Licence

Licence Number	L6131/1990/13
Licence Holder	Pilbara Manganese Pty Ltd
ACN	074 106 577
Registered business address	L2/24 Outram Street WEST PERTH WA 6005
File Number	DER2013/001337-1
Duration	01/10/2013 to 30/09/2028
Date of amendment	29 July 2020
Premises	Woodie Woodie Manganese Project Mining tenements: G45/332, G45/333, G45/334, G45/335, G45/336, G45/37-40, G46/4-5, L46/29, M45/107, M45/429-433, M45/517, M45/600-602, M45/637-641, M45/1218, M46/92-93, M46/108, M46/137, M46/150, M46/161-162, M46/383, M46/384, G45/279-284 MARBLE BAR WA 6760
Prescribed Premises	Category 5: Processing or beneficiation of metallic or non-metallic ore Category 6: Mine dewatering Category 54: Sewage facility Category 73: Bulk storage of materials Category 89: Putrescible landfill site As defined in Schedule 2

This Licence amendment is granted to the Licence Holder, subject to the following conditions, on 29 July 2020 by:

Lauren Fox
Digitally signed by Lauren Fox
Date: 2020.07.29 09:49:04 +08'00'

Lauren Fox
A/MANAGER – RESOURCE INDUSTRIES
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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Introduction

This Introduction is not part of the Licence conditions.

DWER's industry licensing role

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

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

Licence requirements

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

Where other statutory instruments impose obligations on the Premises/Licence Holder the intention is not to replicate them in the Licence conditions. You should therefore ensure that you are aware of all your statutory obligations under the Act and any other statutory instruments. Legislation can be accessed through the State Law Publisher website using the following link: https://www.legislation.wa.gov.au/legislation/statutes.nsf/default.html

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

- *Environmental Protection (Unauthorised Discharges) Regulations 2004* – these Regulations make it an offence to discharge certain materials such as contaminated stormwater into the environment other than in the circumstances set out in the Regulations.
- *Environmental Protection (Controlled Waste) Regulations 2004* - these Regulations place obligations on you if you produce, accept, transport or dispose of controlled waste.

- *Environmental Protection (Noise) Regulations 1997* – these Regulations require noise emissions from the Premises to comply with the assigned noise levels set out in the Regulations.

You must comply with your Licence. Non-compliance with your Licence is an offence and strict penalties exist for those who do not comply.

Licence Holders are also reminded of the requirements of section 53 of the Act which places restrictions on making certain changes to prescribed premises unless the changes are in accordance with a works approval, licence, closure notice or environmental protection notice.

Licence fees

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

Ministerial conditions

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

Premises description

Pilbara Manganese Pty Ltd (PMPL) owns and operates the Woodie Woodie Manganese Project (Woodie Woodie) located approximately 400 kilometres south east of the town of Port Hedland in the Pilbara region. The site consists of a number of leases and covers an area of 10,110 hectares.

The site has the capacity to process up to 5,000,000 tonnes of ore per year from a variety of pits at any one time. The mined ore is transported to a centrally located beneficiation plant where it is blended, crushed, screened and washed before being put through a heavy media separation plant. Lump manganese is produced via a drum separator and fines manganese via a cyclone separator.

Tailings from mining operation are piped to one of five in-pit tailings storage facilities. The pits are areas previously mined and range in capacity from 250,000 m^3 to 8,520,000 m^3.

The site undertakes dewatering to enable mining to occur and has the capacity to discharge 55,188,000 tonnes of water per year. The dewatering water is pumped via in pit sumps and ex-pit bores. Ex-pit bores discharge via the W12 discharge location. In pit sumps are pumped to sedimentation ponds before being discharged to one of three ephemeral creek systems.

Associated infrastructure includes a wastewater treatment plant (WWTP), which services the accommodation and offices buildings and is capable of treating up to 150 m^3 of effluent per day, and putrescible landfills which are located within a disused pit or approved waste rock dumps and are capable of receiving 1,950 tonnes of waste per year.

Licence summary

This Licence was amended in November 2015 as a result of an amendment sought by the Licence Holder to:

- add an additional sampling point at the extended WWTP irrigation area;
- addition of the Topvar dewatering pipeline and discharge location into Brumby Creek (W5821/2015/1); and
- allow dewatering of a new pit within the Hunter Pit extension project, Hunter SE, through an existing sedimentation pond (Cracker sedimentation pond, W1) which is adjacent to the Hunter pits. The Cracker sedimentation pond is within the same creek system (Muddauthera Creek) as where dewater from Hunter is currently approved for discharge.

Other changes made in the November 2015 amendment by DWER included:

- improvement conditions relating to upgrades to the WWTP and permeability investigations of the bioremediation facility were met and therefore removed from the Licence during the amendment;
- a new date for completion of the Bioremediation Facility was agreed and updated; and
- due to Departmental reform at the time, a number of changes were made to the Licence that were justified in the Decision Document. These changes included removing targets, whilst retaining limits on a risk basis.

The January 2016 amendment added a number of mining tenements to the licence, included the Greensnake landfill constructed under works approval W5832/2015/1 and removed improvement conditions for the bioremediation facility.

The April 2016 amendment was due to the site going into Care and Maintenance. The Licence Holder requested that the tailings inspections be reduced from daily to weekly when the facilities were inactive. The Licence Holder also requested that the weather stations at Telfer be used to measure site rainfall and evaporation rather than the site weather stations, which would be decommissioned (this did not result in an amendment to the licence as the weather stations were not specified in the Licence).

Amendment April 2020

The CEO initiated an amendment to the type and style of the licence during April 2020 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 this amendment, DWER has not undertaken any additional risk assessment of the Premises.

In consolidating the licence, the CEO has:

- 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.

The licences and works approvals issued for the Premises since 1/10/2004 are:

Instrument log		
Instrument	**Issued**	**Description**
L6131/1990/9	1/10/2004	Licence reissue.
L6131/1990/9	28/4/2006	Licence amendment.
L6131/1990/10	28/09/2006	Licence reissue.
W4369/2007/1	20/9/2007	Works approval. In pit tailing storage.
L6131/1990/11	18/9/2008	Licence reissue. Added category 54 and 89 to the licence.
L6131/1990/12	30/9/2010	Licence reissue. Added conditions for WWTP monitoring, landfill management and targets for dewatering monitoring.
L6131/1990/12	29/3/2012	Proponent amendment: Additional conditions for tyre disposal, bioremediation facility management, changes annual period and update monitoring sites.
W5216/2012/1	12/8/2012	Works approval. In pit tailing storage.
L6131/1990/13	26/09/2013	Licence reissue and REFIRE conversion.
L6131/1990/13	30/04/2015	Proponent requested licence amendment.
L6131/1990/13	26/11/2015	Proponent requested licence amendment.
L6131/1990/13	25/02/2016	Licence amended to add tenements, include the Greensnake landfill and remove improvement conditions for the bioremediation facility.
L6131/1990/13	29/04/2016	Department initiated amendment in accordance with section 59(1)(k) of the Act to amend the duration of the licence date month year.
L6131/1990/13	30/06/2016	Licence amended as the mine went in Care and Maintenance and to reduce the frequency of TSF inspections from daily to weekly and converting back to the Telfer's weather stations for weather records.
L6131/1990/13	22/12/2016	Amendment Notice: Licence Holder advised that the mine will resume operation and TSF inspections revert back to daily. Condition 4.3.1 was amended to reduce the required period of notice.
L6131/1990/13	31/03/2017	Amendment Notice 2: a Licence Holder initiated amendment to include the Homestead In-Pit tailing storage and its groundwater monitoring bores that were approved via works approval W5821/2015/1. Additional parameters for mine dewatering discharge were added and ambient surface water quality respectively have been updated to include chloride, sulfate, sodium, potassium, cobalt, iron, nickel, selenium, mercury, chromium(VI) and total chromium to fully assess the potential impacts of discharging dewatering effluent to rivers near the mine site.
L6131/1990/13	1/11/2017	Amendment Notice 3: on 21 August 2017 the Licence Holder applied for the following changes: • Change in treatment methods for the licensed WWTP; and • To allow dewatering water from Hunter pit to be discharged into Cracker Sedimentation Pond, prior to discharge to Muddauthera Creek.
L6131/1990/13	2/05/2018	Amendment Notice 4: on 19 December 2017 the Licence Holder applied for the following amendments to the licence: • Construction and operation of a new bioremediation area on top of the Greensnake Western Waste Dump; and

Instrument log		
Instrument	**Issued**	**Description**
		• Disposal of waste tyres within the Chutney/Vespa Waste Dump. On 1 March 2017 an application for additional amendment received for the following: • An increase to the approved throughput for Category 89 from 1,650 tonnes per annum (tpa) to 1,950 tpa.
L6131/1990/13	30/01/2019	Amendment Notice 5: on 25 October 2018 the Licence Holder applied for the following amendment in the licence: • Dispose waste tyres within the Paystar Waste Dump; • Dispose waste tyres within the Bells West Pit; • Extend the Greensnake Landfill footprint; • Dispose dewatering discharge from Extension Cord pit into Paystar pit; and • Dispose dewatering discharge from Topvar Pit into Cracker (W1) sedimentation pond, which discharges to Muddauthera Creek.
L6131/1990/13	29/07/2020	DWER initiated amendment to consolidate/ amalgamate separately issued Licence amendment notices in the main Licence.

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 Department's website.

'ACN' means Australian Company Number;

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

'Anniversary Date' means 30 September of each year;

'Annual Period' means the inclusive period from 1 October until 30 September in the following year;

'ANZECC (2000)' means the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) produced by Australian and New Zealand Environment and Conservation Council and the Agricultural and Resources Management Council of Australia and New Zealand;

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

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

'AS/NZS 5667.4' means the Australian Standard AS/NZS 5667.4 *Water Quality – Sampling – Guidance on sampling from lakes, natural and man-made;*

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

'AS/NZS 5667.9' means the Australian Standard AS/NZS 5667.9 *Water Quality - Sampling Guidance on sampling from marine waters;*

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

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

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

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

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

'CEO' means Chief Executive Officer of the department;

'CEO' for the purpose of correspondence means:

Director General
Department Administering the *Environmental Protection Act 1986*
Locked Bag 10
JOONDALUP DC WA 6027
info@dwer.wa.gov.au

'clean fill' has the meaning defined in Landfill Definitions;

'cfu/100mL' means colony-forming unit per one hundred millilitres;

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

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

'DWER' means Department of Water and Environmental Regulation;

'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, byproducts 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 and Petroleum;

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

'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 (as amended 2018)" published by the CEO of the Department, as amended from time to time;

'Licence' means this Licence numbered L6131/1990/13 and issued under the Act;

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

'kg/ha' means kilogram per hectare (application rate);

'm^3' means cubic meters;

'mg/L' means milligram per litre;

'mg/m^2' means milligram per square metre;

'mm' means millimetre;

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

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

'NATA accredited/accreditation' 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;

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

'putrescible' has the meaning defined in Landfill Definitions;

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

'rehabilitation' means the completion of the engineering of a landfill cell and includes capping and/or final cover;

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

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

'Schedule 3' means Schedule 3 of this Licence unless otherwise stated;

'six monthly' means the 2 inclusive periods from 1 October to 31 March and 1 April to 30 September in the following year;

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

'TSF' means tailing storage facility;

'µg/L' means micrograms per litre;

'WWTP' means wastewater treatment plant, and

'zone of influence' means the area of a receiving environment with the potential to be altered or changed as a result of an emission or discharge.

1.1.3 Any reference to an Australian or other standard in the Licence means the relevant parts of the 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 The Licence Holder shall immediately recover, or remove and dispose of spills of environmentally hazardous materials outside an engineered containment system.

1.3 Premises operation

1.3.1 The Licence Holder shall ensure that all pipelines containing environmentally hazardous materials are either:

(a) equipped with telemetry system and pressure sensors along pipelines to allow the detection of leaks and failures; or
(b) equipped with automatic cut-outs in the event of a pipe failure; or
(c) provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections.

The Licence Holder shall ensure that waste materials are only stored/treated within vessels or compounds provided with the infrastructure detailed in Table 1.3.1 and identified on the Premises map in Schedule 1.

Table 1.3.1: Containment infrastructure

Containment point reference	Material	Specification
Demon Pit TSF (DEPTSF)	Tailings	A minimum total freeboard of 820 mm from the top of the pit crest is maintained at all times
Dartmoor Pit TSF (DAPTSF)		
Malta Pit TSF (MAPTSF)		
Area 1 Pit TSF (A1PTSF)		
Homestead TSF (HPTSF)		
Process Water Pond	TSF return water and mine dewater	A minimum total freeboard of 500 mm or a 1 in 100 year/72 hour storm event (whichever is greater) from the top of the embankment is maintained at all times. Methods of operation minimise the likelihood of erosions of the embankment by wave action.
Bioremediation Facility	Hydrocarbon contaminated waste	Base and bunding clay lined. Stormwater runoff diverted so as not to flow onto the treatment facility.

1.3.2 The Licence Holder shall manage each TSF detailed in Table 1.3.1 such that the supernatant pond on the TSF is minimised as far as practicable.

1.3.3 The Licence Holder shall undertake an annual water balance for each TSF detailed in Table 1.3.1. The water balance shall as a minimum consider the following:
(a) site rainfall;
(b) evaporation;
(c) decant water recovery volumes;
(d) seepage recovery volumes; and
(e) volumes of tailings deposited.

1.3.4 The Licence Holder shall:
(a) undertake inspection 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 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 and leak assessment	Daily when the facilities are active Weekly when the facilities are inactive
Tailings return water lines		
Embankment freeboards of containment infrastructure listed in Table 1.3.1	Visual to confirm required freeboard capacity is available	

1.3.5 The Licence Holder shall ensure groundwater levels within the zone of influence at monitoring bores detailed in Table 3.6.3 and shown in Schedule 1, does not exceed the limit specified in Table 1.3.3.

Table 1.3.3: Groundwater level controls

Parameter	Limit (mbgl)	Averaging Period
Groundwater	4	Spot Sample

1.3.6 The Licence Holder shall, when standing water levels rise higher than 6 mbgl within monitoring bores detailed in Table 3.6.3 and shown in Schedule 1, provide the CEO with the following information:
(a) the monitoring bore location;
(b) the root cause analysis for the exceedances; and
(c) a description of remedial measures taken or planned to be taken.

1.3.7 The Licence Holder shall ensure that where wastes produced on the Premises are not taken offsite for lawful use or disposal, they are managed in accordance with the requirements of Table 1.3.4.

Table 1.3.4: Management of Waste

Facility	Waste type	Processes	Requirements[1,2]
Kia landfill Greensnake landfill	Clean Fill Putrescible Waste Inert Waste Type 1	Storage and disposal of waste by landfilling	<u>All waste types</u> No more than 1,950 tonnes per year of all waste types cumulatively shall be disposed of by landfilling.

Table 1.3.4: Management of Waste			
Facility	**Waste type**	**Processes**	**Requirements[1,2]**
Greensnake Tyre Disposal Facility Vespa/Chutney Waste Dump Paystar Waste Dump Bells West Pit	Inert Waste Type 2		Disposal of waste by landfilling shall only take place within the Kia landfill, Greensnake landfill, Paystar Waste Dump, Bells West Pit, Greensnake Tyre Disposal Facility and Vespa Waste Dump shown on the Premises map in Schedule 1. The separation distance between the base of the landfill and the highest groundwater level shall be not less than 3 metres. <u>Tyres (Inert Waste Type 2)[2]</u> Tyres shall only be landfilled within the Greensnake Tyre Disposal Facility, Vespa Waste Dump, Paystar Waste Dump and Bells West Pit shown on the Premises map in Schedule 1. Tyres shall consist of batches of no more than 1,000 tyres or 40 m^3 of tyre pieces. Batches must be separated from each other by at least 100 mm of soil. <u>Conveyor Belt (Inert Waste Type 2)[2]</u> No more than 600 tonnes of conveyor belts shall be disposed of by landfilling. Disposal of conveyor belts can only take place within the Greensnake Tyre Disposal Facility shown on the Premises map in Schedule 1. Conveyor belts shall be batched in volumes of 40 m^3 or less with batches separated by 100 mm or more of soil. The disposal site of tyres and conveyor belts must be surveyed and recorded for location and relative level.
Wastewater treatment plant	Sewage	Biological, physical and chemical treatment.	No more than 150 m^3 per day.

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

1.3.8 The Licence Holder shall manage the landfilling activities to ensure:
- (a) waste is placed and compacted to ensure all faces are stable and capable of retaining rehabilitation material; and
- (b) rehabilitation of a cell or phase takes place within 6 months after disposal in that cell or phase has been completed.

1.3.9 The Licence Holder shall ensure that cover is applied and maintained on landfilled wastes in accordance with Table 1.3.5 and that sufficient stockpiles of cover are maintained on site at all times.

Table 1.3.5: Cover requirements[1]			
Waste Type	**Material**	**Depth**	**Timescales**
Inert Waste Type 1	No cover required		
Putrescible Waste	Type 1 Inert waste or soil	300 mm	Weekly or as soon as practicable after deposit.
Inert Waste Type 2		500 mm	As soon as practical following the achievement of final waste levels in the area(s) in which tyres are deposited.

Note 1: Additional requirements for the covering 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 wind-blown waste escapes from the Premises and that wind-blown waste is collected on at least a weekly basis and returned to the tipping area.

1.3.11 The Licence Holder shall manage the irrigation of treated wastewater such that:

(a) no irrigation generated run-off, spray drift or discharge occurs beyond the boundary of the defined irrigation area(s);
(b) treated wastewater is evenly distributed over the irrigation area;
(c) no soil erosion occurs;
(d) irrigation does not occur on land that is waterlogged; and
(e) vegetation cover is maintained over the irrigation area.

1.3.12 The Licence Holder shall construct the Hunter, Extension Cord and Topvar dewatering pipelines in accordance with the requirements specified in the infrastructure requirements detailed in Table 1.3.6. The Licence Holder must not depart from the requirements specified in Table 1.3.6 except:

(a) where such departures are minor in nature and do not materially change or affect the infrastructure; or
(b) where such departure improves the functionality of the infrastructure and does not increase the risks to public health, public amenity or the environment;

and all other conditions in this Licence are still satisfied.

Table 1.3.6: Infrastructure requirements	
Infrastructure	**Requirements (design and construction)**
Extension Cord / Chutney pipeline	• Constructed of high density polyethylene • Pipeline contained within windrows, constructed from inert material • Flow meters installed to record volume of all water discharged into the Paystar pit
Topvar pipeline	• Constructed of high density polyethylene • Pipeline contained within windrows, constructed from inert material • Flow meters installed to record volume of all water discharged into the Cracker Sedimentation Pond

1.3.13 The Licence Holder shall operate the Hunter, Extension Cord and Topvar pits dewatering pipelines in accordance with the conditions of this Licence, following submission of the construction compliance document required under condition 4.3.1.

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 surface water

2.2.1 The Licence Holder shall ensure that where waste is emitted to surface water from the emission points in Table 2.2.1 and identified on the map of emission points in Schedule 1 it is done so in accordance with the conditions of this Licence.

Table 2.2.1: Emission points to surface water

Emission point reference on Map of emission points	Emission point reference	Description	Source including abatement
W1	Cracker (CK1)	Discharge to Muddauthera Creek	Sedimentation Pond originating from dewatering at Austin, Big Mack, Lucy Mack, Demon, Hunter SE, Hunter and Topvar pits.
W2	Hunter (H2)		Sedimentation Pond originating from dewatering at Hunter pit.
W3	Radio Hill (RH1)		Sedimentation Pond originating from dewatering at Radio Hill pit.
W4	Sardine (SD1)		Sedimentation Pond originating from dewatering at Dhufish pit.
W5	Greensnake (GS1)	Discharge to Warri Warri Creek	Sedimentation Pond originating from dewatering at Greensnake pit.
W6	Lox (LX1)		Sedimentation Pond originating from dewatering at Lox pit.
W7	Airport (AP1)	Discharge to Brumby Creek	Sedimentation Pond originating from dewatering at Airport pit.
W8	Chris D (CD1)		Sedimentation Pond originating from dewatering at Chris D pit.
W9	Chutney (CT1)		Sedimentation Pond originating from dewatering at Chutney/Extension cord pits and Paystar.
W10	Homestead (HS1)		Sedimentation Pond originating from dewatering at Homestead pit.
W11	Rhodes (RD)		Sedimentation Pond originating from dewatering at Rhodes pit.
W12	Topvar (TD)		Dewatering from Big Mack pit and the Topvar Hub Dewatering Bores
W13	Paystar	Evaporate and reinfiltrate into the unconfined aquifer	Dewatering from Chutney/Extension Cord pit

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

Table 2.2.2: Point source emission limits to surface water			
Emission point reference	**Parameter**	**Limit (including units)**	**Averaging period**
W1- W12	Total Suspended Solids	80 mg/L	Spot sample

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 maps 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 on Maps of emission points	**Emission point reference**	**Description**	**Source including abatement**
L1	Storage pond	Pipe from oily water separator into unlined storage pond	Treated wastewater from oil water separator originating from Greensnake workshop and wash down area
L2 – L2a or L2b (dependent on disposal pattern)	Irrigation area	Effluent from accommodation camp wastewater treatment plant to on-site irrigation area	Treated effluent from wastewater treatment plant

2.3.2 The Licence Holder shall not cause or allow emissions to land greater than the limits listed in Table 2.3.2.

Table 2.3.2: Emissions limits to land			
Emission point reference	**Parameter**	**Limit (including units)**	**Averaging period**
L1	Total Recoverable Hydrocarbon	15 mg/L	Spot sample
L2 – L2a or L2b (dependent on disposal pattern)	Load of Total Nitrogen (TN)	480 kg/ha	Annual
	Load of Total Phosphorus (TP)	120 kg/ha	

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 unless otherwise indicated in the relevant table;
(b) all wastewater sampling is conducted in accordance with AS/NZS 5667.10;
(c) all surface water sampling is conducted in accordance with AS/NZS 5667.4, AS/NZS 5667.6 or AS/NZS 5667.9 as relevant;
(d) all groundwater sampling is conducted in accordance with AS/NZS 5667.11;
(e) all sediment sampling is conducted in accordance with AS/NZS 5667.12;
(f) all microbiological samples are collected and preserved in accordance with AS/NZS 2031; and

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

3.1.2 The Licence Holder shall ensure that:
(a) monthly monitoring is undertaken at least 15 days apart;
(b) quarterly monitoring is undertaken at least 45 days apart; and
(c) six monthly monitoring is undertaken at least 5 months apart.

3.1.3 The Licence Holder shall ensure that all monitoring equipment used on the Premises to comply with the conditions of this Licence is calibrated in accordance with the manufacturer's specifications.

3.1.4 The Licence Holder shall, where the requirements for calibration cannot be practicably met, or a discrepancy exists in the interpretation of the requirements, bring these issues to the attention of the CEO accompanied with a report comprising details of any modifications to the methods.

3.2 Monitoring of point source emissions to surface water

3.2.1 The Licence Holder shall undertake the monitoring of emission points in Table 3.2.1 at locations identified on the map of monitoring points in Schedule 1 according to the specifications in that table.

Table 3.2.1: Monitoring of point source emissions to surface water

Emission point reference	Parameter	Units	Frequency
W1 W2 W3 W4 W5 W6 W7 W8 W9 W10 W11 W12 W13	Volume (cumulative)	m^3	Continuous
	pH[1]	pH units	Monthly
	Total Dissolved Solids	mg/L	
	Nitrate and Nitrite Nitrogen	mg/L	
	Total Kjeldahl Nitrogen	mg/L	
	Total Nitrogen	mg/L	
	Filterable Reactive Phosphorus	mg/L	
	Total Phosphorus	mg/L	
	Sodium	mg/L	
	Magnesium	mg/L	
	Zinc[2]	mg/L	
	Lead[2]	mg/L	
	Cadmium[2]	mg/L	
	Manganese	mg/L	
	Chloride	mg/L	
	Sulfate	mg/L	
	Potassium	mg/L	
	Cobalt	mg/L	
	Iron	mg/L	
	Nickel	mg/L	
	Selenium	mg/L	
	Mercury	mg/L	
	Chromium (VI)	mg/L	
	Total Chromium	mg/L	

Note 1: In-field non-NATA accredited analysis permitted.
Note 2: With adjustments for hardness as per ANZECC (2000) guidelines

3.3 Monitoring of emissions to land

3.3.1 The Licence Holder shall undertake the monitoring of emission points in Table 3.3.1 at locations identified on the maps of monitoring points in Schedule 1 according to the specifications in the table.

Table 3.3.1: Monitoring of emissions to land

Emission point reference	Parameter	Units	Frequency
L1	Total Recoverable Hydrocarbon	mg/L	Quarterly
L2a or L2b (dependent on disposal pattern)	pH[1]	pH units	
	Biochemical Oxygen Demand	mg/L	
	Total Suspended Solids	mg/L	
	Total Nitrogen	mg/L	
	Total Phosphorus	mg/L	
	E.coli	cfu/100mL	

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

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 is that table.

Table 3.4.1: Monitoring of inputs and outputs

Input/ Output	Parameter	Units	Averaging Period	Frequency
Treated Wastewater	Volume (cumulative) recycled for on-site irrigation	m^3	Monthly	Continuous
Waste Inputs	Inert Waste Type 1, Inert Waste Type 2, Putrescible Waste, and Clean Fill	tonnes or m^3	N/A	Each load disposed

3.5 Process monitoring

3.5.1 The Licence Holder shall undertake the monitoring in Table 3.5.1 according to the specifications in that table.

Table 3.5.1: Process monitoring

Process description	Parameter	Units	Averaging Period	Frequency
Tailings deposition	Volume of tailings deposited into each TSF	m^3	Monthly	None specified
	Volume of water recovered from each TSF			

3.6 Ambient environmental quality monitoring

3.6.1 The Licence Holder shall undertake the monitoring of monitoring points in Tables 3.6.1, 3.6.2, 3.6.3 and 3.6.4 at locations identified on the map of monitoring points in Schedule 1 according to the specifications in those tables.

Table 3.6.1: Monitoring of ambient surface water quality				
Monitoring point reference and location	**Parameter**	**Units**	**Averaging period**	**Frequency**
Downstream sites: Muddauthera Creek (MMS) Warri Warri (WWMS) Brumby Creek (BMS)	pH[1]	pH units	Spot sample	Monthly
	Total Dissolved Solids	mg/L		
	Total Suspended Solids			
	Nitrate and Nitrite Nitrogen			
	Total Kjeldahl Nitrogen			
	Total Nitrogen			
	Filterable Reactive Phosphorus			
	Total Phosphorus			
	Sodium			
	Magnesium			
	Zinc[2]			
	Lead[2]			
	Cadmium[2]			
	Manganese			
	Chloride			
	Sulfate			
	Potassium			
	Cobalt			
	Iron			
	Nickel			
	Selenium			
	Mercury			
	Chromium (VI)			
	Total Chromium			
Background site: Lower Carawine Gorge Pool (CG1) Tooma Stockyard (TS) Tooncoonaragee Pool (TC1) Oakover Crossing (OC)	pH[1]	pH units	Spot sample	Monthly (when accessible)
	Total Dissolved Solids	mg/L		
	Total Suspended Solids			
	Nitrate and Nitrite Nitrogen			
	Total Kjeldahl Nitrogen			
	Total Nitrogen			
	Filterable Reactive Phosphorus			
	Total Phosphorus			
	Sodium			
	Magnesium			
	Zinc[2]			
	Lead[2]			
	Cadmium[2]			
	Manganese			
	Chloride			
	Sulfate			
	Potassium			
	Cobalt			
	Iron			
	Nickel			
	Selenium			
	Mercury			
	Chromium (VI)			
	Total Chromium			
	Chlorophyll-a	µg/L		
	Phaeophytin			

Note 1: In-field non-NATA accredited analysis permitted.
Note 2: With adjustments for hardness as per ANZECC (2000) guidelines.

Table 3.6.2: Monitoring of sediment quality				
Monitoring point reference and location	**Parameter**	**Units**	**Averaging period**	**Frequency**
Background site: Lower Carawine Gorge Pool (CG1) Tooma Stockyard (TS) Tooncoonaragee Pool (TC1) Oakover Crossing (OC)	Chlorophyll-a	mg/m^2	Spot sample	Monthly (when accessible)
	Phaeophytin	mg/m^2		

Table 3.6.3: Monitoring of ambient groundwater quality				
Monitoring point reference and location	**Parameter**	**Units**	**Averaging period**	**Frequency**
Demon Pit TSF DEPTSFMB01 DEPTSFMB02 DEPTSFMB04 TSF2 TDMB1 Dartmoor TSF DAPTSFMB01 DAPTSFMB02 Malta TSF MAPTSFMB01 Homestead TSF HPTSFMB01 HPTSFMB02 HPTSFMB03	Standing water level	mbgl	Spot sample	Quarterly
	pH[1]	pH units		
	Total Dissolved Solids	mg/L		
	Total Nitrogen	mg/L		
	Arsenic	mg/L		
	Copper	mg/L		
	Molybdenum	mg/L		
	Selenium	mg/L		
	Uranium	mg/L		
	Hexavalent Chromium	mg/L		

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

Table 3.6.4: Monitoring of vegetation health			
Monitoring point reference and location	**Parameter**	**Averaging period**	**Frequency**
Brumby Creek Crossing (V1) Lower Carawine Pool (V2)	Visually estimate the average foliage cover of the species *Eucalyptus camaldulensis* and *Melaleuca argentea*	Visual inspection	Six monthly
Muddauthera Crossing (V3) Running Water Pool (V4)	Score the health condition of the species *Eucalyptus camaldulensis* and *Melaleuca argentea*		
Tooma Stockyards (V5)	General environmental description of the site and record any changes since previous monitoring		
Warri Warri Creek Crossing (V6)	Take replicate photographs of foliage density and shadow areas beneath trees		

3.6.2 The Licence Holder shall take the relevant action in the case of an event in Table 3.6.5.

Table 3.6.5: Management Action			
Monitoring point reference	**Event/action reference**	**Event**	**Management action**
V1 – V6	EA1	20% reduction in the average foliage density from previous monitoring at the same site	Undertake an investigation to determine if the impacts are attributable to dewatering at the premises. Include details of the investigation in the Annual Environmental Report and if attributable to dewatering include an outline of corrective action taken or planned to mitigate adverse environmental impacts and management measures to prevent a recurrence of the event.
	EA2	A 2 point reduction in the health condition from the previous monitoring at the same site.	

4 Information

4.1 Records

4.1.1 All information and records required by the Licence shall:

(a) be legible;

(b) if amended, be amended in such a way that the original and subsequent amendments remain legible or are capable of retrieval;

(c) except for records listed in 4.1.1(d), be retained for at least 6 years from the date the records were made or until the expiry of the Licence or any subsequent licence; and

(d) for those following records, be retained until the expiry of the Licence and any subsequent licence:

(i) off-site environmental effects; or

(ii) matters which affect the condition of the land or waters.

4.1.2 The Licence Holder must submit to the CEO within 90 days after the Anniversary Date, an Annual Audit Compliance Report indicating the extent to which the Licence Holder has complied with the Conditions in this Licence for the Annual Period.

4.1.3 The Licence Holder shall implement a complaints management system that as a minimum records the number and details of complaints received concerning the environmental impact of the activities undertaken at the Premises and any action taken in response to the complaint.

4.2 Reporting

4.2.1 The Licence Holder shall submit to the CEO an Annual Environmental Report by 30 November each year. The report shall contain the information listed in Table 4.2.1 in the format or form specified in that table.

Table 4.2.1: Annual Environmental Report		
Condition or table (if relevant)	**Parameter**	**Format or form[1]**
-	Summary of any failure or malfunction of any pollution control equipment and any environmental incidents that have occurred during the annual period and any action taken	None specified
1.3.4	Water balance	None specified

Table 4.2.1: Annual Environmental Report		
Condition or table (if relevant)	**Parameter**	**Format or form[1]**
Table 2.2.2	Monitoring of point source emissions to surface water results – Total Suspended Solids (Limit)	WR1
Table 2.3.2	Total Recoverable Hydrocarbon	LR1
	Loading of Total Nitrogen and Total Phosphorus	LR2
Table 3.2.1	Monitoring of point source emissions to surface water results – pH, Total Dissolved Solids, Nitrate and Nitrite Nitrogen, Total Kjeldahl, Total Nitrogen, Filterable Reactive Phosphorus, Total Phosphorus, Sodium, Magnesium, Zinc, Lead, Cadmium, Manganese, Chloride, Sulfate, Potassium, Cobalt, Iron, Nickel, Selenium, Mercury, Chromium (VI) and Total Chromium	WR2
Table 3.3.1	Monitoring of emissions to land	LR1
Table 3.4.1	Volume (cumulative) recycled for on-site irrigation	LR3
Table 3.4.1	Inert Waste Type 1, Inert Waste Type 2, Putrescible Waste and Clean Fill	None specified
Table 3.5.1	Process Monitoring: volume of tailings deposited and volume of water recovered.	None specified
Table 3.6.1	Downstream sites: pH, Total Suspended Solids, Total Dissolved Solids, Nitrate and Nitrite Nitrogen, Total Kjeldahl, Total Nitrogen, Filterable Reactive Phosphorus, Total Phosphorus, Sodium, Magnesium, Zinc, Lead, Cadmium, Manganese Chloride, Sulfate, Potassium, Cobalt, Iron, Nickel, Selenium, Mercury, Chromium (VI) and Total Chromium	WR3
	Background sites: pH, Total Suspended Solids, Total Dissolved Solids, Nitrate and Nitrite Nitrogen, Total Kjeldahl, Total Nitrogen, Filterable Reactive Phosphorus, Total Phosphorus, Sodium, Magnesium, Zinc, Lead, Cadmium, Manganese, Chloride, Sulfate, Potassium, Cobalt, Iron, Nickel, Selenium, Mercury, Chromium (VI) and Total Chromium, Chlorophyll-a and Phaeophytin	WR4
Table 3.6.2	Sediment - Chlorophyll-a and Phaeophytin	WR5
Table 3.6.3	Groundwater: Standing water level, pH, Total Dissolved Solids, Total Nitrogen, Arsenic, Copper, Molybdenum, Selenium, Uranium, Hexavalent Chromium	GR1
Table 3.6.4	Average foliage, health score and general environmental description	None specified
	Identical photographs of foliage density and shadow areas beneath trees	Photographs
Table 3.6.5	Management actions EA1 and EA2	None specified
4.1.2	Compliance	Annual Audit Compliance Report
4.1.3	Complaints summary	None specified

Note 1: Forms are in Schedule 3

4.2.2 The Licence Holder shall ensure that the Annual Environmental Report also contains an assessment of the information contained within the report against previous monitoring results and Licence limits.

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 CEOs request	As received by the Licence Holder from third parties

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[1]**	**Format or form[2]**
-	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
-	Recommencing start-up of operations (after a period of care and maintenance)	At least 21 days prior to recommencing production	None specified
1.3.7	Standing Water Level exceeding 6 mbgl	Within 7 calendar days of becoming aware of Standing Water Levels exceeding 6 mbgl	None specified
1.3.14	The Licence Holder shall submit a construction compliance document to the CEO, following construction of the Hunter, Extension Cord and Tovar dewatering pipelines. The compliance document shall: (a) Clearly detail how the Hunter, Extension Cord and Topvar dewatering pipelines have been constructed to meet the infrastructure requirements of condition 1.3.13 and identify any departures; (b) Be certified by a qualified professional engineer stating that the infrastructure specified in Table 1.3.6 has been constructed in accordance with the conditions of the Licence with no material defects; and (c) Be signed by a person authorised to represent the Licence Holder and contain the printed name and position of that person within the company.	Within 7 days after the completion of construction	None specified
3.1.4	Calibration report	As soon as practicable	None specified

Note 1: Notification requirements in the Licence shall not negate the requirement to comply with s72 of the Act
Note 2: Forms are in Schedule 3

Schedule 1: Maps

Figure 1 - Premises map

The Premises and key infrastructure is shown in the map below. The black line depicts the Premises boundary.

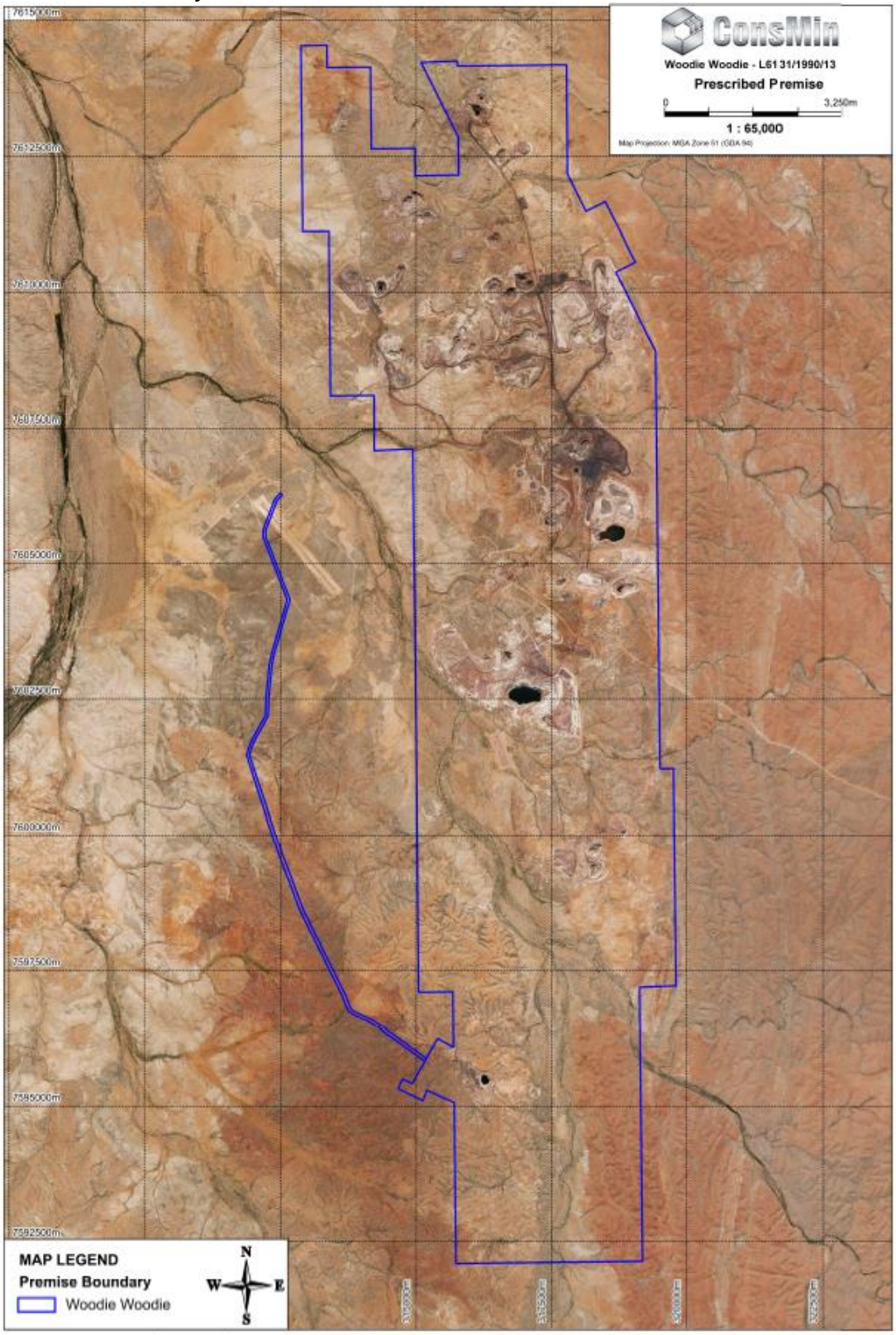


Figure 2 – Containment Infrastructure and Monitoring of Ambient Groundwater Quality

The locations of containment infrastructure as per Table 1.3.1 and monitoring of ambient groundwater quality as per Table 3.6.3.

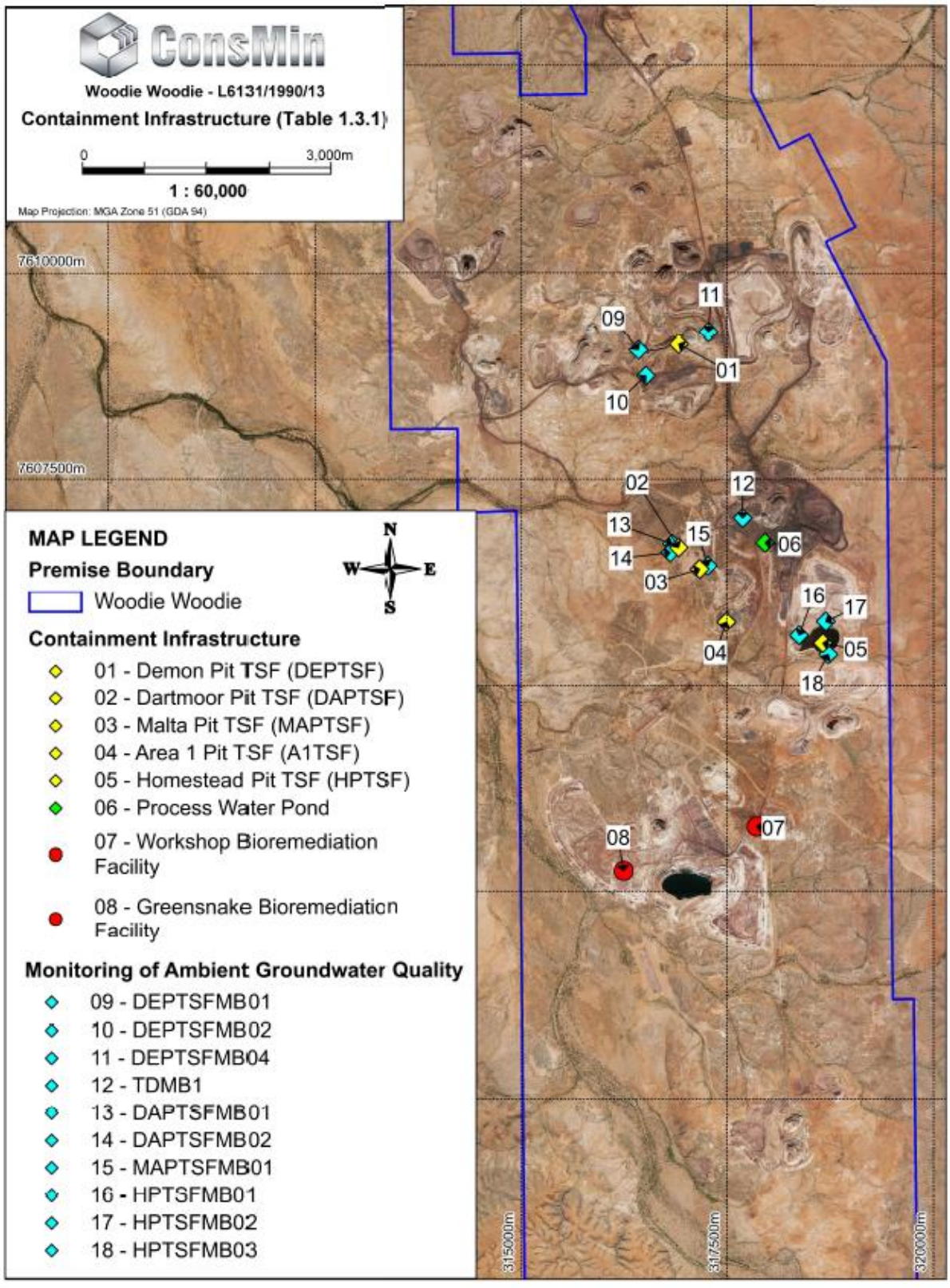


Figure 3 – Emission Points to Surface Water

The locations of emission points to surface water as per Table 2.2.1.

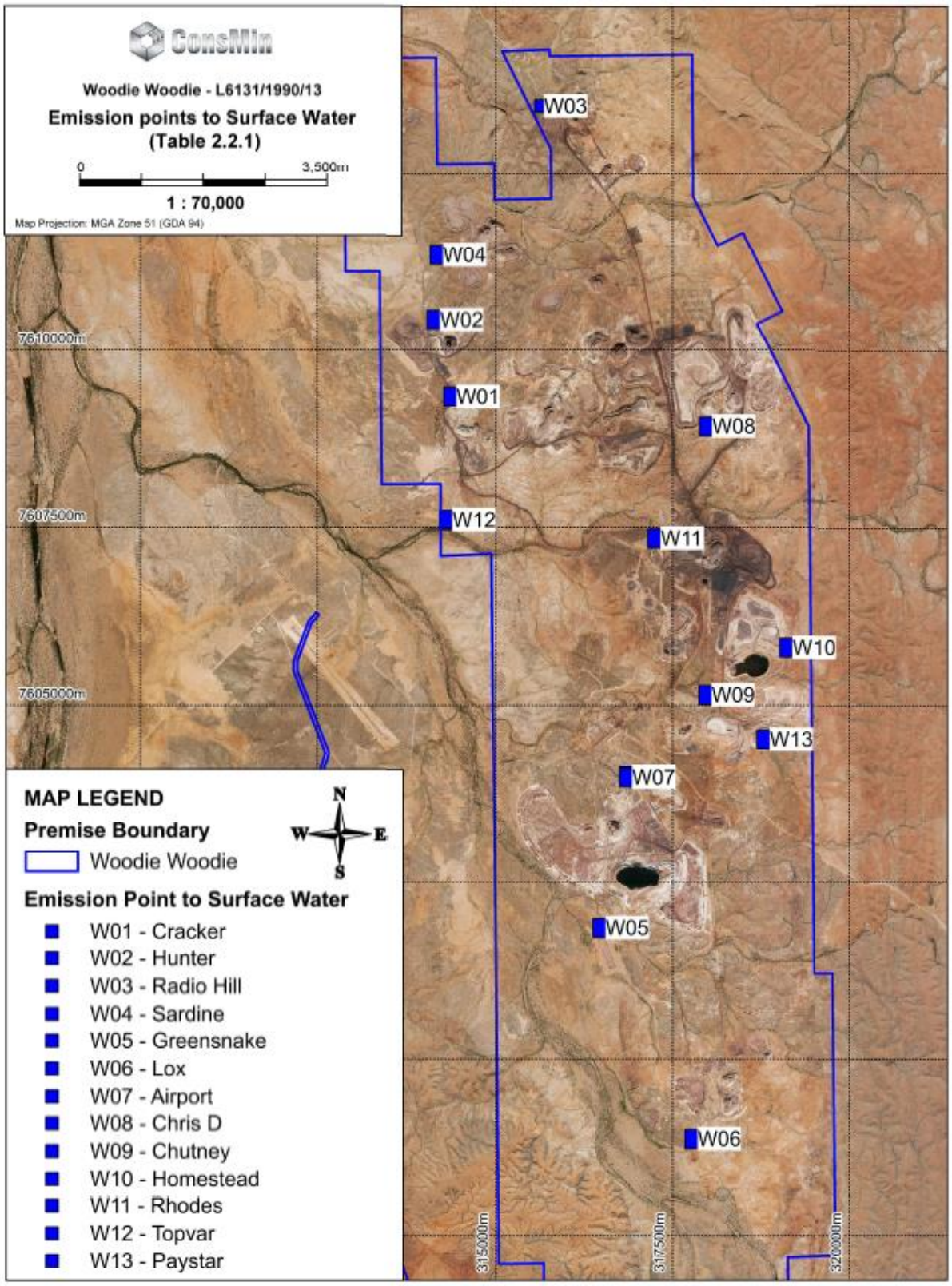


Figure 4 – Off-site Monitoring Locations

Off-site monitoring locations as per Table 3.6.1, 3.6.2 and 3.6.4.

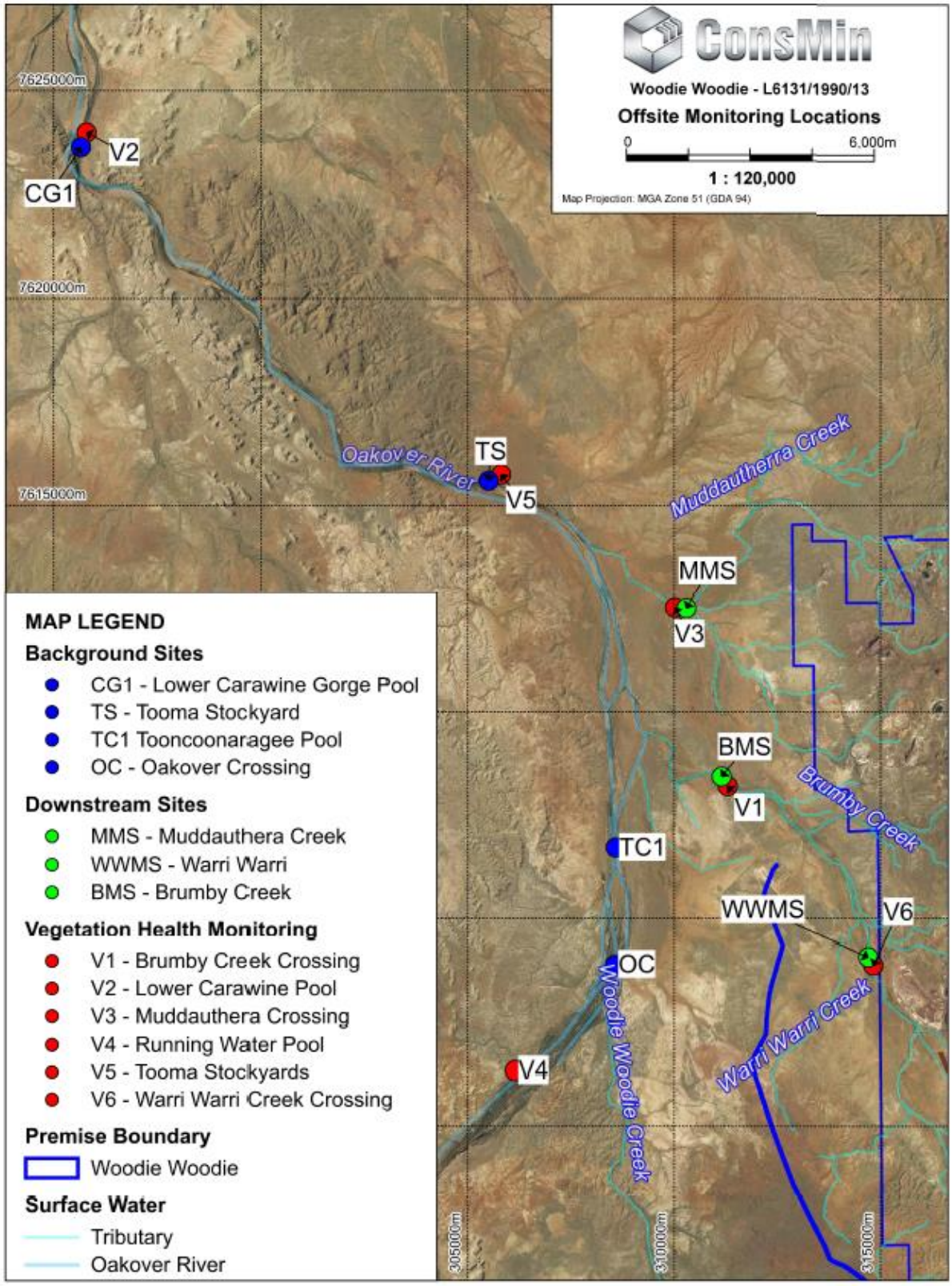


Figure 5 – Management of Waste

Waste management infrastructure as per Table 1.3.4 are shown below.

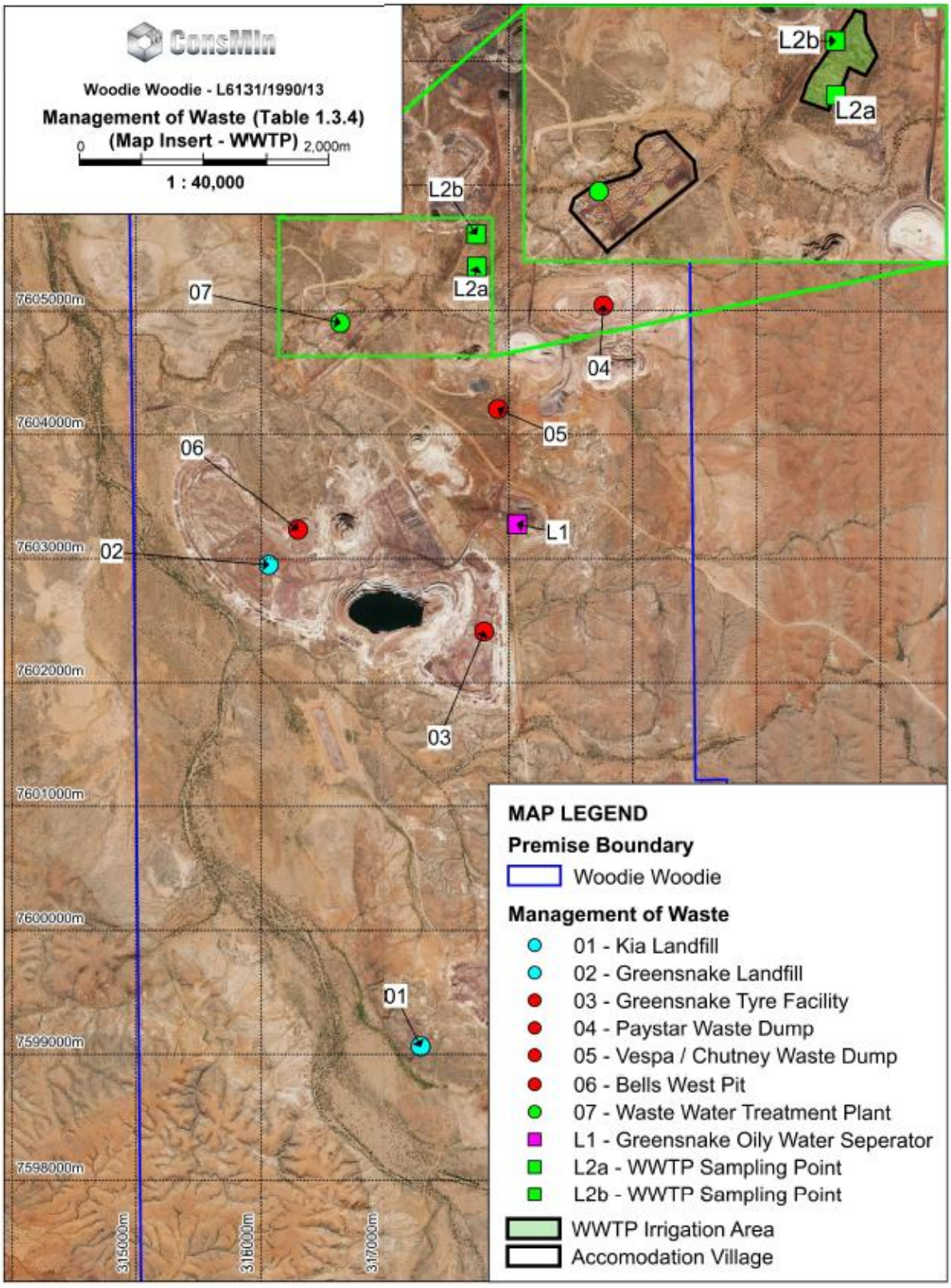
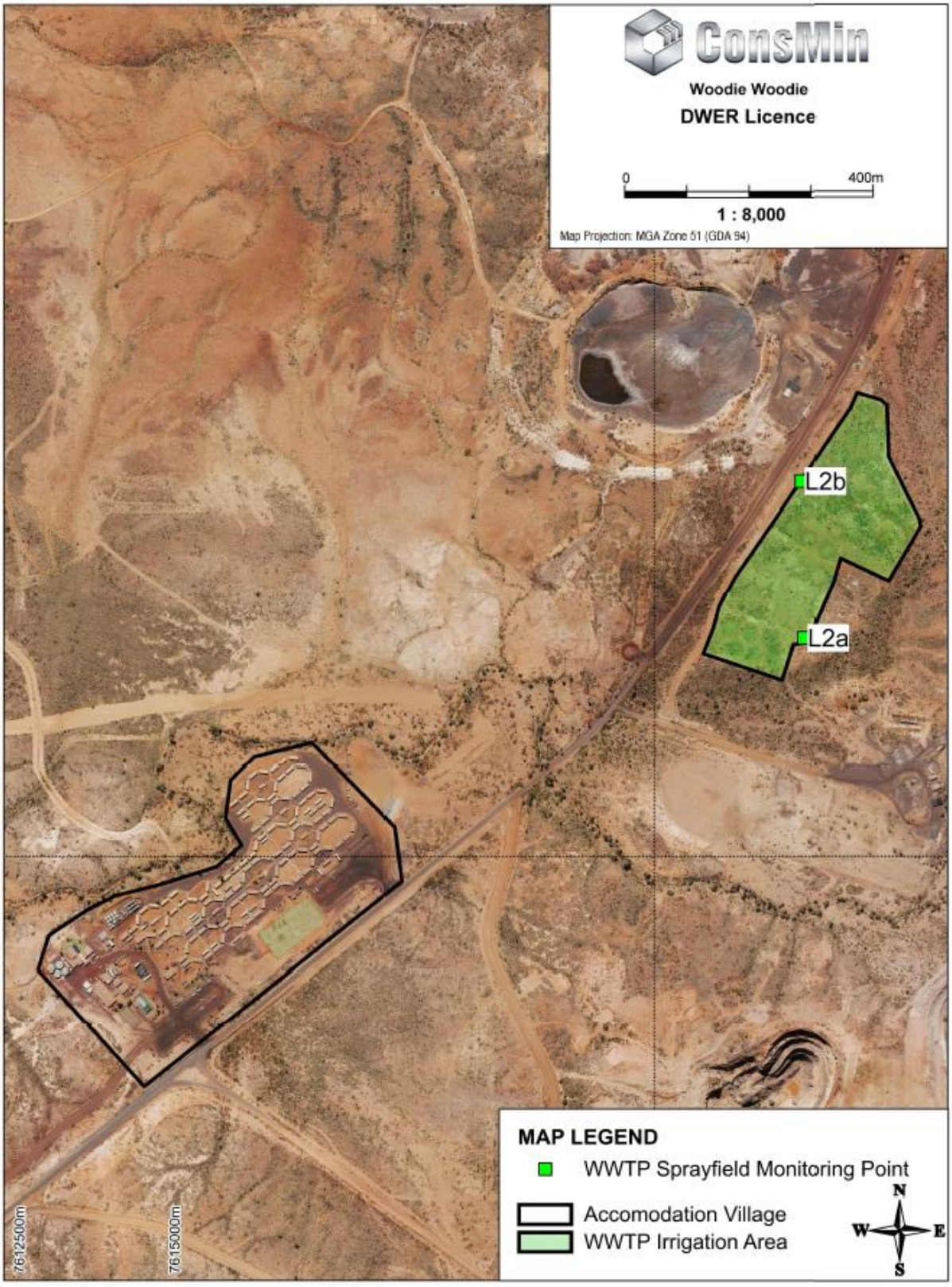


Figure 6 – Wastewater Treatment Plant Sampling Points

The locations of the monitoring points L2a and L2b defined in Table 3.3.1 are shown in the map below.



Schedule 2: Prescribed Premises Categories

The Premises prescribed categories under schedule 1 of *Environmental Protection Regulation 1987*

Prescribed Premises categories

Category number	Category Description	Category production or design capacity	Approved Premises production or design capacity
5	Processing or beneficiation of metallic or nonmetallic ore	50,000 tonnes or more per year	5,000,000 tonnes per annual period
6	Mine dewatering	50,000 tonnes or more per year	55,188,000 tonnes per annual period
54	Sewage facility	100 cubic metres or more per day	150 cubic metres per day
73	Bulk storage of chemicals	1,000 cubic metres in aggregate	2,144 cubic metres in aggregate
89	Putrescible landfill site	More than 20 but less than 5,000 tonnes per year	1,950 tonnes per annual period

Schedule 3: Notification & Forms

Licence: L6131/1990/13 Licence Holder: Pilbara Manganese Pty 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**	**Averaging period**	**Method**	**Sample date & times**
W1 – W12	Total Suspended Solids	80mg/L	m^3/day		Spot Sample		

Signed on behalf of Pilbara Manganese Pty Ltd: …….. Date: …….

Form WR2: Monitoring of point source emissions to surface water						
Emission point	**Parameter**	**Units**	**Results**	**Averaging period**	**Method**	**Sample date & times**
W1 – W13	Volume (cumulative) dewatering water	m^3/day		Continuous		
	pH	pH units		Spot sample		
	Total Dissolved Solids	mg/L				
	Nitrate and Nitrite Nitrogen	mg/L				
	Total Kjeldahl Nitrogen	mg/L				
	Total Nitrogen	mg/L				
	Filterable Reactive Phosphorus	mg/L				
	Total Phosphorus	mg/L				
	Sodium	mg/L				
	Magnesium	mg/L				
	Zinc	mg/L				
	Lead	mg/L				
	Cadmium	mg/L				
	Manganese	mg/L				
	Chloride	mg/L				
	Sulfate	mg/L				

	Sodium	mg/L				
	Potassium	mg/L				
	Cobalt	mg/L				
	Iron	mg/L				
	Nickel	mg/L				
	Selenium	mg/L				
	Mercury	mg/L				
	Chromium (VI)	mg/L				
	Total Chromium	mg/L				

Signed on behalf of Pilbara Manganese Pty Ltd: …….. Date: …….

Licence: L6131/1990/13 Licence Holder: Pilbara Manganese Pty Ltd
Form: WR3 Period :
Name: Monitoring of ambient downstream surface water

Form WR3: Monitoring of surface water						
Emission point	**Parameter**	**Units**	**Result**	**Averaging period**	**Method**	**Sample date & times**
Downstream sites MMS, WWMS and BMS	pH	pH units		Spot sample		
	Total Dissolved Solids	mg/L				
	Total Suspended Solids	mg/L				
	Nitrate and Nitrite Nitrogen	mg/L				
	Total Kjeldahl	mg/L				
	Total Nitrogen	mg/L				
	Filterable Reactive Phosphorus	mg/L				
	Total Phosphorus	mg/L				
	Sodium	mg/L				
	Magnesium	mg/L				
	Zinc	mg/L				
	Lead	mg/L				
	Cadmium	mg/L				
	Manganese	mg/L				
	Chloride	mg/L				
	Sulfate	mg/L				

	Sodium	mg/L				
	Potassium	mg/L				
	Cobalt	mg/L				
	Iron	mg/L				
	Nickel	mg/L				
	Selenium	mg/L				
	Mercury	mg/L				
	Chromium (VI)	mg/L				
	Total Chromium	mg/L				

Signed on behalf of Pilbara Manganese Pty Ltd: …….. Date: ……

Form WR4: Monitoring of surface water						
Emission point	**Parameter**	**Units**	**Result**	**Averaging period**	**Method**	**Sample date & times**
Background sites CG1 TS TC1 OC	pH	pH units		Spot sample		
	Total Dissolved Solids	mg/L				
	Total Suspended Solids	mg/L				
	Nitrate and Nitrite Nitrogen	mg/L				
	Total Kjeldahl	mg/L				
	Total Nitrogen	mg/L				
	Filterable Reactive Phosphorus	mg/L				
	Total Phosphorus	mg/L				
	Sodium	mg/L				
	Magnesium	mg/L				
	Zinc[1]	mg/L				
	Lead[1]	mg/L				
	Cadmium[1]	mg/L				
	Manganese[1]	mg/L				
	Chloride	mg/L				
	Sulfate	mg/L				
	Sodium	mg/L				
	Potassium	mg/L				
	Cobalt	mg/L				
	Iron	mg/L				
	Nickel	mg/L				
	Selenium	mg/L				

	Mercury	mg/L				
	Chromium (VI)	mg/L				
	Total Chromium	mg/L				
	Chlorophyll-a	mg/L				
	Phaeophytin	mg/L				

Note1: With adjustment for hardness as per ANZECC (2000) guidelines.

Signed on behalf of Pilbara Manganese Pty Ltd: …….. Date: …….

Licence: L6131/1990/13 Licence Holder: Pilbara Manganese Pty Ltd
Form: WR5 Period:
Name: Monitoring of ambient sediment quality

Form WR5: Monitoring of sediment quality						
Emission point	**Parameter**	**Units**	**Result**	**Averaging period**	**Method**	**Sample date & times**
Background sites CG1 TS TC1 OC	Chlorophyll-a	mg/m^2		Spot sample		
	Phaeophytin	mg/m^2				

Signed on behalf of Pilbara Manganese Pty Ltd: …….. **Date: ……**

Licence: L6131/1990/13 Licence Holder: Pilbara Manganese Pty Ltd
Form: GR1 Period :
Name: Monitoring of ambient groundwater

Form GR1: Monitoring of groundwater						
Emission point	**Parameter**	**Units**	**Results**	**Averaging period**	**Method**	**Sample date & times**
Demon Pit TSF DEPTSFMB01 DEPTSFMB02 DEPTSFMB04 **TSF2** TDMB1 **Dartmoor** DAPTSFMB01 DAPTSFMB02 **Malta** MAPTSFMB01 **Homestead TSF** HPTSFMB01 HPTSFMB02 HPTSFMB03	Standing water level	mbgl		Spot Sample		
	pH	pH units				
	Total Dissolved Solids	mg/L				
	Total Nitrogen	mg/L				
	Arsenic	mg/L				
	Copper	mg/L				
	Molybdenum	mg/L				
	Selenium	mg/L				
	Uranium	mg/L				
	Hexavalent Chromium	mg/L				

Signed on behalf of Pilbara Manganese Pty Ltd: …….. Date: …….

Licence: L6131/1990/13 Licence Holder: Pilbara Manganese Pty Ltd
Form: LR1 Period :
Name: Monitoring of emissions to land

Form LR1: Monitoring of emissions to land							
Emission point	**Parameter**	**Limit**	**Units**	**Results**	**Averaging period**	**Method**	**Sample date & times**
L1	Total Recoverable Hydrocarbon	15 mg/L	mg/L		Spot sample		

Signed on behalf of Pilbara Manganese Pty Ltd:…….. Date: …….

Licence: L6131/1990/13 Licence Holder: Pilbara Manganese Pty Ltd
Form: LR2 Period :
Name: Monitoring of emissions to land

Form LR1: Monitoring of emissions to land							
Emission point	**Parameter**	**Limit**	**Units**	**Results**	**Averaging period**	**Method**	**Sample date & times**
L2	Load of Total Nitrogen (TN)	480 kg/ha/year	kg/ha/year		Annually		
	Load of Total Phosphorus (TP)	120 kg/ha/year	kg/ha/year				

Signed on behalf of Pilbara Manganese Pty Ltd:…….. Date: …….

Licence: L6131/1990/13 Licence Holder: Pilbara Manganese Pty Ltd
Form: LR3 Period :
Name: Monitoring of emissions to land

Form LR1: Monitoring of emissions to land						
Emission point	**Parameter**	**Units**	**Results**	**Averaging period**	**Method**	**Sample date & times**
L2	Volume (cumulative) recycled for on-site irrigation	m^3		Monthly		
	pH	pH units		Spot sample		
	Biochemical Oxygen Demand	mg/L				
	Total Suspended Solids	mg/L				
	Total Nitrogen	mg/L				
	Total Phosphorus	mg/L				
	E.coli	cfu/100mL				

Signed on behalf of Pilbara Manganese Pty Ltd:…….. Date: …….

Licence: L6131/1990/13 Licence Holder: Pilbara Manganese Pty Ltd
Form: N1 Date of breach:

Notification of detection of the breach of a limit.

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

Part A

Licence Number	
Name of operator	
Location of Premises	
Time and date of the detection	

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

Part B

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

Name	
Post	
Signature on behalf of Pilbara Manganese Pty Ltd	
Date	