

Appendix H – Hazardous Substances Management Plan



Arafura Resources Limited
Nolans Project
Hazardous Substances Management Plan

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1. Introduction

1.1 Purpose

The Nolans Project involves several processes where the use of hazardous substances is required including mineral processing and non-mineral process activities. The use of chemicals (herein referred to as hazardous substances) has the potential to impact upon site personnel and/or the surrounding environment.

Hazardous substances are chemicals or other materials that can cause acute or chronic harm to health; in general they are any substance, mixture or article which is:

- Listed in National Occupational Health and Safety Commission (NOHSC):10005; or
- Classified as a hazardous substance by the manufacturer or importer in accordance with NOHSC:1008; or
- Meets the criteria for hazard classification set out in Part 3 (Health Hazards) of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

The purpose of the Hazardous Substances Management Plan (HSMP) is to provide a framework for the management of hazardous substances. The management includes storage, handling, inventory, spill management measures and disposal requirements.

1.2 Objectives

The Project HSMP has been created to minimise potential impacts on human health and/or the environment. The main objectives are to:

- Provide a management hierarchy for hazardous substances;
- Ensure handling and storage of hazardous substances are in accordance with relevant standards;
- Detail hazardous substances inventory requirements;
- Detail fuel inventory and investigation requirements; and
- Provide spill response procedures and subsequent investigation requirements.

1.3 Legislation, Standards and Guidelines

1.3.1 Northern Territory

In the Northern Territory, hazardous chemicals and dangerous goods are regulated under the *Work Health and Safety (National Uniform Legislation) Act* and the *Work Health and Safety (National Uniform Legislation) Regulations* Administered by NT WorkSafe. The act and regulations are based on the *Model Work Health and Safety Regulations* and make direct reference to the Australian Dangerous Goods Code.

The Australian Dangerous Goods Code 2007 relates primarily to the transport of dangerous goods although it provides relevant information on segregation and compatibility of different classes of dangerous goods.

A summary of NT legislation relating to hazardous substances and management is provided below:

- Dangerous Goods Act 2012;
- Dangerous Goods Regulations 2012;

- Environmental Offences and Penalties Act;
- Waste Management and Pollution Control Act;
- Waste Management and Pollution Control (Administration) Regulations;
- Work Health and Safety (NUL) Act 2011, Division 2 Primary Duty of Care;
- Work Health and Safety (NUL) Regulation 2012, Chapter 7, Hazardous Chemicals; and
- National Environment Protection Council Act.

Australian Standards

Two Australian Standards relate directly to the storage of flammable, combustible and toxic substances including:

- AS/NZS 1940:2004 *The storage and handling of flammable and combustible liquids* provides minimum acceptable safety requirements for storage facilities, operating procedures, emergency planning and fire protection for the storage and handling of flammable liquids.
- AS/NZS 4452:1997 *The storage and handling of toxic substances* provides minimum acceptable safety requirements for storage facilities, operating procedures, emergency planning and fire protection for the storage and handling of toxic substances.

Additional Australian Standards applicable to the HSMP include:

- AS 4360:1999 *Risk Management*;
- AS 2187.1: 1998 *Explosives – Storage, transport and use*;
- AS/NZS 2444:2001 *Portable Fire Extinguishers and Fire Blankets - Selection and Location*;
- AS/NZS 3833:1998 *Storage and Handling of Mixed Classes of Dangerous Goods in Packages and Bulk Containers*; and
- AS 2430.3:1997 *Classification of Hazardous Areas – Examples of Area Classification – General*

Codes of Practice

Several Codes of Practice (CoP) covering the management of hazardous substances within the workplace are available through Safe Work Australia (<http://www.safeworkaustralia.gov.au>). The Project will be operated in general accordance with the codes of practice including:

- Code of Practice: Managing Risks of Hazardous Chemicals in the Workplace
Safe Work Australia, July 2012;
- Code of Practice: Labelling of Workplace Hazardous Substances
Safe Work Australia, March 2015;
- National Code of Practice for the Control of Workplace Hazardous Substances
NOHSC:2007 (1994); and
- Storage and Handling of Workplace Dangerous Goods
NOHSC:1015 (2001).

2. Overview

2.1 Management Hierarchy

The management of hazardous substances at the Nolans project is undertaken in general accordance with the hierarchy of control. The hierarchy of control for hazardous substances is as follows:

- **Elimination and removal**
Eliminating either the substance or the activity which gives rise to the risk is the most effective form of risk reduction.
- **Substitution**
Substituting high risk products or activities with alternative lower risk products or activities will reduce overall risk exposure.
- **Isolation, enclosure or sealing**
Hazards may be isolated by distance or barriers or a combination of both.
- **Engineering controls**
Engineering controls involve making engineering changes to a process or piece of equipment used to store or handle hazardous substances.
- **Safe work practices (administrative controls)**
Administration controls consist of properly designed and implemented work practices and procedures.
- **Personal protective equipment (least preferred)**
PPE is considered the last line of defence against hazardous substances. Material Safety Data Sheets (MSDS) normally contain recommendations on the selection and use of PPE for the particular materials being used.

2.2 Materials Summary

2.2.1 Construction Phase

Construction materials include hazardous and non-hazardous materials. They will be transferred to site by road haulage. A summary of construction phase hazardous substances is provided in Table 2-1.

Table 2-1 Construction Phase Hazardous Substances

Product	Use	Proposed Storage Location	Approximate Quantity
Cement	Construction requirements.	Mine site – location to be confirmed.	<i>tbc</i>
Diesel	Fuel for machinery and vehicles.	Self bunding storage tanks at the Mine Site and Process Site.	15 MLpa.
Unleaded Petrol	Fuel for machinery and vehicles.		<i>tbc</i>
Lubricants	Process plant, machinery and vehicles.	Chemical Storage Shed at the Mine Site within internal bunding.	<i>tbc</i>
Sodium hypochlorite	Water treatment plant disinfection.		5 tpa
Antiscalent	Water treatment plant descaling.		1 tpa
Miscellaneous cleaning products	Site maintenance.		<i>tbc</i>

Note: Required quantities are subject to change through the detailed design phase.

2.2.2 Operations Phase

Hazardous substances during operations will be stored at predefined locations across the Nolans project to facilitate control and management. A summary of the operations phase hazardous substances are provided in Table 2-2.

Table 2-2 Operations Phase Hazardous Substances

Product	Use	Proposed Storage Location	Approximate Quantity
Mine Site			
Diesel	Fuel for machinery and vehicles.	TBC	tbc
Unleaded petrol	Fuel for machinery and vehicles.	TBC	tbc
Processing Site			
Diesel	Fuel for machinery and vehicles.	TBC	tbc
Unleaded petrol	Fuel for machinery and vehicles.	TBC	tbc
Natural gas (60 – 80% methane)	Power station fuel supply.	Adjacent to the power station in bulk storage tanks.	PJpa
Sulphuric Acid	Processing	TBC	130,000 tpa
Hydrochloric Acid (33%)	Processing	TBC	77,000 tpa
Sodium Hydroxide (Caustic Soda)	Processing	TBC	36,000 tpa
Sodium Carbonate	Processing	TBC	24,000 tpa
Carbonate	Processing	TBC	342,000 tpa
Lime	Processing	TBC	16,000 tpa
Barium Chloride	Processing	TBC	tbc
Thorium*	By-product	TBC	tbc
Uranium*	By-product		tbc
Explosives components (ammonium nitrate, emulsion)	Extraction operations.	Explosives Magazine.	2,200 tpa
Cement	Maintenance construction requirements.	Chemical Storage Shed at the Mine Site within internal bunding.	tbc
Flocculent (Nalco 83372)	Settlement of tailings		300 tpa
Lubricants (transmission fluid, engine oil, air compressor oil)	Process plant, machinery and vehicles.		tbc
Sodium hypochlorite	Water treatment plant disinfection.		5 tpa
Antiscalent	Water treatment plant descaling.		1 tpa
Engine Coolant	Machinery and vehicles.		tbc
Drill road grease	Drill and blast and exploration drilling		tbc
Waste oil and waste oil filters	-		tbc
Miscellaneous cleaning products	Site maintenance.		tbc

Note: * indicates managed separately within the Radiation Management Plan.

Required quantities are subject to change through the detailed design phase.

3. Labelling, Monitoring and Incident Notification

3.1 Labelling

Hazardous substances will be labelled in accordance with the *Code of Practice for Labelling of Workplace Hazardous Chemicals* which include the following information:

- Product identified and chemical ingredients;
- Name, Australian address and business telephone number (manufacturer or importer);
- Hazard pictograms;
- Hazard statement¹;
- Hazard, first aid and emergency procedures¹; and
- Expiry date (if applicable)¹.










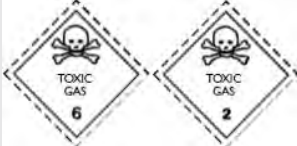




All information is to be written in English.






3.1.1 Hazard Pictograms and ADG Code Class Labels

The Globally Harmonised System (GHS) specifies hazard pictograms in relation to the hazardous substances potential impact to physical, health and/or the environment. Hazard pictogram will be located on all hazardous substance containers. A summary of hazardous pictograms and associated dangerous goods class labels are provided in Table 3-1.

¹ Indicates details may not be included on small containers.

Table 3-1 Hazardous Pictograms and Dangerous Goods Code Class Labels
(Source: Safe Work Australia, 2015)

Hazard Pictograms Required	Hazard	Dangerous Goods Class Label	Hazard
	<ul style="list-style-type: none"> Explosive Self-reactive Organic peroxide 		<ul style="list-style-type: none"> Explosive
	<ul style="list-style-type: none"> Flammable Self-reactive Pyrophoric Self-heating Emits flammable gas in contact with water Organic peroxide 		<ul style="list-style-type: none"> Flammability Pyrophoric Emits flammable gas Organic peroxide
	<ul style="list-style-type: none"> Oxidiser 		<ul style="list-style-type: none"> Oxidiser Oxidising gas
	<ul style="list-style-type: none"> Gases under pressure 		<ul style="list-style-type: none"> Non-toxic non-flammable gas Flammable gas Oxidising gas Toxic gas
	<ul style="list-style-type: none"> Acute toxicity 		<ul style="list-style-type: none"> Acute toxicity Acute toxic gas
	<ul style="list-style-type: none"> Acute toxicity Skin irritant Eye irritant Skin sensitiser 	-	-
	<ul style="list-style-type: none"> Carcinogen Respiratory sensitiser Reproductive toxicant Target organ toxicant Germ cell mutagen 	-	-
	<ul style="list-style-type: none"> Eye corrosion Skin corrosion Corrosive to metal 		<ul style="list-style-type: none"> Corrosive to metals

	<ul style="list-style-type: none"> Acute toxicity 		<ul style="list-style-type: none"> Environmental hazard
-	-		<ul style="list-style-type: none"> Miscellaneous dangerous goods
-	-		<ul style="list-style-type: none"> Infectious
-	-		<ul style="list-style-type: none"> Radioactive

3.2 Monitoring

3.2.1 Hazardous Substances Inventory

Data Collected

Hazardous substances inventory at the Nolans project will be developed during the construction phase and transferred through to the operations phase. The inventory template is provided in Appendix A and will be updated / completed at project commencement. The inventory includes the following information:

- Site and location;
- Name, position and date;
- Commercial Name;
- Chemical Composition;
- Volume (L / kg / m³);
- State (solid, liquid or gas);
- Safe fill volume (L / kg / m³);
- Maximum capacity (L / kg / m³);
- Container type; and
- Hazardous substance / dangerous goods classification.

Frequency

Hazardous substance inventories will be updated frequently and when new substances not previously listed within the inventory are brought onto site.

3.2.2 Safety Data Sheets Register

In addition to hazardous substance inventories, all product Safety Data Sheets (SDSs) will be maintained at both storage locations and the Site Office. The SDS register will form Appendix B of this management plan during construction and operations.

The SDS register will be updated as new hazardous substances are brought to site.

3.2.3 Fuel Inventory (Loss Management)

A fuel inventory system will be implemented including the following:

- Product level measurements compared with dispenser meter readings, deliveries, removals and internal transfers; and
- Reconciliation conducted for each individual tank to review product added to/or removed from the tank.

Fuel Leakage or Loss Identified

Should a fuel leak, spill or other cause of discrepancy be detected the following will be undertaken:

- If required, take action as soon as practicable to prevent any further release of product or used oil into the environment;
- Identify and mitigate any fire, explosion or vapour hazards;
- Take all reasonable steps to prevent migration of product or used oil that has leaked or spilled;
- Take all reasonable steps to recover or remove product or used oil that has leaked or spilled so that the site does not pose any threat to the environment or human health and safety; and
- Remove or, where practical to do so, repair any leaking components of the Above Ground Storage Tank (AST).

3.3 Spill / Incident Statutory Notification Procedures

Spills and/or incidents in relation to hazardous substances at the site will be reported to the required regulatory body as detailed in Table 3-2. Management of the spill / incident will be undertaken in accordance with the Emergency Response Management Plan within the Environmental Management Plan.

All spills will be logged within the Incident and Non-conformance Register in Appendix A of the EMP.

Table 3-2 Regulatory Body Reporting Requirements

Entity	Trigger	Timeframe and Contact Details	Incident Reporting Details
Northern Territory Environmental Protection Authority (NT EPA)	Incident which causes, or is threatening or may threaten to cause pollution resulting in material environmental harm or serious harm. Qualifying triggers requiring submittal of Section 14 Incident Report to NT EPA are any of the following: <ul style="list-style-type: none"> • is not trivial or negligible in nature; or 	< 24 hrs post incident ntepe@nt.gov.au pollution@nt.gov.au	The Section 14 Incident Report Form requires the following details: <ul style="list-style-type: none"> • Incident causing or threatening to cause pollution; • Location occurred and area impacted; • Date and time; • How the pollution has occurred, is occurring or may occur; • Attempts made to prevent, reduce, control, rectify, investigation and/or clean up the pollution or resultant environmental harm caused or threatening to be caused by the incident; and • Operator details. The form is to be signed by the HSEC

Entity	Trigger	Timeframe and Contact Details	Incident Reporting Details
	<ul style="list-style-type: none"> consists of an environmental nuisance of a high impact or on a wide scale; or results, or is likely to result in \$50,000 or more in taking action to prevent or minimise environmental harm or rehabilitate the environment; or results in actual or potential loss or damage to value of \$50,000 or more of the prescribed amount (whichever is the greater). 		<p>Manager and/or General Manager for submission. A blank form is provided in Appendix D.</p>
Department of Mines and Energy (DME)	Incident which causes minor environmental impact with some minor actual or potential harm to the environment.	<p>As soon as practicable.</p> <p>Mineral.Info@nt.gov.au</p>	<p>The Section 29 Notification of Environmental Incident Form requires the following details:</p> <ul style="list-style-type: none"> Site and operator details. Location occurred and area impacted (GPS coordinates); Date and time; Description of incident Emergency and remedial actions taken. Nature of impact and severity; Current situation; Details of sampling undertaken; and Notification status internally and externally. <p>The form is to be signed by the HSEC Manager and/or General Manager for submission. A blank form is provided in Appendix E.</p>
NT WorkSafe	<p>Incident which results in either:</p> <ul style="list-style-type: none"> Death of a person; Serious injury or illness; or Dangerous incident. 	<p>Immediate verbal communication via 1800 019 115</p> <p>Written notification < 48 hrs post incident.</p> <p>ntworksafe@nt.gov.au</p>	<p>The NT WorkSafe Incident Notification Form requires the following details:</p> <ul style="list-style-type: none"> Person submitting details; Incident details including date, time and human injury details; Work activity being undertake at the time of incident; Witness(es) details; Details of injured / deceased persons; Summary of injury or illness; and Future remedial actions. <p>The form is to be signed by the HSEC Manager and/or General Manager for submission. A blank form is provided in Appendix F.</p>

To be determined during detailed design.

Figure 3-1 Operations Phase Hazardous Substance Storage Locations

4. Hazardous Substances Management

Hazardous substance management will be undertaken in accordance with Section 2 of this plan. Management of hazardous substances risk is structured below as follows:

- **Key Activities, Risks and Impacts:** A summary of the key activities being undertaken during the management period. The potential environmental impacts and residual risk levels are identified for each environmental aspect.
- **Objective:** The guiding environmental management objective(s) and activities that apply to the element.
- **Mitigation Measures:** The procedures to be employed to ensure that the relevant objectives are met.
- **Responsibility:** Nominates the responsible position for implementing actions and monitoring.
- **Trigger, Action, Response Plan (TARP):** The actions to be implemented in the case of non-compliance. This includes strategies of remediation and the person(s) responsible for the actions.

4.1 Key Activities, Risks and Impacts

The key activities and potential environmental impacts have been identified for hazardous substances are listed in Table 4-1. The risk matrix is provided in Appendix G.

Table 4-1 Key Activities, Risks and Impacts

Activity	Potential Environmental Impact	Residual Risk Level		
		Consequence	Likelihood	Risk
Uncontrolled release, spill or passive discharge of hydrocarbons or reagents (dry bulk or liquid bulk) at mine site or processing site, including through inappropriate storage and handling.	Contaminant to ground resulting in contamination of soils and groundwater resource.	Minor	Unlikely	Low
Personnel impacted by fire or explosion. This includes equipment and substance fire and explosions. This may occur during construction or operations. Mining operations fires would typically involve mobile equipment fires. Processing plant fires would typically involve fixed plant fires. This also includes the gas fired power generation plant and Amadeus Basin to Darwin high pressure gas pipeline.	Personnel fatality or injury.	Catastrophic	Rare	Medium

Activity	Potential Environmental Impact	Residual Risk Level		
		Consequence	Likelihood	Risk
<p>Personnel exposed to hazardous materials via all means e.g. ingestion, inhalation or skin contact.</p> <p>Materials include sulphur, lime, limestone, hydrochloric acid, HF, sodium hydroxide, sodium sulphate, sulphuric acid, barium chloride, sodium carbonate, chlorine, fire suppression chemicals, RE concentrate, tailings, sewage etc.</p>				
Unauthorised site access / security breach during construction and operation.	Personnel or third party fatality or injury.	Major	Rare	Medium

4.1 Objective

The hazardous substances management objectives have been established and are detailed in Table 4-2.

Table 4-2 Hazardous Substances Objectives

Objective	Target	Indicator
Protection of the surrounding environment from hazardous substances.	No long term impact and/or environmental harm occurring from the release of hazardous substances.	Number of incidents reported leading to potential long term impact and/or environmental harm.
	Hazardous Substances to be stored appropriately and in accordance with legislative standards.	Number of hazardous substance non compliance breaches of legislative standards.

4.2 Mitigation Measures

Mitigation measures have been developed to minimise potential impacts associated with hazardous substances. The mitigation measures, timing and responsibilities are provided in Table 4-3.

Table 4-3 Mitigation Measures

ID	Mitigation Measure	Timing	Responsibility
Site Induction			
HS1	<p>Site induction includes the following components for hazardous substances:</p> <ul style="list-style-type: none"> Summary of hazardous substance at the Nolans project and associated locations; Summary of hazardous pictograms and dangerous goods code class labels and what they mean; Requirements for handling and utilising fuel infrastructure; No hot works or naked flames allowed within 20 m of flammable substances; and Procedure for reporting and/or managing a spill. 	Site Induction	All personnel
General			

ID	Mitigation Measure	Timing	Responsibility
HS2	Management of hazardous substances in accordance with Australian Standards including: <ul style="list-style-type: none"> AS/NZS 1940:2004 <i>Storage and handling of flammable and combustible liquids</i>; AS/NZS 4452:1997 <i>Storage and handling of toxic substances</i>; AS 4360:1999 <i>Risk Management</i>; AS 2187.1: 1998 <i>Explosives – Storage, transport and use</i>; AS/NZS 2444:2001 <i>Portable Fire Extinguishers and Fire Blankets - Selection and Location</i>; AS/NZS 3833:1998 <i>Storage and Handling of Mixed Classes of Dangerous Goods in Packages and Bulk Containers</i>; and AS 2430.3:1997 <i>Classification of Hazardous Areas – Examples of Area Classification – General</i>. 	Construction and Operation	Area Managers
HS3	Hazardous substances to be stored in Chemical Storage Shed with internal bunding to collect spills and ventilation to prevent the build-up of fumes. These are used for drum storage of oil, petrol and similar materials.	Construction and Operation	Area Managers
HS3	Waste oil and oil filters are to be stored in appropriately labelled Intermediate Bulk Containers (IBC). IBCs are determined as small containers, drums (up to 205 litres) and storage up to 1000 litres. All IBCs labelled and hazard it poses listed on container. The IBC are to be removed from site by a suitably licenced contractor and delivered to a licenced depot.	Construction and Operation	All personnel
HS4	Storage of IBCs will not exceed capacity of secondary containment volume.	Construction and Operation	All personnel
HS5	Fuel (diesel) storage tanks will meet environmental guidelines for the safe storage of bulk fuel (AS1692-2006 Steel Tanks for Flammable and Combustible Liquids and AS 1940:2004: The Storage and handling of combustible and flammable liquids).	Construction and Operation	Area Managers
HS6	Fire extinguishers fitted in site vehicles.	Construction and Operation	Area Managers
HS7	In general, hazardous substances are to be stored a minimum of 10 m from surface water and 50 m from groundwater wells.	Construction and Operation	All personnel
HS8	Storage of flammable and combustible materials will be in accordance with the Hazardous Substances Management Plan. Open flame or other ignition sources are prohibited within 20 m of bulk flammable storage areas, fuel dispensing vehicles or refuelling operations and activities in hazardous atmospheres.	Construction and Operation	All personnel
Spill Management			
HS9	Spill kits are located at all hazardous substance storage locations in addition to area supervisors having mobile spill kits. In addition, spill kits are available to be relocated to specific areas in accordance with scopes of work.	Construction and Operation	Area Managers
HS10	Monthly inspections of hazardous substance storage locations to ensure facilities meet HSE requirements and spill kits are present/contain sufficient materials for potential spillages.	Monthly	Safety Officer Environmental Officer Area Supervisors
HS11	In the event of a spill follow the spill management procedure within the Emergency Response Plan.	At all times	All personnel
Inspection and Monitoring			
HS12	Monthly hazardous substances inventory in accordance with Section 3.2.1. The inspection is to update the hazardous substances inventory (Appendix A). In addition, any new hazardous substances will be included when they are brought to site.	Monthly /As required	Safety Officer All personnel
HS13	Safety Data Sheets (SDSs) register will be maintained at storage locations and the Site Office (Appendix B). The register will be supplemented when new hazardous substances are brought to site.	As required	Area Supervisors Safety Officer
HS14	Spill kits to be inspected on a monthly basis to ensure kits contain adequate equipment.	Monthly	Safety Officer Environmental Officer Area Supervisors

ID	Mitigation Measure	Timing	Responsibility
HS15	Fuel inventory control system in accordance with Section 3.2.3 including: <ul style="list-style-type: none"> Product level measurements compared with dispenser meter readings, deliveries, removals and internal transfers; and Reconciliation conducted monthly for each individual tank product is added to or removed. 	At all times	Supply Officer
HS16	If any leaks, spills or other cause of loss is identified the following will be undertaken: <ul style="list-style-type: none"> Take action as soon as practicable to prevent any further release of product or used oil into the environment; Identify and mitigate any fire, explosion or vapour hazards; Take all reasonable steps to prevent migration of product or used oil that has leaked or spilled; Take all reasonable steps to recover or remove product or used oil that has leaked or spilled so that the site does not pose any threat to the environment or human health and safety; and Remove or, where practical to do so, repair any leaking components of the AST. 	As required	All personnel
HS17	Annual Hazardous Substances Management Plan performance review (Section 5).	Annually	HSEC Manager

4.3 Trigger, Action and Response Plan

The Trigger, Action and Response Plan (TARP) outlines remedial actions and responses to the situation. The levels of incidents are outlined in Table 4-4 and TARP in Table 4-5.

Table 4-4 Spill Trigger Levels

Location	Consequence	Trigger Level
Hazardous substance release – both onsite and off Mining Lease	Near source confined and immediate reversible impact.	Level 1
	Near source confined and medium term recovery (up to 1 month).	Level 2
	Unconfined and long term recovery and remediation (months to years).	Level 3

Table 4-5 Trigger, Action and Response Plan

Responsibility	Situation		
	Level 1	Level 2	Level 3
Personnel who identify spill	<ul style="list-style-type: none"> Isolate and contain the spill utilising the spill kit. Evacuate from the area if potential danger. Notify the Emergency Response Team coordinator. 	<ul style="list-style-type: none"> Isolate and contain the spill utilising the spill kit. Evacuate from the area if potential danger. Notify the Emergency Response Team Coordinator. 	<ul style="list-style-type: none"> Isolate and contain the spill utilising the spill kit. Evacuate from the area if potential danger. Notify the Emergency Response Team Coordinator.
Emergency Response Team Coordinator	<ul style="list-style-type: none"> Attend and assess the significance and flag the area. Re-commence operations where possible, excluding the area of the incident. Replenish spill kit consumables. Undertake and/or manage investigation into spill incident which is to be provided to the HSEC team within 24 hours of the incident occurring. Spill to be logged in the Incident and Non-conformance Register (Appendix A of the EMP); Produce a 'Safety Moment' to onsite personnel within 1 week of incident occurring. Review and implement recommendations. 	<ul style="list-style-type: none"> Attend and assess the significance and flag the area. Re-commence operations where possible, excluding the area of the incident. Replenish spill kit consumables. Undertake and/or manage investigation into spill incident which is to be provided to the HSEC team within 24 hours of the incident occurring. Spill to be logged in the Incident and Non-conformance Register (Appendix A of the EMP); Produce a 'Safety Moment' to onsite personnel within 1 week of incident occurring. Review and implement recommendations. 	<ul style="list-style-type: none"> Attend and assess the significance and flag the area. Manage insitu engineering works to capture and control the spill. Re-commence operations where possible, excluding the area of the incident. Replenish spill kit consumables. Undertake and/or manage investigation into spill incident which is to be provided to the HSEC team within 24 hours of the incident occurring. Spill to be logged in the Incident and Non-conformance Register (Appendix A of the EMP); Produce a 'Safety Moment' to onsite personnel within 1 week of incident occurring. Review and implement recommendations.
Environmental Officer	<ul style="list-style-type: none"> Attend and assess the significance and potential requirement for further assessment. Advise on response, containment and clean-up requirements. 	<ul style="list-style-type: none"> Attend and assess the significance and potential requirement for further assessment. Advise on response, containment and clean-up requirements. Commence investigation into soil, surface and/or groundwater impacts from the spill. Excavate and appropriately dispose of contaminated sediments with validation samples taken and disposal certification for contaminated sediments disposed by licenced offsite facility as required. 	<ul style="list-style-type: none"> Attend and assess the significance and flag the area. Advise on response, containment, monitoring and clean-up requirements. Commence investigation into soil, surface and/or groundwater impacts from the spill. Excavate and appropriately dispose of contaminated sediments with validation samples taken and disposal certification for contaminated sediments disposed by licenced offsite facility as required.
HSEC Manager	Assess consequence levels and determine appropriate level of reporting to authorities - Department of	Assess consequence levels and determine appropriate level of reporting to authorities - Department of	Assess consequence levels and determine appropriate level of reporting to authorities - Department of

Responsibility	Situation		
	Level 1	Level 2	Level 3
	Mines and Energy, Northern Territory Environmental Protection Authority and NT WorkSafe (using Table 3-2 as a guide).	Mines and Energy, Northern Territory Environmental Protection Authority and NT WorkSafe (using Table 3-2 as a guide).	Mines and Energy, Northern Territory Environmental Protection Authority and NT WorkSafe (using Table 3-2 as a guide).

5. Previous Period Performance

No data available for previous period performance.

Appendices

Appendix A – Hazardous Substances Inventory

Hazardous Substances Inventory

Site	
Location	
Date	
Name	
Position	

Commercial Name	Chemical Composition	Volume (L / kg / m ³)	State (solid, liquid or gas)	Safe Fill Volume (L / kg / m ³)	Maximum Capacity (L / kg / m ³)	Container Type	Hazardous Substance / Dangerous Goods Classification

Commercial Name	Chemical Composition	Volume (L / kg / m ³)	State (solid, liquid or gas)	Safe Fill Volume (L / kg / m ³)	Maximum Capacity (L / kg / m ³)	Container Type	Hazardous Substance / Dangerous Goods Classification

Appendix B – Safety Data Sheet Register

To be populated throughout the Project.

Appendix C – Fuel Inventory

Fuel Inventory

Site	
Location	
Tank ID	
Product	
Month	

Day	Month	Dispensed (L)	Delivered (L)	Book Stock (L) <i>Note: Previous Day Dip Reading + Delivery - Dispensed</i>	Dip Reading (L)	Loss or Gain <i>Note: Book Stock - Dip Reading</i>	Cumulative Loss / Gain
Previous Month		-	-				
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
	Total					Loss / Gain	

Appendix D – NT EPA Section 14 Incident Report

SECTION 14 INCIDENT REPORT (*Waste Management and Pollution Control Act*)

Date and Time of Notification:	
Person / Company:	
Incident:	

(a) the incident causing or threatening to cause pollution	
(b) the place where the incident occurred	
(c) the date and time of the incident	
(d) how the pollution has occurred, is occurring or may occur	
(e) the attempts made to prevent, reduce, control, rectify or clean up the pollution or resultant environmental harm caused or threatening to be caused by the incident	
(f) the identity of the person notifying the NT EPA	

Appendix E – DME Section 29 Notification of Environmental Incident

Notification of an Environmental Incident

Section 29 of the Mining Management Act

Forward completed form to: Mining Compliance Division,
Department of Mines and Energy

Email: mineral.info@nt.gov.au (preferred) or Fax: (08) 89996527

PLEASE TYPE OR PRINT CLEARLY

Please ensure that you have read the [Draft Guideline - Environmental incident reporting under Section 29 of the Mining Management Act \(July 2012\) \[167kb\]](#)

NAME OF MINING SITE	
NAME OF OPERATOR	
DATE & TIME OF INCIDENT	
NAME OF PERSON NOTIFYING	
POSITION/TITLE	
CONTACT PERSON	
CONTACT DETAILS	Business: Mobile
	Fax: E-mail:
INCIDENT LOCATION (use GPS co-ordinates, attach map, etc as appropriate)	
DESCRIPTION OF INCIDENT	
EMERGENCY & REMEDIAL ACTIONS TAKEN	

ENVIRONMENTAL DETAILS

<p>NATURE OF IMPACT AND SEVERITY (Volume/ of spillage, area impacted, wildlife/vegetation/ erosion, etc) DME severity classification: 1 2 3 4 <i>Refer to pages 3 to 5 of the Draft Guideline - Environmental incident reporting under Section 29 of the Mining Management Act (July 2012) [167kb]</i></p>	
<p>CURRENT SITUATION (Potential / ongoing / ceased / etc)</p>	
<p>DETAILS OF ANY SAMPLES TAKEN (when / where / type / number / time for results /etc)</p>	

OPERATOR INTERNAL REPORTING

<p>Has the incident been reported internally? YES / NO</p>	<p>Name:</p>
<p>If so, to whom</p>	<p>Position:</p>
<p>Operator reference number (where applicable/available)</p>	

<p>HAS THE DEPARTMENT BEEN NOTIFIED EARLIER?</p>	<p><input type="checkbox"/> YES <input type="checkbox"/> NO</p>
<p>WHO WAS NOTIFIED</p>	
<p>HOW (phone/email/fax)</p>	
<p>WHEN (date & time)</p>	
<p>BY WHOM</p>	

Signed: _____ Date: _____

NAME: _____

POSITION: _____

<p>OFFICE USE ONLY</p>	
<p>RECEIVED BY</p>	
<p>DATE</p>	<p>TIME</p>

Appendix F – NT WorkSafe Sections 35 to 39 Incident Notification Form

Incident Notification Form

Sections 35 to 39 of the *Work Health and Safety (National Uniform Legislation) Act* (WHS (NUL)Act) states NT WorkSafe must be notified of the occurrence as soon as practicable by the PCBU on **1800 019 115**. You will be given an incident notification Reference Number that must be included on this form. This number is proof of your notification phone call as soon as was practicable.

In addition to immediate (as soon as is practicable) phone notification, this 2-page notification form must be faxed or emailed to NT WorkSafe within **48 hours** after the incident occurrence. Fax: **08 8999 5141**. Email: ntworksafe@nt.gov.au

For more information please see NT WorkSafe bulletin Incident Notifications.

Incident Notification Form

Reference Number:		Date:	
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Person Submitting Details (if completing form by hand, please print BLOCK letters)

Name:							
Position Title:							
Name of Employer/Self Employed Person notifying:							
ABN:							
Business address: (Not Postal Address)							
Suburb:				State:			
Work number::				Mobile number:			
Email Address:							

Incident Details

Date of Incident:				Time of Incident: (am/pm)			
Death of a person <input type="checkbox"/>		Serious injury or illness <input type="checkbox"/>		Dangerous incident <input type="checkbox"/>			
Name of Employer of any Injured or Deceased Person(s) if different from above: i.e.: subcontractor							
ABN:							
Address or location where the incident occurred:							
Describe the specific location of the incident:							

Work activity being undertaken at the time of the incident:

Provide a description of work being undertaken at the time of the incident including identifying any plant, substance and equipment involved

Incident Notification Form

Witnesses

Name of person(s) who saw the incident or was first on the scene

Details of Injured/Deceased Person(s)

Full Name:					
Date of Birth:		Occupation/Job Title:			
Direct Worker	<input type="checkbox"/>	Contractor	<input type="checkbox"/>	Member of public	<input type="checkbox"/>
Other	<input type="checkbox"/>				
Address:					
Suburb:		State:		Postcode:	
Work number:		Mobile number:			
Email:					

Injury/Illness

Provide a description of any injury or illness		
Did the person receive treatment following the injury/illness? If yes, describe treatment below	Yes <input type="checkbox"/>	No <input type="checkbox"/>

Action

Describe any Action taken/intended, if any, to prevent recurrence of the incident

Declaration

Date form submitted:		Signed:		I have submitted this form electronically (signature is not required)	<input type="checkbox"/>
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Appendix G – Risk Matrix

An environmental risk assessment was undertaken for the Nolans project and associated construction, operation and closure. The risk assessment identified the risk source (hazard and event), receptors and potential impact. The consequence and likelihood were determined using the descriptions identified in Table G1 and Table G2 respectively. The risk matrix is provided in Table G3.

Table G1 Consequence Description

Category of Impact	Aspect	Insignificant	Minor	Moderate	Major	Catastrophic
Air	Air quality	No measurable air quality impacts or exceedance of air quality standards.	Local short term and approaching exceedance of air quality standards.	Local minor long term, or widespread minor short term or exceedance of air quality standards.	Widespread (regional) major short term exceedance of air quality standards.	Regional long term change in air quality or exceedance of air quality standards.
Air	Noise	Applicable standards / guidelines met at all sensitive receptors at all times.	Isolated and temporary increase in noise levels exceeding relevant noise standards / guidelines at a sensitive receptor.	Short term, local increase in noise levels exceeding relevant noise standards / guidelines at a sensitive receptor.	Long term, local increase in noise levels exceeding relevant noise standards / guidelines at a sensitive receptor.	Long term, regional increase in noise levels exceeding relevant noise standards / guidelines at a sensitive receptor.
Biodiversity	Listed Flora Species	Minor local habitat modification and/or lifecycle disruption for a listed species.	Moderate local habitat modification and/or lifecycle disruption for a listed species.	Substantial local habitat modification and/or lifecycle disruption for a listed species.	Moderate regional habitat modification and/or lifecycle disruption for a listed species.	Substantial regional habitat modification and/or lifecycle disruption for a listed species.
Biodiversity	Listed Threatened Fauna Species	No loss of individuals of listed fauna species.	Minor local decrease in size of population(s) of listed fauna species.	Moderate local decrease in size of population(s) of listed fauna species.	Substantial local decrease in size of population(s) of listed fauna species.	Moderate or substantial regional decrease in size of population(s) of listed fauna species.
Biodiversity	General flora and fauna	Insignificant or imperceptible effects.	Local short term decrease in abundance of some species with no lasting effects on local population.	Local long term decrease in abundance of some species resulting in some change to community structure.	Regional decrease in abundance of some species resulting in some changes to community structure.	Regional loss of numerous species resulting in the dominance of only a few species.
Historic and cultural heritage	Aboriginal and cultural heritage	Minor repairable damage to more common structures or sites. No disturbance of historic and / or cultural heritage sites.	Moderate or repairable damage or infringement to sensitive structures or sites of cultural significance or sacred value.	Considerable damage or infringement to sensitive structures or sites of cultural significance or sacred value.	Major damage or infringement to sensitive structures or sites of cultural significance or sacred value.	Irreparable and permanent damage to sensitive structures or sites of cultural significance or sacred value.

Category of Impact	Aspect	Insignificant	Minor	Moderate	Major	Catastrophic
Human health and safety	Safety	Low level short term subjective inconvenience or symptoms. Typically a first aid and no medical treatment.	Reversible / minor injuries requiring medical treatment, but does not lead to restricted duties. Typically a medical treatment.	Reversible injury or moderate irreversible damage or impairment to one or more persons. Typically a lost time injury.	Single fatality and/or severe irreversible damage or severe impairment to one or more persons.	Multiple fatalities or permanent damage to multiple people.
Human health and safety	Health	Reversible health effects of little concern, requiring first aid treatment at most.	Reversible health effects of concern that would typically result in medical treatment.	Severe, reversible health effects of concern that would typically result in a lost time illness.	Single fatality or irreversible health effects or disabling illness.	Multiple fatalities or serious disabling illness to multiple people.
Radiation	Occupational exposure	<1 mSv/y Measurable increase in radiation dose with outcomes below public dose limit.	<5 mSv/y Measurable increase in radiation dose with outcomes remaining below dose constraints.	>5 mSv/y and <20 mSv/y Measurable increase in radiation dose with outcomes between dose constraint and dose limit (averaged over five years).	>20 mSv/y and <50 mSv/y Measurable increase in radiation dose with outcomes between dose limit (averaged over five years) and maximum annual dose.	>50 mSv/y Measurable increase in radiation dose with outcomes greater than the maximum annual dose.
Radiation	Public exposure	No change from background. Dose not discernible above natural background.	<0.3 mSv/y Measurable increase in radiation dose with outcomes below public dose constraint.	>0.3 mSv/y and <1 mSv/y Measurable increase in radiation dose with outcomes between dose constraint and dose limit (averaged over five years) for public.	>1 mSv/y and <5 mSv/y Measurable increase in radiation dose with outcomes between dose limit (averaged over five years) and maximum annual dose for public.	>5 mSv/y Measurable increase in radiation dose with outcomes greater than the maximum annual dose for public.
Radiation	Environmental impact	ERICA RQ < 0.1	ERICA RQ >0.1 and <1.0	ERICA RQ >1.0 plus justification	ERICA RQ >1.0 and no justification	ERICA RQ > 10.0

Category of Impact	Aspect	Insignificant	Minor	Moderate	Major	Catastrophic
Socio-economic	Community	Local, small-scale, easily reversible change on social characteristics or values of the communities of interest or communities can easily adapt or cope with change.	Short-term recoverable changes to social characteristics and values of the communities of interest or community has substantial capacity to adapt and cope with change.	Medium-term recoverable changes to social characteristics and values of the communities of interest or community has some capacity to adapt and cope with change.	Long-term recoverable changes to social characteristics and values of the communities of interest or community has limited capacity to adapt and cope with change.	Irreversible changes to social characteristics and values of the communities of interest or community has no capacity to adapt and cope with change.
Socio-economic	Visual and landscape	Almost imperceptible or no visual change from sensitive receptors or places of cultural and natural value. No loss of / or change to features or characteristics of the landscape.	Minor visual change from sensitive receptors or places of cultural and natural value. Minor loss or alteration to key landscape characteristics, or introduction of elements that may be visible but not uncharacteristic.	Moderate visual change from sensitive receptors and places of cultural and natural value. Discernible changes in the landscape due to partial loss or change to characteristics of the landscape.	Significant visual change from sensitive receptors and places of cultural and natural value. Discernible change which is out of scale with the landscape, at odds with landform and will leave an adverse impact.	Catastrophic visual change from sensitive receptors and places of cultural and natural value. A substantial change to the landscape due to total loss of elements or characteristics, causing the landscape to be permanently changed and its quality diminished.
Transport	Traffic and transport operations and conditions	Negligible adverse impact on traffic and transport conditions. No perceptible deterioration of road integrity.	Detectable adverse changes in traffic and transport condition (decrease in Level of Service) at one or two locations at any one point in time during the construction period or at a single location during operations. Seasonal, local deterioration of road integrity.	Detectable adverse change in traffic and transport conditions (decrease in Level of Service) at multiple locations. Short term, local deterioration of road integrity.	Traffic and transport congestion and delays exceed acceptable levels at multiple locations. Short term, regional deterioration of road integrity.	Traffic and transport congestion and delays severely restrict the safe operation and efficiency of the transport network. Long term, regional deterioration of road integrity.

Category of Impact	Aspect	Insignificant	Minor	Moderate	Major	Catastrophic
Transport	Road safety	No increase in vehicle incidents along relevant haulage routes above historical baseline trend.	An increase in vehicle incidents along relevant haulage routes of five per cent above historical baseline trend.	An increase in vehicle incidents along relevant haulage routes of ten per cent above historical baseline trend.	An increase in vehicle incidents along relevant haulage routes of twenty per cent above historical baseline trend.	An increase in vehicle incidents along relevant haulage routes of greater than twenty per cent above historical baseline trend.
Water	Surface water	Minimal contamination or change with no significant loss of quality.	Local minor short term reduction or change in water quality. Local contamination or change that can be immediately remediated.	Local minor long term or widespread minor short term or local major short term reduction or change in water quality. Local contamination or change that can be remediated in long term.	Widespread (regional) major short term reduction or change in water quality. Local contamination or change that cannot be remediated in long term. Widespread contamination or change that can be remediated.	Regional long term reduction or change in water quality. Widespread contamination or change that cannot be immediately remediated.
Water	Groundwater	Negligible change to groundwater regime, quality and availability.	Changes to groundwater regime, quality and availability but no significant implications.	Changes to groundwater regime, quality and availability with minor groundwater implications for a localised area.	Groundwater regime, quality or availability significantly compromised.	Widespread groundwater resource depletion, contamination or subsidence.

Table G2 Likelihood Description

Likelihood	Rare	Unlikely	Moderate	Likely	Almost Certain
Description	The event may occur only in exceptional circumstances. This event is not expected to occur except under exceptional circumstances (up to once every 100 projects of this nature).	The event could occur but is improbable. This event could occur up to once every 10-100 projects of this nature.	The event could occur but not expected. This event could occur up to once every 10 projects of this nature.	The event will probably occur in most circumstances. This event could occur up to once during a project of this nature.	The event is expected to occur in most circumstances. This event could occur at least once during a project of this nature.
Chance of Occurring (%)	0 - 1%	2 - 10%	11 - 50%	51 - 90%	> 91%

Table G3 Risk Matrix

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

GHD

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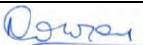
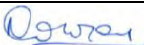
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