periods.	C	▪ No explosives usage as part of current operational plan. Future potential plants will see all blasting contained to the depths of the open pit – high wall protection. ▪ Weather monitoring prior to scheduled blast events.	-
	Increased dust emissions during excessively dry period over exposed surfaces.	E	▪ Vehicular movement restricted to approved roadways only. No off-track travel permitted. ▪ Restricted vehicular access to the Mine site. ▪ Perimeter vegetation surrounding the mine site maintained as supportive wind block and visual screen.	▪ Ongoing drought situation in Western NSW.

2.3 CONTROLS AND PRE-EMPTIVE ACTIONS

The Hazardous Substances Procedure details the control methods to manage the potential risk posed by exposure to hazardous substances and dangerous goods within the workplace, to avoid injury or illness to persons and damage to the environment and equipment/plant.

Manuka Resources implement several pre-emptive actions and controls to manage the Major Hazards as identified in Section 2.2. In addition to those listed in Table 4 to specifically address potential pollution hazards, there are several generic controls implemented on site which include, but are not limited to:

- Spill kits: containing spill socs, pads and pillows (for perimeter containment); coveralls, gloves, safety goggles and glasses (for safe work); and disposable bags (for removing waste). All personnel are provided with training in the correct use of these items.
- Fire control systems, including water carts.
- Fire suppression on relevant mobile and fixed infrastructure.
- Hydrocarbon and chemical storage as per relevant Australian Standards.
- Personal Protective Equipment: requirements are enforced and include the following standard facility PPE when transferring diesel into vehicles or equipment:
  - Eyewear (safety glasses).
  - Gloves.
  - Shoes (Steel-capped and sturdy).
- Training is provided to ensure that all employees receive the education and training required to perform their daily tasks in a safe and productive manner. Training includes pollution incident response management training, emergency preparedness and response and site familiarisation.
- Safety Data Sheets (SDS) are kept with the chemicals. Electronic copies are retained in the site office.

Manuka Resources has limited authority to undertake pollution management activities on private property, or outside the site boundary and in such cases where an incident may require response outside of Manuka Silver Mine operational land, Manuka Resources will liaise directly and provide appropriate assistance to the relevant authority and emergency services.

2.4 INVENTORY OF POTENTIAL POLLUTANTS

Table 5 provides an inventory of the chemicals and potential pollutants currently or planned to be stored at the Mine, as well as the classification, method of delivery, storage location and maximum quantity of each chemical or potential pollutant. The storage locations referred to in this table are shown in **Figures 3 and 4.**

All chemicals are accompanied by the relevant Safety Data Sheets (SDS) as required by work health and safety regulations.

The facilities that store fuel, oil and hazardous chemicals have been designed in accordance with Australian Standard 1940 – 2017. The system has been designed to incorporate:

- Impervious walls and floors;
- Sufficient capacity to maintain 110% of the volume of the tank (or 110% volume of the largest tank where more than one tank is stored in the bund);
- Walls not less than 250 mm high; and
- Floors graded to a collection sump.

Table 5 - Inventory of Pollutants

Chemical / Product Name	HazChem Classification	Delivery Method	Storage Location	Maximum Quantity / Capacity
Sodium Cyanide	2X Reagent	Road (Isotainers – 20t)	Area 360 - Isotainers	60 t
			Area 360 - Liquid Storage Tank	110000 L
Ferrous chloride	2X Reagent	Road (Isotainer)	Area 360 - Liquid Storage Tank	96000 L
Sodium Hydroxide	2R Reagent	Road (Isotainer)	Area 360 – Liquid Storage Tank	36000 L
Hydrochloric Acid	2R Reagent	Road (Isotainer) Road	Area 360 - Liquid Storage Tank	46000 L
			Lab Storage – Corrosives Cabinet	35 L
Diesel	3Y Fuel	Road (Isotainer) – under licence	Diesel storage area (Bunded storage tanks)	210000 L
Cat TDTO 50 Transmission oil	Transmission Oil	Road	Hydrocarbon Bunded Storage area	60 L
Ceplattyn GT 10	Lubricant	Road (Steel Barrel 190Kg)	Hydrocarbon Bunded Storage area	570 Kg
Coolant DD 50 Green	Coolant	Road (Isotainer – 1000L)	Hydrocarbon Bunded Storage area	2000 L
Hy Lube Iso 68	Lubricant	Road (Steel Barrel 205L)	Hydrocarbon Bunded Storage area	410 L
Renolin B 68 Plus	Lubricant	Road (Isotainer – 1000L)	Hydrocarbon Bunded Storage area	3000 L
Titan Cargo SAE 15W-40	Engine Oil	Road (Isotainer – 1000L)	Hydrocarbon Bunded Storage area	2000 L
Interox St-50	2P Reagent	Road	Lab Storage	27 Kg
Nitric Acid	2R Reagent	Road	Lab Storage – Corrosives cabinet	30 L
Di-isobutylketone + 1% Aliquat	3Y Reagent	Road	Lab Storage – Flammables cabinet	30 L
Activated Carbon	Reagent	Road	Gold Room Storage/Mixing Tanks	20 t
Hydrated Lime	Reagent	Road	Area 310 - Lime Silo	40 t
			Area360 – Lime Storage container	20 t
Sulphamic Acid	2X Reagent	Road (Pallet - 1t)	Gold Room Storage	1 t
Silica Flour Milled 100G	Reagent	Road (Pallet - 1t)	Gold Room Storage	2 t
Three Elephant Pyrobar (Anhydrous Borax)	Reagent	Road (Pallet - 1t)	Gold Room Storage	1 t
Potassium Nitrate	1Z Reagent	Road (Pallet - 1t)	Gold Room Storage	1 t

Potential pollutants created as part of general operations on the mine site, and thus excluded from chemical type registers, include:

- mine tailings;
- sediment laden surface water runoff from disturbed areas; and
- effluent waste.

The presence and quantity of these materials is dependent on mining operations status. Potential inventories of sediment laden water, saline mine affected water and effluent waste are included in **Table 6.**

Table 6. Maximum capacity of potential pollutant storage areas

Pollutant Type	Location	Potential Maximum Capacity
Saline/Contaminated Water	Dirty Water Dams (SB2-3, SB5-6, Internal ROM Basin)	42,500 L
Contaminated Water (TSF, Process Water Pond)	TSF	300000 L
Effluent Waste	Mine Camp	10000 L
	Mine Site	8000 L

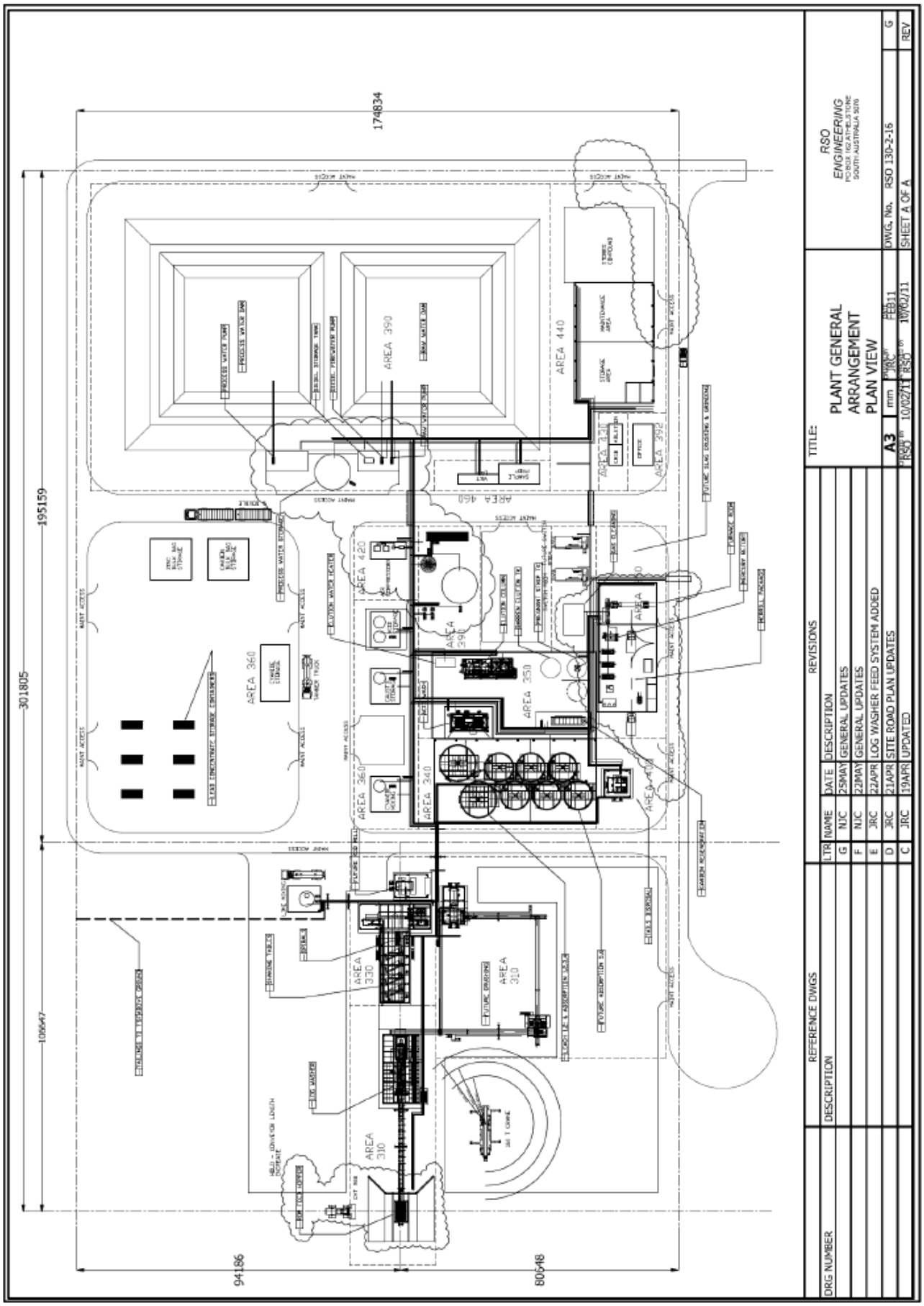

Figure 3 – Pollutant Storage Locations – Processing Plant Area

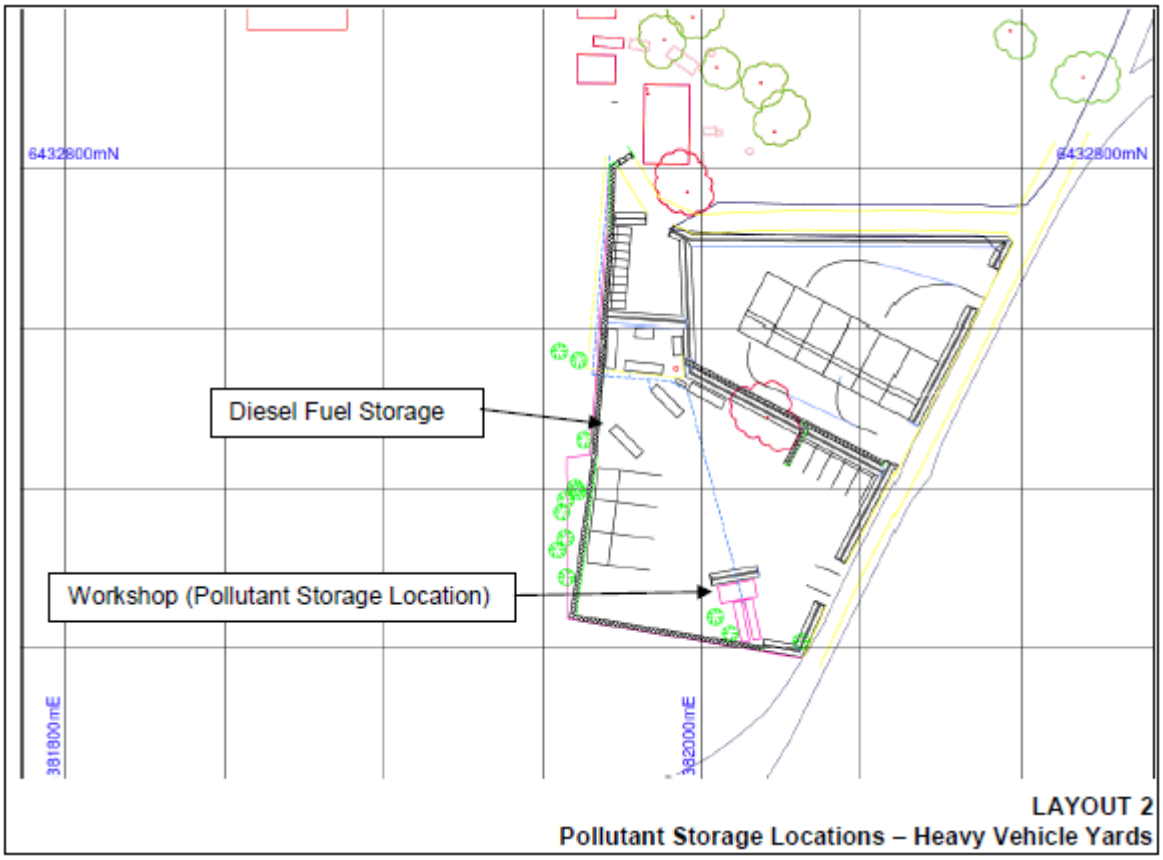

Figure 4 – Pollutant Storage Locations – Heavy Vehicle Yard Area

3. POLLUTION INCIDENT MANAGEMENT

3.1 GENERAL MANAGEMENT AND ACCOUNTABILITIES

In the event of a pollution incident, the response will be managed in accordance with the following five phases.

1. **Alert Phase:** Monitor any incident with the potential to result in pollution.
2. **Stand By Phase:** Prepare to implement the appropriate Pollution Incident Response Management Plan should the incident escalate and trigger as a notifiable pollution incident.
3. **Call Out Phase:** Activate the relevant notification and incident response procedures.
4. **Clean Up Phase:** Clean-up any residual contamination / stabilisation of soil materials once the area is declared safe.
5. **Stand Down Phase:** Incident response completed. Implement a de-briefing and review of the implementation of the notification and incident response procedures.

Table 7 presents the key responsibilities in the implementation of these five phases.

Table 7: Key Management Responsibilities

Position	PHASE	RESPONSIBILITY
Operations Manager David Power 0419 298 359	**General**	▪ Ensure adequate resources are available to enable implementation of the PIRMP. ▪ Ensure the PIRMP evaluation and continual improvement is implemented. ▪ Ensure appropriate personnel training and awareness programs are implemented. ▪ Ensure that the PIRMP is reviewed and tested every 12 months. ▪ Ensure a hard copy of the PIRMP is retained on site.
	Alert	▪ Ensure resources are available to implement the PIRMP, e.g. mobile equipment, water supply, personnel. ▪ Maintain communication with the Processing Superintendent or delegated supervisor for the incident management to ensure progression between incident phases is appropriate.
	Stand By	▪ Advise appropriate personnel of the incident (or ensure notification is undertaken by delegated personnel). ▪ Advise personnel to be on standby for implementation of incident management (notification, response management and/or clean up procedures).
	Call Out	▪ Approve the activation of the relevant notification and response management procedures of the PIRMP. ▪ Maintain communication with the Processing Superintendent and coordinate activities and resources. ▪ Determine the priority of actions of any employees until agencies and emergency services arrive. ▪ Approve the implementation of additional or escalated response measures on advisement from the Processing Superintendent of the incident.
	Clean Up	▪ Ensure adequate resources are available to undertake clean-up. ▪ Inspect and provide confirmation that the affected area is safe.
	Stand Down	▪ Ensure Incident Report Form completed and actioned. ▪ Give direction for a de-briefing and review of the notification, response management and evacuation procedures of the PIRMP.
Processing Superintendent Trevor Higgins 0429 702 838	**General**	▪ In the absence of the Operations Manager, assume or delegate responsibilities. ▪ Ensure that all accidents, incidents and potential incidents are appropriately investigated.
CEO Haydn Lynch 0421 370 902	**General**	▪ Responsible for authorising the PIRMP and all subsequent updates. ▪ Responsible for ensuring adequate resourcing for implementation of the PIRMP. ▪ Liaise with the relevant authority as appropriate.
Delegated Supervisor As delegated by Operations Manager	**General**	▪ Upon advice from the Operations Manager assume or delegate responsibilities. ▪ Upon advice from the Operations Manager ensure that all accidents, incidents and potential incidents are appropriately investigated.
	Alert	▪ Inspect the site of potential pollution incident.
	Stand By	▪ Monitor the identified incident. ▪ Under delegation by the Operations Manager, advise appropriate site personnel of the incident. ▪ Ensure incident reporting has been initiated.
	Call Out	▪ Under delegation by the Operations Manager: – approve the activation of the relevant notification and response management procedures of the PIRMP; – ensure that perimeters are established and access to the site is controlled; – maintain communication with Operations Manager and coordinate activities and resources; and – determine the priority of actions of employees until agencies and emergency services arrive.

Position	PHASE	RESPONSIBILITY
		▪ Complete the appropriate notification (of emergency services, regulatory authority, other relevant authorities and landowners). ▪ Monitor the response to the incident and provide advice to the Operations Manager on the escalation of response as required. ▪ Provide owners and occupiers of land updates of any incidents affecting their land as required.
	Clean Up	▪ Direct the clean-up of the incident and assess and identify when the affected area(s) is/are safe.
	Stand Down	▪ Review Incident Report Form and ensure completed correctly. ▪ Coordinate and manage de-briefing and review as directed by the Operations Manager.
All Personnel	**General**	▪ Ensure incident training is undertaken and responsibilities understood.
	Alert	▪ As soon as aware, advise the Operations Manager or Delegated Supervisor of a pollution incident.
	Stand By	▪ Follow instructions provided by Operations Manager or Delegated Supervisor.
	Call Out / Clean Up	▪ Evacuate the site if instructed. ▪ Undertake response under instruction from Operations Manager or Delegated Supervisor.
	Stand Down	▪ Complete and submit an Incident Report Form. ▪ Attend incident de-briefing and review as directed by the Operations Manager or Delegated Supervisor.

3.2 DUTY TO NOTIFY

All Manuka workers are responsible for immediately alerting their supervisor to all environmental incidents or hazards which may result in environmental harm, regardless of the nature or scale. Immediately is taken to mean *promptly and without delay*.

Notification responsibilities are detailed in the *POEO Act* (Section 148), which encompasses all site personnel, including contractors and sub-contractors. These can be categorised broadly as:

- the duty of an employee or any person undertaking an activity:
  - Any person engaged as an employee or undertaking an activity (on the mine Site) must, immediately after becoming aware of any potential incident, notify their relevant Supervisor of the incident and all relevant information about it. This is to be undertaken as per Section 3.5; and
- the duty of the employer or occupier of a premises to notify:
  - An employer or occupier of the premises on which the incident occurs, who is notified (or otherwise becomes aware of) of a potential pollution incident, must undertake notification to the appropriate regulatory authority of any “material harm incidents”, including all relevant information.

As per guidance provided by the EPA, the decision on whether to notify the incident in accordance with Part 5.7 of the *POEO Act* should not delay immediate actions to provide the safety of people or contain a pollution incident. However, incident notification will be made as soon as it is safe to do so.

3.3 NOTIFICATION CONTACT DETAILS

Table 8 presents the notification protocol to be followed in the event that a notifiable pollution incident occurs.

Table 8. Government Agency Notification Protocol

Trigger	Agency	Timing	Contact Details
An incident that presents an immediate threat to human health or property.	Fire and Rescue NSW NSW Police NSW Ambulance Service	Immediately	Call 000
An incident that does not require an initial combat agency or following initial contact with emergency services.	1. Environment Protection Authority (EPA)	Immediately (or following emergency service contact)	Environment Line 131 555
	2. Ministry of Health (Western NSW Local Health District)		(02) 6841 2222 Ask for Public Health Officer on call
	3. WorkCover Authority		13 10 50
	4. Cobar Shire Council		8:00am - 4:00pm: (02) 6836 5888 After Hours: 0419 281 115
Note: Complying with these notification requirements does not remove the need to comply with any other obligations for incident notification, for example, those that apply under other environment protection legislation or legislation administered by WorkCover.			

Table 9 identifies the neighbouring land holders and notification protocol to be followed in the event that a notifiable pollution incident occurs.

Table 9. Landowner Notification Protocol

Name	Property Address	Contact	Notification Procedures
Wontawinta & Etiwonda	Kidman Highway Cobar NSW 2835 AUSTRALIA	Andrew Moseley 0419 477 983	1. If pollutant has/has the potential to impact either directly or indirectly on property, call to advise of incident and alert as to any potential hazards or impacts on livestock or water supply. 2. Nominate incident response in place and any associated hazards. Nominate schedule for implementation of incident response and clean-up. 3. Following completion of incident clean up and stand down phases, contact the landowner to confirm incident over. Request feedback on incident management. 4. Provide advice on request as to any procedural improvements relevant to the incident.
Lauchlan Downs	8110 Bedooba Road SR13 Cobar NSW 2835	Domonic Prince 0428 669 644	
Wirlong Station	9870 Bedooba Road. NYMAGEE. 2831	Gary McDonald 0429 703 154	
Multagoona	33221 Kidman Way Cobar NSW 2835 – Via. Geandale Station	Simon Prince 0447 753 913	

The specific responsibilities associated with the management and implementation of the PIRMP is outlined

General broader local community notification shall be undertaken at the determination of the CEO. Updates to affected areas may be via information sheets, Community Consultative Committee meetings, media statements or any other strategy deemed appropriate.

3.4 DETERMINATION OF MATERIAL HARM

Following containment of the incident, immediate action must be taken to determine if the incident can be classified as a ‘material harm incident’ as described in Section 1.1.

The determination of a material harm incident will be made by the Operations Manager in consultation with the CEO and the site environmental officer (or delegated Environmental Consultant).

3.5 EXTERNAL NOTIFICATION

As discussed in Section 3.2, notification of an environmental incident is the responsibility of all site and contractor personnel. In the event of an incident, response and notification must be undertaken as per **Figure 5.**

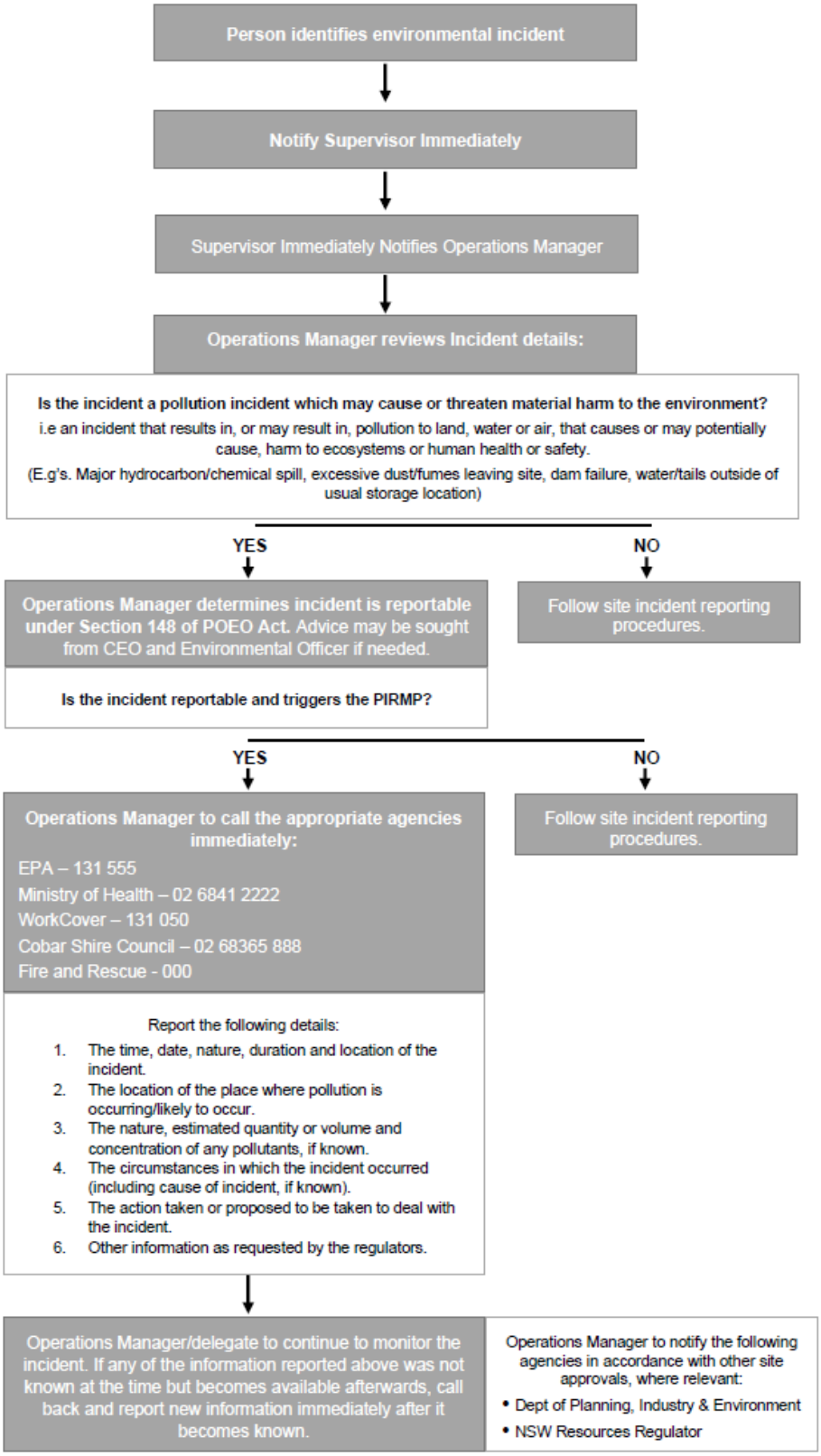

Figure 5 - Incident Reponses and Notification process.

In the case of an environmental incident, prior to any other action, the site must contact 000 if the incident presents an immediate threat to human health or property. Fire and Rescue NSW, the NSW Police and the NSW Ambulance Service are the first responders, as they are responsible for controlling and containing incidents.

3.6 INCIDENT MANAGEMENT PROCEDURES

Incident management is to be implemented in compliance with Manuka's Incident and Hazard Management Procedure.

Incident management at Manuka Resources focuses on actions to:

- Secure and assign necessary tactical response resources, including equipment and/or personnel, to minimise the environmental impacts associated with the incident;
- Establish that tactical response operations are carried out in a safe, well-organised, legal and effective fashion;
- Provide for the safety and welfare of all responders, employees, contractors and visitors;
- Continuously assess the incident to determine the adequacy of tactical response operations and the need for assistance from other agencies;
- Manage stakeholders arriving at site;
- Minimise effects on people, the environment, property, production, and company reputation;
- Implement an environmental monitoring program to quantify impacts as a result of the incident as well as to be used as the basis to notify adjacent landholders as to whether avoidance or remediation measures are required; and
- Interact, as appropriate, with external agencies and regulatory personnel.

3.7 EVACUATION PLAN

The Mine evacuation procedure is communicated to all workers as part of the induction site process. In an emergency evacuation situation, the Operations Manager or a delegate will sound the evacuation horn. Upon hearing the horn, all personnel will proceed to the nearest Emergency Assembly Point. Once mustered at these points, all personnel are to await the instructions of either the Operations Manager, delegated supervisor or safety officer.

4. PLAN EVALUATION AND REVIEW

4.1 TRAINING

Training is to be provided to all personnel as appropriate to their role. Specific training related to this PIRMP and implementation of emergency (incident response) procedures will include the following as a minimum:

- Awareness of all hydrocarbons stored and used on site and how they impact the environment.
- Correct storage and handling of hydrocarbons.
- Refuelling procedures.
- Awareness of dust emission controls and the need for regular review of their effectiveness.
- Awareness of surface water controls and management measures including the operation and maintenance of these.
- Pollution incident management, including roles and responsibilities when responding to an incident.
- Evacuation procedures.
- Incident reporting requirements.

The Operations Manager or their delegate will be responsible for ensuring the appropriate training is included in a site induction and revised every 12 months to ensure skills are updated.

4.2 EVALUATION

During the “Stand Down” phase or within 14 days of the pollution incident response (including testing of the PIRMP) a de-briefing of all relevant personnel will be undertaken to determine the lessons learned from the operation.

The de-briefing will include a meeting with the relevant personnel involved in the incident to collate any comments, issues and views on any changes that could be implemented to improve emergency and incident response procedures within the PIRMP.

The Operations Manager or a delegated supervisor will be responsible for the co-ordination of any de-briefing following a pollution response incident.

4.3 CONTINUAL IMPROVEMENT

The PIRMP will be reviewed:

- at the commencement of new construction and/or operational activities;
- after each test or actual incident;
- in the event that deficiencies are identified;
- as roles and responsibilities of personnel change;
- in the event of legislative changes; and/or
- every 12 months.

The Operations Manager will be responsible for the PIRMP review.

All information and comments compiled from debriefing sessions (test or actual) will be assessed and reviewed to determine the areas of improvement and the updating and implementation of new procedures to improve the outcomes of any pollution incident response for the Mine.

The Operations Manager will be responsible for the approval of the recommended improvements and / or determining any required improvements. All personnel will be responsible for the implementation of the recommended improvement and continual improvement in performance at the Mine.

4.4 TESTING OF THE PIRMP

The testing of the PIRMP will be undertaken to check that the information is accurate and current and that the plan is capable of being implemented in a workable and effective manner. Testing will include all components of the plan, including training requirements. Testing shall be undertaken in the following ways:

- Testing is taken to be either a desktop review, or
- A practical environmental emergency drill.

A review of the PIRMP will occur every 12 months, within one month from the date of any pollution incident that occurs in the course of an activity to which the EPL relates and triggers the PIRMP or following a test of the plan.

This PIRMP was last tested on 21st December 2020 and was a desktop activity coordinated by Environmental Officer Elliott Higgins. The desktop activity was carried out on site at Manuka Silver Mine with Trevor Higgins (processing superintendent), Simon King (OH&S Coordinator), John Currie (Processing shift supervisor) and Andrew Pratt (Maintenance Superintendent).

4.5 AVAILABILITY OF THIS PLAN

The PIRMP shall be kept in written form at the EPL premises and shall be made available to all personnel responsible for implementing the plan, and to an authorised officer (as defined in the POEO Act) on request.

5. DOCUMENT INFORMATION

Relevant legislation, standards and other reference information must be regularly reviewed and monitored for updates. Related documents and reference information in this section provides the linkage and source to develop and maintain site compliance information.

5.1 DOCUMENT REFERENCES

Related documents, listed in **Table 10** below, are directly related to or referenced from this document.

Table 10 Related Documents

Reference	Title
NSW EPA	*Protection of the Environment Operations Act 1997* (POEO Act)
NSW EPA	*Protection of the Environment Operations (General) Regulation 2009* (POEO (G) Regulation)
NSW EPA	Environmental Guidelines: Preparation of Pollution Incident Response Management Plans

5.2 DOCUMENT UPDATES

Full details of the document history are recorded in the document control register, by version. A summary of the current change is provided **Table 11** below.

Table 11 Change Information

Version	Date	Review team (consultation)	Change Summary
1.0	31 August 2012	Alex Irwin (R.W. Corkery & Co. P/L), Cameron Hope, Grant Davidson.	Earliest copy of PIRMP on file from previous owners (Black Oak Minerals)
2.0	16 March 2015	Devon Roberts, Troy Lowien	Updated to reflect site going into Care and Maintenance status by previous owners (Black Oak Minerals).
4.0	17 March 2020	Tanya Gilbert, Haydn Lynch, David Power, Lisa Clarke	Updates completed for site contact details to reflect new ownership and transfer of EPL 20192 and following PIRMP test undertaken 11th March 2020.
5.0	16 August 2020	David Power	Additional contacts updated including neighbouring stakeholders and also responsibilities and accountabilities.
6.0	23 September 2020	Elliott Higgins	Updated list of potential pollutants

6. ATTACHMENTS: PIRMP NOTIFICATION FORMS

6.1 DETAILS OF THE INCIDENT

Detail Required	Detail provided
A. The time, date, nature, duration and location of the incident;	
B. The location of the place where pollution is occurring or is likely to occur;	
C. The nature, the estimated quantity or volume and the concentration of any pollutants if known;	
D. The circumstances in which the incident occurred (including the cause of the incident, if known);	
E. The action taken or proposed to the taken to deal with the incident and any resulting pollution or threatened pollution if known;	
F. Other information prescribed by the regulations.	

6.2 AGENCY NOTIFICATIONS

Agency	Date	Time	Agency Contact Person	Reference Number	Agency comments or further action
Environment Protection Authority (EPA) Immediately (or following emergency service contact) Environment Line 131 555					
Ministry of Health – Western NSW Local Health District (02) 6841 2222 (ask for Public Health Officer on call) or if unavailable call 1300066055					
WorkCover – 131 050					
Cobar Shire Council – 02 68365 888 After Hours: 0419 281 115					
Fire and Rescue – 000					

6.3 LANDHOLDER NOTIFICATIONS

Landholder	Date	Time	Agency Contact Person	Reference Number	Agency comments or further action