Licence

Licence number	L4467/1972/14
Licence holder	Chevron Australia Pty Ltd
ACN	086 197 757
Registered business address	Unit 7, 61 Walters Drive OSBORNE PARK WA 6017
DWER file number	DER2013/000939-4
Duration	01/11/2014 to 31/10/2026
Date of amendment	13/09/2023
Premises details	Barrow Island Oil and Gas Facility Part Crown Reserve 11648 BARROW ISLAND WA 6712 As shown in the boundary map in Schedule 1 Figure 1

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	310,886.5 tonnes per year
Category 57: Used tyre storage (general): premises (other than premises within category 56) on which used tyres are stored	300 tyres
Category 37: Char manufacturing: premises on which wood, carbon material or coal is charred to produce a fuel or material of a carbonaceous nature or of enriched carbon content	1,314 tonnes per year

This licence is granted to the licence holder, subject to the attached conditions, on 13 September 2023, by:

Caron Goodbourn

Digitally signed by Caron Goodbourn
Date: 2023.09.13 11:53:58 +08'00'

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

Licence history

Date	Instrument	Summary of changes
23/10/2014	L4467/1972/14	Licence issued.
9/03/2017	L4467/1972/14	Amendment to change groundwater monitoring regime at the Terminal Tanks oil storage facility.
13/12/2018	L4467/1972/14	Amendment to add prescribed premises Category 57 (used tyre storage) and Category 85 (sewage facility) to licence. In addition, construction, commissioning and operational requirements added for a new bioremediation facility and WWTP and a new requirement to monitor treated effluent discharged to surface water. Conditions relating to the re-injection of Produced Formation Water (PFW) were removed given the disposal of PFW is not regulated through Part V of the EP Act.
20/10/2020	L4467/1972/14	Licence holder initiated amendment to remove Category 85, associated infrastructure operational requirements and monitoring, sampling and reporting of surface water emissions. Redundant requirements relating to construction and commissioning works were also removed. Licence updated to current format
03/08/2022	L4467/1972/14	Licence holder initiated amendment to establish and operate a package pyrolysis plant on the premises for production of biochar for use in rehabilitation
13/09/2023	L4467/1972/14	Licence holder initiated amendment to alter the boundary of the prescribed premises and insert a new map.

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.

Conditions

Infrastructure and equipment

1. The licence holder must ensure that the site infrastructure and equipment specified in Table 1 is maintained in good working order and operated in accordance with the corresponding operational requirements specified in that table.

Table 1: Infrastructure and equipment controls table

Site infrastructure and equipment	Operational requirements	Infrastructure location
Terminal Tank Facility and associated Terminal Stormwater Receiver	Three crude oil storage tanks (each tank with capacity of 31,800,000L) positioned within a bunded containment area with a hydraulic permeability of less than $1x10^{-4}$ m/s.	Schedule 1 Maps: Infrastructure location and works maps Figure 3
	The integrity of the containment infrastructure is maintained.	
	Contaminated stormwater to be transferred to L71 Liquid Waste Disposal Facility.	
L71 Liquid Waste Disposal Facility	Two double lined HDPE evaporation ponds with combined approximate capacity of 1,990m^3 (excluding freeboard) operated such that: • Overtopping of the ponds does not occur; • A freeboard equal to, or greater than, 300mm is maintained; • The integrity of the containment infrastructure is maintained; and • Only the following waste types are accepted: – Contaminated stormwater; – Waste oil and water mixtures or emulsions, and hydrocarbon and water mixtures or emulsions; – Oil interceptor wastes; and – Industrial Wash Waters.	Schedule 1 Maps: Infrastructure location and works maps Figure 3 1 L71
Bioremediation facility	Bund and liner is maintained to comply with AS 1940:2017.	Schedule 1 Maps: Infrastructure location and works maps Figure 3
	Contaminated material to be deposited in windrows.	
	Capacity of stormwater system to be maintained to allow storage for a 1 in 20 ARI 72 hour storm event.	
Used Tyre Storage of up to 300 tyres on the Premises	Tyres to be stored in non-combustible transportable waste receptacles and removed off the Island for recycling as required.	Schedule 1 Maps: Infrastructure location and works maps Figure 1 and Figure 2 BASE

Site infrastructure and equipment	Operational requirements	Infrastructure location
Pyrolysis Plant Container 1 - shredding Container 2 - storage Container 3 - pyrolysis kiln and bagging	Must not commence operation prior to submission of the Environmental Compliance Report required by condition 3(b).	Schedule 1 Maps: Infrastructure location and works maps Figure 5
	The shredder in Container 1 must receive vegetation for shredding via a hopper fitted with wind shields on three sides.	
	The pyrolysis plant must only process cleared native vegetation.	
	Material transfers between the containers must be via enclosed auger.	
	Vegetation processed through the shredder in Container 1 must only be stored in Container 2.	
	A temperature monitoring and alarm system (PLC) must be operated which activates; • an alarm, water quench and shut-down in the event of high temperature in the combustion chamber; • the heating element to turn on in the event of low temperature within the kiln feed auger or combustion chamber; and • an alarm and shut-down in the event of zero feed to the kiln.	
	Produced char must be quenched with water upon exiting the pyrolysis plant.	
	Produced char must be stored within bulka bags, enclosed or covered containers, or covered stockpiles.	
Cleared vegetation storage area	Vegetation must be stockpiled in: • windrows no more than 4 m high; or • enclosed or covered containers; within the cleared area.	
	Each windrow must be located at least 5 m from: • the boundary of the cleared area; • the pyrolysis plant; and • other vegetation windrows.	
	No more than 160,000 m^3 of vegetation may be stored within the cleared area.	

2. The licence holder must:

(a) construct and/or install the infrastructure and/or equipment;

(b) in accordance with the corresponding design and construction / installation requirements; and

(c) at the corresponding infrastructure location,

as set out in Table 2.

Table 2: Design and construction / installation requirement

Infrastructure	Design and construction / installation requirements	Infrastructure location
Pyrolysis plant Container 1 - shredding	• A vegetation shredder with a design capacity of not more than 20 m^3 per hour of vegetation must be installed inside an enclosed sea container; • A vegetation hopper with wind shields on three sides must be attached to the sea container for the feed of vegetation to the shredder. • An enclosed auger must be installed for the transport of shredded vegetation from the shredder to Container 2.	Within the cleared area illustrated in Schedule 1 Maps: Infrastructure location and works maps Figure 5
Pyrolysis plant Container 2 - storage	• An enclosed sea container must be installed for shredded vegetation storage; • Ducting must be installed for extraction of dust from Container 2 by the dust cyclone in Container 3. • An enclosed auger must be installed for the transport of shredded vegetation to the pyrolysis kiln.	
Pyrolysis plant Container 3 – pyrolysis kiln and bagging	• A pyrolysis kiln with a design capacity of not more than 150 kg/hr must be installed inside an enclosed sea container; • A discharge stack with a minimum stack height of >5 m above ground level must be installed for the discharge of air emissions from the pyrolysis kiln. • A dust cyclone must be installed in Container 3 which discharges collected dust to the kiln. • A centrifugal type spark arrestor must be installed in the stack. • The discharge stack must be fitted with a sampling port that complies with the requirements of AS 4323.1 to allow periodic stack testing. • An automated char quench with a capacity not less than 1,000 L must be installed. • An enclosed auger must be installed for the transfer of produced char to the bagging area. • The pyrolysis kiln must be fitted with temperature probes in the kiln feed auger and the combustion chamber. • Temperature probes must be connected to a PLC which is programmed to: – activate an alarm, chamber quench and shut-down in event of high temperature in the combustion chamber; – turn on the heating element in the event of low temperature within the kiln feed auger and/or the combustion chamber; and – activate an alarm and shut-down in the event of zero feed to the kiln.	

3. The licence holder must within 60 days of the infrastructure required by condition 2 being constructed or installed;

(a) undertake an audit of their compliance with the requirements of condition 2; and

(b) prepare and submit to the CEO an Environmental Compliance Report on that compliance.

4. The Environmental Compliance Report required by condition 0 must include as a minimum the following:

(a) certification that the items of infrastructure or components thereof, as specified in condition 2 have or have not, been constructed in accordance with the relevant requirements specified in condition 2;

(b) as constructed plans for each item of infrastructure or component of infrastructure specified in condition 2; and

(c) be signed by a person authorised to represent the licence holder and contains the printed name and position of that person.

Discharges to air

5. The licence holder must ensure that the emissions listed in Table 3 are discharged only from the corresponding discharge point and only at the corresponding discharge location set out in Table 3.

Table 3: Authorised emission points to air

Emission	Emission point	Discharge point height (m AGL)	Emission point location
NOx, SO_2, CO, PM, VOCs, benzene, toluene, dioxins and furans	Pyrolysis Kiln – Container 3 Stack	>5	Pyrolysis Plant Container 3 located within the cleared area shown in Schedule 1 Maps: Infrastructure location and works maps Figure 5

6. The licence holder must monitor point source air emissions in accordance with the requirements specified in Table 4 and record the results of all such monitoring.

Table 4: Point source emission to air monitoring

Emission point	Parameter	Frequency	Averaging period	Unit[1]	Sampling and analysis method
Pyrolysis Kiln – Container 3 Stack	Volumetric flow rate	Once within 42 days of the infrastructure required by condition 2 commencing operation	Minimum 30 minutes	m^3/s	USEPA Method 2
	Exit velocity			m/s	
	Nitrogen oxides (as NO_2)			mg/m^3 and g/s	USEPA Method 7E
	Sulfur dioxide				USEPA Method 6C
	Carbon monoxide				USEPA Method 10
	VOCS – Benzene and Toluene				USEPA Method 18
	Total particulate matter		Minimum 60 minutes		USEPA Method 5 or 17
	PM_{10}				
	Total organic compounds (as carbon)				USEPA Method 25A
	Dioxins and furans		Minimum 120 minutes	ng TEQ/m^3 and g TEQ/s	USEPA Method 23

Note 1: All units referenced to STP, dry.
Note 2: Monitoring must be undertaken to reflect normal operating conditions.

7. The licence holder must ensure that sampling undertaken pursuant to condition 6 is undertaken at a sampling location in accordance with AS 4323.1.

8. The licence holder must ensure that all non-continuous sampling and analysis undertaken pursuant to condition 6 is undertaken by a holder of a current accreditation from the National Association of Testing Authorities (NATA) for the methods of sampling and analysis relevant to the corresponding relevant parameter.

9. The licence holder must submit to the CEO the results of the monitoring required by condition 6 within 60 days of the monitoring being undertaken.

Ambient groundwater quality monitoring

10. The licence holder must monitor the groundwater for concentrations of the parameters listed in Table 5:

(a) at the corresponding monitoring point location and reference;
(b) in the corresponding unit;
(c) at no less that the corresponding frequency; and
(d) for the corresponding averaging period,

as set out in Table 5.

Table 5: Monitoring of ambient groundwater quality

Monitoring point location and reference	Parameter	Units	Averaging period	Frequency
CPF (satellite and tanks) CPF-MW1R to CPF-MR4R	TRH	mg/L	Spot sample	Quarterly
	BTEX			
Bioremediation Facility GW82, GW83 and GW85	TRH		Spot sample	Quarterly
	BTEX			
	PAH		Spot sample if TRH is present	
Terminal Tanks and Terminal Tank Stormwater Receiver TT-GW06, TT-GW14, TT-GW21, TT-GW32, TT-GW41, TT-GW50, TT-MW04, TT-MW18, TT-MW21, TT-MW25, TT-MW26, TT-MW27, TT-MW28, TT-MW31, TT-MW34, TT-MW38, TT-MW39, TT-MW41,	PSH	mm	Spot sample	Six monthly
	Alkalinity (total) as $CaCO_3$	mg/L	Spot sample if no PSH is detected	
	Calcium			
	Magnesium			
	Sodium			
	Potassium			
	Sulfate			
	Chloride			
	Flouride			
	TRH			
	PAH		Spot sample if TRH is present	
L71 Liquid Waste Disposal Facility L71-MW1 to L71-MW4	TRH		Spot sample	Quarterly
	BTEX			
	Arsenic			
	Cadmium			
	Chromium			
	Copper			
	Lead			
	Mercury			
	Nickel			
	Zinc			
Airport Facilities AP-MW3, AP-MW4A, AP-MW5, AP-MW11, AP-MW12A, AP-MW13A, AP-MW18, AP-MW19, AP-MW23, AP-MW32	PSH	mm	Spot sample	Annual
	Dissolved Oxygen	mg/L	Spot sample if no PSH is detected	
	pH	pH units		
	Redox Potential,	mV		
	Temperature	ºC		
	Electrical Conductivity	µS/cm		
	Ferrous Iron	mg/L		

Monitoring point location and reference	Parameter	Units	Averaging period	Frequency
	Sulphate (Filtered)	mg/L		
	Nitrate (as N)	mg/L		
	BTEX	mg/L		
	TRH	mg/L		
	PAH	mg/L	Spot sample if TRH is present	
Central Power Station B-MW3	TRH	mg/L	Spot sample	Quarterly
Compressor Station B-MW4	TRH	mg/L		
Pipe work connecting base administration facilities, J Station flare and J Satellite Station to flare pit B-MW5	TRH	mg/L		
Riggers Yard B-MW2	TRH	mg/L		
Warehouse and adjacent chemical and hazardous materials storage B-MW1	TRH	mg/L		
Heavy and light duty work shops B-MW6 and B-MW7	TRH	mg/L		

11. The licence holder must ensure that:

(a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;
(b) all groundwater sampling is conducted in accordance with AS/NZS 5667.11; and
(c) all water samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being tested.

12. The licence holder must ensure that:

(a) quarterly monitoring is undertaken such that there are at least 45 days in between the days on which samples are taken;
(b) 6-monthly monitoring is undertaken such that there are at least 5 months in between the days on which samples are taken; and
(c) annual monitoring is undertaken such that there are at least 9 months in between the days on which samples are taken.

Record-keeping

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) the maintenance of infrastructure required to ensure that it is kept in good working order in accordance with condition 1;
(c) the works conducted in accordance with condition 2;
(d) monitoring undertaken in accordance with conditions 6 and 10; and
(e) complaints received under condition 14.

In addition, the books must:

(f) be legible;
(g) if amended, be amended in such a way that the original and subsequent amendments remain legible and are capable of retrieval;
(h) be retained for at least 3 years from the date the books were made; and
(i) be available to be produced to an Inspector or the CEO.

14. The licence holder must record the number and details of any complaints received by the licence holder relating to its obligations under this licence and its compliance with Part V of the EP Act at the premises, and any action taken by the licence holder in response to the complaint. Details of complaints must include:

(a) an accurate record of the concerns or issues raised, for example a copy of any written complaint or a written note of any verbal complaints made;
(b) the name and contact details of the complainant, if provided by the complainant;
(c) the date of the complaint; and
(d) the details and dates of the actions taken by the licence holder in response to the complaints.

Reporting

15. 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 30 September in each year, an Annual Audit Compliance Report in the approved form.

16. The licence holder must submit to the CEO by no later than 30 September in each year, an annual environmental report for the previous annual period for the conditions listed in Table 6, and which provides information in accordance with the corresponding requirement set out in that table.

Table 6: Annual environmental report requirements

Condition(s)	Requirement
7	Ambient groundwater quality monitoring - Tabulated groundwater monitoring data results and an interpretation of monitoring data results including comparison of historical data to determine trends

Definitions

In this Licence, the terms in Table 7 have the meanings defined.

Table 7: Definitions

Term	Definition
ACN	Australian Company Number
Annual Audit Compliance Report	means a report in a format approved by the CEO as presented by the licence holder or as specified by the CEO (guidelines and templates may be available on the Department's website).
Annual Period	means a 12 month period commencing from 1 July until 30 June in the following year.
Approved form	The AACR form template approved by the CEO for use and available via DWER's external website
ARI	Average Recurrence Interval
AS 1940:2017	means the Australian Standard 1940:2017: The storage and handling of flammable and combustible materials
AS 4323.1	means the Australian Standard AS4323.1 *Stationary Source Emissions Method 1: Selection of sampling positions*
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 5667.11	means the Australian/New Zealand Standard for Water quality – Sampling Part 11: Guidance on sampling of groundwaters
Averaging period	means the time over which a limit is measured or a monitoring result is obtained
Books	has the same meaning given to that term under the EP Act.
BTEX	means the suite of aromatic hydrocarbons that typify petroleum products and comprises Benzene, Toluene (methyl benzene), Ethyl benzene and the Xylenes (ortho-, meta-, and para-dimethyl benzene)
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department Administering the *Environmental Protection Act 1986* Locked Bag 33 Cloisters Square PERTH WA 6850 info@dwer.wa.gov.au
Condition	means a condition to which this Licence is subject under s.62 of the EP Act.
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the EP Act.
Department Request	means a request for Books or other sources of information to be produced, made by an Inspector or the CEO to the Licence Holder in writing and sent to the Licence Holder's address for notifications, as described at the front of this Licence, in relation to: (a) compliance with the EP Act or this Licence; (b) the Books or other sources of information maintained in accordance with this Licence; or (c) the Books or other sources of information relating to Emissions from the Premises.

Term	Definition
Discharge	has the same meaning given to that term under the EP Act.
DWER	Department of Water and Environmental Regulation.
Emission	has the same meaning given to that term under the EP Act.
EP Act	means the *Environmental Protection Act 1986* (WA).
EP Regulations	means the *Environmental Protection Regulations 1987* (WA).
Implementation Agreement or Decision	has the same meaning given to that term under the EP Act.
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 s.57 of the EP Act, subject to the Conditions.
Licence Holder	refers to the occupier of the premises being the person to whom this Licence has been granted, as specified at the front of this Licence.
m AGL	means metres above ground level
NATA	means the National Association of Testing Authorities, Australia
operation	means the operation of equipment or infrastructure with feed material, inputs, or fuel. It does not include maintenance activities or performance testing of infrastructure or equipment that is undertaken without feed material, inputs, or fuel.
PAH	Polycyclic Aromatic Hydrocarbons
PLC	Programmable Logic Controller
PM_{10}	suspended particulate matter having an equivalent aerodynamic diameter of less than approximately 10 microns (µm)
PSH	Phase Separated Hydrocarbons
Pollution	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Licence applies, as specified at the front of this Licence and as shown on the map in Schedule 1 to this Licence.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Primary Activities	refers to the Prescribed Premises activities listed on the front of this Licence as described in Schedule 2, at the locations shown in Schedule 1.
Quarterly	means once in every three months
STP, dry	means standard temperature and pressure (0ºCelcius and 101.3 kilopascals) dry
TEQ	means Toxic Equivalency Factors as stated in the 2005 World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds.
TRH	means total recoverable hydrocarbons
USEPA	means United States (of America) Environmental Protection Agency
USEPA Method 2	means USEPA Method 2 *Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)*
USEPA Method 5	means United States Environmental Protection Authority *Method 5 – Determination of particulate matter emissions from stationary sources*
USEPA Method 6C	means USEPA Method 6C *Determination of Sulfur Dioxide Emissions from*

Term	Definition
	Stationary Sources (Instrumental Analyzer Procedure)
USEPA Method 7E	means USEPA Method 7E *Determination of Nitrogen Oxides Emissions from Stationary Sources (Instrumental Analyzer Procedure)*
USEPA Method 10	means USEPA Method 10 *Determination of Carbon Monoxide Emissions from Stationary Sources (Instrumental Analyzer Procedure)*
USEPA Method 17	means United States Environmental Protection Authority *Method 17 – Determination of particulate matter emissions from stationary sources*
USEPA Method 18	means USEPA Method 18 *Measurement of Gaseous Organic Compound Emissions by Gas Chromatography*
USEPA Method 23	means USEPA Method 23 *Determination of polychlorinated dibenzo-ρ-dioxins and polychlorinated dibenzofurans from stationary sources*
USEPA Method 25A	means USEPA Method 25A *Determination of total gaseous organic concentration using a flame ionization analyzer*
VOCs	means volatile organic carbons
Waste	has the same meaning given to that term under the EP Act.

Schedule 1: Maps

Premises map

The boundary of the prescribed premises is depicted by the purple line (excluding blue shaded areas) in the map below (Figure 1).

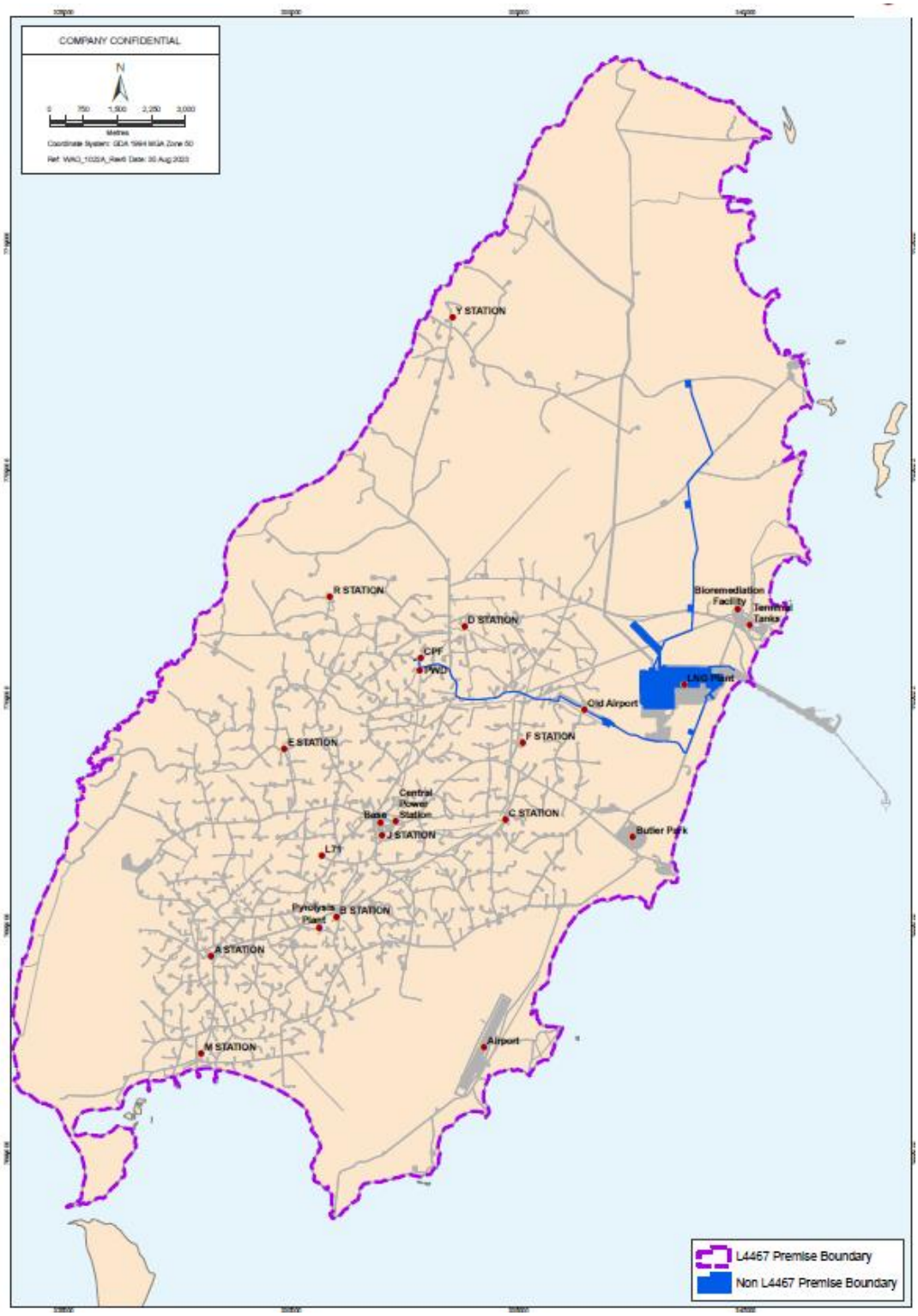

Figure 1: Map of the boundary of the Barrow Island Oil and Gas Facility prescribed premises

Infrastructure location and works maps

The location of the prescribed premises infrastructure and works are depicted in Figure 2 to Figure 5

Figure 2: Used tyre storage locations

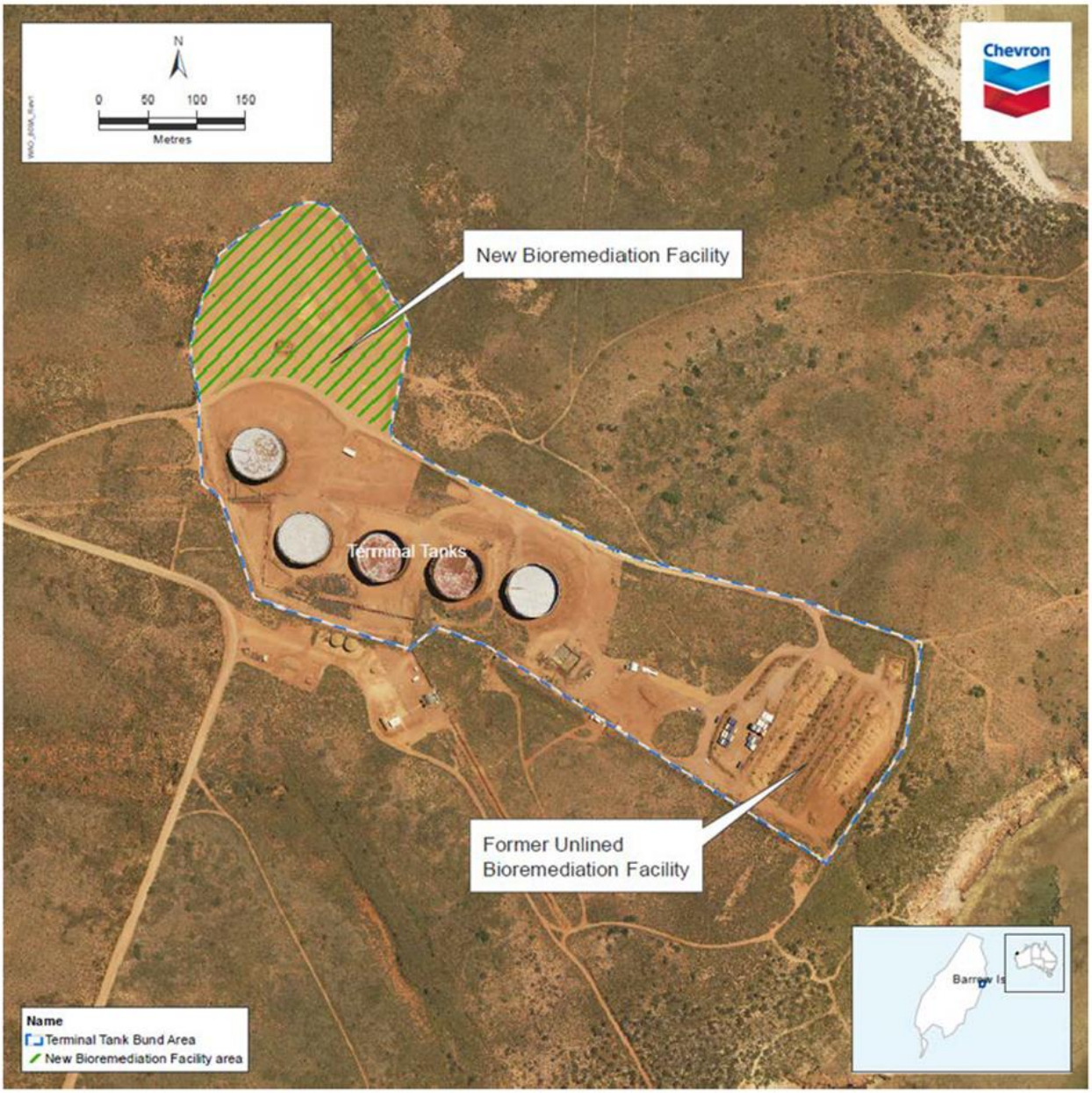

Figure 3: Bioremediation facility and Terminal tanks and stormwater receiver location

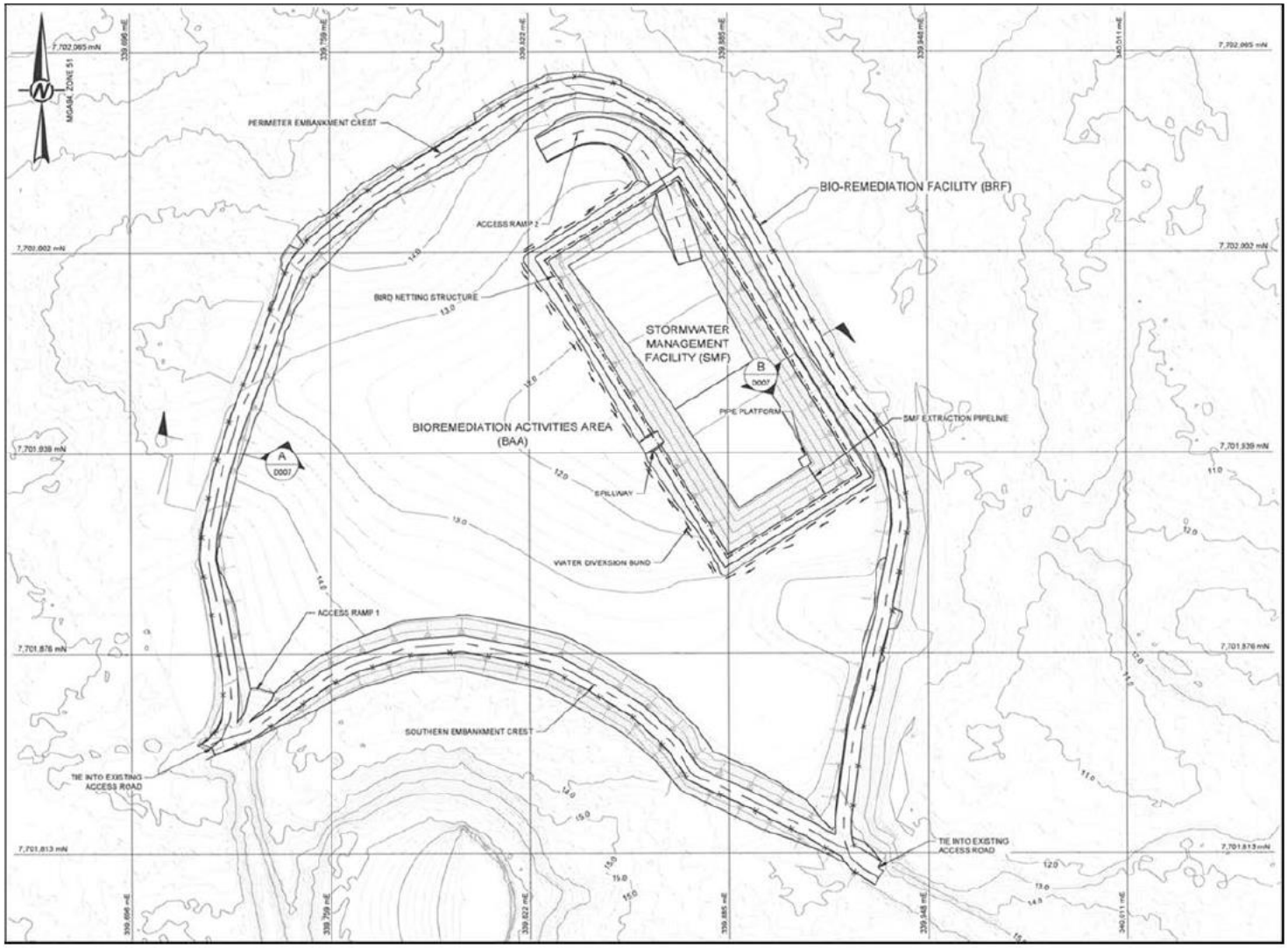

Figure 4: Bioremediation facility layout

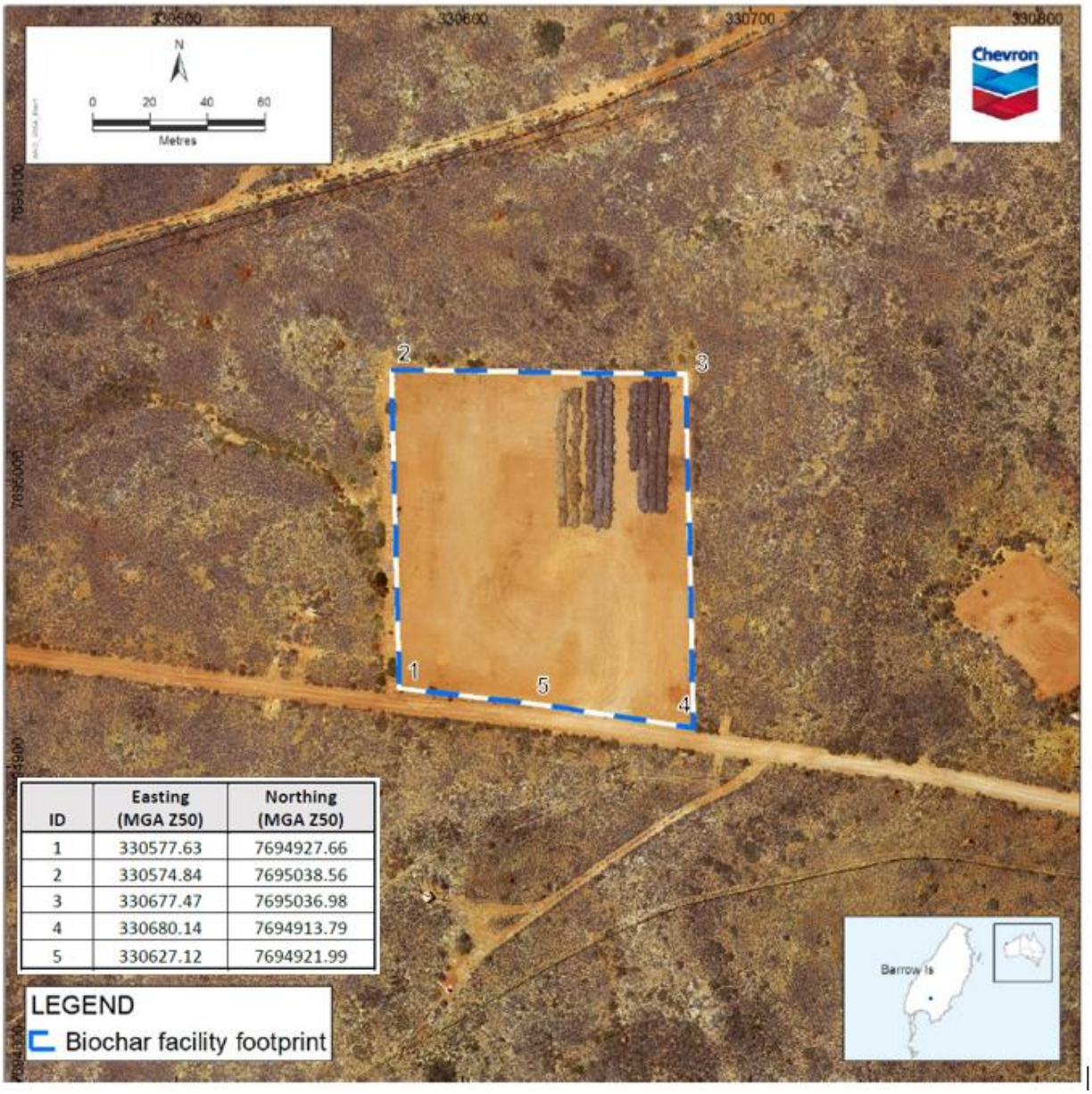

Figure 5: Pyrolysis plant (biochar plant) location

Monitoring locations

The location of the prescribed premises monitoring wells are depicted in Figure 6 and Figure 7

Figure 6: Terminal Tanks, Terminal Tank Stormwater Receiver monitoring well locations

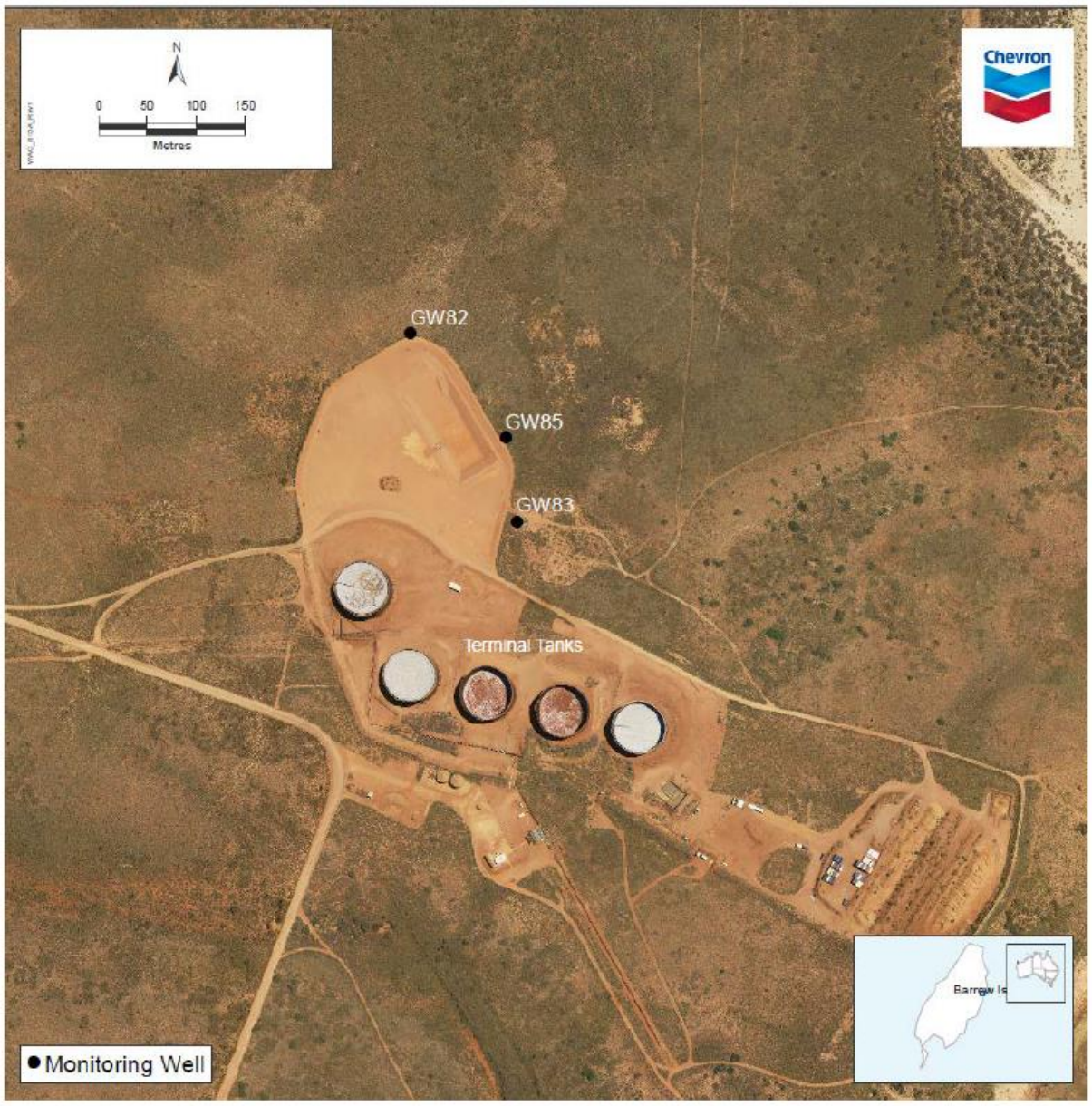

Figure 7: Bioremediation Facility monitoring well locations