Government of Western Australia
Department of Water and Environmental Regulation

Amended Licence

Licence number	L6872/1994/11
Licence holder	Buru Energy Limited
ACN	130 651 347
Registered business address	Level 2, 16 Ord Street WEST PERTH WA 6005
DWER file number	DER2013/001065
Duration	3/2/2012 to 02/02/2040
Date of amendment	28/01/2020
Premises details	Blina Production Facility Petroleum Tenements EP129, L6, L8, L17 and PL7 Blina Road MEDA (6278) and MOUNT HARDMAN (6765) WA

Prescribed premises category description (Schedule 1, Environmental Protection Regulations 1987)	Assessed production capacity
Category 10: Oil or gas production from wells: premises, whether on land or offshore, on which crude oil, natural gas or condensate is extracted from below the surface of the land or the seabed, as the case requires, and is treated or separated to produce stabilized crude oil, purified natural gas or liquefied hydrocarbon gases.	≤ 50,000 tonnes per year
Category 61: Liquid waste facility: premises on which liquid waste produced on other premises (other than sewerage waste) is stored, reprocessed, treated or irrigated.	≤100,000 tonnes per year

This amended licence is granted to the licence holder, subject to the attached conditions, on 28 January 2020, by:

Caron Goodbourn

Digitally signed by Caron Goodbourn
Date: 2021.08.18 08:29:30 +08'00'

MANAGER, PROCESS INDUSTRIES
REGULATORY SERVICES
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Licence history

Date	Ref number	Summary of changes
03/02/2009	L6872/1994/10	Licence re-issued to Buru Energy Limited (formerly issued to Terratek Drilling Tools Pty Ltd) authorising category 10 operations
03/02/2012	L6872/1994/11	Licence re-issued to Buru Energy Limited authorising category 10 operations
28/01/2020	L6872/1994/11	Licence amendment to assess proposed additional category 61 operations (disposal of PFW to West Terrace Wells 1 and 2). In conjunction with the Licence Holder's amendment application, the CEO initiated an amendment to the type and style of licence and conduct a review of category 10 operations and infrastructure.

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 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 that table.

Table 1: Infrastructure and equipment requirements

Site infrastructure and equipment	Design / Installation / Operational requirement(s)	Infrastructure location reference
Blina Battery: • 6 x petroleum production / PFW reinjection wells (Blina 1 – 6);	Maintain existing earthen (clay lined) bunding around separator and storage tanks;	Blina (as shown in Schedule 1 Infrastructure

Site infrastructure and equipment	Design / Installation / Operational requirement(s)	Infrastructure location reference
• 1 groundwater monitoring bore; • vertical and horizontal separator (capacity 600kL); • 2 x vertical oil storage tanks (capacity 300kL each); • 1 x skimmer tank		location map)
Sundown Battery: • 2 x oil storage tanks (capacity 63kL each); • 1 x groundwater monitoring bore (Sundown monitoring bore);		Sundown (as shown in Schedule 1 Infrastructure location map)
Meda Battery: • 2 x petroleum production / PFW reinjection wells (West Terrace 1 and 2); • 2 x oil storage tanks (combined capacity 204kL); • Tanker truck load out facility;	Maintain existing earthen (clay lined) bunded area around truck load out facilities and storage tanks;	Meda (as shown in Schedule 1 Infrastructure location map)
Erskine Terminal • 2 x oil storage tanks (capacity 300kL each); • 1 x groundwater monitoring bore; and • Tanker truck load out facility;		Erskine (as shown in Schedule 1 Infrastructure location map)
Blina to Erskine Pipeline (PL7)	PL7 Pipeline to have sacrificial anode/cathodic protection system at 3km intervals along pipeline;	PL7 (as shown in Schedule 1 Infrastructure location map)
West Terrace PFW disposal site: • West Terrace 1 (disposal well); • West Terrace 2 (disposal well); • 2 x groundwater monitoring bores (WT1 and WT2 monitoring bores); and • Portable injection pump and generator located within portable geotextile bunded liner of permeability < 1 x 10^{-9} m/s	• bunded area must meet requirements of AS1940-2004 with storage capacity of 63kL and must be located adjacent to each well during disposal operations; • the injection pump must be fitted with an Emergency Stop Device	West Terrace 1 and West Terrace 2 (as shown in Schedule 1 Map of authorised discharge points)
Flowlines: • Oil and PFW flowlines across the premises including all pipework, hoses, pumps, valves and meters	Not specified	Not shown

2. The licence holder must design, construct, and install groundwater monitoring bores in accordance with the requirements specified in Table 2.

Table 2: Infrastructure requirements – groundwater monitoring bores

Infrastructure	Design, construction, and installation requirements	Monitoring bore location(s)	Timeframe
Groundwater monitoring bores WT1 and WT2	<u>Well design and construction</u> Designed and constructed in accordance with *ASTM D5092/DM5092M016: Standard practice for design and installation of groundwater monitoring bores*. Bores must be constructed with a screened interval from the water table to a depth of 2m below the water table and 1m above the water table.	WT1 Monitoring bore and WT2 Monitoring bore (as shown in Schedule 1 Monitoring bore locations map)	Monitoring bores must be constructed, developed (purged), and determined to be operational prior to commencement of PFW disposal activities to West Terrace PFW Disposal Wells.
	<u>Logging of borehole:</u> Soil samples must be collected and logged during the installation of the monitoring bores. A record of the geology encountered during drilling must be described and classified in accordance with the Australian Standard Geotechnical Site Investigations AS1726. Any observations of staining / odours or other indications of contamination must be included in the bore log.		
	<u>Bore construction log:</u> Monitoring bore construction details must be documented within a well construction log to demonstrate compliance with *ASTM D5092/D5092M-16*. The construction logs shall include elevations of the top of casing position to be used as the reference point for water-level measurements, and the elevations of the ground surface protective installations.		
	<u>Bore development:</u> All installed monitoring bores must be developed after drilling to remove fine sand, silt, clay and any drilling mud residues from around the bore screen to ensure the hydraulic functioning of the bore. A detailed record should be kept of bore development activities and included in the bore construction log.		

3. The licence holder must, within 60 calendar days of the monitoring bores being constructed, submit to the CEO a bore construction report evidencing compliance with the requirements of condition 2.

Spills of environmentally hazardous materials

4. The licence holder shall immediately recover, or remove and dispose of, spills of environmentally hazardous materials including fuel, oil, or other hydrocarbons, whether inside or outside an engineered containment system.

5. The licence holder shall ensure that all material used for the recovery, removal, and/or disposal of environmentally hazardous materials is stored in an impermeable container prior to disposal at an appropriately authorised facility.

Prevention of stormwater contamination

6. The licence holder must take all reasonable and practicable measures to prevent stormwater run-off becoming contaminated by the activities and operations undertaken at the premises.

Emissions and discharges

Disposal by injection of Produced Formation Water – authorised discharge points

7. The licence holder must ensure that the emissions specified in Table 3 are discharged only from the corresponding discharge point and only at the corresponding discharge point location.

Table 3: Authorised discharge points

Emission	Discharge point	Discharge point location
Produced Formation Water (PFW)	West Terrace 1 PFW disposal well	As shown in Schedule 1: Map of authorised discharge points
	West Terrace 2 PFW disposal well	

Monitoring

Infrastructure inspections

8. The licence holder must undertake inspections of infrastructure in accordance with the requirements specified in Table 4 and record the results of all such monitoring.

Table 4: Inspections of infrastructure

Infrastructure	Type of inspection	Frequency
West Terrace 1	Visual - to confirm no spills or leaks of PFW occurs during injection operations	Continuous during PFW injection operations
West Terrace 2		
Bunded containment areas	Visual - to detect and rectify any spills or leaks and confirm integrity is maintained	Each monthly period
Flowlines	Visual – to detect and rectify any leaks and confirm integrity is maintained	Daily during operations involving transfer of oil or PFW
Blina – Erskine Oil Pipeline PL7	Visual - to detect and rectify any leaks and confirm integrity is maintained	Each weekly period during operations involving transfer of oil
	Cathodic Protection System field inspection survey	Each annual period
Hydrocarbon storage tanks	Tank wall thickness inspections	Each biennial period

Discharge Monitoring

9. The licence holder must monitor the discharge in accordance with the requirements specified in Table 5 and record the results of all such monitoring.

Table 5: PFW discharge monitoring

Discharge point	Waste input	Parameter	Frequency	Unit	Method
PFW Disposal Wells: West Terrace 1 & West Terrace 2 (As shown in Schedule 1: Map of authorised discharge points)	PFW to be disposed via injection	Volume	Each load arriving at the Premises	m^3	-
		pH[1]	At least once for each separate Source of PFW to be injected	-	Spot sample in accordance with AS 5667.1 and AS 5667.10.
		Electrical Conductivity[1]		µS/cm	
		Total Dissolved Solids, Hardness (as $CaCO_3$), Calcium, Magnesium, Sodium, Potassium, Chloride, Sulfate Aluminium, Arsenic, Barium Cadmium, Chromium, (Total), Cobalt Copper, Iron Lead, Manganese, Mercury, Nickel, Zinc, TRH, BTEX, PAH		mg/L	

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

Ambient groundwater monitoring

10. The licence holder must monitor the groundwater for concentrations of the parameters in accordance with the requirements specified in Table 6

Table 6: Monitoring of ambient groundwater

Parameter	Monitoring location	Unit	Frequency	Method
Standing water level[1]	West Terrace Monitoring Bores WT1 and WT2 (as shown in Schedule 1 Monitoring Bore Locations Map)	m(AHD) and m(BGL)	Each quarterly period	Spot sample, in accordance with AS 5667.1 and AS 5667.11
pH[1]		-		
Electrical conductivity[1]		µS / cm		
Total Dissolved Solids, Hardness (as $CaCO_3$), Calcium, Magnesium, Sodium, Potassium, Chloride, Sulfate, Aluminium, Arsenic, Barium, Cadmium,		mg/L		

Chromium (Total), Cobalt, Copper, Iron, Lead, Manganese, Mercury, Nickel, Zinc, TRH, BTEX, PAH				

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

11. The licence holder must ensure that:

(a) monitoring is undertaken in each weekly period such that there are at least 4 days in between the days on which monitoring occurs in successive weeks;
(b) monitoring is undertaken in each monthly period such that there are at least 15 days in between the days on which monitoring occurs in successive months;
(c) monitoring is undertaken in each quarterly period such that there are at least 45 days in between the days on which samples are taken in successive quarters;
(d) monitoring is undertaken in each annual period such that there are at least 9 months in between the days on which monitoring occurs in successive years; and
(e) monitoring is undertaken in each biennial period such that there are at least 18 months in between the days on which monitoring occurs in successive years.

12. All sample analysis must be undertaken by laboratories with current accreditation from the National Association of Testing Authorities (NATA) for the relevant parameters and methods, unless otherwise specified in Table 5 or Table 6.

Records and reporting

13. 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 conditions 1 and 2 of this licence;
(c) monitoring programmes undertaken in accordance with conditions 8, 9, 10, 11 and 12 of this licence;
(d) records of water treatment chemicals used in wells, pipelines and production tanks, and treatment chemicals present in PFW disposed in accordance with condition 7 of this licence;
(e) complaints received under condition 15 of this licence.

14. The books specified under condition 13 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.

15. 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.

16. 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 31 August in each year an Annual Audit Compliance Report in the approved form.

17. The licence holder must submit to the CEO by no later than 31 August in each year, an Annual Environmental Report for the previous 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
8	A summary of the outcome(s) of all infrastructure monitoring conducted on the Premises including a description of any issues identified and how those issues were rectified.
9	PFW discharge monitoring – Tabulated PFW discharge monitoring results.
10	Ambient groundwater quality monitoring - Tabulated groundwater monitoring data results and an interpretation of monitoring data results including comparison of historical data to determine trends.
13(d)	Records of water treatment chemicals used on the Premises or discharged to the West Terrace Disposal Wells, including concentrations of each water treatment chemical present in PFW and calculated volumes discharged to the West Terrace Disposal Wells.
15	A summary of complaints records for the reporting Annual Period.
-	Any issues raised from inspections or incident responses during the reporting period together with details as to how these have been addressed / rectified or, if the required work has yet to be completed, how and when they will be completed / rectified.
-	Any changes to site boundaries, location(s) of groundwater monitoring bores, surface drainage channels and on-site or off-site impacts or pollution as a result of the premises operations.

18. The licence holder must notify the CEO six months in advance of recommencing category 10 oil or gas production operations at the Premises.

Definitions

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

Table 8: Definitions

Term	Definition
ACN	means Australian Company Number
AHD	means Australian Height Datum
AS 5667.1	means the Australian Standard *AS/NZS 5667.1 Water quality – sampling – guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples*, as amended from time to time
AS 5667.11	means the Australian Standard *AS/NZS 5667.11 Water quality – sampling – guidance on sampling groundwater*, as amended from time to time
ASTM D5092/D5092M-16	means the ASTM international standard for *Standard practice for design and installation of groundwater monitoring wells (Designation: ASTM D5092/D5092M-16)*, as amended from time to time.
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 Environmental Report (AER)	means a report submitted in a format as per specifications outlined in Table 6 that contains the results of any monitoring data or other information required under condition 15 for the relevant annual period.
annual period	means a 12 month period commencing from 1 July until 30 June in the following year.
approved form	means the AACR Form template approved by the CEO for use and available via DWER's external website.
AS1940-2004	means Australian Standard 1940-2004: The storage and handling of flammable and combustible liquids.
AS/NZS 5667.11	means the Australian Standard AS/NZS 5667.11 (R2016) Water quality – sampling – guidance on sampling groundwater, as amended from time to time
BGL	means below ground level
biennially	means once every two years
books	has the same meaning given to that term under the EP Act.
BTEX	means benzene, toluene, ethylene and xylene
CEO	means Chief Executive Officer of the Department. "submit to / notify the CEO" (or similar), means either: Director General Department administering the *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 or: info@dwer.wa.gov.au
Department	means the department established under section 35 of the *Public Sector 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)

Term	Definition
EP Regulations	*Environmental Protection Regulations 1987* (WA)
flowlines	means any pipeline carrying oil or produced formation water or both from one area of the Premises to any other area of the Premises
Inspector	means an inspector appointed by the CEO in accordance with s.88 of the EP Act.
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.
mg/L	milligrams per litre
monthly	means a one-month period commencing from the second day of a month until the first day of the immediately following month.
NATA	means National Association of Testing Authorities
PAH	means Polyaromatic Hydrocarbons
PFW	means produced formation water
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(s) (Figures 1, 2, 3 and 4) in Schedule 1 to this licence.
prescribed premises	has the same meaning given to that term under the EP Act.
quarterly	means the 4 inclusive periods from 1 January to 31 March, 1 April to 30 June, 1 July to 30 September and 1 October to 31 December
Source	means each oil exploration or production well or oil reservoir that is the source of PFW to be injected via the West Terrace Disposal Wells 1 and 2
TRH	means Total Recoverable Hydrocarbons
Waste	has the same meaning given to that term under the EP Act.
µS / cm	micro Siemens per centimeter

END OF CONDITIONS

Schedule 1: Maps

Premises map

The boundary of the prescribed premises is shown in the map below (Figure 1). The black perimeter lines around the green filled petroleum tenements depict the premises boundary.

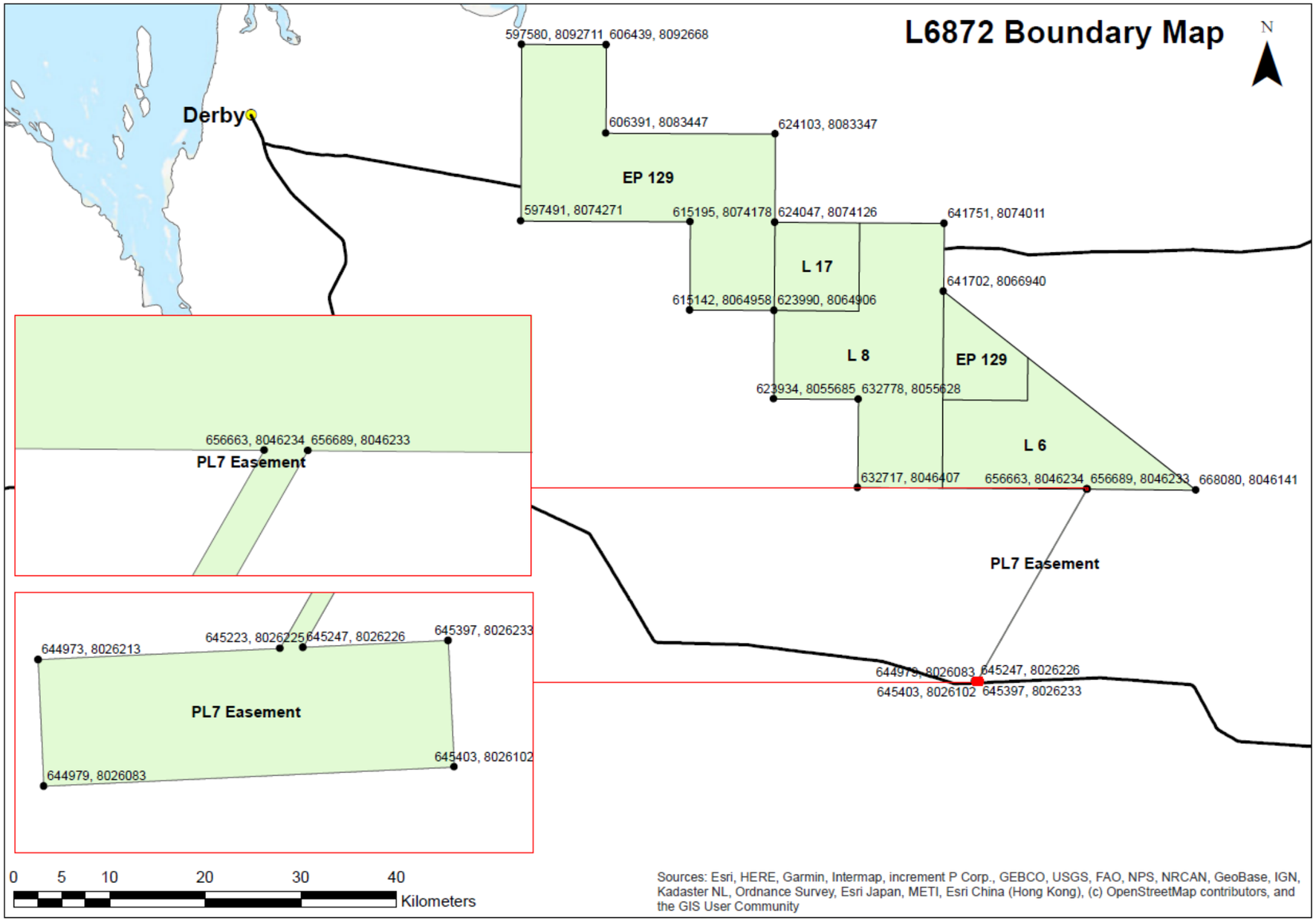

Figure 1: Map of the boundary of the prescribed premises

Infrastructure location map

The general locations of infrastructure on the prescribed premises (as listed in Condition 1 Table 1) is shown in the map below (Figure 2). The red line depicts the Premises boundary.

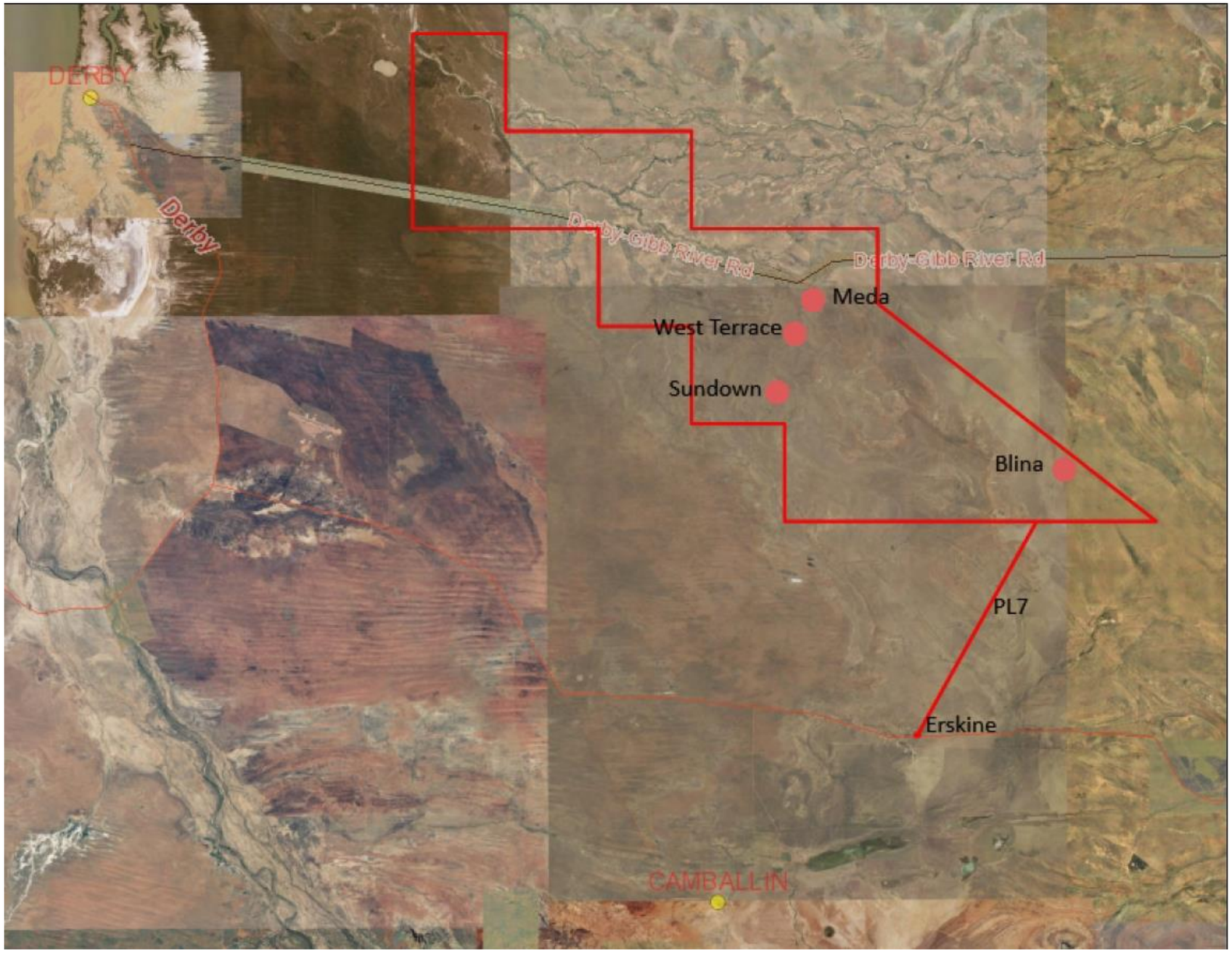

Figure 2: Map of infrastructure locations

Map of authorised discharge points

The locations and GPS coordinates of PFW discharge points (as listed in Condition 5 Table 2) is shown in the map below (Figure 3).

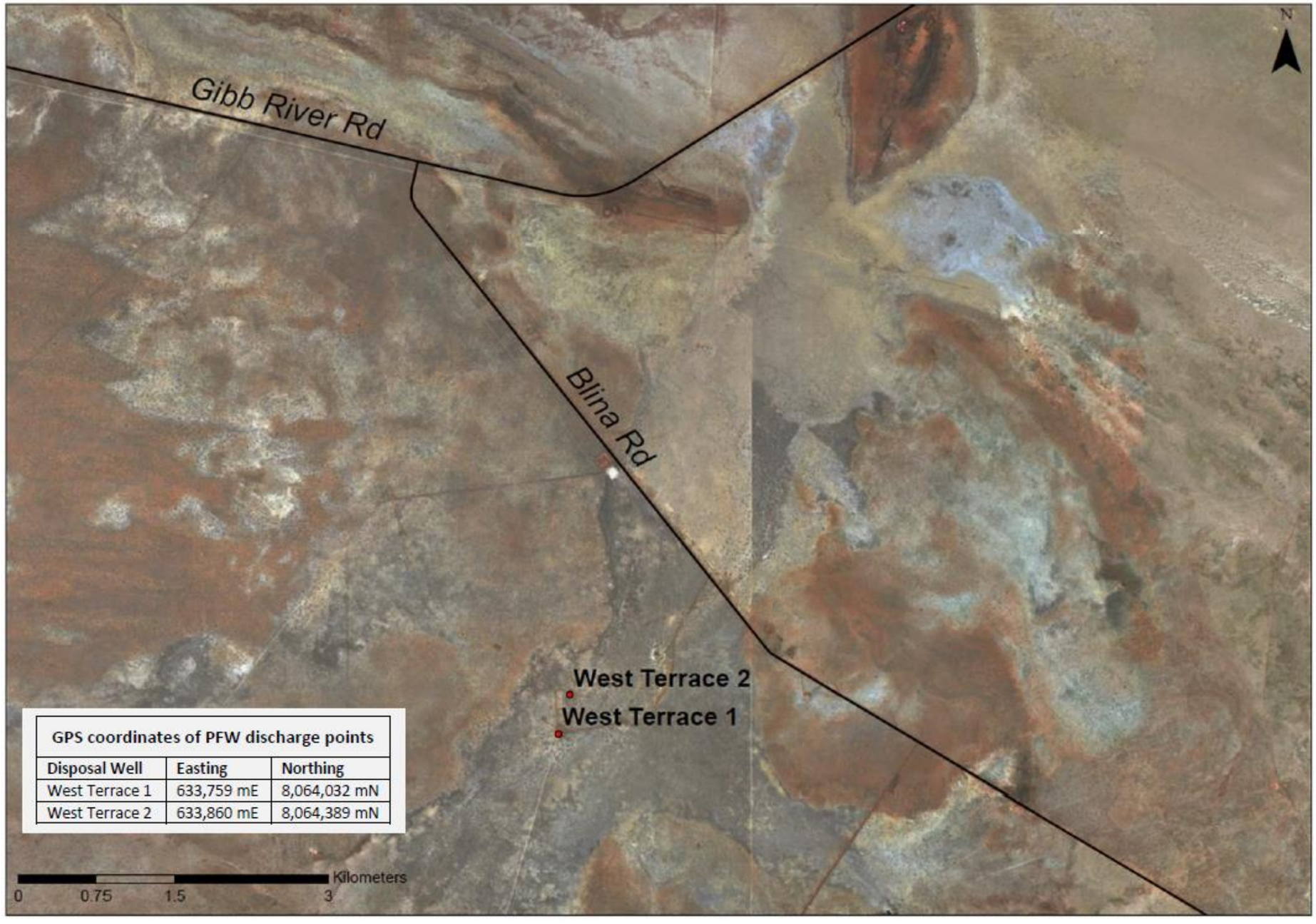

Figure 3: Map of authorised discharge points

Monitoring Bore Locations Map

The locations of the West Terrace Monitoring bores WT1 and WT2 (as listed in Condition 9 Table 5) are shown in the map below (Figure 4).

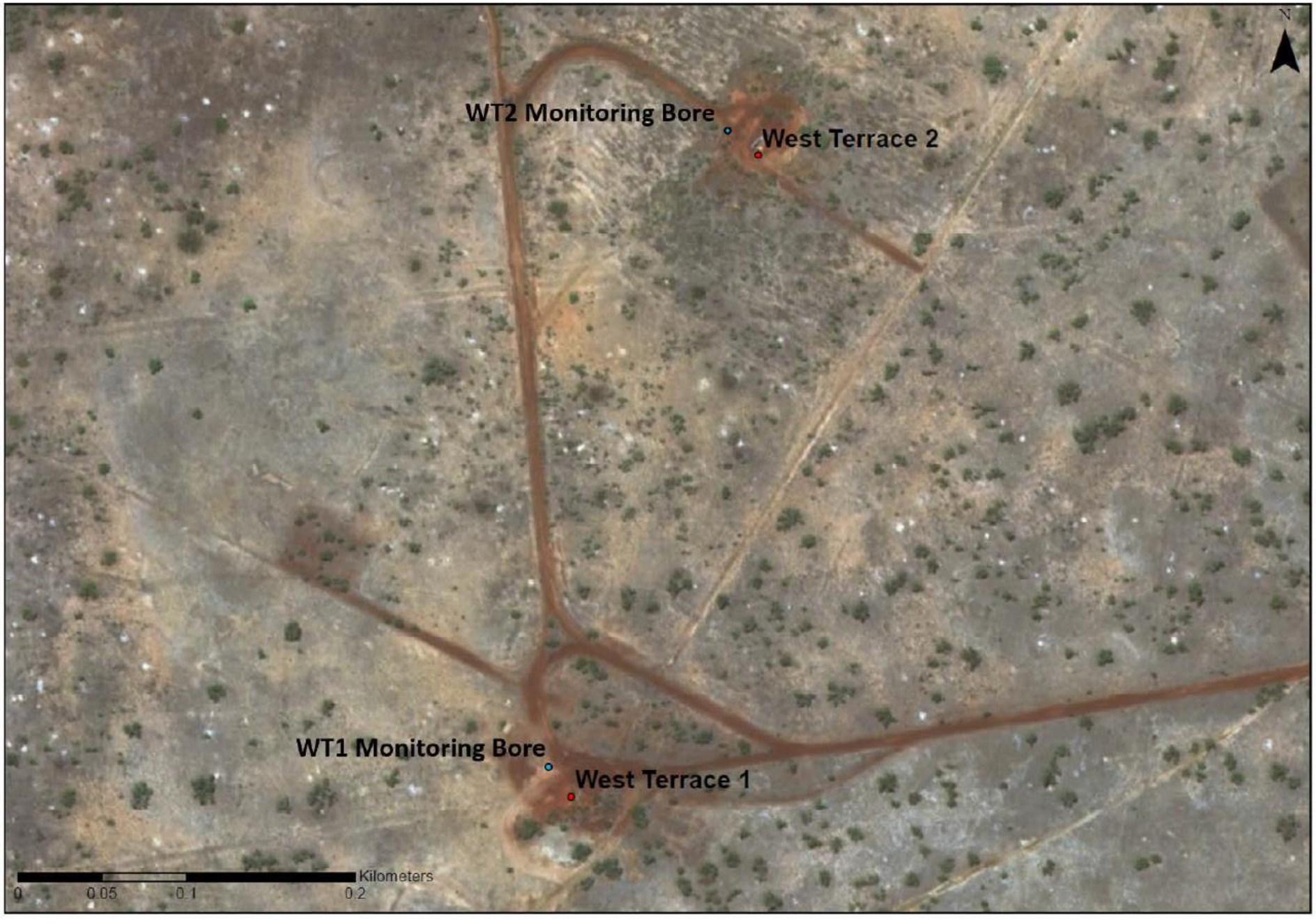

Figure 4: Monitoring bore locations