



Licence Number	L4597/1988/14
Licence Holder	Tianye SXO Gold Mining Pty Ltd
ACN	161 566 490
Registered business address	Level 3, 66 Kings Park Road WEST PERTH WA 6005
DWER File Number	DER2014/000887-1
Duration	20/09/2013 to 25/09/2022
Date of amendment	21/11/2019
Premises details	Minjar-SXO – Marvel Loch Mine MARVEL LOCH WA 6426

Legal description -

Mining Leases M77/7, M77/8, M77/10, M77/26, M77/31, M77/86, M77/109, M77/112, M77/113, M77/114, M77/137, M77/138, M77/175, M77/193, M77/225, M77/239, M77/251, M77/347, M77/352, M77/380, M77/424, M77/431, M77/525, M77/554, M77/555, M77/593, M77/631, M77/638, M77/640, M77/660, M77/668, M77/702, M77/745, M77/721, M77/746, M77/747, M77/790, M77/811, M77/969, M77/977, and M77/1036, Miscellaneous Licences L77/87, L77/91, L77/112, L77/113, L77/114, L77/126, L77/128, L77/145, L77/162, L77/167, L77/173, L77/281, P77/3792, P77/3793 and General Purpose Leases G77/1-3

As defined in Schedule 1

Prescribed premises categories

Prescribed premises category description (Schedule 1, <i>Environmental Protection Regulations 1987</i>)	Assessed production capacity
Category 5: Processing or beneficiation of metallic or non-metallic ore.	2,600,000 tonnes per annual period.
Category 6: Mine dewatering.	6,000,000 tonnes per annual period.
Category 64: Class II or III putrescible landfill.	2 000 tonnes per annual period.
Category 57: Used tyre storage.	200 tyres.



This Licence is granted to the Licence Holder, subject to the following conditions, as amended on 21 November 2019, by:

Tim Gentle

Manager – Resource Industries

Regulatory Services

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Contents

Contents	3
Introduction	3
Licence conditions	7
2 Monitoring	14
3 Information	16
Schedule 1: Maps	19
Schedule 2: Reporting & notification forms	27

Introduction

This Introduction is not part of the Licence conditions.

DWER's industry licensing role

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

DWER has responsibilities under Part V of the *Environmental Protection Act 1986* (the Act) for the licensing of prescribed premises. Through this process DWER works with the business owners, community, consultants, industry and other representatives to prevent, control and abate pollution and environmental harm to conserve and protect the environment. DWER 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

On 8 December 2017 the Licence was transferred from Hanking Gold Mining Pty Ltd to Tianye SXO Gold Mining Pty Ltd for the Southern Cross Operations which include the Marvel Loch Mine, Yilgarn Star, Great Victoria Gold, Hercules and Southern Star, which are all linked to the Marvel Loch site through haul roads and pipeline infrastructure. Mining in the Marvel Loch area dates back to the early 1900s. The surrounding land uses including wheat and other cereal crops.

The mine site is 30 kilometres (km) south of the town of Southern Cross and 360 km east of Perth. Southern Cross has an annual average rainfall of 280 mm. Annual evaporation is estimated to be 2 635 mm per year. A 1 in 100-year storm event will generate approximately 166 mm of rainfall. The groundwater is hypersaline - TDS in the range of 40 000 mg/L to 160 000 mg/L with a depth greater than 10 m below the surface.

The mine is an open cut and underground mine, a processing plant, a tailings storage facility (TSF), landfill, and associated workshops and offices. The mine is dewatered to either the Jaccoletti pit or the Nevoria pit which itself can be dewatered to the Yilgarn Star pit.

Gold mineralisation at Marvel Loch extends across a 1.3 km strike length and has been identified to depths of more than 700 metres below surface level. The ore body comprises multiple lodes. The plant has been in operation for more than 15 years and has a production capacity of 2.4 million tonnes per annum based on a conventional carbon-in-leach circuit. Infrastructure is aging and has occasionally failed.

Emissions mainly relate to dewatering hypersaline water to mine pits and the risk from spills from the processing plant and pipelines. Discharge of tailings from the processing plant to the TSF, freeboard in the TSF and TSF integrity require management to minimise environmental risk. All have the potential to impact vegetation via direct contact, or rising groundwater levels, mounding of the water table and death of vegetation. A network of monitoring bores has been established to monitor impacts. Groundwater monitoring has indicated mounding around the TSF and seepage recovery is critical to ensure protection of native vegetation. Noise and dust may be an issue as the mine is adjacent to the town of Marvel Loch. The Premises abuts residential areas of the town site.

A maintenance and improvement schedule for the processing plant was developed in 2014 with planned crushing and milling commencing in late November 2014.

The licences and works approvals issued for the Premises since 24/06/2010.

Instrument log		
Instrument	Issued	Description
W4732/2010/1	24/6/2010	Works Approval for TSF lift
L4597/1988/13	16/05/2013	Transfer of licence to Hanking Gold Mining Pty Ltd
W4732/2010/2	05/09/2013	Works Approval amendment to extend period of instrument relating to TSF lift.
L4597/1988/14	19/09/2013	Licence reissue in REFIRE format
L4597/1988/14	26/03/2015	Licence amendment to remove requirement for settling ponds from the Licence, to include the construction of the Nevoria landfill and to remove monitoring related to the zone of influence.
W5818/2015/1	21/05/2015	Works Approval to construct dewatering infrastructure and 3 km pipeline from Axehandle deposit to Glendower pit.
L4597/1988/14	07/01/2016	Licence amendment to include the Axehandle dewatering operations, monitoring and reporting requirements plus discharge points within the premises boundary plus remove the improvement condition and Nevoria landfill compliance condition as these have been satisfactorily completed.
L4597/1988/14	28/04/2016	Licence amendment to include 5km pipeline from Glendower to Triad.
L4597/1988/14	29/04/2016	Department initiated amendment in accordance with section 59(1)(k) of the <i>Environmental Protection Act 1986</i> to amend the duration of the licence date month year.
L4597/1988/14	8/02/2017	Amendment Notice 1: the licensee applied for an amendment to licence to include the Axehandle Pit as an approved location to undertake disposal under Category 64 - Class II or III putrescible landfill.
L4597/1988/14	8/12/2017	Amendment Notice 2 – an amendment to; <ul style="list-style-type: none"> • Change Licence Holder's legal entity from 'Hanking Gold Mining Pty Ltd' to 'Tianye SXO Gold Mining Pty Ltd'; • Increasing the Category 6 Mine dewatering design capacity from 4.8 million tonnes to 6 million tonnes per annual period; • Inclusion of Category 57: Used tyre storage; • Inclusion of an additional location under Category 64: Class II or II putrescible landfill site at the Transvaal (Aquarius) pit; and • Inclusion of conditions for the construction of the Tailings Storage Facility 3 (TSF3).

L4597/1988/14	18/04/2018	Amendment Notice 3: - an amendment to; <ul style="list-style-type: none"> ▪ Relocate the Aquarius dewatering pipeline route that was previously approved under Amendment Notice 2; and ▪ Addition of mining tenements M77/251, M77/593 and L77/87. To premises boundary description.
L4597/1988/14	DRAFT	Amendment to allow the discharge of mine dewater to Marvel Loch pit. Also to amalgamate Amendment Notices 1 – 3 into the Licence document to produce a single instrument.

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:

‘AACR’ means Annual Audit Compliance Report, a report in a format approved by the CEO as presented by the Licensee or as specified by the CEO from time to time and published on the Department’s website and a copy of the AACR form is accessible from the DWER website.

‘Act’ means the *Environmental Protection Act 1986*;

‘AER’ means Annual Environmental Report;

‘AHD’ means the Australian height datum;

‘Annual Period’ means the inclusive period from 1 October until 30 September in the following year;

‘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 5667.4’ means the Australian Standard AS/NZS 5667.4 *Water Quality – Sampling – Guidance on sampling from lakes, natural and man-made*;

‘AS/NZS 5667.10’ means the Australian Standard AS/NZS 5667.10 *Water Quality – Sampling – Guidance on sampling of waste waters*;

‘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 Water and Environmental Regulation;

‘CEO’ for the purpose of correspondence means;

Director General

Department Administering the *Environmental Protection Act 1986*

Locked Bag 10

JOONDALUP DC WA 6027

Telephone: (08) 6367 7000

Facsimile: (08) 6367 7001

Email: info@dwer.wa.gov.au

‘controlled waste’ has the definition in *Environmental Protection (Controlled Waste) Regulations 2004*;

‘Department’ means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Division 3 Part V of the EP Act,

‘DWER’ means Department of Water and Environmental Regulation.

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

‘hardstand’ means a surface with a permeability of 10^{-9} metres/second or less;

‘HDPE’ means High-density Polyethylene;

‘Licence’ means this Licence numbered L4597/1988/14 and issued under the Act;

‘License Holder’ means the person or organisation named as Licence Holder on page 1 of the Licence;

‘m³’ means cubic metres;

‘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;

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

‘quarterly’ means the 4 inclusive periods from 1 October to 31 December and in the following year, 1 January to 31 March, 1 April to 30 June and from 1 July to 30 September;

‘rehabilitation’ means the completion of the engineering of a landfill cell and includes capping and/or final cover;

‘Schedule 1’ means Schedule 1 of this Licence unless otherwise stated;

‘Schedule 2’ means Schedule 2 of this Licence unless otherwise stated;

‘six monthly’ means the 2 inclusive periods from 1 October to 31 March in the following year and then from 1 April to 30 September;

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

‘structural integrity assessment’ means conducting an inspection of the TSF, evaporation ponds and similar impoundments to ensure their structural integrity meets the requirements of the Western Australian Department of Mines and Petroleum and the ANCOLD 2003 Dam Safety Management Guidelines;

‘SWL’ means standing water level;

‘TSF’ means Tailing Storage Facility - engineered containment pond or dam used to store tailings; and

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

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 Premises operation

1.2.1 The Licence Holder shall ensure that all pipelines containing saline water, tails, or process water are either:

- equipped with telemetry systems and pressure sensors along pipeline routes to allow the detection of leaks and failures;
- equipped with automatic cut-outs in the event of a pipe failure; or
- provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections.

1.2.2 The Licence Holder shall ensure that tailings, decant water and effluent are only discharged into containment cells, dams or ponds, which are provided with the infrastructure detailed in Table 1.2.1.

Table 1.2.1 Containment infrastructure		
Containment cell or dam number(s)	Material	Infrastructure requirements
TSF 1, 2 and 3	Tailings	Lined with in-situ clay to limit seepage to groundwater
Decant Water Ponds 3 and 4	Decant Water	Lined with 1mm HDPE to achieve a permeability of at least $<10^{-9}$ m/s or equivalent
Dewater discharge pits (Marvel Loch Pit, Glendower Pit, Jaccoletti Pit, Nevoria Pit, Fraser's Pit, Triad Pit, Polaris South Pit and Yilgarn Star pit).	Mine dewater	Bedrock
Bioremediation pad	Hydrocarbon contaminated waste	Ensure soil is bioremediated by: <ul style="list-style-type: none"> maintaining a suitable soil thickness; maintaining an appropriate moisture content and nutrient level within the soil which sustains biological activity; and at least quarterly soil aeration.
Turkeys nest dewater transfer dams (at Nevoria, Yilgarn Star and Cornishman)	Mine Dewater	Lined with HDPE to achieve a permeability of at least $<10^{-9}$ m/s or equivalent

1.2.3 The Licence Holder shall:

- undertake inspections as detailed in Table 1.2.2;

- (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.

Table 1.2.2: Inspection of infrastructure		
Scope of inspection	Type of inspection	Frequency of inspection*
Tailings pipelines	Visual condition and leak assessment	Daily
Return water lines		
Fuel storage areas, ore treatment plant and workshop	Visual condition, leak assessment and spills	Daily
Borefields and pump stations	Visual integrity	Daily
Mine De-water pipelines	Visual condition and leak assessment	Daily
Dewater discharge pits (Marvel Loch Pit, Glendower Pit, Jaccoletti Pit, Nevoria Pit, Fraser's Pit, Triad Pit, Polaris South Pit and Yilgarn Star Pit)	Visual to confirm required freeboard is available.	Daily
TSF Embankment freeboard	Visual to confirm required freeboard is available	Daily and after a rain event
Native vegetation health around infrastructure	Visual health assessment	Weekly
TSF Embankment	Structural integrity assessment	Annual
Dewater transfer turkeys nests at Nevoria, Yilgarn Star and Cornishman.	Visual to confirm required freeboard is available.	Daily

*when in care and maintenance inspections can be monthly.

- 1.2.4 The Licence Holder shall maintain a minimum 300mm embankment freeboard on the settling ponds or storage facilities or ensure that the facility is designed to hold any inflow received as a result of a 1:100 year, 72-hour duration storm event, for at least 72 hours.
- 1.2.5 The Licence Holder shall install and maintain protective bunding, skimmers, silt traps, neutralisation pits, fuel and oil traps, drains and /or sealed collection sumps around the process plant, maintenance workshops and laboratory to enable recovery of spillages and protection of surrounding soils and groundwater.
- 1.2.6 The Licence Holder shall ensure that collected material from the sumps detailed in condition 1.2.5 are disposed off site in accordance with *the Environmental Protection (Controlled Waste) Regulations 2004*.
- 1.2.7 The Licence Holder shall manage TSF's such that:
 - (a) a minimum top of embankment freeboard of 300 mm is maintained across the full surface of the TSF;
 - (b) a seepage collection and recovery system is provided and used to capture seepage from the TSF; and
 - (c) seepage is returned to the TSF or the process.
- 1.2.8 The Licence Holder shall, upon becoming aware that depth to groundwater levels in monitoring bores around the TSF are less than 6.0mbgl, within six months, design and implement a Groundwater Recovery Plan.

- 1.2.9 The Licence Holder shall ensure that the Groundwater Recovery Plan required by condition 1.2.8 includes but is not limited to:
- (i) Notification to the CEO of when and in how many bores the groundwater level could not be met;
 - (ii) Any environmental impacts observed;
 - (iii) Strategies to achieve the groundwater level, including:
 - (iv) Any additional recovery bores or trenches required;
 - (v) Maximising performance of existing recovery bores;
 - (vi) Frequency of groundwater level monitoring;
 - (vii) Minimising the normal operating supernatant pool area on the TSF;
 - (viii) Frequency and scope of groundwater quality monitoring;
 - (ix) Predicted increases in groundwater recovery;
 - (x) Predicted timeframes to achieve the groundwater level;
 - (xi) Strategies to ensure the level will be met in the future; and
 - (xii) Establishing and implementing appropriate vegetation monitoring.
- 1.2.10 The Licence Holder shall undertake an annual water balance for the TSF. The water balance shall as a minimum consider the following:
- (a) site rainfall;
 - (b) evaporation;
 - (c) decant water recovery volumes;
 - (d) seepage recovery volumes; and
 - (e) volumes of tailings deposited.
- 1.2.11 The Licence Holder shall collect waste lubricants, hydraulic fluids and spent radiator coolant/inhibitors in holding tanks in bunded areas for subsequent disposal off-site or recycling.
- 1.2.12 The Licence Holder shall ensure that vehicle wash down areas are equipped with fuel/oil traps and provisions to ensure detergent, fuel and solvent containing waters are contained and disposed of via an oil separator and a licensed Controlled Waste Carrier.
- 1.2.13 The Licence Holder shall only accept waste on to the Landfill for burial if:
- (a) it is of a type listed in Table 1.2.4;
 - (b) the quantity accepted is below any quantity limit listed in Table 1.2.4; and
 - (c) it meets any specification listed in Table 1.2.4.

Table 1.2.4. Waste acceptance		
Waste type	Quantity limit tonnes/ annual period	Specification ¹
Clean fill	2 000 tonnes for all waste types	None Specified
Putrescible Waste		None Specified
Inert Waste Type 1		None Specified
Inert Waste Type 2		Tyres and plastic only

Note 1: Additional requirements for the acceptance of controlled waste (including asbestos and tyres) are set out in the *Environmental Protection (Controlled Waste) Regulations 2004*.

- 1.2.14 The Licence Holder shall ensure waste that does not comply with condition 1.2.13 is removed from the Premises to an appropriately authorised facility as soon as practicable.
- 1.2.15 The Licence Holder shall ensure that wastes accepted onto the Premises are only subjected to the processes set out in Table 1.2.5 and in accordance with any process limits described in that Table.

Table 1.2.5: Waste processing		
Waste type	Process(es)	Process limits ¹
All Waste	Handling and disposal of waste by land filling	(i) Disposal of waste by land filling shall only take place within the Marvel Loch or Axehandle mine landfill shown on the Premises Map in Schedule 1; (ii) The separation distance between the base of the landfill and the highest groundwater level shall not be less than 2m; (iii) waste is disposed of in a defined trench or within an area enclosed by earthen bunds; (iv) the tipping area is restricted to a maximum linear length of 30 metres; (v) the tipping area is no greater than 2 metres in height; and (vi) there is a fire break of at least 3 metres around the boundary of the site.
Inert Waste Type 1	Handling and disposal of waste by land filling	None specified
Inert Waste Type 2	Handling and disposal of waste by land filling	To be stored in piles of up to 100 units with a 6m separation distance between piles. Tyres shall only be landfilled: (i) in a designated disposal area in the landfill; (ii) in batches separated from each other by at least 100mm of soil and each consisting of not more than 40 cubic metres of tyres reduced to pieces; or (iii) in batches separated from each other by at least 100mm of soil and each consisting of not more than 1000 whole tyres.
Putrescible Waste		None specified
Clean Fill		None specified
Depth to ground water	Construction of new cell	Depth to groundwater must be at least two metres from the base of the landfill

Note 1: Requirements for land filling tyres are set out in Part 6 of the *Environmental Protection Regulations 1987*.

- 1.2.16 The Licence Holder shall manage the land filling activities to ensure:
- waste is levelled and compacted as soon as practicable after it is discharged;
 - waste is placed and compacted to ensure all faces are stable and capable of retaining restoration material;
 - rehabilitation of a cell or phase takes place within 6 months after disposal in that cell or phase has been completed.
- 1.2.17 The Licence Holder shall ensure that cover is applied and maintained on landfilled wastes in accordance with Table 1.2.6 and that sufficient stockpiles of cover are maintained on site at all times.

Table 1.2.6: Cover requirements			
Waste Type	Material	Depth	Timescales
Inert Waste Type 1	No cover required		

Inert Waste Type 2	Type 1 Inert waste, clean fill or soil Clean fill, subsoil	100mm	By the end of the working week in which the waste was deposited.
All other wastes		Final cover must be > 500 mm	Plastic waste with the potential to become windblown shall be covered as soon as practicable after deposit.
		150mm	Continuous cover techniques, or a minimum of weekly

Note 1: Additional requirements for the covering of tyres are set out in Part 6 of the *Environmental Protection Regulations 1987*.

- 1.2.18 The Licence Holder shall:
- Implement security measures at the landfill sites to prevent unauthorised access to the site;
 - Undertake regular inspections of all security measures and repair damage; and
 - Ensure the gates are closed and locked when the site is closed.
- 1.2.19 The Licence Holder shall ensure that windblown waste is collected at least on a weekly basis and returned to the active tipping area.
- 1.2.20 The Licence Holder shall not burn or allow the burning of any waste on the landfill.
- 1.2.21 The Licence Holder shall ensure that any unauthorised fire on site is extinguished as soon as possible.
- 1.2.22 The Licence Holder shall ensure that there are adequate water supplies and procedures in place at the premises so that any unauthorised fire is promptly extinguished.
- 1.2.23 The Licence Holder shall submit a water balance for the Marvel Loch pit by 29 February 2020. The water balance shall as a minimum include the following:
- Expected dewatering rates of Jaccoletti pit;
 - Current and projected Nevoria pit dewatering rates;
 - Expected mill supply requirements; and
 - An analysis to determine whether Marvel Loch Pit has the capacity to store dewater from Jaccoletti pit and Nevoria underground on a long term basis.
- 1.2.24 The licence holder must construct and/or install the infrastructure listed in Table 1.2.7, in accordance with;
- the corresponding design and construction requirement; and
 - at the corresponding infrastructure location.
- as set out in Table 1.2.7.

Table 1.2.7: Design and construction requirements

Infrastructure	Design and construction requirement / installation requirement	Infrastructure location
Dewatering pipeline and pump infrastructure from Jaccoletti pit to Marvel Loch pit.	Installation of pump shut-off communications system to ensure dewatering pumps are shut down in the event of a leak being detected along the pipeline route.	See Schedule 1: Map of dewatering pipelines.
	Refurbishment of spill containment	

	sumps and bunding along the pipeline route to ensure they are adequately sized to contain the maximum potential leak volume generated within the dewatering pumps shut-off period.	
--	--	--

1.2.25 The licence holder must within 30 days of each item of infrastructure required by condition 1.2.24 being constructed:

- (a) undertake an audit of their compliance with the requirements of condition 1.2.12; and
- (b) prepare and submit to the CEO an audit report on that compliance.

1.2.26 The report required by condition 1.2.25, must:

- (a) be certified by a qualified professional engineer that each item of infrastructure listed in Table 1.2.7 meets the corresponding specifications and at the locations set out in Table 1.2.7 and has been constructed with no material defects; and
- (b) be signed by a person authorised to represent the licence holder and contain the printed name and position of that person within the company.

2 Monitoring

2.1 General monitoring

2.1.1 The Licence Holder shall ensure that:

- (a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;
- (b) all groundwater sampling is conducted in accordance with AS/NZS 5667.11;
- (c) all samples are submitted to a laboratory with current NATA accreditation for the parameters to be measured unless indicated otherwise in relevant table.

2.1.2 The Licence Holder shall ensure that :

- (a) monthly monitoring is undertaken at least 15 days apart;
- (b) quarterly monitoring is undertaken at least 45 days apart;
- (c) six monthly monitoring is undertaken at least 5 months apart; and
- (d) annual monitoring is undertaken at least 9 months apart.

2.1.3 The Licence Holder 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.

2.1.4 The Licence Holder 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.

2.2 Monitoring of point source emissions to land

2.2.1 The Licence Holder shall undertake the monitoring in Table 2.2.1 according to the specifications in that table.

Table 2.2.1: Monitoring of point source emissions to land			
Emission point reference	Parameter	Units	Frequency
Mine dewatering discharge points ML, F, G, J, N, T, P & Y.	Volumetric flow rate	L/s	monthly
	S; As; Cr; Co; Zn; Cu; Na; Cl; Al; Fe; Mg; Ca; K; Mn; Ni; Se; SO ₄ ²⁻ and HCO ₃ ⁻ .	mg/L	Annually
	TSS (Total suspended solids) and TDS (Total dissolved solids)	mg/L	Six monthly
	pH	N/A	Six monthly

2.3 Process monitoring

2.3.1 The Licence Holder shall undertake the monitoring specified in Table 2.3.1 according to the specifications of the table.

Table 2.3.1: Process monitoring					
Monitoring point reference	Process description	Parameter	Units	Frequency	Method
-	-	Volumes of tailings deposited into the TSF	m ³	Continuous	None specified
-	-	Volumes of water recovered from the TSF	m ³	Continuous	None specified
-	-	Phreatic surface levels within TSF embankments	mAHD	Monthly	None specified
-	-	Volumes of seepage recovered	m ³	Continuous	None specified
-	-	Volumes of ore processed	m ³	Annual period	None specified
Mine dewatering discharge points ML, F, G, J, N, T, P & Y	Mine dewatering	Cumulative volumes of mine dewater discharged to each pit.	m ³	Monthly	None specified
Landfill	Putrescible landfill site	Volumes of waste disposed	tonnes	Monthly	None specified

2.4 Ambient environmental quality monitoring

2.4.1 The Licence Holder shall undertake the monitoring in Table 2.4.1 according to the specifications in that table.

Table 2.4.1: Monitoring of ambient water quality					
Monitoring point reference	Parameter	Limit	Units	Averaging period	Frequency
MB 94 D1 MB 94 G1	Standing water level	Greater than 4m	mbgl	Spot sample	Quarterly
MB 94 F1 MB 94 E1	Standing water level	-			
MB 94 D1 MB 94 F1 MB 94 G1 MB 94 E1	pH*		N/A	Spot sample	Quarterly
	Total Dissolved Solids (TDS); and Weak Acid Dissociable Cyanide		mg/L		Quarterly

Table 2.4.1: Monitoring of ambient water quality					
Monitoring point reference	Parameter	Limit	Units	Averaging period	Frequency
	TSS; Cu; Na; Cl; Al; Cd; Fe; Mg; Ca; K; Mn; Ni; Se; As; Zn; Cr; Co; SO ₄ ²⁻ and HCO ₃ ⁻		mg/L		Six monthly
MB 94 B1	Standing water level ¹	Greater than 4m	mbgl	Spot sample	Quarterly
	pH [*]	Greater than 6 but less than 9		Spot sample	Quarterly
	Weak Acid Dissociable Cyanide	Less than 0.5	mg/L	Spot sample	Quarterly
PZ 99 B1; PZ 99 D1; PZ 99 E1; PZ 99 F1; PZ 99 G1; TSF 1; TSF 2; TSF 3; TSF 4; TSF 5; TSF 6; TSF 7; TSF 8; TSF 9.	Standing water level	Greater than 4m	mbgl	Spot sample	Monthly

* These parameters should be measured and recorded in the field to ensure representativeness. Field samples are to be reported as per condition 3.2.1. An exemption from NATA laboratory analysis is allowed given geographical remoteness of the sample site and short holding time of the parameter.

Note1:SWL shall be determined prior to collection of all other water samples.

3 Information

3.1 Records

3.1.1 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 3.1.1(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.

3.1.2 The Licence Holder 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.

- 3.1.3 The Licence Holder 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.
- 3.1.4 The Licence Holder 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.

3.2 Reporting

- 3.1.3 The Licence Holder shall submit to the CEO an Annual Environmental Report within 28 calendar days after the end of the annual period. The report shall contain the information listed in Table 3.2.1 in the format or form specified in that table.

Table 3.2.1: Annual Environmental Report		
Condition or table (if relevant)	Parameter	Format or form ¹
-	Summary of any failure or malfunction of any pollution control equipment or any incidents that have occurred during the year and any action taken	None specified
3.1.3	Compliance	Annual Audit Compliance Report (AACR)
3.1.4	Complaints summary	None specified
Table 1.2.2	Embankment structural integrity assessment	None specified
1.2.11	TSF water balance	None specified
Table 2.2.1	Monitoring of point source emissions to land	None specified
-	Monitoring of inputs and outputs	None specified
Table 2.3.1	Process Monitoring	None specified
Table 2.4.1	Monitoring of ambient water quality	None specified

Note 1: Forms are in Schedule 2

- 3.1.3 The Licence Holder shall ensure that the Annual Environmental Report also contains an assessment of the information contained within the report against previous monitoring results and Licence limits.

3.3 Notification

- 3.3.1 The Licence Holder shall ensure that the parameters listed in Table 3.3.1 are notified to the CEO in accordance with the notification requirements of the table.

Table 3.3.1: Notification requirements			
Condition or table	Parameter	Notification requirement ¹	Format or form ²
2.1.4	Calibration report	As soon as practicable.	None specified
1.2.9	Groundwater Recovery Plan	Within 30 calendar days of completion.	None specified

1.2.22	Unauthorised fire at landfill	Within 14 calendar days	None specified
Tables 1.2.3, 1.2.4 & 2.4.1 Condition 1.2.4	Breach of any limit specified in the Licence	Part A: As soon as practicable but no later than 5pm of the next usual working day.	N1
-	Any failure or malfunction of any pollution control equipment or any incident which has caused, is causing or may cause pollution	Part B: As soon as practicable.	

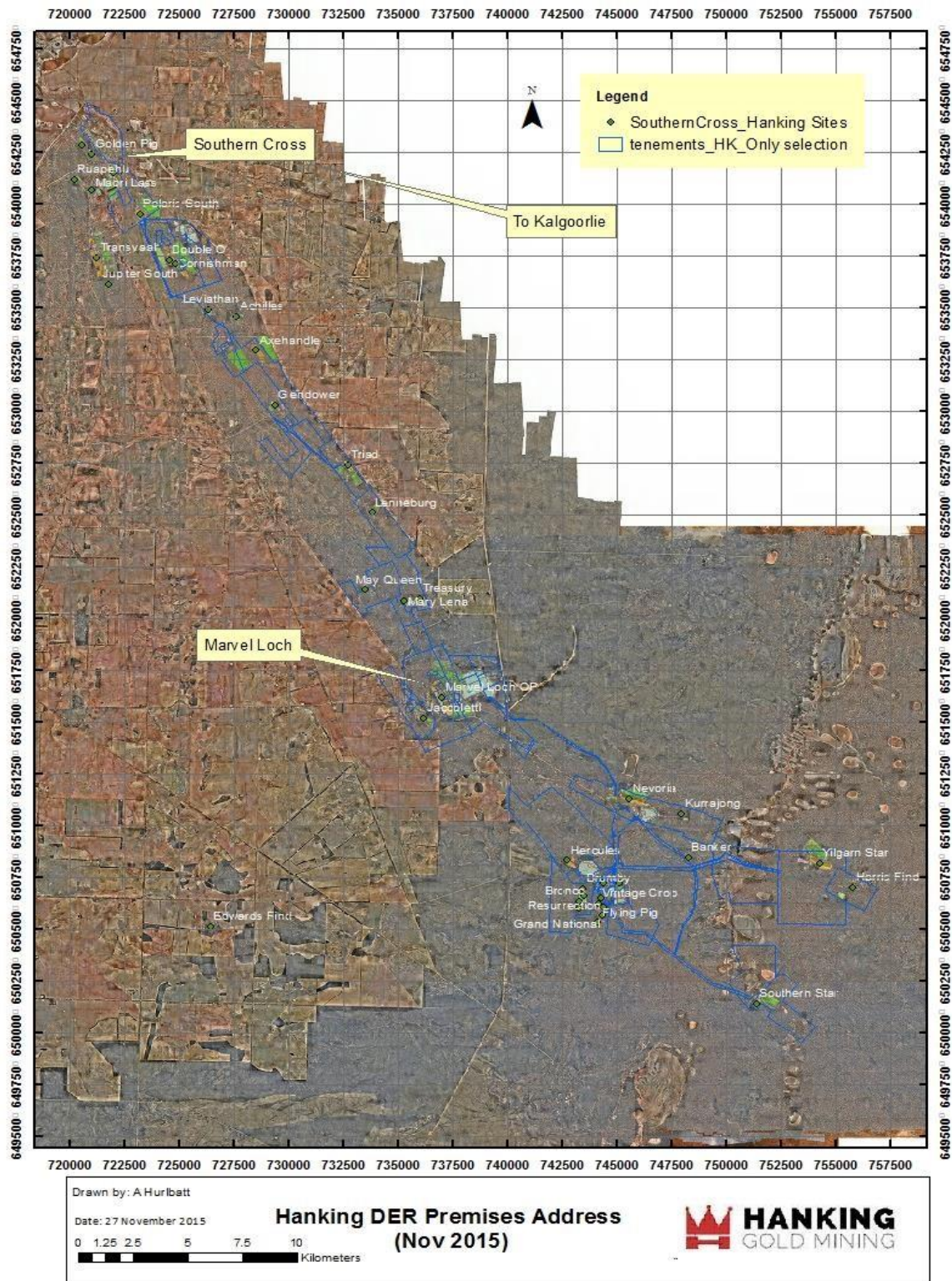
Note 1: Notification requirements in the Licence shall not negate the requirement to comply with s72 of the Act

Note 2: Forms are in Schedule 2

Schedule 1: Maps

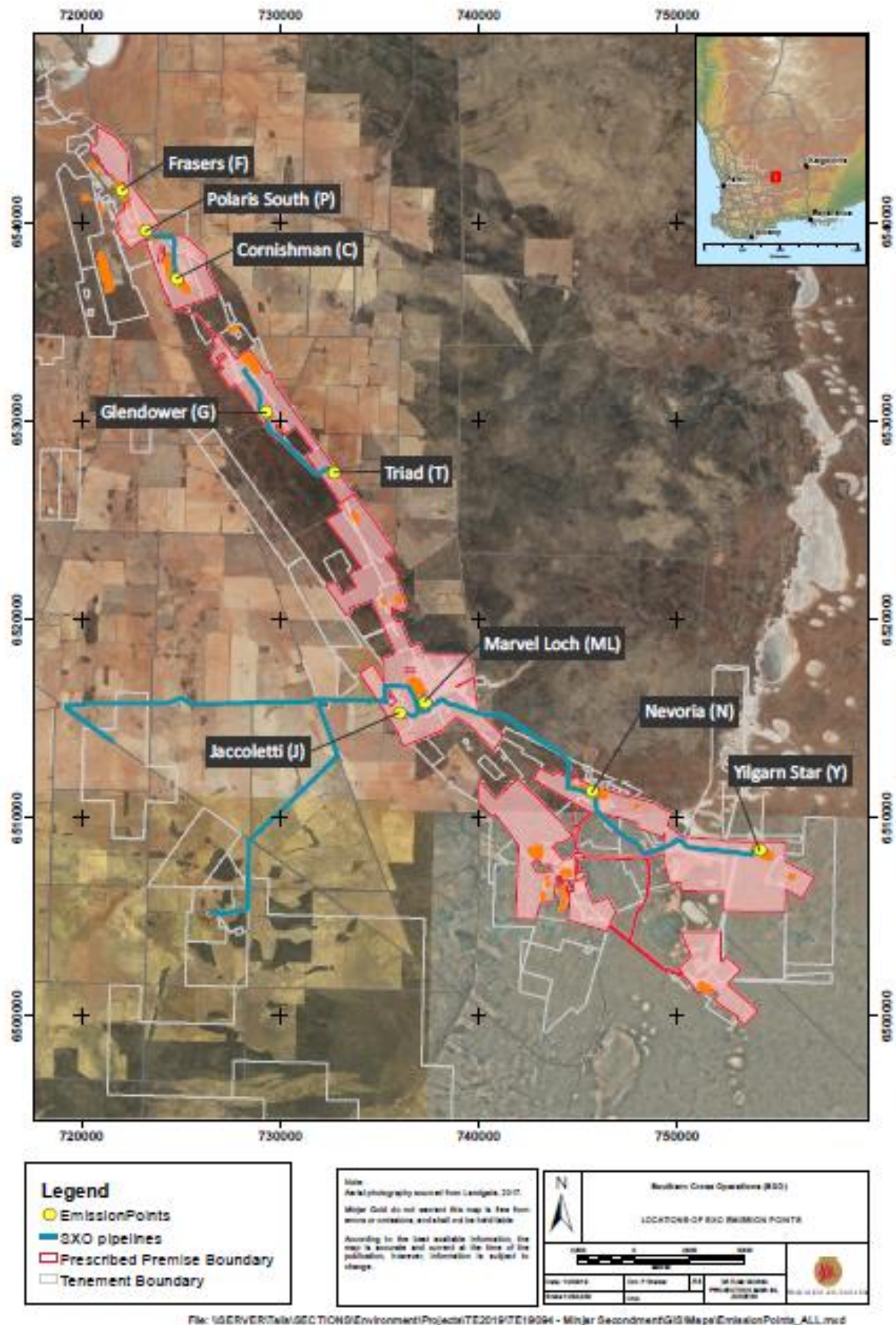
Premises map

The Premises is shown in the maps below. The blue line depicts the Premises boundary



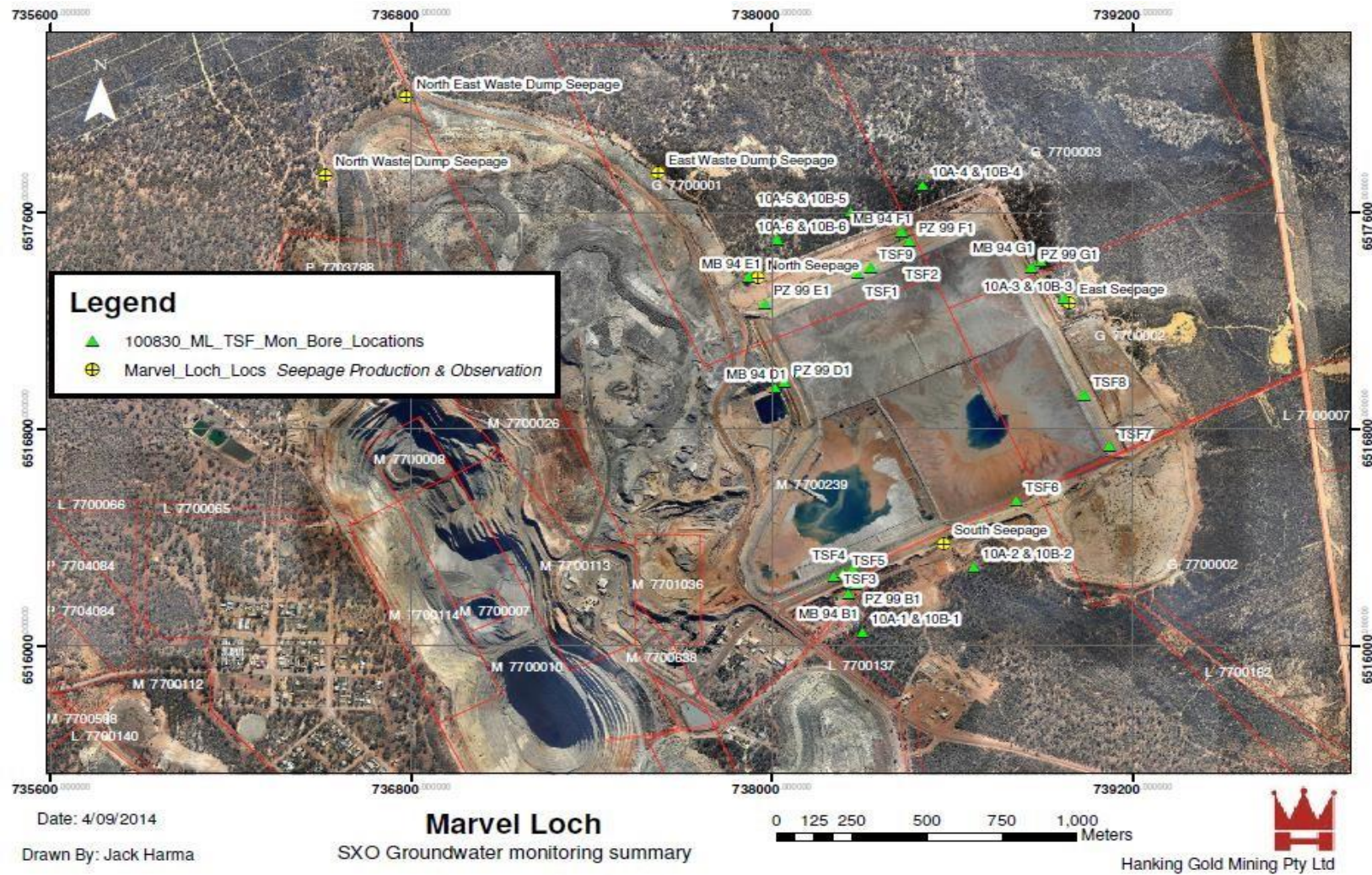
Map of emission points

The location of the emission points defined in Table 2.2.1 are shown below.



Map of monitoring location

The locations of the monitoring points defined in Tables 2.4.1 are shown below.



Map of landfill locations

The location of the Nevoria landfill is shown below.

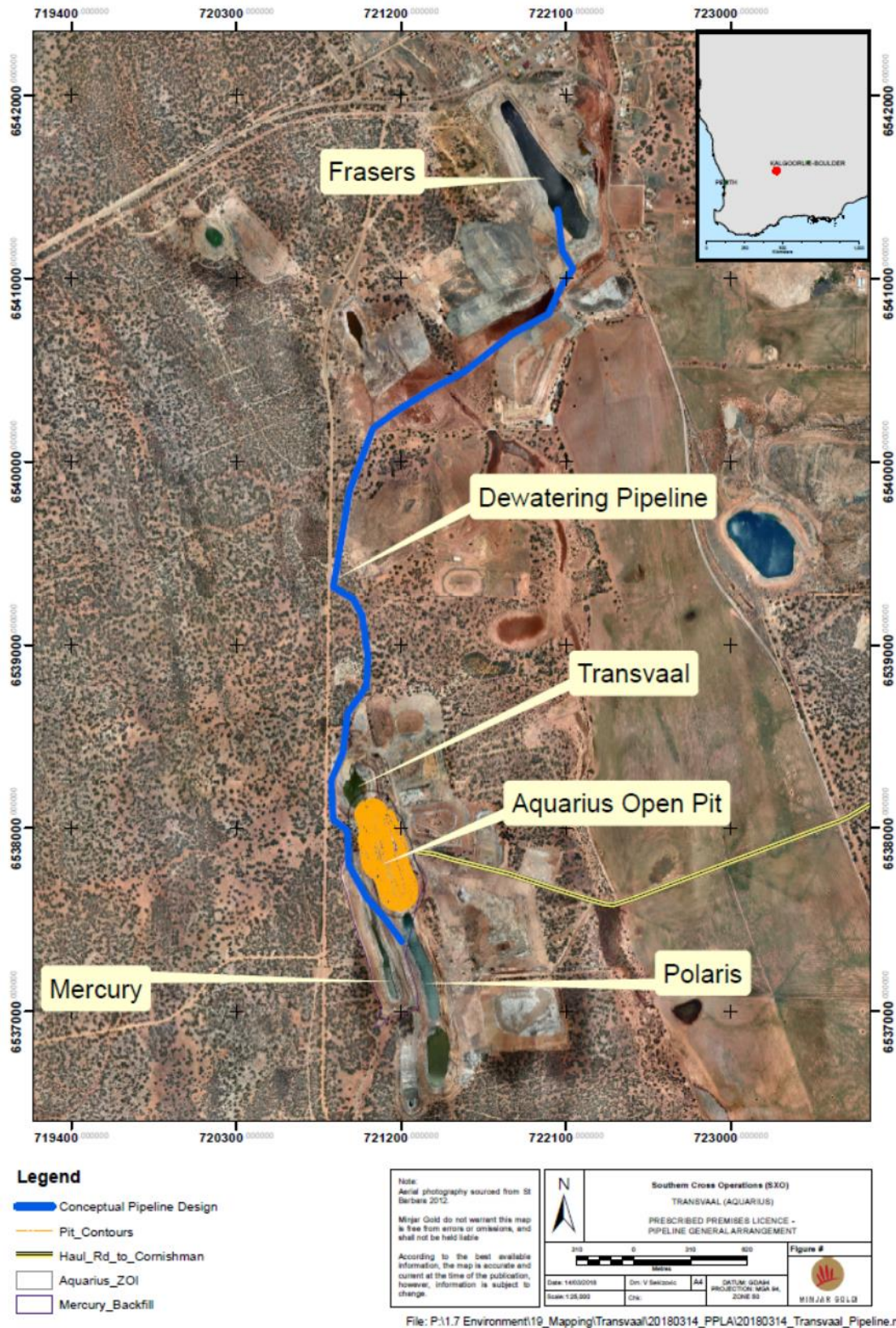


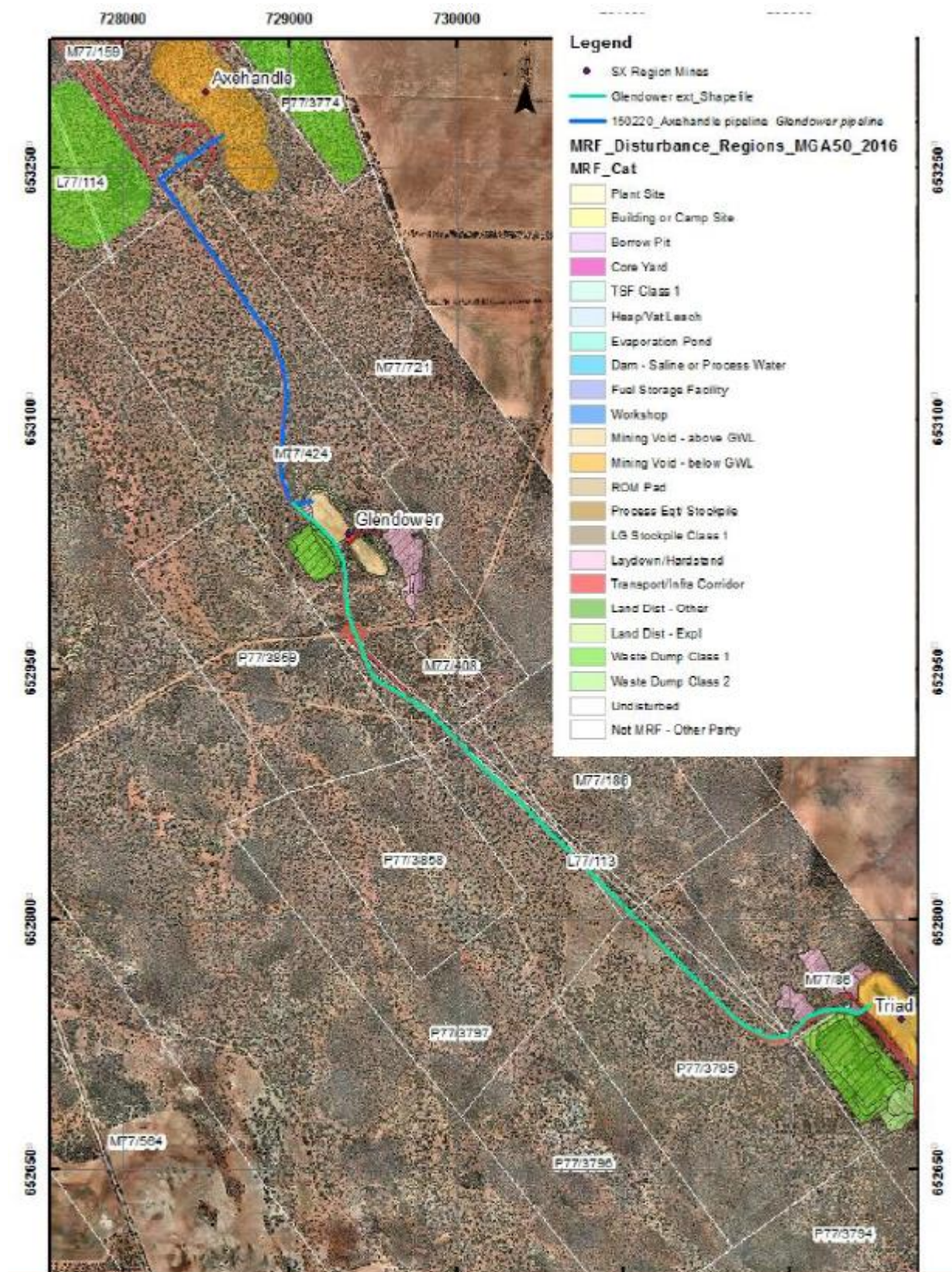
The location of the Axehandle landfill is shown below

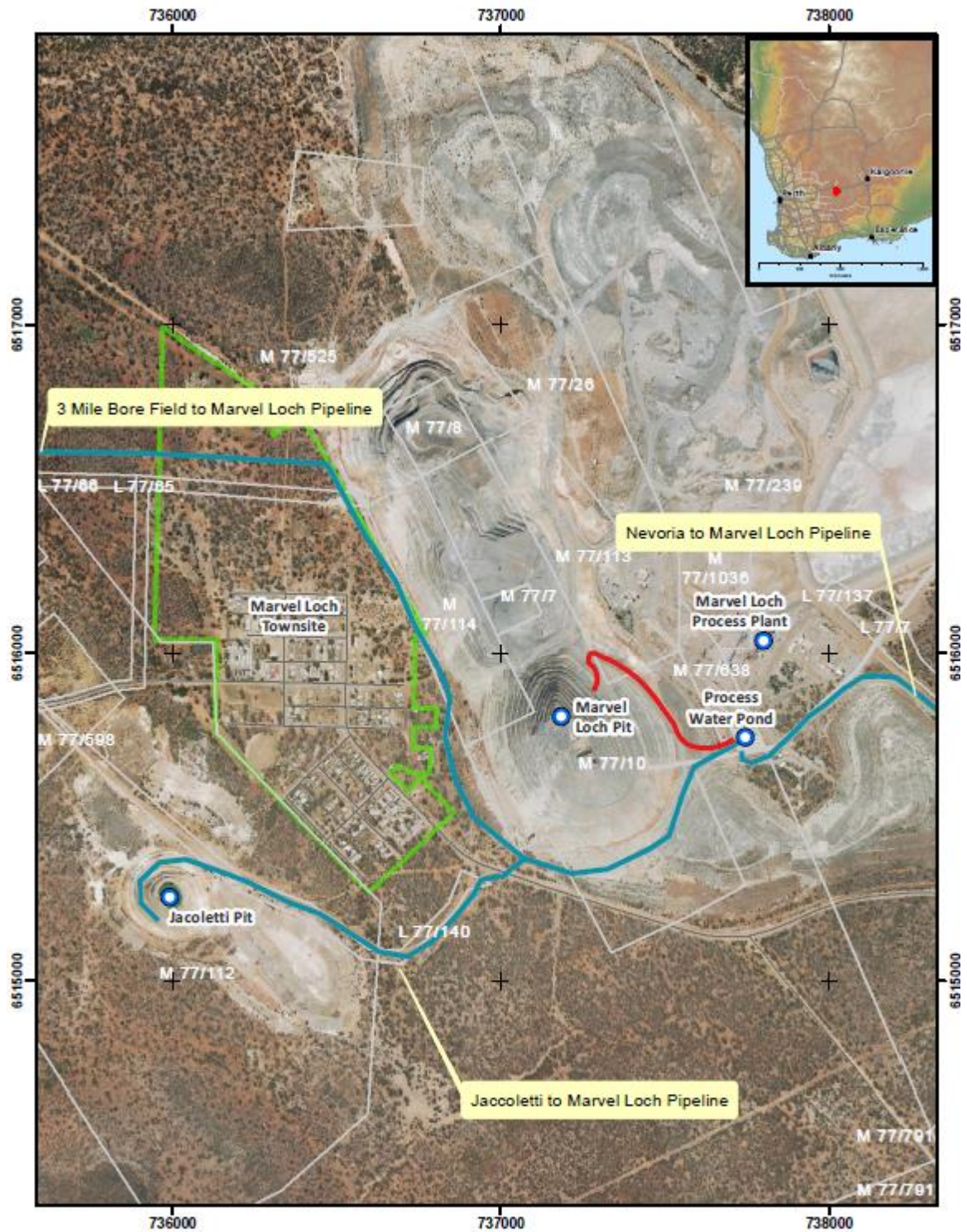


Map of Dewatering Piepline

Detailed maps of some of the dewater pipeline locations required to be inspected by condition 1.2.2 is shown below. An overview of pipeline locations are also shown on the Map of Emission points in Schedule 1.







Legend

- SXO pipelines
- Pipeline to Pit Connection
- Tenement Boundary

Note:
Aerial photography sourced from Landgate, 2017.
Minjar Gold do not warrant this map is free from errors or omissions, and shall not be held liable.
According to the best available information, the map is accurate and current at the time of the publication, however, information is subject to change.

Southern Cross Operations (SXO)

MARVEL LOCH PIT DEWATERING DISCHARGE

Date: 10/08/18

Scale: 1:10,000

Div: Resource

Proj: A-4

Proj: PRODUCED MMR-BL

Zone: 50

Project: 000-000-000-000

File: \\server\\tailor\\SECTIONS\\Environment\\Projects\\TE2019\\TE19094 - Minjar Secondment\\GIS\\Maps\\Jacoletti ML Discharge_01.mxd

Schedule 2: Reporting & notification forms

Form: N1

Licence: L4597/1988/14
Form: N1

Licence Holder: Tianye SXO Gold Mining Pty Ltd
Date of breach:

Notification of detection of the breach of a limit or any failure or malfunction of any pollution control equipment or any incident which has caused, is causing or may cause pollution.

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	

Notification requirements for any failure or malfunction of any pollution control equipment or any incident which has caused, is causing or may cause pollution

Date and time of event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident	

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 Tianye SXO Gold Mining Pty Ltd	
Date	