



Appendix C

Hazardous Waste Management Plan

Vista Gold Australia Pty Ltd

Mount Todd Project Area





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Attachments

- Attachment C1– Request to Bring Hazardous Substance to Site
- Attachment C2 – Hazardous Substances Inventory
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- Attachment C4 – Section 29 – Environmental Incident Notification Form
- Attachment C5 – Section 14 Incident Report Form
- Attachment C6 – NT Worksafe Incident Notification Form



1. Introduction

The Mt Todd Project Area (MTPA) is located approximately 55 km northwest of Katherine and 250 km south of Darwin. The area surrounding the mining lease is rural and sparsely populated. The Werenbun community is the closest residential area located approximately 6.5 km from the site. The Stuart Highway, the main arterial road in the region, is located west of the mine.

Under Work Health and Safety Regulations (2011) (WHS Regulations), operators of any facility where hazardous chemicals are present or likely to be present in a quantity that exceeds 10% the threshold quantity detailed in Schedule 15 of the WHS Regulations, are required to provide certain information to NT WorkSafe using the 'Major hazard facility' Schedule 11 notification form.

Hazardous substances is a term frequently used to cover one or more of the following: hazardous chemicals, dangerous goods, hazardous or controlled waste materials and radioactive materials. The use of hazardous substances is required during the construction and mining phases of the MTPA.

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 on the National Hazardous Substances Information System
- 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

1.1 Purpose

The Hazardous Waste Management Plan forms part of the Environmental Management System (EMS) for the mine and is considered a working document. This document has been updated in formal consultation and assessment by Department of Primary Industry and Resources (DPIR) as part of the mining authorisation process.

The purpose of the Hazardous Waste Management Plan (HWMP) is

- To reduce the risk of site personnel or the environment being exposed to substances that may adversely affect health, safety or biological processes;
- To provide a framework for the management of hazardous substances; and.
- Hazardous substances management including storage, handling, inventory, spill management measures, transport and disposal requirements.

1.2 Objectives

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

- Provide a management hierarchy for hazardous substances;
- Provide a process for handling and storage of hazardous substances in accordance with relevant standards;
- Detail hazardous substances inventory requirements;



- Provide spill response procedures and subsequent investigation requirements; and
- Establish and maintain awareness of the management of hazardous substances.

1.3 Legislation, standards and guidelines

Under the WHS Act all Northern Territory sites that are determined as major hazardous facilities (MHF) are required to hold a license and must comply with stringent requirements, including preparation of a safety case, to ensure they are operated safely. MHF are sites that store, handle and process large quantities of hazardous chemicals and dangerous goods, including explosives and fuels.

Legislation, guidelines and plans relating to the management of hazardous substances include: Northern Territory Legislation, Australian Standards and codes of practice.

1.3.1 Northern Territory Legislation

In the NT, hazardous chemicals and dangerous goods are regulated under the Work Health and Safety (National Uniform Legislation) Act 2016 and the Work Health and Safety (National Uniform Legislation) Regulations 2012 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 (ADG7.4).

The Australian Dangerous Goods Code 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 additional legislation relating to hazardous substances and management is provided below:

- Dangerous Goods Act
- Dangerous Goods Regulations
- Environmental Offences and Penalties Act
- Waste Management and Pollution Control Act
- Waste Management and Pollution Control (Administration) Regulations
- Work Health and Safety (National Uniform Legislation) Act (WHS Act)
- Work Health and Safety (National Uniform Legislation) Regulation (WHS Regulations)

1.3.2 Australian Standards

Two Australian Standards (AS) 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 3780:2008, The storage and handling of corrosive substances;
- AS 4326:2008, The storage and handling of oxidising agents;
- AS/NZS 4452:1997, The storage and handling of toxic substances;
- AS/NZS 4681:2000, The storage and handling of Class 9 (miscellaneous) dangerous goods and articles;
- AS 1319:1994, Safety Signs for the Occupational Environment;
- AS 1216:2006, Class labels for dangerous goods;
- AS 2187.1: 1998, Explosives – Storage, transport and use;
- AS/NZS 1596:2008, The Storage and Handling of LP Gas;
- AS/NZS 2906:2001, Fuel Containers – Portable – Plastic and Metal;
- AS1692:2006, Steel Tanks for Flammable and Combustible Liquids;
- AS/NZS 2444:2001, Portable Fire Extinguishers and Fire Blankets - Selection and Location;
- AS 1345:1995, Identification of the Contents of Pipes and Conduits and Ducts;
- AS 2013.1:1999, The Verification, Filling, Inspection, Testing and Maintenance of Cylinders for Storage and Transport of Compressed Gases – Cylinders for Compressed Gases other than Acetylene;
- AS 2809.1:2008, Road Tank Vehicles for Dangerous Goods – General Requirements for all Road Tank Vehicles;
- AS 2931:1999 Selection and Use of Emergency Procedure Guides for the Transport of Dangerous Goods;
- AS/NZS 3833:2007 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.

1.3.3 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 mine 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, September 2015;
- Approved Code of Practice–Labelling of Workplace Hazardous Chemicals 2011 (under the Work Health and Safety (National Uniform Legislation) Act).
- National Standard for the Storage and Handling of Workplace Dangerous Goods (NOHSC:1015 (2001)).



- National Transport Commission. 2007. Australian code for the transport of dangerous goods by road and rail. 7th ed. National Transport Commission, Melbourne, Vic.
- United Nations. 2009. Globally Harmonized System of Classification and Labelling of Chemicals, 3rd ed. United Nations, New York and Geneva.
- 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. Roles and Responsibilities

Ultimately, the Resident Site Manager is responsible for all activities on site are undertaken in accordance with all applicable legal requirements, but also all personnel on site are responsible for the safety and wellbeing of themselves and others and the protection of the environment.

All managers, staff and contractors have specific environmental responsibilities and accountabilities. Individual responsibilities will vary with the work performed and its potential impact on health, safety and the environment.

2.1 Employees and Contractors

- Assess the workplace and work task for hazardous substances before commencing any work; and
- Ensure that, when applicable, engineering and administrative controls and Personal Protective Equipment (PPE) shall be in place during handling of hazardous substances.

2.2 Supervisors / Area Managers

- Ensure that employees have the knowledge and proper training in handling of hazardous substances that will be encountered during the execution of work;
- Ensure that Safety Data Sheets (SDS) are available to the workers in the work area throughout each work shift;
- Submit 'Request to bring hazardous substance on site' form (**Attachment C1**) and seek approval from the site general manger prior to mobilising new chemicals to site;
- Update as required the SDS Register for their respective areas; and
- Forward a copy of the updated register to the safety coordinator to be included in the site wide chemical register (SDS Register).

2.3 Safety and Environment Team

- Provide guidance for the assessment of hazardous substances and recommendations for controls;
- Facilitate hazardous substances assessments as and when required;
- Periodically audit and verify the adequacy and effectiveness of implemented control measures; and
- Site wide hazardous substances register custodian.

3. Overview of Hazardous Substances

Storage facilities for all Hazardous Substances and Dangerous Goods shall comply with the *Dangerous Goods Act 2012* (NT) and *Dangerous Goods Regulations 2012* (NT), prior to storing hazardous substances on site to ensure that the necessary licenses or exemptions are clarified.

3.1 Management hierarchy of controls

The Hierarchy of Control ranks risk control measures from the highest level of protection and reliability to the lowest level of protection and reliability. The management of hazardous substances at the MTPA will be undertaken in general accordance with the hierarchy of control. The hierarchy of control in order from the most to the least effective controls are elimination, substitution, isolation, engineering, administration and personal protective equipment (PPE) Below in **Figure 3-1 Hierarchy of Controls** is a common graphical representation of the Hierarchy of Controls.

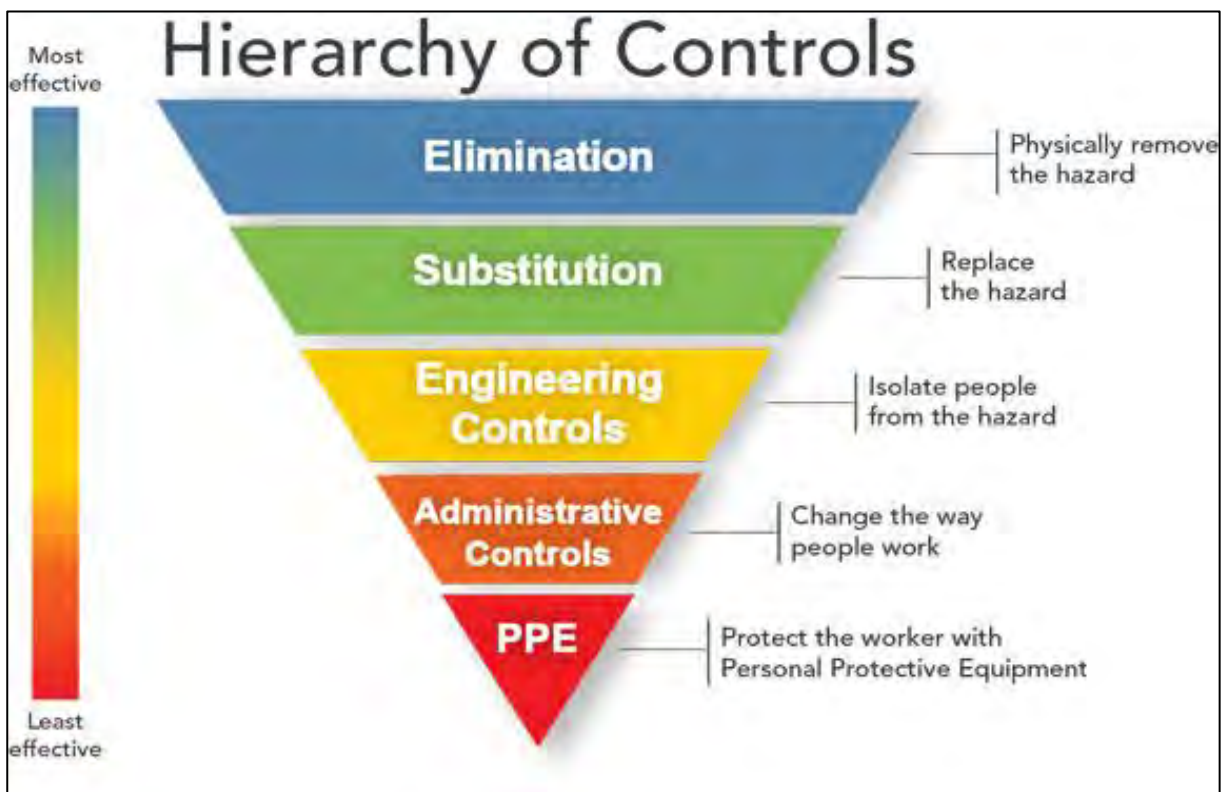


Figure 3-1 Hierarchy of Controls

3.2 Authorisation to bring hazardous substances to site

New hazardous substances required for use must have approval from the Health, Safety and Environmental Team prior to transport and use on site. This ensures that the products are reviewed for potential risks to health and the environment in their use.

Application for approval to bring hazardous substances to site shall be made using the 'Request to Bring Hazardous Substances onto Site' request form (**Attachment C1**) and submitted for approval. This form shall be completed both prior to mobilisation and prior to bringing any new hazardous substances



to site post mobilisation. The SDS for each hazardous substance shall accompany the completed authorisation form.

3.3 Receiving hazardous substances

The personnel responsible for receiving hazardous substances shall ensure that:

- Chemical deliveries are labelled in accordance with the Code of Practice for the Labelling of Workplace Hazardous Substances and any damaged packages are returned to the supplier;
- Risks associated with the hazardous substances and dangerous goods have been identified;
- Receiving personnel know how to respond to incidents during loading and unloading;
- All equipment required, including correct PPE, is available;
- Delivery and loading are supervised at all times;
- Acceptance certificates are signed by the supplier, delivery driver and the receiver;
- Spillages are immediately contained and reported to the Safety and Environmental Coordinators; and
- There are written instructions for deliveries, with special instructions for a delivery tank or container, which has been or will be used to carry other products. The written instructions shall include:
 - Tank or container cleaning procedures;
 - Vehicle unloading and site loading procedures;
 - Emergency response procedures for the vehicle and the site for each product;
 - Fire protection procedures, including the collection of contaminated waste water;
 - Bunding and drainage procedures at the delivery site that will satisfactorily contain any spillage;
 - Checks to ensure the receiving container is fit for purpose, able to hold the volume delivered, and is clean enough for filling with the product being delivered; and
 - Checks to ensure the delivery made was clean and free from contamination.

3.4 Hazardous Substances Inventory and SDS

All hazardous substances supplied or introduced to the site are required to be accompanied by a SDS, copies of which shall be located both where the hazardous substance is being used and where it is stored.

The area supervisor shall maintain an inventory (Hazardous Substance Register) for each separate hazardous substance storage area on site. The inventory and accompanying SDS's shall be available for viewing by all personnel.

The hazardous substance inventory will be updated frequently and when new substances not previously listed within the inventory are brought onto site. The Safety Coordinator shall maintain a separate master inventory of hazardous substances stored on site.



3.5 Safety Data Sheets Register

In addition to the hazardous substance inventory, all product SDSs will be maintained at all storage locations and the Site Office. The SDS register will be updated as new hazardous substances are brought to site.

3.6 Fuel Inventory

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.
- The fuel inventory form is detailed in **Attachment C3**.

3.6.1 Fuel leakage or loss identified

If required, take action as soon as practicable to prevent any further release of hydrocarbons into the environment:

- Identify and mitigate any fire, explosion or vapour hazards;
- Take all reasonable steps to prevent migration of hydrocarbons that has leaked or spilled;
- Take all reasonable steps to recover or remove hydrocarbons that has leaked or spilled to reduce the risk to human health and/or the environment; and
- Remove and/or repair any leaking components of the Above Ground Storage Tanks (ASTs).

3.7 Storage of hazardous substances

Hazardous materials storage requirements vary significantly depending on the hazardous materials classification and are to be stored as per the legislation, Australian standards and codes of practice. Where required by the *Dangerous Goods Act 2012* (NT) storage areas shall be contained within bunds. Bund construction shall comply with *AS1940:1993 The Storage and Handling of Flammable and Combustible Liquids and regulatory requirements*. In the event of inconsistency, regulatory requirements shall be followed.

3.7.1 Separation of dangerous goods

Separation distances for dangerous goods shall comply with the *Dangerous Goods Regulations 2012* (NT).

3.7.2 Placarding requirements

Placarding of storage areas shall comply with the *Dangerous Goods Act 2012* (NT).

3.8 Materials Summary

Hazardous Materials will be utilised throughout the life of mine and the materials required will vary between the construction and operational phases of the mine.

3.8.1 Construction phase

Hazardous substances will be utilised and/or generated across the mine Site during the construction phase. A summary of what hazardous substances are expected to be utilised is provided in **Table 3-1 Hazardous Substances expected to be Utilised during the Construction Phase.**

Table 3-1 Hazardous Substances expected to be Utilised during the Construction Phase

Product	Use	Annual Consumption
Sewage	-	-
Cement	Construction	TBC
Diesel	Machinery and vehicle fuel	TBC
Unleaded Petrol	Machinery and vehicle fuel	TBC
Natural gas	Power station fuel supply	TBC
Lubricants	Vehicle oils	TBC
Coolant	Vehicle coolant	TBC
Waste oil/filters	-	TBC
Solvents	Degreasers	TBC
Miscellaneous cleaning products	Site Maintenance	TBC
Medical waste	Medical treatment	TBC

Notes: TBC: To Be Confirmed, required quantities are subject to change through the detailed design phase.

3.8.2 Operational Phase

Hazardous substances will be utilised and generated across the mine Site during the operational phase. Information on some of these substances may need to be reported to NT WorkSafe using the 'Major hazard facility Schedule 11 notification form. A summary of proposed hazardous substances is provided in **Table 3-2 Hazardous Substances Utilised and/or Generated During Operational Phase.**

Table 3-2 Hazardous Substances Utilised and/or Generated During Operational Phase

Product	Use	Annual Consumption
Mine Site Operation		
Sewage	-	-
Diesel	Machinery and vehicle fuel	TBC
Natural gas	Power station fuel supply	TBC
Lubricants	Vehicle oils	TBC
Coolant	Vehicle coolant	TBC

Product	Use	Annual Consumption
Waste oil/filters	-	TBC
Solvents	Degreasers	TBC
Miscellaneous cleaning products	Site Maintenance	TBC
Medical waste	Medical treatment	TBC
Ammonium nitrate emulsion	Explosives	TBC
Gold Processing		
Quick Lime	pH modifier	16,152.5 tonnes
Sodium Cyanide	Gold lixiviant	13,667.5 tonnes
Sodium Hydroxide	pH modifier	710 tonnes
Flocculant	Settling aid	266.3 tonnes
Sodium Metabisulphite (SMBS)	Oxidising agent	12,957.5 tonnes
Hydrochloric Acid	Carbon washing	1,441.3 tonnes
Lead Nitrate	Leaching aid	1775 tonnes
Activated Carbon	Gold adsorbent	355.0 tonnes
Borax	Flux	1.2 tonnes
Silica	Flux	1.23 tonnes
Soda Ash	Flux	0.82 tonnes
Potassium Nitrate	Flux	0.25 tonnes

Notes: TBC: To Be Confirmed, required quantities are subject to change.

3.9 Labelling

Each area representative is responsible for ensuring that suppliers have correctly labeled all chemical containers according to the *Code of Practice for the Labeling of Workplace Hazardous Substances*. Chemical substances must be kept in their original container and must not be kept in a wrongly marked or unmarked container. Hazardous substances will be labelled in accordance with the *Code of Practice for Labelling of Workplace Hazardous Chemicals*. Labels should contain the following information:

- Signal words (warning/poison/dangerous poison) and dangerous goods class or schedule
- Product name, chemical name, UN number, ingredients and formulation details
- Risk phrases - e.g. "flammable", "irritating to skin" or "harmful if swallowed"
- Directions for use
- Safety information - e.g. "avoid contact with skin" or "do not breathe dust"
- First aid procedures





- Emergency procedures - control of leaks, spills or fires
- Details of manufacturer/supplier
- Expiry date
- Reference to the product SDS
- All information is to be written in English






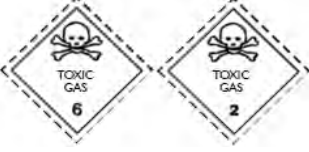




When hazardous substances are contained in an enclosed system, i.e. piping system or process vessel, it must be identified to those that may be exposed to the contents. Suitable means of identification include colour coding in accordance with AS 1345:1995, *Identification of the Contents of Pipes and Conduits and Ducts* and AS 1319:1994 *Safety Signs for the Occupational Environment* (Labelling of Workplace Hazardous Chemicals, Code of Practice, 2015).






3.10 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 3-3 Hazardous Pictograms Compared to Corresponding Dangerous Goods Code Class Labels (Work Safe Australia)**.

Table 3-3 Hazardous Pictograms Compared to Corresponding Dangerous Goods Code Class Labels (Work Safe Australia)

Hazard Pictograms Required	Globally Harmonised System Hazard	Dangerous Goods Class Labels (Pictograms)	Dangerous goods class
	<ul style="list-style-type: none"> • Explosives • Self-reactives • Organic peroxides 		<ul style="list-style-type: none"> • Explosive
	<ul style="list-style-type: none"> • Flammability • Self-reactives • Pyrophorics • Self-heating • Emits flammable gas in contact with water • Organic peroxides 		<ul style="list-style-type: none"> • Flammability • Pyrophoric • Emits flammable gas • Organic peroxide

Hazard Pictograms Required	Globally Harmonised System Hazard	Dangerous Goods Class Labels (Pictograms)	Dangerous goods class
	<ul style="list-style-type: none"> Oxidisers 		<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 irritants Eye irritants Skin sensitisers 	No equivalent dangerous good pictogram	
	<ul style="list-style-type: none"> Carcinogens Respiratory sensitisers Reproductive toxicants Target organ toxicants Germ cell mutagens 	No equivalent dangerous good pictogram	<ul style="list-style-type: none">
	<ul style="list-style-type: none"> Eye corrosion Skin corrosion Corrosive to metals 		<ul style="list-style-type: none"> Corrosive to metals

Hazard Pictograms Required	Globally Harmonised System Hazard	Dangerous Goods Class Labels (Pictograms)	Dangerous goods class
	<ul style="list-style-type: none"> Aquatic toxicity 		<ul style="list-style-type: none"> Environmental hazard
No equivalent hazard pictogram			<ul style="list-style-type: none"> Miscellaneous dangerous goods
Not covered within the scope of workplace hazardous chemical requirements			<ul style="list-style-type: none"> Infectious
Not covered within the scope of workplace hazardous chemical requirements			<ul style="list-style-type: none"> Radioactive

3.11 Spill/incident notification

All environmental incidents on site will be reported as per the requirements of Environmental Incident Reporting under Section 29 of the *Mining Management Act*. Any environmental incident deemed to be of a significant nature will be detailed in a formal Incident Report and submitted to the DPIR using the form provided as **Attachment C4**. Under Section 29 an incident must be reported as soon as practicable. Vista Gold will provide a verbal report of an incident within 24 hours and provide a written report within 7 days unless instructed by the Department otherwise.

All environmental incidents off site but are associated with Vista Gold's activities at MTPA will be reported to the NT EPA under Section 14 of the *Waste Management and Pollution Control Act*. Notification must be received by the EPA within 24hrs. A written response must be received by the EPA within 7days.

The General Manager is responsible for all external incident reporting communications. **Table 3-4 Statutory Reporting Requirements** outlines Statutory Incident Reporting Requirements. All spills and/or incidents will be logged within the sites Environmental Management System (EMS).



Table 3-4 Statutory Reporting Requirements

Entity	Trigger	Timeframe and Contact Details	Incident Reporting Details
NT Environmental Protection Authority (NT EPA)	<p>An Incident which causes, or is threatening or may threaten to cause pollution resulting in material environmental harm or serious harm.</p> <p>Qualifying triggers requiring submittal of a Section 14 Incident Report to the NT EPA are any of the following:</p> <ul style="list-style-type: none"> • Is not trivial or negligible in nature; and/or • Consists of an environmental nuisance of a high impact or on a wide scale; and/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><24 hrs post incident</p> <p>ntepea@nt.gov.au</p> <p>pollution@nt.gov.au</p>	<p>Section 14 Incident Reporting Form requires the following details and is included in Attachment C5:</p> <ul style="list-style-type: none"> • Incident causing or threatening to cause pollution • Date & time • How the pollution has occurred, is occurring or may occur • Attempts made to prevent, reduce, control, rectify, investigate and/or clean up the pollution or resultant environmental harm caused or threatening to be caused by the incident • Operator details • The form is to be signed by the HSEC Manager and/or General Manager for submission.
Department of Primary Industry and Resources	<p>An Incident which causes minor environmental impact with some</p>	<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 and is included in Attachment C4:</p>



	minor actual or potential harm to the environment.		<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 • Notification status internally and externally • The form is to be signed by the HSEC Manager and/or General Manager for submission.
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>As soon as practicable. Tel: 08 8951 9247 heritage@nt.gov.au.</p>	<p>The NT WorkSafe Incident Notification Form requires the following details and is included in Attachment C6:</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 • Future remedial actions • The form is to be signed by the HSEC Manager and/or General Manager for submission.



3.12 Removing and disposing of hazardous substances

The MTPA General Manager is responsible for ensuring that all waste and unused hazardous substances are removed from site in accordance with legislative requirements.

Documented details of such disposal shall be forwarded to the site general manager for approval prior to disposal and records of all chemical disposals retained for inspection and audit.

3.13 Fire protection

The site general manager is responsible for ensuring that all site amenities, offices, workshops, vehicles, plant and storage facilities shall have a suitable type and number of fire extinguishers available for use in the case of a fire.

Relevant national standards and regulations relating to fire safety shall be complied with at all times including *AS/NZS 1940:1993 The Storage and Handling of Flammable and Combustible Liquids*.

The selection and location of fire extinguishers shall be consistent with *AS/NZS 2444:2001 Portable Fire Extinguishers and Fire Blankets - Selection and Location*.



4. Hazardous Substances Management

Hazardous substance management will be undertaken in accordance with Section 4 of this plan. Management of hazardous substances risk is structured below as follows:

- **Risk Assessment:** A summary of the key sources of impact/potential event, the consequences of the impact, the mitigation strategy and the residual risk as developed during the Mining Management Plan (MMP) risk assessment.
- **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.
- **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 risks

A summary of the MMP risk assessment relating to hazardous substances is detailed in **Table 4-1 Key Activities, Risks and Impacts**.

Table 4-1 Key Activities, Risks and Impacts

Source of Impact/Potential Event	Potential Consequence	Residual Risk		
		Consequence	Likelihood	Risk
Spills of hazardous materials leading to entry into surface water and/or soil.	Contamination of surface waters from chemicals, hydrocarbons and ANFO; Onsite: adverse impact on the ecosystem.	Moderate	Possible	Medium*
	Contamination of soils from chemicals, hydrocarbons and ANFO			
Liquid and solid waste leaks and disposal, including chemicals.	Production of leachate leading to the contamination of groundwater; and	Significant	Possible	Medium
	Seepage of chemicals into groundwater leading to contamination of the aquifer.			
Generation of putrescible waste, sewerage on-site and at the accommodation facility.	Release of putrescible, construction and non-mining wastes to the environment	Moderate	Rare	Low
	Release of sewage to the environment.			
Hydrocarbon and chemical spills and leaks.	Contamination of local groundwater from hydrocarbon and chemical spills localised death of soil organisms.	Significant	Rare	Low
	Seepage of chemicals into local groundwater leading to contamination of the aquifer			
	Contamination of soils on site			
	Localised deaths of flora, fauna and soil organisms			
Increase in freight trucks on Edith Falls Road and Stuart Highway, including transport of dangerous goods.	Vehicle accident/spillage of dangerous goods and their release to the environment.	Critical	Unlikely	High

*: it should be noted that although it was logical to group groundwater with surface water and soil, groundwater had the same medium residual risk and likelihood rating of 3 however had a consequence rating of 3.

4.2 Management objectives

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

Table 4-2 Hazardous Substances Objectives

Objective	Target	Indicator
<p>To safely manage, store, handle and dispose of fuels and chemicals.</p> <p>Avoid minimise or control the uncontrolled release of chemicals to the environment.</p> <p>No human health issues or incidents from the use of fuels and chemicals.</p>	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
	No impact to human health from use of hazardous substances;	Number of incidents reported leading to impact to human health
	Hazard substances to be stored, handled and transported in accordance with legislative standards;	Number of hazardous substance non-compliance breaches of legislative standards
	Compliance with relevant Australian Standards (e.g. for the storage and handling of flammable and combustible liquids and dangerous goods); and	No contamination of the environment by hazardous goods
	No spills of chemicals or release of chemicals to the environment.	Any spills are addressed and appropriate remedial action has been implemented.

4.3 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 Mitigation Measures**.



Table 4-3 Mitigation Measures

ID	Mitigation Measures	Timing	Responsibility
Site Induction			
HZ1	Site induction includes the following components for hazardous substances: <ul style="list-style-type: none"> • Summary of hazardous substance at the Mt Todd Gold Project; • Summary of hazardous pictograms and dangerous goods code class labels and what they mean; • Requirements for handling, transporting and using hazardous substances; • Procedures on restrictions of hot works or naked flames within 20 m of flammable substances; and • Procedure for reporting and/or managing a spill. 	Site Induction.	All employees and contractors.
General			
HZ2	Management of hazardous substances in accordance with legislation and Australian Standards.	Construction and Operation.	Area Managers.
HZ3	Hazardous substances to be stored in chemical storage shed with internal bunding and adequate ventilation.	Construction and Operation.	Area Managers.
HZ4	Waste oil to be stored in 205 L steel drums and oil filters are to be stored in appropriately labelled Intermediate Bulk Containers (IBC). IBCs. All drums and IBCs to be appropriately labelled. Drums and IBCs are to be removed from site by a suitably licensed contractor and delivered to a licensed waste/recycling facility.	Construction and Operation.	All employees and contractors.
HZ5	Hydrocarbon (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.



ID	Mitigation Measures	Timing	Responsibility
HZ6	Firefighting equipment to meet relevant legislation.	Construction and Operation.	Area Managers / Emergency Response Coordinator.
HZ7	In general, hazardous substances are to be stored as far away as possible from surface water and groundwater wells.	Construction and Operation.	All employees and contractors.
HZ8	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 employees and contractors.
Spill Management			
HZ9	Spill kits to be located at all hazardous substance storage locations in addition, mobile spill kits are available for use in specific work areas.	Construction and Operation.	Area Supervisors.
HZ10	In the event of a spill follow the spill management procedure within the Emergency Response Plan.	At all times.	All employees and contractors.
HZ11	<ul style="list-style-type: none"> • If any leaks, spills or other cause of loss is identified the following will be undertaken: • 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.
Inspection and Monitoring			



ID	Mitigation Measures	Timing	Responsibility
HZ12	Monthly inspections of hazardous substance storage locations and spill kits.	Monthly	Safety Officer and/or Environmental Officer
HZ13	Monthly hazardous substances inventory review; and ensure the hazardous substances inventory is up to date and includes new hazardous substances brought to site.	Monthly and/or when new hazardous substance brought to site.	Safety Officer
HZ14	SDSs register will be maintained at storage locations and the Site Office. The register will be supplemented when new hazardous substances are brought to site.	As required	Safety Officer
HZ15	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
HZ16	Annual Hazardous Substances Management Plan performance review.	Annually	Environmental / Safety Managers



4.4 Trigger, Action and Response Plan

The Trigger, Action and Response Plan (TARP) outlines remedial actions and responses to a hazardous substance management (**Table 4-4 Trigger, Action and Response Plan**).

Table 4-4 Trigger, Action and Response Plan

Responsibility	Situation		
	Standard	Level 1	Level 2
	Compliant with MP and AS.	Trigger: Near source confined release and immediate reversible impact eg: small diesel spill in workshop	Trigger: Unconfined and long term recovery and remediation eg: leaking diesel tank leading to groundwater impact
Personnel who identifies spill	<ul style="list-style-type: none"> Isolate and contain the spill utilising the spill kit; Evacuate from the area if potential danger; and 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; and 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; and Notify the Emergency Response Team Coordinator.
Safety Officer	<ul style="list-style-type: none"> Assess potential safety issues relating to the release; Re-commence operations where possible once release is cleaned up; Replenish spill kit consumables; Undertake and/or manage investigation into release which is to be provided to the HSE team within 24 hours of the incident occurring; 	<ul style="list-style-type: none"> Assess potential safety issues relating to the release; Re-commence operations where possible, excluding release areas if applicable; Replenish spill kit consumables; Undertake and/or manage investigation into release which is to be provided to the HSE team within 24 hours of the incident occurring; 	<ul style="list-style-type: none"> Assess potential safety issues relating to the release; Re-commence operations where possible, excluding release areas if applicable; Replenish spill kit consumables; Undertake and/or manage investigation into release which is to be provided to the HSE team within 24 hours of the incident occurring;



Responsibility	Situation		
	Standard	Level 1	Level 2
	<ul style="list-style-type: none"> Release to be logged in the Incident and Non-conformance Register (Attachment B2); Produce a 'Safety Incident' to on-site personnel within 1 week of incident occurring; and Review and implement recommendations. 	<ul style="list-style-type: none"> Release to be logged in the Incident and Non-conformance Register (Attachment B2); Produce a 'Safety Incident' to on-site personnel within 1 week of incident occurring; and Review and implement recommendations. 	<ul style="list-style-type: none"> Release to be logged in the Incident and Non-conformance Register (Attachment B2); Produce a 'Safety Incident' to on-site personnel within 1 week of incident occurring; and Review and implement recommendations.
Environmental Officer	<ul style="list-style-type: none"> Attend and assess potential environmental issues and potential requirement for further assessment; and Advise on containment and clean-up requirements. 	<ul style="list-style-type: none"> Attend and assess potential environmental issues and potential requirement for further assessment; Advise on containment and clean-up requirements; Commence investigation into soil and/or surface water and/or groundwater impacts from the spill; and Undertaken remediation of soil and/or surface water and/or groundwater and report as required. 	<ul style="list-style-type: none"> Attend and assess potential environmental issues and potential requirement for further assessment; Advise on containment and clean-up requirements; Commence investigation into soil and/or surface water and/or groundwater impacts from the spill; and Undertaken remediation of soil and/or surface water and/or groundwater and report as required.
Environmental / Safety Managers	Assess consequence levels and determine appropriate level of reporting to authorities - DPIR, NT Environmental Protection Authority and NT WorkSafe (using Table 3-4 as a guide).	Assess consequence levels and determine appropriate level of reporting to authorities - DPIR, NT Environmental Protection Authority and NT WorkSafe (using Table 3-4 as a guide).	Assess consequence levels and determine appropriate level of reporting to authorities - DPIR and Energy, NT Environmental Protection Authority and NT WorkSafe (using Table 3-4 as a guide).



4.5 Monitoring

Hazardous substances will be monitored and measured through documents including hazardous substances inventory, safety data sheets register and fuel inventory.

The Area Managers and/or appointed representative will undertake regular site inspections to assess Project risk including:

- Walkover of high risk locations including fuel farms, chemical storage shed, sewage treatment plant and stormwater ponds to identify any new risks / unmanaged risks;
- Assess environmental performance of department work areas;
- Provision of Environmental advice to personnel and/or contractors as required.

Responsibility and reporting structure:

- **Responsibility:** Area Managers and/or Appointed Representatives;
- **Approval:** General Manager;
- **Documentation:** Environmental Inspection Checklist (to be developed); and
- **Issued to:** Environmental Team

4.6 Training and competency assessment

All personnel required to work with hazardous substances shall, prior to commencing any work, have completed suitable training and have been assessed as competent by the area manager.

Training and/or instruction in the safe use, storage and handling of hazardous substances shall be identified in accordance with the relevant SDS and carried out for all personnel required to work with hazardous substances.

Training may consist of, but not be limited to:

- Formal industry or external training
- Formal "in-house" onsite training
- On the job" training.


4.7 Annual Hazardous Substances Management Plan performance review

Hazardous Substances Management Plan will be reviewed annually and/or any time there is a change to project activities that alter the risk profile. Mitigation strategies and TARP will be reviewed for effectiveness and any corrective actions will be implemented.

Attachments



Attachment C1– Request to Bring Hazardous Substance to Site

Vista Gold Request to Bring Hazardous Substance to Site 						
Project Name:						
Contractor:			Location:			
Date:		Contract No.:				
Product Name:						
Manufacturer / Supplier:						
SDS Provided:	Yes <input type="checkbox"/>		No <input type="checkbox"/>			
HAZCHEM Code:						
A.D.G. Code:						
Quantity:						
Description of Use:						
Reported Health Effects:						
Storage:		Type:		Location:		
Environmental Impact:						
Disposal Details:						
Submitted By (Name):			Position:			
Vista Gold Comments:						
	Approved / Not Approved					
Approved By:			Signature:			

Attachment C3 – Fuel Inventory

Site	
Location	
Tank ID	
Product	
Month	

Day	Month	Dispensed (L)	Delivered (L)	Book Stock (L) = previous day dip reading + delivery - dispensed	Dip Reading (L)	Loss or Gain = book stock - dip reading	Cumulative Loss/Gain
Previous Month		-	-				
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							



Day	Month	Dispensed (L)	Delivered (L)	Book Stock (L) = previous day dip reading + delivery - dispensed	Dip Reading (L)	Loss or Gain = book stock - dip reading	Cumulative Loss/Gain
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
Total						Loss/Gain	

Attachment C4 – Section 29 – Environmental Incident
Notification Form

Notification of an Environmental Incident

Forward completed form to:	Mining Operations Department of Primary Industry and Resources Email: mineral.info@nt.gov.au (preferred) Fax: (08) 8999 6527
All environmental incidents are to be reported in accordance with section 29 <i>Mining Management Act</i> (MMA)	

NAME OF MINING SITE		
NAME OF OPERATOR		
DATE AND 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 Attach photographs etc where available		
NATURE OF ACTUAL/POTENTIAL IMPACT (Volume of spillage, area impacted wildlife/vegetation/erosion, etc.)		

ENVIRONMENTAL DETAILS

EMERGENCY AND REMEDIAL ACTIONS TAKEN	
CURRENT SITUATION (Potential/ongoing/ceased etc.)	
DETAILS OF ANY SAMPLES TAKEN (when/where/type/number/time for availability of results etc. Include plans of sampling locations where possible)	

OPERATOR INTERNAL REPORTING

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

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

Signed: _____ Date: _____ Time: _____

NAME: _____

POSITION: _____

OFFICE USE ONLY	
RECEIVED BY	
DATE	TIME

Attachment C5 – Section 14 Incident Report Form

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	

Attachment C6 – NT Worksafe Incident Notification Form

Incident notification form

Sections 35 to 39 of the *Work Health and Safety (National Uniform Legislation) Act 2011* (WHS (NUL) Act) requires a PCBU to notify NT WorkSafe as soon as reasonably practicable after an incident has occurred on **1800 019 115**. A reference number will be provided to the notifier over the phone.

In addition to immediate phone notification, if requested a PCBU must complete an incident notification form and email it to NT WorkSafe at ntworksafe@nt.gov.au within **48 hours** after the incident. The reference number must be included on the form.

For more information, refer to the NT WorkSafe bulletin - Incident notifications.

Reference Number:		Date:	
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Person submitting details (if completing form by hand, please print **BLOCK** letters)

Name:		Position:	
Name of employer/self-employed person notifying:			
ABN:			
Business address: (Not postal address)			
Suburb:	State:	Postcode:	
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

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 address:			

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 No

Action

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

Notifier declaration

I have submitted this form electronically (signature is not required)

Notifier signature:

Date:

File Name: Appendix C - Hazardous Waste Management Plan.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
Rev 0	Kiara Crook	James Hill		Nicole Conroy		08/09/2017
Rev 1	James Hill	Jill Woodworth		Jill Woodworth		15/11/2017
Rev 2	Brent Murdoch	John Rozelle		Brent Murdoch		31/10/2018
Rev 3	Julia Curran	Jill Woodworth		Brent Murdoch		

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