Amended Licence

Licence Number	L4557/1986/19
Licence Holder	Iluka Resources Limited
ACN	008 675 018
Registered business address	Level 23, 140 St Georges Terrace PERTH WA 6000
Duration	24/01/2014 to 23/01/2034
Date of Amendment	13/03/2024
Date of issue	23/01/2014
Prescribed Premises	Category 8: Mineral sands mining or processing Category 31: Chemical manufacturing Category 37: Char Manufacturing as defined in Schedule 3
Premises	North Capel Operations Yeardy Rd CAPEL WA 6271 Being all of mining tenements M70/257, M 70/651, M70/959, M70/962, M70/970, M70/978, M70/990, M70/1083 and M 70/1128, and part of mining tenements M70/279, M70/386 & M70/1082, as depicted in Schedule 1

This Amended Licence is granted to the Licence Holder, subject to the following conditions, on 13/03/2024, by:

Amine Fisher
Digitally signed by Amine Fisher
Date: 2024.03.13 15:47:26 +08'00'

Manager, Process Industries
Regulatory Services
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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Contents

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: http://www.slp.wa.gov.au/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.

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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

The Iluka North Capel Operations is a mineral sands processing facility located on the outskirts of Capel. It is predominantly surrounded by farming land with the nearest sensitive receptors being single rural dwellings located over 500 m from the main processing areas. The site is also bounded to the west by a regional highway.

The process at the site primarily involves the production of ilmenite, which is further processed into Synthetic Rutile (SR). Support processes include a co-generation plant, a char plant and the storage of process by-products.

The main air emissions are particulates and sulfur dioxide, primarily from the SR kilns. Both kilns have pollution abatement in the form of a scrubber (SR1) and electrostatic precipitator (SR2), prior to discharge via two 110 m stack. Process wastewater is managed through a biofilter, prior to discharge to a local watercourse. Process by-products (iron oxide, ammonium chloride and neutralised acid effluent) are stored within lined containment dams.

Kiln SR2 was restarted after a prolonged shutdown period in April 2015. Kiln SR1 was recommissioned in February 2023.

Licences reissues and amendments notices issued for the Premises since 17/01/2013 are listed in the Table below.

Instrument	Issued	Amendment
L4557/1986/18	17/01/2013	Licence reissue
L4557/1986/19	10/04/2014	Licence reissue. Conversion to new licence template
L4557/1986/19	12/05/2014	Licence amendment. Timeframes for CEMS installation and SO_2 emissions criteria amended.
L4557/1986/19	29/4/2016	Notice of Amendment: to extend the expiry date of the Licence.
L4557/1986/19	17/03/2019	Licence amendment to allow for the upgrade of the carbon recovery circuit
L4557/1986/19	16/10/2019	Licence amendment to include emission points A14, AX and AY
L4557/1986/19	02/08/2023	Licence amendment to include conditions for the ongoing operation of a new stack for air emissions from the Synthetic Rutile Plant (SR1)
L4557/1986/19	13/03/2024	Licence amendment to rename containment infrastructure for storage of processing by-products Iron Oxide and Neutralised acid effluent from IO and NAE to Co-products Storage Dams (CPS Dams) to enable the storage dams to be used for storage of either product dependent on licence holder needs.

Severance

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

END OF INTRODUCTION

Licence conditions

1 General

1.1 Interpretation

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

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

'AACR' means 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: https://www.dwer.wa.gov.au

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

'AER' means the Annual Environmental Report;

'ANZECC' means the Australian and New Zealand Environment Conservation Council (ANZECC) which was a Ministerial Council operating between 1991 and 2001 and which provided a forum for member governments to develop coordinated policies about national and international environment and conservation issues; ANZECC issued a series of Guidelines such as the ANZECC Guidelines for Fresh and Marine Water Quality 2000;

'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 5667.6' means the Australian Standard AS/NZS 5667.6 *Water Quality – Sampling – Guidance on sampling of rivers and streams;*

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

'AS 4323.1 – 1995' means Stationary source emissions – Selection of sampling positions;

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

'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;

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CEO' means Chief Executive Officer of the Department. submit to / notify the CEO" (or similar),means either:

Director General
Department administering the *Environmental Protection Act 1986*
Locked Bag 10
Joondalup DC WA 6919

or:

info@dwer.wa.gov.au

'Department' means the department established under s.35 of the Public Sector Management Act 1984 and designated as responsible for the administration of Division 3 Part V of the *Environmental Protection Act 1986*;

'DWER' means Department of Water and Environmental Regulation;

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

'hardstand' means an impermeable surface;

'Licence' means this Licence numbered L4557/1986/19 and issued under the Act;

'License Holder' means the person or organisation named 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;

'NCSM' means North Capel Separation Mill;

'NDSC' means New Dry Separation Circuit ;

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

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

'RATA' means Relative Accuracy Test Audit;

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

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

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

'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;

'SR1' and 'SR2' means Synthetic Rutile Plant No.1 and Synthetic Rutile Plant No.2, respectively;

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

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

'STP dry' means standard temperature and pressure (0°Celsius and 100.000 kilopascals respectively), dry;

'TPM' means Total Particulate Matter;

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

'USEPA Methos 2' means Determination of Stack Gas Velocityand Volumetric Flow Rate;

'USEPA Method 5' means the USEPA Method 5 *Determination of Particulate Matter Emissions from Stationary Sources*;

'USEPA Method 6C' means the USEPA Method 6C *Determination of Sulfur Dioxide Emissions from Stationary Sources (Instrument Analyser Procedure)*;

'USEPA Method 7E' means the USEPA Method 7E *Determination of Nitrogen Oxides Emissions from Stationary Sources (Instrumental Analyser Procedure)*;

'USEPA Method 8' means the USEPA Method 8 *Determination of Sulfuric Acid and Sulfur Dioxide Emissions from Stationary Sources*;

'USEPA Method 11' means the USEPA Method 11 *Determination of Hydrogen Sulfide Content of Fuel Gas Streams in Petroleum Refineries*;

'**USEPA Method 17'** Means the USEPA Method 17 *Determination of Particulate Matter from Stationary Sources;*

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

'waste' has the meaning defined in the *Environmental Protection Act 1986*; and

'µS/cm' means micro Siemens per centimetre.

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.

1.1.5 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

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

1.2.3 The Licence Holder 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]

Note 1: 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 Licence Holder shall ensure that hazardous/waste material is only stored and/or treated within vessels or compounds provided within the infrastructure detailed in Table 1.3.1 and identified on the map of storage locations in Schedule 1.

Table 1.3.1: Containment infrastructure

Vessel or compound and reference on map of storage locations	Material	Infrastructure requirements
Solution Storage Dam SSD	Mixed effluent and scrubber / ESP solids	Lined to achieve a permeability of 10^{-9} m/s or less
Co-product Storage Dams (CPS Dam 1 – CPS Dam 9)	Iron oxide solids and NH_4Cl liquor, Or Neutralised acid effluent and solids	
Acid effluent dams B5.061, B5.062 & B25.066	Acid effluent	

1.3.2 The Licence Holder shall manage the infrastructure listed in Table 1.3.1 (whilst containing the corresponding material listed in Table 1.3.1) such that:

(a) overtopping of the containment infrastructure does not occur;

(b) a minimum top of embankment freeboard of 300 mm is maintained; and

(c) the integrity of the containment infrastructure is maintained.

1.3.3 The Licence Holder shall ensure that all pipelines containing environmentally hazardous substances are either:

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

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

2 Emissions

2.1 General

2.1.1 The Licence Holder 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 Licence Holder 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.

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Table 2.2.1: Emission points to air			
Emission point reference and location on map of emission points	**Emission Point and source**	**Emission point height (m)**	**Source, including any abatement**
A1	SR2 110 m Stack	110	SR2 dryer via venturi scrubber and wet cyclone; SR2 kiln via thermal oxidiser and ESP;; Acid leach via thermal oxidiser
A15	SR1 110 m Stack	110	SR1 kiln via thermal oxidiser and wet scrubber
A3	SR1 Dedusting Stack	34	SR1 dedusting via radial flow scrubber
A4	SR2 Dedusting Stack	40.6	SR2 dedusting via baghouse, SR2-J26-001
A5	SR2 Raw Materials Dedust Stack	6.9	SR2 raw materials dedusting via baghouse, SR2-J26-120
A6	SR2 Blending Dedust Stack	16.4	SR2 blending dedusting via baghouse, SR2-J26-110
A7	SR2 Bin Dedust Stack	3.6	SR2 bin dedusting via baghouse, SR2-J26-130
A8	SR2 Product Dedust Stack	18	SR2 product bins dedusting via baghouse, SR2-B24-070
A9	SR2 Storage Dedust Stack	8.4	SR2 storage bins dedusting via baghouse, SR2-B24—090
A10	NCSM Stack	35.38	Train 1 via baghouse, I02-102 Train 2 via baghouse, I02-202 Inplant baghouse, G02-001
A11	NCSM Product Bin Stack	2.9	NCSM product bin venting via baghouse, G02-010
A12	SR1 Kiln stack cap	32.1	Emergency/maintenance venting
A13	SR2 Kiln stack cap	37.3	
A14	Carbon recovery circuit de-dusting stack	6.0	Cartridge-style dust collector
AX	Dry separation de-dusting stack	9.25m	NCSM via dedusting baghouse
AY	Dry separation de-dusting stack	9.25m	NCSM via dedusting baghouse

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

2.2.3 The Licence Holder is exempt from compliance from condition 2.2.2. if in the case of an event in Table 2.2.3 the corresponding management action is taken.

Table 2.2.2: Point source emission limits to air			
Emission point Reference	**Parameter**	**Limit (including units)[1]**	**Averaging period**
A1, A3, A4, A15 A10 – A11 A14, AX and AY	Particulates	250 mg/m^3	Stack test (60 minute average)

Note 1: All units are referenced to STP dry

2.2.4 The Licence Holder shall take the specified management action in the case of an event in Table 2.2.3.

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Table 2.2.3: Management actions			
Emission point reference	**Event/ action reference**	**Event**	**Management action**
A1, A15	EA1	Start up (from kiln hold condition, bringing the kiln back to operating temperature)	The Licence Holder shall take all practical measures to minimise emissions

2.2.5 The Licence Holder shall take all practical measures to ensure that the process control parameters in Table 2.2.4 comply with the requirements specified in that table.

Table 2.2.4: Process controls for emissions to air		
Parameter	**Requirement**	**Averaging period**
Temperature within the thermal oxidisers	>760 °C	Continuous[1]

Note 1: Availability ≥90% on a monthly basis.

2.2.6 The Licence Holder shall not allow openings of the SR1 or SR2 Kiln stack cap or the venting of acid leach mixed gas, unless necessary for the safe operation of the Premises, or as approved by the- CEO.

2.3 Point source emissions to surface water

2.3.1 The Licence Holder is permitted, subject to conditions in the Licence, to emit wastes to surface water from the emission point listed in Table 2.3.1.

Table 2.3.1: Emission points to surface water		
Emission point reference	**Description**	**Source including abatement**
W1	Discharge to the Elgin drain via the Bentley Road v-notch weir	Process wastewater and stormwater via an on-site biofilter

2.3.2 The Licence Holder shall not cause or allow point source emissions to surface water greater than the limits listed in Table 2.3.2.

Table 2.3.2: Point source emission limits to surface water			
Emission point reference	**Parameter**	**Limit (including units)**	**Averaging period**
W1	pH	between 5.5 and 9.0	Spot sample
	Electrical conductivity @ 25°C	3 500 µS/cm	
	Total suspended solids	300 mg/L	
	Sulfate	1 250 mg/L	
	Iron	2 mg/L	
	Manganese	1.9 mg/L	
	Ammonia-nitrogen	5 mg/L	

2.4 Point source emission to land

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2.4.1 The Licence Holder ensure that where waste is emitted to land to the reference point in Table 2.4.1 and identified on the map of solid waste disposal locations in Schedule 1 it is done so in accordance with the conditions of this licence.

Table 2.4.1 Point source emission to land		
Reference point on map of solid waste disposal locations	**Material**	**Infrastructure requirements**
Solid Kiln Waste disposal location	• fines waste – final non-magnetic from the magnetic belt separators and J26 dust (<2 mm fraction); • course waste – screen oversize (>10 and < 40 mm fraction) and middlings magnetics (> 2 and < 10 mm fraction); and • cooler oversize – accreted lumps (>40 mm fraction) and melted iron, silica and alumina unsuitable for further processing.	≥ 1m above the height of the winter water table

2.4.2 The Licence Holder shall only bury inert waste from the on-site processing of mineral sands to the reference point in Table 2.4.1 and identified on the map of solid waste disposal locations in Schedule 1.

3 Infrastructure and equipment

3.1 The Licence Holder must ensure that the infrastructure and equipment specified in Column 1 of Table 3.1 is maintained in good working order and operated in accordance with the requirements specified in Column 2 of Table 3.1

Table 3.1: Infrastructure and equipment controls table	
Column 1	**Column 2**
Site infrastructure and equipment	**Operational requirement**
NCSM	
Stack A10 (35.4m)	Connected to a dust collection system. Stack to have a stack sampling points installed that are compliant with AS 4323.1 - 1995. Monitored annually for TPM
NCSM-E02 process control equipment NCSM-G03 plant vacuum cleaning system NCSM-I01 ilmenite H.M.C. feed circuit NCSM-I02 ilmenite drying circuit NCSM-I03 ilmenite separation process circuit NCSM-I04 ilmenite electrostatic separation process circuit	Operated to design specification
NCSM baghouse consisting of: • filter media (fabric bags) • compressed air for reverse pulsing to clean filters • dust collection hoppers • extraction fan for each baghouse Baghouse to be fitted with differential pressure indicators, high level switches and auto leak detection for potential bag failure.	Bags to be replaced immediately if bag failure is detected. Have spare bags available on site to replace any broken bags
NDSC	

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Stack AX (9.25 m) Stack AY (9.25 m)	Connected to a dust collection system. Stack to have a stack sampling points installed that are compliant with AS 4323.1- 1995. Monitored annually for TPM
separation process circuit reject bin re-heater high tension rollers dust collection systems product bin	Operated to design specification
2X baghouses consisting of: • filter media (fabric bags) • compressed air for reverse pulsing to clean filters • dust collection hoppers • extraction fan for each baghouse Baghouses to be fitted with differential pressure indicators, high level switches and auto leak detection for potential bag failure.	Bags to be replaced immediately if bag failure is detected. Have spare bags available on site to replace any broken bags
Carbon recovery circuit	
Stack A14 (6.0m)	Connected to a cartridge style dust collection system. Stack to have a stack sampling points installed that are compliant with AS 4323.1-1995. Monitored annually for TPM
Recovery circuit consisting of: • two large (25m tall) fully enclosed product bins • fully enclosed product bagging and storage shed sampling and bagging equipment • dust collector and associated de-dusting stack • screw feeders • two fully enclosed transfer conveyors	Operated to design specification
SR01 North Capel Synthetic Rutile Plant #1	
Stack A15 (110m)	Connected to a dust collection system. Stack to have a stack sampling points installed that are compliant with AS4323.1-1995. Monitored bi-annually
SR01 equipment SR01-B01 Aeration & NH4Cl mixing SR01-B02 Hydrocycloning SR01-B03 Acid Leaching & Washing SR01-B04 Synthetic Rutile Product Drying SR01-G01 General infrastructure SR01-J01 Raw Materials Handling SR01-J02 Waste Gas Cleaning SR01-J03 Rotary Reduction Kiln SR01-J04 Rotary Product Cooling Kiln SR01-J05 Kiln Product Separation SR01-J06 In plant Dedusting SR01-J07 Water Storage & Distribution SR01-J08 Fire Fighting SR01-J09 Compressed Instrument Air	Operated to design specification
SR02 North Capel Synthetic Rutile Plant #2	
Stack A1 (110m)	Connected to a dust collection system. Stack to have a stack sampling points installed that are compliant with AS4323.1-1995. Monitored bi-annually
SR02-B21 Aeration SR02-B22 Hydrocycloning SR02-B23 Acid Leaching And Washing SR02-B24 Synthetic Rutile Drying SR02-B25 Acid Neutralization Plant SR02-G01 General	Operated to design specification

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SR02-J21 Raw Materials Handling SR02-J22 Waste Gas System SR02-J23 Rotary Reduction Kiln SR02-J24 Rotary Cooler SR02-J25 Kiln Product Separation (incl. Activated Carbon Plant) SR02-J26 Inplant Dedusting SR02-J27 Water Storage And Distribution SR02-J28 Fire Fighting Equipment SR02-J29 Compressed Air System SR02-J30 Air Conditioning And Lighting SR02-J31 Electrical Supply SR02-P21 Boiler- Superheater- Economiser SR02-P22 Precipitator & Gas Discharge System SR02-P23 Turbo-Generator SR02-P24 Condensate & Feedwater System SR02-P25 Water Treatment Plant	

4 Monitoring

4.1 General monitoring

4.1.1 The Licence Holder shall ensure that:

(a) all water samples are collected and preserved in accordance with AS/NZS 5667.1 unless indicated otherwise in the relevant table;

(b) all wastewater sampling is conducted in accordance with AS/NZS 5667.10;

(c) all groundwater sampling is conducted in accordance with AS/NZS 5667.11; and

(d) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured unless indicated otherwise in the relevant table.

4.1.2 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.

4.1.3 The Licence Holder shall record production or throughput data and any other process parameters relevant to any non-continuous or CEMS monitoring undertaken.

4.1.4 The Licence Holder shall have all monitoring equipment referred to in any condition of the Licence calibrated in accordance with the manufacturer's specifications and any relevant Australian standard.

4.1.5 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.

4.2 Monitoring of point source emissions to air

4.2.1 The Licence Holder shall undertake the monitoring in Table 4.2.1 according to the specifications in that table.

Table 4.2.1: Monitoring of point source emissions to air					
Emission point reference	**Parameter**	**Units[1]**	**Frequency [2]**	**Method**	**Averaging period**
A1, A15	Sulfur dioxide	mg/m^3	Continuous[3]	CEMS	60 minutes

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	Particulates Sulfur dioxide Sulfur trioxide Hydrogen sulfide Nitrogen oxides	g/s	Six monthly	USEPA Method 5 USEPA Method 6C or 8 USEPA Method 8 USEPA Method 11 USEPA Method 7E	Stack test (60 minute average)
– A4 A10 – A11 A14, AX and AY	Particulates			USEPA Method 5 or USEPA Method 17	

Note 1: All units are referenced to STP dry
Note 2: Monitoring shall be undertaken to reflect normal operating conditions and any limits or conditions on inputs or production.
Note 3: Availability ≥90% on a monthly basis

4.2.2 The Licence Holder shall ensure that sampling required under condition 4 is undertaken at sampling locations in accordance with the AS 4323.1 or relevant part of the CEMS Code.

4.2.3 The Licence Holder shall ensure that all non-continuous sampling and analysis undertaken pursuant to condition 4 is undertaken by a holder of NATA accreditation for the relevant methods of sampling and analysis.

4.2.4 For any parameter in Table 4.2.1 requiring continuous monitoring, the Licence Holder shall ensure that the CEMS is regularly operated, maintained and calibrated in accordance with the CEMS Code with the following exemptions:
(a) established CEMS are exempt from meeting Phase I, II, and III.

4.3 Monitoring of point source emissions to surface water

4.3.1 The Licence Holder shall undertake the monitoring in Table 4.3.1 according to the specifications in that table.

Table 4.3.1: Monitoring of point source emissions to surface water

Emission point reference	Parameter	Units	Frequency
W1	volumetric flow rate	m^3/day	Continuous (whilst flowing)
	pH[1]	-	
	electrical conductivity @ 25°C[1]	µS/cm	
	total suspended solids	mg/L g/day	Monthly
	ammonia-nitrogen, nitrate-nitrogen, sulfate, iron, manganese		
	arsenic, chromium, copper, lead, mercury, selenium, zinc		Quarterly

Note 1: In field non-NATA accredited testing permitted

4.4 Process Monitoring

4.4.1 The Licence Holder shall undertake the monitoring in Table 4.4.1 according to the specifications in that table.

Table 4.4.1: Process monitoring

Monitoring point reference	Process description	Parameter	Units	Frequency	Averaging period
PM1	Thermal oxidisers	Carbon monoxide	mg/m^3	Continuous[1]	60 minutes

Note 1: Availability ≥90% on a monthly basis.

4.5 Ambient environmental quality monitoring

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4.5.1 The Licence Holder shall undertake the monitoring specified in Table 4.5.1 according to the specifications in that table.

Table 4.5.1: Monitoring of ambient groundwater quality

Monitoring point reference and location on map of monitoring locations	Monitoring point reference on Map of monitoring points	Parameter	Units	Frequency
WQ1 – WQ20	NC145S, M & D NC174S, M & D NC175S, M & D NC082S NC091S NC106S & M NC107S & M NC134M NC141S & M NC142S & M NC001SR2, MR1 & DR1 NC003SR1 NC057M & D NC118S NC124D NC125M & D NC147S, M & D NC155S & M NC156S NC157S & M	standing water level	mAHD	Quarterly
		pH[1]	-	
		electrical conductivity @ 25°C[1]	µS/cm	
		ammonia-nitrogen, nitrate-nitrogen, sulfate, iron, manganese	mg/L g/day	
		arsenic, chromium, copper, lead, mercury, selenium		Annually

Note 1: In field non-NATA accredited testing permitted

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 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.

5.1.3 The Licence Holder shall complete an Annual Audit Compliance Report (AACR) 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.

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5.1.4 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.

5.2 Reporting

5.2.1 The Licence Holder shall submit to the CEO an Annual Environmental Report (AER) by 1 April in each year. 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
Table 4.2.1	Monitoring of point source emissions to air	AR1
Table 4.3.1	Monitoring of point source emissions to surface water	WR1
Table 4.5.1	Monitoring of ambient groundwater quality	None specified
5.1.3	Compliance	AACR[2]
5.1.4	Complaints summary	None specified

Note 1: Forms are in Schedule 2
Note 2: Form on DWER website

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

5.2.3 The Licence Holder 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[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
2.2.6	Emergency /maintenance stack cap opening or acid leach mixed gas venting	Monthly	28 calendar days	None specified
Table 4.2.1	particulates, sulfur dioxide, nitrogen oxides, sulfur dioxide, sulfur trioxide, hydrogen sulfide	Six monthly		AR1
4.2.4	CEMS performance			RATA1

Note 1: Forms are in Schedule 2

5.2.4 The Licence Holder shall ensure that results from continuous monitoring are made available on request as tabulated data and time series graphs including:

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(a) times and dates;
(b) unavailability of abatement;
(c) target or limit exceedances; and
(d) an assessment of the information contained within the report against previous submissions and Licence limits.

5.3 Notification

5.3.1 The Licence Holder shall ensure that the parameters listed in Table 5.3.1 are notified to the CEO at the Contact Address and 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
4.1.5	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

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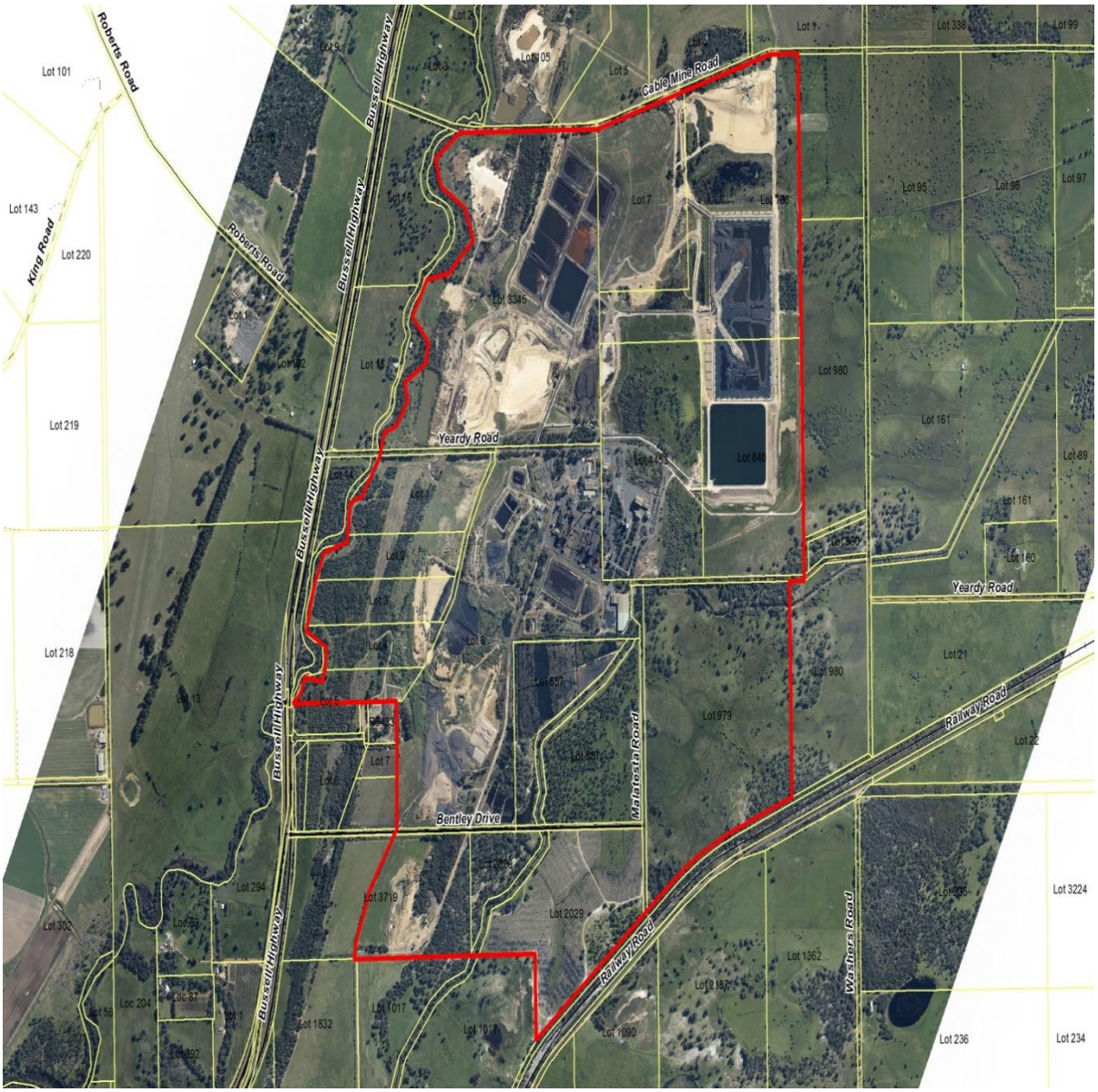
Schedule 1: Maps

Premises map

The red line depicts the Premises boundary.



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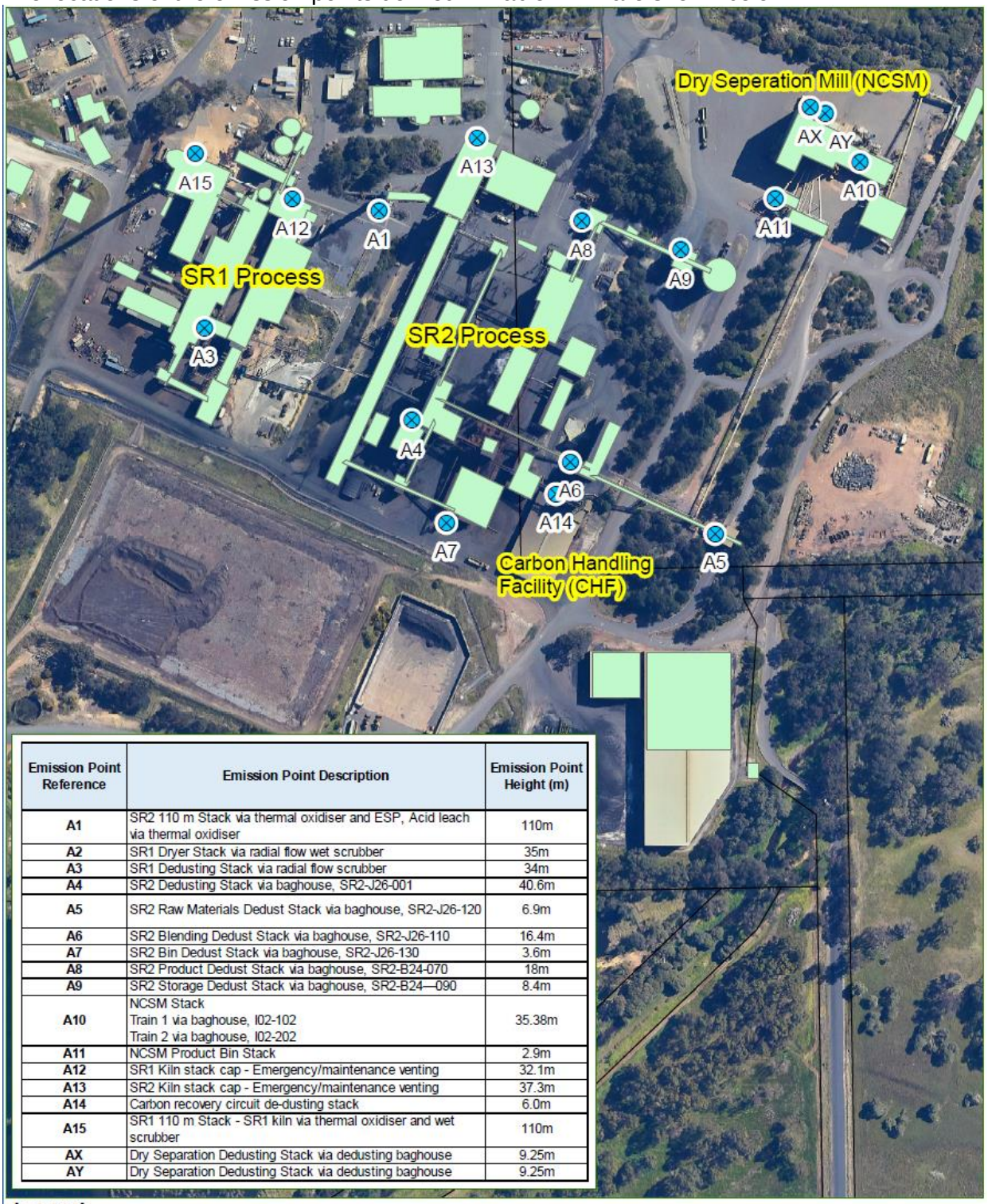
Map of emission points

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



Emission Point Reference	Emission Point Description	Emission Point Height (m)
A1	SR2 110 m Stack via thermal oxidiser and ESP, Acid leach via thermal oxidiser	110m
A2	SR1 Dryer Stack via radial flow wet scrubber	35m
A3	SR1 Dedusting Stack via radial flow scrubber	34m
A4	SR2 Dedusting Stack via baghouse, SR2-J26-001	40.6m
A5	SR2 Raw Materials Dedust Stack via baghouse, SR2-J26-120	6.9m
A6	SR2 Blending Dedust Stack via baghouse, SR2-J26-110	16.4m
A7	SR2 Bin Dedust Stack via baghouse, SR2-J26-130	3.6m
A8	SR2 Product Dedust Stack via baghouse, SR2-B24-070	18m
A9	SR2 Storage Dedust Stack via baghouse, SR2-B24—090	8.4m
A10	NCSM Stack Train 1 via baghouse, I02-102 Train 2 via baghouse, I02-202	35.38m
A11	NCSM Product Bin Stack	2.9m
A12	SR1 Kiln stack cap - Emergency/maintenance venting	32.1m
A13	SR2 Kiln stack cap - Emergency/maintenance venting	37.3m
A14	Carbon recovery circuit de-dusting stack	6.0m
A15	SR1 110 m Stack - SR1 kiln via thermal oxidiser and wet scrubber	110m
AX	Dry Separation Dedusting Stack via dedusting baghouse	9.25m
AY	Dry Separation Dedusting Stack via dedusting baghouse	9.25m

Legend

Air Emission Point - stack

SR Process Infrastructure

0 25 50 100 Meters

GDA 1994 MGA Zone 50

N

NORTH CAPEL OPERATIONS

Synthetic Rutile Plan

Table 2.2.1 Emission Points to air

Aerial Photograph 2022

ILUKA

ORIG: O O'Donnell DRAWN: GMILNE SCALE: 1:3,000 (A4) DATE: 18/07/2023 DWG No: NC_SR1LA_FIG 2

FIGURE:

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Map of monitoring points

The locations of the monitoring points defined in Table 4.5.1 are shown below.

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Map of storage locations

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

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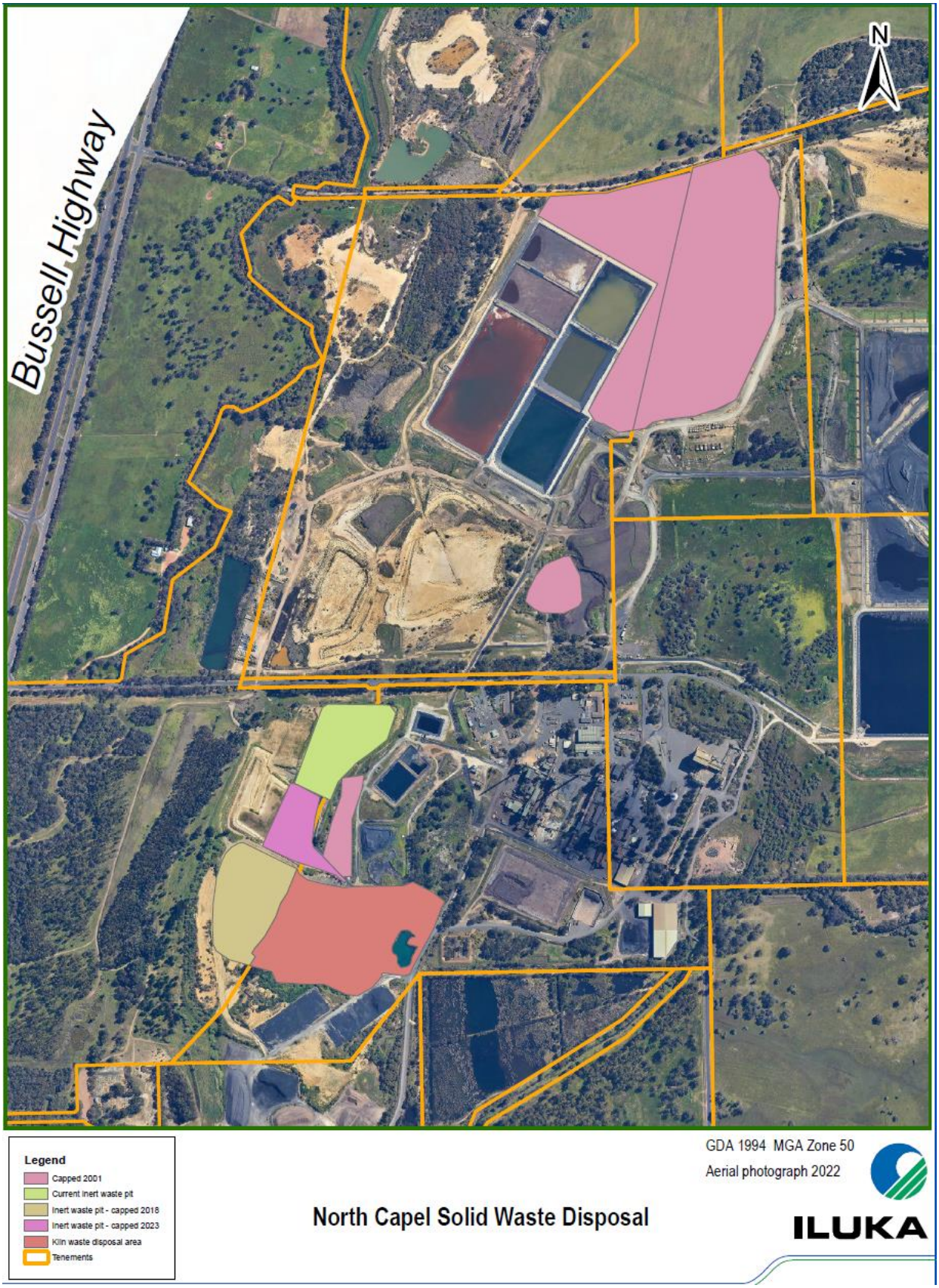
Map of solid waste disposal locations

Location of emission to land as defined in Table 2.4.1



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Schedule 2: Notification forms

Licence: L4457/1986/19
Form: AR1
Name: Monitoring of point source emissions to air

Licence Holder: Iluka Resources Ltd
Period:

Form AR1: Monitoring of point source emissions to air							
Emission point	**Parameter**	**Limit**	**Result[1]**	**Result[1]**	**Averaging period**	**Method**	**Sample date & times**
A1, A15	Volumetric flow rate		m^3/s			USEPA Method 2	
	Particulates	250	mg/m^3	g/s		USEPA Method 5 or USEPA Method 17	
	Sulfur dioxide		mg/m^3	g/s		USEPA Method 6C or USEPA Method 8	
	Sulfur trioxide		mg/m^3	g/s		USEPA Method 8	
	Hydrogen sulfide		mg/m^3	g/s		USEPA Method 11	
	Nitrogen oxides		mg/m^3	g/s		USEPA Method 7E	
	Particulates	250	mg/m^3	g/s		USEPA Method 5 or USEPA Method 17	
A3			mg/m^3	g/s			
A4			mg/m^3	g/s			
A10			mg/m^3	g/s			
A11			mg/m^3	g/s			
A14			mg/m^3	g/s			
AX			mg/m^3	g/s			
AY			mg/m^3	g/s			

Note 1: All units are referenced to STP dry

Signed on behalf of Iluka Resources Ltd: …….. Date: …….

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Licence: L4457/1986/19 Licence Holder: Iluka Resources Ltd
Form: RATA1 Period:
Name: Monitoring of CEMS Performance

Form RATA1: Monitoring of CEMS Performance							
Emission point	**Parameter**	**Reference Method**	**Run**	**Sample date & times**	**Reference Result**	**CEMS Result**	**Unit**
A1, A15	Volumetric flow rate SO_2	USEPA Method 2 (Flow) USEPA Method 6C or 8	1				m^3/s ppm (v) mg/m^3
			2				
			3				
			4				
			5				
			6				
			7				
			8				
			9				
			10				
			11				
			12				
Relative Accuracy							%
Bias							%

Signed on behalf of Iluka Resources Ltd: …….. Date: …….

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Licence: L4457/1986/19 Licence Holder: Iluka Resources Ltd
Form: WR1 Period:
Name: Monitoring of point source emissions to surface water

Form WR1: Monitoring of point source emissions to surface water					
Emission point	**Parameter**	**Limit**	**Unit**	**Result**	**Sample date & times**
W1	Volumetric flow rate		m^3/d		
	pH	5.5 – 9	-		
	Electrical conductivity	3 500	µS/cm		
	Total suspended solids	300	mg/L		
	Ammonia-nitrogen	5			
	Nitrate-nitrogen				
	Sulfate	1 250			
	Iron	2			
	Manganese	1.9			
	Arsenic				
	Chromium				
	Copper				
	Lead				
	Mercury				
	Selenium				
	Zinc				

Signed on behalf of Iluka Resources Ltd: …….. Date: …….

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Licence: L4457/1986/19 Licence Holder: Iluka Resources Ltd
Form: N1 Date of breach:

Notification of detection of the breach of a limit

These pages outline the inform` ation 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	
To be notified as soon as practicable and no later than 5PM of the next working day	
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 - to be submitted as soon as practicable

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 unauthorised emissions from the installation in the preceding 24 months.	

Name*	
Post	
Signature on behalf of Iluka Resources Ltd	
Date	

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Schedule 3: Prescribed Premises Categories

The Premises prescribed categories under Schedule 1 of the *Environmental Protection Regulations 1987* are listed in the table below.

Category number	Category description	Category production or design capacity	Approved premises production or design capacity
8	Mineral sands mining or processing	5 000 tonnes or more per year	730 000 tonnes per annual period
31	Chemical manufacturing	100 tonnes or more per year	380 000 tonnes per annual period
37	Char manufacturing	10 tonnes or more per year	30 000 tonnes per annual period