Government of Western Australia
Department of Environment Regulation

Licence

Environmental Protection Act 1986, Part V

Licensee: Poseidon Nickel Limited

Licence: L8628/2012/1

Registered office: Unit 8, Churchill Court
331-335 Hay Street
SUBIACO WA 6008

ACN: 060 525 206

Premises address: Lake Johnston Operations
NORSEMAN WA 6210
Being mining tenements M63/163, M63/283, M63/284, L63/51, G63/4 and G63/5 as depicted in Schedule 1.

Issue date: Thursday, 8 March 2012

Commencement date: Thursday, 8 March 2012

Expiry date: Tuesday, 7 March 2017

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
05	Processing or beneficiation of metallic or non-metallic ore	50 000 tonnes or more per year	1 500 000 tonnes per annual period
06	Mine dewatering	50 000 tonnes or more per year	5 000 000 tonnes per annual period
52	Electric power generation	10 megawatts or more in aggregate (using fuel other than natural gas)	12.2 megawatts in aggregate (diesel)
54	Sewage facility	100 cubic metres or more per day	100 cubic metres per day
63	Class I inert landfill site	500 tonnes or more per year	500 tonnes per annual period
64	Class II or III putrescible landfill site	20 tonnes or more per year	500 tonnes per annual period

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

.....
Danielle Eyre
Officer delegated under section 20
of the *Environmental Protection Act 1986*

Contents

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 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. 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
In November 2014, Poseidon Nickel Limited (Poseidon) purchased the Lake Johnston Operations (LJO) from Norilsk Nickel Australia. LJO encompasses mining operations at Maggie Hays and Emily Ann nickel mines, which send ore to the onsite processing facility (LJO concentrator). The LJO concentrator also accepts some ore from the Black Swan nickel mine and has a production capacity of 1,500,000 tonnes of ore per year. Prior to a period of care and maintenance in 2009, nickel bearing ore was mined from both deposits. However, since emerging from care and maintenance in 2011, ore was mined from Maggie Hays only with Emily Ann mine allowed to flood. In July 2013 Norilsk entered into another period of care and maintenance with Maggie Hays mine also becoming non-operational to this date. LJO's current occupier, Poseidon, intends to shortly begin recommissioning the LJO concentrator with a processing trial using a limited quantity of stockpiled Black Swan ore.

When operating, ore is processed on site using a conventional sulfide flotation plant to produce nickel concentrate. Once crushed the majority of ore is stored in the fine ore bin before being conveyed to the mill for further processing through the grinding, flotation tanks, thickeners and filters. Final nickel concentrate product is stored within an enclosed shed before it is trucked offsite to Esperance Port.

The coarser tails fraction is separated during the thickening stage and piped to a conventional Tailings Storage Facility (TSF) to the south of the treatment plant. The original TSF (TSF1) underwent four lifts before being replaced with a second TSF (TSF2) in late 2007. TSF2 is currently undergoing a lift under works approval W5300/2012/1, which will bring the height of TSF2 to relative level (RL) 346.4 m.

The LJO Emily Ann Nickel Mine and Maggie Hays Nickel Mine are located 142km west of Norseman in the Shire of Dundas and within the Great Western Woodlands. Three plant species, all Eucalypts, found in the vicinity may be classified as rare or in need of special protection. The only regional surface water features are Lake Johnston and Lake Hope, and their satellite salinas. They are both located about 10km south of LJO. Lake Hope North is being used for the disposal of saline groundwater and mine water from the LJO. The groundwater level (prior to dewatering) ranged from 22m below ground level at Emily Ann Mine, to 32m below ground level at Maggie Hays Mine. Groundwater salinity ranges from 27,000-200,000mg/L while the salinity of dewater taken from within LJO ranges from 29,000-200,000mg/L.

This Licence is the result of an amendment sought by the Licensee to:

- transfer the name of the Licence from Norilsk to Poseidon;
- no longer require regular invertebrate monitoring;
- introduce sediment monitoring to measure impacts of dewatering; and
- reduce TSF groundwater monitoring frequencies at the TSF.

During the amendment process DER has also converted the Licence to an updated format. Upon converting the Licence DER reassessed the environmental impacts and contributing factors of seepage at TSF2 including the process of discharging treated effluent from the evaporation/infiltration ponds to the facility.

The licences and works approvals issued for the Premises for the 5 licences prior to issue of this Licence are:

Instrument log		
Instrument	**Issued**	**Description**
L7414/2000/7	28/05/2009	Licence reissue
L8628/2012/1	08/03/2012	New licence to replace fallen over licence L7414/2000/7
W5300/2014/1	13/12/2012	Works approval for TSF2 lift
W5300/2014/1	15/01/2015	Amended works approval to increase TSF2 final lift height and conversion to new format
L8628/2012/1	20/08/2015	Transfer of licence to Poseidon and conversion to new format

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 period' means the inclusive period from 1 August until 31 July in the following year;

'AS/NZS 2031' means the Australian Standard AS/NZS 2031 *Selection of containers and preservation of water samples for microbiological analysis;*

'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;*

'AS/NZS 5667.12' means the Australian Standard AS/NZS 5667.12 *Water Quality – Sampling – Guidance on sampling of bottom sediments;*

'asbestos' means the asbestiform variety of mineral silicates belonging to the serpentine or amphibole groups of rock-forming minerals and includes actinolite, amosite, anthophyllite, chrysolite, crocidolite, tremolite and any mixture containing 2 or more of those;

'asbestos fibres' has the meaning defined in the Guidelines for Assessment, Remediation and Management of Asbestos Contaminated Sites, Western Australia, (DOH, 2009);

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

'biosolids' has the meaning defined in Landfill Definitions;

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

'CEO' for the purpose of correspondence means;
Manager - Licensing (Resource Industries)

At the following address:
Department of Environment Regulation
Locked Bag 33
CLOISTERS SQUARE WA 6850

Telephone: (08) 9333 7510
Facsimile: (08) 9333 7550
Email: industry.regulation@der.wa.gov.au;

'Clean Fill' has the meaning defined in Landfill Definitions;

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

'Esperance Port' means the premises operated by Southern Ports Authority and licensed by DER under L5099/1974/14;

'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;

'in-situ soils' means soils that are in place and have not been moved from their original place of deposition;

'Inert Waste Type 1' has the meaning defined in Landfill Definitions;

'Inert Waste Type 2' has the meaning defined in Landfill Definitions;

'leachate' means liquid released by or water that has percolated through waste and which contains some of its constituents;

'Licence' means this Licence numbered L8628/2012/1 and issued under the Act;

'Licensee' means the person or organisation named as Licensee 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;

'mbgl' means metres below ground level;

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

'Putrescible' has the meaning defined in Landfill Definitions;

'quarterly' means the 4 inclusive periods from 1 August to 31 October, 1 November to 31 January in the following year, 1 February to 30 April and 1 May to 31 July;

'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;

'Special Waste Type 2' has the meaning defined in Landfill Definitions;

'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;

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

'wastewater treatment vessels' means any vessel or tank containment infrastructure associated with the treatment of wastewater;

'WWTP' means the wastewater treatment plant; 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 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.

1.1.5 Nothing in the Licence shall be taken to authorise any emission that is not mentioned in the Licence, where the emission amounts to:
(a) pollution;
(b) unreasonable emission;
(c) discharge of waste in circumstances likely to cause pollution; or
(d) being contrary to any written law.

1.2 General conditions

1.2.1 The Licensee shall operate and maintain all pollution control and monitoring 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 tailings, return water, saline water, or sewage effluent 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 not process more than 1 500 000 tonnes of ore during the annual period.

1.3.2 The Licensee shall ensure that all pipelines containing tailings, return water or saline water are either:
(a) equipped with telemetry systems and pressure sensors along pipelines to allow for the detection of leaks and failures; or
(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.

1.3.3 The Licensee shall ensure that any saline dewatering effluent shall only be managed in the following manner:
(a) used for dust suppression in a manner that minimises damage to surrounding vegetation; or
(b) discharged in accordance with conditions of this Licence.

1.3.4 The Licensee shall ensure that tailings, decant water, saline dewater and effluent are only discharged into containment cells and ponds with the relevant infrastructure requirements and at the locations specified in Table 1.3.1 and identified in Schedule 1.

Table 1.3.1: Containment infrastructure

Containment point reference	Material	Requirements
TSF 1 and TSF 2	Tailings	Lined with compacted in-situ or locally borrowed soils
Maggie Hays Mine dewater settling ponds (C1, C2, C3 C4 and C5)	Saline dewater	
Concrete batching settlement ponds	Washwater	None specified
Wastewater treatment vessels	Sewage	
Sewage treatment ponds (C6 and C7)	Sewage	Lined with compacted in-situ or locally borrowed soils
Emily Ann Mine dewater settling pond (C8)	Saline dewater	None specified
Emily Ann Mine dewater tank and catch pond (C9)	Saline dewater	
Emily Anne processing plant stormwater catchment pond (C10)	Potentially contaminated stormwater	
Process water ponds (C11, C12 and C13)	Saline dewater	
Evaporation/infiltration ponds (L1 and L2)	Treated wastewater	Unlined

1.3.5 The Licensee shall manage containment cells and ponds in Table 1.3.1 such that:
(a) a minimum top of embankment freeboard of 300mm or a 1 in 100 year/72 hour storm event (whichever is greater) is maintained;
(b) methods of operation minimise the likelihood of erosion of the embankments by wave action; and
(c) vegetation and floating debris (emergent or otherwise) is prevented from encroaching onto pond surfaces or inner pond embankments

1.3.6 The Licensee shall manage TSFs such that:
(a) a seepage collection and recovery system is provided and used to capture seepage from the TSF;
(b) seepage is returned to the TSF or re-used in process; and
(c) the supernatant pond on the TSF is minimised.

1.3.7 The Licensee shall:
(a) undertake inspections as detailed in Table 1.3.2;
(b) where any inspection identifies that an appropriate level of environmental protection is not being maintained, take corrective action to mitigate adverse environmental consequences; and
(c) maintain a record of all inspections undertaken.

Table 1.3.2: Inspection of infrastructure

Scope of inspection	Type of inspection	Frequency of inspection[1]
Tailings pipelines	Visual integrity	12 hourly
Return water lines	Visual integrity	Daily
TSF embankment freeboard	Visual to confirm required freeboard capacity is available	Daily
Tailings deposition	Visual to confirm tailings beach is managed appropriately	Daily
Ponding on the TSF surface	Visual to confirm ponding is minimised	Daily
External wall of the TSF	Visual to ensure that there are no signs of seepage	Daily
Dewatering pipelines	Visual to confirm there are no spills or leaks resulting from failures	Daily
Dewater settling ponds	Visual to identify seepage, spills or leaks	Daily
WWTP evaporation ponds	Visual to confirm required freeboard capacity is available	Daily

Note 1: Tailings pipelines, return water lines and TSF monitoring may be inspected on a monthly basis when not operating.

1.3.8 The Licensee shall undertake an annual water balance for TSF2. The water balance shall as a minimum consider the following:
(a) site rainfall;
(b) evaporation;
(c) decant water recovery volumes;
(d) seepage recovery volumes;
(e) volumes of tailings deposited; and
(f) total volume of liquid discharged to TSF2.

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 1.3.3.

Table 1.3.3: Management of waste

Waste type	Process	Process requirements[1,2]
Sewage	Disposal	100 m^3/day accepted through sewer inflows only. Disposed to evaporation ponds depicted in Schedule 1.
Sewage sludge	Disposal	Removed by a licensed controlled waste carrier
All landfill waste	Disposal of waste by landfilling	Not more than 500 tonnes per annual period cumulatively. The separation distance between the base of the landfill and the highest groundwater level shall not be less than 2m.
Hazardous waste	Storage prior to disposal	Must be stored in a bunded area/container prior to disposal offsite.
Inert Landfill (Maggie Hays Landfill)		
Clean Fill	Receipt, handling and storage prior to disposal	None specified
Inert Waste Type 1		Placed into landfill trenches.
Inert Waste Type 2		Tyres are not stored prior to burial in any location on the premises other than the Maggie Hays class I Inert Landfill. No more than 100 used tyres are stored at any one time before

		burial. Tyres are only stacked on level ground. All tyres are stacked on their side walls. Tyres are incorporated into waste rock material at the Maggie Hays Waste Rock Dump area as depicted in Schedule 1. No burnt tyres are disposed at the Maggie Hays Landfill. Tyres are not burnt.
Putrescible Landfill (Windy Hill Landfill as depicted in Schedule 1)		
Putrescible waste (including biosolids)	Disposal	Putrescible and domestic waste is placed within a defined trench or within an area enclosed by earth bunds. The active tipping area is less than 30 metres in length.
Inert Waste Type 1		Placed into landfill trenches.
Special Waste Type 1	Handling and disposal	Only to be disposed of into a designated asbestos disposal area within the Windy Hill Landfill and kept separate from putrescible waste. The disposal area(s) for asbestos material shall be defined by grid references on a site plan. Asbestos shall be offloaded at the foot of the excavation at the landfill site in such a manner as to avoid the generation of dust and the release of asbestos fibres . No works shall be carried out on the landfill that could lead to a release of asbestos fibres.

Note 1: Requirements for landfilling tyres are set out in Part 6 of the *Environmental Protection Regulations 1987*.
Note 2: Additional requirements for the acceptance and landfilling of controlled waste (including asbestos and tyres) are set out in the *Environmental Protection (Controlled Waste) Regulations 2004*.

1.3.10 The Licensee shall ensure that cover is applied and maintained on landfilled wastes in accordance with Table 1.3.4 and that sufficient stockpiles of cover are maintained on site at all times.

Table 1.3.4: Cover requirements[1]

Waste Type	Material	Depth	Timescales
Special Waste Type 1	Type 1 Inert waste or soil	300 mm	As soon as practicable after deposit and prior to compaction
		1,000 mm	By the end of the working day in which the asbestos waste was deposited
Inert Waste Type 2		500 mm	As soon as practicable, but at least monthly after deposit. Plastic waste with the potential to become windblown shall be covered by a cage as soon as practicable after deposit.
Putrescible Waste (including biosolids)		150 mm	As soon as practicable, but at least monthly after deposit.
Inert Waste Type 1	No cover required		

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

1.3.11 The Licensee shall take measures to ensure that no wind-blown waste escapes from the Premises and that wind-blown waste is collected on at least a monthly basis and returned to the tipping area.

1.3.12 The Licensee shall manage the infiltration of treated wastewater such that:
(a) treated wastewater is evenly distributed over the infiltration area; and
(b) wastewater disposal is to be rotated between the infiltration areas on a regular basis to minimise soil erosion and surface ponding and allow the soils to dry between disposal; and
(c) sludges are removed on a periodic basis from the base of the pond to maintain the infiltration performance.

1.3.13 The Licensee shall manage the wastewater treatment vessels such that:
(a) overtopping of the vessels does not occur;
(b) stormwater runoff is prevented from entering the vessels; and
(c) there is no discernible seepage loss from the vessels.

1.3.14 The Licensee shall ensure that all vehicle washdown bays are sited on a hardstand area capable of containing contaminated water for:
(a) reuse on-site;
(b) treatment on-site; or
(c) removed off-site by a licensed controlled waste carrier to an approved liquid waste facility.

1.3.15 The Licensee shall ensure that the outside of containers leaving the premises for for the transportation of nickel concentrate are free of product.

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	Emission Point	Emission point height (m)	Source
A1 – A6	Power station stack x 6	9	Diesel powered generators

2.3 Point source emissions to surface water

2.3.1 The Licensee shall ensure that where waste is emitted to surface water from the emission points 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 points to surface water

Emission point reference and location on Map of emission points	Description	Source including abatement
Discharge Outlet (W1)	Dewater	Dewater discharge to Lake Hope (North) via an energy dissipation device that ensures minimal erosion and scouring impacts

2.3.2 The Licensee shall maintain the mine dewater settling pond(s) to maximise the removal of suspended solids from mine dewater prior to its discharge to Lake Hope (North).

2.4 Emissions to land

2.4.1 The Licensee shall ensure that where waste is emitted to land from the emission points in Table 2.4.1 and identified on the map of emission points in Schedule 1 it is done so in accordance with the conditions of this Licence.

Table 2.4.1: Emissions to land

Emission point reference and location on Map of emission points	Description	Source including abatement
L1 – L2 (Evaporation/ infiltration ponds)	Infiltration of treated wastewater	Treated wastewater pumped from C6 and/or C7 (sewage treatment ponds)

2.5 Fugitive emissions

2.5.1 The Licensee must ensure fugitive emissions are managed in accordance with the documents, or parts of documents, specified in Table 2.5.1.

Table 2.5.1: Management Plans

Management Plan Reference	Parts	Date of Document
Lake Johnston Operations Environmental Management Plan	Section 4: Dust management	July 2012

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;
(d) all sediment sampling is conducted in accordance with AS/NZS 5667.12;
(e) all microbiological samples are collected and preserved in accordance with AS/NZS 2031; and
(f) 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 Licensee 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 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 surface water

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 surface water

Emission point reference	Parameter	Units	Frequency
W1	Volumetric flow rate	L/s and m^3/day	Monthly
	pH[1]	N/A	Quarterly
	Total Dissolved Solids	mg/L	
	Total Suspended Solids		
	Copper		
	Sodium		
	Chloride		
	Aluminium		
	Cadmium		
	Iron		
	Magnesium		
	Calcium		
	Potassium		
	Manganese		
	Nickel		
	Selenium		
	Arsenic		
	Lead		
	Mercury		
	Sulphate (SO_4)		
	Nitrate (NO_3)		
	Bicarbonate (HCO_3)		
	Chromium	mg/L	Annually
	Cobalt		
	Zinc		

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

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.

Table 3.3.1: Monitoring of inputs and outputs

Input/Output	Monitoring point reference	Parameter	Units	Averaging period	Frequency
Waste Inputs	None specified	Inert Waste Type 1, Inert Waste Type 2, Special Waste Type 1 and Putrescible Waste	m^3 (where no weighbridge is present)	N/A	Each load arriving at the Premises
Sewage - Inlet Flow	Inflow meter (M1)	Volumetric flow rate (cumulative)	m^3/day	Monthly	Continuous

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 and location	Process description	Parameter	Units	Averaging period	Frequency	Method
P1	Discharge from wastewater treatment plant to evaporation ponds	Volumetric flow rate (cumulative)	L/s or m^3/day	Monthly	Continuous	None specified
		Biochemical Oxygen Demand	mg/L	Spot sample	Six monthly	None specified
		Total Suspended Solids				
		Total Nitrogen				
		Total Phosphorus				

3.5 Ambient environmental quality monitoring

3.5.1 The Licensee shall undertake the sediment monitoring in Table 3.5.1 according to the specifications in that tables and record and investigate results that do not meet any limit specified.

Table 3.5.1: Monitoring of ambient sediment quality

Monitoring point reference and location	Parameter	Units	Averaging period	Frequency
Three sediment monitoring locations nominated in IR2	pH[1]	N/A	Spot sample	Annually in the same month each year
	Total Nitrogen	mg/kg		
	Total Phosphorus			
	Total soluble salts			
	Arsenic			
	Cadmium			
	Chromium			
	Copper			
	Cobalt			
	Lead			
	Manganese			
	Nickel			
	Selenium			
	Vanadium			
	Zinc			

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

3.5.2 The Licensee shall undertake the groundwater monitoring in Table 3.5.2 according to the specifications in that tables and record and investigate results that do not meet any limit specified.

Table 3.5.2: Monitoring of ambient groundwater quality

Monitoring point reference and location	Parameter	Limit	Units	Averaging period	Frequency
TSMB01, TSMB02, TSMB05, TSMB06, TSMB08, TSMB09, TSMB10, TSMB11S, TSMB12S, TSMB13S, TSMB14S and TSMB15S.	SWL	>4.0	mbgl	Spot sample	Quarterly
TSMB01, TSMB02, TSMB05, TSMB06, TSMB08, TSMB09, TSMB10, TSMB11S, TSMB12S, TSMB13S, TSMB14S and TSMB15S.	pH[1]	N/A	N/A		Six-monthly
	Total Dissolved Solids		mg/L		
	Aluminium				
	Chromium				
	Copper				
	Iron				
	Lead				
	Magnesium				
	Manganese				
	Nickel				
	Selenium				
	Cobalt				
	Sodium				
	Zinc				
TSMB11D, TSMB12D, TSMB13D, TSMB14D, TSMB15D, TSMB16D and TSMB16S	SWL	>4.0	mbgl		Annually

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

3.5.3 In the event of standing water levels rising above 8.0 mbgl in monitoring bores listed in Table 3.5.2 the Licensee shall increase standing water level monitoring frequencies to monthly in all bores in which the standing water level exceeded 8.0 mbgl, until the standing waster level is greater than 8.0 mblg in those bores.

4 Improvements

4.1.1 The Licensee shall complete the improvements in Table 4.1.1 by the date of completion in Table 4.1.1.

Table 4.1.1: Improvement program

Improvement reference	Improvement	Date of completion
IR1	The Licensee shall submit to the CEO a revised Scope for an ongoing Dewatering Discharge Impact Assessment to replace the monitoring program currently required in conditions 3.2.1 and 3.5.1 of this Licence and reported on in condition 5.2.2(b). The scope of work shall include: (a) monitoring volumes of water discharged to Lake Hope North assessing hydrology of the lake including mapping of areas where dewater ponding is most common and duration of inundation (seasonality); (b) measures to identify the area of impact from dewatering; (c) salt balance for impacted and unimpacted areas at Lake Hope North; (d) contaminant loading to the area of impact measured in kilograms per hectare per year for all parameters listed in Table 3.2.1; (e) additional sediment sampling locations, including at least one sediment sampling point that can be used as an analogue for an unimpacted site (baseline environmental quality); and (f) methods to monitor ecological impact, including impacts to invertebrate health and shoreline/ fringing vegetation.	31/12/2015
IR2	The Licensee shall submit to DER three proposed locations for: background; near-discharge; and downstream sediment monitoring to measure parameters listed in Table 3.5.1.	30/09/2015

5 Information

5.1 Records

5.1.1 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 5.1.1(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.

5.1.2 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.

5.1.3 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.

5.1.4 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.

5.2 Reporting

5.2.1 The Licensee shall submit to the CEO an Annual Environmental Report by 30 September after the end of each annual period. The report shall contain the information listed in Table 5.2.1 in the format or form specified in that table.

Table 5.2.1: 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
-	Throughputs for each licensed category	
Table 1.3.2	Evidence of infrastructure monitoring	
Table 1.3.3	Type and quantity of waste disposed	
1.3.5	Summary of any freeboard limit exceedances and any action taken.	
Table 3.3.1	Monitoring of point source emissions to surface waters	
Table 3.6.1	Monitoring of inputs and outputs	
Table 3.7.1	Process monitoring data	
Table 3.8.1	Monitoring of sediments	
Table 3.8.2, condition 3.8.3	Monitoring of ambient groundwater	
5.1.3	Compliance	Annual Audit Compliance Report (AACR)
5.1.4	Complaints summary	None specified

Note 1: Forms are in Schedule 2

5.2.2 The Licensee shall ensure that the Annual Environmental Report also contains:
(a) an assessment of the information contained within the report against previous monitoring results and Licence limits; and
(b) discussion of the potential environmental impacts from dewatering over the annual period based on monitoring data and visual observations.

5.2.3 The Licensee shall submit the information in Table 5.2.2 to the CEO according to the specifications in that table.

Table 5.2.2: Non-annual reporting requirements

Condition or table (if relevant)	Parameter	Reporting period	Reporting date (after end of the reporting period)	Format or form
-	Copies of original monitoring reports submitted to the Licensee by third parties	Not Applicable	Within 14 days of the CEOs request	As received by the Licensee from third parties

5.3 Notification

5.3.1 The Licensee shall ensure that the parameters listed in Table 5.3.1 are notified to the CEO in accordance with the notification requirements of the table.

Table 5.3.1: Notification requirements

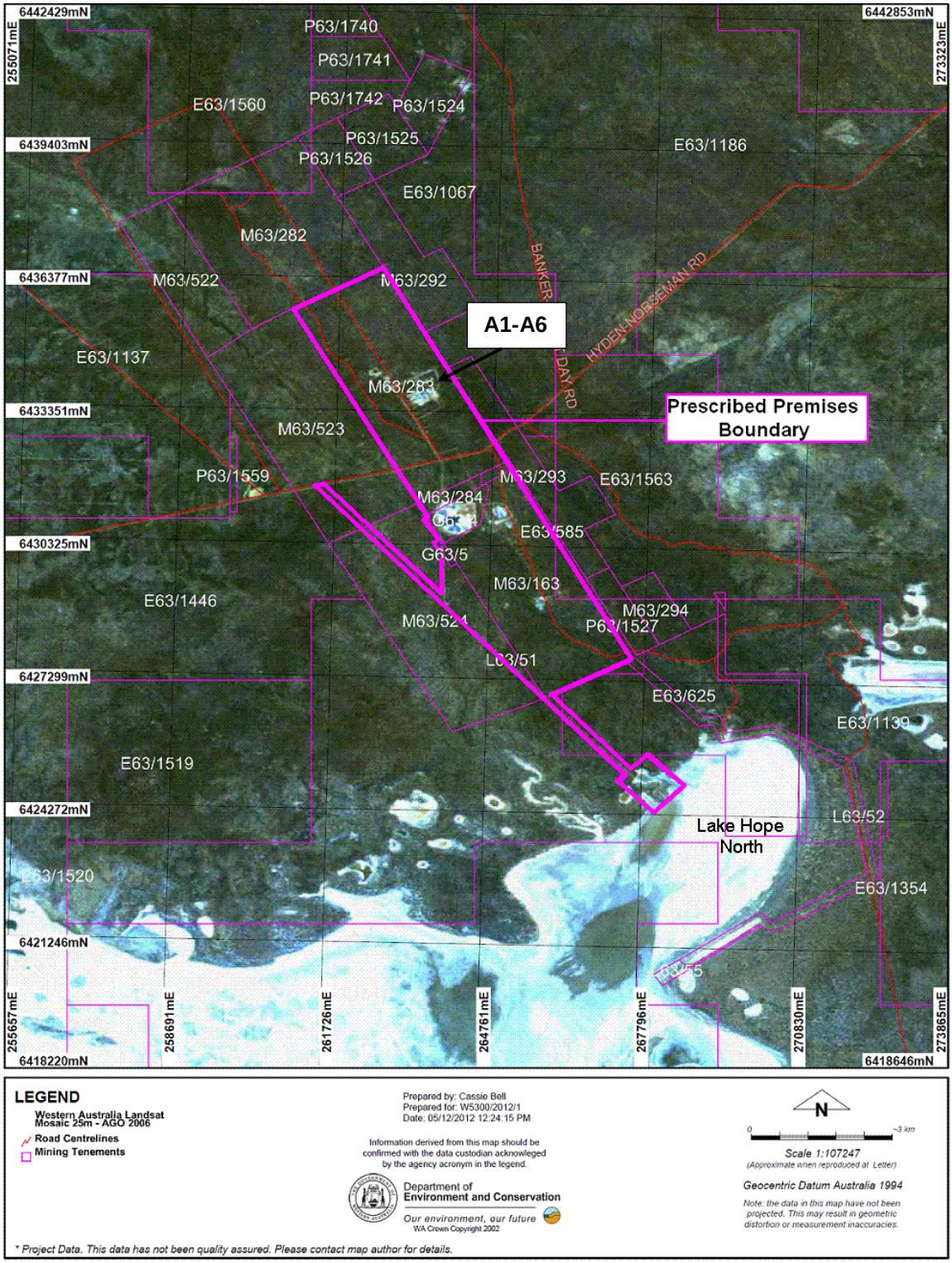
Condition or table (if relevant)	Parameter	Notification requirement[1]	Format or form[2]
2.1.1	Breach of any limit specified in the Licence	Part A: As soon as practicable but no later than 5pm of the next usual working day. Part B: As soon as practicable	N1
3.1.5	Calibration report	As soon as practicable.	None specified

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

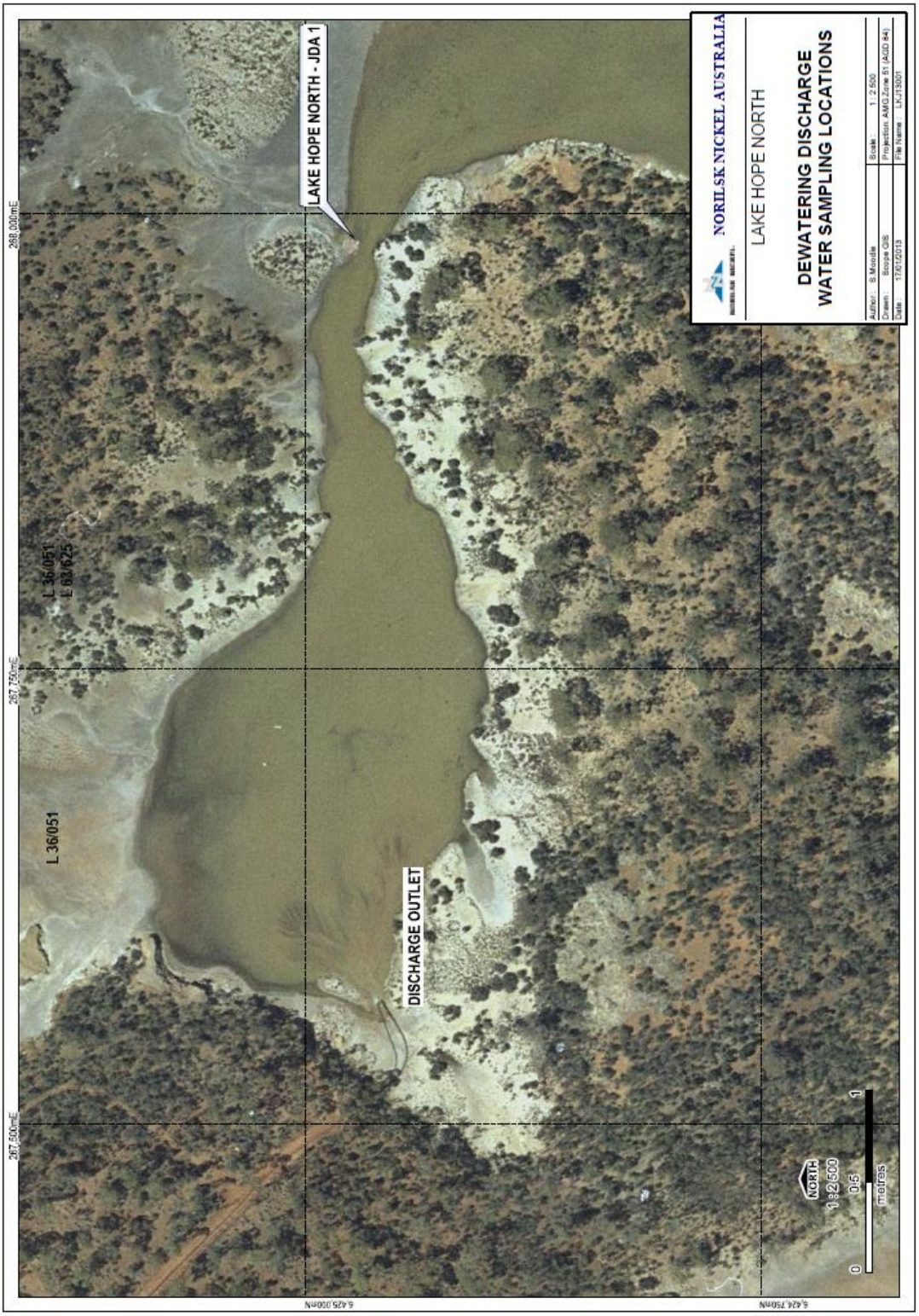
Premises map

The Premises is shown in the map below. The thick purple line depicts the Premises boundary. The emission point defined in Table 2.2.1 is shown below.



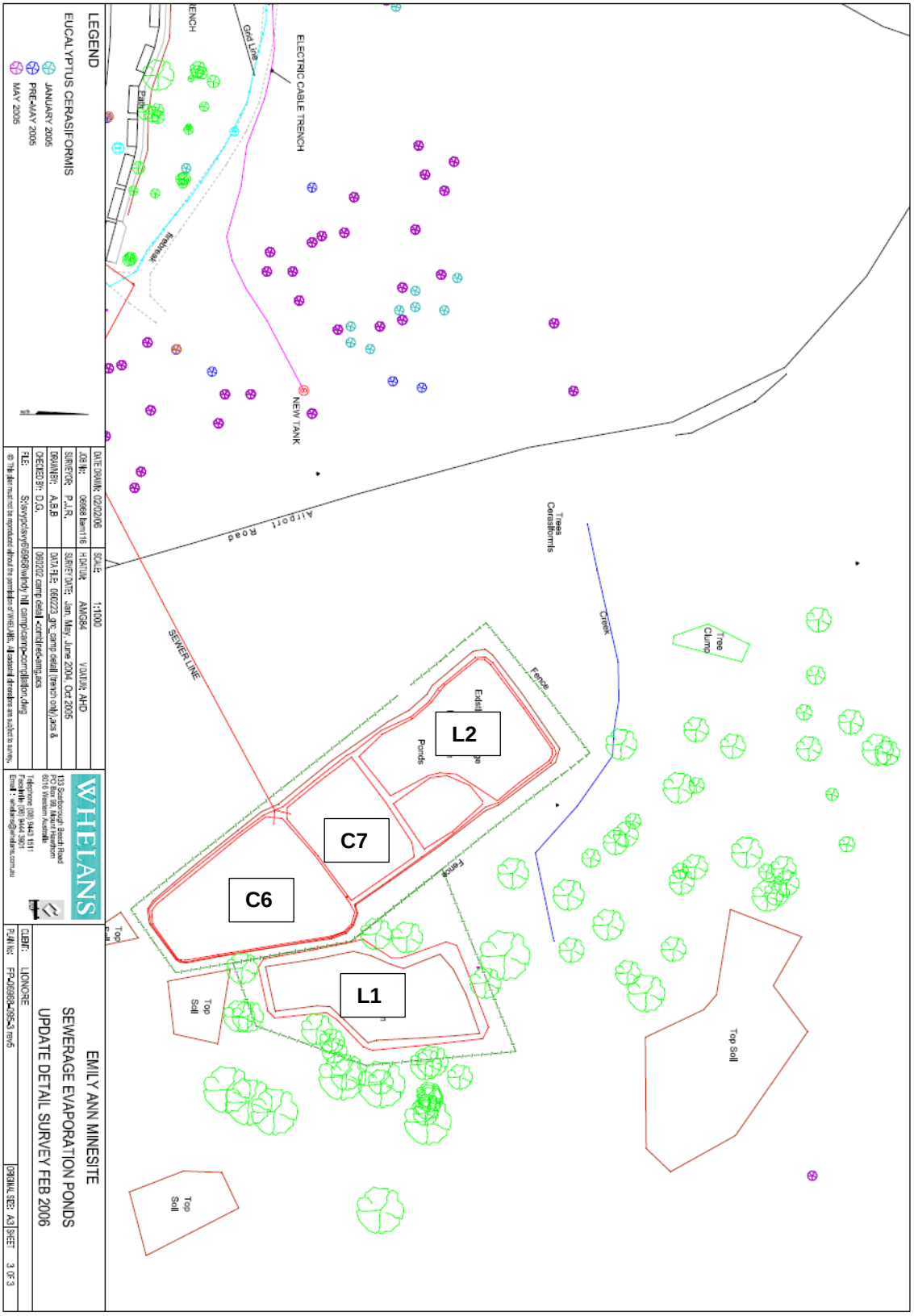
Map of emission points and monitoring locations

The locations of the emission points defined in Table 2.3.1 are shown below. The locations of the monitoring points defined in Table 3.8.1 shown below.



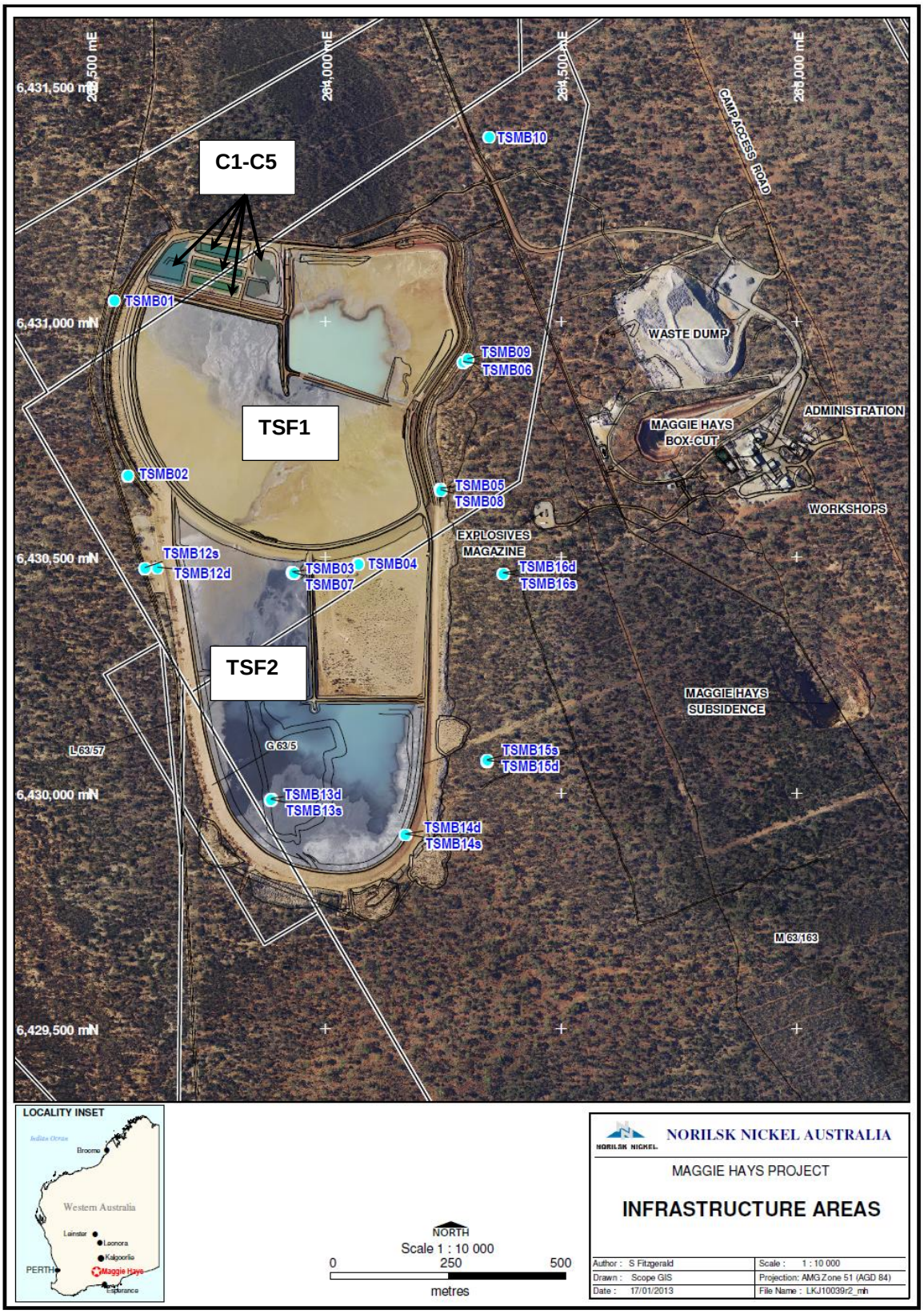
Map of emission points

The location of the emission points and containment infrastructure defined in Tables 1.3.1 and 2.5.1 is shown below.



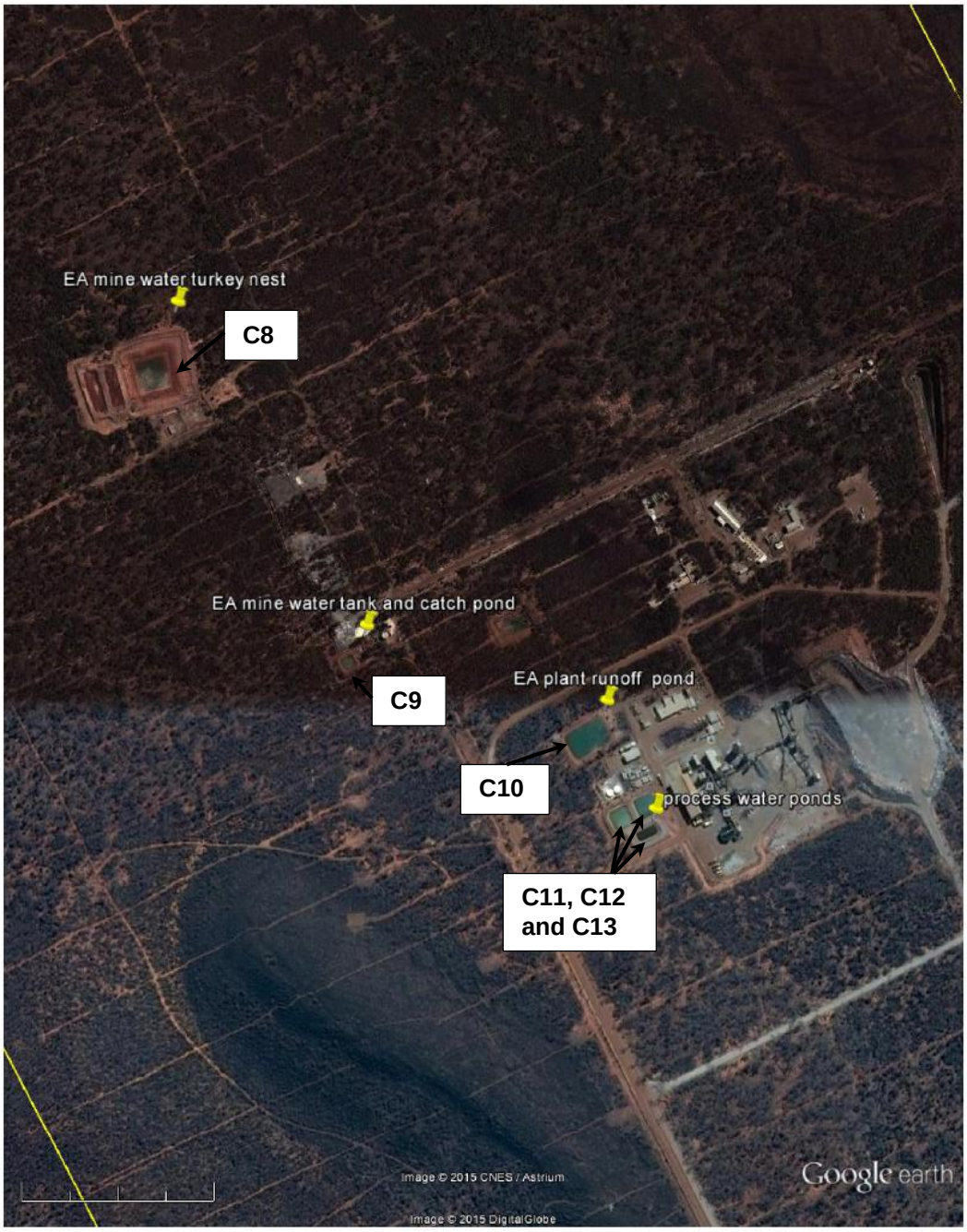
Map of monitoring locations

The locations of the monitoring points defined in Table 3.8.2; and containment infrastructure defined in Table 1.3.1 are shown below.



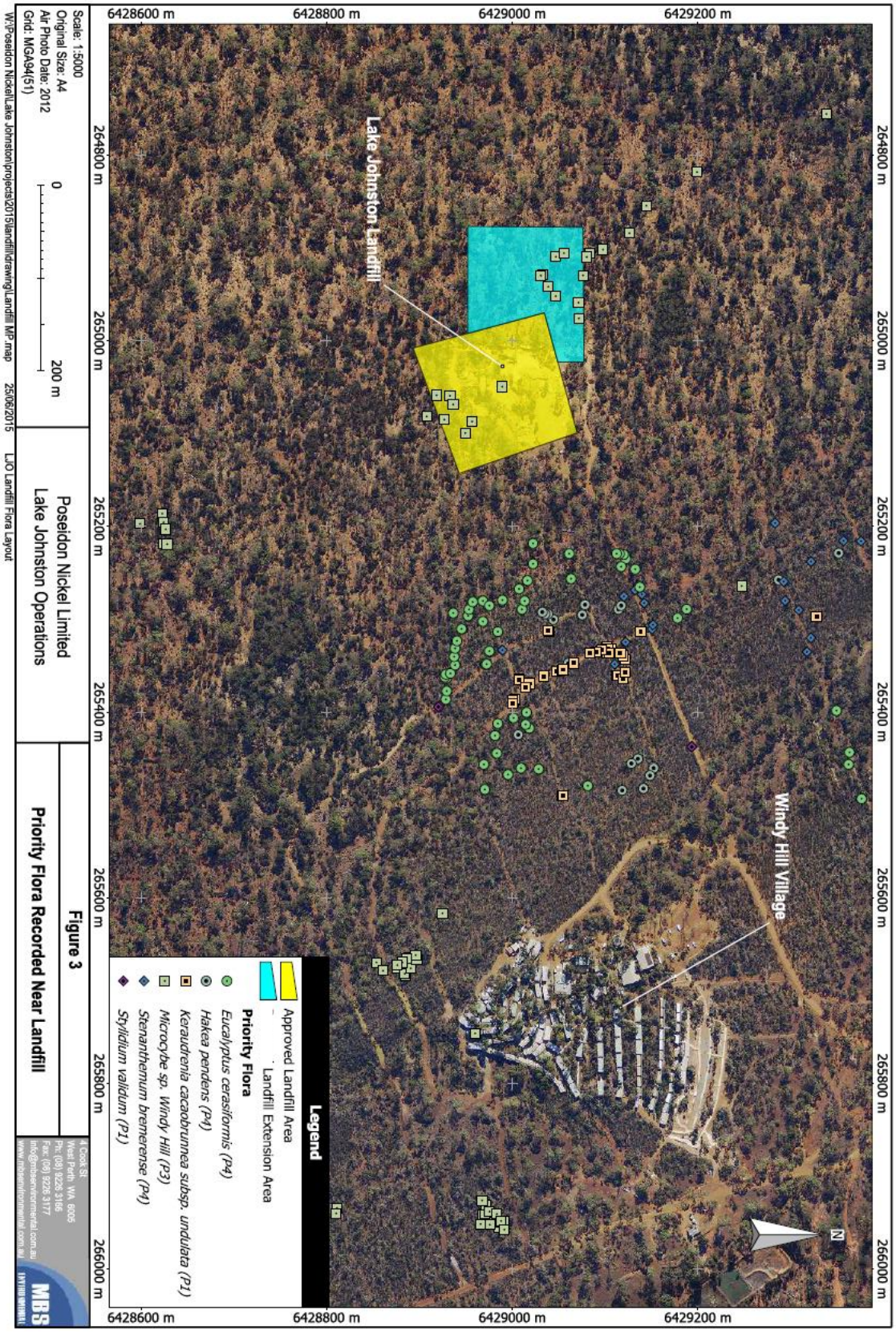
Map of contianment infrastructure

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



Landfill Area Map

The location of the landfilling areas defined in Tables 1.3.3 and 1.3.4 is shown below.



Landfill Area Map

The location of the landfilling areas defined in Tables 1.3.3 and 1.3.4 is shown below.

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: _____ SIGNATURE: _____

NAME:
(printed) _____ NAME:
(printed) _____

POSITION: _____ POSITION: _____

DATE: _____/_____/_____ DATE: _____/_____/_____

SEAL (if signing under seal)

Licence: L8628/2012/1 Licensee: Poseidon Nickel Limited
Form: N1 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	

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 Poseidon Nickel Limited	
Date	

Government of Western Australia
Department of Environment Regulation

Decision Document

Environmental Protection Act 1986, Part V

Proponent: Poseidon Nickel Limited

Licence: L8628/2012/1

Registered office:	Unit 8, Churchill Court 331-335 Hay Street SUBIACO WA 6008
ACN:	060 525 206
Premises address:	Lake Johnston Operations NORSEMAN WA 6210 Being mining tenements M63/163, M63/283, M63/284, L63/51, G63/4 and G63/5 as depicted in Schedule 1.
Issue date:	Thursday, 8 March 2012
Commencement date:	Thursday, 8 March 2012
Expiry date:	Tuesday, 7 March 2017

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:	Clarrie Green Licensing Officer
Decision Document authorised by:	Danielle Eyre Delegated Officer

Contents

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.

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**
	05	1 500 000 tonnes per annum
	06	5 000 000 tonnes per annum
	52	12.2 megawatts in aggregate (diesel)
	54	100 cubic metres per day
	63	500 tonnes per annum
	64	500 tonnes per annum
Application verified Application fee paid	Date: N/A Date: N/A	
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: EPA Report No:
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☒ If Yes include details of which EPP(s) here.		
Is the Premises subject to any EPP requirements? Yes☐ No☒ If Yes, include details here, eg Site is subject to SO_2 requirements of Kwinana EPP.		

3 Executive summary of proposal and assessment

In November 2014, Poseidon Nickel Limited (Poseidon) purchased the Lake Johnston Operations (LJO) from Norilsk Nickel Australia. LJO encompasses mining operations at Maggie Hays and Emily Ann nickel mines, which send ore to the onsite processing facility (LJO concentrator). The LJO concentrator also accepts some ore from the Black Swan nickel mine and has a production capacity of 1,500,000 tonnes of ore per year. Prior to a period of care and maintenance in 2009, nickel bearing ore was mined from both deposits. However, since emerging from care and maintenance in 2011, ore was mined from Maggie Hays only with Emily Ann mine allowed to flood. In July 2013 Norilsk entered into another period of care and maintenance with Maggie Hays mine also becoming non-operational to this date. LJO's current occupier, Poseidon, intends to shortly begin recommissioning the LJO concentrator with a processing trial using a limited quantity of stockpiled Black Swan ore.

When operating, ore is processed on site using a conventional sulfide flotation plant to produce nickel concentrate. Once crushed the majority of ore is stored in the fine ore bin before being conveyed to the mill for further processing through the grinding, flotation tanks, thickeners and filters. Final nickel concentrate product is stored within an enclosed shed before it is trucked offsite to Esperance Port.

The coarser tails fraction is separated during the thickening stage and piped to a conventional Tailings Storage Facility (TSF) to the south of the treatment plant. The original TSF (TSF1) underwent four lifts before being replaced with a second TSF (TSF2) in late 2007. TSF2 is currently undergoing a lift under works approval W5300/2012/1, which will bring the height of TSF2 to relative level (RL) 346.4 m.

The LJO Emily Ann Nickel Mine and Maggie Hays Nickel Mine are located 142km west of Norseman in the Shire of Dundas and within the Great Western Woodlands. Three plant species, all Eucalypts, found in the vicinity may be classified as rare or in need of special protection. The only regional surface water features are Lake Johnston and Lake Hope, and their satellite salinas. They are both located about 10km south of LJO. Lake Hope North is being used for the disposal of saline groundwater and mine water from the LJO. The groundwater level (prior to dewatering) ranged from 22m below ground level at Emily Ann Mine, to 32m below ground level at Maggie Hays Mine. Groundwater salinity ranges from 27,000-200,000mg/L while the salinity of dewater taken from within LJO ranges from 29,000-200,000mg/L.

This Licence is the result of an amendment sought by the Licensee to:

- transfer the name of the Licence from Norilsk to Poseidon;
- no longer require regular invertebrate monitoring;
- introduce sediment monitoring to measure impacts of dewatering; and
- reduce TSF groundwater monitoring frequencies at the TSF.

During the amendment process DER has also converted the Licence to an updated format. Upon converting the Licence DER reassessed the environmental impacts and contributing factors of seepage at TSF2 including the process of discharging treated effluent from the evaporation/infiltration ponds to the facility. Changes to licence conditions are outlined and justified in section 4.

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 L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
General conditions	L1.2.1 – 1.2.3	General conditions have been applied to the updated Licence (1.2.1 – 1.2.3) to ensure all pollution control and monitoring equipment to be maintained and any spilt materials that may cause environmental harm are recovered, removed or disposed of. Condition 1.2.3 replaces conditions 6, 7 and 8 on the previous Licence.	Application supporting documentation *Environmental Protection (Unauthorised Discharges) Regulations 2004).*
Premises operation	L1.3.1 – 1.3.15	Conditions 1.3.2 – 1.3.7 replace former conditions 4 and 8 – 13 for the management of the operational Tailings Storage Facility (TSF2), saline dewatering requirements, sewage and treated wastewater containment requirements. Standing water levels at TSF2 have previously demonstrated a rising trend toward the root zone of native vegetation. However, since this rise was identified in August 2012, standing water levels have since shown a decline due to the Lake Johnston Operations moving into care and maintenance resulting in tailings not deposited in TSF2. Poseidon were granted a works approval (W5300/2012/1) that allowed for an embankment lift at TSF2. By increasing the capacity of the TSF it is possible that there will be an increase in hydraulic pressure on liquid within TSF2, driving entrained water within the tailings into groundwater. However, it is expected that the extended period of care and maintenance would have resulted in tailings fines coagulating at the base of TSF2 forming a more impermeable base. In August 2012, DER was notified by the then Licensee of seepage occurring at TSF2 (see assessment in	Application supporting documentation General provisions of the *Environmental Protection Act 1986* *Environmental Protection (Concrete Batching and Cement Product Manufacturing) Regulations 1998*

DECISION TABLE			
Works Approval / Licence section	**Condition number L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		Appendix 1). Condition 1.3.9 – 1.3.13 includes conditions from the previous licence (Condition 19) updated and several new conditions to ensure the effective management of the wastewater treatment plant (WWTP) and Maggie Hays/Windy Hill landfills. This includes the conditions not previously on the Licence to ensure that: • sludges are regularly removed from the WWTP infiltration ponds to ensure adequate infiltration performance(1.3.12); and • no works at the landfill result in the release of asbestos fibres and that all hazardous waste be stored appropriately prior to disposal offsite (1.3.9). Previously under L8628/2012/1 it was permitted for putrescible waste to be covered with a 'cage or soil' however, to prevent fire and the attraction of vermin and native wildlife; the use of a cage as cover has been removed from the converted Licence. This requirement is consistent with other mine site landfills. Condition 1.3.14 pertains to the management of potentially contaminated stormwater from vehicle washdown activities. This condition has been directly transferred from the previous Licence. Condition 1.3.15 has been added to the Licence as a consequence of elevated nickel being found in stormwater at Esperance Port. As nickel is only exported out of the Port in closed, half-height containers, the source of this nickel is expected to be the result of product left on the outside of containers at the mine sites. Condition 5 has been removed from the Licence as all concrete batching operations will need to comply with the *Environmental Protection (Concrete Batching and Cement Product Manufacturing) Regulations 1998*.	
Emissions general	L2.1.1	Descriptive limits will be set through the emissions section of the licence and therefore condition regarding recording and investigation of exceedances of limits has been included.	N/A
Point source emissions to air	L1.2.2 L2.2.1	<u>Normal Operation</u> <u>Emission Description</u>	General provisions of the

DECISION TABLE			
Works Approval / Licence section	**Condition number L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
including monitoring		*Emission:* Poseidon generates power on-site using a 12.2 MW diesel power station. Exhaust gases are flued through six individual generator stacks to the atmosphere. *Impact:* Reduced air quality as a result of sulfur oxides and particulates emitted from the power station. *Control:* Poseidon will regularly service and maintain the power station to ensure its efficient burning of diesel for power generation. Due to the small size of the power station and its remote location away from sensitive receptors, the consequence of this emission is insignificant. Risk Assessment *Consequence*: Insignificant *Likelihood:* Possible *Risk Rating:* Low Regulatory Controls Due to the insignificant consequence of the emissions, no limits or monitoring conditions have been applied to the Licence. Condition 2.2.1 allows for Poseidon to emit exhaust gases from the power station to air, though in accordance with Condition 1.2.1.	*Environmental Protection Act 1986* Ambient Air Assessment Criteria, National Environmental Protection Measure (Ambient Air Quality)
Point source emissions to surface water including monitoring	L2.3.1 – 2.3.2 L3.2.1	**Normal Operation** Emission Description *Emission:* Dewatering effluent from the Maggie Hays Mine will be discharged to Lake Hope (North) where it will seep into groundwater and/or evaporate. Dewatering effluent is hypersaline at approximately 100,000 to 150,000 mg/L Total Dissolved Solids (TDS), and is similar quality of water to Lake Hope (North). *Impact:* Increasing salt concentrations within discharged dewater has the potential to kill or reduce the life cycles of salt-tolerant life forms in Lake Hope (North) such as Brine Shrimp (stygofauna) and can adversely affect vegetation. *Control:* No treatment of dewatering effluent is undertaken by Poseidon to reduce the salt loading on Lake Hope. Water quality from Maggie Hays Mine is of similar quality to that within Lake Hope (North) when present. No vegetation is present in the dewater discharge area.	Application supporting documentation General provisions of the *Environmental Protection Act 1986* Environmental Protection (Unauthorised

DECISION TABLE			
Works Approval / Licence section	**Condition number L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		Stygofauna sampling has indicated that the extended inundation of the lake from the mine water discharge actually increased the overall abundance of stygofauna. However, dewater from the Maggie Hay Mine has a higher salt content than from Emily Ann. Since the cessation of dewatering from Emily Ann, salt concentrations have increased at sample sites around Lake Hope (North). Many species are able to survive in waters with salinities up to 262,000 mg/L TDS, which is not expected to occur over extended periods. Risk Assessment *Consequence*: Minor *Likelihood:* Likely *Risk Rating:* Moderate Regulatory Controls Water sampling at the discharge point will continue as per licence condition 3.2.1. This will assist in the identification of extended trends for salinity levels within Lake Hope (North). Residual Risk *Consequence:* Minor *Likelihood:* Likely *Risk Rating:* Moderate	Discharges Regulations, 2004).
Point source emissions to groundwater including monitoring	N/A	There are no anticipated point source emissions to groundwater as a result of dewatering at Lake Johnston Operations. All current dewatering discharges are permitted under section 2.3, emissions to surface water (Lake Hope North).	General provisions of the *Environmental Protection Act 1986*
Emissions to land including monitoring	L2.4.1 L2.4.2	DER's assessment and decision making are detailed in Appendix A.	General provisions of the *Environmental Protection Act*

DECISION TABLE			
Works Approval / Licence section	**Condition number L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
			1986
Fugitive emissions	L2.5.1	Normal Operation Emission Description *Emission:* Dust emissions from the crusher, concrete batching plant and conveyor belts, as well as from disturbed areas, active stockpiles and movement of vehicles on unsealed roads. *Impact:* Dust has the potential to deposit on to nearby native vegetation and block plant stomata, reducing its ability to photosynthesise. The Lake Johnston Operations occurs within a Threatened Ecological Site containing a number of priority/threatened species. Particulate matter also has the potential to impact human health by entering the respiratory system. Environmental amenity values are high in the vicinity of the premises, and may be impacted by high total suspended particulate concentrations. *Controls:* The crusher facility has dust suppression in the form of water sprays and partially enclosed conveyor systems. As there is a minimum amount of water that can be applied before the crushed product sticks to the conveying mats, a High Vacuum Dust Extraction system is also used to improve the capture of dust generated from the final stages of the crushing circuit. Fugitive dust generated from vehicle movements along the road ways is minimised through the use of process or mine settling pond water applied routinely to dampen the road surface. The water used for road dust suppression has a higher salinity that assists in the formation of a salt crust, further preventing dust lift-off. During the drier summer months the roads are commonly watered a minimum of twice daily. Risk Assessment *Consequence*: Moderate *Likelihood:* Possible *Risk Rating:* Moderate Regulatory Controls Condition 2.5.1 has been applied to the Licence to ensure that Poseidon operate in	General provisions of the *Environmental Protection Act 1986*

DECISION TABLE			
Works Approval / Licence section	**Condition number L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		accordance with commitments made in the site's environmental management plan. This replaces conditions 2 and 3 of the previous Licence. Residual Risk *Consequence:* Minor *Likelihood:* Unlikely *Risk Rating:* Moderate	
Odour	N/A	Odours potentially generated from the putrescible landfill and wastewater treatment plant (WWTP) are not expected to reach human receptors beyond the premises boundary due to the remoteness of the site.	General provisions of the *Environmental Protection Act 1986*
Noise	N/A	Noise is not anticipated to interfere with the amenity of the nearest human receptor. Therefore no noise conditions have been applied to the Licence.	*Environmental Protection (Noise) Regulations 1997*
Monitoring general	L3.1.1	Condition 3.1.1 has been applied to ensure that all samples are collected in accordance to the relevant Australian Standards and are submitted to a laboratory with NATA accreditation.	Australian Standard AS/NZS 5667.1
Monitoring of inputs and outputs	L3.3.1	Condition 3.3.1 has been applied to the Licence to require the recording of annual waste inputs and outputs from the landfill and WWTP.	General provisions of the *Environmental Protection Act 1986.*
Process monitoring	N/A	There are no specified conditions relating to process monitoring.	N/A

DECISION TABLE			
Works Approval / Licence section	**Condition number L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Ambient quality monitoring	L2.3.2 L3.5.1 – 3.5.2 L3.5.3	**Sediment monitoring:** Due to the mining of naturally mineralised rock, there is some risk of trace metal loadings in the discharge. Natural levels of metals in the lake are low whereas sediments within dewatering effluent are expected to have marginally greater concentrations of metals. Dewatering effluent is held in settling ponds to reduce the volume of sediment deposition on Lake Hope (North). Dewatering effluent is then discharged to the lake over an energy dissipation device designed to minimise erosion and scouring impacts. Some sediment is still expected to enter Lake Hope (North) from the discharge point and be spread across the lake. Poseidon will be required to conduct sediment monitoring at a location near to the discharge outlet, downstream and background locations. Poseidon have committed to conducting an assessment of dewatering impacts to Lake Hope (North) to identify a background/no impact location for sediment sampling. Further requirements have been placed on the Licence and are discussed in the Improvements section of this table. Impacts from a small elevation in metals content on the Lake Hope (North) lakebed are expected to be low, due to the low concentrations of metals within dewater. Monitoring will assist in the identification of metal concentrations that could impact on the prevalence of native stygofauna. **Groundwater monitoring:** DER's assessment and decision making are detailed in Appendix A.	Australian Standard AS/NZS 5667.1 – Water Quality Sampling – Guidance on the Design of sampling, programs, sampling techniques and the preservation and handling of sample.
Meteorological monitoring	N/A	There are no meteorological monitoring requirements under this Licence.	N/A
Improvements	IR1	IR1 has been placed on the Licence to require Poseidon to conduct a Dewatering Discharge Impact Assessment designed to identify additional sediment sampling locations including a background sediment sampling point. As part of this assessment, an investigation into the area of impact will be necessary to identify	N/A

DECISION TABLE			
Works Approval / Licence section	**Condition number L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		where dewater commonly migrates to and pools, which should highlight the appropriate locations for sediment sampling. Discussion on measures proposed to identify dewatering impacts on fringing vegetation and invertebrates will also be required. Poseidon will be required by IR2 to submit three proposed locations for: background; near-discharge; and downstream sediment monitoring to measure parameters listed in Table 3.5.1. This will be required ahead of the Dewatering Discharge Impact Assessment to allow for an initial round of monitoring to be submitted as part of the next AER.	
	IR2		
Information	L5.1 – 5.3	Table 5.2.1 replaces condition 51 Annual Environmental Report (AER) with annual audit compliance reporting requirements being replaced by condition 5.1.3. As part of the AER, Poseidon will be required to submit an assessment of environmental impacts resulting from dewatering discharges to Lake Hope (North). Previously Poseidon had conducted stygofauna surveys to understand these impacts. Significant information has been gathered to identify the tolerance of stygofauna to hypersaline dewater discharges. In addition, the absence of water in recent years due to low rainfall and reduced dewatering has resulted in reduced information available for this assessment. Therefore condition 5.2.2(b) requires the assessment of impacts against sediment monitoring and discharge water sampling as opposed to aquatic ecological studies.	N/A
Licence Duration	N/A	The Licence expiry date has not been amended. An appropriate licence duration will be assessed at the time of reissue in 2017.	N/A

5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
25/05/2015	Proponent sent a copy of draft instrument	1) Request to conduct monthly monitoring of pipelines and TSF when not operational. 2) Request to replace sampling locations in Table 3.8.1 with three nominated locations to be submitted as part of a new improvement condition (IR2) 3) Reduce groundwater quality monitoring frequencies at the TSF to once every annual period. 4) Maintain the condition that allows the use of a cage to cover landfilled material. 5) Request not to require a flow meter on the WWTP as throughput can be measured through water supply metering. 6) Poseidon wish to extend the Windy Hill Landfill footprint. The extension involves the clearing of 1.95 ha of native vegetation including nine Priority 3 plants. No Declared Rare Flora was identified within or in the vicinity of the extension area. There are no proposed changes to landfilling activities.	1) Condition amended with a footnote to allow monthly monitoring when infrastructure is not operational. 2) Table 3.8.1 modified and improvement condition IR2 inserted. 3) Groundwater quality monitoring frequencies at the TSF have been reduced to six-monthly (see Appendix A). 4) Covering landfill material with a cage presents a risk for fire, fly-away litter and vermin and is not considered acceptable. However, plastic waste can be covered by a cage between the minimum monthly coverings to prevent windblown waste. 5) Water supply metering is not considered an accurate measure of the volume of water being treated. An inflow/outflow meter will still be required. 6) Although a Priority 3 species (*Microcybe* sp. Windy Hill) has been identified within the landfill extension area, the species has been identified at other locations of the prescribed premises. As there are no known watercourses in the extension area and groundwater is typically deep and of high salinity, impacts to water resources are expected to be negligible. Therefore the Windy Hill Landfill Area Map has been updated to include the proposed extended area.
03/08/2015	Proponent sent an updated draft instrument	No comments received	N/A

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

Emissions to land including monitoring

Normal operation – Wastewater Treatment Plant

LJO operates a packaged WWTP based on an advanced sequencing batch reactor technology to treat up to 100m^3 of wastewater per day using an ultra violet (UV) system before discharging into ponds where effluent is evaporated and infiltrated to ground. The WWTP was designed to achieve effluent qualities outlined in Table 1.

Table 1: Expected effluent quality from the packaged sewage treatment plant

Parameter	Concentration	Unit
Biochemical Oxygen Demand	<20	mg/L
Total Suspended Solids	<30	
Total Nitrogen	<20	
Total Phosphorus	<8	
Faecal coliforms	<150	cfu/100 mL

Emission: Treated effluents containing above background nutrient concentrations potentially seeping through to vegetative root zones and/or groundwater that runs toward Lake Hope North.
Impact: Elevated nutrients around the infiltration ponds as the result of seepage of treated effluent may promote faster growing plant species such as weeds at the expense of native vegetation. In addition, groundwater contamination with high nutrients can lead to the eutrophication of nearby surface waters, algal blooms and fish kills.
Control: Poseidon do not currently monitor the quality of treated effluent although at optimum efficiency, the WWTP is expected to produce high quality treated effluent.

Risk Assessment
Consequence: Minor
Likelihood: Unlikely
Risk Rating: Moderate

Regulatory Controls
L3.4.1 requires the biannual monitoring of treated effluent quality to ensure the WWTP is operating efficiently and that nutrient loading is not likely to significantly impact groundwater or surrounding vegetation. By providing monitoring data, Poseidon will be able to demonstrate to DER the ability to identify inefficiencies in the WWTP and rectify any issues prior to significant environmental impacts occurring.

Residual Risk
Consequence: Minor
Likelihood: Rare
Risk Rating: Low

Normal operation – TSF seepage

Currently LJO dispose of treated effluent to ponds for infiltration and evaporation with excess volumes being discharged to TSF2. It is estimated that this contributes an additional 6.5% of water volume to the TSF after tailings slurry is discharged when maximum throughputs at the WWTP are met. Pooled water within the TSF is recovered for reuse for process water in the processing plant.

In August 2012, the then Licensee, Norilsk, notified DER of evidence of seepage at TSF2 citing rising standing water levels in monitoring bores around the facility and seepage in the western toe drain. In July 2013, Norilsk entered into a period of care and maintenance and ceased discharging tailings slurry to TSF2. Since this time a slow decline in standing water levels has indicated that TSF2 is the most likely source of rising groundwater levels.

Poseidon plan to remove LJO from care and maintenance, reinstating TSF2 as a discharge point for tailings slurry from the processing facility. While existing tailings fines within TSF2 are expected to have consolidated during the care and maintenance period, there remains a risk of seepage at TSF2 as processing recommences.

Emission: Treated effluent being discharged to TSF2 is likely to contribute to seepage resulting in rising standing water levels. Groundwater in the project area can be described as hypersaline with TDS reaching up to 200,000 mg/L.
Impact: LJO falls within the Great Western Woodlands where vegetation is typically deep rooted, sometimes in excess of 10 metres. Should standing water levels reach the root zone of surrounding Priority and Threatened vegetation it is likely that the high salt content of groundwater would result in vegetation death. Impacts from groundwater mounding are likely to be localised to the western side of the TSF where seepage is currently apparent. Therefore a 'Moderate' consequence rating has been applied.
Control: Poseidon monitor standing water levels at monitoring bores around TSF2 on a quarterly basis.

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

Regulatory Controls
Standing water level limits set at 4 mbgl on the previous Licence have been retained to protect significant vegetation. Targets have not been retained. In the event that groundwater monitoring shows that seepage is resulting in significant groundwater mounding and there is a risk of impact to vegetation, management actions to reduce the volume of seepage entering and remaining in local groundwater will be required. Management actions may include limiting the volume of water that can be deposited to the TSF, increasing the volume of decant recovered from the TSF, or increasing the recovery of seepage from the ground around the TSF through recovery bores. If management actions are not undertaken by the Licensee in response to rising groundwater, the licence will be amended to regulate the actions required.

Condition 1.3.12 has also been added to require the regular removal of sludges from the WWTP infiltration ponds ensuring the WWTP's adequate infiltration performance and minimising the volume of treated effluent being discharged to TSF2.

Improvement condition IR1 requires Poseidon to conduct a water balance for LJO to assist in the identification of future improvements aimed at reducing seepage rates at TSF2. The water balance will need to include an assessment of the water volumes discharged to TSF2 and the volumes of water recovered versus evaporated.

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

Dewatering pipeline failure
Emission Description
Emission: Dewatering effluent from a leaking or ruptured pipeline being discharged to areas of native vegetation. Dewater effluent at the discharge point into Lake Hope (North) is hypersaline with TDS ranging between 130,000 mg/L and 270,000 mg/L.
Impact: Hypersaline water when discharged to land can result in salt scarring and vegetation death. LJO is situated within a number of Priority Ecological Sites for native vegetation. Impacts are likely to be localised and are therefore rated as 'Moderate'.
Control: Dewatering pipelines will remain bunded to capture discharges from leaking or ruptured pipelines.

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

Regulatory Controls
Condition 1.1.5, 1.2.2 and 1.2.3 replace condition 11 (i) which requires Poseidon to cease mine dewatering in the event of a pipeline leak. In addition, the regularity of dewatering pipeline monitoring will be increased from every second day to daily under condition 1.3.7. This is consistent with requirements on other dewatering licences and ensures that pipeline leakages do not result in significant damage to surrounding vegetation.

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

Ambient quality monitoring

Groundwater monitoring conditions 49 and 50 have been replaced by conditions 3.5.2 and 3.5.3.

A review of groundwater/surface water monitoring was conducted as part of this re-assessment and as a consequence of a P4 amendment request to reduce monitoring. The requirement to monitor dewater in the settling ponds has been removed from the Licence. It has been demonstrated through previous monitoring periods that there is little variation in water quality between the settling ponds and discharge point to Lake Hope (North).

The P4 amendment request submitted on 12 May 2015 requested that monitoring be reduced from quarterly to annually as the TSF has been in care and maintenance since mid-2013. DER requires a minimum frequency of six-monthly monitoring to remain so that data can be used to accurately calculate trends in water quality and standing water levels against potential seasonal fluctuations. Poseidon are expected to continue use of the TSF and therefore six-monthly monitoring would also be required to ensure any reasonable response times to potential seepage issues. Significant changes in water quality results may result in a licence amendment that sees TSF monitoring revert back to quarterly.

In the process of reviewing Poseidon's request and previous monitoring results provided in Annual Environmental Reports, DER has determined that the monitoring of arsenic, cadmium and mercury is not necessary for LJO. Arsenic, cadmium and mercury at every monitoring bore has been recorded as being below detectable levels for at least the last five years.

In addition, it has been concluded that groundwater monitoring at deeper bores are no longer necessary at this point. The purpose of having deep and shallow bores at the same locations is to track the location of a groundwater contamination plume at varying depths below ground level. Although contamination from seepage is important to investigate at LJO's TSFs, groundwater salinity ranges between 29,000 and 60,000 mg/L and is unusable. Shallow bores have been consistently intercepted since their construction in 2008. Groundwater quality is best measured from these bores as they best represent the quality of groundwater nearest to the root zone of vegetation.

TSMB16S and TSMB16D have demonstrated stabilised groundwater quality on all parameters and have therefore been removed from quarterly groundwater quality monitoring. However, standing water levels will still be required to be tested at each bore. DER may reintroduce these bores and other deep monitoring bores, to the groundwater sampling regime should standing water levels begin to rise or other groundwater users enter the vicinity of the TSF.