



Licence Number	L4557/1986/19
Licence Holder	Iluka Resources Limited
ACN	008 675 018
File Number:	DER2014/000051-1
Premises	North Capel Operations Yearly Rd CAPEL WA 6271 Being all of mining tenements M70/257, M 70/651, M 70/959, 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.
Date of Report	16 October 2019
Status of Report	Final

1. Definitions and interpretation

Definitions

In this Amendment Report, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
ACN	Australian Company Number
Amendment Report	refers to this document
ASLP	ASLP 4439.3-1997 : Wastes, sediments and contaminated soils - Preparation of leachates - Bottle leaching procedures.
Category	categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CEO	means Chief Executive Officer Department Administering the Environmental Protection Act 1986 Locked Bag 10 JOONDALUP DC WA 6027 Telephone: (08) 6367 7000 Facsimile: (08) 6367 7001 Email: info@dwer.wa.gov.au
Delegated Officer	an officer under section 20 of the EP Act
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DER	Former Department of Environment Regulation
DWER	Department of Water and Environmental Regulation
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
Existing Licence	The licence issued under Part V, Division 3 of the EP Act and in force prior to the commencement of and during this amendment
NCSM	North Capel Separation Mill
NDSC	New Dry Separation Circuit
Noise Regulations	<i>Environmental Protection (Noise) Regulations 1997 (WA)</i>
Occupier	has the same meaning given to that term under the EP Act.
PM ₁₀	used to describe particulate matter that is smaller than 10 microns (µm) in diameter.
PM _{2.5}	used to describe particulate matter that is smaller than 2.5 microns (µm) in diameter.
Prescribed Premises	has the same meaning given to that term under the EP Act.
TPM	Total Particulate Matter
UDR	<i>Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA)</i>

2. Amendment Description

This amendment is made pursuant to section 59 of the *Environmental Protection Act 1986* (EP Act) to amend licence L4557/1986/19 (licence) granted to Iluka Resources Limited (the Licence Holder) for its North Capel Operations facility (Premises)

Table 2 lists the documents submitted during the assessment process.

Table 2: Documents and information submitted during the assessment process

Document/information description	Date received	Availability
North Capel Separation Mill licence amendment application	5/07/2019	DWER records (DWERDT 176345)
North Capel Inert Waste Leach Report	27/09/2019	DWER records (A1828629)

The guidance statements that have informed the assessment and decision outlined in this Amendment Report are listed in Appendix 1.

2.1. Purpose and scope of assessment

Iluka Resources Limited (Licence Holder) holds licence L4557/1986/19 for the operation of the North Capel Operations (Premises). The Licence Holder lodged an application on 8 July 2019 to amend the licence as follows:

- 1 Include the operation of the New Dry Separation Circuit (NDSC) (see Figure 1) constructed in accordance with works approval W6111/2017/1 (Works Approval). The NDSC is an extension of the current dry separation circuit for the electrostatic and magnetic separation of ilmenite and will result in an additional two emission point source emission stacks AX and AY (see Figure 2), dust collection and de-ducting stacks.
- 2 Remove Category 63 - Class I inert landfill from the licence as the inert waste pit does not accept any material from offsite sources. Material buried in the inert waste pit is made up of fines and oversize waste material from the processing of mineral sands on site.

This Amendment Report reviews emissions and discharges from the new NDSC at the Premises. The Amended Licence issued as a result of this review consolidates and supersedes all previously authorised licences and amendment notices previously issued in relation to the Premises. The Amended Licence has been issued with existing conditions being transferred but not reassessed.

The assessment of this application has been undertaken in accordance with DWER's published Regulatory Framework.

CEO amendments

In consolidating the Licence Holder's amendments to the licence, the CEO initiated the following amendments:

- 1 removing the whole of former condition 6 (construction and commissioning of the carbon recovery circuit) from the licence;
- 2 removing improvement conditions IR2 and IR4;
- 3 incorporating the CEO initiated amendment notice issued in 2016 to extend the licence duration;
- 4 removing the annual audit compliance report proforma from schedule 2; and
- 5 corrects the pH limits for point source emission to surface water in Table 2.3.2.

These amendments are made pursuant to section 59 of the *Environmental Protection Act 1986* (EP Act) to amend the licence issued under the EP Act for a prescribed premises.

3. Basis for the CEO Amendments

1. On 17 March 2016, the former Department Environment and Regulation (DER) included condition 6 - Works on the licence for the construction of the carbon recovery circuit. The compliance and commissioning certification for the carbon recovery circuit, submitted to DER on 9 August and 4 November 2016 respectively, addressed all the requirements for former conditions 6.1.2, 6.3.1, 6.4.1, 6.4.2, 6.4.3 and 6.5.1 of the licence. During commissioning of the carbon recovery circuit it was determined that emission point A14 (carbon recovery emission point) yielded an average Total Particulate Matter (TPM) result of $<3 \text{ mg/m}^3$.

The Delegated Officer notes that the impact of TPM from A14 as a standalone stack will be very low level with no expected impacts to health and amenity, however, stack A14 contributes to the overall cumulative particulate and stack emissions (approximately 16 stacks) from the premises. The Delegated Officer considers it appropriate to apply regulatory controls to stack A14 emissions source within the context of the overall **medium** risk of TPM impacting on the health welfare and amenity of nearby sensitive receptors for the site. Although impacts from cumulative emissions are **unlikely**, and will probably not occur in most circumstances cumulative dust emissions still have the ability to cause low level offsite impacts (of **moderate** consequence)

The Delegated Officer therefore removes the whole of previous condition 6 – Works from the licence but includes emission point A14 of the carbon recovery circuit to Tables 2.2.1, 2.2.2 and 3.2.1 and the infrastructure of the carbon recovery circuit to Table 3.1. in the Amended Licence.

2. The Licence Holder submitted reports relating to improvement requirements IR2 and IR4 on 27 June 2016 and 1 July 2016 respectively. DER confirmed (in a letter sent on 15 August 2016) that the Licence Holder addressed all the requirements for improvement requirements IR2 and IR4. The Delegated Officer therefore removes previous requirements IR2 and IR4 from the amended licence.
3. A DER initiated amendment notice issued 29 April 2016 extended licence expiry dates for almost all licensed prescribed premises. The Delegated Officer therefore incorporates the DWER initiated amendment notice and extends the amended licence duration to 23 January 2034.
4. The Annual Audit Compliance Report (AACR) form set out in schedule 2 – ‘reporting and notification forms’ of the existing licence has been superseded with an AACR in the new format. The Delegated Officer therefore removes the annual audit compliance report proforma from Schedule 2 of the amended licence and advises the License Holder to obtain the form from the Department’s website
5. The pH limits in Table 2.3.2 of the licence incorrectly reads as ‘ ≤ 5.5 and ≥ 9.0 ’. The Delegated Officer therefore corrects the limits for pH in Table 2.3.2 of the Amended Licence to read as ‘between 5.5 and 9.0’.

4. Premises Information

Premises Background

The Premises is a mineral sands processing facility for the production of Ilmenite, which is further processed into Synthetic Rutile (SR). The North Capel Separation Mill (NCSM) process involves heating, screening, magnetic and electrostatic separation to produce ilmenite, zircon and other heavy minerals, various by-products and wastes.

The NDSC comprising of magnetic and electrostatic separation streams, enables the processing of Heavy Mineral Concentrate (HMC) to produce ilmenite. This new circuit is an extension to the current NCSM, and with the exception of the two new dust collectors, is contained within the NCSM building. The dust collectors each include an emission stack and a dust silo, and have

been constructed on a hardstand area directly adjacent to the NCSM. Works Approval compliance certification for the NDSC was received by DWER on 21 December 2018. DWER confirmed that construction and installation of the NDSC satisfied conditions 1, 2, 3 and 4 of Works Approval. Commissioning certification was submitted to DWER on 13 June 2019. DWER conducted a desktop assessment and confirmed that commissioning of the NDSC satisfied conditions 5, 6, 7 and 8 of the Works Approval.

Infrastructure

The Premises infrastructure, as it relates to Category 8 activities, is detailed in Table 3.

Table 3: North Capel Operations facility- Category 8 infrastructure (from W6111/2017/1)

Infrastructure		Site Plan Reference
NDSC and NCSM infrastructure		
Emission stacks		Figure1: North Capel Emission Stacks
A10	35.4m - NCSM Stack	
AX	Proposed 8m- de-dusting stack	
AY	Proposed 8m- de-dusting stack	
<p>NCSM NCSM-E02 process control equipment NCSM-G02 dust collection system 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</p> <p>NDSC separation process circuit reject bin re-heater high tension rollers dust collection systems product bin</p>		Figure 3: Process Flow Diagram

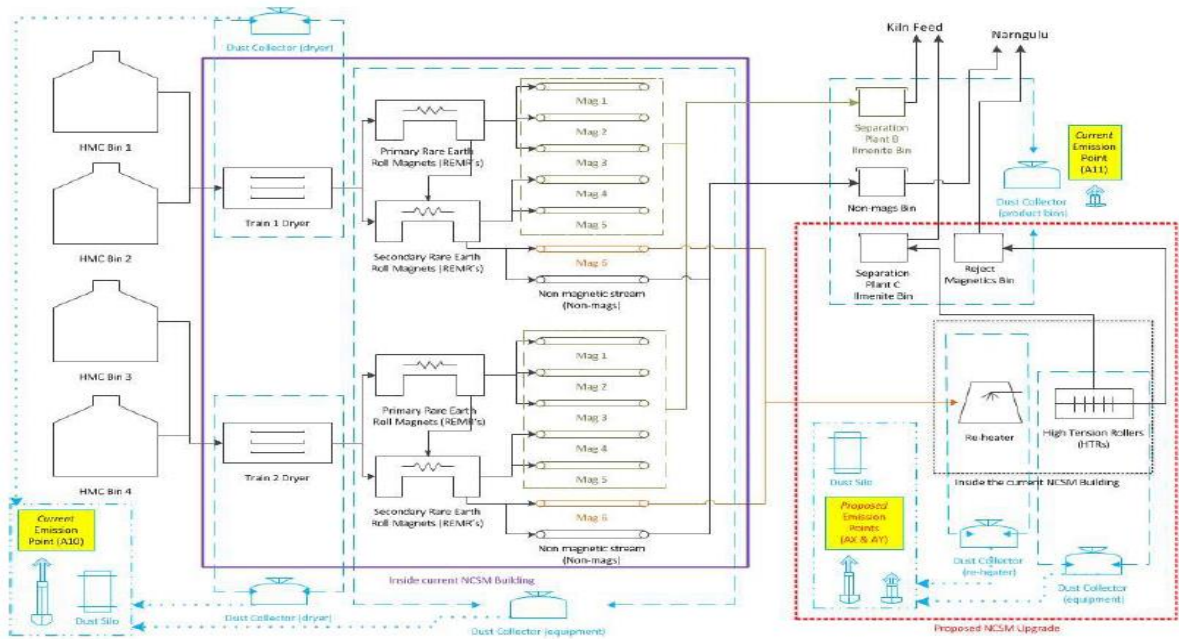


Figure 1: Process flow diagram - The red box indicates the NDSC (from W6111/2017/1)



Figure 2: Emission points for the Premises (from W6111/2017/1)

5. Licence history

Table 4 provides the licences reissues, amendments and amendment notices issued for the Premises since 17/01/2013.

Table 4: Licences issued

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 works for the upgrade of the carbon recovery circuit
L4557/1986/19	16/10/2019	Licence amendment to include emission point AX and AY and removal of category 63

6. Location and receptors

Table 5 below list of the closest residential premises to the Prescribed Premises.

Table 5: Receptor and distance from premises boundary

Residential and sensitive premises	Distance from Prescribed Premises
Residential Premises	Closest single residence is approximately 1.7 km north-west from the NCSC building.

7. Risk assessment

Tables 6 below describe the Risk Events associated with the amendment consistent with the Guidance Statement: Risk Assessments. Both tables identify whether the emissions present a material risk to public health or the environment, requiring regulatory controls.

Table 6: Risk assessment for proposed amendments during operation

Risk Event				Consequence rating ¹	Likelihood rating ¹	Risk ¹	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities*	Potential emissions	Potential receptors, pathway and impact	Applicant controls					
Movement of ore through conveyors, magnetic, electrostatic and rotating equipment	Fugitive Dust	Air/windborne pathway causing impacts to health and amenity of closest residential premises located 1.7km north west of the construction site	Applicant controls for fugitive dust: There is suction on all conveyor transfer points, rotating equipment and the re-heater extracting dust to the dust collectors	Slight	Rare	Low	No residences or other sensitive land uses within 1.7km The operations are proposed on an active minesite. The Applicant controls are suitable to manage fugitive dust and noise emissions	Condition 1.2.1
	Noise		Applicant controls for Noise: Processing occurring within an enclosed building Extraction fans fitted with insulated shrouding for noise attenuation.					

Risk Event				Consequence rating ¹	Likelihood rating ¹	Risk ¹	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities*	Potential emissions	Potential receptors, pathway and impact	Applicant controls					
Emissions from the bag house discharged to air through two stacks AX and AY	Combustion products NO _x , SO _x and CO.	Air / wind dispersion Amenity impacts from deposited dust; human health impacts from particulates and gasses	Infrastructure: Filter media (fabric bags) Compressed air for reverse Pulsing to clean filters Dust collection hoppers Extraction fan for each baghouse Baghouses will be fitted with differential pressure indicators, high level switches and auto leak detection for potential bag failure. <u>Management during operation</u> Bags to be replaced immediately if bag failure is detected. Have spare bags available on site to replace any broken bags. Stacks AX and AY to be monitored annually for Total Particulate Matter (TPM).	Slight	Rare	Low	No residences or other sensitive land uses within 1.7km Emission from existing NCSM plant on site	N/A
	Particulates (PM ₁₀ and PM _{2.5})						The NDSC is located on an existing mine site. The nearest residential premises is located 1.7km north west of the NDSC building. Stack testing done for stacks AX and AY during commissioning of the NDSC yielded an average result of <2 mg/m ³ for TPM	Conditions 2.2.1, 2.2.2, 3.1 and 4.2.1

Risk Event				Consequence rating ¹	Likelihood rating ¹	Risk ¹	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities*	Potential emissions	Potential receptors, pathway and impact	Applicant controls					
Inert waste from the processing of mineral sands	Fugitive Dust Leachate	Amenity impacts from deposited dust Groundwater contamination	Waste to be buried ≥ 1m above the height of the winter water table	Minor	Unlikely	Medium	<p>No residences or other sensitive land uses within 1.7km</p> <p>ASLP tests conducted on 5 May 2017 showed that the following contaminant metals were leached with the acidic and neutral leach testing fluids: barium (0.98 mg/L), chromium (0.08 mg/L) and manganese (2.1 mg/L). Boron (0.3mg/l) was found in in the acidic leach only.</p> <p>No radionuclides were detected in either leachate</p> <p>Inert waste complies with the <i>Landfill Waste Classification and Waste Definitions 1996 (as amended 2018)</i></p>	Conditions 2.4.1 and 2.4.2

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the Department's Guidance Statement: Risk Assessments (February 2017)

8. Decision

- Stack testing done for stacks AX and AY during commissioning of the NDSC yielded an average result of <math><2 \text{ mg/m}^3</math> for TPM. The Delegated Officer has determined, that as standalone stacks, the impact of particulate emissions for AX and AY on the health, welfare and amenity on nearby residential receptors will be **slight** with minimal on site impacts to amenity. The likelihood of these impacts occurring are considered **rare** and may only occur in exceptional circumstances and are therefore assessed by the Delegated officer as having an overall **low** risk rating. The Delegated Officer, however, notes that stacks AX and AY, while having an insignificant impact on the health and amenity of nearest sensitive receptors by themselves contributes to the overall cumulative TPM emissions from the premises, which includes 16 stack emission points and various fugitive particulate sources. The Delegated Officer considers it appropriate to apply regulatory controls to these two new stack emissions sources within the context of the overall **medium** risk of TPM impacting on the health welfare and amenity of nearby sensitive receptors for the site. Although impacts from cumulative emissions are **unlikely**, and will probably not occur in most circumstances cumulative dust emissions still have the ability to cause low level offsite impacts (of **moderate** consequence) . The Delegated Officer therefore amends Tables 2.2.1, 2.2.2 and 4.2.1 to include the emission from stacks AX and AY and includes infrastructure and operational requirements in Table 3.1.
- The Delegated Officer is satisfied that no inert waste is accepted from offsite sources and that all inert waste disposed to the onsite inert waste pit is generated on site only. The Delegated Officer considers it appropriate to apply regulatory controls to the emission to land within the context of the overall **medium** risk of leachate impacting on groundwater.

Leach testing done on the inert waste using both acidic and water mediums concluded that the following contaminant metals were leached: barium (0.98 mg/L), chromium (0.08 mg/L) and manganese (2.1mg/L). Boron (0.3 mg/L) was found in the acidic leachate only.

No radionuclides were detected in either leachate. The Delegated Officer has determined that the leach testing done on the inert waste complies with *the Landfill Waste Classification and Waste Definitions 1996 (as amended 2018)*.

The Delegated Officer therefore removes Category 63 - Class I inert landfill from the Amended Licence but includes conditions 2.4.1 and 2.4.2 'point source emission to land' on the amended licence to ensure that only waste generated on site is buried at the inert landfill and $\geq 1\text{m}$ above the height of the winter water table.

9. Consultation

Table 7: Summary of consultation

Method	Comments received	DWER response
Licence Holder was provided with the draft amendment for comment on 8/10/2019	No comments were received. The Licence Holder responded on 16/10/2019 waiving the remaining comment period until 5/11/2019.	DWER issued the amended licence on 16/10/2019

10. Conclusion

Based on the assessment in this Amendment Report, the Delegated Officer has determined

that a licence amendment will be granted, subject to conditions specified in this report and commensurate with the controls necessary for administration and reporting requirements.

10.1. Summary of licence amendments

Table 8 provides a summary of the proposed licence amendments and will act as record of implemented changes. All proposed changes have been incorporated into the revised licence as part of the amendment process.

Table 8: Licence amendments

Condition No.	amendments
2.2.1	Inclusion of new emission points to air:- A14, Ax and AY
2.2.2	Includes point source emission limits to air from stacks A14, Ax and AY
2.3.2	Corrects the limit for pH in Table 2.3.2
2.4.1	Include point source emission to land
3.1	Includes infrastructure and equipment controls table
4.2.1	Includes monitoring of point source emissions to air from stacks A14, Ax and AY
N/A	Removes the Annual Audit Compliance Report Proforma from Schedule 2
N/A	Removes the whole of previous condition 4 Improvements
N/A	Removes the whole of previous condition 6 Works
N/A	Removes Category 63

For this licence amendment, DWER has considered past works approvals and an amendment notice for the licence. The numbering, wording and format of existing licence conditions may have changed, but the intent remains the same. Additional changes, as proposed by the Licence Holder for this licence amendment, are detailed within this Decision Report.

The Amended Licence issued as a result of this review consolidates and supersedes all previously authorised licences and amendment notices previously issued in relation to the Premises.

Chris Malley

A/Manager, Process Industries
Regulatory Services

Officer delegated under section 20 of the Environmental Protection Act 1986

Appendix 1: Key documents

	Document title	In text ref	Availability
1	Licence L4557/1986/19 – Iluka Resources Limited North Capel Operations	L4557/1986/19	accessed at www.dwer.wa.gov.au
2	Works Approval W6111/2017/11– Iluka Resources Limited North Capel Operations	W6111/2017/1	DWER records (A1652770)
3	<i>Landfill Waste Classification and Waste Definitions 1996 (as amended 2018).</i>	<i>Landfill Waste Classification and Waste Definitions 1996 (as amended 2018).</i>	accessed at www.dwer.wa.gov.au
4	DWER, <i>Industry Regulation Guide to Licensing</i> . Department of Water and Environmental Regulation June 2019	N/A	accessed at www.dwer.wa.gov.au
5	DER, October 2015. <i>Guidance Statement: Setting conditions</i> . Department of Environment Regulation, Perth.		
6	DER, August 2016. <i>Guidance Statement: Licence duration</i> . Department of Environment Regulation, Perth.		
7	DER, February 2017. <i>Guidance Statement: Risk Assessments</i> . Department of Environment Regulation, Perth.		
8	DWER, June 2019. <i>Guidance Statement: Decision Making</i> . Department of Water and Environmental Regulation.		