Government of Western Australia
Department of Water and Environmental Regulation

Licence

Licence Number	L6284/1992/10
Licence Holder	Santos WA Energy Limited
ACN	009 301 964
Registered business address	60 Flinders Street ADELAIDE SA 5000
File Number	DER2013/000949-3
Duration	17/10/2013 to 16/10/2032
Amendment Date	6/07//2023
Premises	Varanus Island and East Spar Facilities CALM Act Leases 1902/100 and 2064/100 Part Reserve 33902 (Part Lot 500 on Plan 240033) (As depicted by the Premises Map in Schedule 1) VARANUS ISLAND WA 6872

Prescribed premises category description (Schedule 1, *Environmental Protection Regulations 1987*)	**Assessed production capacity**
Category 10: Oil or gas production from wells	7 050 000 tonnes per annual period
Category 34: Oil or gas refining	
Category 85: Sewage facility	72 cubic metres per day; 26,280 cubic metres per annual period

This Licence is granted to the licence holder, subject to the following conditions, on 6 July 2023, by:

Caron Goodbourn

Digitally signed by Caron Goodbourn
Date: 2023.07.06 11:18:48 +08'00'

Manager, Process Industries

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

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 means the version of the standard, guideline, or code of practice in force at the time of granting of this licence and includes any amendments to the standard, guideline or code of practice which may occur from time to time during the course of the licence;

(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.

Definitions and interpretation

Definitions

In this Licence, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
ACN	Australian Company Number
Amendment Notice	means an amendment granted under s.59 of the EP Act in accordance with the procedure set out in s.59B of the EP Act.
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.
AS/NZS 5667.1	Means the Australian/New Zealand 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/NZS 5667.10	means the Australian/New Zealand Standard AS/NZS 5667.10 Water Quality – Sampling – Guidance on sampling of waste waters
AS/NZS 5667.11	means the Australian/New Zealand Standard for Water quality – Sampling Part 11: Guidance on sampling of groundwaters
ASTM D7979	Means the ASTM Standard ASTM D7979 – Standard Test Method for Determination of Perfluorinated Compounds in Water, Sludge, Influent, Effluent and Wastewater by Liquid Chromatography Tandem Mass Spectrometry (LC/MS/MS)
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 benzene, toluene, ethylbenzene and xylene
CALM Act	means the *Conservation and Land Management Act 1984* (WA)
CO	Carbon Monoxide
Condition	means a condition to which this Licence is subject under s.62 of the EP Act.
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department Administering the *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
Corrugated Plate Interceptor	means the water treatment system located at the Bulk Storage Facility that separates solids and oily water from contaminated stormwater falling within the Bulk Storage Tank bund and liquid recovered from the Soil Vapour Extraction system.
Deep Disposal Wells	means the onshore water injection wells (Alkimos-1, Tanami-1 and Tanami-5) used for disposal of PFW and contaminated stormwater
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.
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.
Environmental Harm	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).
H_2S	Hydrogen Sulfide
Implementation Agreement or Decision	has the same meaning given to that term under the EP Act.
IBC	means intermediate bulk container
Inspector	means an inspector appointed by the CEO in accordance with s.88 of the EP Act.
ISO 25101	Means the ISO Standard ISO 25101 – Water quality – Determination of perfluorooctanesulfonate (PFOS) and perfluorooctanoate (PFOA) – Method for unfiltered samples using solid phase extraction and liquid chromatography/mass spectrometry (applicable to drinking water, ground water and surface water)
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.
Material Environmental Harm	has the same meaning given to that term under the EP Act.
NOx	Nitrogen Oxides
PM	Particulate Matter
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.
Serious Environmental Harm	has the same meaning given to that term under the EP Act.
SVE	means soil vapour extraction
SVOCs	semi volatile organic compounds
TRH	means Total Recoverable Hydrocarbons
Unreasonable Emission	has the same meaning given to that term under the EP Act.
VOCs	volatile organic compounds
Waste	has the same meaning given to that term under the EP Act.

Conditions

Infrastructure and equipment

1. The Licence Holder must ensure that the infrastructure and equipment specified in Column 1 of Table 2 is maintained in good working order and operated in accordance with the requirements specified in Column 2 of Table 2.

Table 2: Infrastructure and equipment controls table

Column 1	**Column 2**
Site infrastructure and equipment	**Operational requirements**
HJV and ESJV processing areas	Must be bunded, drained or graded such that uncontaminated stormwater is prevented from entering processing areas
	Must be designed such that contaminated stormwater and liquid wastes collected within processing areas are directed to collection sumps
Bunds, sumps and drains as identified in Schedule 1 Map: Containment Areas	Stormwater and liquid wastes collected must be routinely pumped out and sent to an oil water separator for treatment prior to disposal via the Deep Disposal Wells or discharge via the HJV Humeceptor 54
	All sumps must be pumped out before an impending cyclone unless unsafe to do so
Bulk Crude / Condensate Storage Tanks	Two crude oil storage tanks (each tank with capacity of 39,750,000L) positioned within a lined and bunded containment area with a hydraulic permeability of less than $1x10^{-9}$ m/s
	The integrity of the containment infrastructure is maintained
	Contaminated stormwater to be transferred to the Corrugated Plate Interceptor for treatment prior to discharge via Deep Disposal Wells
Sewage Facility	Overtopping of the treatment tanks does not occur
	The integrity of the containment and discharge infrastructure is maintained.
SVE Infrastructure	SVE wells and groundwater bores piped to centralised process equipment
	All vapour recovered is vented to atmosphere via a 6.5m stack
	Transfer pump capable of transferring all liquid to the IBC
	1,000L IBC capable of storing liquid produced from the SVE.
	Any liquid recovered is to be processed through the Corrugated Plate Interceptor for treatment prior to discharge via Deep Disposal Wells

2. The Licence Holder must install the SVE in accordance with the SVE Infrastructure requirements specified in Column 2 of Table 2 at the location shown in Schedule 1: SVE Operations.

Emissions

3. The Licence Holder must not cause any Emissions from the Primary Activities on the Premises except for specified Emissions and general Emissions described in Column 1 of Table 3 subject to the exclusions, limitations or requirements specified in Column 2 of Table 3.

Table 3: Authorised Emissions table

Column 1	**Column 2**
Emission type	**Exclusions/Limitations/Requirements**
Specified Emissions	
Emissions to air	Subject to compliance with Condition 4
Treated effluent discharged from the Premises Sewage Facility	Subject to compliance with Conditions 4, 7, 8 and 14
Treated stormwater from the HJV Humeceptor 54	Subject to compliance with Conditions 4, 6 and 14
General Emissions (excluding Specified Emissions)	
Emissions which: • arise from the Primary Activities set out in Schedule 2: Primary Activities	Emissions excluded from General Emissions are: • Unreasonable Emissions; or • Emissions that result in, or are likely to result in, Pollution, Material Environmental Harm or Serious Environmental Harm; or • Discharges of Waste in circumstances likely to cause Pollution; or • Emissions that result, or are likely to result in, the Discharge or abandonment of Waste in water to which the public has access; or • Emissions or Discharges which do not comply with an Approved Policy; or • Emissions or Discharges which do not comply with a prescribed standard; or • Emissions or Discharges which do not comply with the conditions in an Implementation Agreement or Decision; or • Emissions or Discharges the subject of offences under regulations prescribed under the EP Act, including materials discharged under the Environmental *Protection (Unauthorised Discharges) Regulations 2004*.

Point source emissions to air

4. The Licence Holder shall ensure that where waste is emitted to air from the emission points in Table 4 and identified on the map of emission points to air in Schedule 1 it is done so in accordance with the conditions of this Licence.

Table 4: Authorised discharge points to air

Emission	Discharge point	Emission point height (m)	Discharge point location as shown in Schedule 1: Map of Emissions to Air locations
NOx, PM	ES Power Generator (EG-6003)	13	Discharge point A5
NOx, PM, Acrolein	Taurus 60 (K-11A) gas turbine	11	Discharge point A7
	Taurus T70 (K-12) gas turbine	12	Discharge point A9
NOx	ESJV - Taurus A (K-6401-A) gas turbine	13	Discharge point A10
	ESJV - Taurus B (K-6401-B) gas turbine	13	Discharge point A11
	ESJV - Taurus C (K-6401-C) gas turbine	13	Discharge point A12
	Mars 100 ESJV Sales Gas Compressor (K-6401-D)	20	Discharge point A13
NOx, PM	Black start Diesel Generator (EG-1)	6	Discharge point A16
	Black start Diesel Generator (EG-2)	6	Discharge point A17
NOx, PM, CO, Benzene, n-hexane	HJV Elevated Flare (F-101)	35	Discharge point A18
	HJV Ground Flare (F-100)	15	Discharge point A19
	ESJV Elevated Flare (V-6542)	33	Discharge point A20
	ESJV Ground Flare (V-6541)	8	Discharge point A21
H_2S	Amine Train Vent 1 (AV1)	24	Discharge point A22
	Amine Train Vent 2 (AV2)	24	Discharge point A23
Methane, hexane, cyclo-hexane, BTEX H_2S, VOCs SVOCs	SVE Vent	6.5	Discharge point A24
NOx	Mars 100 ESJV Inlet Gas Compressor (K-0302)	12.8	Discharge point A26
	Mars 100 ESJV Inlet Gas Compressor (K-0402)	12.8	Discharge point A25
	Centaur C40 (EG-9001) Gas Turbine Generator	9.8	Discharge point A27
	Cummins Generator (EG-9002)	6.5	Discharge point A28
	Cummins Generator (EG-9004)	6.5	Discharge point A29

5. The Licence Holder must ensure that:

(a) emissions specified in Table 5 are discharged only from the corresponding discharge point;

(b) at the corresponding emission point reference; and

(c) at the discharge point location; and

(d) in accordance with the limit;

specified in Table 5.

Table 5: Emission point limits

Emission	Limit	Discharge point	Emission point reference	Discharge point location
Treated effluent from the Premises Sewage Facility	≤ 72m^3 / day	Discharge via pipe to marine environment	Effluent discharge Pipe	Ocean Outfall Discharge Point as shown in Schedule 1: Sewage Facility Location and Discharge Point
Treated stromwater from the HJV Humeceptor 54	≤ 15mg/L TRH	Discharge via pipe to land	Humeceptor discharge pipe	Discharge Point to Land as shown in Schedule 1: Humeceptor Location and Discharge Point

Ambient Groundwater Quality Monitoring

6. The Licence Holder must monitor the groundwater for concentrations of the parameters listed in Table 6:

(a) at the corresponding monitoring point location and reference;

(b) in the corresponding unit;

(c) at no less that the corresponding frequency;

(d) for the corresponding averaging period;

(e) using the corresponding sampling method; and

(f) the corresponding analytical method,

as set out in Table 6.

Table 6: Monitoring of ambient groundwater quality

Monitoring point location and reference	Parameter	Units	Averaging period	Frequency	Method	
					Sampling	Analysis
MW01B, MW03, MW04, MW06, MW07, MW08, MW11, MW14, MW16, MW17, MW25, MW44, MW55, MW56, MW58, MW61, MW63 and MW64	pH[1]	-	Spot sample	Annually	AS/NZS 5667.1	AS/NZS 5667.11
	Temperature[1]	^{o}C				
	Electrical conductivity[1]	µS/cm				
	Dissolved oxygen	mg/L				
	Redox potential	mV				
	Total Recoverable Hydrocarbons	mg/L				
	Polycyclic Aromatic Hydrocarbons	mg/L				
	Benzene, Toluene, Ethyl	mg/L				

Monitoring point location and reference	Parameter	Units	Averaging period	Frequency	Method	
					Sampling	Analysis
	Benzene and Xylene					
MW01B, MW03, MW04, MW08, MW11, MW53B, MW55 and MW63	Phenols	mg/L				
	Arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, strontium and zinc	mg/L				
MW01B, MW03, MW04, MW14, MW19, MW44, MW61, MW63, MW64 and MW71	Natural attenuation	mg/L				
MW03, MW06, MW08, MW19, MW58 and MW61	PFAS compounds[1]	µg/L	Spot sample	Annually	AS/NZS 5667.1	ISO 25101 or ASTM D7979

Note 1: Analysis of PFAS compounds to be performed in accordance with the *Interim Guideline on the Assessment and Management of Perflouroalkyl and Polyflouroalkyl Substances (PFAS)*" (Department of Environment Regulation, January 2017)

Emissions to Land Monitoring

7. The Licence Holder must monitor emissions listed in Table 7:

(a) from each discharge point;

(b) at the corresponding monitoring location;

(c) for the corresponding parameter;

(d) at the corresponding frequency;

(e) for the corresponding averaging period;

(f) in the corresponding unit; and

(g) using the corresponding method,

as set out in Table 7.

Table 7: Monitoring of point source emissions to land

Discharge point	Monitoring location	Parameter	Frequency	Averaging period	Unit	Method	
						Sampling	Analysis
Outlet of HJV Humeceptor 54 discharge pipe	Discharge Point to Land as shown in Schedule 1: Humeceptor Location and Discharge Point	TRH	Annually: at least once per year during periods of discharge	Spot sample	mg/L	AS/NZS 5667.1	AS/NZS 5667.10

Emissions to Surface Water Monitoring

8. The Licence Holder must monitor and record the total amount of waste outputs for the waste type listed in Table 8 and in the corresponding unit and for the corresponding time period set out in Table 8.

Table 8: Monitoring of WWTP outputs

Waste type	Monitoring point reference	Parameter	Units	Averaging period	Frequency
Sewage	Outflow meter as shown in Schedule 1: Map - Sewage Facility Location and Discharge Point.	Volumetric flow rate (cumulative)	m^3 / day	Monthly	Continuous

9. The Licence Holder must monitor and record emissions listed in Table 9:

(a) at the corresponding monitoring location;

(b) for the corresponding parameter;

(c) at the corresponding frequency;

(d) for the corresponding averaging period;

(e) in the corresponding unit; and

(f) using the corresponding method,

as set out in Table 9.

Table 9: Monitoring of point source emissions to surface water

Monitoring location	Parameter	Frequency	Averaging period	Unit	Method	
					Sampling	Analysis
Schedule 1: Map - Sewage Facility Location and Discharge Point.	pH[1]	Quarterly	Spot sample	pH Units	AS/NZS 5667.1	AS/NZS 5667.10
	Biochemical Oxygen Demand			mg/L		
	Total Suspended Solids			mg/L		
	Total Nitrogen			mg/L		
	Total phosphorus			mg/L		
	E. Coli			Organisms / 100mL		
	Anionic surfactants			mg/L		
	Oil and grease			mg/L		
	Free Chlorine[1]			mg/L		
	Copper, zinc, lead, mercury, nickel, cadmium			mg/L		

Note 1: In field non-NATA accredited analysis permitted

10. 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; and

(b) annual monitoring is undertaken such that there are at least 9 months in between the days on which samples are taken.

11. The Licence Holder shall submit all samples required by conditions 6, 7 and 9 of to a laboratory with current NATA accreditation for the analysis of parameters specified.

Record-keeping

12. 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 of this Licence;

(c) monitoring undertaken in accordance with Conditions 6, 7, 8, 9, 10 and 11 of this Licence; and

(d) complaints received under Condition 13 of this Licence.

In addition, the Books must:

(e) be legible;

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

(g) be retained for at least 3 years from the date the Books were made; and

(h) be available to be produced to an Inspector or the CEO.

13. 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

14. The Licence Holder must submit to the CEO, by no later than 30 September in each year, an Annual Audit Compliance Report indicating the extent to which the Licence Holder has complied with the Conditions in this Licence for the preceding Annual Period.

15. The Licence Holder must submit to the CEO, by no later than 30 September in each year, an Annual Environmental Report for the preceding Annual Period for the conditions listed in Table 10, and which provides information in accordance with the corresponding requirement set out in Table 10.

Table 10: Annual Environmental Report requirements

Condition(s)	Requirement
6	Ambient groundwater quality monitoring - Tabulated groundwater monitoring data results and an interpretation of monitoring data results including comparison of historical data to determine trends
7	Emissions to land monitoring – tabulated discharge water quality results from the outlet of HJV Humeceptor 54 to determine compliance with discharge limit set out in condition 5
8 and 9	Sewage Facility outflows (including volumes of sludge removed) and treated effluent quality monitoring results and an interpretation of monitoring data results including comparison against trigger levels and historical data to determine trends and compliance with discharge limit set out in condition 5

16. The Licence Holder must comply with a Department Request, within 14 days from the date of the Department Request or such other period as agreed to by the Inspector or the CEO.

Works

17. The Licence Holder must construct / install the infrastructure listed in Table 11, in accordance with;

(a) the corresponding design and construction / installation requirement; and

(b) at the corresponding infrastructure location;

as set out in Table 11.

Table 11: Design and construction / installation requirements

Infrastructure	Design and construction / installation requirement	Infrastructure location
2 x Cummins Generators	a) GEA containers to be sound insulated with interior sound attenuators at either end. b) Lighting to be limited to within enclosed container. c) GEA operation with container doors open to trigger GEA fire system alarm	Within the Premises Boundary as depicted in the Premises Map of Schedule 1.
Construction lighting	d) Construction activities to be scheduled during daylight hours to reduce impact of light emissions.	
Water cart	e) Unsealed roads, access tracks, work areas and soil stockpiles to be watered as required to reduce dust emissions	
Mobile equipment	f) Mobile equipment to be maintained to ensure equipment exhaust systems are operating as designed	

18. The Licence Holder must within 30 days of the infrastructure required by Condition 17 being constructed:

(a) undertake an audit of their compliance with the requirements of Condition 17; and

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

19. The Environmental Compliance Report required by Condition 0, must include as a minimum the following:

(a) certification by a Qualified Professional Engineer that the items of infrastructure or component(s) thereof, as specified in Condition 17 (Table 11), have been constructed in accordance with the relevant requirements specified in Condition 17;

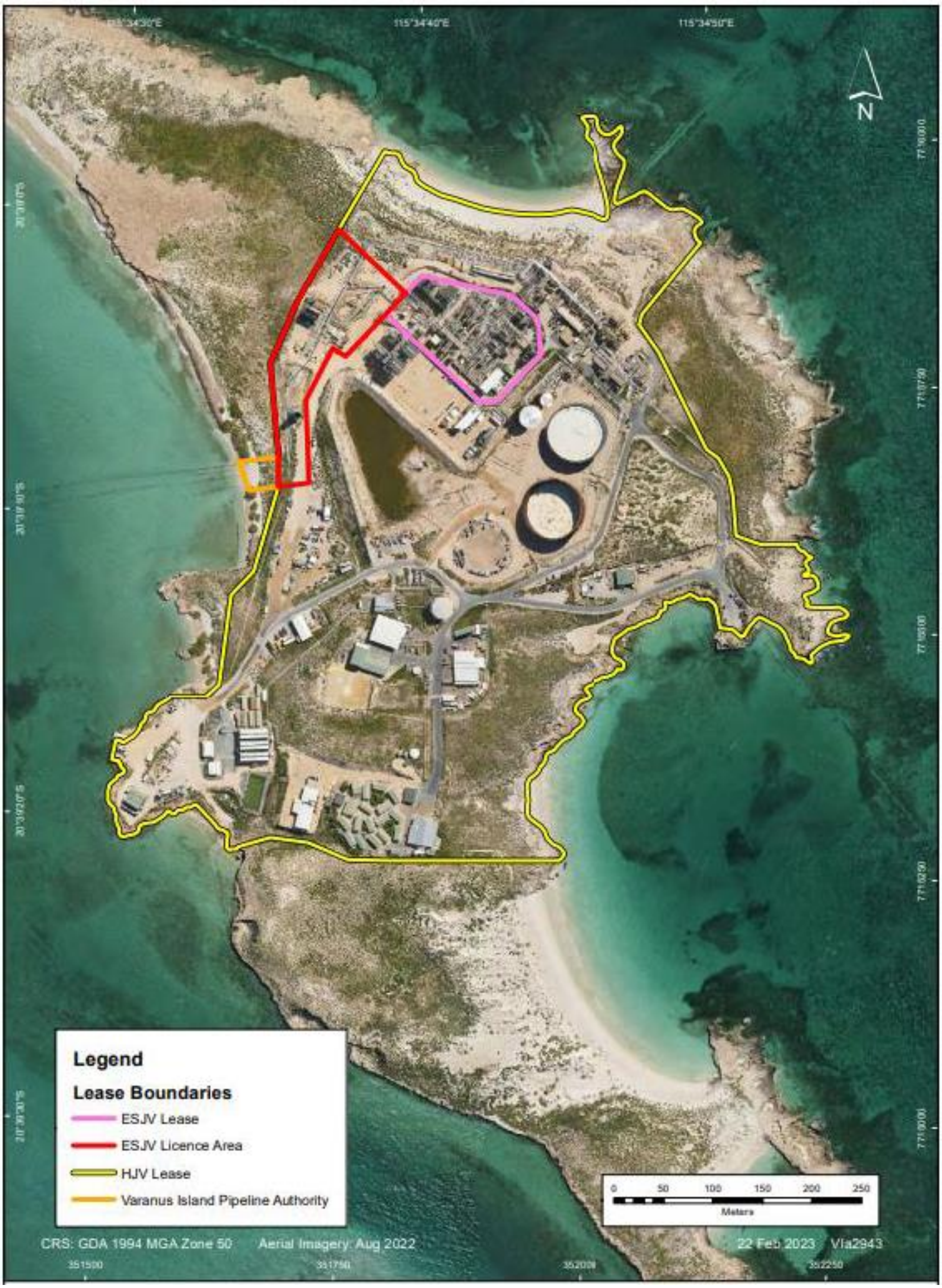
(b) as constructed plans and a detailed site plan for each item of infrastructure specified in Condition 17; and

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

Schedule 1: Maps

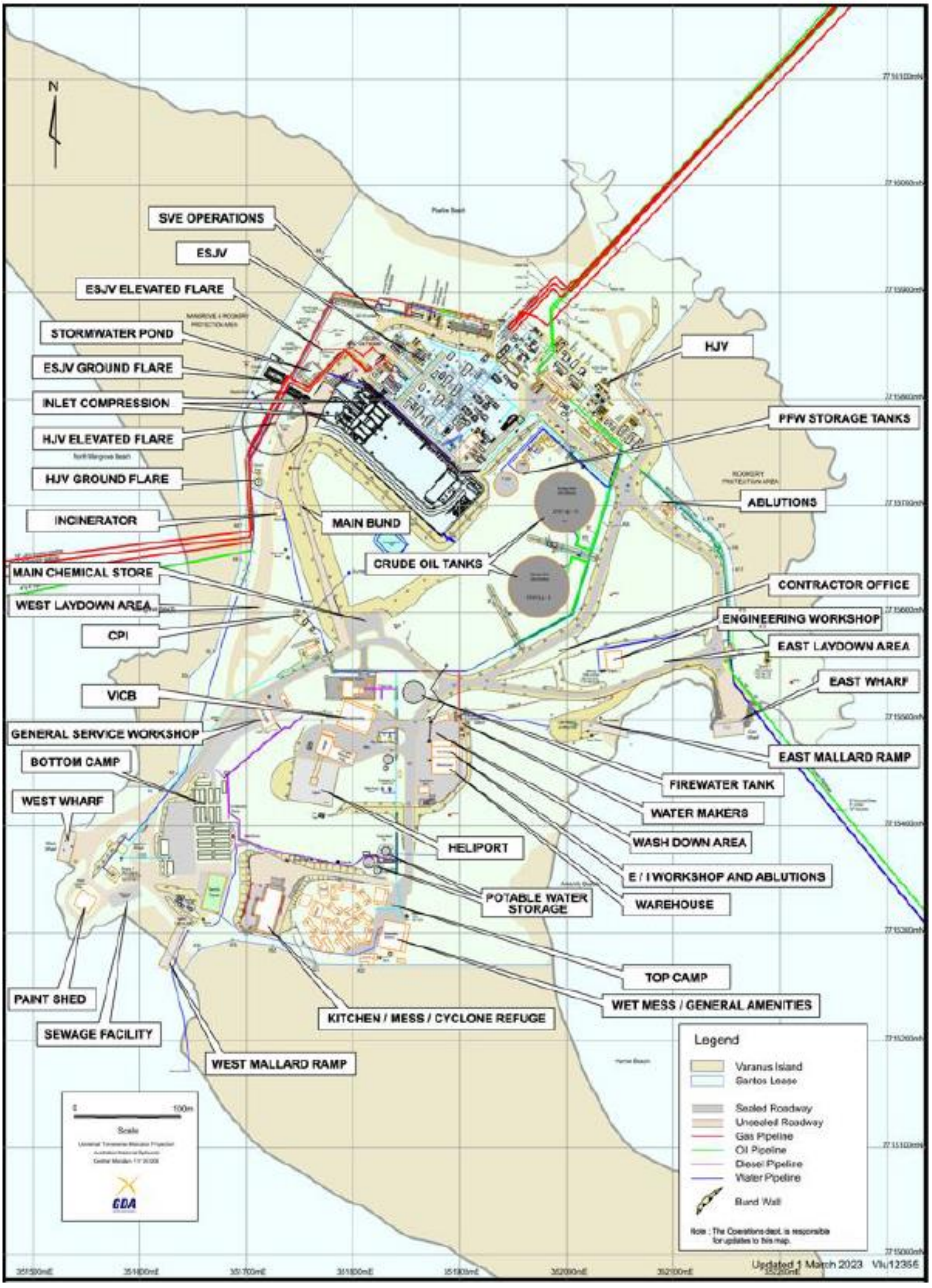
Premises map

The Premises is shown in the map below. The red line depicts the Premises boundary.



Premises layout

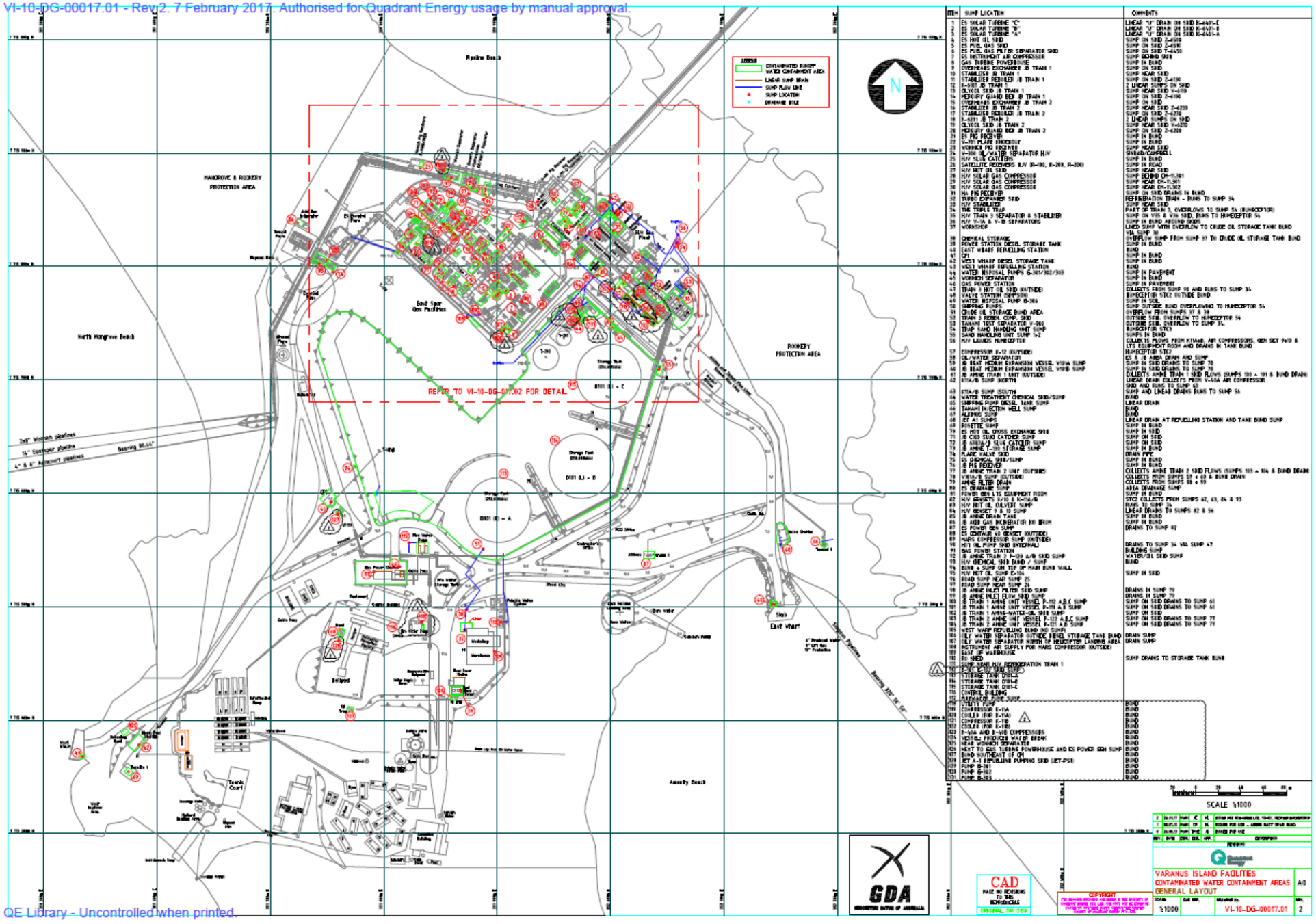
The Premises is layout shown in the map below.



Containment Areas

The locations and layout of the Premises bunds, sumps and drainage infrastructure is shown in the map below.

VI-10-DG-00017.01 - Rev 2. 7 February 2017. Authorised for Quadrant Energy usage by manual approval.



ITEM	SUMP LOCATION	COMMENTS
1	ES SOLAR TURBINE "C"	LINEAR "U" DRAIN ON SKID K-6491-C
2	ES SOLAR TURBINE "B"	LINEAR "U" DRAIN ON SKID K-6491-B
3	ES SOLAR TURBINE "A"	LINEAR "U" DRAIN ON SKID K-6491-A
4	ES HOT OIL SKID	SUMP ON SKID Z-4595
5	ES FUEL GAS SKID	SUMP ON SKID Z-4597
6	ES FUEL GAS FILTER SEPARATOR SKID	SUMP ON SKID T-4430
7	ES INSTRUMENT AIR COMPRESSOR	SUMP BEHIND SKID
8	GAS TURBINE POWERHOUSE	SUMP IN BUND
9	OVERHEADS EXCHANGER JB TRAIN 1	SUMP ON SKID
10	STABILIZER TRAIN 1	SUMP NEAR SKID
11	STABILIZER REBOILER JB TRAIN 1	SUMP ON SKID Z-4596
12	K-6301 JB TRAIN 1	2 LINEAR SUMPS ON SKID
13	GLYCOL SKID JB TRAIN 1	SUMP NEAR SKID V-4198
14	MERCURY GUARD BED JB TRAIN 1	SUMP ON SKID Z-4196
15	OVERHEADS EXCHANGER JB TRAIN 2	SUMP ON SKID
16	STABILIZER JB TRAIN 2	SUMP NEAR SKID Z-4239
17	STABILIZER REBOILER JB TRAIN 2	SUMP ON SKID Z-4236
18	K-6301 JB TRAIN 2	2 LINEAR SUMPS ON SKID
19	GLYCOL SKID JB TRAIN 2	SUMP NEAR SKID V-4220
20	MERCURY GUARD BED JB TRAIN 2	SUMP ON SKID Z-4200
21	ES PIG RECEIVER	SUMP IN BUND
22	V-701 FLARE KNOCKOUT	SUMP IN BUND
23	WORKBOAT PIG RECEIVER	SUMP NEAR SKID
24	V-350 OIL/WATER SEPARATOR H/V	SEWAGE/CAMPBELL
25	H/V SLUG CATCHER	SUMP IN BUND
26	SATELLITE RECEIVERS H/V 39-100, 39-200, 39-300	SUMP IN ROAD
27	H/V HOT OIL SKID	SUMP NEAR SKID
28	H/V SOLAR GAS COMPRESSOR	SUMP BEHIND CH-41,301
29	H/V SOLAR GAS COMPRESSOR	SUMP NEAR CH-41,301
30	H/V SOLAR GAS COMPRESSOR	SUMP NEAR CH-41,302
31	HA PIG RECEIVER	SUMP ON SKID DRAINS IN BUND
32	TURBO EXPANDER SKID	REFRIGERATION TRAIN - RUNS TO SUMP 34
33	H/V STABILIZER	SUMP NEAR SKID
34	THE TRIPLE TRAP	PART OF TRAIN 3 OVERFLOWS TO SUMP 54 (HUMICEPTOR)
35	H/V TRAIN 3 SEPARATOR & STABILIZER	SUMP ON V35 & V36 SKID, RUNS TO HUMICEPTOR 54
36	H/V V-3A & V-3B SEPARATORS	SUMP IN BUND AROUND SKIDS
37	WORKSHOP	LINED SUMP WITH OVERFLOW TO CRUDE OIL STORAGE TANK BUND
38	CHEMICAL STORAGE	H/A SUMP 38
39	POWER STATION DIESEL STORAGE TANK	OVERFLOW SUMP FROM SUMP 37 TO CRUDE OIL STORAGE TANK BUND
40	EAST WHARF REFUELLING STATION	SUMP IN BUND
41	CPI	BUND
42	WEST WHARF DIESEL STORAGE TANK	SUMP IN BUND
43	WEST WHARF REFUELLING STATION	SUMP IN BUND
44	WATER DISPOSAL PUMPS G-3611/302/303	BUND
45	WORMICH SEPARATOR	SUMP IN PAVEMENT
46	GAS POWER STATION	SUMP IN BUND
47	TRAIN 1 HOT OIL SKID (OUTSIDE)	SUMP IN PAVEMENT
48	VALVE STATION (SUMP 50)	COLLECTS FROM SUMP 96 AND RUNS TO SUMP 34
49	WATER DISPOSAL PUMP G-306	HUMICEPTOR STC2 OUTSIDE BUND
50	SHIPPING PUMPS	SUMP IN SOIL
51	CRUDE OIL STORAGE BUND AREA	SUMP OUTSIDE BUND OVERFLOWING TO HUMICEPTOR 54
52	TRAIN 2 RECEIV. COMP. SKID	OVERFLOW FROM SUMPS 97 & 98
53	TANANA TEST SEPARATOR V-060	OUTSIDE SUMP, OVERFLOW TO HUMICEPTOR 54
54	TRAP SAND HANDLING UNIT SUMP	OUTSIDE SUMP, OVERFLOW TO SUMP 34.
55	SAND HANDLING UNIT SUMP 1+2	HUMICEPTOR STC3
56	H/V LEAKLESS HUMICEPTOR	SUMPS IN BUND
57	COMPRESSOR K-12 (OUTSIDE)	COLLECTS FLOWS FROM K11A-B, AIR COMPRESSORS, GEN SET 9410 & LTS EQUIPMENT ROOM AND DRAINS IN TANK BUND
58	OIL/WATER SEPARATOR	HUMICEPTOR STC1
59	JB HEAT MEDIUM EXPANSION VESSEL V101A SUMP	C1 & JB AREA DRAIN AND SUMP
60	JB HEAT MEDIUM EXPANSION VESSEL V101B SUMP	SUMP IN SKID DRAINS TO SUMP 70
61	JB AMINE TRAIN 1 UNIT (OUTSIDE)	SUMP IN SKID DRAINS TO SUMP 70
62	K11A/B SUMP (NORTH)	COLLECTS AMINE TRAIN 1 SKID FLOWS (SUMPS 100 + 101 & BUND DRAIN)
63	K11A/B SUMP (SOUTH)	LINEAR DRAIN COLLECTS FROM V-10A AIR COMPRESSOR
64	WATER TREATMENT CHEMICAL SKID/SUMP	SKID AND RUNS TO SUMP 63
65	SHIPPING PUMP DIESEL TANK SUMP	SUMP AND LINEAR DRAINS RUNS TO SUMP 56
66	TANANA INJECTION WELL SUMP	BUND
67	ALUMINOX SUMP	BUND
68	JET A1 SUMPS	LINEAR DRAIN AT REFUELLING STATION AND TANK BUND SUMP
69	BURETTE SUMP	SUMP IN BUND
70	ES HOT OIL CROSS EXCHANGE SKID	SUMP IN SKID
71	JB CRUDE SLUG CATCHER SUMP	SUMP ON SKID
72	JB K6301/3 SLUG CATCHER SUMP	SUMP ON SKID
73	JB AMINE T-301 STORAGE SUMP	SUMP IN BUND
74	FLARE VALVE SKID	DRAIN PIPE
75	ES CHEMICAL SKID/SUMP	SUMP IN BUND
76	JB PIG RECEIVER	SUMP IN BUND
77	JB AMINE TRAIN 2 UNIT (OUTSIDE)	COLLECTS AMINE TRAIN 2 SKID FLOWS (SUMPS 103 + 104 & BUND DRAIN)
78	V104/B SUMP (OUTSIDE)	COLLECTS FROM SUMPS 58 + 60 & BUND DRAIN
79	AMINE FILTER DRAIN	COLLECTS FROM SUMPS 59 + 99
80	ES DRAINAGE SUMP	AREA DRAINAGE SUMP
81	POWER GEN LTS EQUIPMENT ROOM	SUMP IN BUND
82	H/V GENSETS V-10 & V-10/B	STC1 COLLECTS FROM SUMPS 62, 63, 64 & 93
83	H/V HOT OIL OILVENT SUMP	RUNS TO SUMP 34
84	H/V GENSET 7 & 10 SUMP	LINEAR DRAINS TO SUMPS 82 & 56
85	JB AMINE DRAIN TANK	SUMP IN BUND
86	JB AGU GAS INCINERATOR DO BRUM	SUMP IN BUND
87	ES POWER GEN SUMP	DRAINS TO SUMP 92
88	ES CONTAIN AIR GENSET (OUTSIDE)	
89	MARS COMPRESSOR SUMP (OUTSIDE)	
90	HOT OIL PUMP SKID (INTERNAL)	DRAINS TO SUMP 34 VIA SUMP 47
91	GAS POWER STATION	BUILDING SUMP
92	JB AMINE TRAIN 1 P-101 A/B SKID SUMP	WATER/OIL SKID SUMP
93	H/V CHEMICAL SKID BUND / SUMP	BUND
94	BUND + SUMP ON TOP OF MAIN BUND WALL	
95	H/V HOT OIL SUMP E-304	SUMP IN SKID
96	ROAD SUMP NEAR SUMP 35	
97	ROAD SUMP NEAR SUMP 36	
98	JB AMINE FILTER FEED SKID SUMP	DRAINS IN SUMP 79
99	JB AMINE FILTER FLOW SKID SUMP	DRAINS IN SUMP 79
100	JB TRAIN 1 AMINE UNIT VESSEL P-110 A,B,C SUMP	SUMP ON SKID DRAINS TO SUMP 61
101	JB TRAIN 1 AMINE UNIT VESSEL P-111 A,B SUMP	SUMP ON SKID DRAINS TO SUMP 61
102	JB TRAIN 1 AMINE-WATER-GLYCOL SKID SUMP	SUMP ON SKID
103	JB TRAIN 2 AMINE UNIT VESSEL P-110 A,B,C SUMP	SUMP ON SKID DRAINS TO SUMP 77
104	JB TRAIN 2 AMINE UNIT VESSEL P-111 A,B SUMP	SUMP ON SKID DRAINS TO SUMP 77
105	WEST WHARF REFUELLING BUND (NO SUMP)	
106	OILY WATER SEPARATOR OUTSIDE DIESEL STORAGE TANK BUND	DRAIN SUMP
107	OILY WATER SEPARATOR NORTH OF HELICOPTER LANDING AREA	DRAIN SUMP
108	INSTRUMENT AIR SUPPLY FOR MARS COMPRESSOR (OUTSIDE)	
109	EAST OF WAREHOUSE	
110	PA SHED	SUMP DRAINS TO STORAGE TANK BUND
111	SUMP NEAR H/V REFRIGERATION TRAIN 1	
112	CRUDE OIL SKID SUMP	
113	STORAGE TANK D31-1	
114	STORAGE TANK D31-2	
115	STORAGE TANK D31-3	
116	CONTROL BUILDING	
117	WAREHOUSE FIRE SUMP	
118	TOILET PUMP	BUND
119	COMPRESSOR K-11A	BUND
120	COOLER FOR K-11A/B	BUND
121	COMPRESSOR K-11B	BUND
122	COOLER FOR K-11B	BUND
123	K-11A AND K-11B COMPRESSORS	BUND
124	VESSEL: PRODUCED WATER BREAK	BUND
125	NEAR WORMICH SEPARATOR	BUND
126	NEXT TO GAS TURBINE POWERHOUSE AND ES POWER GEN SUMP	BUND
127	BUND SOUTHEAST OF DH	BUND
128	JET A-1 REFUELLING PUMPING SKID (JET-PS1)	BUND
129	PUMP G-161	BUND
130	PUMP G-162	BUND
131	PUMP G-163	BUND

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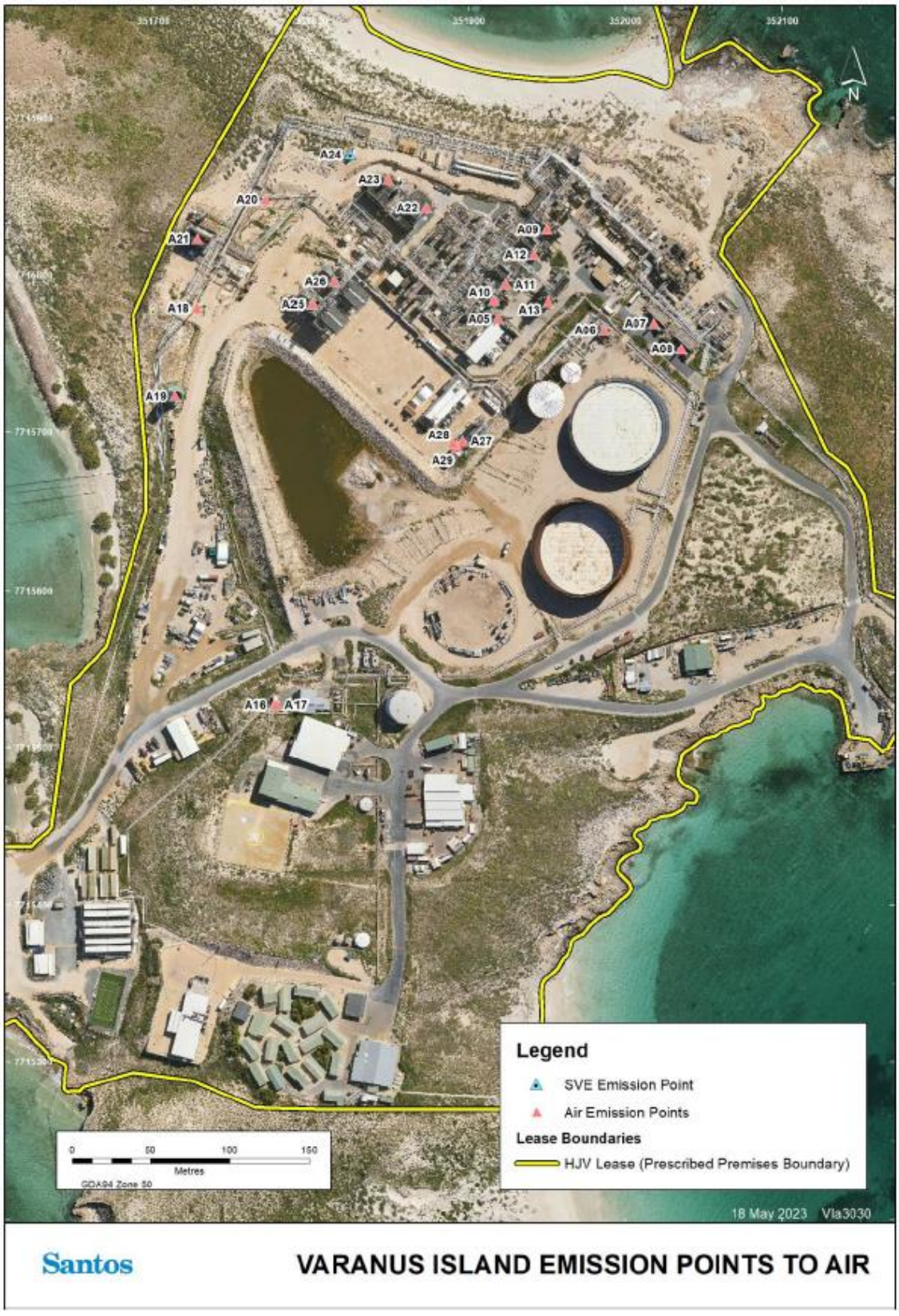
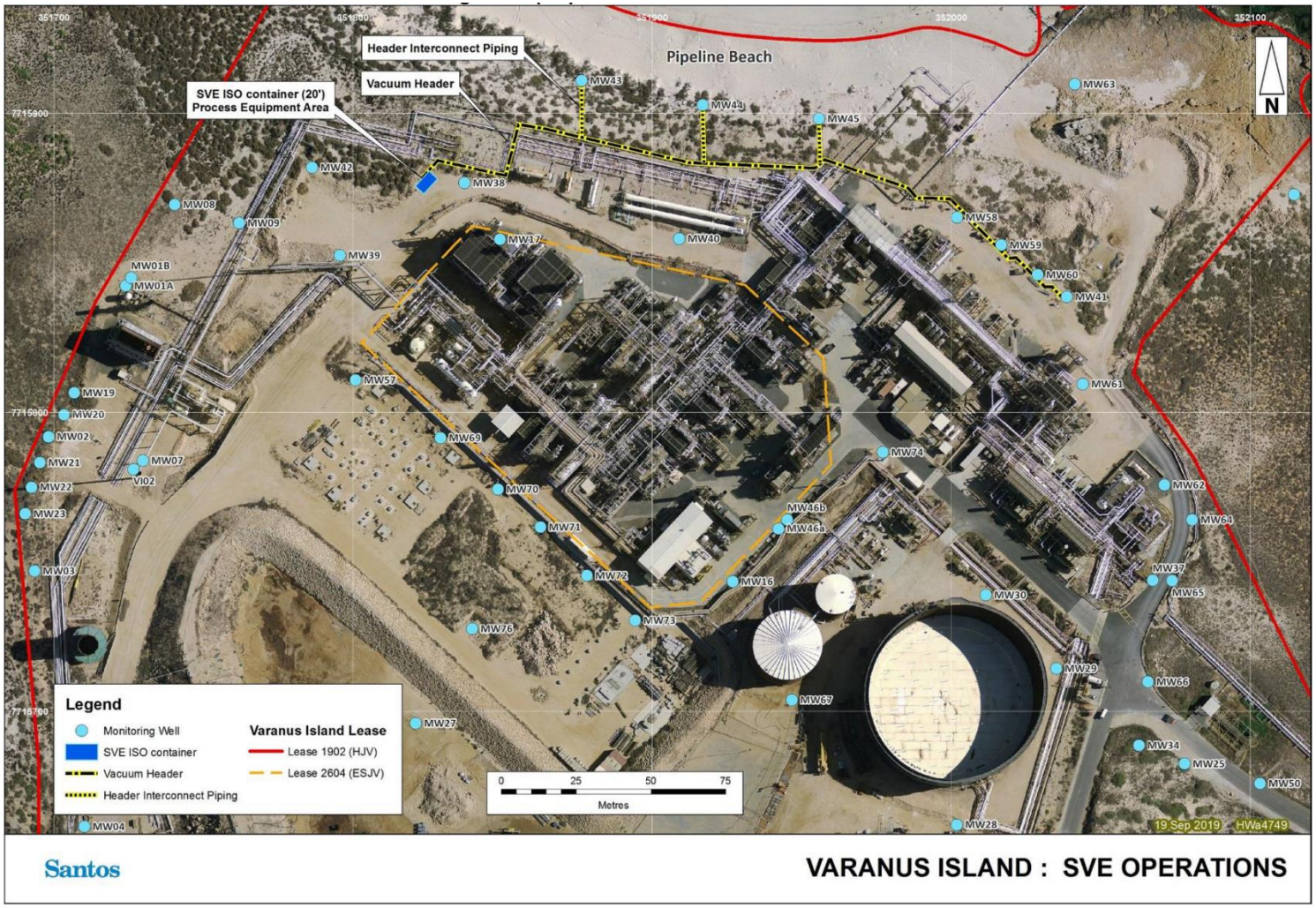
Emissions to air

The locations of the Premises discharge points to air are shown in the map below.

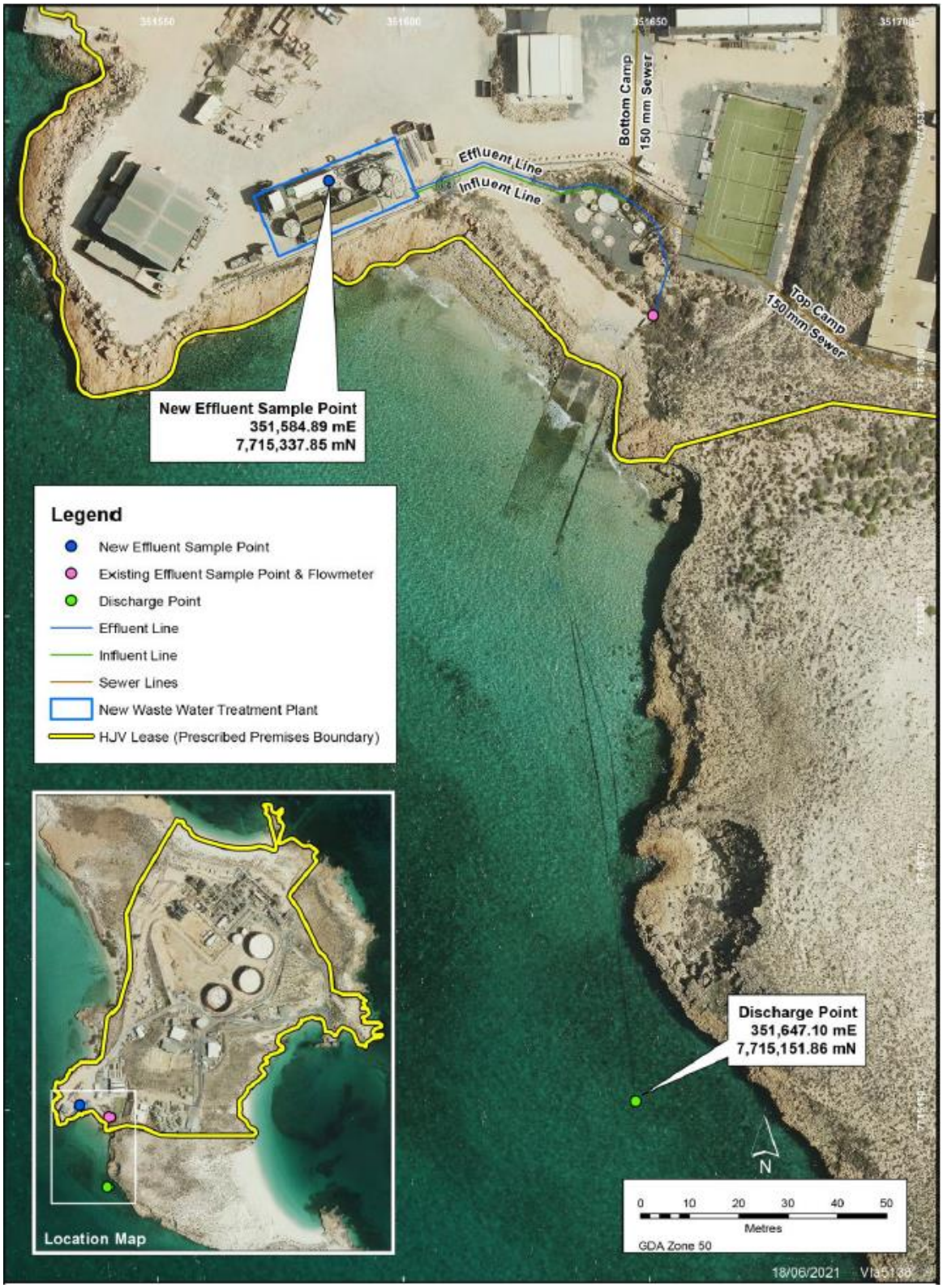


SVE Operations



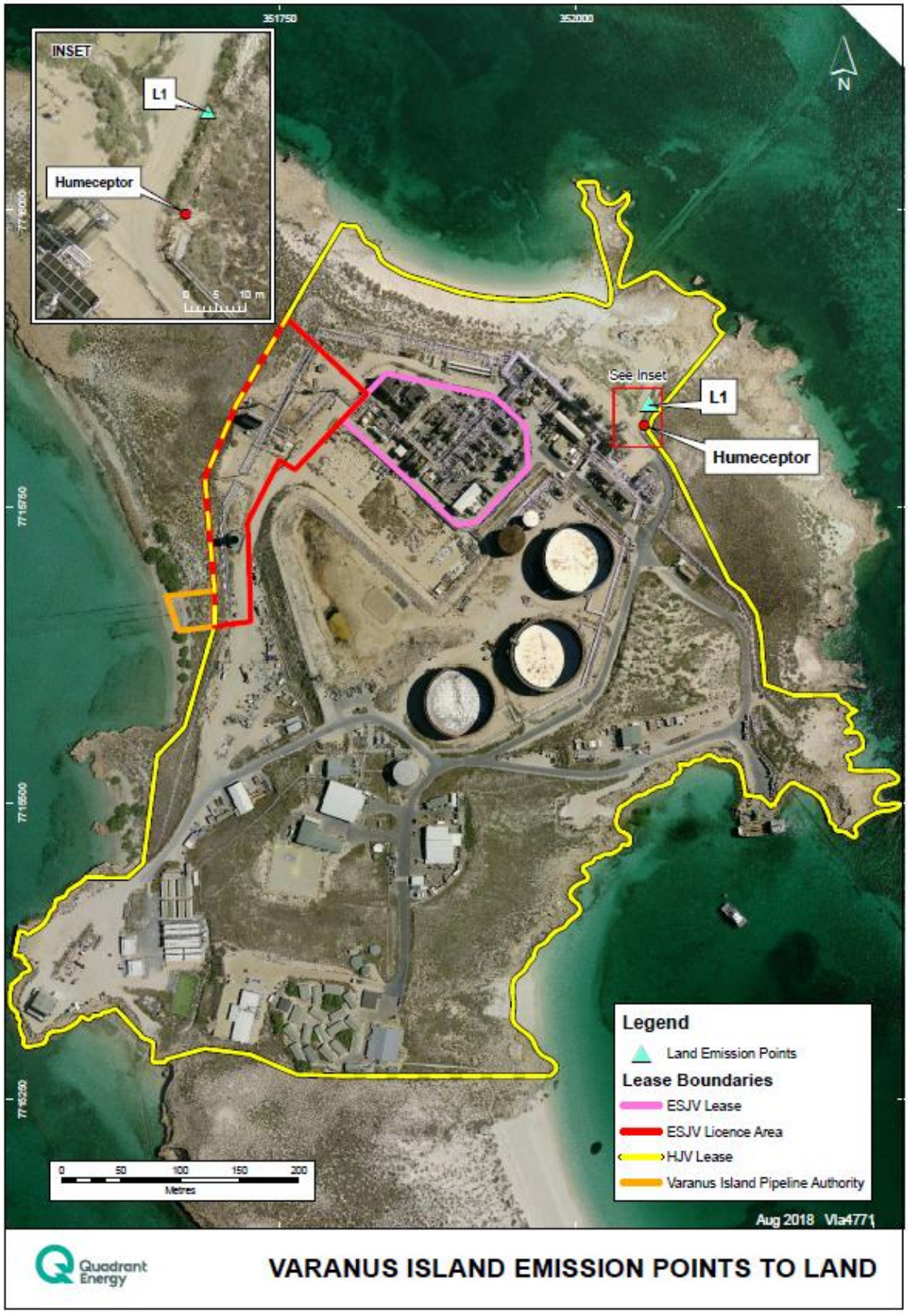
Sewage Facility Location and Discharge Point

The location of the Premises Sewage Facility, sample point and discharge location is shown in the map below.



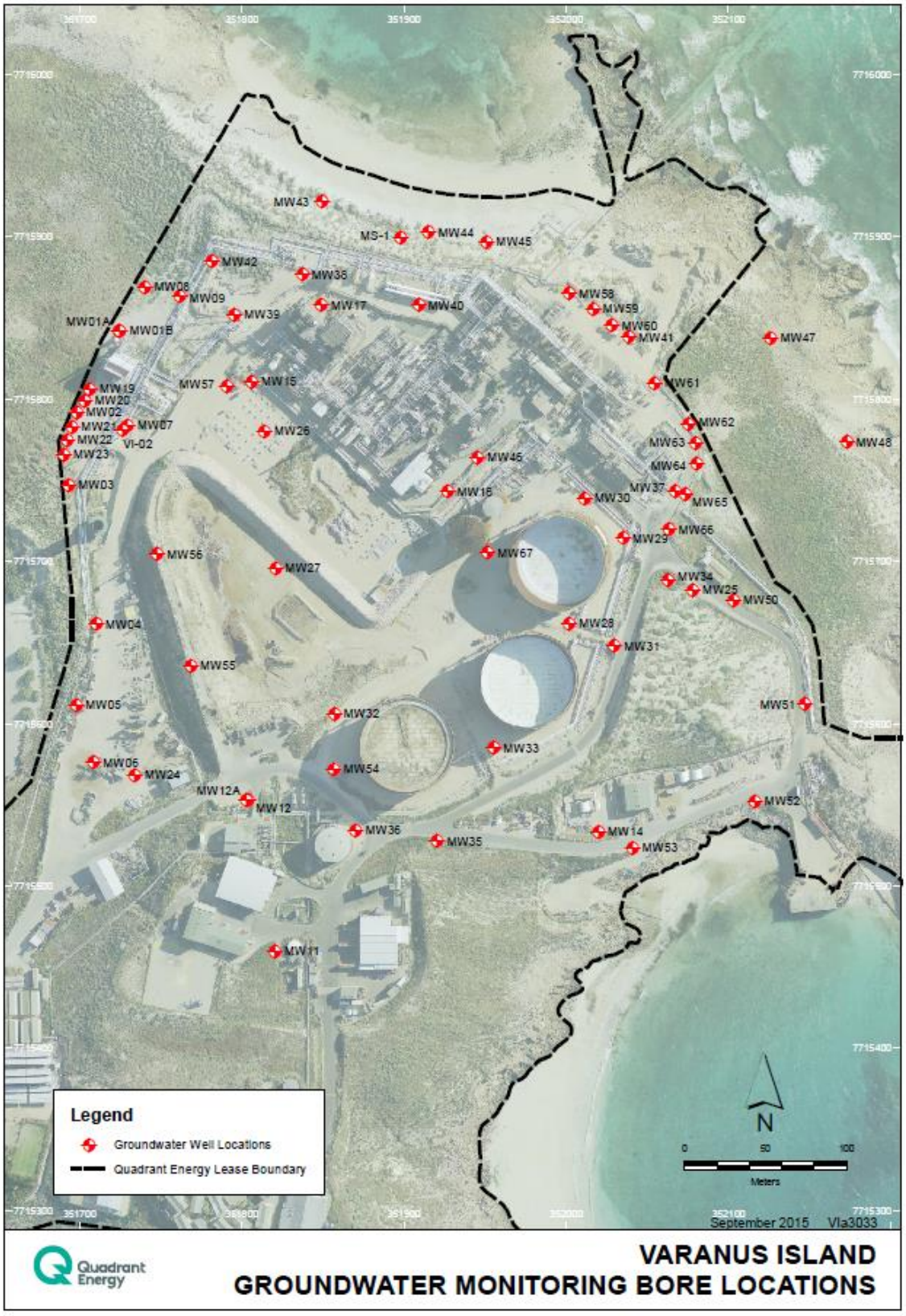
Humeceptor 54 Location and Discharge Point

The location of the Premises Humeceptor 54, sample point and discharge location is shown in the map below.



Monitoring locations

The locations of the Premises groundwater monitoring bores are shown in the map below.



Schedule 2: Primary Activities

At the time of assessment, Emissions and Discharges from the following Primary Activities were considered in the determination of the risk and related Conditions for the Premises.

The Primary Activities are listed in Table 11:

Table 12: Primary Activities

Primary Activity	Premises production or design 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.	≤7,050,000 tonnes per annual period
Category 34 - Oil or gas refining: premises on which crude oil, condensate or gas is refined or processed	
Category 85 - Sewage facility: premises — (d) on which sewage is treated (excluding septic tanks); or (e) from which treated sewage is discharged onto land or into waters.	≤72 cubic metres per day

Infrastructure and equipment

The Primary Activity infrastructure and equipment situated on the Premises is listed in Table 13.

Table 13: Infrastructure and equipment

Infrastructure		Reference
Prescribed Activity Category 10 and 34		
Oil and gas is pumped from surrounding offshore platforms to Varanus Island to produce oil, gas and condensate via separation plants. LNG and condensate is exported via ship while gas is piped to the mainland for distribution to the Dampier to Bunbury Natural Gas Pipeline.		
1	HJV gas separation plant	Schedule 1: Premises layout
2	HJV oil separation plant	
3	ESJV gas separation plant	
4	HJV Ground Flare	
5	HJV Elevated Flare	
6	ESJV Ground Flare	
7	ESJV Elevated Flare	
8	Crude oil and condensate Bulk Storage tanks	

Infrastructure		Reference
9	PFW Storage tanks	Schedule 1: Premises layout
10	Subsea pipeline and marine terminal for the export of hydrocarbon liquids	
11	Two sales gas pipelines to the mainland	
12	Inlet gas compression infrastructure	
Prescribed Activity Category 85		
The activated sludge bioreactor (ASBR) sewage facility to treat domestic sewage from the accommodation camp, mess facilities and office ablutions prior to discharging treated effluent to the marine environment		
1	ASBR Sewage system comprising influent screen, 2 x balance tanks (combined capacity of 100 m3), bioreactor (for aerobic and anoxic treatment) Tanks A and B, clarification tank (including sludge skimmer), treated effluent tank (capacity 9 kL), sludge tank (capacity 22 kL), effluent chlorination system, and treated effluent distribution system (including flowmeter and effluent sample point)	Schedule 1: Premises layout
2	Sub-sea pipeline and discharge point to marine waters	Schedule 1: Premises Map “Sewage Facility Location and Discharge Point”
Directly related activities		
Contaminated wastewater from various waste streams, including PFW and contaminated stormwater is directed to the following infrastructure for treatment and disposal		
1	Network of bunds and sumps on the Premises. Captured water is then directed through oil-water separation systems (eg. Corrugated Plate Interceptor (CPI) / Humeceptors) prior to disposal via deep disposal wells to oil reservoirs or discharge to land via pipeline.	Schedule 1: Premises Map “Containment Areas”
Other activities		
1	Support infrastructure including power generation units, chemical storage, workshops, laydown areas, incinerator, wharfs, wash down bays, concrete batching plant, offices, accommodation village, potable water plant and heliport.	Schedule 1: Premises layout
2	Contaminated Sites SVE remediation activities: The application of a vacuum to induce air flow in SVE wells (MW41, MW43, MW44, MW45, MW58, MW59 MW60) and other groundwater monitoring wells, to strip volatile contaminants from soil and groundwater and venting them to atmosphere. Recovered liquid is processed through the Corrugated Plate Interceptor prior to disposal via deep disposal wells to depleted oil reservoirs.	Schedule 1: SVE Operations