



Licence number	L6498/1995/11
Licence holder	Northern Star Resources Ltd
ACN	092 832 892
Registered business address	388 Hay Street SUBIACO 6008
DWER file number	2012/006868-1
Duration	21/11/2013 to 21/11/2024
Date of amendment	20 December 2021
Premises details	Jundee Operations SHIRE OF WILUNA WILUNA WA 6646 Mining tenements: G53/20, L53/52, L53/60, L53/68, L53/69, L53/70 - L53/73, L53/75, L53/99, L53/100, L53/102, L53/112, L53/113, L53/117, L53/136 - L53/138, L53/142, L53/143, L53/153, L53/169, L53/174, M53/155, M53/156, M53/182, M53/191, M53/192, M53/196 - M53/198, M53/199, M53/221, M53/226, M53/228 - M53/230, M53/235 - M53/237, M53/245 - M53/250, M53/326, M53/347, M53/372, M53/412 - M53/414, M53/441, M53/446, M53/451, M53/452, M53/461, M53/477 - M53/480, M53/492, M53/535 - M53/541, M53/552, M53/588, M53/589, M53/611, M53/707, M53/708, M53/711, M53/712, M53/836, M53/874, M53/895, M53/911, M53/929, M53/935, M53/940, M53/966, PL34 as depicted in Schedule 1.

Prescribed premises category description (Schedule 1, <i>Environmental Protection Regulations 1987</i>)	Assessed production /or design capacity
Category 5: Processing or beneficiation of metallic or non-metallic ore	3,500,000 tonnes per annual period
Category 6: Mine dewatering	3 000 000 tonnes per annual period
Category 52: Electric power generation	42.21 MW
Category 54: Sewage Facility	350m ³ per day

Prescribed premises category description (Schedule 1, <i>Environmental Protection Regulations 1987</i>)	Assessed production /or design capacity
Category 64: Class II or III Putrescible Landfill	820 tonnes per annual period
Category 74: Bulk storage of chemicals	10 000m ³

This amended licence is granted to the licence holder, subject to the attached conditions, on 20 December 2021, by:

Lauren Edmands

MANAGER – RESOURCE INDUSTRIES

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



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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 regulates 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/ Licence Holder 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: <https://www.legislation.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

Jundee Operations (Jundee) is an operational gold mine acquired by Northern Star Resources from Newmont Asia Pacific in 2014. The Jundee Process Plant is currently fed with ore from three underground mines and a satellite open pit (located 32km south east of Jundee).

Jundee is located approximately 55 km north-east of the township of Wiluna and is situated on the Jundee, Lake Violet and Millrose Pastoral Leases. Land use in the Jundee area is a mixture of mining and pastoral enterprise. The major pastoral properties with a direct relationship are Barwidgee/Yandal, Millrose, Lake Violet and Jundee stations. Northern Star is the leaseholder of Jundee which continues to be sublet to Millrose Station.

Jundee comprises two historically separate operations called Jundee and Nimary. Following aggregation of the operations, the Nimary processing site was decommissioned in 2007 with final rehabilitation completed in 2010. In 1995 a Notice of Intent was lodged with the Department of Mines for the Nimary Gold Project, on behalf of the Wiluna Joint Venture, headed by majority shareholder Eagle Mining Pty Ltd. The Nimary Gold Project comprised the Nim 1, Nim 2, Nim 3 and Nim 4 open pits.



Also in 1995, the adjacent Jundee Operations was commissioned by Great Central Mines Pty Ltd (GCM). Nimary and Jundee were immediate neighbours, separated by a tenement boundary with different owners. Two mills were constructed, one at Nimary and one at Jundee. In 1997 GCM acquired the Eagle/Nimary leases incorporating Nimary and Jundee as one operation.

In April 2000, GCM was acquired by Normandy Mining Limited (Normandy). In February 2002, Newmont Yandal Pty Ltd acquired Normandy. In July 2015 the site was acquired by Northern Star Resources. Currently the premises has a nominal rated throughput covered by the licence to process 3 000 000 tonnes of ore per annum. Processing of ore is through the Carbon in Pulp (CIP) and Carbon in Leach (CIL) process, with tailings disposal to Tailings Storage Facility (TSF) 2 and Fisher In-pit TSF. Underground mining commenced in 2007.

TSF1 was commissioned in October 1995 and was in operation until November 1999. Construction of TSF 2 commenced in February 1999 and was completed in June 1999. Deposition commenced into TSF 2 in November 1999 and this facility was used on a continuous basis until August 2004. TSF 2 has been used on a rotational basis since the commissioning of the Fisher In-pit TSF in August 2004. Fisher In-pit TSF was used continuously until October 2007. Tailings deposition is now cycled between the Fisher Pit, TSF1 and TSF 2 with the aim of optimising water return by depositing into the Fisher Pit in the hotter summer months to help improve water recoveries.

In 2019, surface mining re-commenced at Jundee from the Ramone satellite pit, 32km south east from the processing plant. Mining at the open pit Ramone mine ceased in October 2020 and was placed on care and maintenance. Resource definition drilling confirmed an underground resource, which is expected to commence mining in late 2021.

Following grant of works approval W6522/2021/1 in 2021, construction of TSF3 commenced, proposed for commissioning in mid-2023.

To reduce water reporting to the TSF and increase water recoveries, a tailings thickener was constructed in 2021 and is expected to be operational in late 2021.

The licence allows for the following activities at the Jundee Operations:

- Carbon in pulp (CIP) and carbon in leach (CIL) process plant and associated infrastructure;
 - Tailings disposal into Tailings Storage Facilities (TSFs): TSF 2, TSF 1 and Fisher In-pit TSF.
 - Treated sewage water is disposed of on active TSF2
 - A bioremediation facility which utilises treated wastewater from the sewage treatment facility and may be used for the disposal and treatment of hydrocarbon contaminated soils and oily water removed from the minesite;
 - Two Class II or III landfills; one at Jundee and the other at the Ramone Underground Mine;
- and,



- Electrical power is generated on-site using nine 3.05MW gas engine generators, three 2.1MW gas engines generators and four 0.75MW (functional) diesel engine generators.

September 2021 Amendment

The amendment authorises increased throughput to category 54 and 64 activities, addition of a low tonnage landfill adjacent to the Ramone open pit and administrative amendments to Table 1.2.1 and 1.2.2 including:

- Alteration of references to the TSF1 and TSF2 “return water dam” to “processing water dam”; and
- Removal of Barton underground level 4 clean water dam as an ingress pond.

The licences and works approvals issued for the Premises since 05/02/2001 are:

Instrument log	Date issued	Summary of changes
Instrument	Issued	Description
L6498/1995/4	05/02/2001	Licence re-issue
L6498/1995/5	28/12/2001	Licence re-issue
L6498/1995/6	28/12/2002	Licence re-issue
L6498/1995/7	28/12/2003	Licence re-issue
L6498/1995/8	28/12/2003	Licence re-issue
L6498/1995/9	22/11/2004	Licence re-issue
L6498/1995/10	22/11/2010	Licence re-issue
W5164/2012/1	25/06/2012	Works approval for Stage 6 embankment raise of 2m on TSF 2 (includes condition to develop a Groundwater Recovery and Seepage Management plan)
L6498/1995/11	22/11/2013	Licence re-issue
W5744/2014/1	22/12/2014	Works approval for Stage 7 embankment raise of 2m on TSF 2
L6498/1995/11	17/09/2015	Licence amendment to current format, including transfer of ownership
L6498/1995/11	04/08/2016	Licence amendment to increase capacity of power station by to 42.2 MW.
L6498/1995/11	31/07/2020	Various amendments including throughput for Category 54 and 64, dewatering and monitoring.
L6498/1995/11	20/12/2021	Amendment to category 5, 54 and 64, addition of low tonnage landfill adjacent to Ramone open pit, administrative amendments to Table 1.2.1. Increase of throughput for category 5 (existing infrastructure).



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*;

‘AHD’ means the Australian height datum;

‘Annual Audit Compliance Report’ means a report in a format approved by the CEO as presented by the Licence Holder or as specified by the CEO from time to time and published on the Department’s website;

‘annual period’ means the inclusive period from 1 January until 31 December in the same year;

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

‘AS 4482.1’ means the Australian Standard AS4482.1 2005 *Guide to the investigation and sampling of sites with potentially contaminated soil; Part 1: Non-volatile and semi-volatile compounds*;

‘AS 4482.2’ means the Australian Standard AS4482.2 1999 *Guide to the sampling and investigation of potentially contaminated soil; Part 2: Volatile substances*;

‘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 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 or target is measured or a monitoring result is obtained;



'bioremediation' means the above-ground remediation of soils to reduce the concentrations of hydrocarbons through biodegradation. The process involves the stimulation of bacteria in the soil, which consume hydrocarbons as an energy source, releasing water and carbon dioxide as the ultimate breakdown products. This may include bioaugmentation of microbes to target specific contaminants;

'CEMS' means continuous emissions monitoring system;

'CEMS Code' means the current version of the Continuous Emission Monitoring System (CEMS) Code for Stationary Source Air Emissions, Department of Environment & Conservation, Government of Western Australia;

'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

'Department' means the department established under s.35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Division 3 Part V of the *Environmental Protection Act 1986*;

'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;

'Licence' means this Licence numbered L6498/1995/11 and issued under the Act;

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

'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 January to 31 March, 1 April to 30 June, 1 July to 30 September, and 1 October to 31 December in the same year;

'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 January to 30 June and 1 July to 31 December in the same year;

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

'SWL' means Standing Water Level;

'TSF' means an engineered containment pond or dam used to store tailings;

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

'USEPA Method 2' means United States (of America) Environmental Protection Agency Method 2 – *Determination of stack gas velocity and volumetric flow*;

'USEPA Method 7E' means United States (of America) Environmental Protection Agency Method 7E – *Determination of nitrogen oxides emissions from stationary sources*;

'USEPA Method 10' means United States (of America) Environmental Protection Agency Method 10 – *Determination of carbon monoxide emissions from stationary sources*;

'µS/cm' means microsiemens per centimetre; 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 Premises operation

1.2.1 The Licence Holder shall ensure that all pipelines containing saline, alkaline or cyanide constituents are either:

- (a) provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections; and/ or
- (b) equipped with automatic cut-outs in the event of a pipe failure; and/or



- (c) shall install telemetry systems and pressure sensors along pipelines carrying saline, alkaline or cyanide constituents to allow the detection of leaks and failures.

1.2.2 The Licence Holder shall ensure that waste material is only stored and/or treated within vessels or compounds provided with infrastructure requirements and at the locations specified in Table 1.2.1.

Table 1.2.1: Containment infrastructure		
Storage vessel or compound	Material	Infrastructure requirements
TSF 2, TSF1	Tailings, treated sewage water	Clay lined
Fisher In-pit TSF	Tailings	Maintain a minimum 1 m height perimeter earthen bund surrounding the Fisher In-pit TSF.
Nimary TSF	Tailings	N/A - Decommissioned
Bioremediation treatment cells	Hydrocarbon contaminated soil	Clay lined (or equivalent) with a permeability of 10^{-9} m/s or less. All leachate runoff is directed to, and contained within, an impermeable leachate collection sump with capacity to contain a 1 in 100 year, 72 hour duration rainfall event. The leachate collection sump is lined in accordance with Water Quality Protection Note 27, Liners for containing pollutants, using engineered soils, June 2010 or Water Quality Protection Note 26, Liners for containing pollutants, using synthetic membranes, February 2009.
Bulk diesel storage facility (BDSF) Turkey's Nest	Treated water from oil water separator at BDSF	HDPE liner
TSF 1 & 2 Processing Water Dam	Tailings Decant Water	HDPE liner
R2D2 Seepage Return Water Dam	Seepage groundwater recovered near TSF2	HDPE liner
R1D1 Seepage Return Water Dam	Seepage groundwater recovered near TSF1	HDPE liner
WWTP Tanks	Wastewater undergoing treatment	None specified
Wastewater treatment ponds (Mine site and accommodation)	Wastewater	Installation of aeration units within the second and third ponds at both the mine site and accommodation village
WWTP Sewage Sludge Drying Beds	Sewage sludge	A bunded hardstand area capable of preventing surface run-off of leachate and sludge
Turkey nest dams	Mine dewater	HDPE liner. Locations shown in Figure 5.
Decommissioned Pits	Mine dewater	Locations shown in Figure 5.



- 1.2.3 The Licence Holder shall manage the effluent storage ponds in Table 1.2.1 in a manner such that:
- Uncontaminated stormwater runoff resulting from roof and site drainage does not cause erosion of outer pond embankments; and
 - Vegetation (emergent or otherwise) shall be prevented from growing in the pond wastewaters or on the inner pond embankments of all ponds.
- 1.2.4 The Licence Holder shall maintain the following freeboards defined in Table 1.2.2:

Table 1.2.2: Freeboard requirements	
Storage vessel or compound	Freeboard requirements
TSF 2 and TSF 1	<ul style="list-style-type: none">Minimum total vertical freeboard of 500mm or equivalent to contain a 1 in 100 year rainfall event over 72 hours (whichever is greater) from the operational pond to lowest elevation of perimeter embankment.Minimum vertical operational freeboard of 300mm between deposited tailings and the lowest elevation of perimeter embankment.
Fisher In-pit TSF	Maintain a minimum top of embankment/ operational freeboard of 300mm.
Bioremediation treatment cells leachate collection sump	Capacity to contain an 1 in 100 year, 72 hour duration rainfall event
TSF1 and TSF 2 Processing Water Dam	Minimum vertical freeboard of 300mm
Bulk diesel storage facility (BDSF) Turkey's Nest	Minimum vertical freeboard of 300mm
WWTP Tanks	None specified
Effluent Storage Ponds	Minimum vertical freeboard of 300mm
All pits containing mine dewater (unlined)	Minimum vertical freeboard of 10m between the pit lake and the surrounding ground surface
Turkey nest dams containing mine dewater	Minimum vertical freeboard of 300mm

- 1.2.5 The Licence Holder shall:
- undertake inspections as detailed in Table 1.2.3;
 - 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
 - maintain a record of all inspections undertaken.

Table 1.2.3: Inspection of infrastructure		
Scope of inspection	Type of inspection	Frequency of inspection
Tailings pipelines	Visual integrity	Twice every 12 hours
Dewatering pipelines	Visual integrity	At least every 72 hours
Return water lines	Visual integrity	Twice every 12 hours



Table 1.2.3: Inspection of infrastructure		
Scope of inspection	Type of inspection	Frequency of inspection
Embankment freeboard	Visual to confirm required freeboard capacity is available	Twice every 12 hours
Borefield pipelines and pump stations	Visual	At least every 72 hours
Fisher In-pit TSF operating level/capacity	Survey	Annual

1.2.6 The Licence Holder 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 1.2.4.

Table 1.2.4 Management of waste		
Waste type	Management strategy	Requirements
Sewage	Biological, physical and chemical treatment	Maximum of 350 m ³ /day cumulatively
Sewage sludge	Drying and storage	Dispose of sludge solids and other residuals in accordance with the <i>Western Australian guidelines for direct land application of biosolids and biosolid products</i> , February 2002
Hydrocarbon contaminated waste	Bioremediation	Ensure soil is bioremediated by maintaining a suitable soil thickness, maintaining an appropriate moisture content and nutrient level within the soil which sustains biological activity; and at least monthly soil aeration when facility is in use.
Inert Waste Type 1 & 2 Putrescible Waste Clean Fill Other waste that meets the acceptance criteria for Class II landfills	Receipt, handling and disposal of waste by landfilling	All waste types No more than 820 tonnes per year of all waste types cumulatively shall be disposed of by landfilling. Disposal of waste by landfilling shall only take place within the landfill areas shown on the Emission Maps in Schedule 1; Waste shall be placed in a defined trench or within an area enclosed by earthen bunds; and The active tipping area shall be restricted to a maximum linear length of 30 metres. Construction, operation and decommissioning of landfill cells can occur within the defined landfill area providing there is no waste within: 100 m of any surface water body; and 3 m of the highest level of the water table aquifer. Waste shall not be burned within the trench or within the areas enclosed by earth bunds Fires within the defined trench or within the areas enclosed by earth bunds shall be extinguished as soon as practicable, upon becoming aware of the fire
Waste lubricants, hydraulic fluids	Disposal	Collect in holding tanks for recycling and disposal off-site
Waste radiator coolant/inhibitors	Disposal/reuse	Collect spent radiator coolant/inhibitors in holding tanks for subsequent disposal off-site or for use within the mine site for dust suppression.

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



- 1.2.7 The Licence Holder shall ensure that cover is applied and maintained on landfilled wastes in accordance with Table 1.2.5 and that sufficient stockpiles of cover are maintained on site at all times.

Table 1.2.5: Cover requirements			
Waste Type	Material	Depth	Timescales
Putrescible waste	Inert and incombustible material	300mm	As soon as practicable, but at least weekly, after deposit
All waste		1000mm	Within three months of the final waste load in each trench
Inert Waste Type 2 (Tyres)	Inert and incombustible material	500mm	As soon as practical following the achievement of final waste levels in the area(s) where tyres are disposed of

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

- 1.2.8 The Licence Holder shall take all reasonable and practical measures to ensure that no windblown waste escapes from the landfill area and that windblown waste is collected on at least a monthly basis and returned to the active tipping area.
- 1.2.9 The Licence Holder shall construct the works to install the 6 new gas generators, waste heat recovery unit and associated infrastructure in accordance with the documentation detailed in Table 1.2.6:

1.2.6: Construction Requirements		
Document	Parts	Date of Document
1.5 MW Waste heat recovery system as detailed in the file note 'Jundee Heat to Power Plant – Process Description' by Jacques F. Gouws The waste heat recovery system comprises: <ul style="list-style-type: none">Exhaust collector system with a main exhaust dust that connects to each of the six generators, pressure sensors and temperature monitorsExhaust heat exchanger module that has temperature monitoring on all streams entering and leaving the unit, whilst the thermal fluids pressure is monitoredExhaust collector skid with a blower, valve manifold and remote control system elementsThermal governing skid comprising control system, pumps, expansion vessel and water treatment devicesWet steam cycle module comprising an evaporator, Lysholm expander, pump, control systemOrganic rankin cycle module comprising two evaporators, Lysholm expander, pump, control systemCooling system comprising cooling tower, pump and dosing unit.	All	20 July 2016

Note 1: Where the details and commitments of the documents listed in condition 1.2.9 are inconsistent with any other condition of this Licence, the conditions of this Licence shall prevail.

- 1.2.10 The licence holder must within 30 days following installation of aeration units for wastewater treatment ponds, required by condition 1.2.2, prepare and submit to the CEO a report confirming installation and compliance.



2 Emissions

2.1 General

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

2.2 Point source emissions to air

2.2.1 The Licence Holder is permitted, subject to conditions in the Licence, to emit waste to the atmosphere from the emissions points listed in Table 2.2.1 and identified in the Map of emission points, Figure 4 in Schedule 1.

Table 2.2.1: Emission points to air			
Emission point reference and location on Figure 4	Emission point	Emission point height (m)	Source including abatement
A1	Gold Room Exhaust	20	Gold Room
A2	Carbon Regeneration Kiln Stack	8	Carbon Regeneration Kiln
A3	Gas Generator	10	Gas fired genset
A4	Gas Generator	10	Gas fired genset
A5	Gas Generator	10	Gas fired genset
A6	Gas Generator	10	Gas fired genset
A7	Gas Generator	10	Gas fired genset – standby only
A8	Gas Generator	10	Gas fired genset
A9	Gas Generator	8	Gas fired genset – standby only
A10	Gas Generator	10	Gas fired genset – standby only
A11	Diesel Generator	8	Diesel generator – standby only
A12	Diesel Generator	8	Diesel generator
A13	Diesel Generator	8	Diesel generator
A14	Diesel Generator	8	No generator present – not currently authorised
A15	Diesel Generator	8	Diesel generator
A16	Diesel Generator	8	No generator present – not currently authorised
A17	Gas Generator	5.2	No generator present – not currently authorised
A18	Gas Generator	5.2	No generator present – not currently authorised
A19	Gas Generator	7.5	Gas fired genset Jenbacher JGS 620
A20	Gas Generator	7.5	Gas fired genset Jenbacher JGS 620
A21	Gas Generator	7.5	Gas fired genset Jenbacher JGS 620
A22	Gas Generator	7.5	Gas fired genset Jenbacher JGS 620
A23	Gas Generator	7.5	Gas fired genset Jenbacher JGS 620
A24	Gas Generator	7.5	Gas fired genset Jenbacher JGS 620
A25	Exhaust heat exchanger stack	8	Proposed Waste heat recovery exhaust heat exchanger



2.3 Point source emissions to groundwater

- 2.3.1 The Licence Holder is permitted to discharge 3 000 000 tonnes of mine dewater to the surface containment dams and pits identified in Schedule 1, Map of emission points, Figure 5.

3 Monitoring

3.1 General monitoring

- 3.1.1 The Licence Holder shall ensure that:
- (a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;
 - (b) all wastewater sampling is conducted in accordance with AS/NZS 5667.10;
 - (c) all groundwater sampling is conducted in accordance with AS/NZS 5667.11;
 - (d) all soil sampling is conducted in accordance with AS 4482.1 and AS 4482.2 as relevant; and
 - (e) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured (unless indicated otherwise in the relevant table).
- 3.1.2 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.
- 3.1.3 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 and the requirements of the Licence.
- 3.1.4 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.

3.2 Monitoring of inputs and outputs

- 3.2.1 The Licence Holder shall undertake the monitoring in Table 3.2.1 according to the specifications in that table. Level of detection (where relevant) must be sufficient to allow comparison with the ANZECC (2000) concentration guidelines for 95% protection of freshwater ecosystems.



Table 3.2.1: Monitoring of inputs and outputs				
Input/Output	Parameter	Units	Averaging period	Frequency
Tailings deposition	Volume of tailings deposited to TSF2 and Fisher In-pit TSF	m ³	Monthly	Cumulative monthly total
	Volume of tailings supernatant liquor returned to process plant from TSFs			
	Volume of seepage recovered			
Mine dewater discharged to each dam/pit	Volume	m ³	Monthly	Cumulative monthly total
Cook Pit Keating Pit	pH ¹	-	Spot sample	Quarterly
	Total dissolved solids ¹	mg/L		
	Total recoverable hydrocarbons	mg/L		
	Total phosphorus, total nitrogen	mg/L		
	Sodium, potassium, calcium, magnesium, chloride, carbonate, bicarbonate, sulfate, nitrate, fluoride, silica	mg/L		
	Aluminium, arsenic, boron, cadmium, iron, mercury, nickel, lead, selenium, zinc	mg/L		

Note 1: Non-NATA in field measurement of pH and TDS permitted.

3.3 Ambient environmental quality monitoring

3.3.1 The Licence Holder shall undertake the monitoring in Table 3.3.1, Table 3.3.2 and 3.3.3 according to the specifications in those tables and record and investigate results that do not meet any limit specified. Level of detection (where relevant) must be sufficient to allow comparison with the ANZECC (2000) concentration guidelines for 95% protection of freshwater ecosystems.

Table 3.3.1: Monitoring of ambient groundwater quality ³					
Monitoring point reference and location	Parameter	Limit	Units	Averaging period	Frequency
Jundee (TSF 1 & 2) Recovery Bores					
JRB01, JRB02, JRB03, JRB05, JRB06, JRB07, JRB08, JRB09, JRB10, JRB11, JRB12, JRB13, JRB14, JRB15	SWL ¹	-	m(AHD)	Spot sample	Monthly
Jundee (TSF 1 & 2) Seepage Indication Bores					
JMB17, JMB01-D, JMB04-D, JMB07-D, JMB08-D, JMB09-D, JMB10-S, JMB10-D, JMB14-D, JMB15-D, JMB16-D	SWL ¹	-	m(AHD)	Spot sample	Quarterly
Jundee (TSF 1 & 2) Compliance Bores					
JMB05-S, JMB05-D, JMB06-S, JMB06-D, JMB23A, JMB24	SWL ¹	-	mbgl	Spot sample	Quarterly
JMB11-S, JMB11-D, JMB19, JMB20		>1			



Table 3.3.1: Monitoring of ambient groundwater quality³

Monitoring point reference and location	Parameter	Limit	Units	Averaging period	Frequency
JMB12-S, JMB12-D, JMB13-S, JMB13-D, JMB25, JMB26, JMB27, JMB28, JMB29		>1			
JMB06-D, JMB11-D, JMB12-D, JMB13-D, JMB19, JMB20, JMB21, JMB22, JMB25, JMB26, JMB27, JMB28, JMB29	pH ²	6.0 - 9.0	-		
	Total dissolved solids ²	<14 000	mg/L		
	Weak Acid Dissociable Cyanide (WAD CN)	<0.5	mg/L		
	Dissolved metals – As, Cd, Cu, Hg, Ni, Pb, Zn	-	mg/L		
	Selenium	-	mg/L		
Fisher In-Pit TSF Monitoring Bores					
FMB04, FMB05, FMB09, FMB10, FMB11	SWL ¹	-	m(AHD)	Spot sample	Quarterly
	pH ²	-	-		
	Total dissolved solids ²	-	mg/L		
	Weak Acid Dissociable Cyanide (WAD CN)	-	mg/L		
	Dissolved metals – As, Cd, Cu, Hg, Ni, Pb, Zn	-	mg/L		
	Selenium	-	mg/L		
FMB12	SWL ¹	-	m(AHD)	Spot sample	Quarterly
Fisher In-Pit TSF Seepage Recovery Bores					
FRB01, FRB04, FRB05	SWL ¹	-	m(AHD)	Spot sample	Quarterly
Nimary TSF Seepage Indication Bores					
NMB01-D, NMB02-D, NMB03-D	SWL ¹	-	m(AHD)	Spot sample	Annually
Nimary TSF Compliance Bores					
NMB04-D, NMB07-D, NMB08D, NMB09-D, NMB10-D, NMB10-S	SWL ¹	-	m(AHD)	Spot sample	Annually
Bioremediation Landfarm					
JHMB01, JHMB02, JHMB03	TRH	-	mg/L	Spot sample	Annually

Note 1: SWL shall be determined prior to collection of other water samples.

Note 2: Non-NATA in field measurement of pH and TDS permitted.

Note 3: A minimum of 90% of all bores listed in Table 3.3.1 will be sampled during any quarterly period to allow for maintenance and operational constraints.



Table 3.3.2: Monitoring of ambient soil quality

Monitoring point reference and location	Parameter	Units	Averaging period	Frequency
Landfarm	TRH	mg/kg	Spot sample	Six monthly

Table 3.3.3: Monitoring of treated wastewater

Discharge point	Monitoring location	Parameter	Unit	Frequency
Wastewater treatment ponds				
TSF1 or TSF2 (whichever of the two is being used as the active TSF) ²	TSF1 or TSF2 decant pond (whichever of the two is active and receiving treated sewage water) ²	E. Coli	cfu/100mL	Quarterly
		Total coliforms		
		BOD ₅	mg/L	
		Total dissolved solids		
		Total suspended solids		
		Total nitrogen		
		Total phosphorous		
		Cumulative flow volume	m ³	Monthly
		pH ¹	pH units	Quarterly
		Residual chlorine ¹	mg/L	

Note 1: In-field non-NATA accredited analysis permitted

Note 2: Discharge of treated sewage water into an inactive TSF is not permitted. Discharge of treated sewage water into TSF3 is not permitted.

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 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.



- 4.1.3 The Licence Holder shall complete an Annual Audit Compliance Report indicating the extent to which the Licence Holder 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 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.

4.2 Reporting

- 4.2.1 The Licence Holder shall submit to the CEO an Annual Environmental Report by 31 March in each year, after the end of the annual period 1 January to 31 December. 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
Table 3.2.1	Stack testing results of emissions from new gas generators	None specified
Table 3.2.1	Volumes of tailings deposited, supernatant liquor returned to process plant and seepage water recovered. Volume of mine dewater discharge and surface water parameters	None specified
Tables 3.3.1, 3.3.2, 3.3.3	Groundwater quality parameters Treated wastewater quality (as required by Table 3.3.3) Soil quality sampling	None specified
4.1.3	Compliance	Annual Audit Compliance Report (AACR) ¹
4.1.4	Complaints summary	None specified

- 4.2.2 The Licence Holder shall ensure that the Annual Environmental Report also contains:
- (a) any relevant process, production or operational data recorded under Condition 3.1.3; and
 - (b) an assessment of the information contained within the report against previous monitoring results and Licence limits and/or targets
- 4.2.3 The Licence Holder 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 or form ¹
-	Copies of original monitoring reports submitted to the Licence Holder by third parties	Not Applicable	Within 14 days of the CEOs request	As received by the Licence Holder from third parties

4.2.4 The Licence Holder shall submit a compliance document to the CEO, following the construction of the waste heat recovery system and prior to operation of the same.

4.2.5 The compliance document shall:

- (a) certify that the works were constructed in accordance with the conditions of the Licence;
- (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.

4.3 Notification

4.3.1 The Licence Holder 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	Format or form ¹
2.1.1	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. Part B: As soon as practicable	N1
3.1.4	Calibration report	As soon as practicable.	None specified
3.3.1	Exceedance of the groundwater limits specified in Table 3.3.1.	Within 21 days of becoming aware of the results.	N1

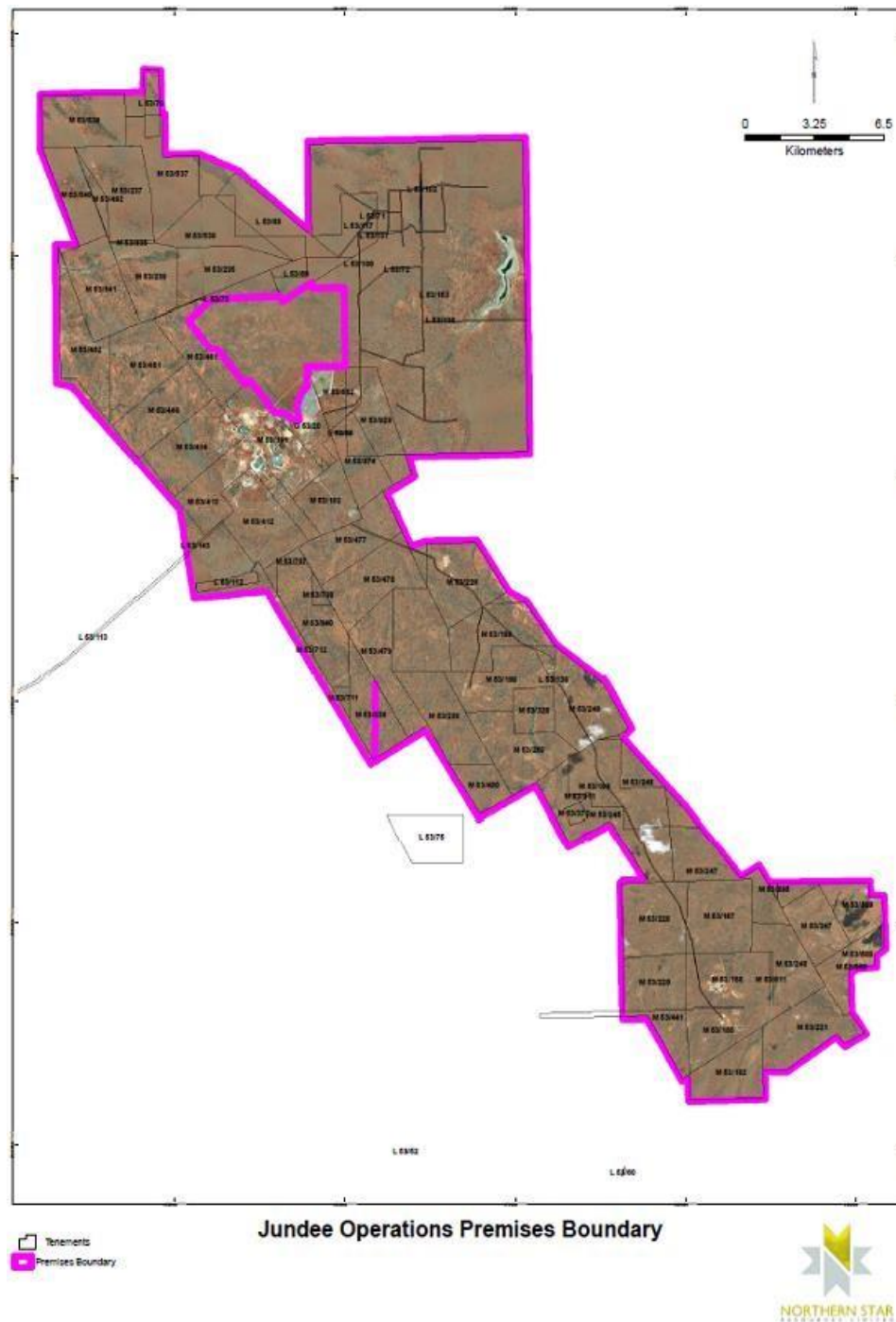
Note 1: Forms are in Schedule 2

Schedule 1: Maps

Premises map

The Premises is shown in the map below. The pink line depicts the Premises boundary. Mining tenements inside the internal pink boundary are not part of the Prescribed Premises.

Figure 1: Prescribed Premises Boundary - Jundee Operations.





Map of storage locations

The locations of the storage areas defined in Table 1.3.1 are shown below.

Figure 2: Location of Jundee Operations' containment infrastructure.

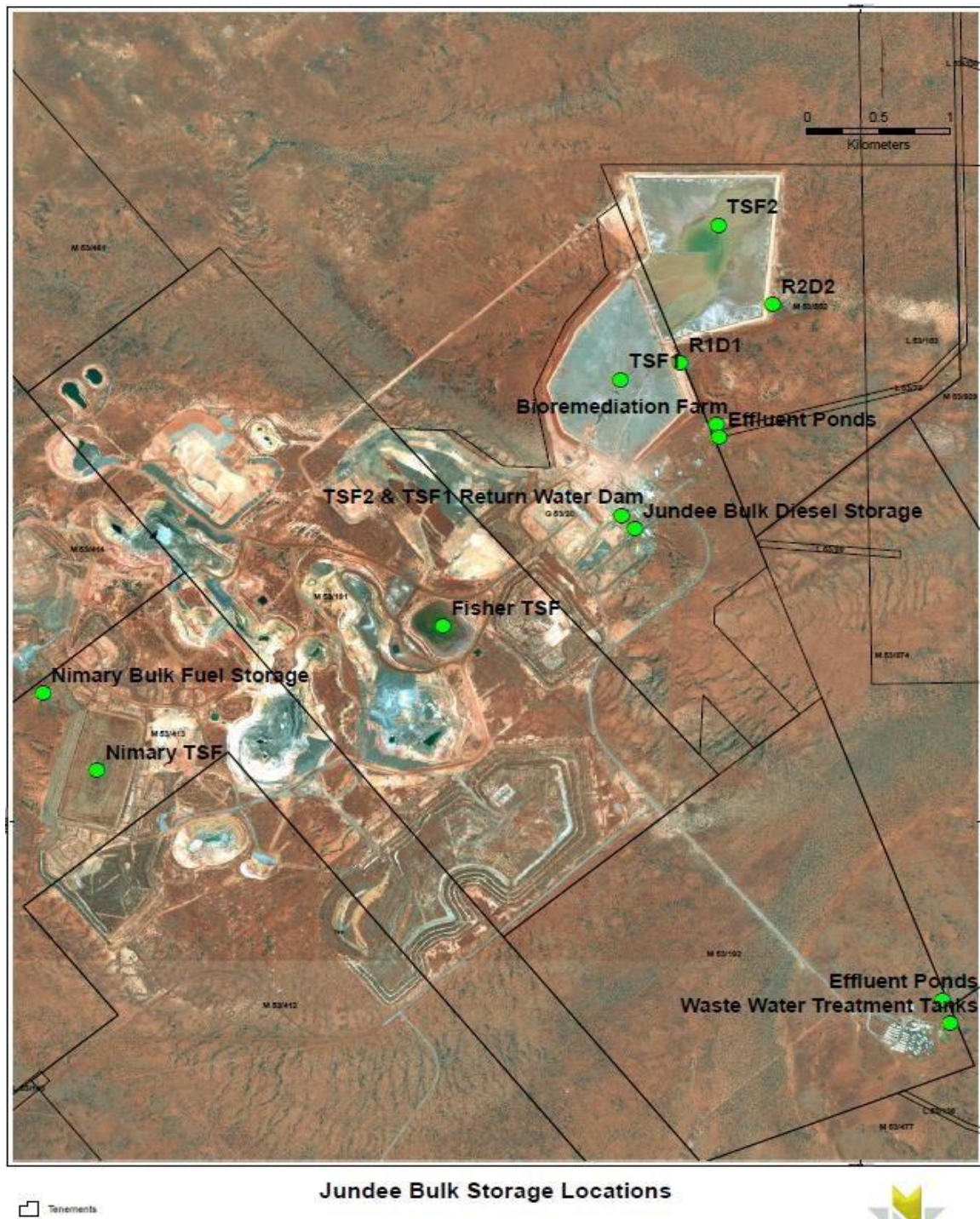


Figure 3: Location of containment infrastructure at Jundee Village. (These village storages are also shown on previous Figure 2).



Jundee Village Bulk Storage Locations



Map of emission points

The locations of the emission points defined in Table 2.2.1 is shown below.

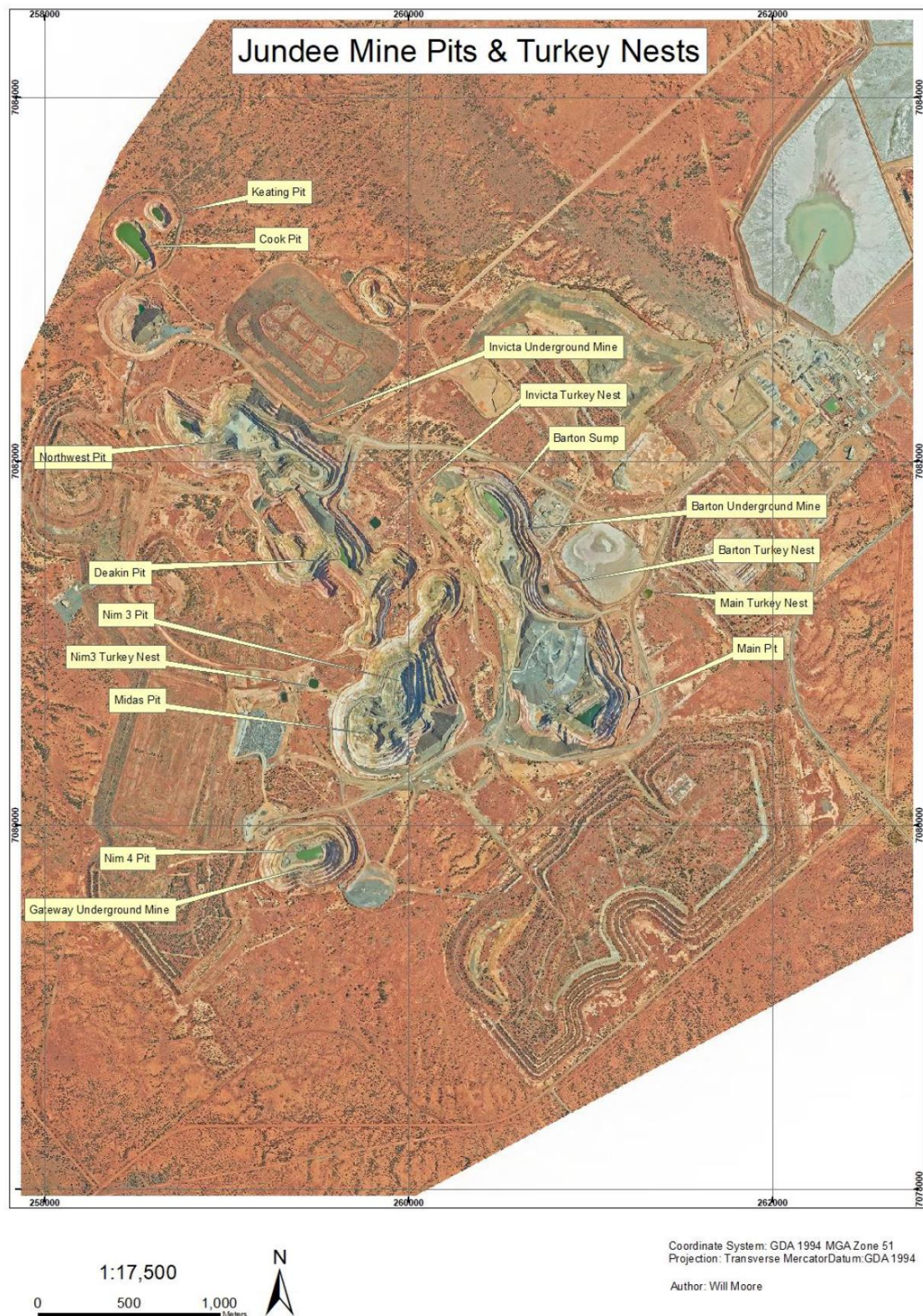
Figure 4: Map showing Jundee Emission Points to Air



The location of the emission point in condition 2.3.1 and monitoring point for Table 3.2.1 is shown below. Storages in the underground mine are not shown.



Figure 5: Mine dewater discharge point.

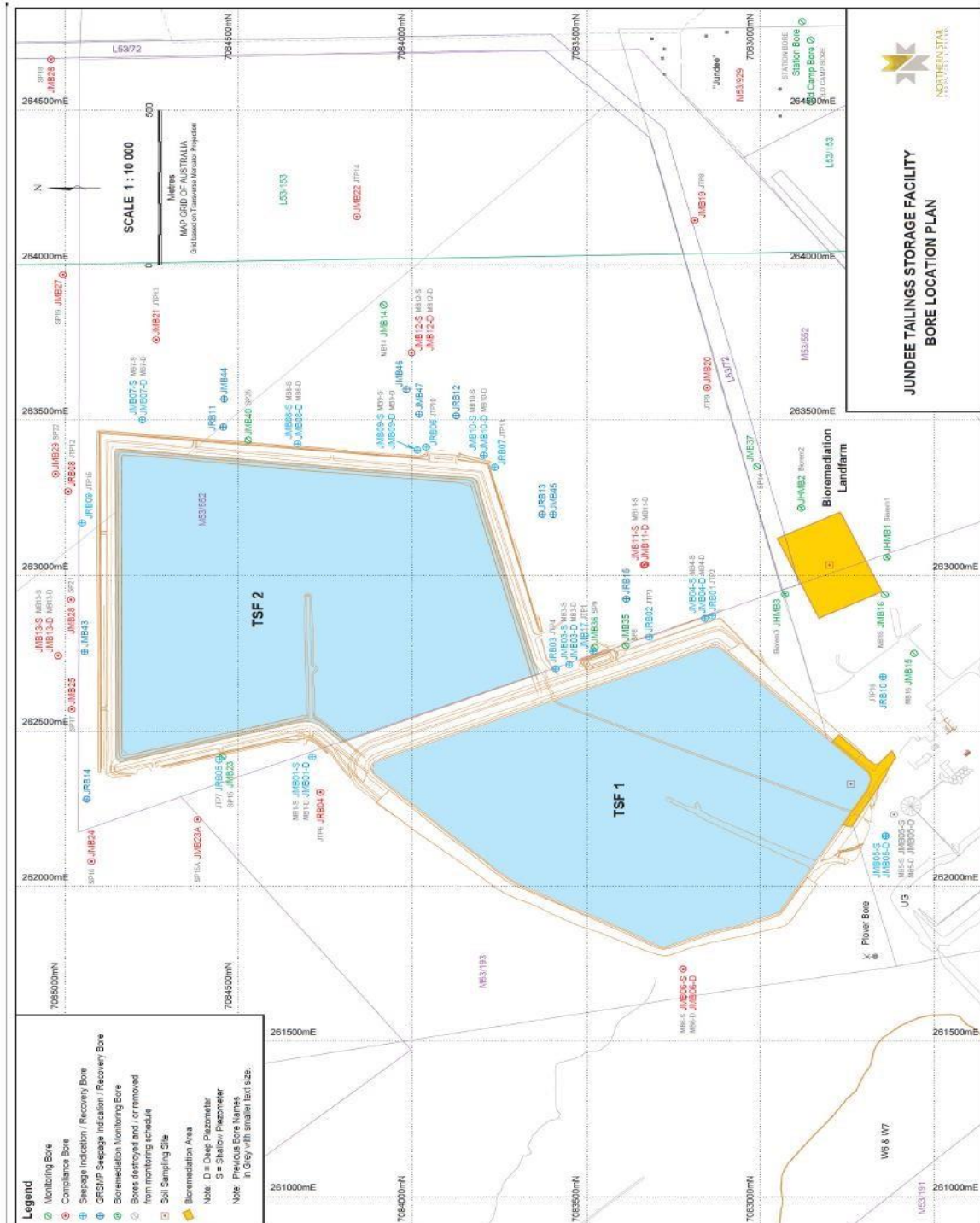




Map of monitoring locations

The locations of the defined in Tables 3.2.1 and 3.2.2 are shown below.

Figure 6: TSF1 and TSF 2 groundwater monitoring bore locations, also including location of the Bioremediation Landfarm





The locations of the monitoring points defined in Table 3.2.1 are shown below.

Figure 7: Fisher In-pit TSF groundwater monitoring bore locations

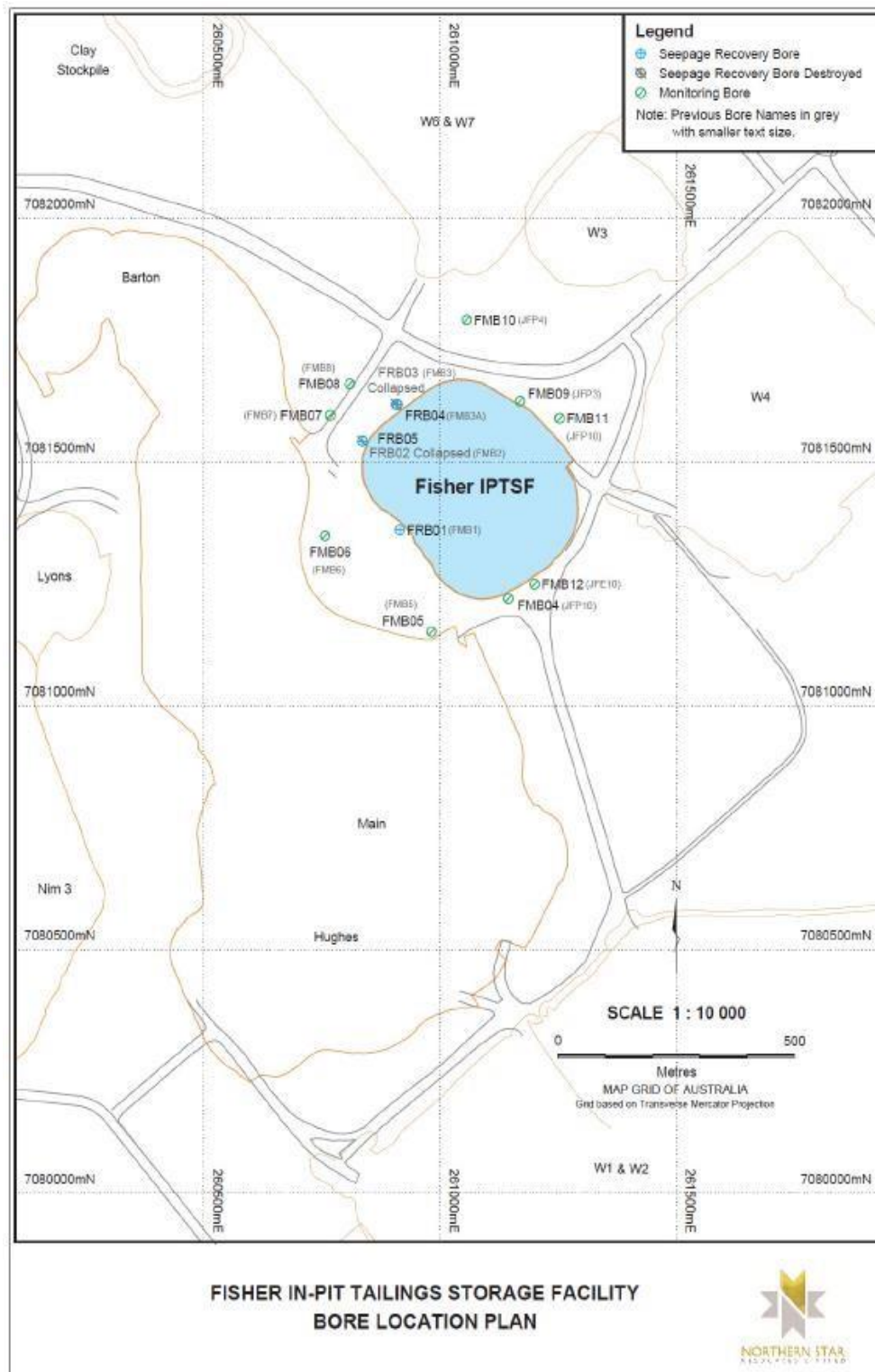
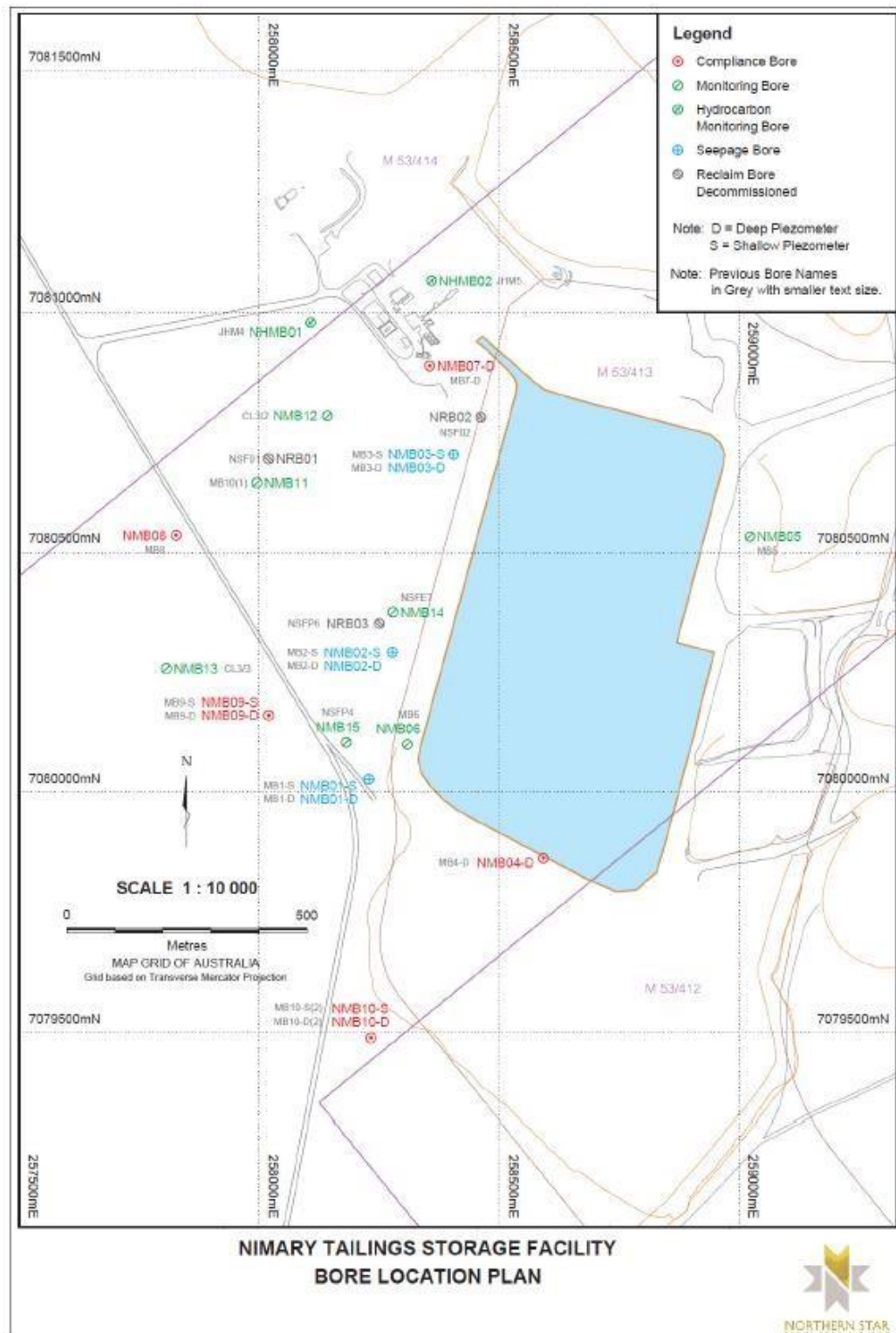


Figure 8: Location of Nimary TSF groundwater monitoring bores



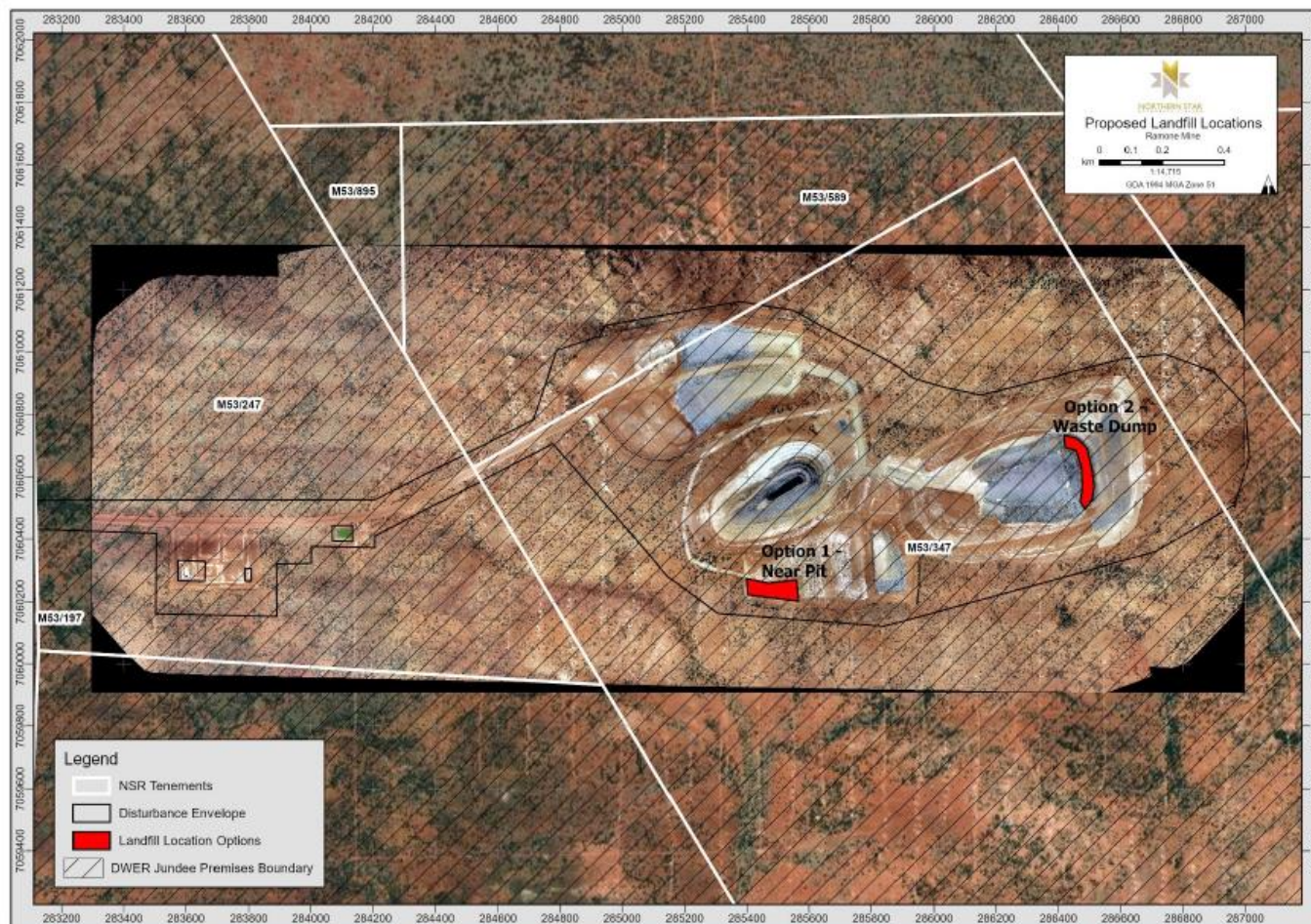


Figure 9 Proposed landfill locations, Ramone pit

Schedule 2: Reporting & notification forms

Licence: L6498/1995/11 Licence Holder: Northern Star Resources Ltd

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 Resources Ltd	
Date	