Government of Western Australia
Department of Water and Environmental Regulation

Licence

Licence number	L9357/2022/1
Licence holder	MicroZinc Pty Ltd
ACN	616 959 936
Registered business address	71 Hamersley Place MORLEY WA 6062
DWER file number	DER2021/000562
Duration	30/05/2023 to 29/05/2043
Date of issue	30/05/2023
Premises details	Manna Soil Solutions Lot 77 Wellard Road LEDA WA 6170 Legal description - Part of Lot 77 on Diagram 68183 As defined by the coordinates in Schedule 2

Prescribed premises category description (Schedule 1, *Environmental Protection Regulations 1987*)	**Assessed capacity**
Category 31: Chemical manufacturing: premises (other than premises within category 32) on which chemical products are manufactured by a chemical process	Not more than 5500 tonnes of chemical products manufactured in an annual period
Category 61: Liquid waste facility: premises on which liquid waste produced on other premises (other than sewage waste) is stored, reprocessed, treated or irrigated	Not more than 4660kL of liquid wastes accepted in an annual period

This licence is granted to the licence holder, subject to the attached conditions, on 30 May 2023, by:

Caron Goodbourn

Digitally signed by Caron Goodbourn
Date: 2023.05.31 07:46:41 +08'00'

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

Licence history

Date	Reference number	Summary
31/07/2020	W6293/2019/1	Works approval granted for the construction and time limited operation of a nutrient recovery and liquid waste treatment facility (Categories 31 and 61).
24/01/2021	W6293/2019/1	Works approval holder-initiated amendment to extend the period of time limited operations.
30/05/2023	L9357/2021/1	Licence granted.

Interpretation

In this licence:

(a) the words 'including', 'includes' and 'include' in conditions mean "including but not limited to", and similar, as appropriate;

(b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;

(c) where tables are used in a condition, each row in a table constitutes a separate condition;

(d) any reference to an Australian or other standard, guideline, or code of practice in this licence:

  (i) if dated, refers to that particular version; and

  (ii) if not dated, refers to the latest version and therefore may be subject to change over time;

(e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act; and

(f) unless specified otherwise, all definitions are in accordance with the EP Act.

NOTE: This licence requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this licence.

Licence conditions

The licence holder must ensure that the following conditions are complied with:

Infrastructure and equipment

1. The licence holder must ensure that the site infrastructure and equipment listed in Table 1 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in Table 1.

Table 1: Infrastructure and equipment operational requirements

	Site infrastructure and equipment	Operational requirement	Infrastructure location
Process area			
1.	Process Concrete Hardstand Area: two adjacent concrete hardstand areas constructed with: - a 150mm perimeter bund - a combined containment capacity of 230kL/m^3. Adjoining concrete truck receival bay	a) All chemical processing operations, process liquid transfers and waste storage must be conducted within the hardstand area; b) All hardstands and containment bunds must be maintained: - with a hydraulic conductivity of $1x10^{-6}$ m/s; - in a fit for purpose condition for containing liquids and free of cracks or damage; - with capacity to contain not less than 110% of the volume of the largest storage vessel; and - with drain valves locked unless they are in use.	Shown as “Storage Pad” and “Process Pad” in Schedule 1 Figure 3: Map of process area infrastructure
2.	Sediment trap: a 20kL below ground reinforced sealed concrete sump. Liquid waste receival tank: a 30kL below ground reinforced sealed concrete sump. Solids drying pad sump: 30kL below ground reinforced sealed concrete sump.	a) A minimum freeboard of 200m must be maintained within the liquid waste receival tank, solids drying sump and sediment trap.	Shown as “Sediment Trap”, “Liquid Waste Receival Tank” and “Solids Drying Pad Sump” in Schedule 1 Figure 3: Map of process area infrastructure
3.	14 chemical processing and storage tanks	a) All tanks must be maintained free of visible leaks b) All tanks must be located within the bunded Process Concrete Hardstand Area (item 1). c) Transfer of liquids must only occur during staffed operational hours	Shown as “Tanks 1-14” in Schedule 1 Figure 3: Map of process area infrastructure
4.	Concrete solids drying pad enclosed by 150mm concrete bunding (all sides) and a 700mm high perimeter wall extending 5m (northern edge), 14m (western	a) Solids collected from the sediment trap and liquid waste receival bay must be contained within the solids dying pad prior to disposal off-site. b) All leachate and contaminated surface water runoff must be contained within the hardstand area and directed to the solids drying sump.	Shown as “New solids pad” in Schedule 1 Figure 3: Map of process area infrastructure

Site infrastructure and equipment		Operational requirement	Infrastructure location
	edge) and 9m (eastern edge).		
5.	Reverse osmosis (RO) unit	a) RO unit must be limited to producing a maximum of 10.6 kL per day of water b) Treated water produced by the RO unit must be stored in the RO unit treated water tank.	Shown as "RO unit" and "RO unit treated water tank" in Schedule 1 Figure 3: Map of process area infrastructure
Vetiver grass propagation IBC hardstand area			
6.	A 3000m^2 compacted limestone and road-base aggregate hardstand fully enclosed by 200m high compacted road-base bund walls	a) Compacted limestone and road-base aggregate hardstand must be maintained with a hydraulic conductivity of 1x10^{-6} m/s	As shown in Schedule 1 Figure 1: Map of the prescribed premises boundary
7.	210 individual IBCs containing established vetiver grass pots placed within circular cut-outs at the top of each IBC. IBCs are interconnected sequentially via an overflow system.	a) All IBCs must be located within the bunded compacted hardstand area. b) All IBCs must be clean and free of residue; c) All IBCs must be maintained in good condition free of cracks and leaks. d) The initial IBC in the vetiver grass bed sequence must be fitted with a volume control floatation valve to prevent overfilling. e) The final IBC in the vetiver grass bed sequence must be fitted with an overflow outlet to divert excess water back to the common sump. f) An ullage of at least 110mm must be maintained within each IBC. g) IBCs must be visually inspected prior to any transfer of liquid to the vetiver grass propagation area to assess the available storage capacity of the IBCs is sufficient. h) IBCs must be visually inspected at least once per day prior to operation to identify any potential overflows, leaks, structural defects or blockages in the PVC connectors. i) only sterile vetiver grass (*Chrysopogon zizanioides*) is to be propagated within IBCs.	Located within the "Vetiver grass bed hardstand area" as shown in Schedule 1 Figure 2
8.	Common sump tank: a 4500L polyethylene tank located within a sealed concrete bunded hardstand with 5720L capacity.	a) The common sump tank must be fitted with a non-return valve to prevent excess water being diverted back into the vetiver system. b) Contents of the common sump must be visually inspected, and any contents pumped back to the processing area RO unit treated water storage tank at the end of each work-day.	Shown as "Sump tank" in in Schedule 1 Figure 2

General conditions

2. The licence holder must only accept waste onto the premises if:

(a) it is of a waste type listed in Table 2; and

(b) the quantity of the waste type accepted is below any quantity limit listed in Table 2; and

(c) the waste meets the relevant acceptance specification,

as set out in Table 2.

Table 2: Waste acceptance criteria

Waste type	Controlled Waste Code	Specification	Quantity limit
SPL (spent pickle liquor)	A100	None.	<2880kL per annual period
Acidic solutions or acids in solid form: - Hydrochloric acid, - sulfuric acid, - nitric acid, and - phosphoric acid	B100	Excludes nitrosylsulfuric acid and other NOx producing acids.	Combined total volume of up to of 1780kL per annual period
Sodium hydroxide	C100	Excludes per- and poly-fluoroalkyl substances (PFAS) contaminated materials	
Other industrial liquid wastes, including: - Waste resulting from heat treatment and tempering processes which use cyanide - Inorganic cyanide - Inorganic fluorine compounds (excluding calcium fluoride) - Arsenic and arsenic compounds - Chromium compounds - Cadmium and cadmium compounds - Copper compounds - Cobalt compounds - Nickel compounds - Lead and lead compounds - Zinc compounds - Vanadium compounds - Nontoxic salts - Inorganic sulfides - Phosphorus compounds (excluding mineral phosphates) - Waste oil and water mixtures or emulsions, and hydrocarbon and water mixtures or emulsions - Car and truck wash waters - Industrial wash waters contaminated with a controlled waste - Waste from production or formulation of photographic chemicals or processing materials.	A110 A130 D110 D130 D140 D150 D190 D200 D210 D220 D230 D270 D300 D330 D360 J120 J130 L100 L150 T120		

Note: Additional requirements for the acceptance of controlled waste are set out in the Environmental Protection (Controlled Waste) Regulations 2004.

3. Where waste does not meet the waste acceptance criteria set out in condition 2, the licence holder must:

(a) reject the waste; and

(b) record the details of the:

(i) waste (type and description);
(ii) source of the waste load;
(iii) name of the waste carrier;
(iv) registration number of the delivery vehicle; and
(v) date that the waste load was rejected; and

(c) maintain accurate and auditable records of all waste loads rejected from the premises.

4. The licence holder must ensure that where waste does not meet the waste acceptance criteria set out in condition 2, it is removed from the premises by the delivery vehicle or, where that is not possible, stored in a quarantined storage area within a bunded concrete hardstand and removed to a licensed waste facility as soon as practicable.

5. The licence holder must ensure that the waste types specified in Table 3 are only subjected to the corresponding process(es), subject to the corresponding process specifications and reported as per the specified reporting requirement.

Table 3: Waste processing

Waste type		**Process**	**Process specifications**	**Reporting requirement(s)**
1.	Untreated wastewater (consisting of contaminated stormwater, industrial liquid wastes, process wastewater and/or leachate)	Use in SPL processing	a) All untreated wastewater must be stored within process concrete hardstand area at all times.	None.
		Transfer to vetiver grass propagation area	b) All liquids must be treated through the RO unit prior to transfer to vetiver grass propagation area. c) Available storage capacity of vetiver grass propagation system must be visually assessed to ensure there is sufficient capacity to receive the volume of liquids prior to the transfer of any liquids. d) A maximum of 290kL of treated wastewater can be transferred to the vetiver grass propagation system per annual period.	Volume (kL) of treated water transferred to vetiver grass propagation area. Volume (kL) of treated water returned from vetiver grass propagation area to processing area.
		Excess wastewater (treated or untreated)	e) Should there be insufficient capacity in the vetiver grass propagation system to accept treated wastewater, all surplus liquid waste must be disposed of off-site to a licensed waste facility.	Volume (kL) of treated water disposed of off-site

Waste type		Process	Process specifications	Reporting requirement(s)
2.	Solid waste, including: • Solidified neutralized SPL • RO brine (solidified) • Solids from sediment trap and oil separation • Other solids produced in SPL processing	Dewatering and disposal of solid wastes produced in SPL processing and treatment of industrial liquid wastes.	a) All solid waste must be stored on the solids drying pad. b) Solids drying pad must be cleared of all solids through disposal to landfill at least once per month. c) Disposal of stockpiled solids should be managed to ensure the capacity of the solids drying pad is not exceeded.	Weight (tonnes) of solid waste removed per month

Monitoring

6. 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;

7. The licence holder must monitor the groundwater for concentrations of the parameter listed in Table 4:

(a) at the corresponding monitoring location;
(b) in the corresponding unit;
(c) at no less that the corresponding frequency;
(d) for the corresponding averaging period; and
(e) using the corresponding method,
as set out in Table 4.

Table 4: Monitoring of ambient groundwater concentrations

Monitoring location	Parameter	Unit	Frequency	Method
"MZN1", "MZN2", and "MZN3" as shown in Schedule 1 Figure 2: Map of the groundwater monitoring locations	Standing water level[1]	m(AHD) m(BGL)	Each quarterly period	Spot, in field measurement
	pH[1]	pH units		
	Electrical conductivity[1]	µS/cm		
	Total and dissolved metal and metalloids: aluminium, antimony, arsenic, barium, boron, cadmium, chromium (III and VI), cobalt, copper, magnesium, molybdenum, mercury, lead, nickel, silver, selenium, vanadium, zinc	mg/L		Spot sample, in accordance with AS/NZS 5667.11
	Major ions: alkalinity (bicarbonate, carbonate, total alkalinity), calcium, chloride, hardness, hydroxide, magnesium, potassium, sodium, sulphate	mg/L	Each annual period	
	Nutrients: ammonia, ammoniacal nitrogen, biological oxygen demand (BOD), chemical oxygen demand (COD), nitrate-nitrogen, reactive phosphorus, total kjeldahl nitrogen, total nitrogen	mg/L		
	Organics: Total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene, and xylenes (BTEX)	mg/L		

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

8. The licence holder must record the results of all monitoring activity required by condition 7.

9. The licence holder must ensure that all samples required for collection by condition 7 are submitted to and tested by a laboratory with current NATA accreditation for the specified method and parameters being measured unless indicated otherwise in the relevant table.

Waste management monitoring

10. The licence holder must undertake the monitoring of inputs and outputs in Table 5 according to the specifications in that table.

Table 5: Waste accepted onto the premises

Waste type	Parameter	Unit	Time period
Waste Inputs	Waste types as defined in Table 2	kL or tonnes, as applicable	Monthly
Waste outputs	Waste types as defined in Table 2		
	Any other waste products produced in the SPL processing or industrial waste treatment processes		

11. The licence holder must undertake the leak detection monitoring in Table 6 according to the specifications in that table.

Table 6: Leak detection monitoring

Location	Type of monitoring	Parameter	Frequency	Reporting requirement(s)
Transfer pipeline within "Pipeline corridor" as shown in in Schedule 1 Figure 1	Visual inspection	Damage or defects to the pipeline	During or immediately following every liquid transfer	Log of inspections including details of defects found and remediation actions taken
IBCs within "Vetiver grass bed hardstand area" as shown in Schedule 1 Figure 2	Visual inspection	Damage, defects or blockages within IBCs, PVC connectors or pipes	At least once per week and prior to every liquid transfer	

Records and reporting

12. The licence holder must record the following information in relation to complaints received by the licence holder (whether received directly from a complainant or forwarded to them by the department or another party) about any alleged emissions from the premises:

(a) the name and contact details of the complainant, (if provided);

(b) the time and date of the complaint;

(c) the complete details of the complaint and any other concerns or other issues raised; and

(d) the complete details and dates of any action taken by the licence holder to investigate or respond to any complaint.

13. The licence holder must:

(a) undertake an audit of their compliance with the conditions of this licence during the preceding annual period; and

(b) prepare and submit to the CEO by no later than 60 days after the end of that annual period an Annual Audit Compliance Report in the approved form.

14. The licence holder must submit to the CEO by no later than 60 days after the end of each annual period, an Annual Environmental Report for that annual period for the conditions listed in Table 7, and which provides information in accordance with the corresponding requirement set out in Table 7.

Table 7: Annual Environmental Report

Condition	Requirement
-	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
Condition 3	A summary of rejected waste reporting requirements as indicated in condition 3.
Condition 5 - Table 3 3	Monitoring of inputs and outputs as per Table 3 presented in graphical and tabulated format including: • Volume (kL) of treated water transferred to vetiver grass propagation area. • Volume (kL) of treated water returned from vetiver grass propagation area to processing area. • Volume (kL) of treated water disposed of off-site • Weight (tonnes) of solid waste removed per month
Condition 7 – Table 4	a) Laboratory sheets for groundwater monitoring in accordance with Table 4. b) Tabulated data summary of groundwater monitoring results. c) An interpretation of monitoring data including comparison to historical trends.
Condition 10 – Table 5	Monitoring of waste acceptance and waste disposal as required by Table 5 presented in graphical and tabulated format.
Condition 11 – Table 6	Monitoring of leak detection parameters including: • Date and time of each inspection. • A summary of any damage, defects or blockages identified. • A summary of actions taken to remediate damage, defects or blockages.
Condition 12	Complaint summary
Condition 13	Compliance summary

15. The licence holder must maintain accurate and auditable books including the following records, information, reports, and data required by this licence:

(a) the calculation of fees payable in respect of this licence;

(b) any maintenance of infrastructure that is performed in the course of complying with condition 1 of this licence;

(c) monitoring programmes undertaken in accordance with conditions 7, 10 and 11 of this licence; and

(d) complaints received under condition 12 of this licence.

16. The books specified under condition 15 must:

(a) be legible;

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

(c) be retained by the licence holder for the duration of the licence; and

(d) be available to be produced to an inspector or the CEO as required.

Definitions

In this licence, the terms in Table 8 have the meanings defined.

Table 8: Definitions

Term	Definition
µS/cm	microsiemens per centimetre
ACN	Australian Company Number
Annual Audit Compliance Report (AACR)	means a report submitted in a format approved by the CEO (relevant guidelines and templates may be available on the Department's website).
annual period	a 12 month period commencing from 1 January until 31 December of the same year.
AS/NZS 5667.11	Australian Standard AS/NZS 5667.11 *Water quality – sampling – guidance on sampling groundwater,* as amended from time to time
books	has the same meaning given to that term under the EP Act.
CEO	means Chief Executive Officer of the Department. "submit to / notify the CEO" (or similar), means either: Director General Department administering the *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 or: info@dwer.wa.gov.au
concrete hardstand	means a 150mm thick reinforced concrete surface with a hydraulic conductivity of 10^{-9} metres/second or less
controlled waste	any matter listed under Schedule 1 of the *Environmental Protection (Controlled Waste) Regulations 2004* (WA).
controlled waste category list	As published by the department, and amended from time to time, the Controlled waste category list arranges controlled wastes into groups and assigns a controlled waste code to each controlled waste
controlled waste code	The unique alpha-numeric code assigned by the department to categories of controlled waste for waste tracking and reporting purposes.
delivery vehicle	means the vehicle in which the waste material was delivered.
department	means the department established under section 35 of the *Public Sector*

Term	Definition
	Management Act 1994 (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
discharge	has the same meaning given to that term under the EP Act.
emission	has the same meaning given to that term under the EP Act.
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
kL	kilolitres
leachate	means liquid released by or water that has percolated through waste and which contains some of its constituents.
licence	refers to this document, which evidences the grant of a licence by the CEO under section 57 of the EP Act, subject to the specified conditions contained within.
licence holder	refers to the occupier of the premises, being the person specified on the front of the licence as the person to whom this licence has been granted.
limestone/ road-base aggregate hardstand	means a compacted limestone and road base aggregate surface with a hydraulic conductivity of 10^{-6} metres/second or less
m/s	metres per second
m(AHD)	elevation in metres with respect to the Australian Height Datum
m(BGL)	meters below ground level
mg/L	Milligrams per litre
monthly period	means a one-month period commencing from fourteenth day of a month until the thirteenth day of the immediately following month.
NATA	means the (Australian) National Association of Testing Authorities.
NOx	nitrogen oxides
premises	refers to the premises to which this licence applies, as specified at the front of this licence and as shown on the premises map (Figure 1) in Schedule 1 of this licence.
prescribed premises	has the same meaning given to that term under the EP Act.
SPL	spent pickle liquor
waste	has the same meaning given to that term under the EP Act.
waste type	means waste types identified in Schedule 1 of the Controlled Waste Regulations.

END OF CONDITIONS

Schedule 1: Maps

Premises map

The boundary of the prescribed premises is shown in the map below (Figure 1).

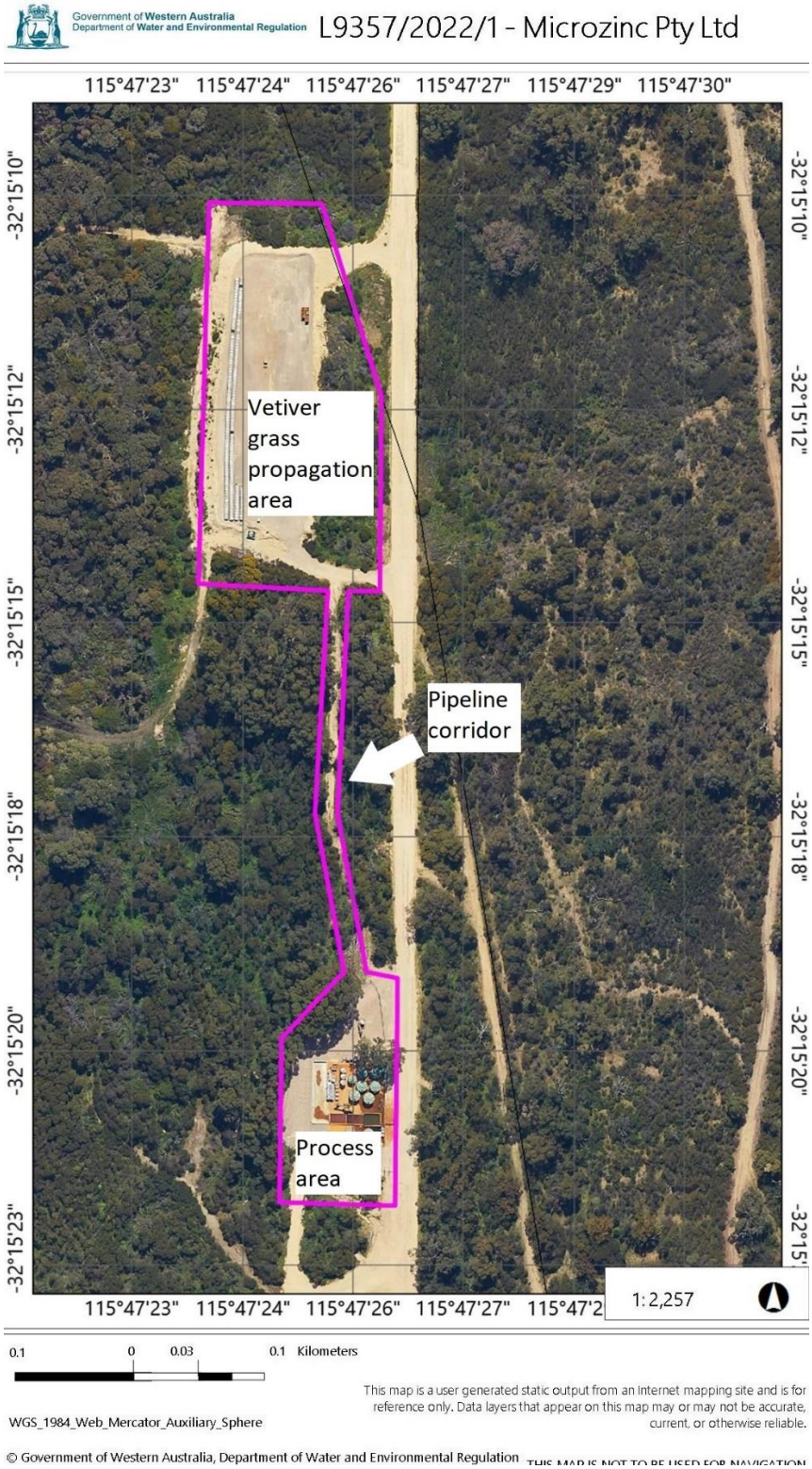

Figure 1: Map of the prescribed premises boundary (pink)

Groundwater monitoring locations map

The location of groundwater monitor locations and the boundary of the vetiver grass propagation area are shown in the map below (Figure 2).

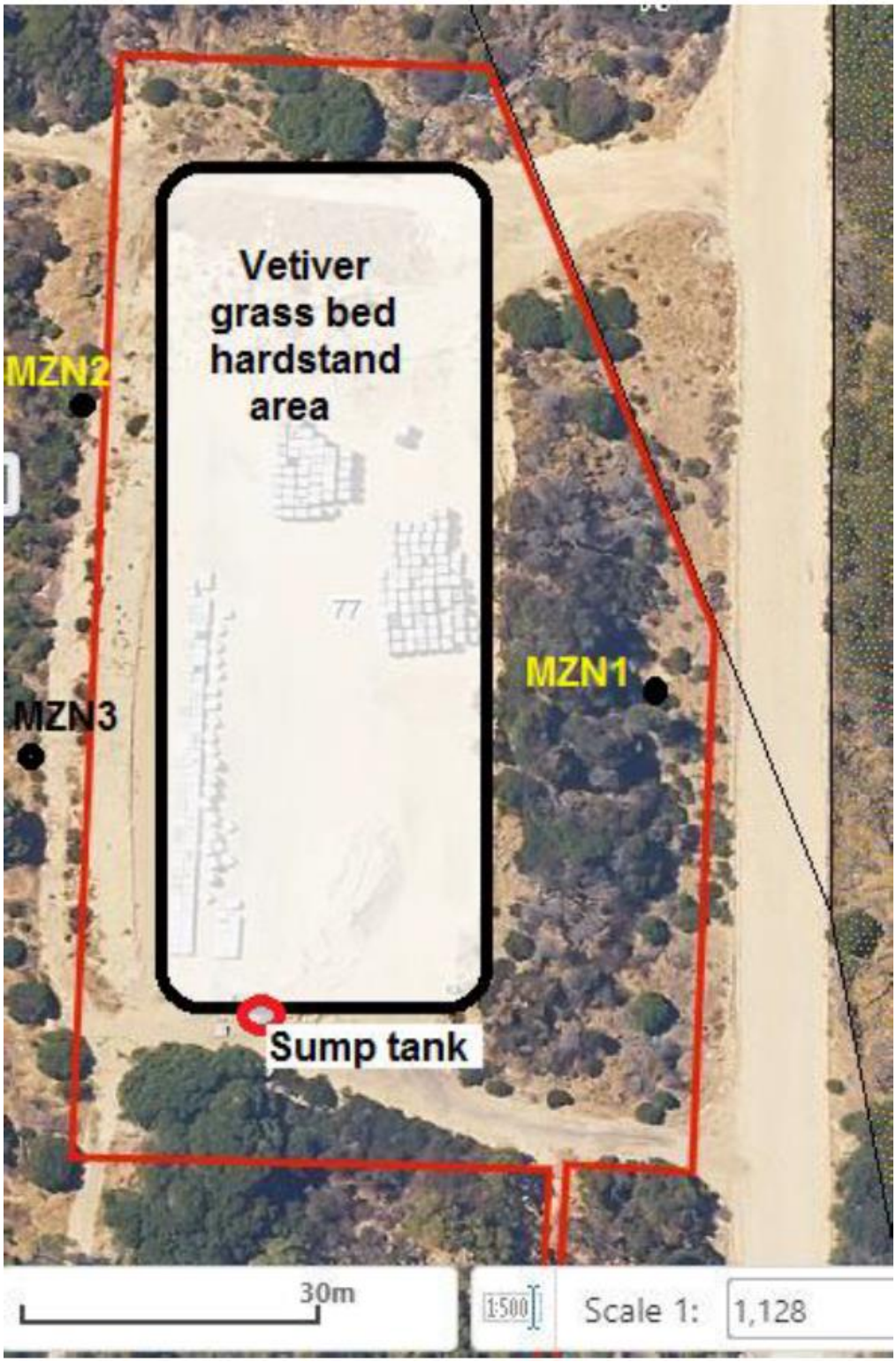

Figure 2: Map of the groundwater monitoring locations (MZN1, MZN2, MZN3)

Premises infrastructure map

The location of key infrastructure associated with the processing area is shown in the map below (Figure 3).

Equipment List			
ID	Type	Details	Capacity
1	Tank	Process Water Tank	32kL
2	Tank	Oil Recovery Tank	32kL
3	Tank	RO Unit Treated Water Tank	50kL
4	Tank	RO Unit Feed Water Tank	50kL
5	Tank	Acid Storage Tank	32kL
6	Tank	Acid Storage Tank	32kL
7	Tank	Iron Chloride Tank	32kL
8	Tank	Zinc Chloride Tank	32kL
9	Mixing Tank	TBP Tank	5kL
10	Mixing Tank	TBP Tank	5kL
11	Mixing Tank	TBP Tank	5kL
12	Mixing Tank	Precipitation Tank	12kL
13	Clarrifier	Clarrification Tank	27kL
14	Tank	Acid Storage Tank	27kL
15	Concrete	Process Pad	101kL
16	Concrete	Storage Pad	80kL
17	Concrete	Waste Receival Bay	0kL
18	Concrete	Sediment Trap	20kL
19	Concrete	Liquid Waste Receival Tank	30kL
20	Concrete	Solids Drying Pad Sump	30kL
21	Plant	RO Unit	10.5kL/H
22	Plant	Small generator	
23	Plant	Large generator	
24	Plant	Scrubber units	
25	Plant	Scrubber stack	

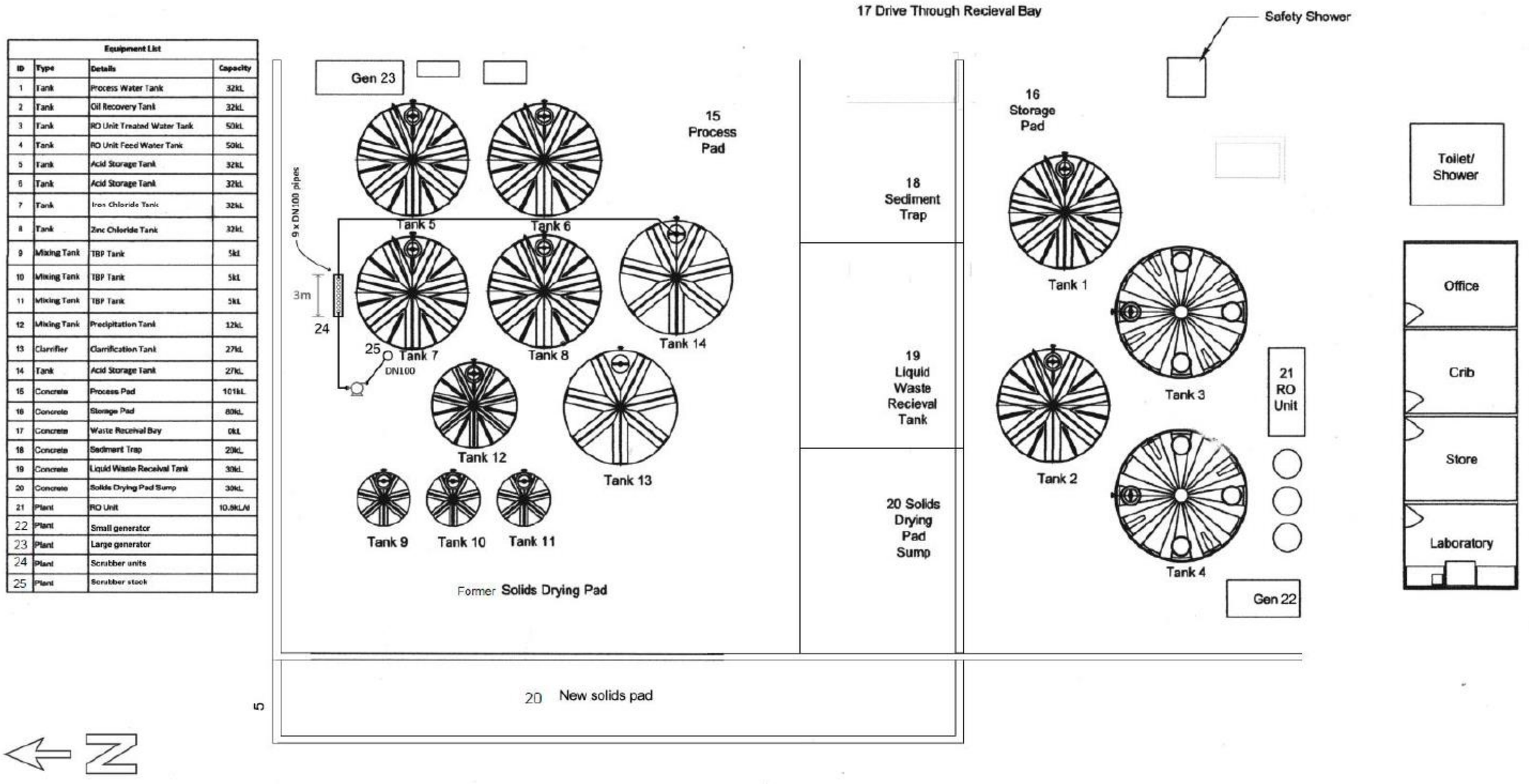

Figure 3: Map of process area infrastructure

Schedule 2: Premises boundary

The boundary of the prescribed premises is outlined by the coordinates listed in Table 9.

Table 9: Premises boundary coordinates

	Easting	Northing
Processing area		
1.	386061.360	6430579.376
2.	386080.200	6430579.589
3.	386080.575	6430546.331
4.	386052.314	6430546.013
5.	386052.064	6430568.184
6.	386052.064	6430568.184
7.	386051.939	6430579.270
8.	385929.603	6430566.804
Vetiver grass propagation area		
9.	386001.214	6430900.226
10.	386048.317	6430900.757
11.	386077.452	6430823.475
12.	386078.077	6430768.047
13.	386002.714	6430767.197
Pipeline		
14.	389021.42	6430779.71
15.	386075.43	6430626.32