



# Licence

<b>Licence number</b>	L7276/1996/12
<b>Licence holder</b>	Murrin Murrin Operations Pty Ltd
<b>ACN</b>	076 717 505
<b>Registered business address</b>	Level 3, 30 The Esplanade PERTH WA 6000
<b>DWER file number</b>	2011/011705-1
<b>Duration</b>	06/06/2021 to 05/06/2041
<b>Commencement date</b>	05/06/2021
<b>Premises details</b>	Murrin Murrin Nickel Cobalt Project Mining tenements, L39/81, L39/62, L39/83, L39/136, L39/168, M39/314, M39/322, M39/562, M39/637, M39/686, M39/692, M39/714, M39/715, M39/716, M39/737, M39/299, M39/651, M39/300, M39/301, M39/435, M39/436, M39/421, M39/422, M39/423, M39/424, M39/342, M39/343, M39/446, M39/820 LAVERTON WA 6440 As defined in Schedule 1 of the licence

Prescribed premises category description (Schedule 1, <i>Environmental Protection Regulations 1987</i> )	Assessed production / design capacity
Category 5: Processing or beneficiation of metallic or non-metallic ore	5 000 000 tonnes per annual period
Category 6: Mine dewatering	182 500 tonnes per year
Category 12: Screening, etc. of material	1 500 000 tonnes per annual period
Category 31: Chemical manufacturing	1 718 100 tonnes per annual period
Category 44: Metal smelting or refining	55 000 tonnes per annual period
Category 52: Electric power generation	87.5 MW in aggregate
Category 54: Sewage facility	300 m <sup>3</sup> per day
Category 64: Class II or III putrescible landfill site	5 000 tonnes per annual period

This licence is granted to the Licence holder, subject to the attached conditions, on 04 June 2021, by:

**Neville Welsh**

**Senior Industry Regulation Officer**

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

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## Introduction

This Introduction is not part of the Licence conditions.

### DWER's industry licensing role

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

DWER has responsibilities under Part V of the *Environmental Protection Act 1986* (the Act) for the licensing of prescribed premises. Through this process DWER regulates to prevent, control and abate pollution and environmental harm to conserve and protect the environment. DWER also monitors and audits compliance with works approvals and licence conditions, takes enforcement action as appropriate and develops and implements licensing and industry regulation policy.

### Licence requirements

This Licence is issued under Part V of the Act. Conditions contained within the Licence relate to the prevention, reduction or control of emissions and discharges to the environment and to the monitoring and reporting of them.

Where other statutory instruments impose obligations on the Premises/Licence Holder the intention is not to replicate them in the licence conditions. You should therefore ensure that you are aware of all your statutory obligations under the Act and any other statutory instrument. Legislation can be accessed through the Western Australian Legislation website using the following link:

<https://www.legislation.wa.gov.au/legislation/statutes.nsf/default.html>

For your Premises relevant statutory instruments include but are not limited to obligations under the:

- *Environmental Protection (Unauthorised Discharges) Regulations 2004* – these Regulations make it an offence to discharge certain materials such as contaminated stormwater into the environment other than in the circumstances set out in the Regulations.

- *Environmental Protection (Controlled Waste) Regulations 2004* - these Regulations place obligations on you if you produce, accept, transport or dispose of controlled waste.
- *Environmental Protection (Noise) Regulations 1997* – these Regulations require noise emissions from the Premises to comply with the assigned noise levels set out in the Regulations.

You must comply with your licence. Non-compliance with your licence is an offence and strict penalties exist for those who do not comply. Licence holders are also reminded of the requirements of section 53 of the Act which places restrictions on making certain changes to prescribed premises unless the changes are in accordance with a works approval, licence, closure notice or environmental protection notice.

### Licence fees

If you have a licence that is issued for more than one year, you are required to pay an annual licence fee prior to the anniversary date of issue of your licence. Non-payment of annual licence fees will result in your licence ceasing to have effect meaning that it will no longer be valid and you will need to apply for a new licence for your Premises.

### Ministerial conditions

If your Premises has been assessed under Part IV of the Act you may have had conditions imposed by the Minister for Environment. You are required to comply with any conditions imposed by the Minister.

### Premises description and Licence summary

The Murrin Murrin Nickel Cobalt Project (Murrin Murrin) is located in the northeastern Goldfields of Western Australia, approximately 220 km north of Kalgoorlie and 680 km north-east of Perth. It is an active mine site which mines laterite ore to produce nickel and cobalt briquettes.

The operation, commissioned in 1999, mines and processes approximately 4 million tonnes (t) of nickel laterite ore per year to produce approximately 48 000 t/yr of nickel briquettes and 3 000 t/yr of cobalt briquettes. The operation uses open-pit mining techniques and processes the ore using High Pressure Acid Leach technology to recover the nickel and cobalt from the laterite ore.

The current Murrin Murrin Operation consists of:

- Open-cut nickel cobalt mining operations at Murrin Murrin North, Murrin Murrin South and Murrin Murrin East.
- Dewatering operations.
- Calcrete quarrying operations.
- Processing plant with associated ancillary plants (power generation, sulfuric acid plant, hydrogen sulfide plant, hydrogen and oxygen plant and water treatment facilities).
- Tailings storage facilities, including in-pit tailings disposal and evaporation ponds.
- Heap leach facility.
- Water supply borefields.
- Landfill.
- Wastewater treatment plant.
- Supporting infrastructure such as the accommodation village, airstrip and roads.

Murrin Murrin is divided into four main active mining areas: Murrin Murrin North (MMN), Murrin Murrin South (MMS), Murrin Murrin East (MME) and the Windarra Calcrete Quarry

### Category 5 — Processing plant

Ore from the Murrin Murrin run of mine (ROM) stockpile is fed into the primary crusher (consisting of a ROM bin and sizer) and then slurried in a ball mill with water to produce a feed slurry for the high pressure acid leach (HPAL) circuit.

The HPAL circuit leaches the nickel and cobalt from the ore slurry. The resulting solution is then washed in a counter current decant (CCD) circuit to separate the leach solution from the waste residue. The pressure leach solution is then further processed in the refinery area and the waste residue is partially neutralised and discharged to the TSFs.

TSFs at Murrin Murrin consist of five inpit TSFs and one paddock style TSF consisting of two cells. Supernatant from the TSFs is decanted and discharged to four evaporation ponds.

### **Category 6 – Dewatering**

Murrin Murrin added dewatering operations to their licence via an amendment notice issued on 16 October 2017. Due to development of open pits closer to Lake Carey, mining extended further below the groundwater table, requiring disposal of water in excess of dust suppression requirements. The amendment included a proposal to dewater 15 pits at Murrin Murrin East (MME) mining area for the mining of ore. The water removed from pits would be discharged into the existing pit voids at MME. It was during this time that the applicant extended the prescribed premises boundary (by inclusion of additional mining tenements) to include areas within the MME outside of the previous prescribed premises boundary.

The amendment included the progressive installation of a dewatering pipeline network to discharge to the following pits:

- 2101
- 2302
- 2303
- 2402
- 2501/2502
- 2603
- 2704

The dewatering network was proposed to be installed progressively over five years in seven stages to dewater up to 182,500kL per year.

### **Category 12 — Screening plant**

Murrin Murrin has a calcrete quarry located approximately 45 km from the main processing plant where calcrete is quarried and then fed through a crushing circuit to produce a crushed calcrete product. The crushed product is then transported by road train to the main plant site where it is milled and slurried for use in solution and tailings neutralisation.

### **Category 31 — Chemical manufacturing**

Murrin Murrin has three chemical manufacturing plants on the premises:

- Sulfuric acid plant.  
The sulfuric acid plant is a double absorption acid plant which produces concentrated sulfuric acid.
- Hydrogen Sulfide Plant.  
The hydrogen sulfide plant reacts molten sulfur with hydrogen gas to produce hydrogen sulfide gas.
- Hydrogen Plant  
The hydrogen plant produces high purity hydrogen gas using the catalytic steam reforming process of natural gas.

The breakdown of the design capacity for each of the chemical manufacturing plants is as follows:

Category number	Category description	Activity	Approved premises production or design capacity
31	Chemical manufacturing	Sulfuric acid	1 650 000 tonnes per annual period
		Hydrogen sulfide plant	60 000 tonnes per annual period
		Hydrogen plant	8 100 tonnes per annual period

#### Category 44 — Metal smelting

Murrin Murrin produces nickel and cobalt briquettes by passing the pressure leach solution through the mixed sulfides precipitation circuit to produce a mixed nickel and cobalt sulfide precipitate. This sulfide precipitate is then converted to mixed metal sulfate solution where metal impurities are removed. The nickel and cobalt are then separated from the solution using solvent extraction.

The nickel sulfate solution is then passed through the hydrogen reduction circuit to form a nickel precipitate, which is then dried to form a nickel powder. The nickel powder is formed into a briquette, sintered in a furnace and then packaged.

The cobalt sulfate solution from solvent extraction follows a separate processing path which is similar to the nickel processing path but on a smaller scale.

#### Category 52 — Power generation

Murrin Murrin produces electricity primarily from two sources:

1. Natural gas turbine, which has a capacity of 31.5 MW.
2. Two steam turbines, which have a capacity of 28 MW each (56 MW total).

There are also six diesel generators which provide emergency power. These have a total capacity of 4.8 MW.

#### Category 54 — Sewage facility

Murrin Murrin treats sewage generated from the plant site and accommodation village using a WWTP which utilises intermittent extended aeration. It consists of four tanks and two sludge drying ponds. Treated effluent is irrigated to one of three irrigation fields located adjacent to the WWTP.

#### Category 64 — Putrescible landfill

The landfill facility is located on a waste rock landform and consists of an inert trench and a putrescible trench. The entire facility is fenced to prevent fauna access and minimise windblown waste escaping the area.

**DWER initiated amendment 2020**

The CEO initiated an amendment to the type and style of the Licence during July 2019 and issued a revised Licence consolidating changes made under Amendment Notices issued between 2016 to 2019 (as detailed in the instrument log below), where relevant. The obligations of the Licence Holder have not changed in making this amendment. During the consolidation of these amendments DWER has not undertaken any additional risk assessment of the Premises.

In consolidating the licence, the CEO:

- updated the format and appearance of the Licence;
- deleted the redundant AACR form set out in schedule 1 of the previous licence and advised the Licence Holder to obtain the form from the Department's website;
- revised licence condition numbers, removed any redundant conditions and realigned condition numbers for numerical consistency; and
- corrected clerical mistakes and unintentional errors.

<b>Instrument log table since 2005</b>		
<b>Instrument</b>	<b>Issued</b>	<b>Description</b>
L7276/1996/8	06/06/2005	Licence renewal
W4135/1996/1	15/08/2005	Works approval construction of Heap Leach Facility
W4180/1996/1	7/11/2005	Works approval for construction of a 2 m lift to the southern cell of the TSF from 449.5 mRL to 451.5 mRL.
W4177/1996/1	15/11/2005	Works approval for construction of in-pit TSF 2/3.
W4274/1996/1	06/10/2006	Works approval for staged approach for an overall 10m high lift for the TSF.
L7276/1996/9	6/06/2007	Licence renewal
L7276/1996/10	7/07/06/2009	Licence renewal
W4554/2009/1	13/05/2010	Works approval for construction of in-pit TSFs 8/5 and 9/4.
W4817/2010/1	27/01/2011	Works approval for construction of MM9/2 heap leach residue disposal facility.
W5090/2011/1	01/03/2012	Works approval for construction of dewatering infrastructure from pits 21 and 24 to be discharged into pit 24
W5399/2013/1	23/05/2013	Works approval for construction of in-pit TSF MM19Sth.
L7276/1996/11	5/06/2013	Licence renewal
W5641/2014/1	29/05/2014	Works approval for construction of in-pit TSFs 2/2-2/4, 8/4 & 9/2.
L7276/1996/11	04/06/2015	Licence amendment to allow in-pit TSFs including REFIRE conversion and removal of sulfur dioxide limits.
L7276/1996/11	29/04/2016	Department initiated amendment in accordance with section 59(1)(k) of the <i>Environmental Protection Act 1986</i> to amend the duration of the licence date month year.
L7276/1996/11	16/10/2017	Amendment notice 1: Licence application to dewater 15 pits at Murrin Murrin East pit mining area and extension of prescribed boundary.
L7276/1996/11	16/01/2018	Amendment notice 2: Addition of conditions assessed under Works Approval W5641/2014/1 and amended on 26 June 2017 for the operation of In-pit TSF's 9/5, 18/3 and 18/6.
L7276/1996/11	17/05/2018	Amendment notice 3: proposal of spent vanadium catalyst, as a one-off event, to either in-pit Tailing Storage Facility (TSF) 18/3 located at Murrin Murrin.
L7276/1996/11	23/03/2020	CEO initiated licence amendment to consolidate/amalgamate separately issued licence amendment notices in the licence.
L7276/1996/12	04/05/2021	Licence renewal (old format) with a 20 year licence term.

**Severance**

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

**END OF INTRODUCTION**

## Licence conditions

### 1 General

#### 1.1 interpretation

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

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

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

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

**'Annual Period'** means the inclusive period from 1 May until 30 April in the following year;

**'AS/NZS 5667.1'** means the Australian Standard AS/NZS 5667.1 Water Quality— Sampling — Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples;

**'AS/NZS 5667.10'** means the Australian Standard AS/NZS 5667.10 Water Quality — Sampling — Guidance on sampling of waste waters;

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

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

**'CEMS'** means continuous emissions monitoring system;

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

**'CEO'** means Chief Executive Officer of the Department of Water and Environmental Regulation;

**'CEO'** for the purpose of correspondence means 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](mailto:info@dwer.wa.gov.au)

**'Clean Fill'** has the meaning defined in Landfill Definitions; 'Contaminated Solid Waste' has the meaning defined in Landfill Definitions;

**'code of practice for the storage and handling of dangerous goods'** means the document titled "Storage and handling of dangerous goods: Code of Practice" published by the



Department of Mines, as amended from time to time;

**'DMIRS'** mean Department of Mines, Industry Regulation and Safety;

**'DWER'** means Department of Water and Environmental Regulation;

**'dangerous goods'** has the meaning defined in the *Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007*;

**'environmentally hazardous material'** means material (either solid or liquid raw materials, materials in the process of manufacture, manufactured products, products used in the manufacturing process, by-products and waste) which if discharged into the environment from or within the premises may cause pollution or environmental harm. Note: Environmentally hazardous materials include dangerous goods where they are stored in quantities below placard quantities. The storage of dangerous goods above placard quantities is regulated by the Department of Mines, Industry Regulation and Safety (DMIRS);

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

**'fugitive emissions'** means all emissions not arising from point sources identified in sections 2.2, 2.3, 2.4 and 2.5;

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

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

**'Landfill Definitions'** means the document titled "Landfill Waste Classification and Waste Definitions 1996" published by the Chief Executive Officer of the Department of Environment as amended from time to time.

**'Licence'** means this Licence numbered L7276/1996/12 and issued under the Act;

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

**'mgbf'** means metres below ground level;

**'NATA'** means the National Association of Testing Authorities, Australia;

**'NATA accredited'** means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis;

**'normal operating conditions'** means any operation of a particular process (including abatement equipment) excluding start-up, shut-down and upset conditions, in relation to stack sampling or monitoring;

**'NO<sub>x</sub>'** means oxides of nitrogen, calculated as the sum of nitric oxide and nitrogen dioxide and expressed as nitrogen dioxide;

**'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 Waste'** has the meaning defined in Landfill Definitions;

**'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;

**'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 April to 30 September and 1 October to 31 March in the following year;

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

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

**'STP dry'** means standard temperature and pressure (0°Celsius and 101.325 kilopascals respectively), dry;

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

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

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

**'WWTP'** means waste water 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 standard in force from time to time during the term of this Licence.

1.1.4 Any reference to a guideline or code of practice in the Licence means the version of that guideline or code of practice in force from time to time, and shall include any amendments or replacements to that guideline or code of practice made during the term of this Licence.

## 1.2 General conditions

1.2.1 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.

1.2.2 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.

1.2.3 The Licence Holder, except where storage is prescribed in section 1.3, shall ensure that environmentally hazardous materials are stored in accordance with the code of practice for the storage and handling of dangerous goods.

1.2.4 The Licence Holder shall immediately recover, or remove and dispose of spills of

environmentally hazardous materials outside an engineered containment system.

1.2.5 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.

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 all pipelines containing tailings, decant or hypersaline water are either:

- (a) equipped with telemetry systems and pressure sensors along pipelines to allow the detection of leaks and failures;
- (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.

1.3.2 The Licence Holder shall ensure that tailings, decant water and effluent are only discharged into containment cells, dams or 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	Infrastructure requirements
North Cell TSF and South Cell TSF	Tailings and decant liquor	Constructed and operated in accordance with relevant Part V approvals.
In-pit TSF 2/3		
In-pit TSF 7/2	Heap leach residue	Constructed and operated in accordance with relevant Part V approvals Heap Leach residue to be disposed of at least 5m above water table. (W4554/2009/1)
In-pit TSF 8/5 — 9/4	Tailings and decant liquor	Constructed and operated in accordance with document titled Murrin Murrin North 8/5 and 9/4 In-pit Tailings Disposal. Mining Proposal and Works Approval Supporting Documentation, M39/342, M39/343, M39/421, M39/424, February 2010.
In-pit TSF 2/2-2/4	Tailings and decant liquor	Constructed and operated in accordance with document titled 2/2-2/4, 8/4 & 9/2 In-pit Tailings Storage Facility Mining Proposal and Works Approval Application — M39/300, M39/343, M39/431, M39/422, M39/423, M39/424, March 2014.
In-pit TSF 8/4		
In-pit TSF 9/2		
In-pit TSF 9/5	Tailings and decant liquor	Constructed and operated in accordance with document titled 9/5, 18/3 & 18/6 in-pit Tailings Storage Facility Mining Proposal and Licence Amendment Application, January 2017 and Works Approval W5641/2014/1.
In-pit TSF 18/3	Tailings and decant liquor and spent vanadium catalyst (one-off approved disposal of 620m <sup>3</sup> Vanadium catalyst waste	

<b>Table 1.3.1: Containment Infrastructure</b>		
<b>Containment point reference</b>	<b>Material</b>	<b>Infrastructure requirements</b>
	in 2018).	Employ methods to increase the consolidation rate of tailings material in the in-pit TSF 18/3, which contains vanadium catalyst waste (from one-off disposal in 2018) (e.g. install vertical wick drains).
In-pit TSF 18/6	Tailings and decant liquor	
Heap Leach pad	Scats (low grade ore) with acidic liquor percolating through the solids.	8 cells on compacted clay base with a single 1mm HDPE liner
Heap Leach pad — PLS (pregnant liquor solution) pond	Process solution	Constructed and operated in accordance with W4135 dated 15 August 2005. PLS pond capacity is 5,000 m <sup>3</sup> HDPE liner over clay base
Heap Leach pad — ILS (intermediate liquor solution) pond	Process solution	Constructed and operated in accordance with W4135 dated 15 August 2005. ILS Pond capacity is 20,000 m <sup>3</sup> Feed Pond capacity is 20,000 m <sup>3</sup> Barron Liquor pond capacity is 1,800 m <sup>3</sup> HDPE liner over clay base.
Heap Leach pad - CCD 1 overflow/ heap leach feed pond		
Heap Leach pad - Barren liquor pond		
Heap Leach pad - Stormwater pond	Potentially contaminated stormwater (can capture overflow from other heap leach ponds)	Constructed and operated in accordance with W4135 dated 15 August 2005 50000 m <sup>3</sup> capacity Clay lined HDPE liner
Evaporation Pond — Cell 1 Evaporation Pond — Cell 2 Evaporation Pond — Cell 3 Evaporation Pond — Cell 4	Decant liquor and seepage recovery water.	Constructed and operated in accordance with relevant Part V approvals.
Raw Water Dam	Untreated groundwater and pit water	Lined with 1mm HDPE to achieve a permeability of at least <10 <sup>-9</sup> m/s or equivalent.
Process Water Dam	Untreated groundwater and pit water	
Counter Current Decant Containment Pond 1 and Pond 2	Process liquor	
Sludge drying ponds	Waste water treatment plant sludge	Lined with 1mm HDPE to achieve a permeability of at least <10 <sup>-9</sup> m/s or equivalent, capable of preventing surface runoff of leachate and sludge
Nickel matte residue storage facility	Intermediate nickel byproduct	Stored on ROM pad within earthen bund.

### 1.3.3 The Licence Holder shall manage North Cell TSF, South Cell TSF, In-pit 2/3, In-pit

TSF 7/2, In-pit TSF 8/5 – 9/4, In-pit TSF 2/2-2/4, In-pit TSF 8/4, In-pit TSF 9/2, evaporation dams, counter current containment pond and heap leach pad process ponds in Table 1.3.1 such that a minimum top of embankment freeboard of 300mm or a 1 in 100 year/72 hour storm event (whichever is greater) is maintained.

- 1.3.4 The Licence Holder shall manage the paddock TSF (TSF North and TSF South) such that:
- (a) a seepage collection and recovery system is provided and used to capture seepage from the TSF;
  - (b) seepage is pumped to the evaporation ponds or processing plant; and
  - (c) the supernatant pond on the TSF is minimised as far as practicable.
- 1.3.5 The Licence Holder 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 as soon as practicable; 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
Tailings pipelines	Visual integrity	12 hourly when operating
Return water lines	Visual integrity	12 hourly when operating
Embankment freeboard	Visual to confirm required freeboard capacity is available	12 hourly when operating
Counter current decant (CCD) containment pond	Instrumentation	Before each CCD discharge

- 1.3.6 The Licence Holder shall undertake an annual assessment of vegetation within the zone of influence of the above ground tailings storage facility. The assessment shall:
- (a) photograph and record the presence and condition of key vegetation features within the zone of influence;
  - (b) compare the results of the assessment against previous years assessments and identify whether any deterioration in the presence and/or quality of vegetation has taken place; and
  - (c) be undertaken by a person suitably qualified in vegetation identification and sampling.
- 1.3.7 The Licence Holder shall manage all paddock TSF (TSF North and TSF South) seepage in accordance with the Murrin Murrin Operations Tailings Storage Facility Seepage Mitigation Project and provide the CEO with quarterly updates as well as an annual summary.
- 1.3.8 The Licence Holder shall ensure that where wastes produced on the Premises are not taken off-site for lawful use or disposal, they are managed in accordance with the requirements in Table 1.3.3.

Table 1.3.3: Management of waste		
Waste type	Management strategy	Requirements <sup>1,2</sup>
Inert waste type 1	Receipt, handling, associated storage and disposal of waste by landfilling	<u>All waste types</u> <ul style="list-style-type: none"> <li>No more than 5 000 tonnes per year of all waste types cumulatively shall be disposed of by landfilling;</li> <li>disposal of waste by landfilling shall only take place within the landfill area shown on the Landfill Area Map in Schedule 1;</li> <li>the separation distance between the base of the landfill and the highest groundwater level shall not be less than 2m;</li> <li>Waste shall be placed in a defined trench or within an area enclosed by earthen bunds; and</li> <li>the Licence Holder shall ensure that the tipping area is less than 30 metres in length.</li> </ul>
Inert waste type 2		
Putrescible waste		
Clean Fill		
Contaminated solid waste (spilled process materials/ sulfur residue)	Bioremediation	Location is disposal area in TSF North as per map in Schedule 1.
Hydrocarbon contaminated waste		Ensure soil is bio-remediated by: <ul style="list-style-type: none"> <li>maintaining a suitable soil thickness</li> <li>maintaining an appropriate moisture content and nutrient level within the soil which sustains biological activity;</li> <li>at least monthly soil aeration; and</li> <li>disposal of hydrocarbon contaminated waste shall only take place within the bioremediation area shown in Schedule 1.</li> </ul>
Sewage	Physical, biological and chemical treatment	300 m <sup>3</sup> per day
Sewage sludge		Dispose of sewage sludges in accordance with the Western Australian Guidelines for Direct Land Application of Biosolids and Biosolids Products, February 2002 or by a method approved by the CEO.
Spent vanadium catalyst <sup>Note3</sup>	Disposal to in-pit TSF 18/3	Location of disposal area is in-pit TSF 18/3 as per map in Schedule 1

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*.

Note 3: Disposal of spent vanadium catalyst was approved as a one-off event in-pit 18/3 in 2018. Any additional disposal of spent vanadium will be treated on a case by case basis and is subject to approval.

1.3.9 The Licence Holder 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 <sup>1</sup>**

Waste Type	Cover requirements
Putrescible wastes	To be covered fortnightly with sufficient quantities of Type 1 inert waste, clean fill or other appropriate cover material to prevent the spread of fire and harbouring of disease vectors.
Inert Waste Type 1	No cover required
Inert Waste Type 2 (Tyres)	To be covered by the end of the working day in which the waste was deposited with sufficient quantities of Type 1 inert waste or clean fill to prevent the spread of fire and harbouring of disease vectors.

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

- 1.3.10 The Licence Holder shall take all reasonable and practical measures to ensure that no windblown waste escapes from the Premises and that wind-blown waste is collected on at least a fortnightly basis and returned to the tipping area.
- 1.3.11 The Licence Holder shall manage the irrigation of treated wastewater such that:
- no irrigation generated run-off, spray drift or discharge occurs beyond the boundary of the defined irrigation area(s);
  - treated wastewater is evenly distributed over the irrigation area;
  - no soil erosion occurs;
  - irrigation does not occur on land that is waterlogged; and
  - vegetation cover is maintained over the irrigation area.
- 1.3.12 The Licence Holder must ensure that infrastructure and equipment specified in Column 1 of Table 1.3.5 is constructed / installed in accordance with the requirements specified in Column 2 of Table 1.3.5.

**Table 1.3.5: Construction Requirements**

Column 1	Column 2
Infrastructure/Equipment	Requirements (design and construction)
Dewatering pipeline infrastructure	Construction of a 500mm deep v-drain bund for the entire length of pipeline network.
	Construction of pipeline consisting of PN8 rated 160mm diameter poly pipeline rising from the pits to main truck line PN10 rated 250mm diameter pipeline from the risers to the discharge pits.
	Installation of meters at all discharge points capable of recording the cumulative quantity of water discharged to each pit.



- 1.3.13 The Licence Holder must ensure that the dewatering operational requirements are managed in accordance with Table 1.3.6.

Table 1.3.6: Dewatering operation requirements	
Column 1	Column 2
Pits	Operational requirements
All discharge pits (2101, 2303, 2302, 2402, 2501, 2502, 2603, & 2704)	Minimum freeboard of 4m to be maintained
Pit 2101	Only accept dewater discharge from source pits 2104, 2103, 2106 & 2201.

- 1.3.14 The Licence Holder shall maintain In-pit TSF 9/5, 18/3 and 18/6 in accordance with Table 1.3.7.

Table 1.3.7: In-pit expansion 2017: summary of freeboard requirements				
Facility Pit	Catchment area (ha)	Minimum pit crest height (mAHD)	Estimated volume required for the temporary storage of a 1 in 100 year, 72 hour storm event (m <sup>3</sup> )	Maximum operating pond level (mAHD)
9/5	87.3	457.0	157,000	455.5
18/3	47.0	459.0	85,000	457.6
18/6	48.0	459.5*	86,000	457.5

\* A mine waste embankment bund may be required to be constructed at the lowest pit crest to achieve the minimum crest level. Table 1.3.7, minimum crest height for 18/6 includes the 2.5m mine waste embankment to achieve the required height of 459.5 mAHD. Should the embankment not be constructed, the maximum operating pond level shall not exceed 455.4 mAHD.

## 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.

Table 2.2.1: Point source emissions to air			
Emission point reference	Emission Point and source	Emission point height (m)	Source, including any abatement
A1	Refinery plant ammonia scrubber vent	15	Refinery
A2	Nickel reduction flash tank vent	27	Nickel reduction circuit
A3	Cobalt reduction flash tank	12	Cobalt reduction autoclaves 1 and 2
A4	Cobalt sinter furnace stack	24	Cobalt sinter furnace
A5	Nickel sinter furnace stack	40	Nickel sinter furnace
A6	Sulfuric acid plant stack	80	Sulfuric acid plant
A7	Hydrogen sulfide circuit flare	80	Hydrogen sulfide plant Neutralisation circuit degassing Pre-reduction vent system Mixed sulfides precipitation circuit Sulfides leaching Nickel reduction
A8	Hydrogen plant reformer stack	36	Hydrogen plant
A9	Gas turbine stack	30	Gas turbine
A10	Gas turbine HRSG stack	40	Heat recovery steam generator
A11	Power station boiler stack	40	Power station boiler

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.

Table 2.2.2: Point source emission limits to air			
Emission point Averaging period reference	Parameter	Limit (including units) <sup>1</sup>	Averaging period
A4	Sulfur dioxide (SO <sub>2</sub> )	NA	Stack test (60 minute average)
A5		NA	Stack test (60 minute average)
A7		25g/s	Stack test
A6	Sulfuric acid mist (H <sub>2</sub> SO <sub>4</sub> ) and sulfur trioxide (SO <sub>3</sub> )	0.075 kg (expressed as SO <sub>3</sub> )/ tonne of 100% acid or equivalent	Stack test (60 minute average)
	Sulfur dioxide (SO <sub>2</sub> ) <sup>2</sup>	2.0 kg/tonne of 100% acid or equivalent	Stack test (60 minute average)
A9	Oxides of nitrogen (NO <sub>x</sub> )	70 mg/Nm <sup>3</sup> expressed as nitrogen dioxide at a 15% oxygen reference level	Stack test (60 minute average)
A10		85 mg/Nm <sup>3</sup> expressed as nitrogen dioxide at a 15% oxygen reference level	
A11		350 mg/Nm <sup>3</sup> expressed as nitrogen dioxide at a 7% oxygen reference level	

Note 1: All units are referenced to STP dry

Note 2: The SO<sub>2</sub> and SO<sub>3</sub> limits do not apply during cold acid plant startups or shutdowns.

## 2.3 Emissions to land

2.3.1 The Licence Holder shall ensure that where waste is emitted to land 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: Emissions to land		
Emission point reference and location on Map of emission points	Description	Source including abatement
L1 — L3	Discharge from irrigation pump station to on-site irrigation area	Treated wastewater pumped from wastewater treatment plant

## 2.4 Fugitive emissions

- 2.4.1 The Licence Holder shall use all reasonable and practical measures to prevent and where that is not practicable to minimise dust emissions from the Premises.

# 3 Monitoring

## 3.1 General monitoring

- 3.1.1 The Licence Holder shall ensure that:
- (a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;
  - (b) all wastewater sampling is conducted in accordance with AS/NZS 5667.10;
  - (c) all groundwater sampling is conducted in accordance with AS/NZS 5667.11; and
  - (d) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured.
- 3.1.2 The Licence Holder shall ensure that :
- (a) monthly monitoring is undertaken at least 15 days apart; and
  - (b) quarterly monitoring is undertaken at least 45 days apart.
- 3.1.3 The Licence Holder shall record production or throughput data and any other process parameters relevant to any non-continuous or CEMS monitoring undertaken.
- 3.1.4 The Licence Holder shall ensure that all monitoring equipment used on the Premises to comply with the conditions of this Licence is calibrated in accordance with the manufacturer's specifications.
- 3.1.5 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.

## 3.2 Monitoring of point source emissions to air

- 3.2.1 The Licence Holder 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 air					
Point source reference	Parameter	Units <sup>1</sup>	Averaging Period	Frequency <sup>2</sup>	Method
A4 - A5	Sulfur dioxide (SO <sub>2</sub> )	g/s	60 minute	Quarterly	USEPA Method 6C
A6	Sulfuric acid mist (H <sub>2</sub> SO <sub>4</sub> )	kg/t	60 minute	Quarterly	USEPA Method 8
	Sulfur trioxide (SO <sub>3</sub> )				
	Sulfur dioxide (SO <sub>2</sub> )				
A7	Sulfur dioxide (SO <sub>2</sub> )	g/s	60 minute	Quarterly	USEPA Method 15

**Table 3.2.1: monitoring of point source emissions to air**

Point source reference	Parameter	Units <sup>1</sup>	Averaging Period	Frequency <sup>2</sup>	Method
A9 - A11	Oxides of nitrogen (NO <sub>x</sub> )	mg/Nm	60 minute	Quarterly	USEPA Method 7E or 7D

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.

3.2.2 The Licence Holder shall ensure that monitoring required under condition 3.2.1 of the Licence is undertaken at sampling locations in accordance with the AS 4323.1 or relevant part of the CEMS Code.

3.2.3 The Licence Holder shall ensure that all non-continuous monitoring and analysis undertaken pursuant to condition 3.2.1 is undertaken by a holder of NATA accreditation for the relevant methods of sampling and analysis.

### 3.3 Monitoring of emissions to land

3.3.1 The Licence Holder shall undertake the monitoring in Table 3.3.1 according to the specifications in that table.

**Table 3.3.1: Monitoring of emissions to land**

Emission point reference	Parameter	Units	Averaging Period	Frequency
WWTP	Volumetric flow rate (cumulative)	m <sup>3</sup>	Monthly	Continuous
L1, L2, and L3	pH	-	Spot sample	Quarterly
	Total suspended solids	mg/L		
	Total dissolved solids	mg/L		
	5-day biological oxygen demand	mg/L		
	Total nitrogen	mg/L		
	Ammonium-nitrogen	mg/L		
	Nitrate + nitrite-nitrogen	mg/L		
	Total phosphorus	mg/L		
	<i>Escherichia coli</i>	cfu/100mL	Spot sample	Six monthly

### 3.4 Monitoring of inputs and outputs

3.4.1 The Licence Holder shall undertake the monitoring in Table 3.4.1 according to the specification in that table.

Table 3.4.1: Monitoring of inputs and outputs				
Process description	Parameter	Units	Frequency	Method
Tailings deposition	Volumes of tailings deposited into the TSF and In-pit TSFs	m <sup>3</sup>	Monthly	None specified
	Volumes of water recovered from the In-pit TSFs			
	Volumes of seepage recovered			
Heap Leach Residue	Volume of residue disposed to In-pit TSF			

### 3.5 Ambient environmental quality monitoring

3.5.1 The Licence Holder shall undertake the monitoring in Table 3.5.1 according to the specifications in that table and record and investigate results that do not meet any limit specified.

Table 3.5.1: Monitoring of ambient groundwater quality						
Monitoring point reference and location	Parameter	Limit	Target	Units	Averaging period	Frequency
Plant site: PSMB 2-3, 7, 9, 11-19, 23-25 and 27-30 Heap leach: HLMB 1-12	Standing water level		----	mbgl	Spot sample	Quarterly
	pH	>3.5	---	---		
	Total dissolved solids, aluminium, cadmium, copper, lead, mercury, silicon, zinc, arsenic, sodium, cobalt,	--		mg/l		
	Nickel	--	<1	mg/L		
Tailings dam: TDMB 1-16 and 18-36 In pit tailings facility	Standing water level	---	---	mbgl	Spot sample	Quarterly
	pH	>3.5	--	--		

Table 3.5.1: Monitoring of ambient groundwater quality						
Monitoring point reference and location	Parameter	Limit	Target	Units	Averaging period	Frequency
2/3: IP203-1, IP203-2, IP203-3 and IP203-4 In pit tailings facility 7/2: IP702-1, IP702- 2 and IP702-3 In pit tailings facility 8/5 — 9/4: IP805-1, IP805-2, IP805-3, IP904-1, IP904-2 and IP904-3	Total dissolved solids, aluminium, cadmium, copper, lead, mercury, silicon, zinc, arsenic, sodium, cobalt, nickel			mg/L		
In pit tailings facility 2/2-2/4: IP202-1, IP202-2, and IP204-1 In pit tailings facility 9/2: IP902-1, IP902-2, IP902-3, IP902-4, IP902-5 and IP902-6  In pit tailings facility 8/4: IP804-1, 1P804- 2, IP804-3 and IP804-4	Standing water level	>4		mbgl	Spot sample	Quarterly
	pH	>3.5		--		
	Total dissolved solids, aluminium, cadmium, copper, lead, mercury, silicon, zinc, arsenic, sodium, cobalt, nickel	--	--	mg/L		
In pit tailings facility 9/5: IP905-1, IP905-2, IP905-3, IP905-4, IP905-5 In pit tailings facility 18/3: IP1803-1, IP1803-2, IP1803-3 In pit tailings facility 18/6: IP1806-1, IP1806-2	Standing water level	>4 (maximum limit)	>6*	mbgl	Spot sample	Quarterly
	pH	>3.5	--	--		
	Total dissolved solids, aluminium, cadmium, copper, lead, mercury, silicon, zinc, vanadium, arsenic, sodium, cobalt, nickel, selenium, molybdenum	To be determined based on baseline monitoring data		mg/L		
In-situ bridge pillar between pits 18/6 and 9/5: SP30** SP31**, SP32**	Standing water level	--	--	mbgl	Spot sample	Quarterly

\*If exceeded (i.e. is closer to the ground surface) would require MMO to develop and implement a seepage management plan for the In-pit TSF's.

\*\*Stability piezometers.

## 4 Records and Reporting

### 4.1 Records

- 4.1.1 All information and records required by the Licence shall:
- be legible;
  - if amended, be amended in such a way that the original and subsequent amendments remain legible or are capable of retrieval;
  - except for records listed in 4.1.1(d) be retained for at least 6 years from the date the records were made or until the expiry of the Licence or any subsequent licence; and
  - for those following records, be retained until the expiry of the Licence and an subsequent licence:
    - off-site environmental effects; or
    - matters which affect the condition of the land or waters.
- 4.1.2 The Licence Holder shall ensure that:
- 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
  - any person who performs tasks on the Premises is informed of all of the conditions of the Licence that relate to the tasks which that person is performing.
- 4.1.3 The Licence Holder shall complete an Annual Audit Compliance Report indicating the extent to which the Licence Holder has complied with the conditions of the Licence, and any previous licence issued under Part V of the Act for the Premises for the previous annual period.
- 4.1.4 The Licence Holder shall implement a complaints management system that as a minimum, records the number and details of complaints received concerning the environmental impact of the activities undertaken at the Premises and any action taken in response to the complaint.

### 4.2 Reporting

- 4.2.1 The Licence Holder shall submit to the CEO an Annual Environmental Report within 60 calendar days after the end of the annual period. The report shall contain the information listed in Table 4.2.1 in the format or form specified in that table.

Table 4.2.1: Annual Environmental Report		
Condition or table (if relevant)	Parameter	Format or form
-	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
Condition 1.3.7	Annual summary of the progress of the Murrin Murrin Operations Paddock Tailings Storage Facility Seepage Mitigation Project	
Table 2.2.2 and Condition 3.2.1, Table 3.2.1	Monitoring of emissions to air	
Condition 2.3.1	Monitoring of emissions to land	None specified

**Table 4.2.1: Annual Environmental Report**

Condition or table (if relevant)	Parameter	Format or form
and Table 3.3.1	Annual average loads of each contaminant in the effluent discharged from the WWTP to the environment (except pH and bacteria) using flow weighted data, reported in kilograms per day.	
Table 3.4.1	Monitoring of inputs and outputs	None specified
Table 3.5.1	Ambient groundwater monitoring	None specified
Condition 4.3.1	Compliance Annual Audit Compliance Report (AACR)	A template of the compliance reporting form is accessible on Department's website.
Condition 4.1.4	Complaints summary	None specified

4.2.2 The Licence Holder shall ensure that the Annual Environmental Report also contains:

- (a) any relevant process, production or operational data recorded under Condition 3.1.3; and
- (b) an assessment of the information contained within the report against previous monitoring results and Licence limits and/or targets.

4.2.3 The Licence Holder shall submit the information in Table 4.2.2 to the CEO according to the specifications in that table.

**Table 4.2.2: Non-annual reporting requirements**

Condition or table (if relevant)	Parameter	Reporting period	Reporting date (after end of the reporting period)	Format or form
--	Copies of original monitoring reports submitted to the Licence Holder by third parties	Not Applicable	Within 14 days of the CEO's request	As received by the Licence Holder from third parties
Table 3.5.1	Standing water levels	Quarterly	28 calendar days	None specified
Condition 1.3.7	Update on the progress of the Murrin Murrin Operations Paddock Tailings Storage Facility Seepage Mitigation Project.	Quarterly	28 calendar days	None specified



### 4.3 Notification

- 4.3.1 The Licence Holder shall ensure that the parameters listed in Table 4.3.1 are notified to the CEO in accordance with the notification requirements of the table.

Table 4.3.1: Notification requirements			
Condition or table (if relevant)	Parameter	Notification requirement <sup>1</sup>	Format or form <sup>2</sup>
Condition 2.1.1, and Condition 3.5.1	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.	N1
N/A	Any failure or malfunction of any pollution control equipment or any incident, which has caused, is causing or may cause pollution	Part B: As soon as practicable	

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

Note 2: Forms are in Schedule 2

## Schedule 1: Maps

### Premises map

The boundary of the prescribed premises is shown in the map below. The purple line depicts premises boundary.

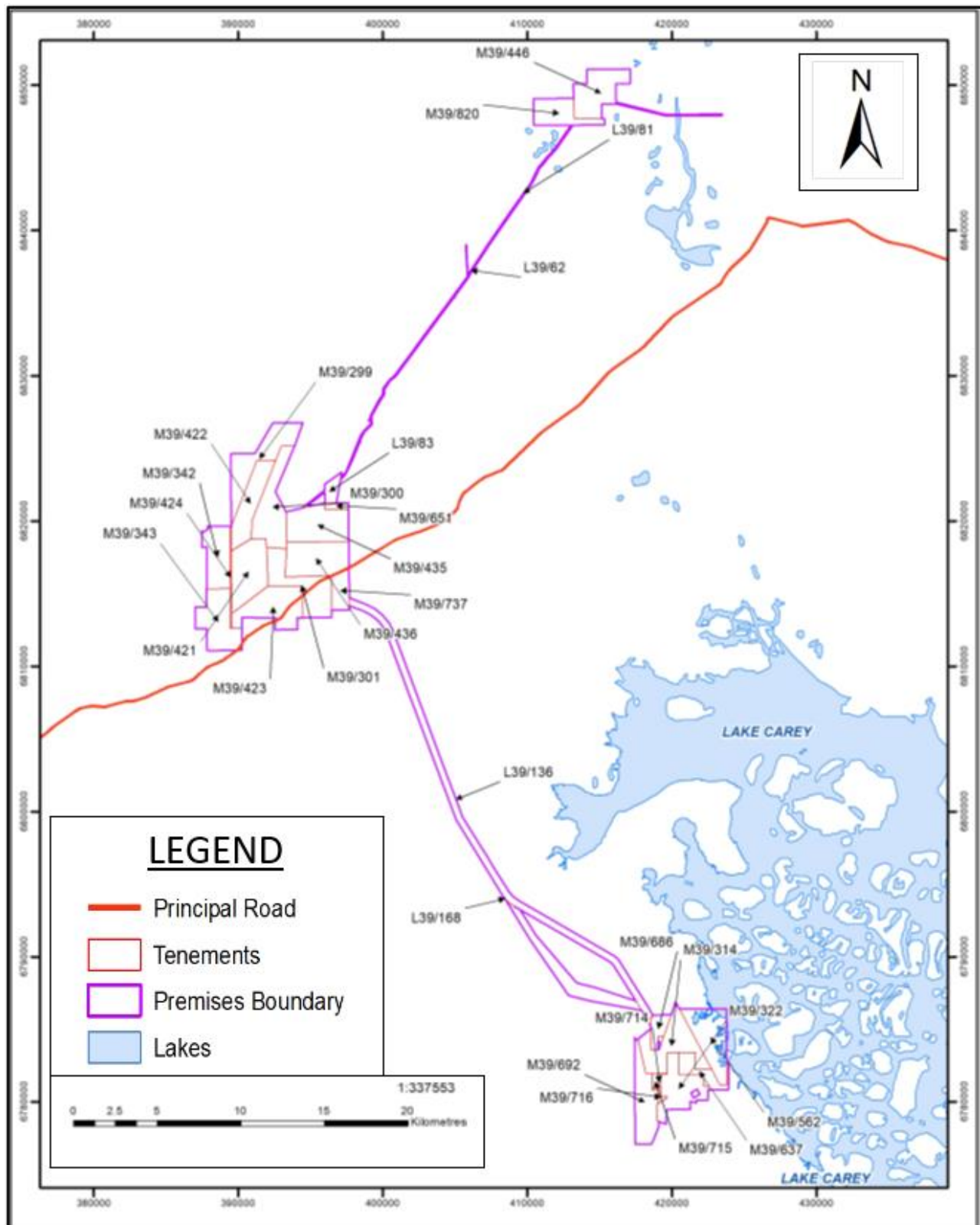


Figure 1: Prescribed premises boundary

## Map of emission points

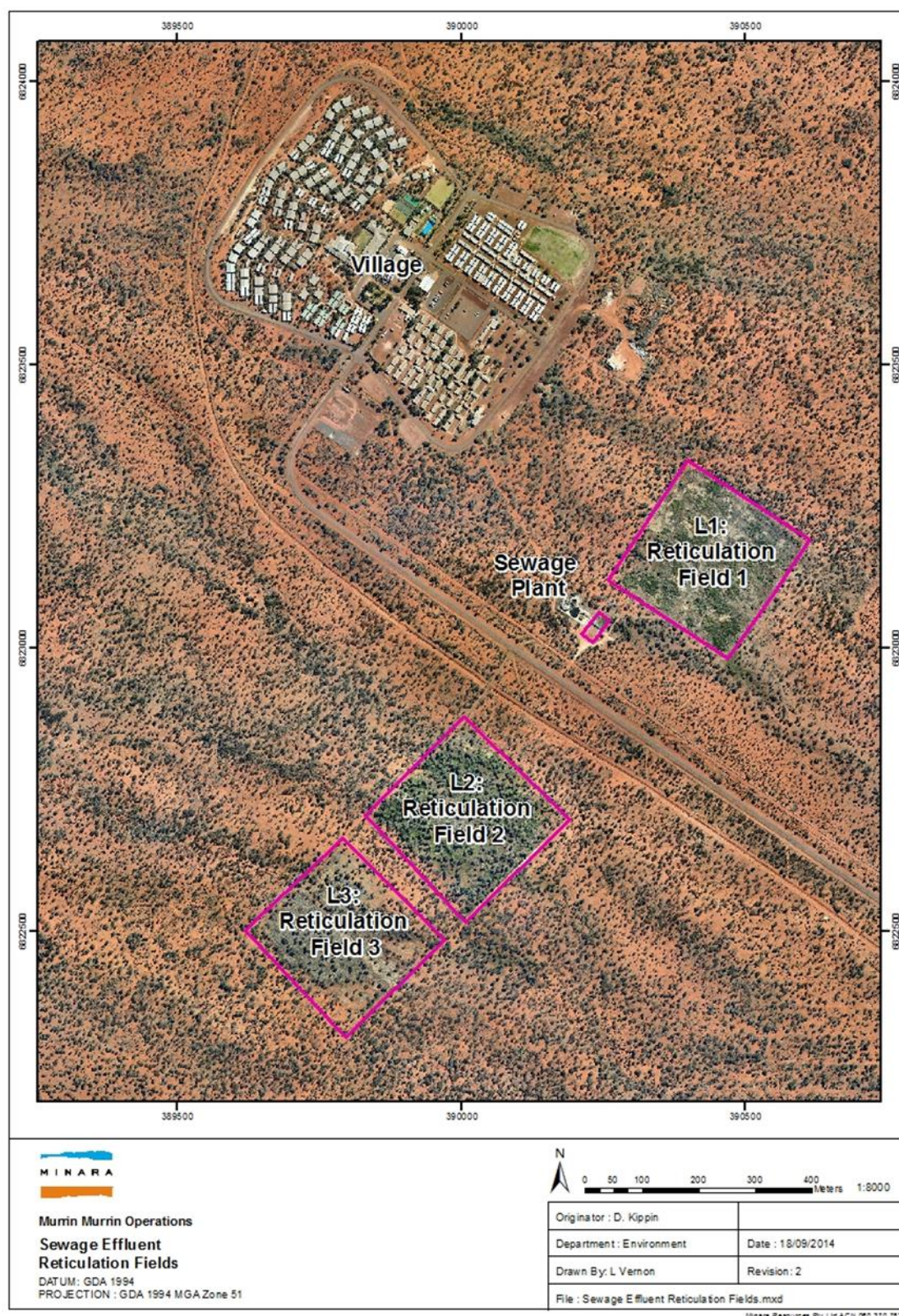
The locations of the emission points defined in Table 2.2.2 are shown below.



**Figure 2: Emission Points to Air at Murrin Murrin**



The locations of the emission points defined in Table 3.3.1 are shown below.



**Figure 3: Sewage Effluent Reticulation Fields**



### Maps of monitoring locations (groundwater)

The locations of the monitoring points defined in Table 3.5.1 are shown below.

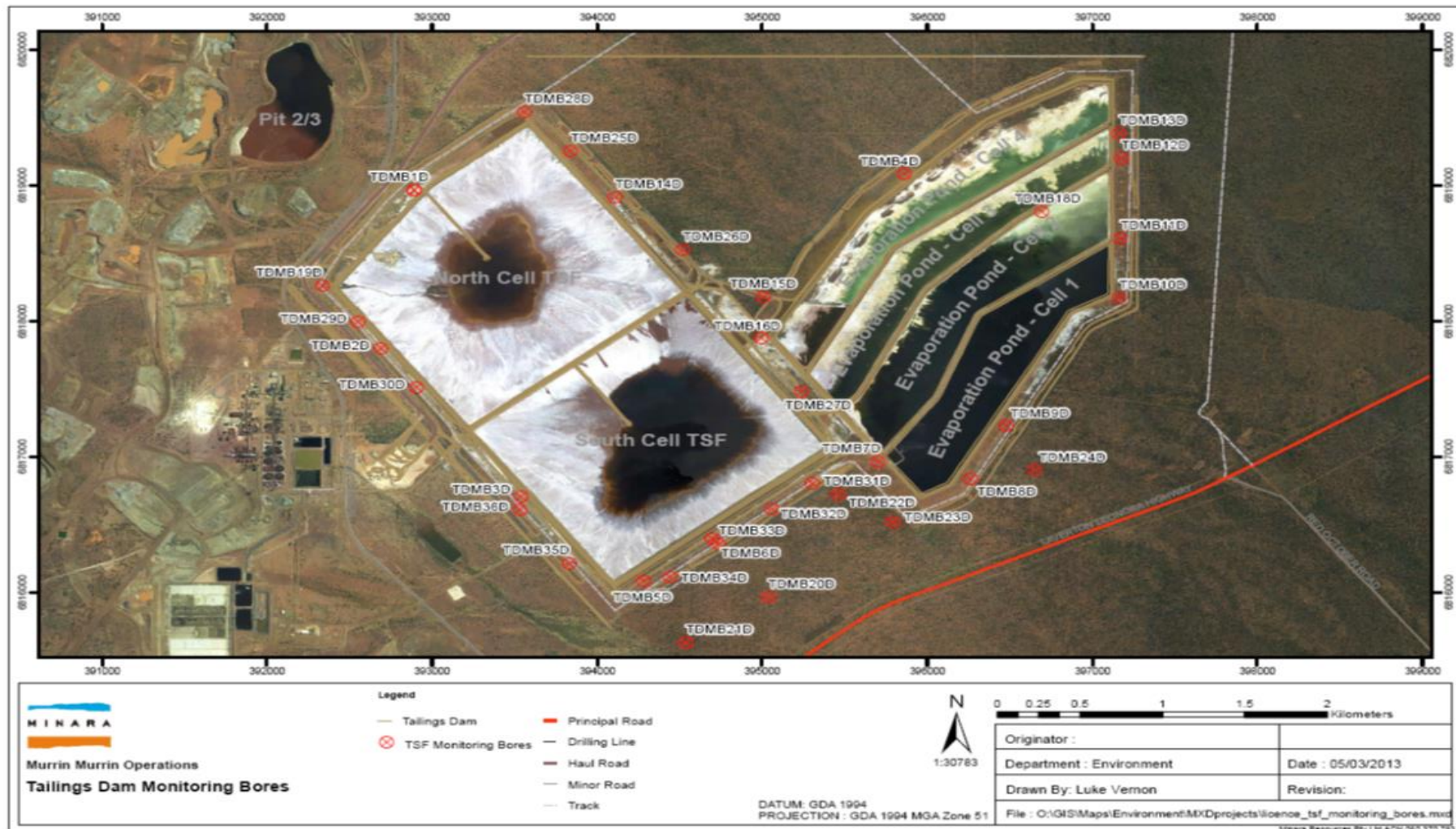


Figure 4: Tailings Dam Monitoring Bores

30





The locations of groundwater monitoring points defined in Table 3.5.1 are shown below

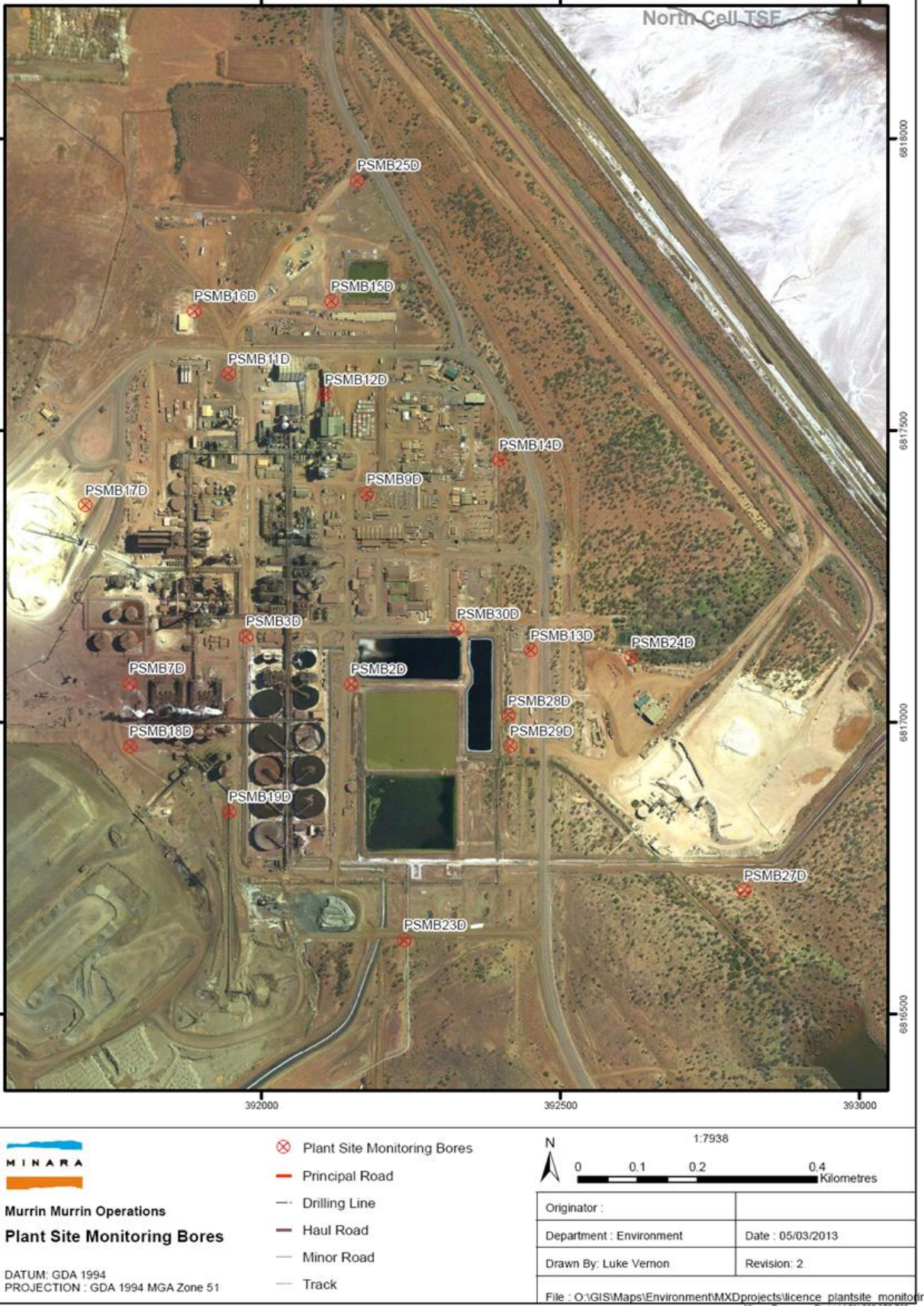


Figure 6: Plant site monitoring bores



Locations of groundwater monitoring points defined in Table 3.5.1 as shown below.

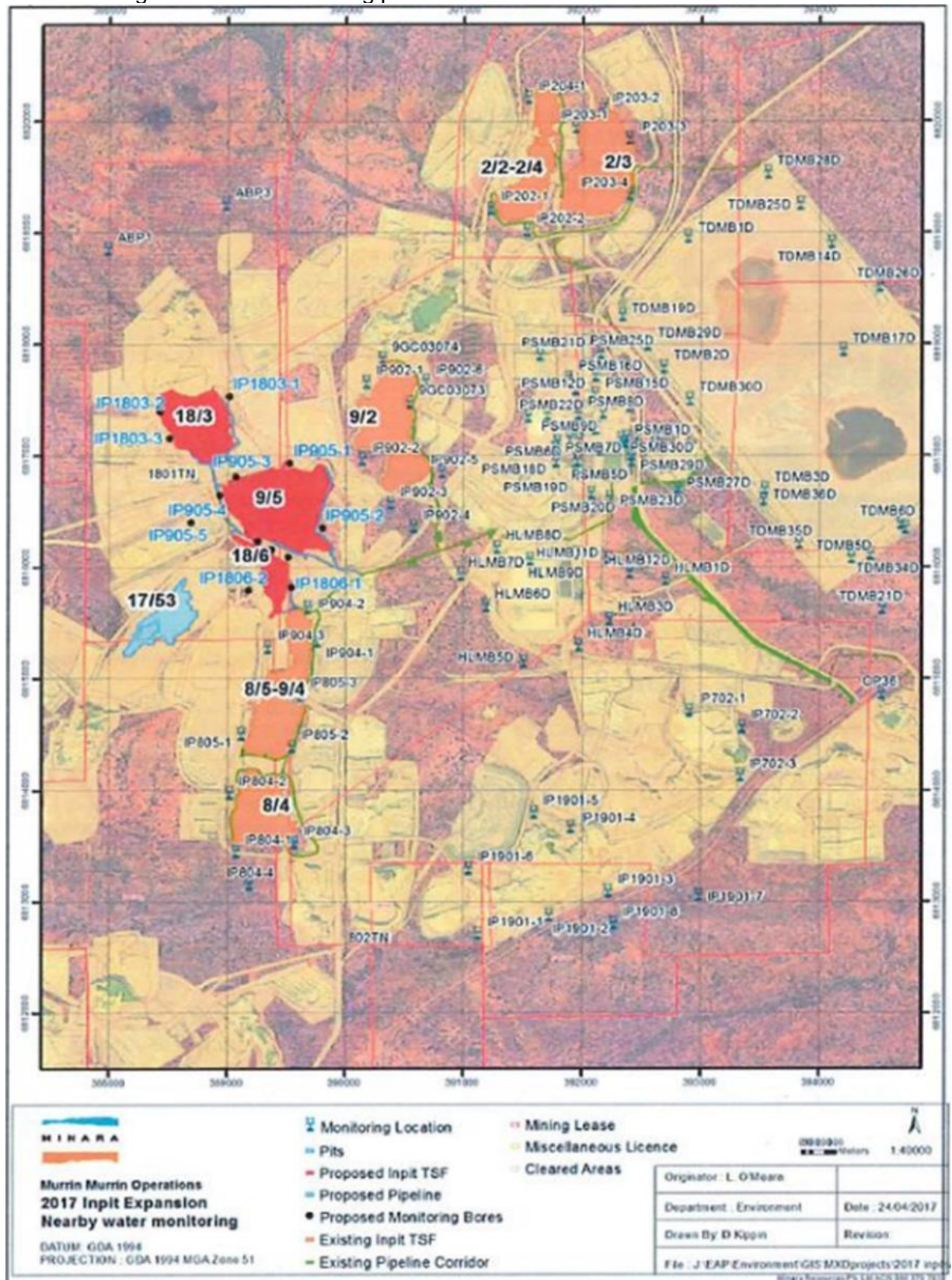


Figure 7: Locations of groundwater monitoring points defined in Table 3.5.1



Locations of groundwater monitoring points defined in Table 3.5.1 as shown below.

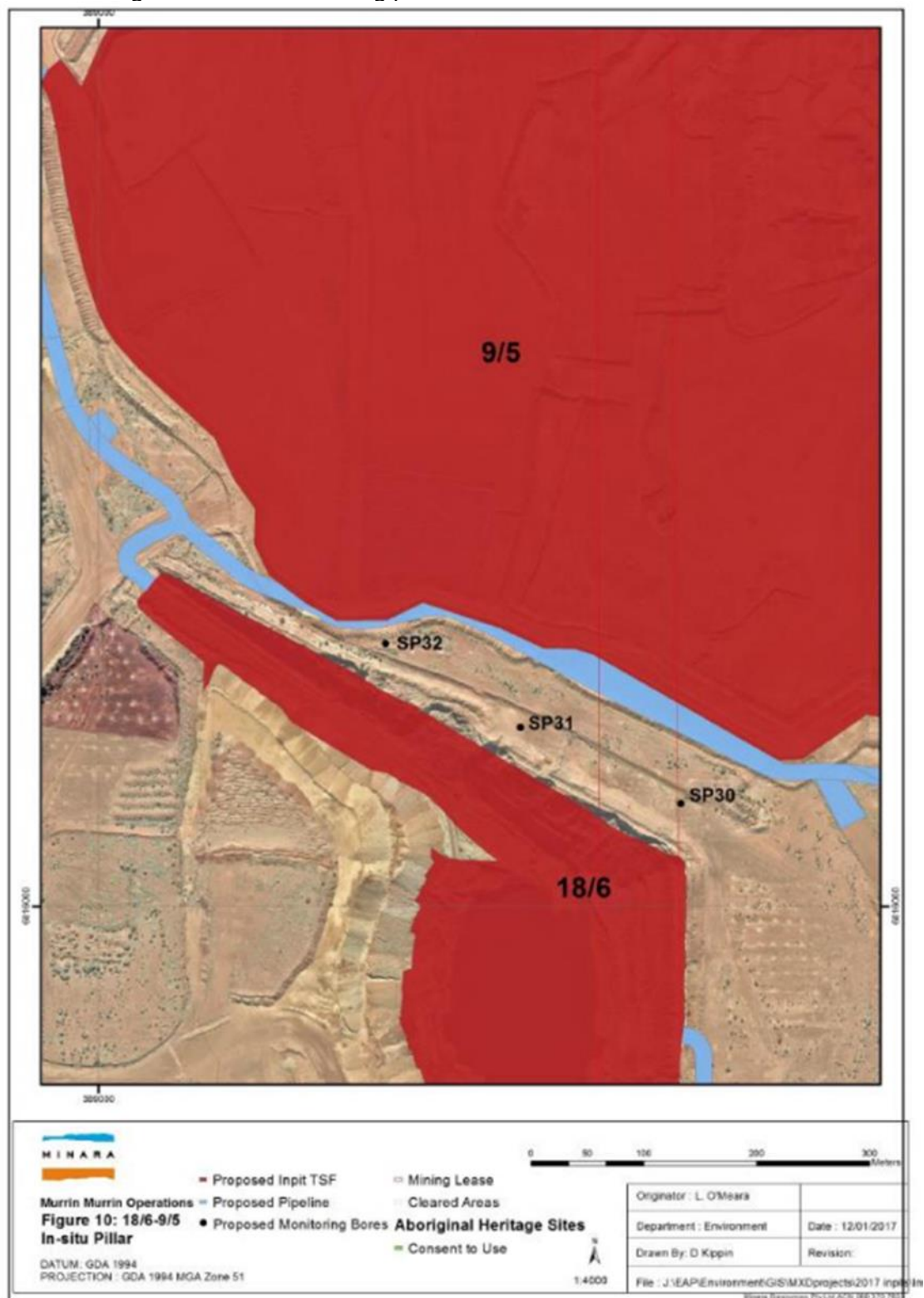
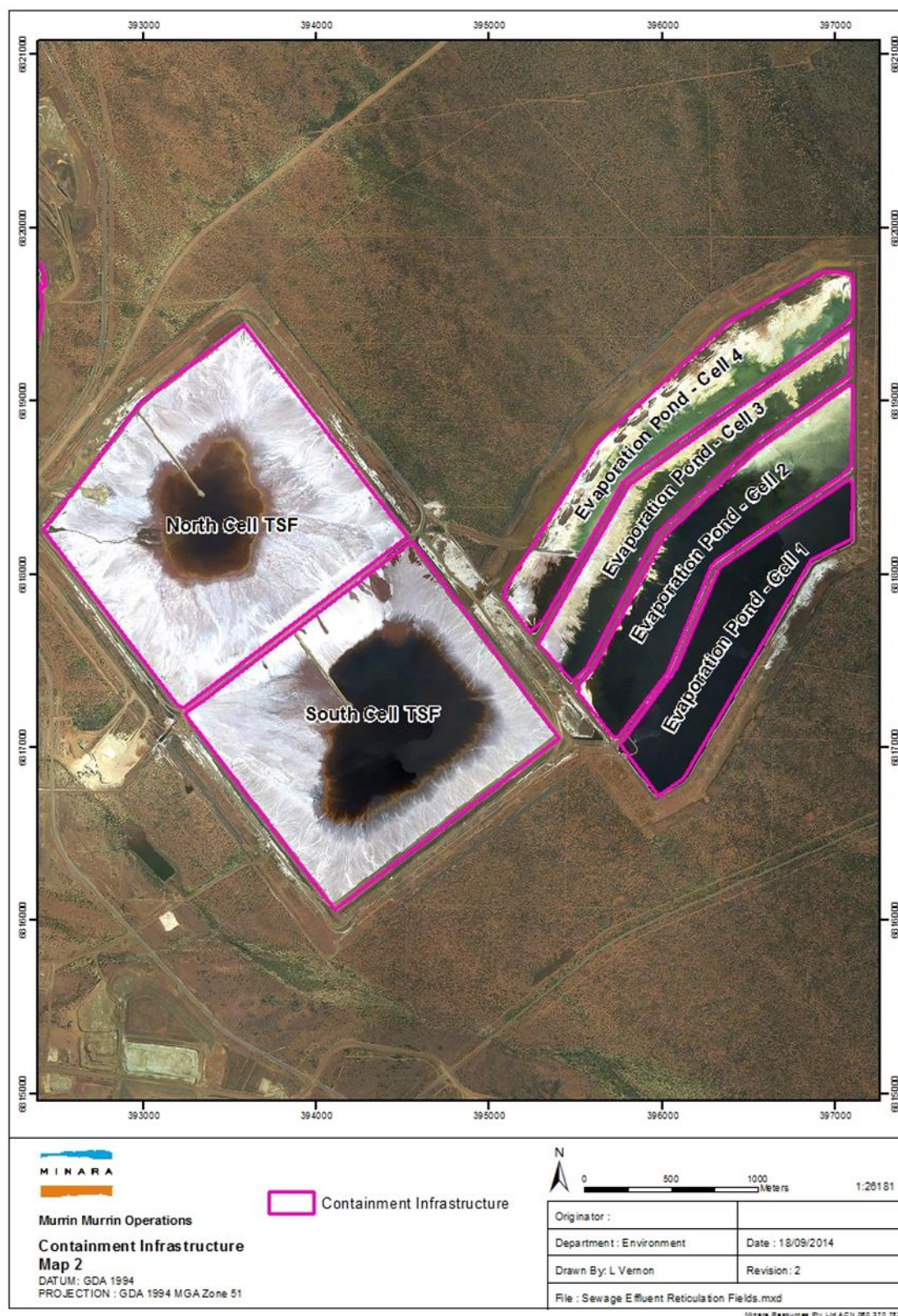


Figure 8: Locations of groundwater monitoring points defined in Table 3.5.1

## Map of containment infrastructure

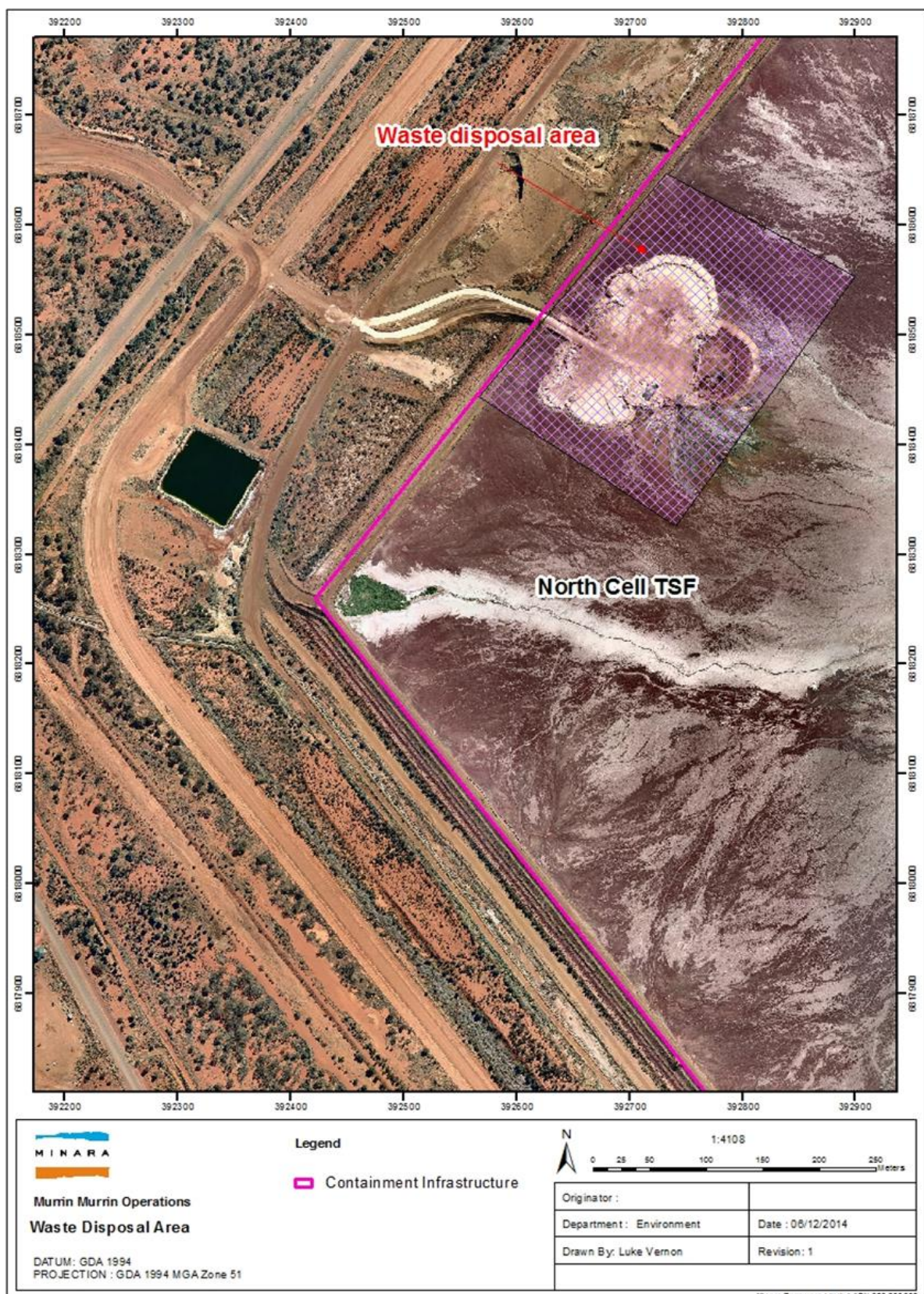
The location of the TSF cells and evaporation ponds defined in Table 1.3.1 are shown below.



**Figure 9: The location of the TSF cells and evaporation ponds defined in Table 1.3.1**



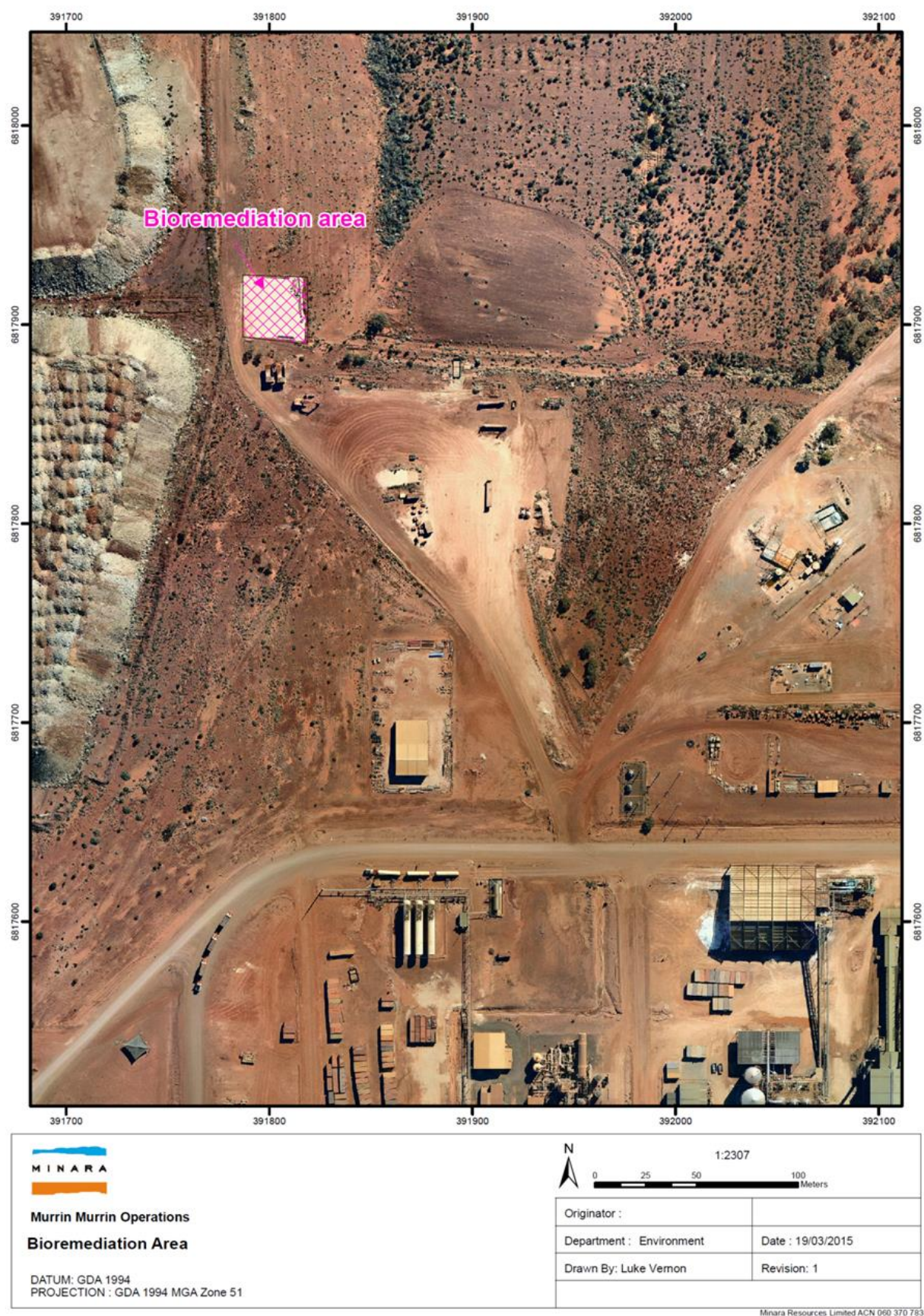
The location of the contaminated solid waste disposal area as defined in Table 1.3.1 is shown below.



**Figure 10: The location of the contaminated solid waste disposal area as defined in Table 1.3.1**



The location of the bioremediation facility as defined in Table 1.3.3 is shown below.



**Figure 11: The location of the bioremediation facility as defined in Table 1.3.3**



The location of the heap leach pad as defined in Table 1.3.1 is shown below.

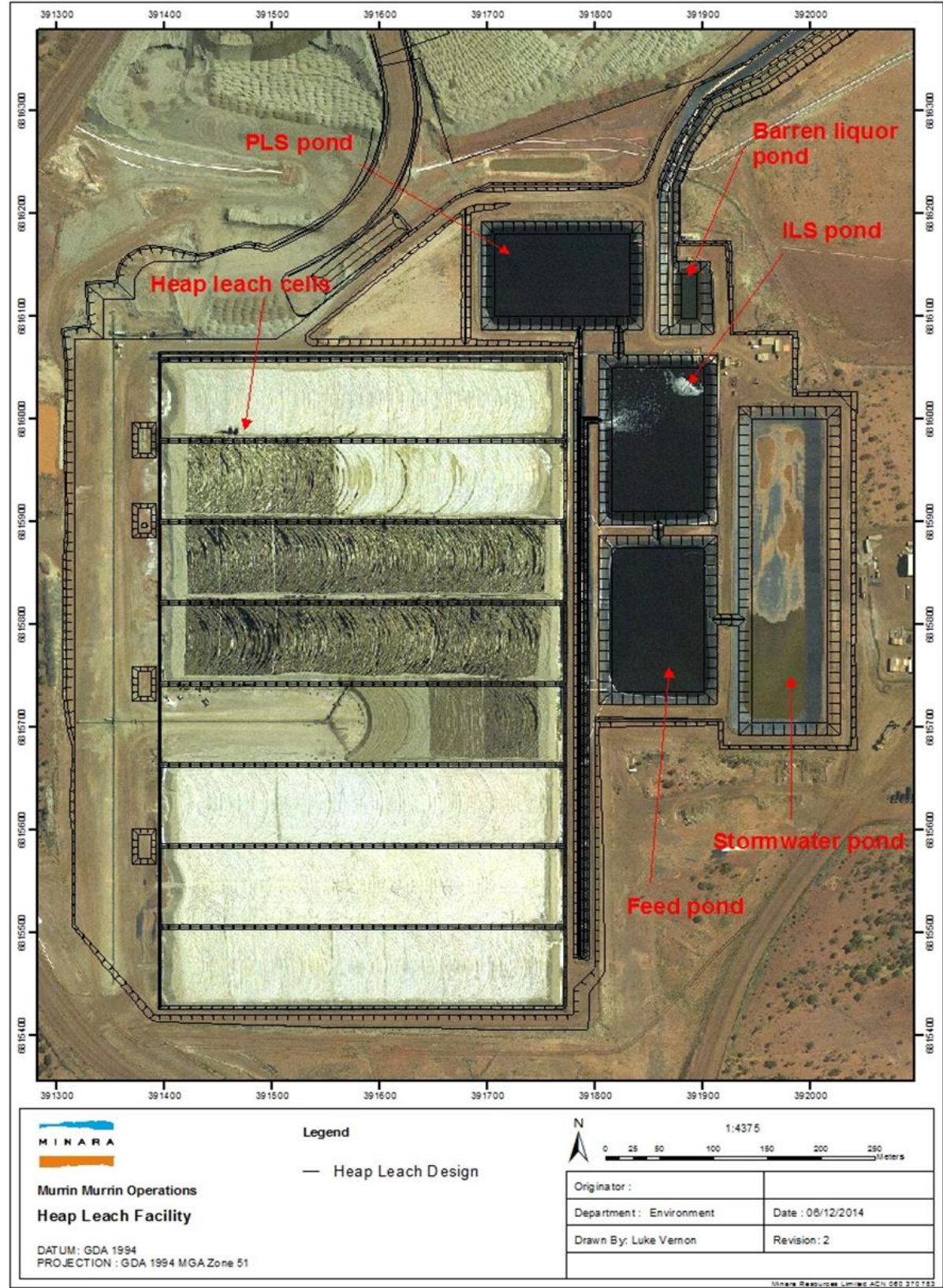


Figure 12: The location of the heap leach pad as defined in Table 1.3.1



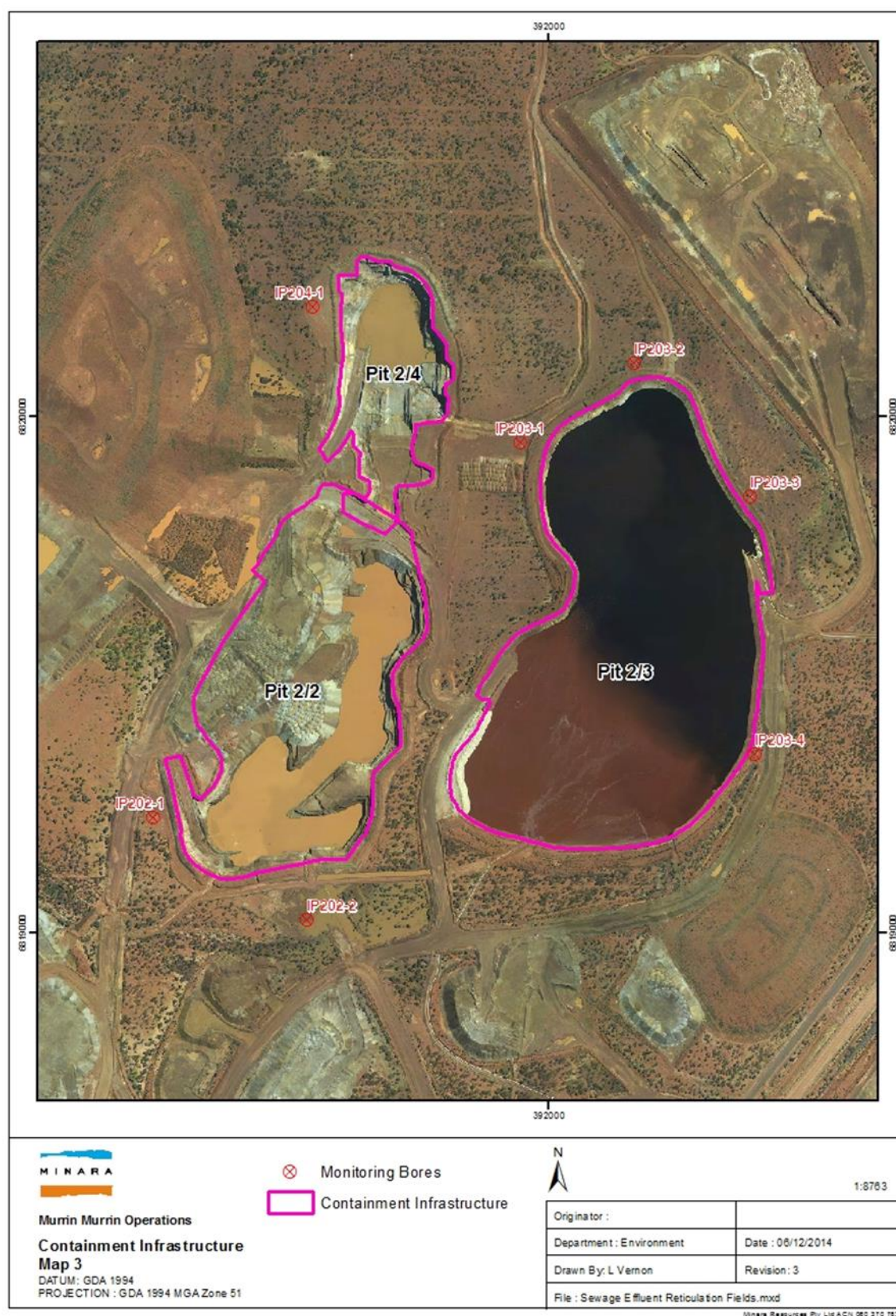
The location of the nickel matte residue storage area as defined in Table 1.3.1 is shown below.



**Figure 13: The location of the nickel matte residue storage area as defined in Table 1.3.1**



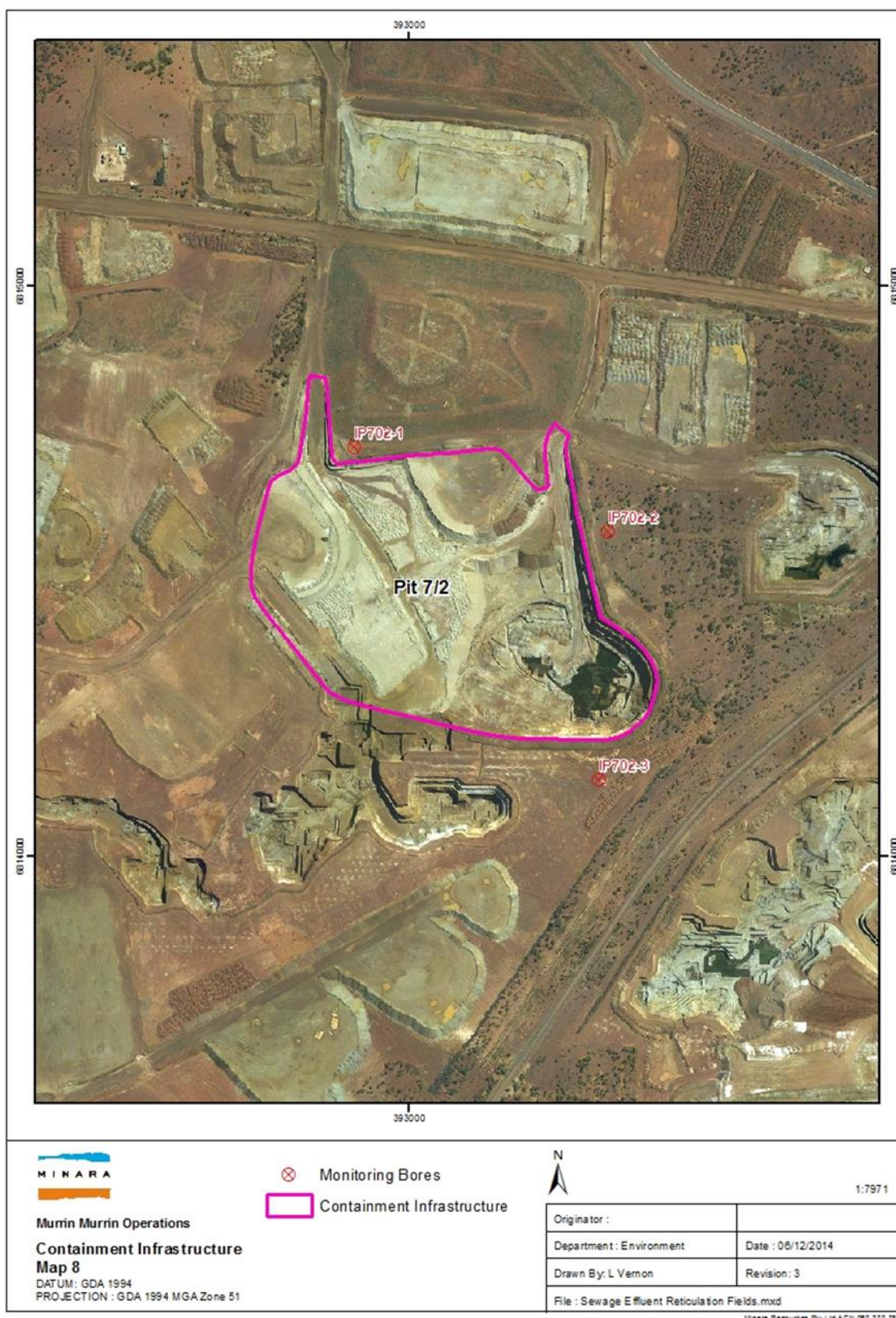
The location of the containment infrastructures and monitoring locations for pits 2/3, 2/2 and 2/4 as defined in Tables 1.3.1 and Table 3.5.1 are shown below.



**Figure 14: The location of the containment infrastructures and monitoring locations for pits 2/3, 2/2 and 2/4 as defined in Tables 1.3.1 and Table 3.5.1**



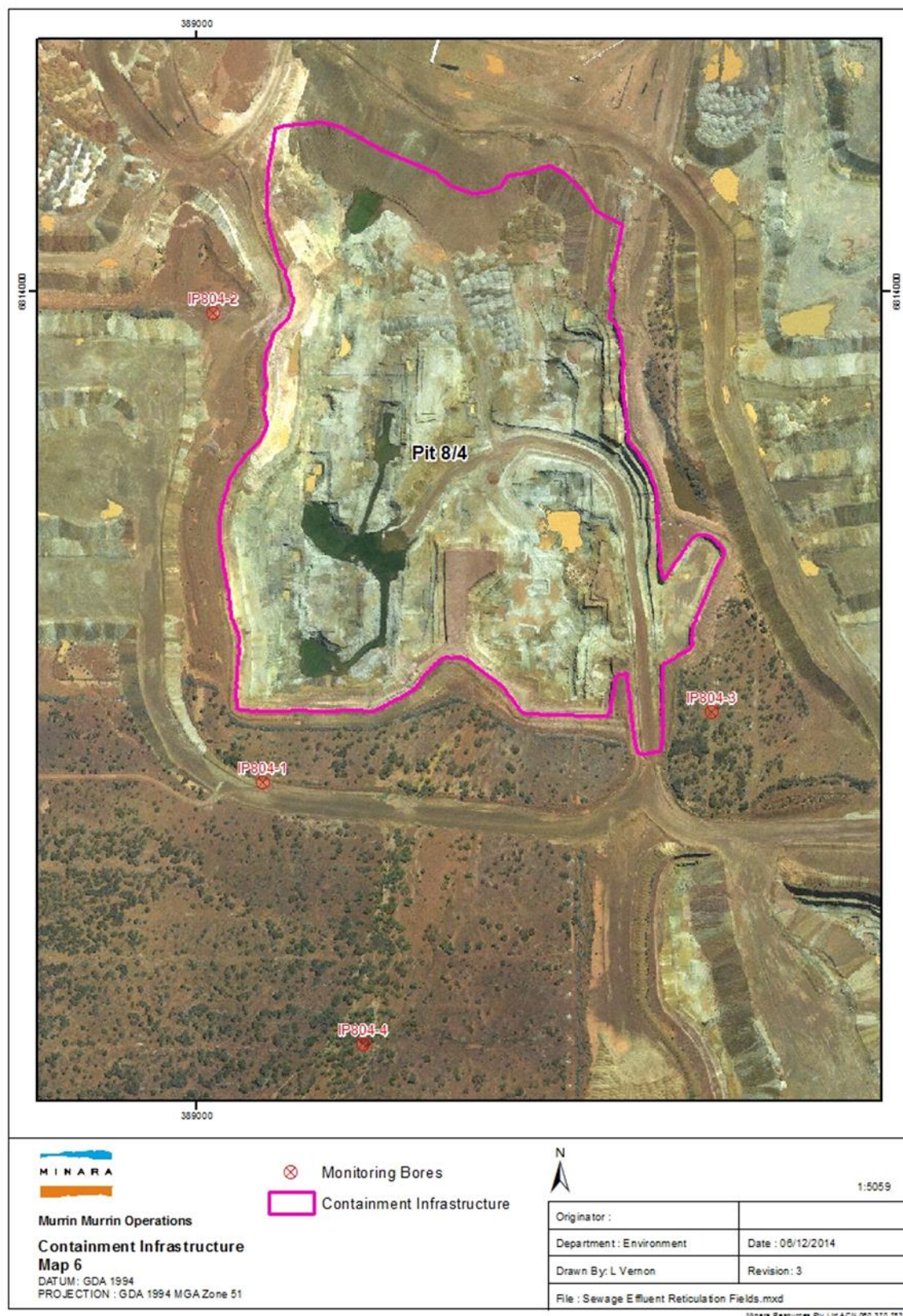
The location of the containment infrastructures and monitoring locations for pit 7/2 as defined in Tables 1.3.1 and Table 3.5.1 are shown below.



**Figure 15: The location of the containment infrastructures and monitoring locations for pit 7/2 as defined in Tables 1.3.1 and Table 3.5.1**



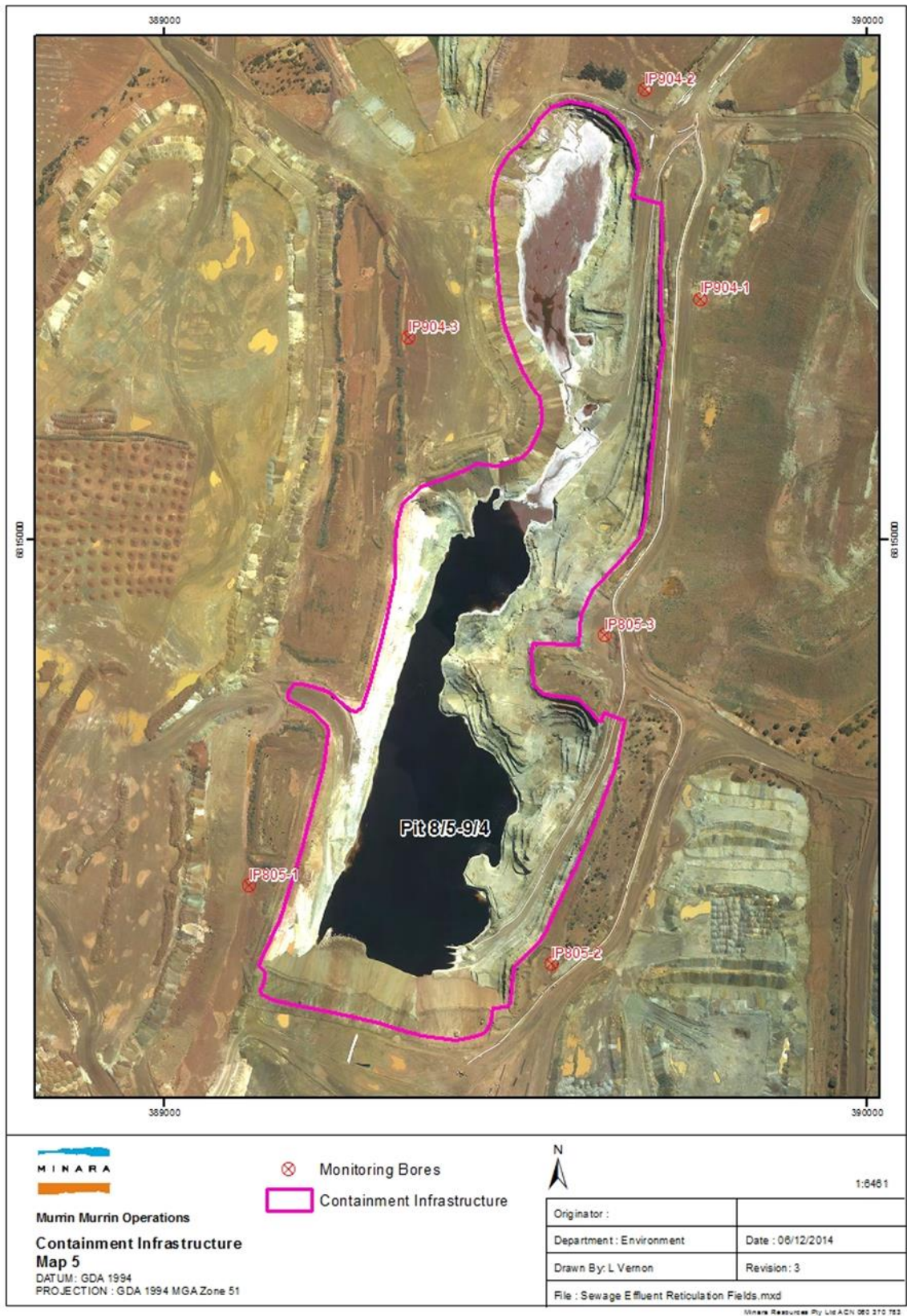
The location of the containment infrastructures and monitoring locations for pit 8/4 as defined in Table 1.3.1 and Table 3.5.1 are shown below.



**Figure 16: The location of the containment infrastructures and monitoring locations for pit 8/4 as defined in Table 1.3.1 and Table 3.5.1**



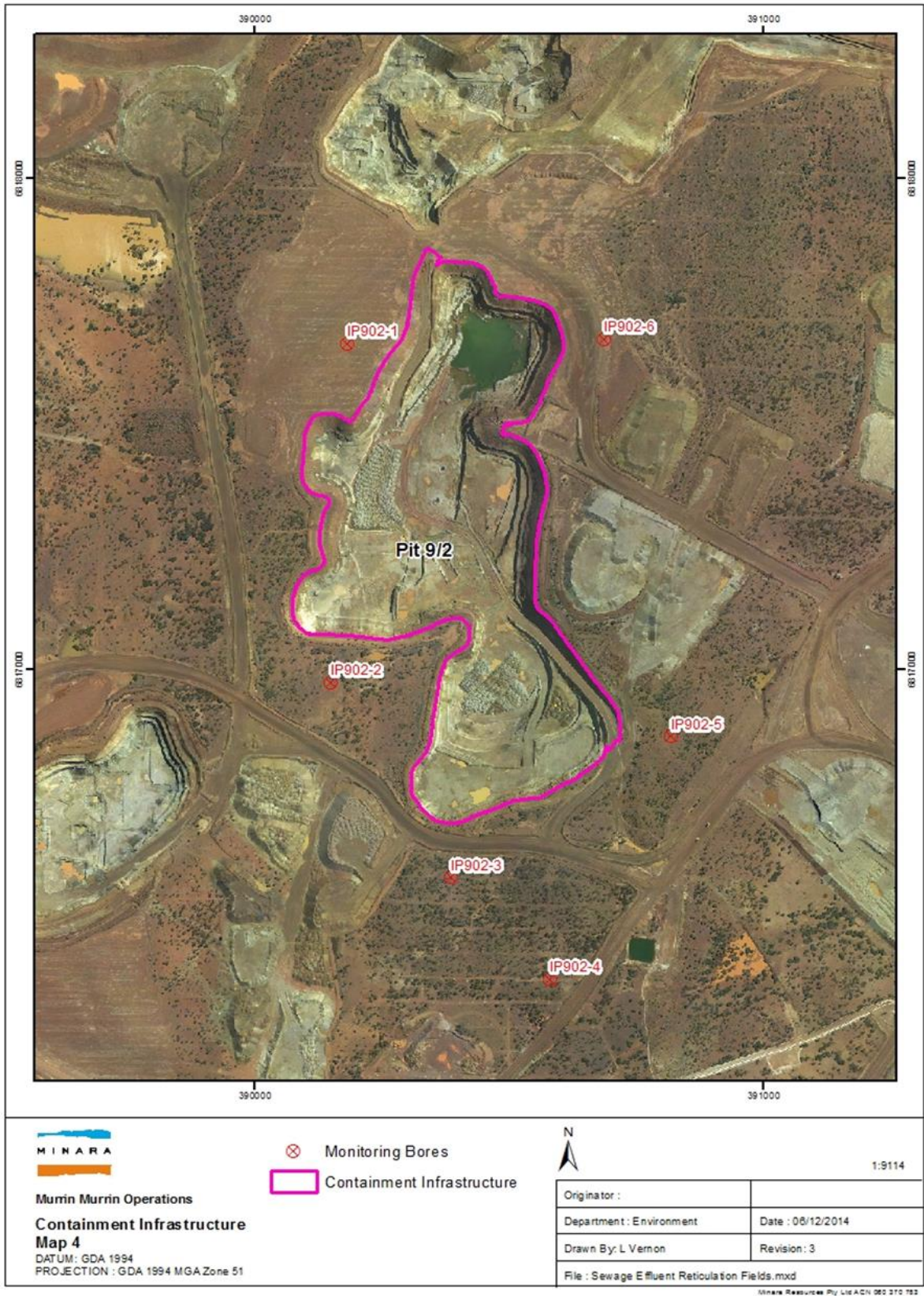
The location of the containment infrastructures and monitoring locations for pit 8/5 – 9/4 as defined in Table 1.3.1 and Table 3.5.1 are shown below.



**Figure 17: The location of the containment infrastructures and monitoring locations for pit 8/5 – 9/4 as defined in Table 1.3.1 and Table 3.5.1**



The location of the containment infrastructures and monitoring locations for pit 9/2 as defined in Table 1.3.1 and Table 3.5.1 are shown below.



**Figure 18: The location of the containment infrastructures and monitoring locations for pit 9/2 as defined in Table 1.3.1 and Table 3.5.1**



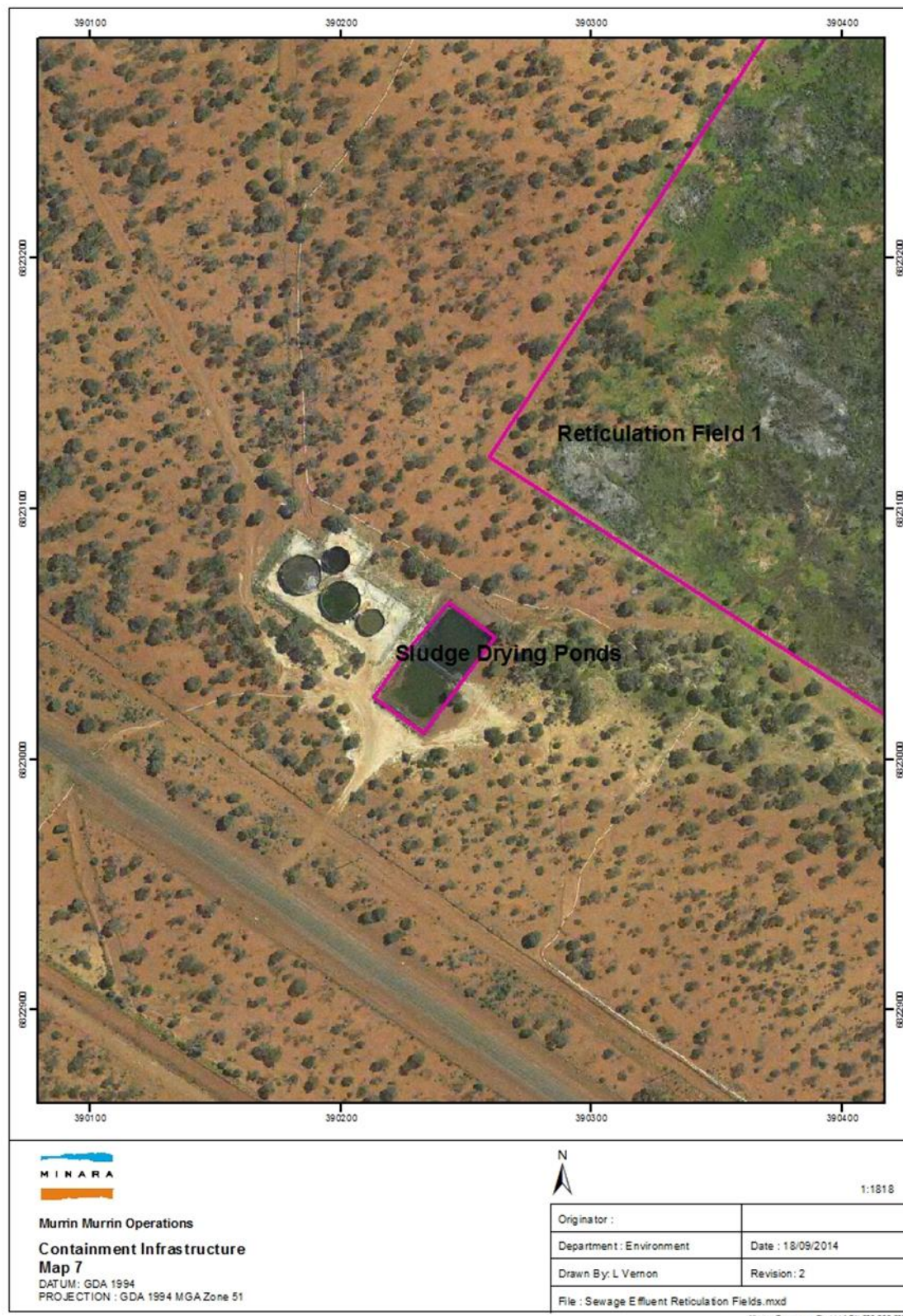
The location of the CCD ponds, process water dam and raw water dam, defined in Table 1.3.1 are shown below.



**Figure 19: The location of the CCD ponds, process water dam and raw water dam, defined in Table 1.3.1**



The location of the reticulation field and sludge drying ponds defined in Table 1.3.3 are shown below.



**Figure 20: The location of the reticulation field and sludge drying ponds defined in Table 1.3.3**



### Map depicting the disposal location of the vanadium catalyst waste

Disposal of spent vanadium catalyst was approved as a one-off event in-pit 18/3 in 2018. Any additional disposal of spent vanadium will be treated on a case by cases basis and is subject to approval (as referenced in Table 1.3.3).



Figure 21: Disposal of spent vanadium catalyst





Figure 22: Location of Landfill

## Schedule 2: Notification & form

Licence: L7276/1996/12  
Form: N1

Licence Holder: Murrin Murrin Operations Pty Ltd  
Date of breach:

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

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

### Part A

Licence Number	L7276/1996/12
Name of operator	Murrin Murrin Operations Pty Ltd
Location of Premises	Laverton WA 6440
Time and date of the detection	

Notification requirements for the breach of a limit	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Notification requirements for any failure or malfunction of any pollution control equipment or any incident which has caused, is causing or may cause pollution	
Date and time of event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken , or intended to be taken, to stop any emission	
Description of the failure or accident	



## Part B

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident.	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission.	
The dates of any previous N1 notifications for the Premises in the preceding 24 months.	

Name	
Post	
Signature on behalf of: Murrin Murrin Operations Pty Ltd	
Date	