Government of Western Australia
Department of Environment Regulation

Licence

Environmental Protection Act 1986, Part V

Licensee: Northern Star (Kanowna) Pty Limited

Licence: L5029/1992/11

Registered office: Level 1
388 Hay Street
SUBIACO WA 6008

ACN: 010 511 789

Premises address: Kanowna Belle Gold Mine
M27/18,22,23,37,49,57,92,103,122,127,159,164,232,245,287,420 and L27/87,83,62
KALGOORLIE WA 6430 as depicted in Schedule 1

Issue date: 3 October 2013

Commencement date: 8 October 2013

Expiry date: 7 October 2018

Prescribed premises category
Schedule 1 of the *Environmental Protection Regulations 1987*

Category number	Category description	Category production or design capacity	Approved Premises production or design capacity
5	Processing or beneficiation of metallic or non-metallic ore	50 000 tonnes or more per year	2 000 000 tonnes per annual period
6	Mine dewatering	50 000 tonnes or more per year	720,000 tonnes per annual period
44	Metal smelting or refining	1 000 tonnes or more per year	78 840 tonnes per annual period

Conditions
This Licence is subject to the conditions set out in the attached pages.

Date signed: 26 August 2016
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Jonathan Bailes
Manager Licensing (Process Industries)

Officer delegated under section 20
of the Environmental Protection Act 1986

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Introduction

This Introduction is not part of the Licence conditions.

DER's industry licensing role
The Department of Environment Regulation (DER) is a government department for the state of Western Australia in the portfolio of the Minister for Environment. DER's purpose is to advise on and implement strategies for a healthy environment for the benefit of all current and future Western Australians.

DER has responsibilities under Part V of the *Environmental Protection Act 1986* (the Act) for the licensing of prescribed premises. Through this process DER regulates to prevent, control and abate pollution and environmental harm to conserve and protect the environment. DER also monitors and audits compliance with works approvals and licence conditions, takes enforcement action as appropriate and develops and implements licensing and industry regulation policy.

Licence requirements
This Licence is issued under Part V of the Act. Conditions contained within the Licence relate to the prevention, reduction or control of emissions and discharges to the environment and to the monitoring and reporting of them.

Where other statutory instruments impose obligations on the Premises/Licensee the intention is not to replicate them in the licence conditions. You should therefore ensure that you are aware of all your statutory obligations under the Act and any other statutory instrument. Legislation can be accessed through the State Law Publisher website using the following link:
http://www.slp.wa.gov.au/legislation/statutes.nsf/default.html

For your Premises relevant statutory instruments include but are not limited to obligations under the:

- *Environmental Protection (Unauthorised Discharges) Regulations 2004* – these Regulations make it an offence to discharge certain materials such as contaminated stormwater into the environment other than in the circumstances set out in the Regulations.

- *Environmental Protection (Controlled Waste) Regulations 2004* - these Regulations place obligations on you if you produce, accept, transport or dispose of controlled waste.

- *Environmental Protection (Noise) Regulations 1997* – these Regulations require noise emissions from the Premises to comply with the assigned noise levels set out in the Regulations.

You must comply with your licence. Non-compliance with your licence is an offence and strict penalties exist for those who do not comply.

Licence holders are also reminded of the requirements of section 53 of the Act which places restrictions on making certain changes to prescribed premises unless the changes are in accordance with a works approval, licence, closure notice or environmental protection notice.

Licence fees
If you have a licence that is issued for more than one year, you are required to pay an annual licence fee prior to the anniversary date of issue of your licence. Non payment of annual licence fees will result in your licence ceasing to have effect meaning that it will no longer be valid and you will need to apply for a new licence for your Premises.

Ministerial conditions
If your Premises has been assessed under Part IV of the Act you may have had conditions imposed by the Minister for Environment. You are required to comply with any conditions imposed by the Minister.

Premises description and Licence summary
Kanowna Belle (KB) mine is situated approximately 18 kilometres (km) northeast of Kalgoorlie and covers an area of approximately 27,712 hectares (ha). The KB processing facility processes both sulfide-rich refractory ore from KB and free milling ore from regional mines. The processing plant utilises the carbon-in-pulp (CIP) process for ore from the Kundana Gold Mine, while ore produced from KB requires roasting. Concentrates from the flotation circuit are filtered and washed before being roasted. The roasted calcine product is then leached in a carbon-in-leach (CIL) circuit to extract the gold. Arsenic is a by-product of the roasting process at the premises. The dolocrete encapsulation process is used to make the waste inert prior to disposal underground.

Existing infrastructure at the premises includes:

- KB processing facility;
- Sulfide concentrate roaster;
- KB tailing storage facility (TSF)-paddock style (TSF1);
- Red Hill in-pit TSF;
- Waldon pit, Consols Pit and Ballarat Last Chance Pits;
- Wastewater treatment plant;
- Arsenic waste stabilisation plant;
- KB underground mine;
- Red Hill low-grade stockpiles; and
- Paste plant and batch plant and other non-operational open pits.
- Red Hill and TSF1 decant ponds

Tailings from the KB processing plant are pumped, via the delivery line, from the process plant to the Red Hill in-pit TSF. When required, a stream of the tailings is diverted to the KB underground paste plant to be used for paste fill operations.

The Red Hill in-pit TSF was formerly an open-cut mine and is now being backfilled with process plant tailings as a single cell facility. The catchment area is approximately 20 ha. The pit is being backfilled as is and as such it is not a lined facility. Decant water obtained from the Red Hill in-pit TSF is pumped, via the return water line, back into the process plant (into the process water dam) for reuse in the processing activities. Decant water may also be directed to other storage locations within the KB project boundaries (e.g. Waldon pit, etc.) for the management of process water balance requirements.

TSF 1 is an unlined, two cell conventional “paddock” style TSF. The catchment area is approximately 38 ha. TSF 1 is used for supplementary processing of the tailings stream from the paste plant. The recovered decant water is then returned to the process water dam for reuse in processing activities.

The Calcine TSF is a lined (1.5 mm HDPE), single cell, conventional "paddock" style TSF. The catchment area is approximately 2.6 ha. Currently, it receives septic waste from the mine offices and plant.

Process water for the plant is sourced from decant water obtained from the Red Hill in-pit TSF, TSF 1, borefield water (bores 1-5), and water transfers between other miscellaneous sources (e.g., QED pits, KB underground and KB pit, etc.).

Arsenic trioxide collection

The particulates are removed from the off-gasses of the reactors (of the roaster) in four stages:

1. Cyclones collect the heaviest particles from the top of each reactor;
2. A gas cooler initially removes the coarse particle fraction;
3. Discharge from the gas cooler passes through an electrostatic precipitator which collects ultrafine particles; and
4. The gas stream is further cooled via air dilution where arsenic trioxide sublimes and is collected via fabric filters.

Particulates collected in the cyclones, gas cooler and ESP are returned for further roasting. The remaining dust (arsenic trioxide waste) is collected in the baghouse by fabric filters with the remaining gases flowing out the stack. The fabric filters are pulsed with air and the arsenic trioxide waste automatically falls into hoppers and is collected in bags for storage prior to treatment.

Storage and treatment

The arsenic trioxide waste is stored in bags in a weather proof enclosure until the encapsulation process is performed in batches. The dolocrete encapsulation process uses a cement-like process to encapsulate the arsenic waste, making it inert and safe for disposal underground. Dolocrete is an inorganic geopolymer binder system that micro-encapsulates wastes. The dolocrete product consists of a specially calcined dolomitic binder and proprietary additives. When mixed with liquid and fillers, the finished product sets hard. The treated hazardous waste undergoes a micro-encapsulation process that chemically traps both inorganic and organic substances.

Curing and testing

Dolocrete blocks are stored on the surface for curing. Each block is tested to ensure the levels of arsenic do not exceed 7ppm. Once the curing process is completed, the blocks are ready to be transported underground.

Transportation and underground storage

Dolocrete blocks are then transported underground by truck and placed in designated areas of the underground operations.

Paste cover and final disposal

The dolocrete blocks stored underground are finally surrounded by paste at suitable times during the life of mine (LOM). The paste used in the process is a mix of tailings sourced from the mill and concrete.

Dewatering is undertaken at the premises using a pumping system from underground workings and one in-pit sump (Troy Sump). A significant component of water abstracted from Troy Sump is re-used in the underground mining operation for drill hole flushing and stope sprays. It is estimated that around 90% of the water abstracted from the underground workings is recycled with the remainder going to the mill and for use in mineral ore processing.

A works approval (W5599/2014/1) was issued in May 2014 to allow the dewatering of supernatant from Red Hill in–pit TSF to the nearby Waldon Pit. This proposal was the result of a seepage assessment review after elevated weak acid dissociable cyanide levels were detected in the Red Hill monitoring bores.

The category 85 wastewater treatment plant that treats septic waste/sewage water from the mine offices and facilities on site has been removed from the licence as it does not meet the prescribed

throughput capacity required for registration of 20m^3 per day. The treated water is discharged to the Calcine/Tailings Dam facility for final disposal by evaporation.

The site is subject to the *Environmental Protection (Goldfields Residential Areas)(Sulphur Dioxide) Regulations 2003* ("the regulations").

The current licence is the result of an amendment sought by the Licensee to convert Waldon Pit into an In-pit TSF. Approval was obtained by the Licensee on 15 July 2016 to transfer tailings supernatant from the Waldon Pit into the nearby disused Ballarat Last Chance (BLC) Pits and Consols Pit in order to allow tailings deposition into the Waldon Pit. The Waldon Pit dewatering proposal was approved by the Department of Mines and Petroleum in May 2016 (Mining Proposal Registration ID: 59068) and the deposition of tailings into Waldon pit was approved on 6 July 2016 (Mining Proposal Registration ID: 59514).

Other minor administrative changes have been made to the licence.

The licences and works approvals issued for the Premises for the previous five licences are:

Instrument log		
Instrument	**Issued**	**Description**
L5029/1992/6	27/09/2002	Licence reissue
L5029/1992/7	20/10/2003	Licence reissue
L5029/1992/8	05/10/2004	Licence reissue
L5029/1992/9	27/07/2007	Licence reissue
W8/2008/1	01/05/2008	Works approval for Red Hill In-pit TSF
L5029/1992/10	08/10/2010	Licence reissue
L5029/1992/11	03/10/2013	Licence reissue
W5599/2014/1	01/05/2014	Works approval for discharging Red Hill supernatant tailings to Waldon Pit.
L5029/1992/11	20/11/2014	Licence amendment to include REFIRE format.
L5029/1992/11	21/05/2015	Licence amendment to reduce in-pit TSF freeboard.
L5029/1992/11	02/06/2016	Licence amendment to allow construction of TSF1 embankment rise of 2m.
L5029/1992/11	15/07/2016	Licence amendment to allow the dewatering and transfer of tailings supernatant from Waldon Pit to the Consols Pit and Ballarat Last Chance Pits.
L5029/1992/11	25/08/2016	Licence amendment to allow Waldon Pit to be converted into an In-pit TSF. Removal of *category 85: sewage facility* as throughput capacity of the wastewater treatment plant is less than the prescribed minimum requiring registration.

Severance

It is the intent of these Licence conditions that they shall operate so that, if a condition or a part of a condition is beyond the power of this Licence to impose, or is otherwise *ultra vires* or invalid, that condition or part of a condition shall be severed, and the remainder of these conditions shall nevertheless be valid to the extent that they are within the power of this Licence to impose and are not otherwise *ultra vires* or invalid.

END OF INTRODUCTION

Licence conditions

1 General

1.1 Interpretation

1.1.1 In the Licence, definitions from the *Environmental Protection Act 1986* apply unless the contrary intention appears.

1.1.2 For the purposes of this Licence, unless the contrary intention appears:

'Act' means the *Environmental Protection Act 1986;*

'**ambient air of a protected area'** has the meaning given in clause 5 of the *Environmental Protection (Goldfields Residential Areas) (Sulfur Dioxide) Policy 2003*;

'annual period' means the inclusive period from 1 January to 31 December in a calendar year;

'AS 3580.1.1' means the Australian Standard AS 3580.1.1 *Methods for sampling and analysis of ambient air – Guide to siting air monitoring equipment;*

'AS 3580.4.1' means the Australian Standard AS 3580.4.1 *Methods for sampling and analysis of ambient air - Determination of sulfur dioxide - Direct reading instrumental method;*

'AS 3580.14' means the Australian Standard AS *3580.14* Methods for sampling and analysis of ambient air - Meteorological monitoring for ambient air quality monitoring applications

'AS 4323.1' means the Australian Standard AS4323.1 *Stationary Source Emissions Method 1: Selection of sampling positions;*

'AS 4439.3' means the Australian Standard AS4439.3 *Wastes, sediments and contaminated soils – Preparation of leachates — Bottle leaching procedures*;

'AS/NZS 5667.1' means the Australian Standard AS/NZS 5667.1 *Water Quality – Sampling – Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples;*

'AS/NZS 5667.10' means the Australian Standard AS/NZS 5667.10 *Water Quality – Sampling – Guidance of sampling of wastewaters;*

'AS/NZS 5667.11' means the Australian Standard AS/NZS 5667.11 *Water Quality – Sampling – Guidance on sampling of groundwaters;*

'averaging period' means the time over which a limit is measured or a monitoring result is obtained;

'CEO' means Chief Executive Officer of the Department of Environment Regulation;

'CEO' for the purpose of correspondence means:

Chief Executive Officer
Department of Environment Regulation
Locked Bag 33
CLOISTERS SQUARE WA 6850
Email: info@der.wa.gov.au

'Clock Hour' means a sixty minute period commencing on the hour;

'CN-free' means free cyanide;

'environmentally hazardous material' means material (either solid or liquid raw materials, materials in the process of manufacture, manufactured products, products used in the manufacturing process, by-products and waste) which if discharged into the environment from or within the premises may cause pollution or environmental harm. Note: Environmentally hazardous materials include dangerous goods where they are stored in quantities below placard quantities. The storage of dangerous goods above placard quantities is regulated by the Department of Mines and Petroleum;

'EPP' means the Environmental Protection (Goldfields Residential Areas) (Sulfur Dioxide) Policy 2003;

'freeboard' means the distance between the maximum water surface elevations and the top of retaining banks or structures at their lowest point;

'HDPE' means high-density polyethylene with a permeability of at least $<10^{-9}$m/s or equivalent;

'Licence' means this Licence numbered L5029/1992/11 and issued under the Act;

'Licensee' means the person or organisation named as Licensee on page 1 of the Licence;

'mAHD' means metres Australian Height Datum;

'mBGL' means metres below ground level;

'NATA' means the National Association of Testing Authorities, Australia;

'NATA accredited' means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis;

'normal operating conditions' means any operation of a particular process (including abatement equipment) excluding start-up, shut-down, and upset conditions, in relation to stack sampling or monitoring;

'PM' means total particulate matter including both solid fragments of material and minuscule droplets of liquid;

'Premises' means the area defined in the Premises Map in Schedule 1 and listed as the Premises address on page 1 of the Licence;

'Protected Area' has the meaning given in clause 4 of the *Environmental Protection (Goldfields Residential Areas) (Sulfur Dioxide) Policy 2003;*

'quarterly' means the 4 inclusive periods from 1 January to 31 March, 1 April to 30 June, 1 July to 30 September and 1 October to 31 December;

'RL' means reduced level (or relative level) and means height in meters above sea level;

'Schedule 1' means Schedule 1 of this Licence unless otherwise stated;

'Schedule 2' means Schedule 2 of this Licence unless otherwise stated;

'seepage management plan' means the document titled "Hydrogeological Assessment and Seepage and Groundwater Management Plant Red Hill in-Pit TSF" date October 2013, prepared by Schlumberger Water Services (Australia) Pty Ltd, as submitted to the CEO and including annual revisions of that document approved by the CEO;

'shut-down' means the period when plant or equipment is brought from normal operating conditions to inactivity;

'spot sample' means a discrete sample representative at the time and place at which the sample is taken;

'stack test' means a discrete set of samples taken over a representative period at normal operating conditions;

'start-up' means the period when plant or equipment is brought from inactivity to normal operating conditions;

'STP dry' means standard temperature and pressure (0^{o}Celsius and 101.325 kilopascals respectively), dry;

'sulfur dioxide concentration' means the sulfur dioxide concentration averaged over one clock hour;

'SWL' means standing water level;

'TSF' means Tailings Storage Facility;

'USEPA' means United States (of America) Environmental Protection Agency;

'USEPA Method 5' means the most recent version and relevant part of USEPA Method 5 – Determination of particulate matter emissions from stationary sources;

'USEPA Method 17'means the most recent version and relevant part of the USEPA Method 17 Determination of particulate matter emissions from stationary sources;

'USEPA Method 29' means the most recent version and relevant part of the USEPA Method 29 – Determination of metals emissions from stationary sources;

'usual working day' means 0800 – 1700 hours, Monday to Friday excluding public holidays in Western Australia; and

'zone of influence' means the area of a receiving environment with the potential to be altered or changed as a result of an emission or discharge.

1.1.3 Any reference to an Australian or other standard in the Licence means the relevant parts of the standard in force from time to time during the term of this Licence.

1.1.4 Any reference to a guideline or code of practice in the Licence means the version of that guideline or code of practice in force from time to time, and shall include any amendments or replacements to that guideline or code of practice made during the term of this Licence.

1.2 General conditions

1.2.1 The Licensee shall operate and maintain all pollution control equipment to the manufacturer's specification or any relevant and effective internal management system.

1.2.2 The Licensee shall immediately recover, or remove and dispose of spills of environmentally hazardous materials outside an engineered containment system.

1.2.3 The Licensee shall:
- (a) implement all practical measures to prevent stormwater run-off becoming contaminated by the activities on the Premises; and
- (b) treat contaminated or potentially contaminated stormwater as necessary prior to being discharged from the Premises.[1]

Note1: *The Environmental Protection (Unauthorised Discharges) Regulations 2004* make it an offence to discharge certain materials into the environment.

1.3 Premises operation

1.3.1 The Licensee shall ensure that all pipelines containing environmentally hazardous materials are either:

(a) equipped with telemetry systems, flow meters or pressure sensors along pipelines to allow the detection of leaks and failures;

(b) equipped with automatic cut-outs in the event of a pipe failure; or

(c) provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections.

1.3.2 The Licensee shall ensure that any saline dewatering effluent used for dust suppression shall only be managed in a manner that minimises damage to surrounding vegetation.

1.3.3 The Licensee shall ensure that waste material specified in Table 1.3.1 is only stored and/ or treated within vessels or compounds provided with the infrastructure detailed in that Table.

Table 1.3.1: Containment infrastructure

Structure and location on maps of containment infrastructure in Schedule 1	Material	Infrastructure requirements
TSF 1	Tailings	Operated in accordance with document titled, "Operating Manual – KB TSF1 at Kanowna Belle Gold Mine." Stage J lift to RL374.9m
Red Hill In-pit TSF		Constructed and operated in accordance with document titled, 'Mining proposal for tailings deposition into Red Hill pit and Kanowna Belle Gold Mine', January 2008 and subsequent updates of these documents
Waldon In-pit TSF		Operated in accordance with document titled, "Waldon In-Pit TSF Mining Proposal, July 2016 (registration ID 59514) and subsequent updates of this document.
Red Hill decant water transfer pond	Return water	Lined with HDPE Liner leakage detection system (series of 'Megaflow' drains leading to gravel filled sump with riser under the HDPE liner)
TSF 1 decant pond	Return water	Lined with HDPE
Process water dam	Return water	Lined with HDPE
Calcine dam	Calcination waste and treated waste water	Lined with HDPE
Arsenic trioxide storage and treatment area	Arsenic trioxide dust resulting from ore roasting activities captured in fabric filter and electrostatic precipitators. Spillages from the mobile waste treatment plant including spillages from the handling of dry materials. Depleted arsenic waste storage bags	Impervious flooring and spillage retaining walls designed to minimise any threat to the environment resulting from fire, accident or extreme weather conditions To be located inside the enclosed concrete lined and bunded area identified in Schedule 1
Kanowna Belle underground gold mine excavated pit	Stabilised and solidified dolocrete encapsulated arsenic trioxide waste which meets the specifications of AS 4439.3	As per "Works Approval Application Dolocrete Stabilisation of Arsenic Waste Version 1, Report No 2002/85 (July 2002)" and subsequent Management Plans and updates
Concentrate ponds	Gold concentrate	Lined with HDPE
Mine surface dams	Mine dewatering from underground operations	None specified

1.3.4 The Licensee shall maintain a freeboard of 300mm in the following containment compounds: TSF1 decant pond, process water dam, concentrate ponds, and mine surface dams.

1.3.5 The Licensee shall undertake an annual water balance for the Red Hill In-Pit TSF and the Waldon, Consols and Ballarat Last Chance Pits. The water balance shall as a minimum consider the following:
(a) site rainfall;
(b) evaporation;
(c) tailings return water discharge volumes;
(d) seepage;
(e) supernatant liquor discharge and transfer;
(f) pit wall runoff;
(g) groundwater inflow; and
(h) volumes of tailings deposited.

1.3.6 The Licensee shall implement the seepage management plan for Red Hill In-pit TSF. The management plan may be amended on approval from the CEO to improve the management of seepage from the TSF. In circumstances where the details and commitments in the management plan are inconsistent with conditions of this Licence, the conditions of this Licence shall prevail.

1.3.7 The seepage management plan shall be reviewed on an annual basis. The review shall include but not be limited to:
(a) the Licensee's progress towards existing targets and milestones; and
(b) whether the objectives in the seepage management plan are being achieved and are still appropriate.

1.3.8 The Licensee shall undertake an annual assessment of vegetation within the zone of influence of the Red Hill in-pit TSF and the Waldon in-pit TSF. The assessment shall:
(a) photograph and record the presence and condition of key vegetation features within the zone of influence;
(b) compare the results of the assessment against previous years assessments and identify whether any deterioration in the presence and/or quality of vegetation has taken place; and
(c) be undertaken by a person suitably qualified in vegetation identification and sampling.

1.3.9 The Licensee shall ensure that where wastes produced on the Premises are not taken off-site for lawful use or disposal, they are managed in accordance with the requirements in Table 1.3.2.

1.3.10 The Licensee shall:
(a) undertake inspections as detailed in Table 1.3.3;
(b) where any inspection identifies that an appropriate level of environmental protection is not being maintained, take corrective action to mitigate adverse environmental consequences as soon as practicable; and
(c) maintain a record of all inspections undertaken.

1.3.11 The Licensee shall not burn waste oil, plastics or rubber at any time except for fire training purposes.

Table 1.3.2: Management of Waste		
Waste type	**Activity**	**Management requirements**
Supernatant tailings liquor	Transfer of supernatant water to Ballarat Last Chance Pits and Consols Pit	Maintain the pit lake elevation at no greater than 350m AHD
Arsenic trioxide waste	Handling, transfer	(i) Arsenic waste screw auger conveyor systems including the transfer points shall be totally enclosed and sealed, with provision for dust extraction and filtration equipment where necessary. (ii) The Licensee shall ensure that there are no visible dust emissions from arsenic waste and dolocrete receival hoppers.
	Temporary storage above ground	(i) More than 400 tonnes of arsenic trioxide[1] waste shall only be stored on the surface if notification requirements specified in Table 5.3.1 are met. (ii) No more than 800 tonnes of arsenic trioxide[1] waste shall be stored on the surface at any time. (iii) Any arsenic trioxide waste shall only be stored inside the weatherproof enclosures within sealed bulka bags manufactured in accordance with section 5.6.15.4 of the *Australian Code for the Transport of Dangerous Goods by Road and Rail.*
Arsenic trioxide waste	Treatment for stabilisation	(i) The arsenic trioxide waste shall only be treated and stabilised in the mobile arsenic waste treatment plant located within an enclosed concrete lined and bunded building. (ii) Spillages from the mobile arsenic waste treatment plant operations including spillages from the handling of dry materials shall be drained to the impermeable sump located inside the enclosed concrete lined and bunded treatment plant building. (iii) Solidification of the arsenic treated waste shall be undertaken in moulds within the bunded area of the enclosed treatment building. (iv) The treated arsenic waste shall remain in situ until the material is no longer free flowing.
Stabilised, solidified and cured arsenic trioxide waste	Offsite disposal	Authorised only if the means of disposal is approved by the CEO.
	Disposal in Kanowna Belle underground Gold Mine	(i) The Licensee shall not dispose the waste if the concentration of arsenic in the leachate exceeds 7mg/L when tested in accordance with the leaching procedure specified in AS 4439.3. (ii) Arsenic trioxide waste which exceeds the ASLP test level of 7mg/L of arsenic in the leachate shall be documented, investigated and retreated. (iii) Solidified blocks of arsenic treated waste shall be fully cured before disposal. (iv) The solidified blocks of treated arsenic waste disposed in the Kanowna Belle Gold Mine underground mined out excavations shall be surrounded by a tailings paste.
Depleted arsenic trioxide waste bags	Temporary storage	To be stored in an enclosed area
	Disposal	Only to be disposed at a Class V landfill facility offsite or as approved by the CEO.

Note 1: Determined as a mass balance of equivalent pure arsenic trioxide.

Table 1.3.3: Inspection of infrastructure		
Scope of inspection	**Type of inspection**	**Frequency of inspection**[1]
Tailings delivery pipelines	Visual integrity	Every 12 hours
Return water lines	Visual integrity	
Tailings deposition	Visual	
Ponding on the surface of the TSF1	Visual to confirm size of the pond	
Internal embankment freeboard	Visual to confirm required freeboard capacity is available	
External walls of TSF1	Visual integrity	
Borefield pipelines	Visual integrity	Daily
Pump stations	Visual integrity	
Supernatant transfer pipelines	Visual integrity	

Note 1: If circumstances at the scheduled time of inspection are identified as immediately hazardous to personnel the inspection should be undertaken as soon as practicable and the reason(s) recorded.

2 Emissions

2.1 General

2.1.1 The Licensee shall record and investigate the exceedance of any descriptive or numerical limit specified in any part of section 2 of this Licence.

2.2 Point source emissions to air

2.2.1 The Licensee shall ensure that where waste is emitted to air from the emission points in Table 2.2.1 and identified on the map of emission points in Schedule 1 it is done so in accordance with the conditions of this Licence.

Table 2.2.1: Emission points to air			
Emission point reference and location on Map of emission points	**Emission Point**	**Emission point height (m)**	**Source, including any abatement**
A1	Stack 1	120	Roaster exhaust gases passed through a gas treatment system, electrostatic precipitator and fabric filter

2.2.2 The Licensee shall not cause or allow point source emissions to air greater than the limits listed in Table 2.2.2.

Table 2.2.2: Point source emission limits to air			
Emission point reference	**Parameter**	**Limit (including units)**[1]	**Averaging period**
A1	PM	250 mg/m^3	Stack test (60 minute average)
	Total concentration of antimony, arsenic, cadmium, lead, mercury, vanadium and their respective compounds	10 mg/m^3	Stack test (60 minute average)

Note 1: All units referenced to STP dry.

2.3 Point source emissions to groundwater

2.3.1 The Licensee shall ensure that where waste is emitted to groundwater from the emission point in Table 2.3.1 and identified on the map of emission points in Schedule 1 it is done so in accordance with the conditions of this Licence.

Table 2.3.1: Emission point to groundwater		
Emission point reference and location on Map of emission points	**Description**	**Source, including any abatement**
Ballarat Last Chance Pits and Consols Pit	Discharge to pit lake in previously mined out open pit	Supernatant tailings liquor discharged via bunded delivery pipeline.

3 Monitoring

3.1 General monitoring

3.1.1 The Licensee shall ensure that:
(a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;
(b) all wastewater sampling is conducted in accordance with AS/NZS 5667.10;
(c) all groundwater sampling is conducted in accordance with AS/NZS 5667.11; and
(d) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured.

3.1.2 The Licensee shall ensure that :
(a) quarterly monitoring is undertaken at least 45 days apart;
(b) six monthly monitoring is undertaken at least 5 months apart; and
(c) annual monitoring is undertaken at least 9 months apart.

3.1.3 The Licensee shall record production or throughput data and any other process parameters relevant to any monitoring undertaken.

3.1.4 The Licensee shall ensure that all monitoring equipment used on the Premises to comply with the conditions of this Licence is calibrated in accordance with the manufacturer's specifications and the requirements of the Licence.

3.1.5 The Licensee shall, where the requirements for calibration cannot be practicably met, or a discrepancy exists in the interpretation of the requirements, bring these issues to the attention of the CEO accompanied with a report comprising details of any modifications to the methods.

3.2 Monitoring of point source emissions to air

3.2.1 The Licensee shall undertake the monitoring in Table 3.2.1 according to the specifications in that table.

Table 3.2.1: Monitoring of point source emissions to air					
Emission point reference and location in map of emission points in Schedule 1	**Parameter**	**Units[1]**	**Averaging period**	**Frequency[2]**	**Method**
A1	PM	mg/m^3	60 minute	Quarterly	USEPA Method 5 or 17
	Mercury, cadmium, antimony, arsenic, lead, vanadium				USEPA Method 29

Note 1: All units are referenced to STP dry.
Note 2: Monitoring shall be undertaken to reflect normal operating conditions and any limits or conditions on inputs or production.

3.2.2 The Licensee shall ensure that sampling required under condition 3.2.1 of the Licence is undertaken at sampling locations in accordance with the AS 4323.1.

3.2.3 The Licensee shall ensure that all non-continuous sampling and analysis undertaken pursuant to condition 3.2.1 is undertaken by a holder of NATA accreditation for the relevant methods of sampling and analysis.

3.3 Monitoring of inputs and outputs

3.3.1 The Licensee shall undertake the monitoring in Table 3.3.1 according to the specifications in that table and record any limit exceedances and the corrective action taken.

Table 3.3.1: Monitoring of inputs and outputs

Output	Parameter	Limit	Units	Averaging period	Frequency	Method
Dolocrete encapsulated arsenic trioxide waste	Arsenic in leachate	7	mg/L	Composite sampling based on every 5 batches of waste	For each composite sample collected	AS 4439.3

3.4 Process monitoring

3.4.1 The Licensee shall undertake the monitoring in Table 3.4.1 according to the specifications in that table:

Table 3.4.1: Process monitoring

Monitoring point reference	Parameter	Limit	Units	Averaging period	Frequency
Red Hill In-pit TSF	Survey supernatant pond elevations	1.2	mBGL	-	Monthly
	Survey tailings surface elevation	0.3	mBGL	-	Quarterly
Waldon In-pit TSF	Survey supernatant pond elevations	365	mAHD	-	Monthly
	Survey tailings surface elevation	365	mAHD	-	Quarterly
Red Hill In-pit TSF and Waldon in-Pit TSF supernatant pond liquor	Cu WAD CN Total CN TDS	-	mg/L	Spot sample	Quarterly[1]
	pH[2]	-	-		
	Cations (Ca, Mg, Na, K)	-	mg/L		Biannual
	Anions (Cl, SO_4, alkalinity)	-	mg/L		
	Metals, dissolved (As, Al, Cd, Co, Cr, Fe, Mn, Ni, Pb, Se, Zn)	-	mg/L		
Ballarat Last Chance Pits Consols Pit	Survey pit lake elevations[3]	350	mAHD	-	Monthly
Ballarat Last Chance Pit lake, and Consols Pit lake	Cu WAD CN Total CN TDS	-	mg/L	Spot sample	Monthly
	pH[2]	-	-		
	Cations (Ca, Mg, Na, K)	-	mg/L		
	Anions (Cl, SO_4, alkalinity)	-	mg/L		
	Metals, dissolved (As, Al, Cd, Co, Cr, Fe, Mn, Ni, Pb, Se, Zn)	-	mg/L		

Note 1: Quarterly for the first 12 months of data recording and then the frequency will be reviewed.
Note 2: Electrical conductivity and pH can be measured in the field.
Note 3: When pit lakes are able to be safely accessed.

3.5 Ambient environmental quality monitoring

3.5.1 The Licensee shall undertake the monitoring in Tables 3.5.1 and 3.5.2 according to the specifications in that table and record and investigate results that do not meet any limit specified.

Table 3.5.1: Monitoring of ambient groundwater quality

Monitoring point reference and location on maps of monitoring locations in Schedule 1	Parameter	Limit	Units	Averaging period	Frequency[1]
GWMB1-GWMB11 BH1A (deep) BH1A (intermediate)[3] BH1B[3] BH2A (deep) BH2B[3]	SWL[2]	-	mBGL	Spot sample	Quarterly
	pH[4]		-		
	Total dissolved solids		mg/L		
	Weak acid dissociable cyanide				
	Arsenic				
RHBH1A-int RHBH1A-deep RHBH2A-deep RHBH3S, RHBH3D RHBH4, RHBH5S RHBH5D, RHBH6 RHBH7S, RHBH7S2 RHBH7D, RHBH8 RHBH9, WBH1S WBH1D, WBH2S WBH2D, WBH3S WBH3D, WBH4S WBH4D, WBH5, WBH6, WBH7S WBH7D, WBH8	SWL[2]	-	mBGL	Spot sample	Monthly
RHBH1A-deep RHBH2A-deep RHBH3S, RHBH4 RHBH7S2, RHBH9 WBH1S, WBH2S WBH3D, WBH4D	pH[4]	-	-	Spot sample	Quarterly
	Electrical conductivity[4]		µS/cm		
	Total dissolved solids		mg/L		
	Weak acid cyanide				
	Arsenic				
	Calcium				
	Magnesium				
	Sodium				
	Potassium				
	Chloride				
	Sulphate				
	Aluminium				
	Cadmium				
	Cobalt				
	Chromium				
	Copper				
	Iron				
	Manganese				
	Nickel				
	Lead				
	Selenium				
	Zinc				

Note 1: A minimum of 90% of all production bores shall be sampled during any reporting period to allow for maintenance considerations.
Note 2: SWL shall be monitored prior to undertaking any other sampling. If a representative sample cannot be taken then the bore shall be reported as dry.
Note 3: BH1A (intermediate), BH1B and BH2B shall be sampled only when SWL can be recorded.
Note 4: Electrical conductivity and pH can be measured in the field.

Table 3.5.2: Monitoring of ambient groundwater quality (Consols Pits and BLC Pits)					
Monitoring point reference and location on maps of monitoring locations in Schedule 1	**Parameter**	**Limit**	**Units**	**Averaging period**	**Frequency[1]**
BLCBH1, BLCBH2 BLCBH3, BLCCH1 BLCCH2, BLCCH3 CONBH1, CONBH2 CONCH1, CONCH2 CONCH3, CONCH4	SWL[1]	6	mBGL	Spot sample	Monthly
BLCBH1 BLCBH2 BLCBH3 CONBH1 CONBH2	pH[2]	-	-	Spot sample	Monthly
	Electrical conductivity[2]		µS/cm		
	Total dissolved solids	-	mg/L		
	Weak acid cyanide				
	Arsenic				
	Calcium				
	Magnesium				
	Sodium				
	Potassium				
	Chloride				
	Sulphate				
	Aluminium				
	Cadmium				
	Cobalt				
	Chromium				
	Copper				
	Iron				
	Manganese				
	Nickel				
	Lead				
	Selenium				
	Zinc				

Note 1: SWL shall be monitored prior to undertaking any other sampling. If a representative sample cannot be taken then the bore shall be reported as dry.
Note 2: Electrical conductivity and pH can be measured in the field.

3.5.2 The Licensee shall limit emissions to groundwater as specified in Table 3.5.3.

Table 3.5.3: Groundwater quality limits			
Monitoring point reference	**Parameter**	**Limit (including units)**	**Averaging period**
GWMB1 – GWMB11	Weak Acid Dissociable (WAD) cyanide	0.8 mg/L	Spot sample
GWMB1 – GWMB11	pH	≤2	

3.5.3 The Licensee shall take the action specified in Table 3.5.4 when the action level specified in Table 3.5.4 is reached at the locations specified in Table 3.5.4.

Table 3.5.4: Monitoring actions			
Monitoring location	**Parameter**	**Action level**	**Action**
BLCBH1, BLCBH2, BLCBH3, BLCCH1, BLCCH2, BLCCH3 CONBH1, CONBH2, CONCH1, CONCH2, CONCH3, CONCH4	SWL	15 mBGL	Review data trends and transfer strategy of water from Waldon Pit to Ballarat Last Chance Pits and Consols Pit
		10 mBGL	Increase frequency of monitoring in Table 3.5.2 to fortnightly.
		6 mBGL	Stop transfer of water from Waldon Pit to Ballarat Last Chance Pits and Consols Pit
Consols Pit Ballarat Last Chance Pits	Pit lake elevation	348mAHD	Increase frequency of monitoring in Table 3.5.2 to fortnightly
		350mAHD	Stop transfer of water from Waldon Pit to Ballarat Last Chance Pits and Consols Pit

3.6 Meteorological monitoring

3.6.1 The licensee shall undertake the meteorological monitoring in Table 3.6.1 according to the specifications in that table.

Table 3.6.1: Meteorological monitoring					
Monitoring station & location[1]	**Parameter**	**Units**	**Height**	**Frequency[2]**	**Method**
M1 as shown on map in Schedule 1	Wind speed	m/s	90	Continuous	AS 3580.14
	Wind direction	Degrees	90		
	Wind direction standard deviation[1]	Degrees	N/A		
	Air temperature[1]	°C			
	Relative humidity[1]	%			
	Solar radiation[1]	W/m^2			
	Rainfall[1]	mm			
M2 as shown on map in Schedule 1	Wind speed	m/s	30	Continuous	AS 3580.14
	Wind direction	Degrees	30		
	Wind direction standard deviation[1]	Degrees	N/A		
	Air temperature[1]	°C			
	Relative humidity[1]	%			
	Solar radiation[1]	W/m^2			
	Rainfall[1]	mm			
M3 as shown on map in Schedule 1	Wind speed	m/s	N/A	Continuous	AS 3580.14
	Wind direction	Degrees			
	Wind direction standard deviation[1]	Degrees			
	Air temperature[1]	°C			
	Relative humidity[1]	%			
	Solar radiation[1]	W/m^2			
	Rainfall[1]	mm			

Note 1: Licensee shall ensure at least one of the locations of the meteorological monitoring equipment are continuously monitored and recorded for these parameters.

Note 2: The Licensee shall maintain and operate meteorological monitoring equipment so as to provide reliable data for greater than 90 percent of the time in every calendar month and for greater than 95 percent of the time in any period of 12 calendar months.

4 Information

4.1 Records

4.1.1 All information and records required by the Licence shall:
- (a) be legible;
- (b) if amended, be amended in such a way that the original and subsequent amendments remain legible or are capable of retrieval;
- (c) except for records listed in 4.1.1(d) be retained for at least 6 years from the date the records were made or until the expiry of the Licence or any subsequent licence; and
- (d) for those following records, be retained until the expiry of the Licence and any subsequent licence:
  - (i) off-site environmental effects; or
  - (ii) matters which affect the condition of the land or waters.

4.1.2 The Licensee shall ensure that:
- (a) any person left in charge of the Premises is aware of the conditions of the Licence and has access at all times to the Licence or copies thereof; and
- (b) any person who performs tasks on the Premises is informed of all of the conditions of the Licence that relate to the tasks which that person is performing.

4.1.3 The Licensee shall complete an Annual Audit Compliance Report indicating the extent to which the Licensee has complied with the conditions of the Licence, and any previous licence issued under Part V of the Act for the Premises for the previous annual period.

4.1.4 The Licensee shall implement a complaints management system that as a minimum records the number and details of complaints received concerning the environmental impact of the activities undertaken at the Premises and any action taken in response to the complaint.

4.2 Reporting

4.2.1 The Licensee shall submit to the CEO an Annual Environmental Report within 90 calendar days after the end of the annual period. The report shall contain the information listed in Table 4.2.1 in the format or form specified in that table.

Table 4.2.1: Annual environmental report

Condition or table (if relevant)	Parameter	Format or form[1]
-	Summary of any failure or malfunction of any pollution control equipment and any environmental incidents that have occurred during the annual period and any action taken	None specified
1.3.7	Review of the seepage management plan	None specified
1.3.8	Annual assessment of vegetation within zone of influence of Red Hill In-pit TSF and the Waldon In-pit TSF	None specified
Table 3.2.1	PM, mercury, cadmium, antimony, arsenic, lead, vanadium	None specified
3.3.1	Monitoring of inputs and outputs including any limit exceedances and action taken	None specified
-	Calibration reports for all equipment covered by any condition of this Licence	None specified
4.1.3	Compliance	AACR
4.1.4	Complaints summary	None specified
4.2.3	Reference non-annual reporting data and provide a summary of the key findings and recommendations	None specified

Note 1: Forms are in Schedule 2

4.2.2 The Licensee shall ensure that the Annual Environmental Report also contains:
(a) any relevant process, production or operational data; and
(b) an assessment of the information contained within the report against previous monitoring results and Licence limits.

4.2.3 The Licensee shall submit the information in Table 4.2.2 to the CEO according to the specifications in that table.

Table 4.2.2: Non-annual reporting requirements

Condition or table (if relevant)	Parameter		Reporting period	Reporting date (after end of the reporting period)	Format
-	Copies of original monitoring reports submitted to the Licensee by third parties		Not Applicable	Within 14 days of the CEO's request	As received by the Licensee from third parties
Table 3.2.1	Stack test air monitoring results		Quarterly	56 calendar days	None specified
-	Plant malfunctions, or when the plant is offline from the roasters, or during any planned plant shutdowns	Roaster shut-down and start-up times, with shut-downs which are related to the control of Sulfur Dioxide concentrations appropriately identified	Monthly	14 calendar days	Computer readable format
		Tonnage of dry concentrates feed to the roaster each day			
		Percentage of sulfur in each day's feed of dry concentrates			
Table 3.4.1 Table 3.5.1 Table 3.5.2 Table 3.5.3 Table 3.5.4	Process monitoring and monitoring of ambient groundwater quality, including any limit exceedances and action taken		Quarterly	(a) Quarter 1 report due on 27 February; (b) Quarter 2 report due on 31 May; (c) Quarter 3 report due on 31 August; (d) Quarter 4 report due on 28 November;	None specified

Note 1: Forms are in Schedule 2

4.3 Notification

4.3.1 The Licensee shall ensure that the parameters listed in Table 4.3.1 are notified to the CEO in accordance with the notification requirements of the table.

Table 4.3.1: Notification requirements			
Condition or table (if relevant)	**Parameter**	**Notification requirement[1]**	**Format or form[2]**
Table 1.3.2	Storage in excess of 400 tonnes of arsenic trioxide (determined as a mass balance of equivalent pure As_2O_3)	Prior to storage	None specified
3.1.5	Calibration report	As soon as practicable	None specified
2.1.1	Exceedance of a limit	As soon as practicable but no later than 5pm of the next usual working day	N1

Note 1: Notification requirements in the Licence shall not negate the requirement to comply with s72 of the Act
Note 2: Forms are in Schedule 2

5 EPP related requirements

5.1 General

5.1.1 The Licensee shall ensure that the operations on the Premises are conducted in such a way as neither to cause, nor contribute to causing, the Maximum Sulfur Dioxide Concentration Permitted in the Ambient Air of a Protected Area under clause 6 of the Policy to be exceeded at any place within the area.

5.1.2 The Licensee shall ensure that the siting of ambient air and meteorological monitoring equipment is in accordance with AS 3580.1.1.

5.1.3 The Licensee shall ensure that the approved monitoring equipment referred to in condition 5.2.1 and 5.3.1 is operated and calibrated in accordance with approved procedures and is maintained so as to provide valid data for greater than 90% of the time in every calendar month, and greater than 92% of the time over any 12 consecutive calendar months.

5.2 Ambient air monitoring

5.2.1 The Licensee shall undertake the ambient monitoring specified in Table 5.2.1 as specified in that table.

Table 5.2.1: Ambient monitoring						
Monitoring point reference and location	**Location**	**Parameter**	**Units**	**Averaging Period**	**Frequency**	**Method**
KRH	Kalgoorlie Regional Hospital, Piccadilly St, Kalgoorlie	Sulfur dioxide	ppm	5 minute	Continuous	AS 3580.4.1 AS 3580.2.2
HGC	Hannans Golf Course, Aslett Dr, Kalgoorlie					
KCY	Kalgoorlie Council Yard, Hay St, Kalgoorlie					
AIR	Kalgoorlie Airport, Hart Kerspian Dr, Broadwood					
MEX	Metals Exploration, Holmes St, Boulder					
BSY	Boulder Shire Yard, Forrest St, Boulder					
WFY	Westrail Freight Yard, West Kalgoorlie Rd, West Kalgoorlie					
KAM	Salmon Gum Dr, Kambalda West					
COO	Coolgardie Primary School, Hunt St, Coolgardie					
KUR	Sharpe Dr, Kurrawang					

5.3 Meteorological monitoring

5.3.1 The Licensee shall undertake the meteorological monitoring in Table 5.3.1 according to the specifications in that table.

Table 5.3.1: Meteorological monitoring					
Monitoring station & location[1]	**Parameter**	**Units**	**Height (Approx)**	**Frequency**	**Method**
MEX as shown on map in Schedule 1	Wind speed	m/s	16 m	10 minute	AS 3580.14
	Wind direction	Degrees	16 m		
	Wind direction standard deviation	Degrees	N/A		

5.4 Reporting

5.4.1 The Licensee shall submit the information in Table 5.4.1 to the CEO according to the specifications in that table.

Table 5.4.1: Reporting requirements

Condition	Parameter	Averaging period	Reporting period	Reporting date (after end of the reporting period)	Format
5.2.1	Ambient sulfur dioxide	24 hour	Monthly	14 days	Sulfur dioxide data shall be summarised in the form of a one-calendar-month table, one for each monitoring station.
		Daily maximum 5 minute average			
		Daily maximum clock hour average			
		5 minute average			Time series listing on an approved computer-readable medium in the format specified in Attachment 1 of Schedule 2 recorded in parts per million.
			Specified by the CEO	As soon as practicable	Orally
				Within 48 hours	Time series listing on an approved computer-readable medium in the format specified in Attachment 1 of Schedule 2 recorded in parts per million.
	Ambient sulfur dioxide data recovery (%)	Daily	Monthly	14 days	Sulfur dioxide data shall be summarised in the form of a one-calendar-month table, one for each monitoring station.
		Monthly			
	Total number of hours in the month, when the clock hour average sulfur dioxide concentration exceeded 0.20ppm	Count of clock hours in month	Monthly	14 days	
	Total number of hours in the month when the clock hour average sulfur dioxide concentration exceeded 0.25ppm	Count of clock hours in month	Monthly	14 days	

Table 5.4.1: Reporting requirements						
Condition	**Parameter**		**Averaging period**	**Reporting period**	**Reporting date (after end of the reporting period)**	**Format**
5.3.1	Meteorological monitoring		10 minute average	Monthly	14 days	Time series listing on an approved computer-readable medium in the format specified in Attachment 1 of Schedule 2.
				Specified by the CEO	As soon as practicable	Orally
					Within 48 hours	Time series listing on an approved computer-readable medium in the format specified in Attachment 1 of Schedule 2.
-	Roaster shut-down related to the control of Sulfur Dioxide Concentrations	Roaster shut down and start up times	-	Monthly	14 days	None specified
		Identity of the sulphur dioxide monitor which indicated the need for the roaster shut down				
		Wind speed and wind direction at the time of roaster shut down				
		Maximum 1-hour averaged sulphur dioxide concentration recorded at the sulphur dioxide monitor in the hours surrounding the roaster shut down				

5.5 Notification

5.5.1 Parameters listed in Table 5.5.1 shall be notified to the CEO and in accordance with the notification requirements of the table.

Table 5.5.1: Notification requirements

Condition or table (if relevant)	Parameter	Notification requirement	Format
5.2.1	Exceedance of maximum sulfur dioxide concentration permitted at any of the sulfur dioxide monitoring stations in Table 5.2.1.	As soon as practicable but no later than 5PM on the next usual working day.	None specified

6 Works

6.1 Tailings Storage Facility Lift Stage J

6.1.1 The Licensee shall construct the Tailings Storage Facility Lift Stage J in accordance with the documentation listed in Table 6.1.1:

Table 6.1.1: Construction requirements[1]

Document	Parts	Date of Document
Licence Amendment Application	All	21 March 2016
Northern Star (Kanowna) Pty Limited Licence Amendment Supporting Document	All	March 2016
Northern Star Resources Ltd Kanowna Belle Gold Mine TSF1 Embankment Raise Design Report	All	29 February 2016

Note 1: Where the details and commitments of the documents listed in condition 7.1.1 are inconsistent with any other condition of this licence, the conditions of this licence shall prevail.

6.1.2 The Licensee shall submit a compliance document to the CEO, following the completion of the works under condition 6.1.1 and prior to commissioning of the same.

6.1.3 The compliance document shall:

(a) certify that the extent to which works were constructed in accordance with the conditions of this Licence;

(b) be signed by a person authorised to represent the Licensee and contain the printed name and position of that person within the company.

Schedule 1: Maps

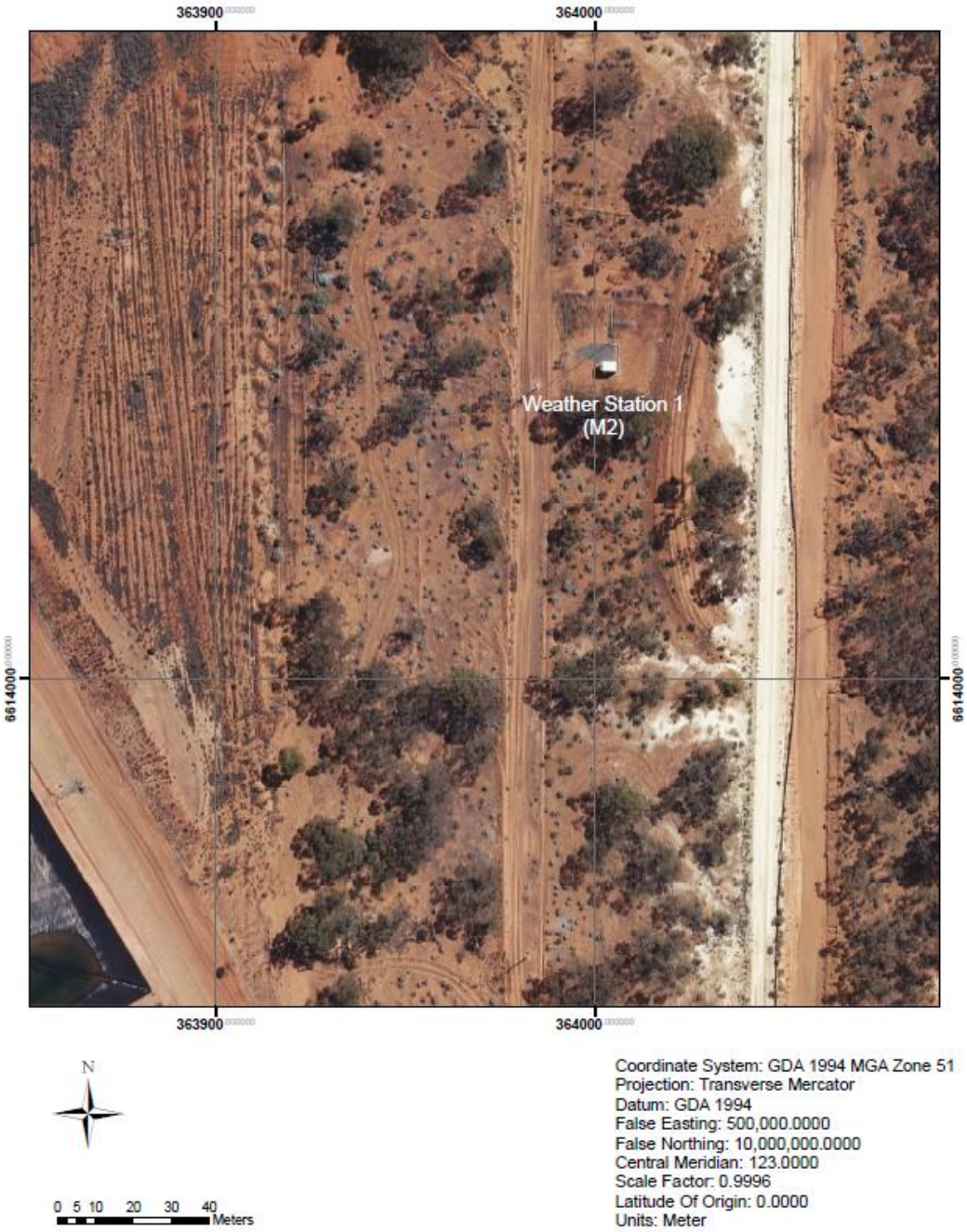
Premises map

The Premises is shown on the map below. The light blue line depicts the Premises boundary.

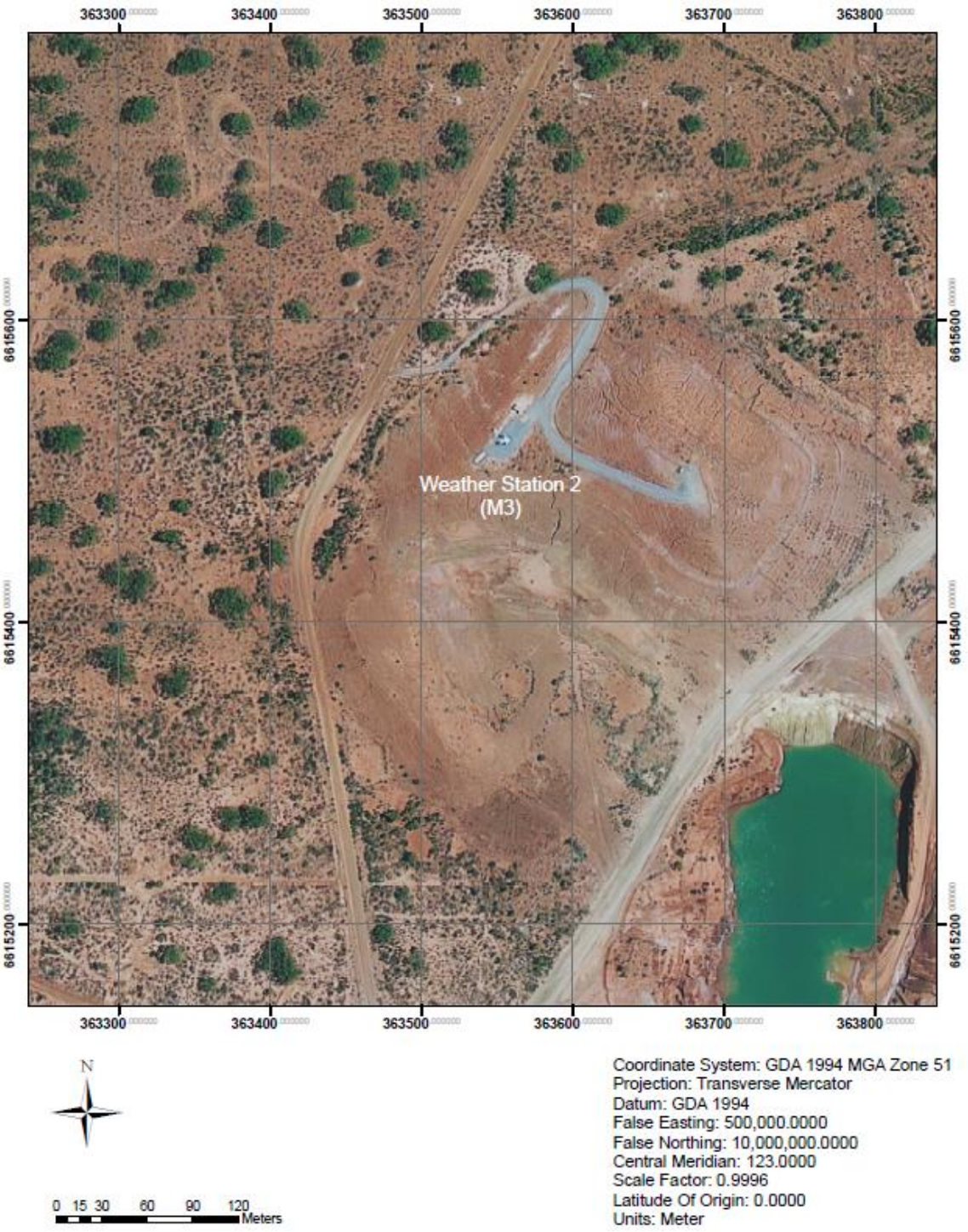
Maps of emission points and monitoring points

The location of the emission point defined in Table 2.2.1 is shown below as is the monitoring location point defined in Table 3.2.1.

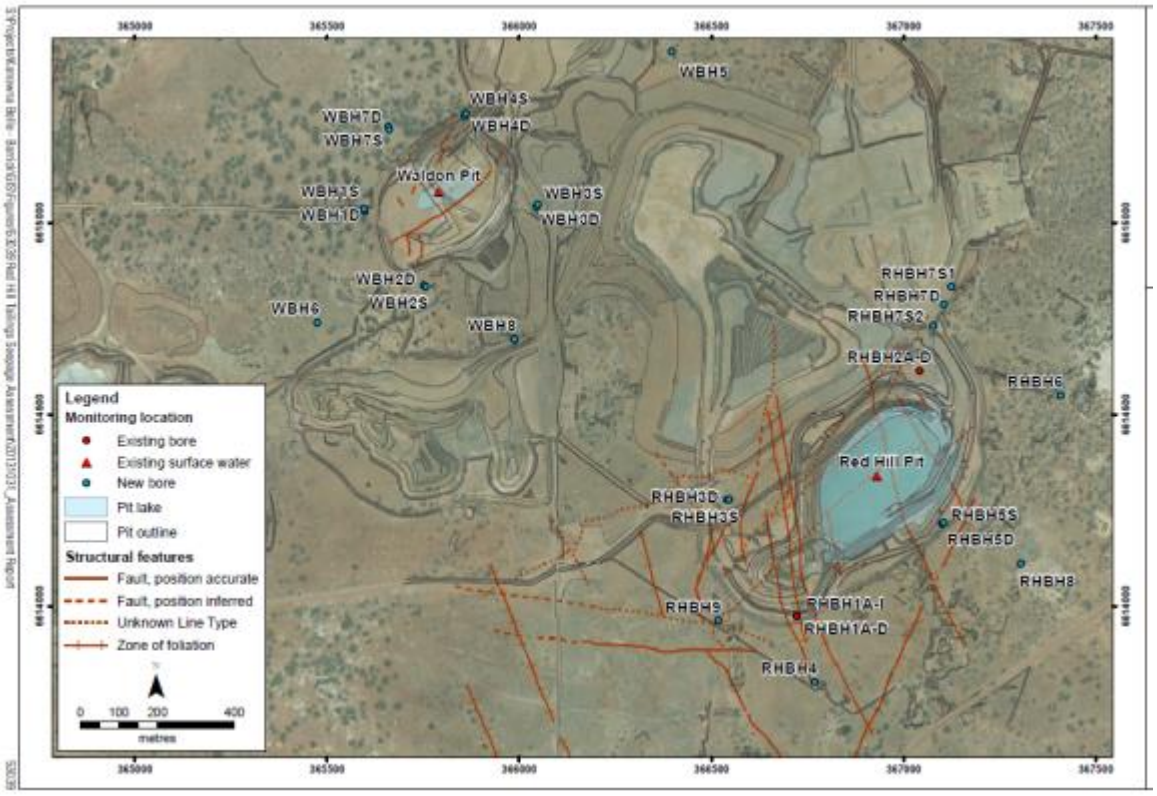
The location of the monitoring point defined in Table 3.6.1 is shown below.

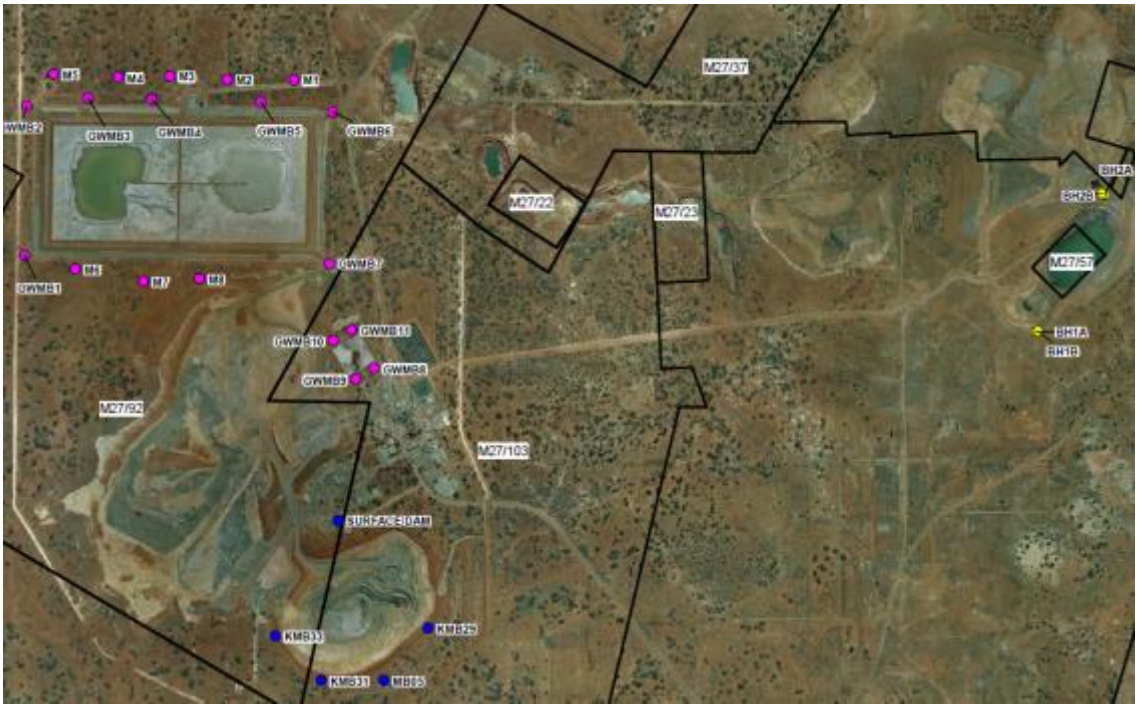


The location of the monitoring point defined in Table 3.6.1 is shown below.



The locations of the monitoring points defined in Tables 3.5.1 and 3.5.2 are shown below.



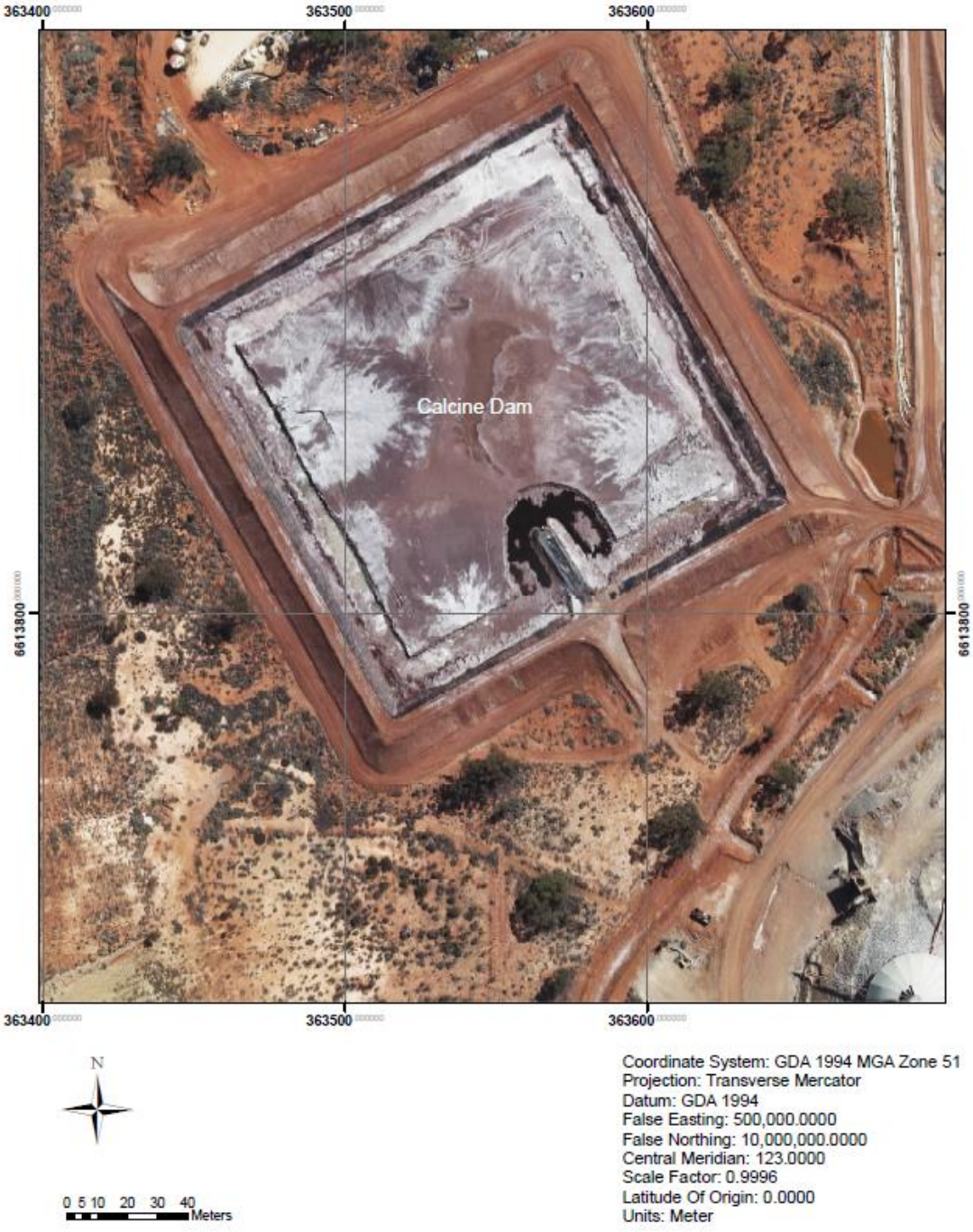



CONCH4
CONCH3
BLCBH3
CONBH1
Consols Pit
BLC Pit
(West)
BLC Pit
(East)
BLCBH1
BLCBH2
BLCCH1
BLCCH3
CONCH2
BLCCH2
CONBH2
CONCH1

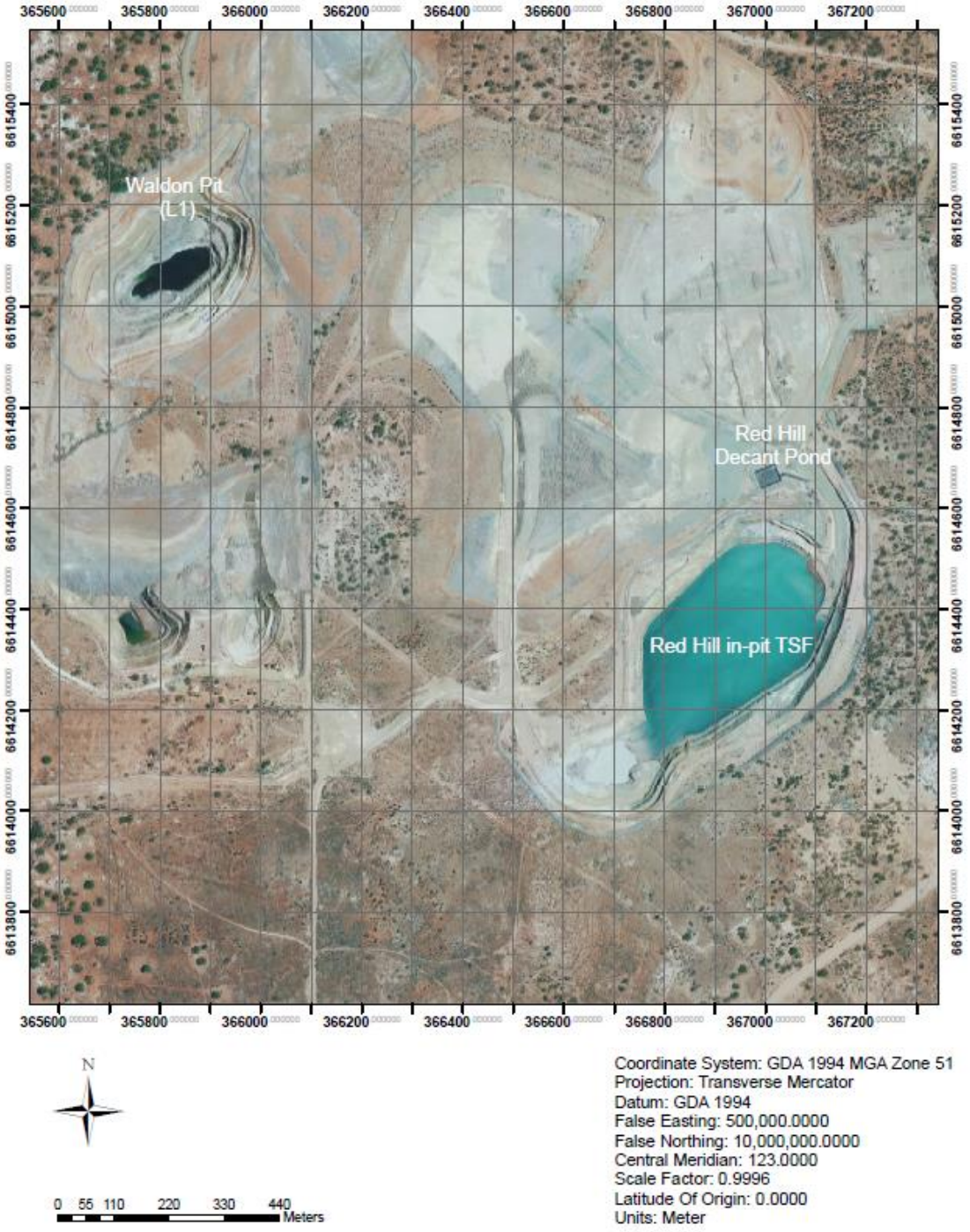
Maps of containment infrastructure

The locations of the containment infrastructure defined in Table 1.3.1 are shown below.

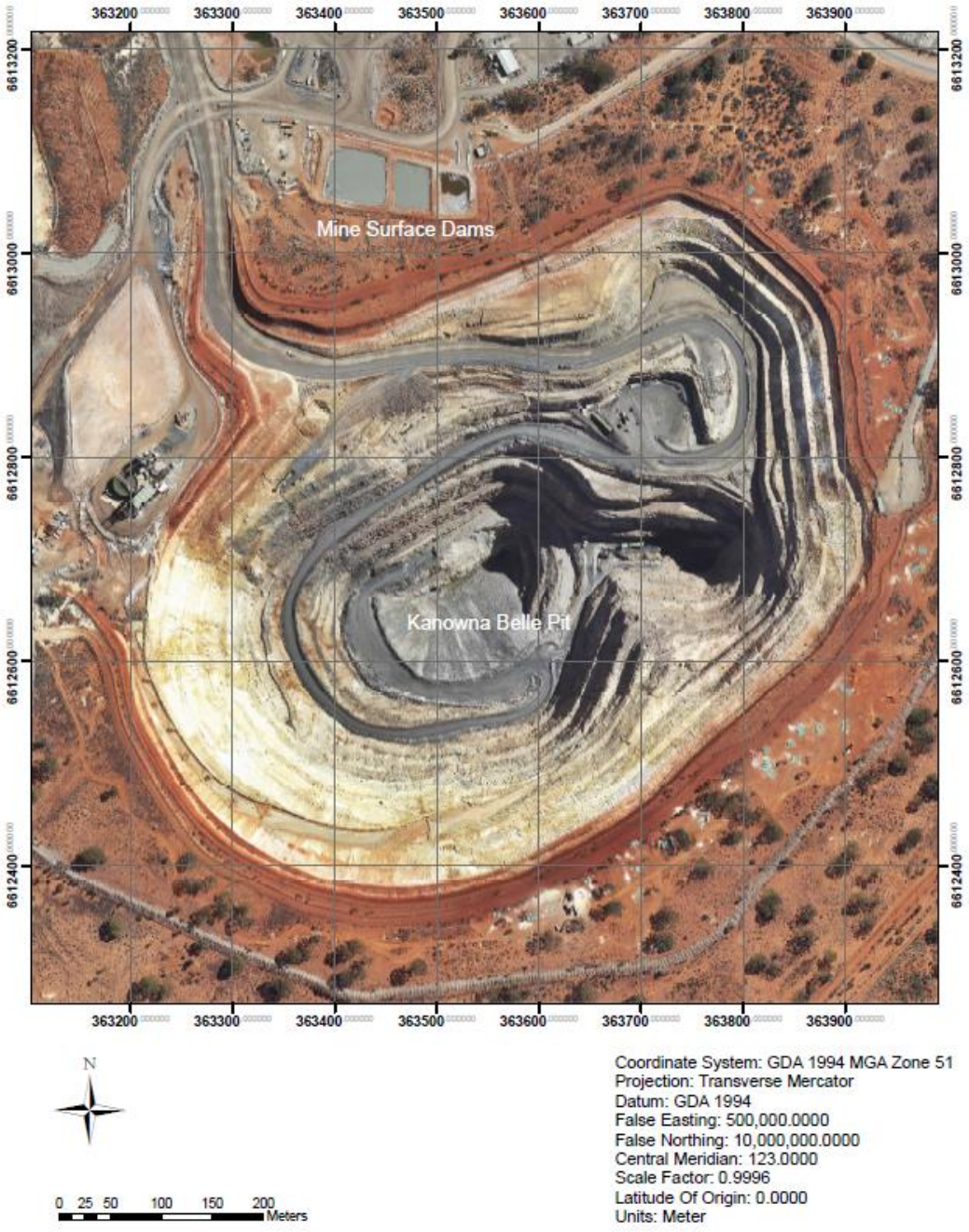
Calcine Dam



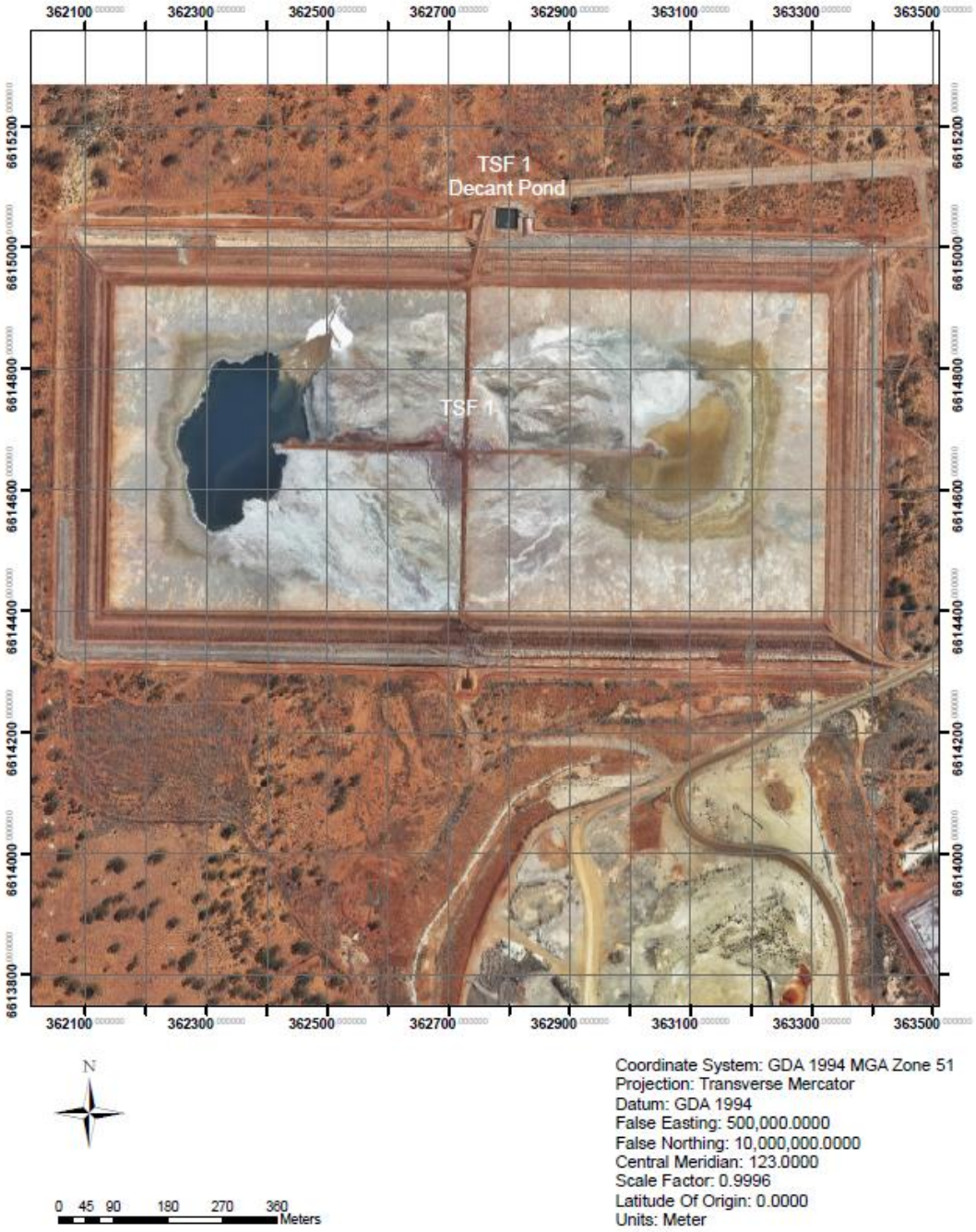
Waldon pit, Red Hill in-pit TSF and Red Hill decant pond



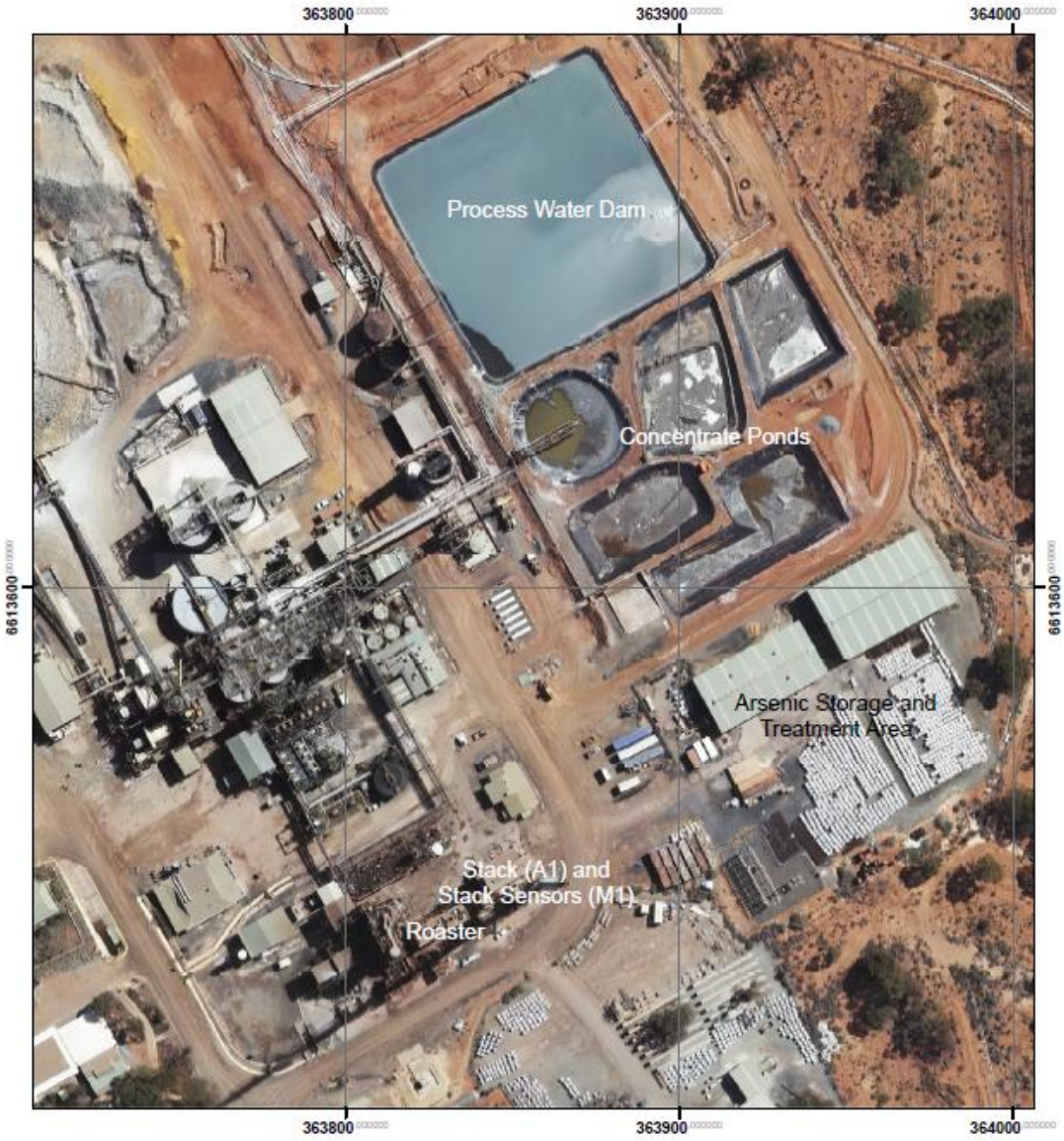
Mine surface dams



TSF1 and TSF1 decant pond

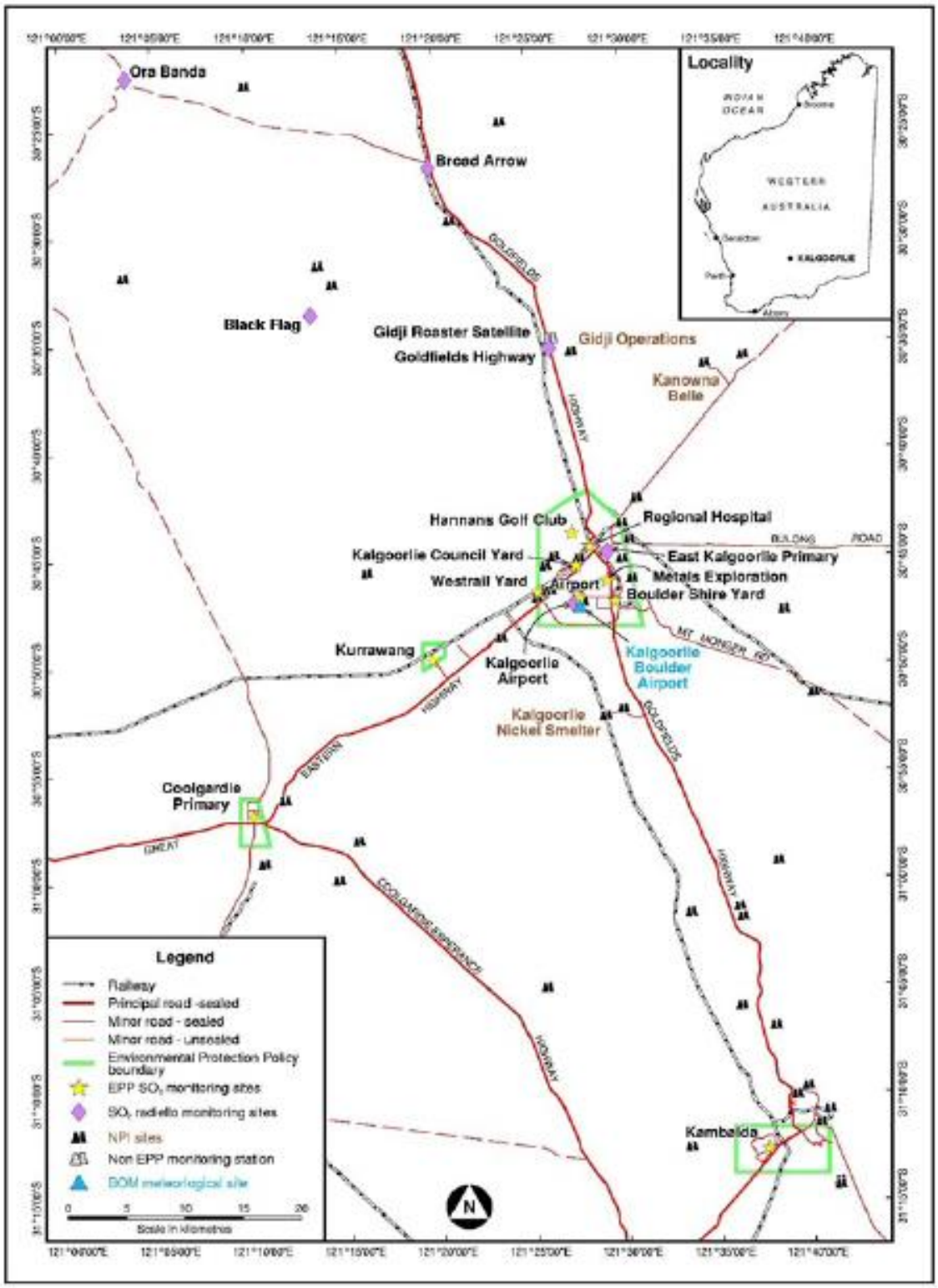


Process water dam, concentrate ponds and arsenic storage and treatment area



Red Hill In-pit TSF, Waldon Pit, Ballarat Last Chance (BLC) Pits, and Consols Pit

EPP Protected Area- Sulfur dioxide monitoring locations



Schedule 2: Reporting & notification forms

These forms are provided for the proponent to report monitoring and other data required by the Licence. They can be requested in an electronic format.

ANNUAL AUDIT COMPLIANCE REPORT PROFORMA

SECTION A

LICENCE DETAILS

Licence Number:	Licence File Number:
Company Name: Trading as:	ABN:
Reporting period: _____ to _____	

STATEMENT OF COMPLIANCE WITH LICENCE CONDITIONS

1. Were all conditions of the Licence complied with within the reporting period? (please tick the appropriate box)

Yes ☐ Please proceed to Section C

No ☐ Please proceed to Section B

Each page must be initialled by the person(s) who signs Section C of this Annual Audit Compliance Report (AACR).

Initial:

SECTION B

DETAILS OF NON-COMPLIANCE WITH LICENCE CONDITION.

Please use a separate page for each Licence condition that was not complied with.

a) Licence condition not complied with:	
b) Date(s) when the non compliance occurred, if applicable:	
c) Was this non compliance reported to DER?:	
☐ Yes ☐ Reported to DER verbally Date _____ ☐ Reported to DER in writing Date _____	☐ No
d) Has DER taken, or finalised any action in relation to the non compliance?:	
e) Summary of particulars of the non compliance, and what was the environmental impact:	
f) If relevant, the precise location where the non compliance occurred (attach map or diagram):	
g) Cause of non compliance:	
h) Action taken, or that will be taken to mitigate any adverse effects of the non compliance:	
i) Action taken or that will be taken to prevent recurrence of the non compliance:	

Each page must be initialled by the person(s) who signs Section C of this AACR

Initial:

SECTION C

SIGNATURE AND CERTIFICATION

This Annual Audit Compliance Report (AACR) may only be signed by a person(s) with legal authority to sign it. The ways in which the AACR must be signed and certified, and the people who may sign the statement, are set out below.

Please tick the box next to the category that describes how this AACR is being signed. If you are uncertain about who is entitled to sign or which category to tick, please contact the licensing officer for your premises.

If the licence holder is		The Annual Audit Compliance Report must be signed and certified:
An individual	□	by the individual licence holder, or
	□	by a person approved in writing by the Chief Executive Officer of the Department of Environment Regulation to sign on the Licensee's behalf.
A firm or other unincorporated company	□	by the principal executive officer of the Licensee; or
	□	by a person with authority to sign on the Licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
A corporation	□	by affixing the common seal of the Licensee in accordance with the *Corporations Act 2001*; or
	□	by two directors of the Licensee; or
	□	by a director and a company secretary of the Licensee, or
	□	if the Licensee is a proprietary company that has a sole director who is also the sole company secretary – by that director, or
	□	by the principal executive officer of the Licensee; or
	□	by a person with authority to sign on the Licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
A public authority (other than a local government)	□	by the principal executive officer of the Licensee; or
	□	by a person with authority to sign on the Licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
a local government	□	by the chief executive officer of the Licensee; or
	□	by affixing the seal of the local government.

It is an offence under section 112 of the *Environmental Protection Act 1986* for a person to give information on this form that to their knowledge is false or misleading in a material particular. There is a maximum penalty of $50,000 for an individual or body corporate.

I/We declare that the information in this annual audit compliance report is correct and not false or misleading in a material particular.

SIGNATURE: _____

NAME:
(printed) _____

POSITION: _____

DATE: _____/_____/_____

SIGNATURE: _____

NAME:
(printed) _____

POSITION: _____

DATE: _____/_____/_____

SEAL (if signing under seal)

Licence: L5029/1992/11 Licensee: Northern Star (Kanowna) Pty Limited
Form: N1 Date of breach:

Notification of detection of the breach of a limit

These pages outline the information that the operator must provide.
Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

Part A

Licence Number	
Name of operator	
Location of Premises	
Time and date of the detection	

Notification requirements for the breach of a limit	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Part B

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident.	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission.	
The dates of any previous N1 notifications for the Premises in the preceding 24 months.	

Name	
Post	
Signature on behalf of Northern Star (Kanowna) Ltd	
Date	

ATTACHMENT 1

Data format for monitoring data files

Line 1: SITE NAME:XXXXXXXXXXX
Line 2: ---*blank line*-------
Line 3: column description
Line 4: column description
Line 5: ---*blank line*-------
Line 6: ddmmyyyy HHMM xxxx.xx xxxx.xx xxxx.xx . . . . . .
Line 7: ddmmyyyy HHMM xxxx.xx xxxx.xx xxxx.xx . . . . . .
|
|
V
Line n:

where: dd is the two digit day of the month i.e. 01, 02,…….31.
mm is the two digit month code i.e. 01, 02,…….12.
yyyy is the four digit year i.e. 1999, 2000……..
HH is the two digit hour code i.e. 01, 02,……24.
MM is the two digit minute code i.e. 10, 20,……50.
xxxx.xx is the format of the data represented in FORTRAN notation as F7.2

The time period shall represent the end of the data period. Hence the first data period for any day shall be 0010 hours and the data associated with this period shall be the data for the five minutes up to this time. The last time for the same day shall be 2400 and the data associated with this period shall be the data for the ten minutes up to this time.

Government of Western Australia
Department of Environment Regulation

Decision Document

Environmental Protection Act 1986, Part V

Proponent: Northern Star (Kanowna) Pty Limited

Licence: L5029/1992/11

Registered office:	Level 1 388 Hay Street SUBIACO WA 6008
ACN:	010 511 789
Premises address:	Kanowna Belle Gold Mine M27/18,22,23,37,49,57,92,103,122,127,159,164,232,245,287,420 and L27/87, 83, 62 KALGOORLIE WA 6430
Issue date:	3 October 2013
Commencement date:	8 October 2013
Expiry date:	7 October 2018

Decision

Based on the assessment detailed in this document the Department of Environment Regulation (DER) has decided to issue an amended licence. DER considers that in reaching this decision, it has taken into account all relevant considerations and legal requirements and that the Licence and its conditions will ensure that an appropriate level of environmental protection is provided.

Decision Document prepared by:	Cristina Angel Senior Licensing Officer
Decision Document authorised by:	Jonathan Bailes Delegated Officer

Contents

1 Purpose of this document 2
2 Administrative summary 3
3 Executive summary of proposal and assessment 4
4 Decision table 5
5 Advertisement and consultation table 8
6 Risk Assessment 8
Appendix A 9

1 Purpose of this document

This Decision Document explains how DER has assessed and determined the application and provides a record of DER's decision-making process and how relevant factors have been taken into account. Stakeholders should note that this document is limited to DER's assessment and decision making under Part V of the *Environmental Protection Act 1986*. Other approvals may be required for the proposal, and it is the proponent's responsibility to ensure they have all relevant approvals for their Premises.

Government of Western Australia
Department of Environment Regulation

2 Administrative summary

Administrative details		
Application type	Works Approval ☐ New Licence ☐ Licence amendment ☒ Works Approval amendment ☐	
Activities that cause the premises to become prescribed premises	**Category number(s)**	**Assessed design capacity**
	5	2 000 000 tonnes per annual period
	6	720 000 tonnes per annual period
	44	78 840 tonnes per annual period
	85	20 cubic metres per day
Application verified Application fee paid	Date: 17 July 2013 Date: 24 July 2013	
Works Approval has been complied with Compliance Certificate received	Yes☒ No☐ N/A☐ Yes☒ No☐ N/A☐	
Commercial-in-confidence claim	Yes☐ No☒	
Commercial-in-confidence claim outcome		
Is the proposal a Major Resource Project?	Yes☒ No☐	
Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the *Environmental Protection Act 1986*?	Yes☐ No☒	Referral decision No: Managed under Part V ☐ Assessed under Part IV ☐
Is the proposal subject to Ministerial Conditions?	Yes☒ No☐	Ministerial statement No: 0331 EPA Report No: 710
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the *Environmental Protection Act 1986*)?	Yes☐ No☒ Department of Water consulted Yes ☐ No ☐	
Is the Premises within an Environmental Protection Policy (EPP) Area Yes☒ No☐ *Environmental Protection Policy (Goldfields Residential Areas) (Sulphur Dioxide Policy) 2003*		
Is the Premises subject to any EPP requirements? Yes☒ No☐ Site is subject to SO_2 requirements of Goldfields EPP		

3 Executive summary of proposal and assessment

Kanowna Belle (KB) mine is situated approximately 18 kilometres (km) northeast of Kalgoorlie and covers an area of approximately 27,712 hectares (ha). The KB processing facility processes both sulfide-rich refractory ore from KB mine and free milling ore from regional mines. The processing plant utilises the carbon-in-pulp (CIP) process for ore from the Kundana Gold Mine, while ore produced from KB requires roasting. Concentrates from the flotation circuit are filtered and washed before being roasted. The roasted calcine product is then leached in a carbon-in-leach (CIL) circuit to extract the gold. Arsenic is a by-product of the roasting process at the premises. The dolocrete encapsulation process is used to make the waste inert prior to disposal underground.

Existing infrastructure at the premises includes:

- KB processing facility;
- Sulfide concentrate roaster;
- KB Tailing Storage Facility (TSF) - paddock style (TSF1);
- Red Hill in-pit TSF;
- Waldon pit;
- Wastewater treatment plant;
- Arsenic waste stabilisation plant;
- KB underground mine;
- Red Hill low-grade stockpiles;
- Paste plant and batch plant and other non-operational open pits; and
- Red Hill and TSF1 decant ponds

The site is subject to the *Environmental Protection (Goldfields Residential Areas)(Sulphur Dioxide) Regulations 2003* (EPP).

The current licence is the result of an amendment sought by the Licensee to convert Waldon Pit into an in-pit TSF. The Waldon in-pit TSF has been assigned a low hazard rating using criteria specified in the Department of Mines and Petroleum *'Guidelines on the Safe Design and Operating Standards for Tailings Storage'* (May 1999). The main environmental risks are from potential impacts to ambient groundwater quality and vegetation health.

It has been determined that the Waldon in-pit TSF can be safely operated on the basis that water is continually removed from the surface of the tailings, that the tailings slurry deposition is carefully controlled, and that groundwater monitoring continues to check impacts to groundwater are not occurring.

Approval was obtained by the Licensee on 15 July 2016 to transfer tailings supernatant from the Waldon Pit into the nearby disused Ballarat Last Chance (BLC) Pits and Consols Pit in order to allow tailings deposition into the Waldon Pit. The Waldon Pit dewatering proposal was approved by the Department of Mines and Petroleum in May 2016 (Mining Proposal Registration ID: 59068) and the deposition of tailings into Waldon Pit was approved on 6 July 2016 (Mining Proposal Registration ID: 59514).

The category 85 wastewater treatment plant that treats septic waste/sewage water from the mine offices and facilities on the site has been removed from the licence as it has a throughput capacity of 12m^3 per day and does not meet the prescribed throughput capacity required for registration of 20m^3 per day. Other minor administrative changes have been made to the licence.

4 Decision table

All applications are assessed in line with the *Environmental Protection Act 1986*, the *Environmental Protection Regulations 1987* and DER's Operational Procedure on Assessing Emissions and Discharges from Prescribed Premises. Where other references have been used in making the decision, they are detailed in the decision document.

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Definitions	NA	Definitions have been amended to include reference to AS4439.3 as this standard is included in Condition 3.3.1 Table 3.3.1.	Email comments received by Brendon McGillivray 23/08/2016
General Conditions	L1.2.1	Following comments from the Licensee, Condition 1.2.1 has been amended to remove reference to monitoring equipment to prevent duplication with Condition 3.2.4.	Email comments received by Brendon McGillivray 23/08/2016
Premises operation	L1.3.1(a) L1.3.3 L1.3.8 L1.3.10	Condition 1.3.1(a) has been updated to allow the use of flow meters to detect leaks and failures of pipelines containing environmentally hazardous materials. Table 1.3.1 in condition L1.3.3 has been updated to include the Waldon in-Pit TSF as containment infrastructure for tailings. The operation of this TSF is required to be undertaken in accordance with the approval granted by the Department of Mines and Petroleum (DMP) (Mining Proposal Registration ID 59514). Condition 1.3.8 has been amended to require vegetation monitoring within the zone of influence around the Waldon in-pit TSF. Groundwater mounding is expected to occur within 100m of the pit and within 6mbgl for a period of up to two years post-decommissioning. This could impact on deep-rooted vegetation species within this area. Refer to Appendix A for DER's assessment and decision. Condition 1.3.10 (Table 1.3.2) has been amended to remove the requirement to maintain the lake level of tailings supernatant in Waldon Pit to 330mAHD. This pit will no longer be	*Licence amendment supporting documentation.* Email comments received by Brendon McGillivray 23/08/2016

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		used to contain tailings supernatant, other than the fraction contained within the tailings slurry which will be continually removed from the pit.	
Point source emissions to groundwater including monitoring	L2.3.1	Table 2.3.1 in condition 2.3.1 has been updated to remove Waldon Pit as a point source of emission to groundwater. Supernatant storage occurs in the Consols Pit and BLC Pits.	-
Process Monitoring	L3.4.1	Table 3.4.1 in condition 3.4.1 has been amended to include monitoring of the tailings and supernatant elevations within the Waldon in-pit TSF. The management of supernatant elevations is one of the main strategies for managing the risk of supernatant discharges to groundwater. A risk assessment of this is contained in Appendix A. Following comments from the Licensee, Table 3.4.1 has also been amended to allow electrical conductivity and pH to be measured in the field and to allow for other non-direct means of measuring pit lake elevations if the lakes cannot be safely accessed.	Email comments received by Brendon McGillivray 23/08/2016
Ambient environmental quality monitoring	L3.5.1 L3.5.2	Following comments from the Licensee, Condition 3.5.1 (Tables 3.5.1 and 3.5.2) have been amended to clarify that bores are to be reported as dry if there is insufficient water available to take a representative standing water level sample. Condition 3.5.2 (Table 3.5.3) has been amended so that the pH limit applied to groundwater bores GWMB8 to GWMB11 is amended to less than 2. Monitoring has shown that pH levels have remained consistent but can decrease below a pH of 3 (the current limit). A limit of pH less than 2 is currently applied to bores GWMB1 to GWMB7. Therefore, the limit has been amended to be consistent across all bores monitored on the premises. The weak acid dissociable cyanide limit in Condition 3.5.2 (Table 3.5.3) has been amended from 0.5mg/L to 0.8mg/L to be consistent with groundwater emission limits applied to other	Email comments received by Brendon McGillivray 23/08/2016

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		licensed premises within the Goldfields region and to reflect the health criteria specified in the *Contaminated Sites Ground and Surface Water Chemical Screening Guidelines* (Department of Health, 2014).	
Reporting and Notification	L4.2.1	Table 4.2.1 in condition 4.2.1 has been updated to include the requirement for vegetation monitoring within the expected vegetation impact zone surrounding the Waldon in-pit TSF.	-
EPP related requirements – Meteorological monitoring	L5.3.1 L5.4.1	The Licensee has requested that the requirement to undertake meteorological monitoring at the MEX station is removed from the licence. The MEX station is part of the Kalgoorlie Air Monitoring Network (KAMN). This decision has been deferred pending further advice as to the impact of removing this station from the licence on the KAMN. This is to ensure that the requirements of the *Environmental Protection (Goldfields Residential Areas) (Sulfur Dioxide) Policy 2003* can continue to be met. At the time of issuing of this licence, this issue remains unresolved. The licence can be amended by DER at the time further advice is received if appropriate. If not, the Licensee will be informed of the decision and the reason why.	-

5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
16 August 2016	Proponent sent a copy of draft amended licence	DER received an email from Brendon McGillivray on 23/08/2016 requesting additional minor amendments and supporting information for the removal of category 85 from the licence, alteration of the WAD cyanide limit to be consistent with other DER licenses, and repeated request for removal of the MEX monitoring station. Administrative amendments were also requested.	All of the comments were approved and amendments made accordingly with the exception of the request to remove the MEX monitoring station in Conditions 5.3.1 and 5.4.1 (see Decision Table).

6 Risk Assessment

Note: This matrix is taken from the DER Corporate Policy Statement No. 07 - Operational Risk Management

Table 1: Emissions Risk Matrix

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

Appendix A

Waldon in-pit TSF

The Licensee submitted a design report for the proposed use of the Waldon Pit as an in-pit TSF - Northern Star Resources Limited Kanowna Belle Gold Min- Waldon In-Pit TSF Design Report (16 May 2016). This TSF is anticipated to provide additional tailings storage of up to 4.86Mtpa for a period of three years. The following considerations were incorporated into the design:

- Tailings in the form of slurry will be discharged sub-aerially via a single spigot located on the southern side of the TSF to facilitate compaction and drying;
- The tailings beach will have a 1% slope and an operational freeboard of 0.7m allowing for storage of rainfall from a 1:100 Annual Rainfall Incident of up to 242,070m^3;
- Water from the surface of the TSF will be removed during deposition to facilitate compaction and drying of the tailings;
- The water removal pump will be located on the northern side of the TSF to optimise supernatant recovery;
- Water will be recovered using a pontoon-mounted pump, and the recovered water will be piped back to the process plant for reuse via the Red Hill return water pond following cyanide destruction; and
- The Waldon in-pit TSF will remain a permanent feature of the landscape upon decommissioning, and the surface will be stabilised and rehabilitated.

As the Red Hill In-pit TSF approaches capacity, the Licensee is proposing to convert the Waldon Pit into an in-pit TSF. The works that will be undertaken as part of this amendment are the construction of pipelines and bunds, and the installation of pumps to transfer water between the pits. The use of Waldon Pit as an in-pit TSF has been facilitated by a previous licence amendment to allow the dewatering of supernatant stored in the pit and transfer to other disused pits on the premises.

Groundwater in the area is at a depth of approximately 30m and is naturally hypersaline and not suitable for supporting flora or fauna. The supernatant contains contaminants such as metals, metalloids, and cyanide at levels that may be toxic to flora. The only beneficial use for the water in the area is a process water supply for the processing of ore in mining operations. The current proposal has the potential to artificially elevate groundwater levels in the area which could impact on vegetation growth when groundwater reaches the root zone. The root zone of plant species typical of the Eastern Goldfields Region generally extends 6m below the surface. It is predicted that groundwater mounding will occur within 100m of the Waldon in-pit TSF for a period of up to two years following decommissioning of the TSF.

Information submitted in the application suggests that the inferred pre-mining groundwater level in the Waldon Pit area is approximately 330mAHD (approximately 30mbgl) and is thought to have been as high as 335mAHD (35mbgl) to the south of the pit.

The Licensee has provided a conceptual hydrogeological model for the Waldon Pit which is summarised below and shown in Figure 1.

- *If filled to the approximate pit crest, the maximum elevation of tailings and supernatant within the Waldon In-pit TSF will be ~ 356mAHD;*
- *The low hydraulic conductivity of the geology surrounding the Waldon pit will impede lateral and downward groundwater flow and seepage migration;*
- *Groundwater levels may rise within 6m of ground surface within 100m of the Waldon pit crest;*
- *Groundwater levels further than 100m from the pit crest are not predicted to rise to within 10m of ground surface;*

- *Post closure of the Waldon In-pit TSF, groundwater levels within 6m of the ground surface are predicted to decrease to background levels after approximately 2 years;*
- *If the Waldon Pit lake level rises above the surrounding regional water table, the pit will change from a groundwater sink to a groundwater source;*
- *Any potential groundwater movement can be minimised by keeping pit lake levels low.*
- *Existing monitoring locations are sufficient to ensure that any groundwater movement is identified.*
- *Monitoring data will be reviewed against the conceptual model on an annual basis to ensure any changes to groundwater are identified in a timely manner.*
- *Model predictions are comparable to those developed for the Red Hill In-pit TSF.*

The Department's review of the conceptual model used to predict the impacts of groundwater level changes determined that it has limited ability to predict the magnitude and extent of groundwater mounding. However, it was determined that the uncertainties could be managed through the existing groundwater monitoring and by water levels set to trigger management action below levels where environmental harm may occur to vegetation.

Other potential risks could result from discharges or spills from valves, pumps, and pipelines transferring the supernatant between the pits, resulting in contamination of the ground surface.

Emission Assessment

Emission: Migration of tailing supernatant into groundwater causing groundwater mounding, a rise in standing water levels above inferred pre-mining groundwater levels, and migratory flow of contaminants away from the pit area.
Impact: Mounding and migration of supernatant containing heavy metals, cyanide, and elevated salinity, resulting in an alteration of groundwater quality which could impact vegetation health if water levels rise into the root-zone (i.e. above 6mbgl).
Controls: The Licensee has determined the most effective way of minimising seepage from the facility is to minimise the amount of water or the lake elevation level within the TSF at any one time. The tailings and supernatant level are expected to reach 365mAHD which is approximately 35m above the pre-mining inferred background groundwater levels, and the Licensee predicts a potential vegetation impact zone of approximately 100m around the pit for a period of up to two years following decommissioning of the TSF. Vegetation monitoring surrounding the Red Hill In-pit TSF has not identified any significant decline of significant vegetation receptors within the zone that has been attributed to groundwater mounding. It is expected that the geology surrounding the Waldon in-pit TSF will offer a similar level of protection within the predicted impact zone. A minimum operational freeboard of 300mm (vertical height between the tailings beach and embankment crest) and beach freeboard of 200mm (vertical height between the 1:100 year ARI level and top of the tailings beach) is also proposed.

Risk Assessment
Consequence: Moderate
Likelihood: Possible
Risk Rating: Moderate

Regulatory Controls

Condition 1.3.3 (Table 1.3.1 premises operation) has been amended to allow the deposition of tailings into the Waldon in-pit TSF in accordance with the approved DMP Mining Proposal.

Condition 1.3.8 (premises operation) has also been amended to require the Licensee to extend the current vegetation monitoring program to include the potential impact zone from mounding predicted to occur from the deposition of tailings into the Waldon in-pit TSF.

Condition 3.4.1 (process monitoring) has been amended to include a limit on the maximum elevation of the Waldon in-pit TSF supernatant pond and tailings surface. This has been set at 365mAHD as identified through the hydrogeological assessment. The monitoring and surveying requirements have also been updated to reflect the use of the Waldon Pit as an in-pit TSF and not for supernatant water storage.

Condition 3.5.1 (Table 3.5.2 Monitoring of ambient groundwater quality) has been amended to remove the SWL limit as applied to WBH1S, WBH2S and WBH4D as tailings supernatant will be continually removed from the Waldon Pit, and short term mounding is predicted to occur within this impact area. Existing groundwater monitoring conditions are protective and will identify any seepage that occurs from the Waldon Pit and potential impacts on groundwater water quality. This will enable the conceptual hydrogeological model to be validated on an annual basis, and adjustments made accordingly to ensure that impacts on vegetation receptors are mitigated.

Reporting and notification requirements have been updated to include the limits and additional monitoring described above.

Residual Risk
Consequence: Moderate
Likelihood: Possible
Residual Risk Rating: Moderate

Emission: Discharge of supernatant water and tailings slurry from leak or rupture of the transfer pipelines.
Impact: Contamination of ground and impact on local vegetation.
Controls: The Licensee has proposed the following controls:

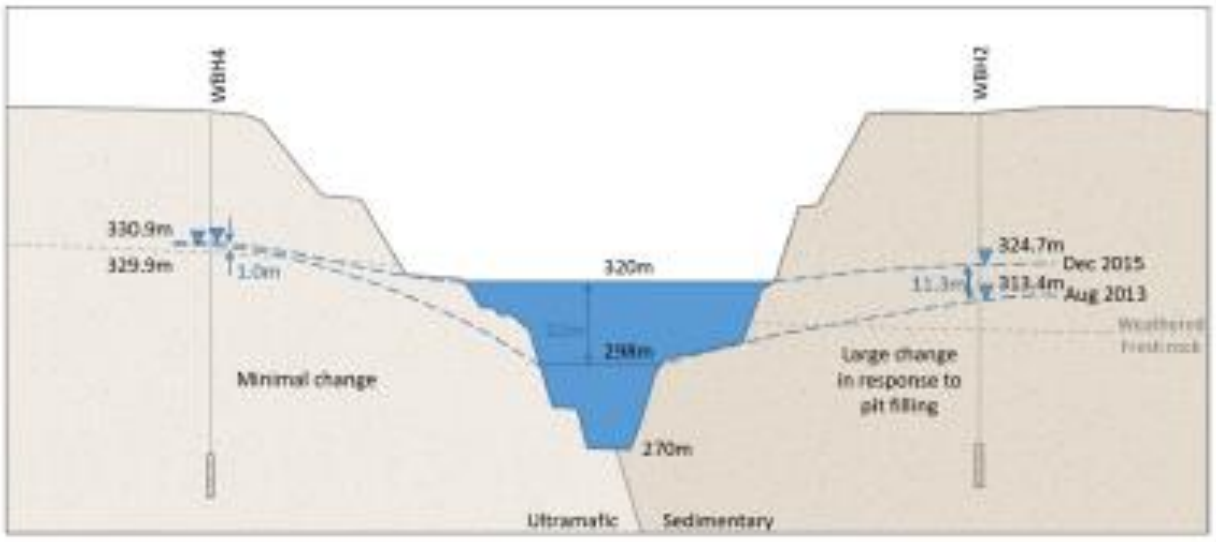
- Keep transfer pipelines above ground for routine visual inspections; and
- Run pipelines within bunds to contain any leaks.

Risk Assessment
Consequence: Moderate
Likelihood: Possible
Risk Rating: Moderate

Regulatory controls
Existing condition 1.3.1 applies to all pipelines conveying supernatant and tailings slurry and requires them to be equipped with telemetry systems and pressure sensors along pipelines to allow the detection of leaks and failures, automatic cut-outs in the event of a pipe failure, and secondary containment.

Residual Risk
Consequence: Moderate
Likelihood: Unlikely
Residual Risk Rating: Moderate

Figure 1: Conceptual hydrogeological model for the Waldon Pit



Source: *Report on Waldon In-Pit TSF Hydrogeological Review* (Australasian Groundwater and Environmental Consultants Pty Ltd, April 2016)