TOMINGLEY
GOLD OPERATIONS PTY LTD
(A wholly owned subsidiary of Alkane Resources Ltd)

Tomingley Gold Operations

Hazardous Materials Management Plan

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Tomingley Gold Project

Hazardous Materials Management Plan

TABLE OF REVISIONS

Revision Number	Revision Date	Prepared By	Approved by	Comments
Revision 1	May 2013	S. Barker	Sean Buxton	Submitted for Consultation
Revision 2	June 2013	C. Measday	Sean Buxton	Submitted for Approval
Revision 3	February 2015	Mark Williams	Sean Buxton	Annual review
Revision 4	April 2017	Mark Williams	Sean Buxton	MOD 3 Approval

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1. INTRODUCTION AND SCOPE

The Hazardous Materials Management Plan has been prepared as a tool to manage Hazardous Materials. It will be used by Tomingley Gold Operations (TGO) personnel as the first point of reference for Hazardous Material Management.

This plan consolidates the commitments made during the Environmental Assessment, and the requirements of the Project Approval (PA 09_0155) and Environmental Protection Licence (EPL 20169).

The Hazardous Materials Management Plan sits under the overarching Environmental Management Strategy for the project and with the following Environmental Management Plans forms the basis for environmental management at TGO. The other Environmental Management Plans include:

- Air Quality and Greenhouse Gas Management Plan;
- Noise Management Plan;
- Blast Management Plan;
- Biodiversity Management Plan;
- Cultural Heritage Management Plan;
- Traffic Management Plan;
- Pollution Incident Response Management Plan;
- Rehabilitation Management Plan; and
- Water Management Plan.

2. DEFINITION OF HAZARDOUS MATERIALS

Those materials considered as hazardous materials at TGO are listed below:

- Materials identified as potential pollutants within the TGO Pollution Incident Response Management Plan (PIRMP) (included in Appendix 1).
- Materials identified as Hazardous within the Preliminary Hazard Analysis undertaken as part of the Environment Assessment for the Tomingley Gold Project. (Included in Appendix 1).
- Asbestos (to ensure compliance with the Work Health and Safety (WHS) Act 2011 and WHS Regulation 2011);
- Process slurries and solutions that contain Weak Acid Dissociable (WAD) Cyanide > 30 ppm; and
- Hydrocarbons (including hydrocarbon contaminated materials).

3. LEGISLATIVE REQUIREMENTS

3.1 LEGISLATIVE FRAMEWORK

3.1.1 Project Approval

TGO was assessed under Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A Act).

Project Approval was granted by the NSW Department of Planning and Environment (DPE) and Schedule 3, Condition 48 requires the preparation of a Hazardous Materials Management Plan (HMMP).The third modification to PA 09_0155 (MOD 3) was approved by DPE in July 2016.

Schedule 3, Condition 48 is as follows:

Hazardous Materials Management Plan

48. The Proponent shall prepare and implement a Hazardous Materials Management Plan for the project to the satisfaction of the Secretary. The plan must:

(a) be prepared in consultation with relevant government agencies including Council, RMS, EPA, DPI Water, WorkCover NSW and DRE;
(b) be consistent with the International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold;
(c) be submitted to the Secretary for approval prior to commencing mining operations;
(d) describe the measures that would be implemented to:
(i) ensure sodium cyanide and other toxic chemicals are stored and handled on the site in accordance with AS/NZ 4452 – The Storage and Handling of Toxic Substances; and
(ii) ensure the transportation of hazardous materials to or from the site is undertaken in accordance with the Department's Hazardous Industry Planning Advisory Paper No. 11 – Route Selection and the Australian Code for the Transport of Dangerous Goods by Road and Rail – current version; and
(e) detail the emergency procedures for the Project consistent with the Department's Hazardous Industry Planning Advisory Paper No. 1 – Emergency Planning.

3.1.2 Statement of Commitments

TGO commitments with respect to Hazardous Material Management, as included in the Statement of Commitments (Appendix 8 to PA 09_0155) are listed in Table 1.

Table 1 - Tomingley Gold Project - Statement of Commitments Extract

Action		Timing
5.4	Ensure that all fuel and reagent storage, delivery and handling areas are appropriately sealed and bunded and that overflow pipes are installed in a manner that would minimise the potential for pollution in the event of overfilling.	Ongoing
5.5	Securely store all hydrocarbon and chemical products.	Ongoing
5.6	Ensure all hydrocarbon and chemical storage tanks are either self-bunded tanks or bunded with an impermeable surface and a capacity to contain a minimum 110% of the largest storage tank capacity.	Ongoing
5.7	Refuel all equipment within designated areas of the Mine Site, where practicable.	Ongoing
5.8	Undertake all maintenance works involving hydrocarbons, where practicable, within designated areas of the Mine Site such as the maintenance workshop.	Ongoing
5.9	Direct all water from wash-down areas and workshops to oil/water separators and containment systems.	Ongoing
5.10	Construct the RSF in accordance with design specifications and have QA/QC assessment completed.	During site establishment phase (prior to commencement of mining)
5.11	Line the RSF and Raw Water Dam with compacted clay to achieve a permeability of 1 x 10^{-9}m/s or less.	
5.12	Provide for design specific freeboard within the RSF and Raw Water Dam to prevent overtopping.	

3.2 NSW SAFETY LEGISLATION AND REGULATIONS

Tomingley Gold Operations has a duty of care to ensure the health and safety of its workforce and nearby community.

Three key pieces of legislation apply to the use of Hazardous Materials at TGO, including:

- *Work Health and Safety Act 2011* and *Work Health and Safety Regulation 2011*
- *Work Health and Safety (Mines) Act 2013* and Work Health and Safety (Mines) Regulation 2014
- *Explosives Act 2003* and *Explosives Regulation 2005*

The key requirements from this legislation are listed below:.

- Identify reasonably foreseeable hazards that could give rise to the risk to health and safety;
- Eliminate the risk to health and safety, so far as is reasonably practicable;
- If it is not reasonably practicable to eliminate the risk to health and safety, minimise it so far as is reasonably practicable by implementing control measures in accordance with the hierarchy of risk control;
- Maintain the implemented control measure so that it remains effective;

- Review and, if necessary, revise risk control measures so as to maintain, so far as is reasonably practicable, a work environment that is without risks to health and safety;
- A detailed emergency management plan will be prepared and implemented for the site that covers emergency response plans for hazardous materials including explosives. .

As the hazardous materials discussed within this plan cannot be operationally eliminated or substituted, this plan outlined steps required to minimise the risks to the environment.

3.3 CONSULTATION

This plan has been developed in consultation with the following government agencies:

3.3.1 NSW Department of Transport - Roads and Maritime Services (RMS)

Revision 1 of the HMMP was provided to RMS on 15th May 2013 for consultation.

3.3.2 Narromine Shire Council (NSC)

Revision 1 of the HMMP was provided to NSC on 15th May 2013 for consultation.

3.3.3 NSW Department of Trade and Investment – Resources and Energy (DRE)

Revision 1 of the HMMP was provided to DRE on 15th May 2013 for consultation.

3.3.4 NSW Department of Primary Industries - Water (DPI - Water)

Revision 1 of the HMMP was provided to NOW on 15th May 2013 for consultation.

3.3.5 WorkCover Authority of NSW (WorkCover)

Revision 1 of the HMMP was provided to WorkCover on 15th May 2013 for consultation.

3.3.6 NSW Environment Protection Authority (EPA)

Revision 1 of the HMMP was provided to the EPA on 15th May 2013 for consultation.

Appendix 2 provides details of the consultation undertaken.

3.4 THE INTERNATIONAL CYANIDE MANAGEMENT CODE

The cyanide management strategy adopted by TGO is consistent with the standards of practice outlined in the International Cyanide Management Code (ICMC). The ICMC is a voluntary initiative developed for the gold mining industry and the producers and transporters of the cyanide used in gold mining.

The ICMC focuses on the safe management of cyanide that is produced, transported and used for the recovery of gold. The ICMC was developed for gold mining operations, and addresses production, transport, storage, and use of cyanide and the decommissioning of cyanide facilities. It also includes requirements related to financial assurance, accident prevention, emergency response, training, public reporting, stakeholder involvement and verification procedures.

4. GENERAL MANAGEMENT MEASURES

There are a number of management measures that are similar to all hazardous materials. These are discussed below. Management measures that are specific to a particular hazardous material are detailed within the sections further within the plan.

4.1 PRODUCTION

TGO will ensure (via a contract) that hazardous materials are purchased from a company that has a proven track record of safety and quality for the relevant hazardous material.

4.2 TRANSPORT

TGO will ensure there are written agreements with hazardous materials producers, distributors and transporters, designating the specific responsibilities for each aspect of chemical transport. The written agreements shall include (but not limited to):

- The supplier will comply with all legislative requirements, statutory acts and regulations plus industry guidelines for the safe operation of their mobile equipment. A specific requirement is to comply with relevant parts of the latest version of the *Australian Code for the Transport of Dangerous Goods by Road and Rail*
- The supplier shall ensure the personnel engaged in the performance of the contract be skilled and experienced in the supply of the hazardous material and adopt their own safe system of work,
- The supplier will comply with TGO site based procedures (such as, induction and training requirements),
- Supply the Safety Data Sheet (SDS) for each hazardous material to TGO before supplying the material to site. Any updates to the SDS will also be supplied to TGO in a timely manner,
- The supplier must provide to personnel PPE required as outlined by the SDS and as required by site standards, and
- If requested by TGO the supplier will provide training materials in the safe handling and emergency response for the hazardous material being supplied.

It will be a contractual requirement that suppliers of Sodium Cyanide and LPG have undertaken an assessment on the route selection to minimise risk to the public and environment in accordance with the DPE's *Hazardous Industry Planning Advisory Paper No. 11 – Route Selection*.

Specific requirements for individual hazardous materials will be outlined within the relevant sections.

4.3 STORAGE

All chemical tanks on site are to be contained within impervious concrete bunded areas with sump pumps located in each bund. The sumps will return any potential spillage back to the process

plant. All bunds will have a capacity of 110% of the volume of the largest bulk container as a minimum.

All hazardous materials storage areas will have appropriate signage.

All hazardous materials will be stored and handled in accordance with "*AS/NZ 4452 – The Storage and Handling of Toxic Substances".*

The general layout of the site including the hazardous materials storage locations are shown in Figures 1 and 2.

Figure 1:

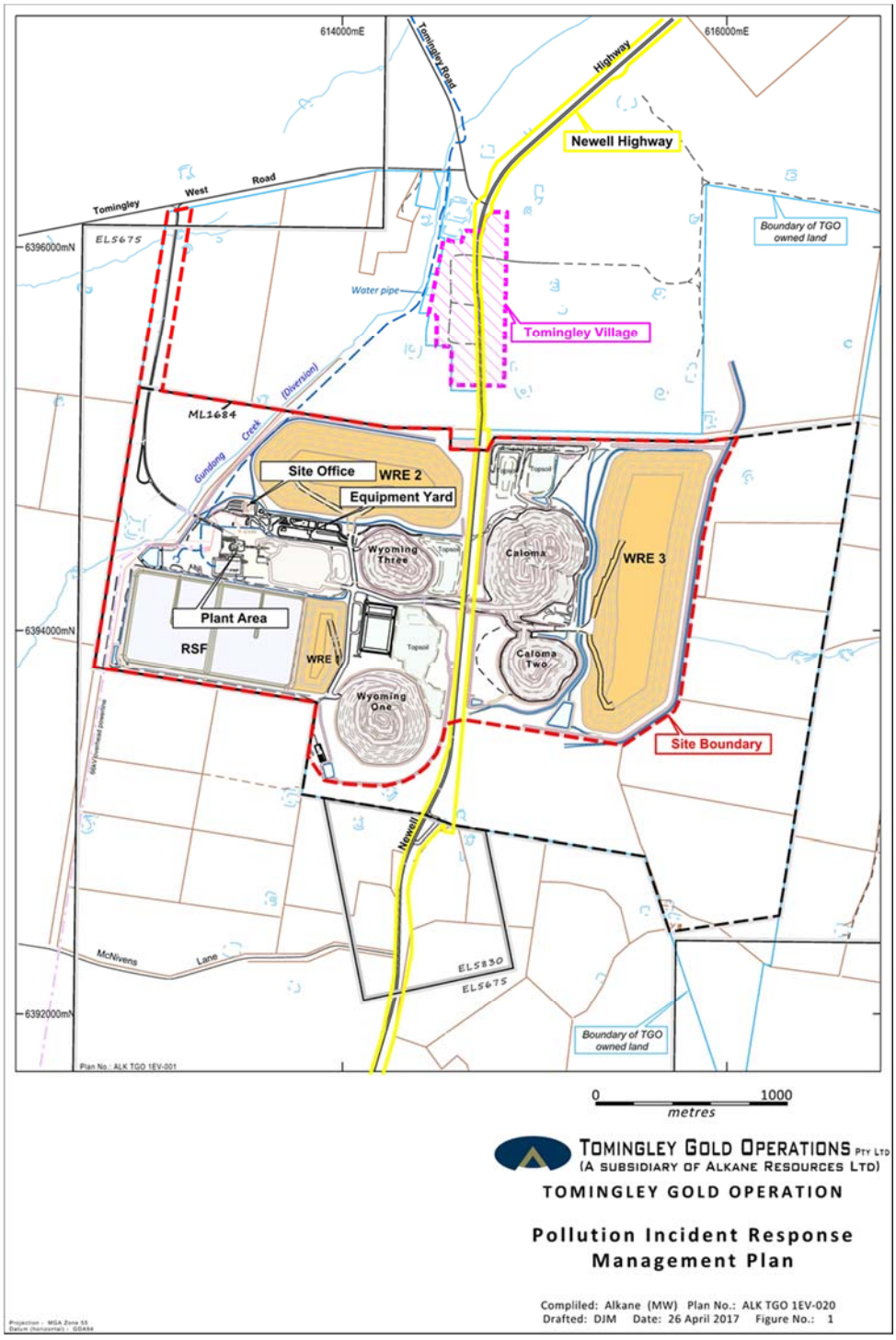
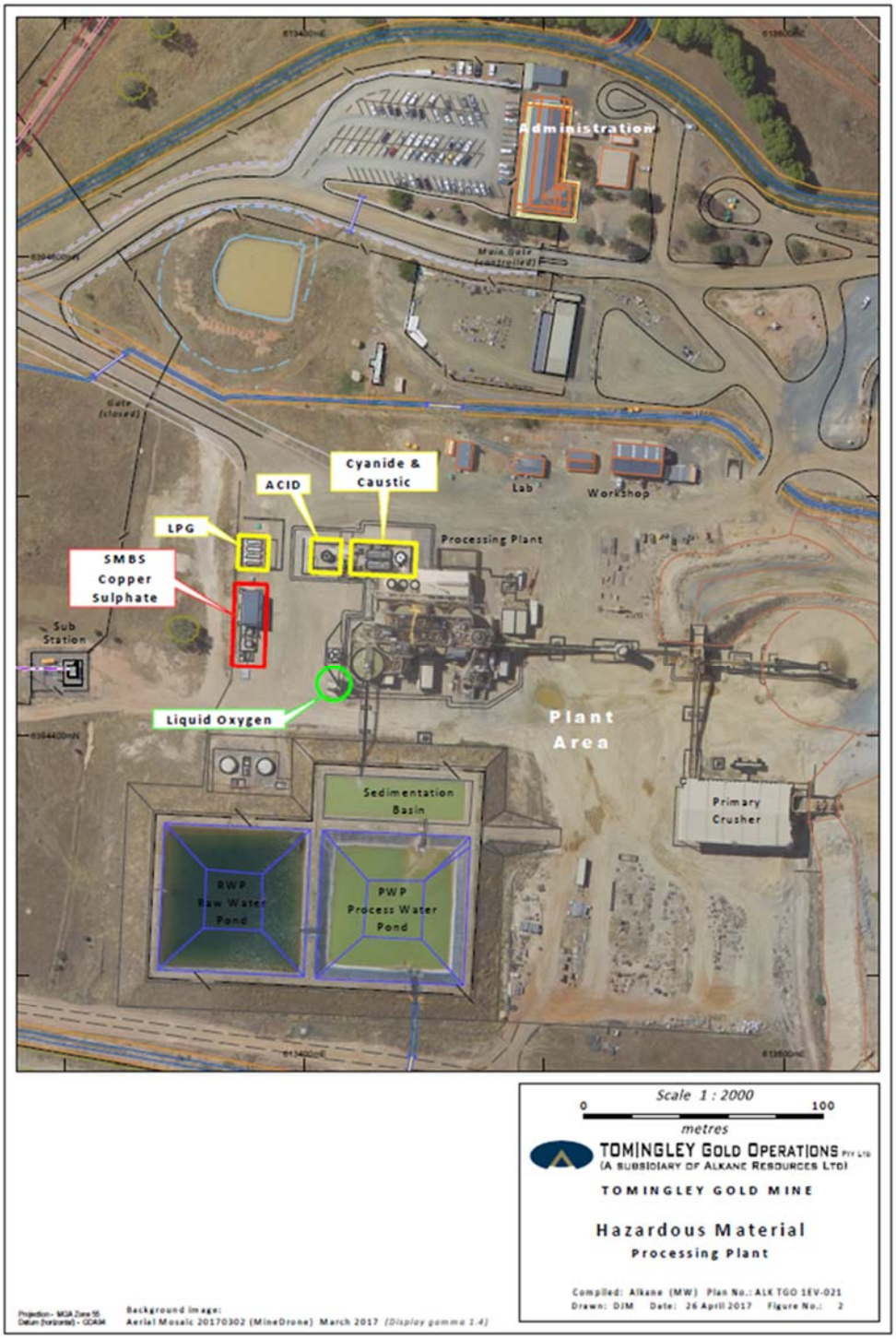


Figure 2:


Administration
Main Gate (controlled)
Gate (closed)
Cyanide & Caustic
ACID
LPG
SMBS Copper Sulphate
Lab
Workshop
Processing Plant
Sub Station
Liquid Oxygen
Plant Area
Sedimentation Basin
Primary Crusher
RWP Raw Water Pond
PWP Process Water Pond
Scale 1 : 2000
0
100
metres
TOMINGLEY GOLD OPERATIONS PTY LTD
(A SUBSIDIARY OF ALKANE RESOURCES LTD)
TOMINGLEY GOLD MINE
Hazardous Material
Processing Plant
Compiled: Alkane (MW) Plan No.: ALK TGO 1EV-021
Drawn: DJM Date: 26 April 2017 Figure No.: 2
Background Image:
Aerial Mosaic 20170302 (MineDrone) March 2017 (Display gamma 1.4)

4.4 OPERATIONS

4.4.1 Chemical Inventory Register

All chemicals brought to site (and relevant SDS) are recorded in the Chemical Inventory Register. The Chemical Inventory Register is updated and maintained by the Safety department.

When new chemicals are brought to site, SDS are assessed using ChemAlert and the TGO risk management process to determine whether the chemical:

- is fit for purpose;
- poses a safety or environmental hazard;; or
- requirescontrols to be implemented.

4.4.2 Training

TGO trains mine workers and First Response Team personnel in the safe and environmentally responsible handling of hazardous materials. Training includes:

- induction training - outlining the high risk hazardous materials at TGO;
- chemical awareness training, including SDS availability;
- hazard identification training for specific hazardous materials;
- use of PPE required for hazardous materials,
- refresher training (at a frequency determined by the risk level) for relevant site personnel,
- simulated emergencies including hazardous materials scenarios, and
- first response actions for process plant personnel in the event of hazardous material release.

4.4.3 Emergency Response (ER)

TGO has implemented the following emergency response strategies and capabilities.

- Development of an *Emergency Response Plan* and *Pollution Incident Response Management Plan*.
- Implementation of the relevant response plan in the event of a significant hazardous materials release.
- Consultation with emergency response authorities on the content of these response plans.
- Training and resourcing of a site First Response TeamR, and
- Ensuring that emergency response procedures are consistent with DPE *Planning Advisory Paper No. 1 – Emergency Planning*.

5. HAZARDOUS MATERIALS ON SITE

TGO manages the following Hazardous Materials on site.

- Explosives
- Cyanide and Cyanide Compounds
- Sodium Hydroxide
- Hydrochloric Acid
- Lime
- Sodium Metabisulphite
- Copper Sulphate
- Diesel
- Hydrocarbons
- Liquefied Petroleum Gas
- Hazardous Waste
- Liquid oxygen

A summary of management requirements for each material is outlined in the following sections.

5.1 EXPLOSIVES

Several explosives products are used at TGO for the fragmentation of hard rock strata prior to excavation. TGO has prepared an explosive site security plan (as required under the *Explosive Regulation 2005*) and Blast Management Plan (as required by condition of Project Approval), to govern the safety and security requirements of blasting operations. A suite of management plans and procedures has also been implemented to ensure the safe use and storage of explosive products.

The following explosives are kept on site:

- Ammonium Nitrate Emulsion
- Sensitising Agent Acetic Acid
- Packaged Emulsion
- Primer
- Detonator
- Ammonium Nitrate

Key characteristics of these explosives are described in Tables 2 - 8.

Table 2 – Key Characteristics Ammonium Nitrate Emulsion

Chemical Name	Ammonium Nitrate Emulsion
Common Name	Emulsion, EPI
Chemical Formula	HN_4NO_{3T}
UN Number	3375
Hazchem Code	1[Y]E.
Dangerous Goods Class	5.1 (Oxidising Agent)
Transport Method	Bulk tanker

Storage Method	Bulk tank in a secure compound

Table 3 – Key Characteristics Sensitising Agent Acetic Acid

Chemical Name	Sensitising Agent Acetic Acid
Common Name	EGB, Ezigasser B
Chemical Formula	CH_3CO_2H
UN Number	2790
Hazchem Code	2R
Dangerous Goods Class	8 (Corrosive)
Transport Method	200L drums via licensed contractor
Storage Method	In 200L drum in bunded storage shed

Table 4 – Key Characteristics Packaged Emulsion

Chemical Name	Packaged Emulsion
Common Name	Megadrive, Econotrim, Buttbuster, Sentinel
Chemical Formula	H_3NHNO_3
UN Number	0082 & 0241
Hazchem Code	E
Dangerous Goods Class	1.1B (Explosive)
Transport Method	20 kg box via explosive transport contractor
Storage Method	Licensed high explosives magazine

Table 5 – Key Characteristics Primer

Chemical Name	Primer, Booster
Common Name	Mighty Atom, Ezistarter, Megaprime, Pentex
UN Number	0042
Hazchem Code	E
Dangerous Goods Class	1.1D (Explosive)
Transport Method	20 kg box via explosive transport contractor
Storage Method	Licensed high explosives magazine

Table 6 – Key Characteristics Detonator

Chemical Name	Detonator
Common Name	Dets Non-Electric LP/MS Series, Excel
UN Number	0360
Hazchem Code	E
Dangerous Goods Class	1.1B (Explosive)
Transport Method	20 kg box via explosive transport contractor
Storage Method	Stored in licensed dedicated facility

Table 7 – Key Characteristics Ammonium Nitrate (Solid)

Chemical Name	Ammonium Nitrate (Solid)
Common Name	AN
Chemical Formula	HN_4NO_3
UN Number	1942
Hazchem Code	1[Y]
Dangerous Goods Class	5.1 (Oxidising Agent)
Transport Method	1.2t Bulka Bags via licensed contractor
Storage Method	Storage shed in secure compound

Table 8 – Key Characteristics Ammonium Nitrate Fuel Oil

Chemical Name	Ammonium Nitrate Fuel Oil
Common Name	ANFO
Chemical Formula	H_3NHNO_3
UN Number	0082
Hazchem Code	E
Dangerous Goods Class	1.1D (Explosive)
Transport Method	20 kg bags via explosives transport contractor
Storage Method	In high explosives magazine
Operational Function	Explosives

5.1.1 Explosives Transport

Supply contractors will be licenced to transport Security Sensitive Ammonium Nitrate (SSAN) and will be required to comply with the latest version of the *Australian Code for the Transport of Explosives by Road and Rail* (AEC).

The SSAN must be transported in a locked or sealed container or be under the constant surveillance of an authorised personclearly identified in the security plan. Transport must be from one secure location to another via the most direct route, both of which must be identified in the security plan, and the SSAN must never be left unattended in an unsecured location. Strict record-keeping is required, both for inventory purposes (and any discrepancies reported to authorities) and to demonstrate that the SSAN has been obtained from an authorised person and supplied to an authorised person.

Explosives transport companies must hold a licence to transport explosives. Vehicles used to transport explosives must comply with the AEC if the explosive is transported on a public road. Vehicles used to transport explosives within the mine site also need to comply with AEC, however they do not need to be licenced if they stay within the mine site.

5.1.2 Explosives Storage

A purpose built security compound with perimeter exclusion fencing has been constructed to house TGO's precursor security sensitive products and bunded explosive magazine..

The design and construction of the explosive magazine has been assessed by the NSW Government Department of Trade and Investment for compliance with *AS 2187.1:1998 Explosives – Storage, Transport and Use – Storage*, in accordance with Clause 80(1)(c) of the *Explosives Regulation, 2005* with licencing issued by NSW Work Cover.

The storage ammonium nitrate emulsion (EPI) has been constructed in accordance with *AS 4326:2008 The Storage and Handling of Oxidising Agents*. Storage facilities for EPI consist of emulsion tanks on a concrete slab base. Sensitising agents are stored in a separate shed with a concrete base and stored on bunded pallet systems that can contain 110% of stored product. All explosive storage facilities and structures will be bunded as required by *AS 1940:2004 The Storage and Handling of Flammable and Combustible Liquids*. TGO will manage its storage of stocks to levels that do not exceed licensed capacities.

5.2 CYANIDE AND CYANIDE COMPOUNDS

Cyanide will be used on the TGO to leach finely disseminated gold from ores. Alternatives to Cyanide in the recovery of gold have proven to be uneconomic. Therefore, elimination and substitution of cyanide is not viable for the project. The term Cyanide refers to any compound which contains the cyano group (CN). The following cyanide and cyanide compounds will be managed at TGO;

- Sodium Cyanide (Solid) ,
- Sodium Cyanide Solution (30%), and
- Hydrogen Cyanide Gas.

The key characteristics of each compound is described in Table 9 to 11 below.

Table 9 – Key Characteristics of Sodium Cyanide (Solid)

Chemical Name	Sodium Cyanide (Solid)
Common Name	Cyanide
Chemical Formula	NaCN
UN Number	1689
Hazchem Code	2X
Dangerous Goods Class	6.1 (Toxic)
Transport Method	Solid briquettes in 20 tonne isotainer via rail and road

Table 10 – Key Characteristics of Sodium Cyanide Solution (30%)

Chemical Name	Sodium Cyanide Solution (30%)
Common Name	Cyanide Solution
Chemical Formula	NaCN
UN Number	3414
Hazchem Code	2X
Dangerous Goods Class	6.1 (Toxic)
Storage Method	Two 100,000 litre tanks
Operational Function	Gold lixiviant

Table 11 – Key Characteristics of Hydrogen Cyanide Gas

Chemical Name	Hydrogen Cyanide Gas
Common Name	Cyanide Gas
Chemical Formula	HCN

UN Number	1051
Hazchem Code	2WE
Dangerous Goods Class	6.1 (Toxic), 2.1 (Flammable Gas)

5.2.1 Cyanide Production

TGO will only purchase cyanide from manufacturers certified as compliant International Cyanide Management Institute Code.

5.2.2 Transportation of Cyanide

TGO will ensure written agreements with cyanide producers, distributors and transporters, address the following aspects:

- Packaging as required by, and labelling in languages necessary to identify the material in, the governmental jurisdiction/s the shipment passes through,
- Storage prior to shipment,
- Evaluation and selection of routes to reduce risks, including community involvement,
- Storage and security at ports of entry,
- Interim loading, storage and unloading during shipment,
- Transport to the operation,
- Unloading at the operation,
- Safety and maintenance of the means of transportation (eg vehicles and trains, etc.) throughout transport,
- Task and safety training for transporters and handlers throughout transport,
- Security throughout transport,
- Emergency response throughout transport.

5.2.3 Storage of Cyanide

Unloading of cyanide at TGO will be conducted in accordance with the following requirements:

- Unloading will occur on a concrete loading bay that drains into a cyanide facility bund.
- A minimum of two personnel will be present during connection and disconnection phases of the unloading process.
- Cyanide storages will;
    - be bunded and be able to contain 110% of the largest vessel plus a 500mm contingency,
    - have a sump pump directing spillage or rain build up to the process plant,
    - meet engineering standards such as distances between stored chemicals,
- Regular planned inspection of the unloading process will occur.

- A preventative maintenance schedule for the unloading and storage facility.

5.3 Operational considerations in the management of Cyanide

5.3.1 Monitoring Locations and Frequency

CN_{WAD} levels and pH of the aqueous component of the tailings slurry stream reporting to the Residue Storage Facility (RSF) will be monitored twice daily.

CN_{WAD} levels in the decant water of the RSF will be monitored twice daily.

5.3.2 Sample Collection and Preservation

The twice daily CN_{WAD} sample collected from the tailings slurry stream reporting to the RSF will be a representative composite sample.

At the same time as the RSF discharge sample above is collected a sub-sample of the decant water will be collected for CN_{WAD}.

CN_{WAD} sample collection and preservation procedures are aligned with the Department of Resources Energy and Tourism 2008, Leading Practice Sustainable Development in Mining handbook on Cyanide Management.

Additional CN_{WAD} and CN_{TOTAL} samples will be collected from the tailings slurry stream reporting to the RSF monthly for analysis at a National Association of Testing Authorities (NATA) accredited laboratory.

A sample register will be maintained on site for each sample collected.

Sample collection will be undertaken by appropriately qualified staff and appropriate safety precautions (such as gloves and protective clothing) will be employed.

5.3.3 Laboratory Analysis of Cyanide

ON-SITE LABORATORY ANALYSIS

The samples will be analysed for CN_{WAD} in the on-site laboratory using Picric Acid colorimetric determination.

The results of the on-site analysis will be verified by including a control standard and blank sample in the sample analysis method.

OFF-SITE LABORATORY ANALYSIS

The additional CN_{WAD} and CNT_{OTAL} monthly samples collected from the tailings slurry stream reporting to the RSF in accordance with AS/NZS 5667:1:1998 Water Quality – Sampling and APHA (1998 or subsequent version) Standard Methods for the Examination of Water and Wastewater will be sent as soon as practicable for analysis at an off-site NATA-accredited laboratory.

The CN_{WAD} results from the NATA accredited laboratory can be used to verify the CNWAD results from the on-site laboratory.

For samples sent to off-site laboratories, a sample chain-of-custody (CoC) form will be completed for each sample collected. A copy of the CoC will be provided to the laboratory with the samples. A copy of the CoC will be held on site for the life of the Project.

5.3.4 Data Management

Data obtained by the monitoring of CN_{WAD} levels in the tailings stream reporting to the RSF and in the decant water of the RSF will be maintained on site by the Processing Manager (or delegate).

5.3.5 Monitoring Programme Review

The monitoring programme for CN_{WAD} levels in the tailings stream reporting to the RSF and in the decant water of the RSF will be reviewed annually, unless otherwise directed by the Director-General, and the changes will be made and approved through the AEMR process.

5.3.6 Monitoring of Hydrogen Cyanide (HCN) in the Processing Plant

HCN gas levels will be determined using both ambient and personal monitoring devices.

The ambient monitoring units will take continuous readings and display the results in the process control centre. In addition to the ambient monitors, employees may be required to carry personal monitoring units in designated areas.

The on-line monitoring of HCN gas will be carried out at the leach tail carbon safety screen and cyanide destruct tank.

Both personal and ambient HCN gas monitoring units will trigger alarms at the National Occupational Exposure Limits detailed in the relevant SDS. Ambient monitoring units will be equipped with a flashing light and siren. Personal monitoring units will vibrate and sound a high pitched alarm.

5.3.7 High HCN Alarm Procedure

In the event the ambient or personal monitoring units trigger an alarm the following procedure will be used to reduce HCN levels for employee safety:

Step 1 – Personal or ambient monitoring alarms sound indicating HCN levels are at or above10 ppm.

In the case of an ambient monitor, a siren and flashing lights will be activated and HCN levels will be displayed in the process control centre.

In the case of a personal monitor, the monitor will vibrate and emit a high pitched alarm.

Step 2 – Personnel will be evacuated from the alarm-activated area and the appropriate standard operating procedure will be initiated.

Personnel will not be permitted to enter the area in question without the correct personal protective equipment.

Step 3 – Process control centre personnel will investigate the possible causes of the alarm and implement appropriate contingency measures where necessary.

5.3.8 Contingency Measures for Reducing HCN Levels Procedure

The contingency measures implemented by the process control centre to reduce HCN levels in the processing plant will vary depending on the circumstances (e.g. the particular HCN levels, the cause of the increased levels and the plant location). The following measures are available to reduce HCN levels in the processing plant:

- Reduce the amount or rate of cyanide addition;
- Increase the pH of the cyanide solution/process stream;
- Reduce the rate of ore feed;

- Shut down the process plant.

Each of the above measures will take some time to reduce the level of HCN. Employees will not be permitted to access the area in question without the correct personal protective equipment or until safe HCN levels are achieved.

5.3.9 CN_{FREE} and CN_{WAD} Levels in the Processing Plant

CN_{FREE} and CN_{WAD} levels will be monitored in the processing plant to provide information relevant to process control and/or cyanide destruction, as described below.

CN_{FREE} levels in solution will be monitored at a number of locations in the processing plant for process control and cyanide destruction (i.e. to control the rate of cyanide addition and efficiency of dissolution of the gold in the leach circuit).

CN_{FREE} levels in solution will be determined using the silver nitrate titration method. Elevated levels of CN_{FREE} will be reported to the process control centre where corrective actions will be implemented.
CN_{WAD} levels will also be sampled at a number of locations and analysed at the on-site laboratory. (i.e. to regulate the dosage of SMBS/O2 and to ensure cyanide in the tailings is destroyed down to the required levels).

CN_{WAD} samples will be taken of the cyanide destruct feed and discharge streams. In the event CN_{WAD} levels at the discharge point to the tailings storages exceed 20 mg/L (90 percentile) or 30 mg/L (maximum) one or more of the contingency measures outlined below will be implemented to reduce CN_{WAD} levels to below these levels.

5.3.10 Contingency Measures for Reducing CN_{WAD} Discharge Levels.

TGO's processing plant has been designed so that CN_{WAD} levels in the tailings discharge stream do not exceed 20 mg/L (90 percentile) and 30 mg/L (maximum). As a result, it is not anticipated that the contingency measures provided below would ever need to be activated.

In the event CN_{WAD} levels in the tailings discharge stream exceed 20 mg/L (90 percentile) or 30 mg/L (maximum), one or more of the following contingency measures will be implemented to reduce $CN_{WA}D$ levels to below these levels:

- Discharge to the tailings storages will cease until CN_{WAD} levels can be achieved below the levels stated above;
- Increase the amount or dosage rate of cyanide destruction chemicals being used in the cyanide destruction circuit to achieve lower cyanide levels in the tailings discharge stream;
- Reduce the amount or rate of cyanide addition;
- Reduce the rate of ore feed;
- Add dilution water, if available.

Monitoring of the effectiveness of the contingency measures will be undertaken.

5.3.11 Worker Safety around Cyanide

TGO will protect workers' health and safety from exposure to cyanide by:-

- Supply and training in the use of appropriate PPE, including personnel HCN monitors,
- Maintaining the slurry pH >9.5,
- No personnel to work in a HCN environment > 5 ppm,

- Any exposure to > 10ppm HCN is considered an incident and investigated accordingly,
- To minimise hygiene risks the whole site will be no smoking,
- Warning signs (where appropriate) regarding potential cyanide exposure, and
- Train all full time TGO Process Plant personnel in the use of the Oxy Viva.

5.3.12 RSF Wildlife Management and Monitoring

The following management measures have been implemented to protect wildlife from interactions with the RSF and cyanide:

- Mechanisms to keep wildlife away from the RSF's:
    - minimising the area of open water in the RSF;
    - fencing to prevent fauna access from entering the area;
    - making the area non-conducive to the establishment of wildlife habitats, as far as possible; and
    - use of current best practice methods for avifauna deterrence as to frighten birds from the decant water surface.
- Monitoring twice daily the usage of the RSF by wildlife.
- Procedures for the rescue of wildlife.

Wildlife monitoring at the RSF will occur twice a day to observe and record wildlife usage. One patrol will be conducted after dawn and the other in late afternoon. The monitoring results will be utilised to determine the requirement for modification to the mechanisms being implemented to keep wildlife away from the RSF.

The following details will be recorded during the wildlife observations:

- observer details (name);
- date and time of inspection;
- type of species observed;
- number of individuals of each species observed;
- location within RSF (eg. beach, embankment or decant, etc);
- behaviour and habits of individuals (eg. flying, wading, feeding etc);
- wildlife effected (eg. trapped) or deaths.

In the event that native wildlife are effected or deaths are recorded, the Environment and Community Manager will be notified immediately.

5.3.13 Emergency Response (ER) to Cyanide Exposure

Symptoms of cyanide poisoning are dependent on the level of exposure; the level of poisoning can be described as mild or moderate to severe.

Mild poisoning can produce the following symptoms:

- Headache,
- Anxiety,
- Dizziness,
- Nausea and vomiting—particularly if the cyanide has been ingested,
- Shortness of breath and a sense of suffocation, and

- General weakness with heaviness of arms and legs.

If treatment is not started quickly, symptoms may progress and the person's condition can deteriorate to include signs of:

- Increased shortness of breath or gasping for air,
- Falling blood pressure,
- Cardiac arrhythmia—disturbance in heart rhythm and pulse,
- Cyanosis—blue or purple colouration of the skin or mucous membranes, and
- Deteriorating levels of consciousness.

Moderate to severe poisoning results from exposure to higher concentrations of cyanides and symptoms include:

- Rapid loss of consciousness,
- Seizures,
- Gasping for breath, weakness or absence of breathing, and
- Cardiac arrest.

TGO have a cyanide emergency kit available. The following is a checklist of items that will be kept in the TGO Rescue Vehicle:

- An oxygen resuscitator and a source of oxygen and a resuscitation bag or mask,
- An approved airway,
- A minimum of four pairs of impervious gloves—double gloving is recommended,
- Safety eyewear,
- Plastic bags labelled as 'Contaminated with Cyanide',
- A copy of the current MSDS for the cyanide compound(s) being used, and
- A copy of first aid procedures and emergency contact numbers.

It is the responsibility of the Safety and Training Manager to maintain the cyanide emergency kit.

The first aid steps for suspected cyanide exposure are:-

STEP 1 – REMOVE CASUALTY FROM CYANIDE EXPOSURE

The first priority in a rescue is to try and remove the casualty, if possible, from further exposure to cyanides and ideally into a source of fresh air. Rescuers must be properly trained in emergency procedures and wear appropriate PPE, especially goggles and protective gloves and, where hydrogen cyanide or cyanide solutions/liquids are involved, a suitable respirator which protects the wearer—for instance those respirators which comply with Australian Standard AS/NZS 1716: Respiratory protective devices. Rescuers should ensure their own safety while assisting the casualty.

Even if the casualty recovers quickly after removing from exposure to cyanide, administer 100 per cent oxygen and arrange transfer to a medical facility, whilst continuing to monitor his or her condition.

STEP 2 – SUPPORT AIRWAY, BREATHING AND CIRCULATION

Speed is critical in treating a casualty with cyanide poisoning. Check the casualty's airway. Remove blockages or restrictions as necessary. Check the casualty's breathing. If the casualty is breathing, place in recovery position and administer 100 per cent oxygen. If the casualty is unconscious, insert an oral airway if available and the first aider has been trained in its use.

If the casualty is not breathing, begin resuscitation using a resuscitation bag or mask connected to an oxygen source or 100 per cent oxygen via a non-rebreathing facemask. Mouth-to-mouth resuscitation

should be avoided due to the risk of contamination of the rescuer either through exhaled breath from the victim or from skin contamination. It is less efficient than mechanical resuscitation. Check for a pulse. If no pulse is present, start external cardiac massage.

STEP 3 – DECONTAMINATION

Care should be taken in handling a casualty whose clothing has been contaminated with cyanides. Contaminated clothing should be carefully removed and placed in a sealed bag for decontamination or disposal. Wash down the casualty with copious fresh water. Do not delay first aid by decontaminating the casualty. Treatment should be started immediately.

STEP 4 – TRANSFER OF CASUALTY TO MEDICAL CARE

If not already arranged, immediately organise urgent ambulance transfer to the nearest medical facility. If located remotely, arrange for transfer to the nearest registered medical practitioner. The casualty should be accompanied by someone trained in cardiopulmonary resuscitation (CPR) and able to continue the rescue.

TGO will liaise with the local hospitals to determine the appropriate antidote form and to ensure cyanide antidote kits are available at the hospital.

TGO will Protect communities and the environment through the development of emergency response strategies and capabilities by:-

- Maintaining the Pollution Incident Response Management Plan and training staff in the use of this plan,
- This plan shall include multiple muster points to account for differing wind directions and include the requirement to have a wind direction indicator (eg wind sock) to show wind direction.
- Procedures for inspecting and maintaining cyanide emergency kits, paying particular attention to PPE and expiry dates of antidotes—if stocked—and breathing oxygen to ensure supplies are fresh and useable.

5.4 SODIUM HYDROXIDE (CAUSTIC)

Caustic is used within the elution circuit of processing plant. Caustic is pumped from the bulk storage tank via a dosing pump to two locations in the processing plan (into the suction of the strip solution pump and directly to the Intensive Leach Reactor). The discharge from both of these streams report to the CIL circuit to ensure maximum gold recovery. The addition of caustic into the CIL circuit assists in maintaining the slurry pH >9.5 (required for cyanide safety). The key characteristics of Sodium Hydroxide are detailed in Table 12.

Table 12 – Key characteristics of sodium hydroxide

Chemical Name	Sodium Hydroxide
Common Name	Caustic, Caustic Soda
Chemical Formula	NaOH
UN Number	1824
Hazchem Code	2R

Dangerous Goods Class	8 (Corrosive)
Transport Method	~50% strength liquid in Tanker
Storage Method	24,000 litre tank
Operational Function	Gold recovery pH control

.

5.5 HYDROCHLORIC ACID

Hydrochloric Acid is used in the the gold recovery step of the elution process. A dilute hydrochloric acid solution (approximately 3%) is produced by pumping the delivered acid strength (32%) into a mixing pipeline with water into the acid wash hopper. The key characteristics of Hydrochloric Acid are included in Table 13.

Table 13 – Key characteristics of Hydrochloric Acid Solution

Chemical Name	Hydrochloric Acid Solution (~33%)
Common Name	Hydrochloric Acid
Chemical Formula	HCL
UN Number	1789
Hazchem Code	2R
Dangerous Goods Class	8 (Corrosive)
Transport Method	~ 33% solution strength in Tanker
Storage Method	24,000 litre tank
Operational Function	Removal of inorganic foulants on activated carbon

5.6 LIME

Hydrated lime is produced for the cyanide destruct plant. To produce hydrated lime, quicklime is mixed with water (a process called slaking).

Quicklime is delivered into a lime silo and discharged as a solid onto the mill feed belt and mixed with ore prior to milling.

The hydrated lime is pumped to the detox tank where is it utilised to ensure the correct pH is maintained. The detox tank has a pH meter which is used to control the flow of the hydrated lime.

The key characteristics of the two lime based products are detailed within Table 14 and 15.

Table 14 – Key characteristics of Lime

Chemical Name	Calcium Oxide
Common Name	Quicklime, Lime
Chemical Formula	CaO
UN Number	1910
Hazchem Code	4W
Dangerous Goods Class	N/A
Transport Method	~ 18t Sealed road tanker
Storage Method	100 tonne purpose built silo
Operational Function	pH control in CIL to minimise risk of HCN evolution.

Table 15 – Key Characteristics of Hydrated Lime

Chemical Name	Calcium Hydroxide
Common Name	Hydrated Lime, Lime
Chemical Formula	$Ca(OH)_2$
UN Number	None allocated
Hazchem Code	None allocated
Dangerous Goods Class	None allocated
Transport Method	N/A
Storage Method	Purpose built tank
Operational Function	pH control in cyanide detoxification process

5.7 SODIUM METABISULPHITE (SMBS)

SMBS is used in the cyanide detoxification circuit to oxidize the free and weakly complexed metal cyanides (i.e., WAD cyanides) to cyanate by the addition of sulphur dioxide and air in the presence of a soluble copper catalyst.

SMBS is supplied in $1m^3$ bulka bags and opened via a bag splitter to discharge contents into a mixing tank. Personnel conducting mixing activities require PPE (coveralls and respirator face mask). SMBS is stored and pumped as a mixed liquid to the detoxification tank. The key characteristics of Sodium Metabisulphite are detailed below in Table 16.

Table 16 – Key Characteristics of Sodium Metabisulphite

Chemical Name	Sodium Metabisulphite
Common Name	SMBS

Chemical Formula	$Na_2S_2O_5$
UN Number	None allocated
Hazchem Code	None allocated
Dangerous Goods Class	None allocated
Transport Method	20 x 1 m3 bulki bag delivered by road transport
Storage Method	As solid in covered purpose built shed
Operational Function	Reagent in the CIL cyanide detoxification process

5.8 COPPER SULPHATE

Copper is required in the cyanide detoxification circuit as a catalyst to the destruct reaction. The copper sulphate is supplied as liquid in $1m^3$ IBC's that are stored in a bunded, covered purpose built shed. The liquid is pumped directly to the detoxification tank. The key characteristics of copper sulphate are detailed below in Table 17.

Table 17 – Key Characteristics of Copper Sulphate

Chemical Name	Copper Sulphate Solution
Common Name	Cupric Sulphate
Chemical Formula	$CuSO_4$
UN Number	3082
Hazchem Code	2X
Dangerous Goods Class	9 (Misc.)
Transport Method	$1m^3$ Intermediate Bulk Container (IBC)
Storage Method	In covered purpose built shed
Operational Function	Catalyst in the cyanide detoxification process

5.9 DIESEL

Diesel will be stored in a single double skinned sealed (so to keep out rain) engineering designed structure. This structure will have an adjacent concrete area where loading and unloading of the diesel will occur. This concrete area will have a sump that will have the ability to be pumped from in the case of rainfall or diesel spillage.

Any diesel spills will be cleaned up immediately using spill kits with any contaminated soil or water being removed and directed to a bioremediation or licenced disposal facility.The key characterises of diesel are detailed within Table 18.

Table 18 – Key Characteristics of Diesel

Chemical Name	Diesel
Common Name	Distillate
Chemical Formula	Various
UN Number	None allocated
Hazchem Code	None allocated
Dangerous Goods Class	C1
Transport Method	Bulk transport tanker
Storage Method	100kL tank with internal bunding
Operational Function	Mobile equipment fuel

5.10 HYDROCARBONS (OILS AND GREASES)

Hydrocarbons (and related waste streams) used at TGO include:

- Oils
- Greases and lubricants
- Contaminated rags
- Used oil filters
- Waste oil and greases (including specialist products such as ball mill lubrication products)

All hydrocarbons will be stored (before use) in a designated storage vessel (such as a sea container).

Prior to removal from site by a licensed contractor, hydrocarbon waste is stored in sealed drums, or bunded sheds/ areas with minimum capacity of 110% of the largest container stored and an impermeable surface. Hydrocarbons (eg liquids) and hydrocarbon contaminated materials (eg rags and used oil filters) are separated by stream for disposal, and segregated from other wastes to minimise the risk of contamination.

5.11 LIQUID PETROLEUM GAS (LPG)

LPG is used on site as the fuel for heating of:

- Elution heater,
- Carbon regeneration furnace, and
- Gold smelting furnace.

The LPG facility is leased by TGO and maintenance on this facility is conducted by the facility owner.

Plant and equipment using LPG will be engineer designed to the appropriate Standard and operated by TGO in accordance with the specified requirements. The key characteristics of Liquid Petroleum Gas are detailed within Table 19.

Table 19 – Key Characteristics of Liquid Petroleum gas

Chemical Name	Liquid Petroleum Gas
Common Name	LPG
UN Number	1075
Hazchem Code	2WE
Dangerous Goods Class	2.1 (Flammable Gas)
Transport Method	Bulk tanker
Storage Method	4 x 7.5 m3 bullets

5.12 LIQUID OXYGEN

Bulk liquid oxygen is stored on site in a single 60,000 litre capacity cryogenic tank, vapourised and injected into the ore processing process. The system was designed and installed by BOC Limited, specialist industrial gas providers, and the installation was in accordance with the relevant Australian Standard AS1894-1997: The storage and handling of non-flammable cryogenic and refrigerated liquid. The main hazard associated with oxygen is oxygen enrichment.

The LOX system is located on the edge of the existing processing area within the mine site approx. 60 m away from the separated LPG storage compound.

Sherpa Consulting Pty Ltd conducted a Final Hazard Analysis (FNA) of the LOX system prior to it commencing operation and found that at the LOX installation at TGO is regarded as extremely unlikely that a significant release of LOX would occur. The FNA noted that the separation distance significantly exceeds the requirement of 15m in AS1894 -1997 from LOX storage to a flammable liquefied gas storage of less than 60 m3 capacity.

To ensure that the likelihood of an incident involving oxygen is low, the following occur:

- Processing and maintenance personnel are made aware of the hazards of oxygen
- There is no smoking, no open flame and no hot work near the Liquid Oxygen
- Specialist maintenance procedures are in place for working on oxygen systems.

The key characterisitics of Liquid Oxygen are detailed within Table 20.

Table 20 – Key Characteristics of Liquid Oxygen

Chemical Name	Oxygen, Refridgerated Liquid
Common Name	Liquid Oxygen (LOX)
UN Number	1073
Hazchem Code	2 PE
Dangerous Goods Class	2.2 (Non-Flammable/non-toxic gas)
Transport Method	Bulk tanker
Storage Method	Cyrogenic vertical tank

5.13 ASBESTOS

Where older infrastructure is re-used at TGO from other sites, or asbestos is suspected of being present anywhere onsite, a suitably qualified contractor will inspect and advise TGO of:

- asbestos details (location, form, identification, management) for inclusion in the Asbestos Register, if ***low risk***, or
- asbestos management, removal and disposal standards and requirements, if ***high risk***.

If Asbestos exists on the TGO lease then an Asbestos Management Plan will be required (in accordance with Workplace Health and Safety Regulations Chapter 8 paragraph 432).

The key characteristics of asbestos are detailed within Table 20.

Table 21 – Key Characteristics of asbestos

Chemical Name	Asbestos
UN Number	2590, 2212
Hazchem Code	2X
Dangerous Goods Class	9 Misc.

6. ROLES AND RESPONSIBILITIES

Roles and Responsibilities for implementation of this plan are outlined in Table 21:

Table 22 – Roles and Responsibilities

Role	Responsibilities
TGO Operations Manager	Officer of a PCBU under the WHS ACT 2011, as per the corporations act. Ensure the requirements of this plan are in place.
TGO Safety & Training Manager	Maintain emergency response plan and ensure regular training is carried out. Maintain Chemalert, chemicals register and site introduction of chemicals process.
TGO Environment & Community Manager	Ensure audit/ review of the HMMP and completion of corrective actions.
TGO Process Manager	Undertake laboratory testing for Cyanide Maintain the CN_{WAD} discharged to RSF at 20 mg/L (90 percentile) or 30 mg/L (maximum) Ensure wildlife observations at RSF are undertaken.
All Personnel	Comply with company policy and procedures. Show a duty of care to themselves, others and the environment.

7. AUDITING AND REVIEW

The requirements of this HMMP will be audited as part of the three yearly Independent Environmental Audit process as required by condition of Consent, and reviewed annually.

Appendix 1 - Hazardous Substance Inventory

Extract from TGO PIRMP
Table 3 Potential Pollutant Inventory

	Location	Maximum Quantity
Diesel Fuel	Mining Contractor Yard	200,000 litres
Lubricants	Processing Workshop	3000 litres
Lubricants	Contractors Workshops (Emeco)	23000 litres
Lubricants	Contactors Workshop (Maxfield)	3000 litres
Sodium Cyanide	Reagents Compound	180,000 litres
Sodium Hydroxide	Reagents Compound	54,000 litres
Hydrochloric Acid	Reagents Compound	25,000 litres
Acetic Acid	Reagents Compound	2000 litres
Sodium Metabisulphite	Reagents Compound	20,000 litres
Copper Sulphate	Reagents Compound	20,000 litres
Liquid Oxygen	LOX Storage area	60,000 litres
LPG	LPG Storage Area	4 x 6750 litre tanks
Ammonium Nitrate	Magazine Yard	70000 litres
Ammonium Nitrate Prill	Magazine Yard	32000 litres
Process residue (plus supernatant water)	Residue Storage Facility (RSF)	201,000,000 Litres
Process water	Process Water Dam	10,000,000 litres
Mining impacted water	Central Storage Dam (dirty water cell)	78,200 Litres
Sediment Basin 1	West of processing plant	20,200,000 litres
Sediment Basin 2	South West corner of residue storage facility	5,200,000 litres
Sediment basin 3	South of magazine	10,700,000 litres
Sediment Basin 4	South of Waste Rock Emplacement 3	34,000,000 litres
Sediment Basin 5	North of Caloma 1 pit	9,700,000 litres
Sediment Basin 7	South West of Caloma 2 pit	4,600,000 litres

Appendix 2
Consultation with Government Agencies in the development of this plan

RMS:

Thank you Hapu.
Best Regards

Colleen Measday
Environment and Community Superintendent

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TOMINGLEY GOLD OPERATIONS PTY LTD
(A wholly owned subsidiary of Alkane Resources Ltd)

Level 2, 21 Church Street, Dubbo NSW 2830
PO BOX 910 Dubbo NSW 2830

From: HAPUWIDA Jayanthsiri [mailto:Jayanthsiri.HAPUWIDA@rms.nsw.gov.au]
Sent: Tuesday, 18 June 2013 5:57 PM
To: 'CMeasday@alkane.com.au'
Cc: HALL Jeffrey W
Subject: RE: Tomingley Gold Operations - Hazardous Materials Management Plan

Colleen

Thanks for sending your Hazardous Materials Management Plan. RMS have no comments.

Regards

Hapu

From: HARTWIG Alexandra A
Sent: Wednesday, 15 May 2013 12:07 PM
To: 'CMeasday@alkane.com.au'
Cc: HALL Jeffrey W; HAPUWIDA Jayanthsiri
Subject: Fw: Tomingley Gold Operations - Hazardous Materials Management Plan

Good afternoon Colleen,

Wishing to advise that I am no longer in Project Services, therefore I am not involved in Work Authorisation Deeds (WADs). The RMS contact is Mr Jeff Hall.

I have sent this email response to him as a c.c.

Jeff Hall's number is 02 6861 1420.

Thanks

Alexandra Hartwig

From: Colleen Measday [mailto:CMeasday@alkane.com.au]
Sent: Wednesday, May 15, 2013 11:56 AM
To: HARTWIG Alexandra A
Subject: Tomingley Gold Operations - Hazardous Materials Management Plan

Hello Alexandra,
Please find attached Revision 1 of Tomingley Gold Operations – Hazardous Materials Management Plan, which has been prepared for the Operational Phase of the Tomingley Gold Project.

In accordance with Schedule 3, Condition 48 of our Project Approval issued by the NSW Department of Planning and Infrastructure, this plan must be prepared in consultation with RMS.

I understand that the Key Contact person for the Tomingley Gold Project is Henry Kaye. However this is an Operational Plan and Henry is our Construction Project Manager.

Please review this plan and pass on any feedback to me. Please do not hesitate to give me a call should you wish to discuss anything.

Best Regards

Colleen Measday
Environment and Community Superintendent

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TOMINGLEY
GOLD OPERATIONS PTY LTD
(A wholly owned subsidiary of Alkane Resources Ltd)

Level 2, 21 Church Street, Dubbo NSW 2830
PO BOX 910 Dubbo NSW 2830

DRE:

Hi Colleen,

I have reviewed the TGO HMMP and make the following comments:

- 3.2 NSW SAFETY LEGISLATION AND REGULATIONS

Two key pieces of safety legislation that applies are;

1. Work Health & Safety Act 2011 and Work Health & Safety Regulation 2011
2. Mine Health & Safety Act 2004 and Mine Health & Safety Regulation 2007

Also the Explosive Act 2003 and Explosive Regulation 2005 applies.

1. Should also state in this section that a detailed emergency management plan will be prepared and implemented for the site that covers emergency response plans for hazardous materials including explosives (note that there is a requirement under Clause 66 of the explosive regulation 2005 to develop, implement and maintain an emergency plan and that a draft of the plan is to be reviewed by the Commissioner of the New South Wales Fire Brigades.

- 5.1.2 Explosives Transport

1. Explosive transport is to comply with the "Australian Code for the Transport of Explosives by Road and Rail" Third Edition (AEC). *(not the dangerous goods code)*
2. Explosive transport companies must hold a licence to transport explosives and transport vehicles must comply with the AEC if explosives transported on a public road eg bringing explosives to mine site. Explosive vehicles on a mine also need to comply with AEC however do not need to hold a licence to transport if vehicle only operates on the mine site.

- 5.1.3 Explosive Storage

1. It appears that TGO will be using a mobile processing unit (MPU) to manufacture explosives on site (eg MPU used to mix emulsions to form an explosive product) if this is the case TGO will need to obtain a licence to manufacture explosive from Workcover NSW. A licence to manufacture may also include storage of explosives if requested on the application. Department of Trade and Investment assess explosive manufacture, storage and security plan compliance at a mine site and provides advise to Workcover NSW that explosive facilities comply with required standards.
2.

- 5.1.4 Operational factors associated with explosive management

1. Should state in first paragraph that TGO will prepare an explosive site security plan as required under Explosive Regulation 2005 requirements.

- 8 . Legislation

1. add reference to Mine Health & Safety Act 2004 and Mine Health & Safety Regulation 2007

- 9. Codes

1. add reference to "Australian Code for the Transport of Explosives by Road and Rail" Third Edition (AEC)

- Australian Standards

1. should include reference to AS 2187.2 - 2006 -Use of explosives

If you have any queries on the above please do not hesitate to contact me to discuss.

Regards

Robert Jay | Regional Inspector of Mines
Mine Safety Operations Branch
Division of Resources and Energy
NSW Department of Trade and Investment, Regional Infrastructure and Services
161 Kite Street | Locked Bag 21 | Orange NSW 2800
T: 02 6360 5337 | F: 02 6360 5363 | M: 0427 289596 | E: robert.jay@industry.nsw.gov.au
W: www.industry.nsw.gov.au

From: Colleen Measday <CMeasday@alkane.com.au>
To: "Robert.jay@industry.nsw.gov.au" <Robert.jay@industry.nsw.gov.au>
Date: 15/05/2013 04:52 PM
Subject: Tomingley Gold Operations - Hazardous Materials Management Plan

---

Hello Robert,
Please find attached Revision 1 of Tomingley Gold Operations – Hazardous Materials Management Plan, which has been prepared for the Tomingley Gold Project.

In accordance with Schedule 3, Condition 48 of our Project Approval issued by the NSW Department of Planning and Infrastructure, this plan must be prepared in consultation with DRE.

Please review this plan and pass on any feedback to me. Please do not hesitate to give me a call should you wish to discuss anything.

Best Regards

Colleen Measday
Environment and Community Superintendent

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TOMINGLEY
GOLD OPERATIONS PTY LTD
(A wholly owned subsidiary of Alkane Resources Ltd)

Level 2, 21 Church Street, Dubbo NSW 2830
PO BOX 910 Dubbo NSW 2830

Dear Robert,

Thank you for providing comments on the Hazardous Materials Management Plan, we have amended our plan as follows:

Department of Trade and Investment Comment	**Tomingley Gold Operations Response**
3.2 NSW SAFETY LEGISLATION AND REGULATIONS Two key pieces of safety legislation that applies are; 1. Work Health & Safety Act 2011 and Work Health & Safety Regulation 2011 2. Mine Health & Safety Act 2004 and Mine Health & Safety Regulation 2007	Section 3.2 has been updated to reflect your comments
Also the Explosive Act 2003 and Explosive Regulation 2005 applies. 1. Should also state in this section that a detailed emergency management plan will be prepared and implemented for the site that covers emergency response plans for hazardous materials including explosives (note that there is a requirement under Clause 66 of the explosive regulation 2005 to develop, implement and maintain an emergency plan and that a draft of the plan is to be reviewed by the Commissioner of the New South Wales Fire Brigades.	Section 3.2 has been updated to incorporate your comments
5.1.2 Explosives Transport Explosive transport is to comply with the "Australian Code for the Transport of Explosives by Road and Rail" Third Edition (AEC). (not the dangerous goods code) Explosive transport companies must hold a licence to transport explosives and transport	Section 5.1.2 has been updated to include your comments

vehicles must comply with the AEC if explosives transported on a public road eg bringing explosives to mine site. Explosive vehicles on a mine also need to comply with AEC however do not need to hold a licence to transport if vehicle only operates on the mine site.	
5.1.3 Explosive Storage It appears that TGO will be using a mobile processing unit (MPU) to manufacture explosives on site (eg MPU used to mix emulsions to form an explosive product) if this is the case TGO will need to obtain a licence to manufacture explosive from Workcover NSW. A licence to manufacture may also include storage of explosives if requested on the application. Department of Trade and Investment assess explosive manufacture, storage and security plan compliance at a mine site and provides advise to Workcover NSW that explosive facilities comply with required standards.	Your comments have been noted
5.1.4 Operational factors associated with explosive management Should state in first paragraph that TGO will prepare an explosive site security plan as required under Explosive Regulation 2005 requirements.	Section 5.1.4 has been updated to reflect your comments.
Legislation add reference to Mine Health & Safety Act 2004 and Mine Health & Safety Regulation 2007	Section 8 updated
9. Codes add reference to "Australian Code for the Transport of Explosives by Road and Rail" Third Edition (AEC)	Section 9 updated
Australian Standards should include reference to AS 2187.2 - 2006 -Use of explosives	Appendix 4 updated to include the reference

Colleen Measday

From: Tim Baker <Tim.Baker@water.nsw.gov.au>
Sent: Tuesday, 4 June 2013 2:25 PM
To: Colleen Measday
Subject: Tomingley - Hazardous Management Plan
Attachments: ER20743_TomingleyHMP.pdf

Hi Colleen,

Please see attached response from NSW Office of Water to the Hazardous Management Plan.

Any queries please let me know.

Regards
Tim

Tim Baker
Senior Water Regulation Officer
NSW Office of Water
Ph (02) 68417403
Mob 0428162097
Fax (02) 68840096
email - Tim.Baker@water.nsw.gov.au

NSW GOVERNMENT | Department of Primary Industries Office of Water

Contact Tim Baker
Phone 02 6841 7403
Mobile 0428 162 097
Fax 02 6884 0096
Email Tim.Baker@water.nsw.gov.au

Our ref ER20743

Colleen Measday
Baal Bone Colliery
PO Box 13
LITHGOW NSW 2790

Dear Colleen

TOMINGLEY GOLD MINE – DRAFT HAZARDOUS MANAGEMENT PLAN 2012

I refer to your email dated 15th May 2013 requesting comments from the NSW Office of Water on the Hazardous Management Plan for the Tomingley Gold Mine. It is recognised this request is in accordance with Schedule 3, Condition 48 of the Tomingley Gold Mine Project Approval 09_0155.

The NSW Office of Water is satisfied that the consultation requirements have been met in respect of the preparation of the Hazardous Management Plan. The NSW Office of Water has no comment.

Should you have any further queries in relation to this submission please do not hesitate to contact Tim Baker on (02) 6841 7403.

Yours sincerely

Mitchell Isaacs
Manager Strategic Stakeholder Liaison
4 June 2013

www.water.nsw.gov.au | NSW Office of Water
209 Cobra St, Dubbo | PO Box 717 Dubbo NSW 2830 | t 02 6884 2560 | f 02 6884 0096

Colleen Measday

From: mwalsh@narromine.nsw.gov.au on behalf of glamont@narromine.nsw.gov.au
Sent: Friday, 17 May 2013 10:31 AM
To: Colleen Measday
Cc: kmurphy@narromine.nsw.gov.au
Subject: Re: Tomingley Gold Operations - Hazardous Materials Management Plan

Colleen,

Council's relevant staff have perused the Hazardous Materials Management Plan, as submitted, and have no issues with it.

Kind Regards

Greg.

****

Greg Lamont
General Manager
NARROMINE SHIRE COUNCIL
PO Box 115
NARROMINE NSW 2821
Ph: 6889 9999
Fax: 6889 9998
Email: gm@narromine.nsw.gov.au
www.narromine.nsw.gov.au
****

Appendix 3 - References

AUSTRALIAN STANDARDS

AS 2187.2 2006 Use of Explosives

AS 1216-1995 Class labels for dangerous goods

AS 1319-1994 Safety signs for the occupational environment

AS 1345-1995 Identification of the contents of pipes, conduits and ducts

AS 1596-2014 The storage and handling of LP Gas

AS 1716 Respiratory protective devices

AS 1984 – 1997

AS 1940-2004 The Storage and Handling of Flammable and Combustible Liquids

AS 2187.1-1998 Explosives – Storage, Transport and Use – Storage

AS 2809-2008 Road tank vehicles for dangerous goods

AS 3780-2008 The storage and handling of corrosive substances

AS 3833:2007 The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers

AS 4326:-008 The Storage and Handling of Oxidising Agents

AS 4452 1997– The Storage and Handling of Toxic Substances

8. LEGISLATION

Work Health and Safety (WHS) Act 2011 and WHS Regulation 2011

Explosives Act 2003 and Explosives Regulation 2013

NSW Dams Safety Act 2015

Work Health and Safety (Mines and Petroleum Sites) Act 2013 and work Health and Safety (Mines and Petroleum Sites) Regulation 2014

9. CODES OF PRACTICE AND OTHER RELEVANT GUIDELINES

Australian Code for the Transportation of Explosives by Road and Rail - Third Edition (AEC)

Guidance on the Interpretation of Workplace Exposure Standards for Airborne Contaminants (2012) - Safe Work Australia

Model Code of practice - Managing risks of hazardous chemicals in the workplace (2012) – Safe Work Australia

Guide for Preventing and Responding to Cyanide Poisoning in the Workplace (2013) - Safe Work Australia

Australian Code for the Transport of Dangerous Goods by Road and Rail – 7th Edition (2008)

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