Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6875/2023/1
Works approval holder	Perdaman Chemicals and Fertilisers Pty Ltd
ACN	121 263 741
Registered business address	Alluvion Building Level 17, 58 Mounts Bay Road PERTH WA 6000
DWER file number	DER2023/000727
Duration	25/06/2024 to 14/03/2026
Date of issue	25/06/2024
Premises details	Project Ceres Part of Lot 700 on Plan 411759, Part of Lot 701 on Plan 411760, Part of Lot 706 on Plan 411760, Part of Lot 3013 on Plan 42282, Part of Lot 3014 on Plan 42282, Part of Lot 566 on Plan 28209, Part of Lot 567 on Plan 28209, Part of Lot 568 on Plan 28209, Part of Lot 571 on Plan 28209, Part of Lot 573 on Plan 28209, Part of Lot 581 on Plan 72793, Part of Lot 598 on Plan 77655, Part of Lot 599 on Plan 77665, Part of Lot 640 on Plan 29300, Part of Lot 644 on Plan 28840, Part of Lot 3000 on Plan 77070 and Part of Lot 3003 on Plan 4121422 BURRUP WA 6714 As shown in the premises maps in Schedule 1 and defined by the coordinates in Schedule 2.

Prescribed premises category description (Schedule 1, *Environmental Protection Regulations 1987*)	**Assessed production capacity**
Category 31: Chemical manufacturing	Urea: 6,200 tonnes per day (2.046 million tonnes of granulated product per annual period) Ammonia: 3,500 tonnes per day
Category 52: Electric power generation	101MWe
Category 58: Bulk material loading or unloading	2,200 tonnes per hour (2,046 million tonnes per annual period)
Category 85: Sewage facility	40m^3/day

This works approval is granted to the works approval holder, subject to the attached conditions, on 25 June 2024 by:

Michael Greenslade

Digitally signed by Michael Greenslade
Date: 2024.06.25 13:30:00 +08'00'

MANAGER, PROCESS INDUSTRIES

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

Works approval history

Date	Reference number	Summary of changes
25/06/2024	W6875/2023/1	Works approval granted.

Interpretation

In this works approval:

(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 works approval:

(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 works approval requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this works approval.

Works approval conditions

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

Construction phase

Infrastructure and equipment

1. The works approval holder must:

(a) construct the infrastructure and equipment;

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

(c) at the corresponding infrastructure location; and

as set out in Table 1.

Table 1: Design and construction requirements

	Infrastructure	Design and construction requirements	Infrastructure location
1.	Ammonia plant	(a) Comprised of one ammonia train designed and constructed with autothermal reforming (ATR) technology; (b) The ammonia train shall include a gas Fired Heater; (c) Designed such that emissions from the Fired Heater shall be combined and discharged to atmosphere via a single Common Stack that is at least 75 m high[1]; (d) The Fired Heater shall be fitted with low NOx burner designed to achieve a NOx concentration at the stack discharge point of 134mg/Nm^3 (referenced at 3% O_2, STP dry); (e) The Common Stack must be fitted with monitoring ports that meet the requirements of AS 4323.1; (f) A continuous emissions monitoring system shall be installed on the Common Stack that: (i) monitors NO_2, SO_2 and CO; and (ii) adheres to the installation, calibration and operational quality controls of the CEMS Code; and (g) The ammonia train shall be designed and constructed such that there are no emissions of ammonia vented directly to atmosphere; (h) Designed and fitted with high integrity sealing on syngas and refrigeration compressors with a nitrogen barrier to minimise fugitive ammonia loss; (i) Designed and fitted with cryogenic wash units to minimise inerts and purging to fuel gas; (j) The ammonia plant must include containment and bunding infrastructure (including storage tanks and containers) for the storage and containment of process condensates and other environmental hazardous materials to prevent discharge to the environment; (k) Designed and constructed to ensure that potentially contaminated stormwater is contained and directed to the	Figure 3: General layout of Site C; Figure 7: Plan showing key infrastructure – Site C; Figure 8: Plan showing the location of infrastructure components, exhaust stacks, vents and flares – Site C.

	Infrastructure	Design and construction requirements	Infrastructure location
		Saline Water Pond; (l) Designed and constructed to ensure that potentially contaminated oily water is contained and directed to the oily water treatment unit (CPI); and (a) Installed with a dedicated Methyldiethanolamine (MDEA) containment and storage system to capture, segregate and contain potentially MDEA contaminated water within the ammonia plant for offsite removal.	
2.	Urea synthesis plant (2 units)	(a) Designed and constructed: (i) using Snamprogetti^{TM} melt technology or equivalent; and (ii) such that emissions of ammonia from medium pressure vents are treated via a scrubbing system prior to discharge via the Granulator Stack(s); (b) Each urea synthesis unit shall include a Blowdown Vent stack ("Cold Vent Unit 2600" and "Cold Vent Unit 2700") that is at least 75 m high[1]; (c) The urea synthesis plants must include containment and bunding infrastructure (including storage tanks and containers) for the storage and containment of process condensates and other environmental hazardous materials to prevent discharge to the environment; (d) Designed and constructed to ensure that potentially contaminated stormwater is contained and directed to the Saline Water Pond; and (e) Designed and constructed to ensure that potentially contaminated oily water is contained and directed to the oily water treatment unit (CPI).	Figure 3: General layout of Site C; Figure 7: Plan showing key infrastructure – Site C; Figure 8: Plan showing the location of infrastructure components, exhaust stacks, vents and flares – Site C.
3.	Urea granulator (2 units)	(a) Each granulator plant shall be designed and constructed to ensure that dust emissions are directed to a scrubbing system capable of achieving the following design criteria: (i) NH_3 less than 20mg/Nm^3 (dry); and (ii) PM_{10} less than 25mg/Nm^3 (dry); (b) Each of the scrubbing systems installed on the granulator plants shall discharge emissions to atmosphere via separate stacks that are at least 75 m high[1]; (c) Each stack must be fitted with monitoring ports that meet the requirements of AS 4323.1; (d) Each stack shall be fitted with a continuous emissions monitoring system that: (i) monitors NH_3 and particulates; and (ii) adheres to the installation, calibration and operational quality controls of the CEMS Code; (e) De-dusting systems shall be installed on each granulator at the following locations with exhaust air treated via the scrubbing system installed on the granulator stacks:	Figure 3: General layout of Site C; Figure 7: Plan showing key infrastructure – Site C; Figure 8: Plan showing the location of infrastructure components, exhaust stacks, vents and flares – Site C. Figure 10: Schematic of dust control infrastructure on conveyor, shiploader

<table>
<tr><th></th><th>Infrastructure</th><th>Design and construction requirements</th><th>Infrastructure location</th></tr>
<tr><td></td><td></td><td>(i) top of the bucket elevator; and
(ii) the point that discharges from the vibrating screens onto the first conveyor belt;
(f) The urea granulator units must include containment and bunding infrastructure (including storage tanks and containers) for the storage and containment of process materials and other environmental hazardous materials to prevent discharge to the environment;
(g) Designed and constructed to ensure that potentially contaminated stormwater is contained and directed to the Saline Water Pond; and
(h) Designed and constructed to ensure that potentially contaminated oily water is contained and directed to the oily water treatment unit (CPI).</td><td>and granulator</td></tr>
<tr><td>4.</td><td>Flares</td><td>(a) The flaring system shall include the following flares constructed to be no less than the height specified below:
<table>
<tr><th>Flare description</th><th>Height (m)[1]</th></tr>
<tr><td>Syngas Flare (3420-PK-102)</td><td>92</td></tr>
<tr><td>Ammonia Flare (3410-PK-101)</td><td>92</td></tr>
<tr><td>Ammonia Storage Flare (3430-PK-103)</td><td>30</td></tr>
<tr><td>Primary Urea Flare – Train 1 (2610-PK-112)</td><td>66</td></tr>
<tr><td>Secondary Urea Flare – Train 1 (2610-PK-113)</td><td>66</td></tr>
<tr><td>Primary Urea Flare - Train 2 (2710-PK-112)</td><td>66</td></tr>
<tr><td>Secondary Urea Flare – Train 2 (2710-PK-113)</td><td>66</td></tr>
</table>
(b) All flares shall be equipped with the following:
(i) Instrumentation for continuously measuring the quantity of gas (kg) emitted via the flare per hour; and
(ii) Pilot systems to ensure effective combustion of flared gas.</td><td>Figure 3: General layout of Site C;
Figure 8: Plan showing the location of infrastructure components, exhaust stacks, vents and flares – Site C.</td></tr>
<tr><td>5.</td><td>Power generation</td><td>(a) Power shall be supplied by two combined cycle gas turbines with a total power generating capacity of 100.3MWe and equipped with Heat Recovery Steam Generators (HRSG);
(b) The combined cycle gas turbines shall be constructed so that emissions from each gas turbine:
(i) discharge via the HRSG stack during normal operations; or
(ii) during emergency of upset conditions when the HRSG is offline, discharge via the Bypass Stack;
(c) Dry Low NOx burners shall be installed to treat emissions prior to discharge via the HRSG and Bypass stacks;
(d) Selective Catalytic Reduction Technology shall be installed to achieve a NOx concentration at the HRSG Stack discharge point of 15 ppmv (32.3mg/Nm^3) [referenced at 15% O_2, STP dry];
(e) The HRSG stack and Bypass stack shall be at least 30.5 m</td><td>Figure 3: General layout of Site C;
Figure 7: Plan showing key infrastructure – Site C;
Figure 8: Plan showing the location of infrastructure components, exhaust stacks, vents and flares – Site C.</td></tr>
</table>

	Infrastructure	Design and construction requirements	Infrastructure location
		high[1]; (f) Each stack must be fitted with monitoring ports that meet the requirements of AS 4323.1; (g) Each stack shall be fitted with a continuous emissions monitoring system that: (i) monitors NO_2, SO_2 and CO; and (ii) adheres to the installation, calibration and operational quality controls of the CEMS Code; (h) HRSG stacks to be fitted with silencers to achieve a sound power level of 104 dB(A); (i) The power generation units must include containment and bunding infrastructure (including storage tanks and containers) for the storage and containment of process materials and other environmental hazardous materials to prevent discharge to the environment; (j) Designed and constructed to ensure that potentially contaminated stormwater is contained and directed to the Saline Water Pond; and (k) Designed and constructed to ensure that potentially contaminated oily water is contained and directed to the oily water treatment unit (CPI).	
6.	Storage sheds, overland conveyor and ship loading facilities	(a) 2 x storage sheds designed and constructed to store maximum quantities of urea granules as follows: (i) Site C Storage Shed: 75,000 tonnes; and (ii) Port Storage Shed: 65,000 tonnes; (b) The urea storage sheds shall be constructed at least 6m high; (c) Materials handling systems comprising of: (i) a shiploader with a loading capacity of 2,200 tonnes per hours; and (ii) conveyor network for the transfer of urea granules from Site C to the ship loader; and (d) Dust control infrastructure and equipment shall be constructed in accordance with condition 2.	Figure 5: General layout of port infrastructure. Figure 10: Schematic of dust control infrastructure on conveyor, shiploader and granulator

	Infrastructure	Design and construction requirements	Infrastructure location
7.	Sewage treatment plant	The WWTP must be designed and installed to meet the following specifications: (a) Comprising the following equipment: (i) Balance pump, mixer and balance tank (~50 kL); (ii) Activated sludge bioreactor consisting of aeration section, clarifier section and buffer outlet section; (iii) A sludge storage tank (~10.5kL); (iv) A treated effluent holding tanks (~8 kL); (v) Decant pump and sludge pump; and (vi) Disinfection agent dosing skid. (b) Be able to receive and treat a combined sewage inflow of up to 40 m^3/day; (c) Able to treat sewage to the following output standards: (i) 5-day biochemical oxygen demand (BOD5) <20 mg/L; (ii) pH 5.5 – 8.5; (iii) Total suspended solids (TSS) <30 mg/L; (iv) Chemical oxygen demand <125mg/L; (v) Total nitrogen (TN) <40 mg/L; (vi) *E. coli* <13,000 MPN/100mL; and (vii) Residual free chlorine 0.1mg/L; (d) Flow meters are required to be installed on the inlet and outlet side of the plant to record both inflows and outflows from the sewage treatment plant; (e) Sampling point is required to be installed on the outlet of the treated water tank to enable collection of a water quality sample for laboratory analysis. (f) The sampling point above shall be installed with instrumentation for continuously monitoring pH and Residual free chlorine (mg/l); (g) Incorporate an alarm system of warning beacons, as well as audible and visual pump fault alarms, which will activate in the event of: (i) system faults; (ii) high tank levels; and (iii) tank overflows; (h) Installed with activated carbon filter canisters to the intermittent ventilation discharge points of the sewage balance tank and sludge holding tank; (i) All above ground infrastructure to be located on compacted ground within an earthen bund to contain spills; (j) All sewage conveyance, storage and treatment infrastructure must be designed and constructed to ensure that stormwater does not enter the sewage treatment system and sewage and treated wastewater storage infrastructure; and (k) All sewage storage and treatment tanks, transfer pipelines and conveyance infrastructure must be impermeable and free of leaks and defects.	Figure 4: General layout of Site F; Figure 9: Plan showing key infrastructure – Site F;

	Infrastructure	Design and construction requirements	Infrastructure location
8.	Chemicals / condensate storage	(a) All containers or tanks containing condensate, process by-products and/or reagents and chemicals used in the urea manufacturing process (that are solid or liquid at standard temperature and pressure) shall be situated within: (i) impervious bunded concrete compounds capable of containing 110% of the volume of the largest vessel / container in the bund and spills occurring from the height of the tanks; or (ii) other containment/technical solutions that achieve similar risk mitigation to part (i), taking into consideration applicable standards and requirements under the *Dangerous Goods Safety Act*, and the premises Safety Case/HAZOP; (b) Bunded areas shall drain towards a sump and include a sump pump for recovery of spilled liquids and stormwater; and (c) Sumps shall contain high level alarms to prevent overflowing.	Figure 3: General layout of Site C; Figure 4: General layout of Site F;
9.	Stormwater management	(a) The premises must be constructed such that: (i) process plant areas that are likely to collect and contain potential contamination from process activities are sealed and bunded to contain first flush stormwater prior to it being directed to the Saline Water Pond (as depicted in Figure 15 and Figure 16); (ii) process plant areas that are likely to collect and contain potentially hydrocarbon contaminated stormwater are sealed and bunded to contain first flush stormwater prior to it being directed to a corrugated plate interceptor (CPI) for treatment (as depicted in Figure 15 and Figure 16); (iii) stormwater collected from process plant areas, beyond the first flush volume is diverted to the Clean Stormwater Ponds; and (iv) uncontaminated surface water runoff is diverted away from operational areas (as depicted in Figure 17 and Figure 18); (v) port side storage shed and associated infrastructure to include stormwater management infrastructure that collects and retains stormwater and runoff from port side infrastructure and prevents discharges of high turbidity water to the environment; (b) The CPI shall be designed to achieve a Total Recoverable Hydrocarbon content of 5ppm within treated wastewater; (c) The CPI shall be constructed so that treated wastewater is discharged into a Treated Water Pit prior to transfer to the Saline Water Pond; (d) The Treated Water Pit shall be constructed of materials that achieve a permeability of 1 x 10^{-9} m/s and fitted with high level and high-high level alarms; (e) The Treated Water Pit to be constructed to ensure that 500	Figure 15: Stormwater plan for Site C; Figure 16: Stormwater plan for Site F; Figure 17; and Figure 18.

	Infrastructure	Design and construction requirements	Infrastructure location
		mm freeboard is maintained above the high-high level alarm; (f) Two Clean Stormwater Ponds shall be constructed with the following storage capacity designed to contain a 1% AEP, 24-hour rainfall event: (i) 8,000 m^3 (Site C); and (ii) 1,250 m^3 (Site F); (g) The Site C and F Clean Stormwater Ponds shall be lined with a HDPE geomembrane liner of at least 1.5 mm thickness to achieve a hydraulic conductivity of <1 x 10^{-9} m/s; and (h) All HDPE liners must comply with the requirements specified in condition 6.	
10.	Wastewater management	(a) The Final Observation Basin must be constructed as an impervious concrete basin and fitted with high level and high-high level alarms; and (b) The Final Observation Basin to be constructed to ensure that 500 mm freeboard is maintained above the high-high level alarm.	Figure 3: General layout of Site C; Figure 4: General layout of Site F.
11.	MUBRL tie in	(a) Fitted with a continuous monitoring analyser; (b) Fitted with sampling point to allow water samples to be obtained; and (c) Designed and constructed to allow wastewater discharges to be diverted in the event that wastewater exceeds allowable discharge criteria.	Figure 3: General layout of Site C; Figure 4: General layout of Site F.

Note 1: Heigh of stack is measured from ground level.

2. The works approval holder must ensure that dust control infrastructure and equipment is constructed and installed in accordance with:

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

(b) at the corresponding infrastructure location,

as set out in Table 2.

Table 2: Construction and installation requirements for dust control infrastructure.

Infrastructure and equipment	Requirements	Location
Stockpiles, stackers and reclaimers	Situated within a fully enclosed urea storage shed	Storage sheds located at Site C and the port identified in Figure 5, 10 and 12.
Urea storage sheds	(a) Fully enclosed and fitted with air lock doors at each entrance; and (b) Designed and constructed to prevent the ingress of rainwater and stormwater and prevent dust emissions.	

Conveyors	Designed and constructed with a dual-cleaning system to minimise product carry back comprising of: (i) primary and secondary cleaner at the driver head; and (ii) a V-plough return belt cleaner on at the tail pulley:	Conveyors: 4110-CV-001; 4130-CV-004; 4110-CV-002; 4130-CV-005; 4110-CV-003; 4130-CV-006; 4110-CV-011; 4130-CV-007; 4110-CV-012; 4150-CV-001; 4130-CV-001; 4150-CV-002; 4130-CV-002; 4150-CV-003; 4130-CV-003; 4150-CV-004; and Boom conveyor as depicted in Figure 10, 11 and 13.
	Conveyors shall be fully enclosed within a conveyor gallery or the product storage sheds.	Conveyors: 4110-CV-001; 4130-CV-004; 4110-CV-002; 4130-CV-005; 4110-CV-003; 4130-CV-006; 4110-CV-011; 4130-CV-007; 4110-CV-012; 4150-CV-001; 4130-CV-001; 4150-CV-002; 4130-CV-002; 4150-CV-004; 4130-CV-003; and Boom conveyor as depicted in Figure 10, 11 and 13.
	Conveyor shall be situated within a conveyor gallery that is enclosed except for on one side (the sea-side). The sea-side shall be fitted with a flexible skirting (gallery sealing) that allows movement of the ship loader conveyor while being able to contain dust within the conveyor gallery.	Conveyor 4150-CV-003 as depicted in Figure 10, 11 and 13.
Transfer points	Transfer chutes must be enclosed with curtains fitted at entry and exit points to minimise dust escape.	All transfer chutes.
	Transfer chutes must be situated within a fully enclosed transfer tower.	Transfer chutes transferring product between the following conveyors: 4110-CV-012 to 4110-CV-001 4110-CV-011 to 4110-CV-001 4110-CV-001 to 4110-CV-002 4110-CV-001 to 4130-CV-002 4110-CV-002 to 4110-CV-003 4130-CV-001 to 4130-CV-002 4130-CV-002 to 4130-CV-003

		4130-CV-003 to 4130-CV-004 4130-CV-004 to 4130-CV-005 4130-CV-005 to 4130-CV-006 4130-CV-006 to 4130-CV-007 4150-CV-001 to 4150-CV-002 4150-CV-002 to 4150-CV-003 as depicted in Figure 10, 11 and 13.
	(a) Transfer towers equipped with dust extraction system to collect and treat dust from transfer of material; and (b) Dust extraction system to include bag filters fitted with high efficiency filtration media (99% filtration efficiency) and automatic air pulse cleaning.	Transfer towers: 4110-TT-001 4130-TT-003 4110-TT-002 4130-TT-004 4110-TT-003 4130-TT-005 4110-TT-004 4130-TT-006 4130-TT-001 4150-TT-001 4130-TT-002 as depicted in Figure 10.
	(a) Must be fitted with a dust extraction system; and (b) Dust extraction system to include bag filters fitted with high efficiency filtration media (99% filtration efficiency) and automatic air pulse cleaning.	Extraction system 4150-BF-002 which collects and treats dust from the: • ship loader boom conveyor loading point; and • boom conveyor head chute discharge point, as depicted in Figure 11.
Ship loader	Ship loader designed and constructed to enable slewing and luffing to minimise product drop height.	Ship loader (4150-SL-001) as depicted in Figure 11 and 12.
	Telescopic cascading chute fitted with a shroud to minimise the drop height of product into the ship.	Telescopic Chute (4150-TL-001) as depicted in Figure 10, 11 and 13.

Compliance reporting

3. The works approval holder must within 30 calendar days of the infrastructure or equipment required by condition 1 being constructed and/or installed:

(a) undertake an audit of their compliance with the requirements of conditions 1 and 2; and

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

4. The Environmental Compliance Report required by condition 3, must include as a minimum the following:

(a) certification by a suitably qualified engineer that the items of infrastructure or component(s) thereof, as specified in conditions 1 and 2, have been

constructed in accordance with the relevant requirements specified in conditions 1 and 2;

(b) as constructed plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in conditions 1 and 2; and

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

Critical containment infrastructure

5. The works approval holder must:

(a) construct the critical containment infrastructure;

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

(c) at the corresponding infrastructure location

set out in Table 3.

Table 3: Water storage pond critical containment infrastructure

Criteria	Design and construction requirements	Infrastructure location
Saline Water Pond and Saline Water Evaporation Pond	(a) Each pond must be constructed with the minimum storage capacity specified below (excluding freeboard): (i) Saline Water Pond: 9,000 m^3 (ii) Saline Evaporation Pond: 5,000 m^3; (b) The Saline Evaporation Pond must be constructed to include a minimum freeboard of 500 mm; (c) The Saline Water Pond must be constructed to include a working freeboard of 350 mm; (d) Each pond must be lined with a HDPE geomembrane liner of at least 1.5 mm thickness to achieve a hydraulic conductivity of $<1 \times 10^{-9}$ m/s; (e) All HDPE liners must comply with the requirements specified in condition 6; (f) The Saline Water Pond shall be fitted with sensors capable of raising a High and High-High water level alarm; (g) Standby/transfer pumps are installed to automatically pump water from the Saline Water Pond to the Evaporation Pond during rainfall events (set at 350mm from the top of the pond); and (h) The Saline Water Pond must be fitted with apparatus to deter fauna from entering the pond.	Figure 14: Saline Wate Pond and Saline Evaporation Pond

6. The works approval holder must ensure all HDPE liners comply with the properties listed in Table 4, and are constructed in accordance with the requirements specified in that table.

Table 4: HDPE liner installation requirements

	Item	Property/construction requirement
1.	Liner properties	HDPE liners must have the following properties: • Specific gravity of 0.94 or more (Test Method – ASTM D1505); • Melt index of 0.05 g to 0.30 g in 10 minutes (Test Method – ASTM D1238, condition E 190/2.16); • Carbon black content of 2-3% (Test Method – ASTM D1603); • Minimum tensile strength at yield of 16,000 kN/m^2; • Minimum tensile strength at break of 550 kN/m^2 (Test Method – ASTM D638, type IV 2); and • Minimum elongation at yield of 10%, and at break 300% (ASTM D638).
2.	Liner fabrication	• Liners must be fabricated to form the shape of the pond embankments; • All seams and joins made on the premises must be continuous; and • Panels of the liner must be overlapped by a minimum of 100 mm, prior to heat welding or mechanical joining.
3.	Welding materials	Membrane welding materials must be supplied by the liner manufacturer, and be identical with the liner membrane.
4.	Seams and joins	All seams and joins must be constructed and tested as watertight over their full length using a vacuum box test and air pressure test.
5.	Shear resistance	Shear resistance must be tested in accordance with ASTM D5321.

7. The works approval holder must within 30 calendar days of each stage of the Critical Containment Infrastructure identified by condition 5 being constructed:

(a) undertake an audit of their compliance with the requirements of conditions 5 and 6; and

(b) prepare and submit to the CEO a Critical Containment Infrastructure Report on that compliance.

8. The Critical Containment Infrastructure Report required by condition 7(b) must include as a minimum the following:

(a) a Quality Control / Quality Assurance Certificate from an independent experienced geotechnical specialist which demonstrates that each item of critical containment infrastructure or component thereof, as specified in condition 5, has been built and installed in accordance with the requirements specified in conditions 5 and 6;

(b) as constructed plans and a detailed site plan showing the location and dimensions for each item of critical containment infrastructure or component thereof, as specified in condition 5;

(c) photographic evidence of the installation of the infrastructure;

(d) records of any quality assurance/control testing undertaken to demonstrate the requirements of conditions 5 and 6, including the basis of any method specification adopted;

(e) a summary of HDPE geomembrane liner defects and repairs recorded during installation of the liner in accordance with conditions 5 and 6;

(f) details of any modifications to the original design together with the reasons why the modifications were necessary; and

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

Noise monitoring

9. During construction works, the works approval holder must conduct monitoring of noise emissions at the locations specified in Table 5 in accordance with the corresponding requirements set out in that table.

Table 5: Noise monitoring requirements during construction works

Monitoring point reference[1]	Parameter	Sound measuring equipment	Unit	Frequency	Duration
Monitor 1; Monitor 2 – West Industrial Area; Monitor 3 – Yara boundary; and Monitor 4 – Heritage site 9439.	$L_{A10, 30min}$	Non-directional system	dB(A)	At commencement of construction works, ongoing	Continuous
	$L_{A90, 30min}$				
	$L_{Aeq\ (20Hz\ to\ 800Hz),\ 30\ min}$				

Note 1: As shown in Figure 19 of Schedule 3 and specified by the coordinates in Schedule 4.

10. The works approval holder must ensure that all noise measurements are carried out in accordance with Part 3 of the Environmental Protection (Noise) Regulations 1997 (as applicable).

11. The works approval holder must ensure that all monitoring equipment used on the premises to comply with condition 9 is calibrated in accordance with the manufacturer's specifications.

Noise modelling

12. The works approval holder must, by the 30 September 2025, retain the services of a person qualified and experienced in the area of environmental noise assessment and who by their qualifications and experience is eligible to hold membership of the Australian Acoustical Society or the Australian Association of Acoustical Consultants to:

(a) carry out noise modelling to predict the nature and extent of noise emissions from the premises;

(b) assess compliance of the predicted noise emissions against the relevant assigned levels specified in the Environmental Protection (Noise) Regulations 1997; and

(c) compile and submit to the works approval holder by 31 October 2025 a report in accordance with condition 13.

13. A report prepared pursuant to condition 12(c) is to include:

(a) a description of the methods used for modelling noise emissions from the premises;

(b) details and the results of the modelling undertaken pursuant to condition 12(a);

(c) details and results of the assessment of the noise emissions from the premises, against the relevant assigned levels in the Environmental Protection (Noise) Regulations 1997 undertaken pursuant to condition 12(b); and

(d) an assessment of noise levels against the most recent previous noise assessment.

14. The works approval holder must submit to the CEO the report prepared pursuant to condition 12(c) by 14 November 2025.

15. Where an assessment pursuant to condition 12(b) indicates that noise emissions do not comply with the relevant assigned levels in the Environmental Protection (Noise) Regulations 1997, the works approval holder must,

(a) within 60 days of receiving an assessment report pursuant to condition 12(c), prepare and submit to the CEO a plan to ensure the undertaking of the prescribed activities will not lead to any contravention of the Environmental Protection (Noise) Regulations 1997; and

(b) provide to the CEO a copy of the plan prepared pursuant to condition 15(a) within 30 days of its preparation.

Dust management

16. The works approval holder must proactively manage dust generating activities on the premises by:

(a) conducting daily visual inspections of the premises while undertaking construction activities to monitor for dust control equipment availability, implementation and dust mitigation effectiveness;

(b) completing air quality inspection reports on days that pose a higher risk of dust emissions (including but not limited days where high wind conditions and high temperatures are experienced) that record the management measures that have been implemented to control dust, including watercart load sheets to record the total volume of water used for dust suppression; and

(c) utilising weather forecasting tools to inform daily work activities and dust suppression activities to target and mitigate dust emissions from premises activities (including Site C, Site F and Port areas, as depicted in Figures 3, 4 and 5, Schedule 1).

Dust monitoring

17. The works approval holder must ensure that all monitoring equipment used on the premises to comply with the conditions of this Works Approval is calibrated, operated and maintained in accordance with the manufacturer's specifications.

18. The works approval holder must, where the requirements for calibration cannot be practicably met, or discrepancy exists in the interpretation of the requirements, bring these issues to the attention of the CEO accompanied with a report comprising details of any modifications to the methods.

19. The works approval holder must undertake monitoring in Table 6 in accordance with the specifications in that table.

Table 6: Monitoring of ambient air quality

Monitoring point reference	Parameter	Unit	Averaging period	Frequency	Method	Management trigger criteria
Fixed dust monitors						
Monitor 1[1]; Monitor 2[1] – West Industrial Area; Monitor 3[1] – Yara boundary; Monitor 4[1] – Heritage site 9439; and Monitor 5[2] – Port	Particulates as $PM_{2.5}$	µg/m^3	10 minutes	Continuous for the duration of undertaking construction activities	As per manufacturer's specifications for 'ETS TP-2510 Dust Concentrator Sensor'[3].	N/A
	Particulates as PM_{10}					80 µg/m^3

Note 1: As shown in Figure 19 of Schedule 3 and specified by the coordinates in Schedule 4.

Note 2: As shown in Figure 20 of Schedule 3

Note 3: Near real time monitor with response time of <90 seconds.

20. Immediately upon being notified of management trigger criteria specified in Table 6 being exceeded, the works approval holder must:

(a) conduct a trigger investigation within 20 minutes of being alerted to the management trigger criteria exceedance to identify any potential cause of the management trigger criteria exceedance; and

(b) upon identification of a potential on-site source/s during the trigger investigation conducted in accordance with part (a) of this condition, immediately control visible dust emissions by:

i. applying additional dust suppression/water loading to any dust generating areas within the premises; and/or

ii. increasing moisture conditioning of material being used for construction activities; and/or

iii. increasing watercart operations on roads and any dust generating areas within the premises; and/or

iv. limiting works on site to only essential activities to minimise dust generation; and/or

v. decreasing the operating speed of plant and equipment on site; and/or

vi. ceasing works; and/or

vii. implementing other dust mitigation measures to reduce dust from premises activities.

21. In the event that the management trigger criteria for a parameter in Table 6 is exceeded, the works approval holder must:

(a) continue to actively monitor dust levels for the duration of the event (until dust levels return below the trigger criteria);

(b) continue to apply additional dust mitigation measures for the duration of the event;

(c) maintain records (including photographic or video footage) of the work area(s) at the time of the exceedance;

(d) maintain records of the management trigger event including:

i. date(s), time and duration of the event;

ii. site specific weather conditions; and

iii. management actions that were implemented to reduce dust emissions.

22. The works approval holder must undertake monitoring in Table 7 in accordance with the specifications in that table.

Table 7: Monitoring of ambient meteorological conditions

Monitoring point reference	Parameters	Unit	Averaging period	Frequency	Method
Weather Station (WC1)[1]	Wind speed	m/s	10 minute	Continuous	As per manufacturer's specifications for 'AirMetER-DX' monitor.
	Wind direction	degrees			
	Temperature	°C	1 hour		

Note 1: As shown in Figure 21 of Schedule 3.

23. The works approval hold shall, within 60 days of completing all construction activities, provided to the CEO a report summarising any trigger exceedance events recorded in accordance with condition 21 including management action(s) taken.

Records and reporting (general)

24. The works approval holder must record the following information in relation to complaints received by the works approval 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 works approval holder to investigate or respond to any complaint.

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

(a) the works conducted in accordance with conditions 1, 2 and 5;

(b) monitoring undertaken in accordance with conditions 9, 19 and 22; and

(c) complaints received under condition 24.

26. The books specified under condition 25 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 works approval holder for the duration of the works approval; and

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

Definitions

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

Table 8: Definitions

Term	Definition
annual period	a 12 month period commencing from 1 July until 30 June of the immediately following year.
AEP	Annual Exceedance Probability
AS 4323.1	means Australian Standard *AS 4323.1 Stationary source emissions: selection of sampling positions*.
ASTM D638	means the ASTM international standard *Standard test method for tensile properties of plastics (Designation: ASTM D638-14*), as amended from time to time.
ASTM D1238	means the ASTM international standard *Standard test method for melt flow rates of thermoplastics by extrusion plastometer (Designation: ASTM D1238-20)*, as amended from time to time.
ASTM D1505	means the ASTM international standard *Standard test method for density of plastics by the density – gradient technique (Designation: ASTM D1505-18)*, as amended from time to time.
ASTM D1603	means the ASTM international standard *Standard test method for carbon black content in olefin plastics (Designation: ASTM D1603-20)*, as amended from time to time.
ASTM D5321/D5321M-20	means the ASTM international standard *Standard test method for determining the shear strength of soil-geosynthetic and geosynthetic-geosynthetic interfaces by direct shear (Designation: ASTM D5321/D5321M-20*), as amended from time to time.
ATR	means autothermal reforming technology
books	has the same meaning given to that term under 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
CEMS Code	means the *Continuous Emission Monitoring System (CEMS) Code for Stationary Source Air Emissions*, March 2016, Department of Environment Regulation, Perth WA, as amended from time to time
CO	carbon monoxide

Term	Definition
continuous	means to operate with an availability greater than 90 per cent on a calendar monthly basis.
CPI	corrugated plate interceptor
critical containment infrastructure	means the items of infrastructure listed in condition 5.
Critical Containment Infrastructure Report	means a report to satisfy the CEO that works of critical containment infrastructure have been constructed in accordance with the works approval.
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.
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.
Environmental Compliance Report	means a report to satisfy the CEO that the conditioned infrastructure and/or equipment has been constructed and/or installed in accordance with the works approval.
EP Act	*Environmental Protection Act 1986* (WA).
EP Regulations	*Environmental Protection Regulations 1987* (WA).
Experienced geotechnical specialist/engineer	means a person who: (a) holds a tertiary academic qualification in geotechnical engineering; (b) has a minimum of five years' experience working in the area / field of design engineering and certification of dams and/or evaporation ponds; and (c) is employed by an independent third party external to the works approval holder's business.
First flush stormwater	Means the first flush treatment systems that are designed and constructed to collect and treat a volume equivalent to a 1 in 3-month event ARI
fully enclosed	means covered on all sides to: (a) prevent the release of dust emissions to the environment without treatment via a dust extraction system; (b) prevent the release of urea product to the environment; and (c) prevent the ingress and/or egress of water.
HAZOP	means Hazard Operability Study, undertaken as part of the safety case assessment for major hazard facilities.
HDPE	High density polyethylene

Term	Definition
HRSG	Heat Recovery Steam Generators
$L_{AS\ 90,30min}$ and $L_{AS\ 10,30min}$	means the A-weighted level exceeded for more than 90% and 10%, respectively, of the time over 30 minutes with the sound level meter set to 'Slow' time weighting
$L_{Aeq(20Hz-800Hz),30min}$	means the A-weighted equivalent noise level between 20 Hz and 800 Hz (one-third octave bands inclusive), averaged over 30 minutes
m	metre
mm	millimetre
NH_3	ammonia
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
non-directional system	means single microphone sound measuring equipment compliant with Schedule 4 of the Noise Regulations and capable of recording overall and one-third octave band statistical noise levels based on the A-weighted sound pressure level with 'Slow' time weighting (LAS)
O_2	oxygen gas
PM	particulate matter
$PM_{2.5}$	means particulate matter with an aerodynamic diameter of less or equal to 2.5 µm.
PM_{10}	means particulate matter with an aerodynamic diameter of less or equal to 10 µm and includes $PM_{2.5}$.
ppmv	parts per million by volume
premises	the premises to which this works approval applies, as specified at the front of this licence and as shown on the premises map (Figure 1) in Schedule 1 to this works approval.
prescribed premises	has the same meaning given to that term under the EP Act.
SO_2	sulfur dioxide
STP	means standard temperature and pressure (0°Celsius and 101.325 kilopascals respectively), dry

Term	Definition
suitable qualified engineer	means a person who: (a) holds a tertiary academic qualification in civil engineering; (b) has a minimum of five years' experience working in the area / field of design engineering; and (c) is employed by an independent third party external to the Works Approval Holder's business.
µg/m^3	microgram per cubic metre
waste	has the same meaning given to that term under the EP Act.
works approval	refers to this document, which evidences the grant of the works approval by the CEO under section 54 of the EP Act, subject to the conditions.
works approval holder	refers to the occupier of the premises being the person to whom this works approval has been granted, as specified at the front of this works approval.
WWTP	Wastewater Treatment Plant

END OF CONDITIONS

Schedule 1: Maps

Premises map

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

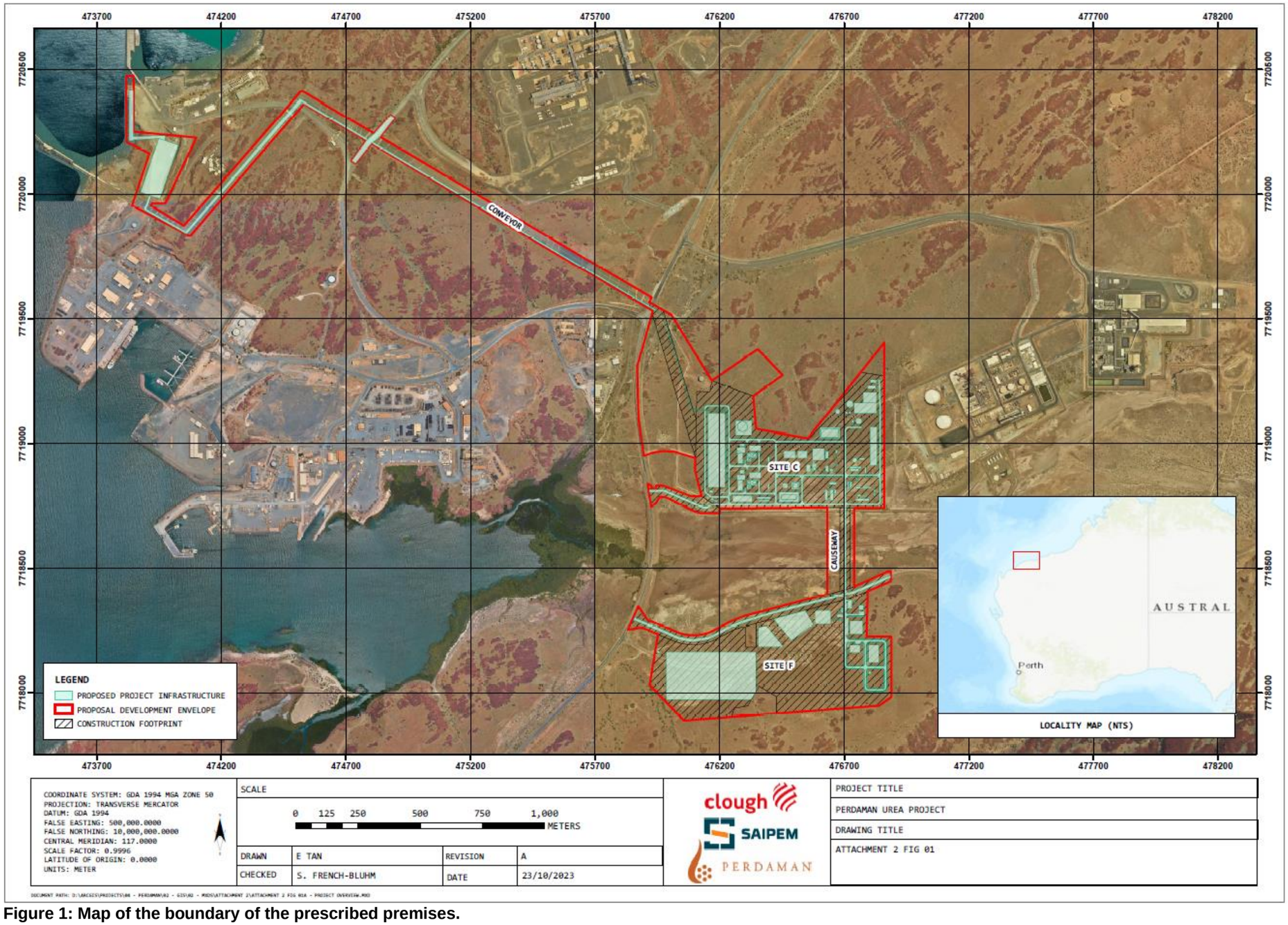


Figure 1: Map of the boundary of the prescribed premises.

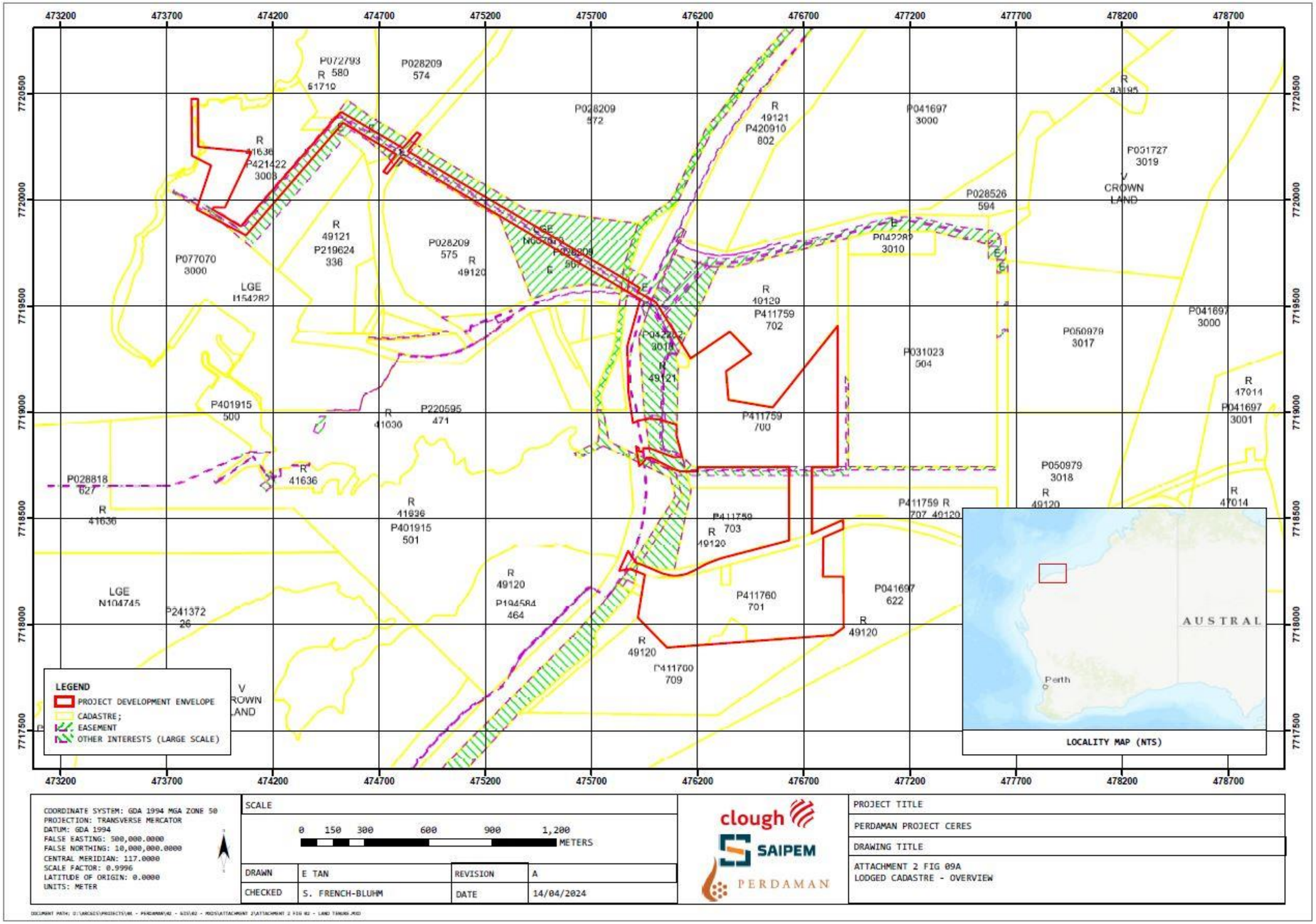


Figure 2: Map of the boundary of the prescribed premises, including premises tenure description

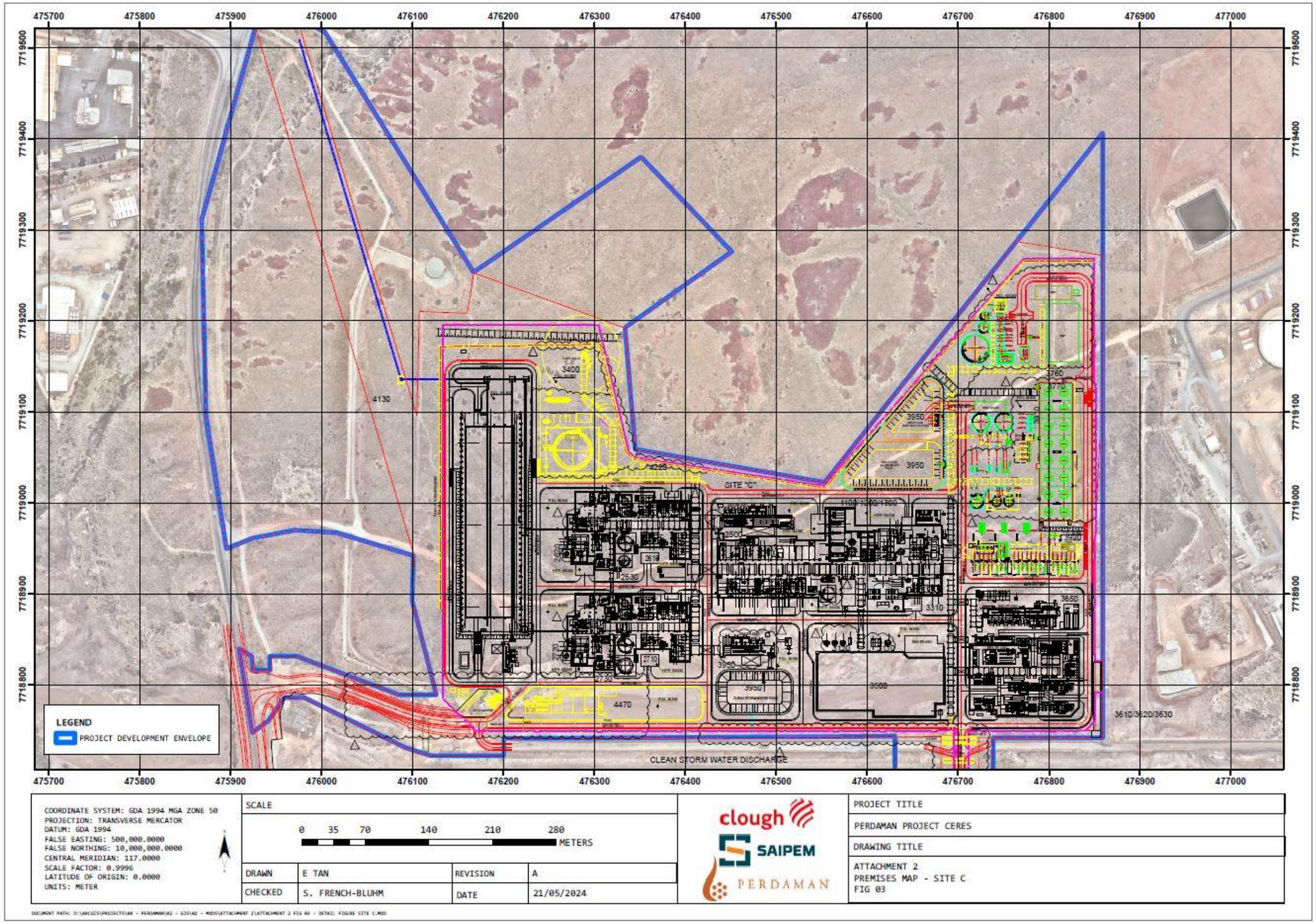


Figure 3: General layout of Site C

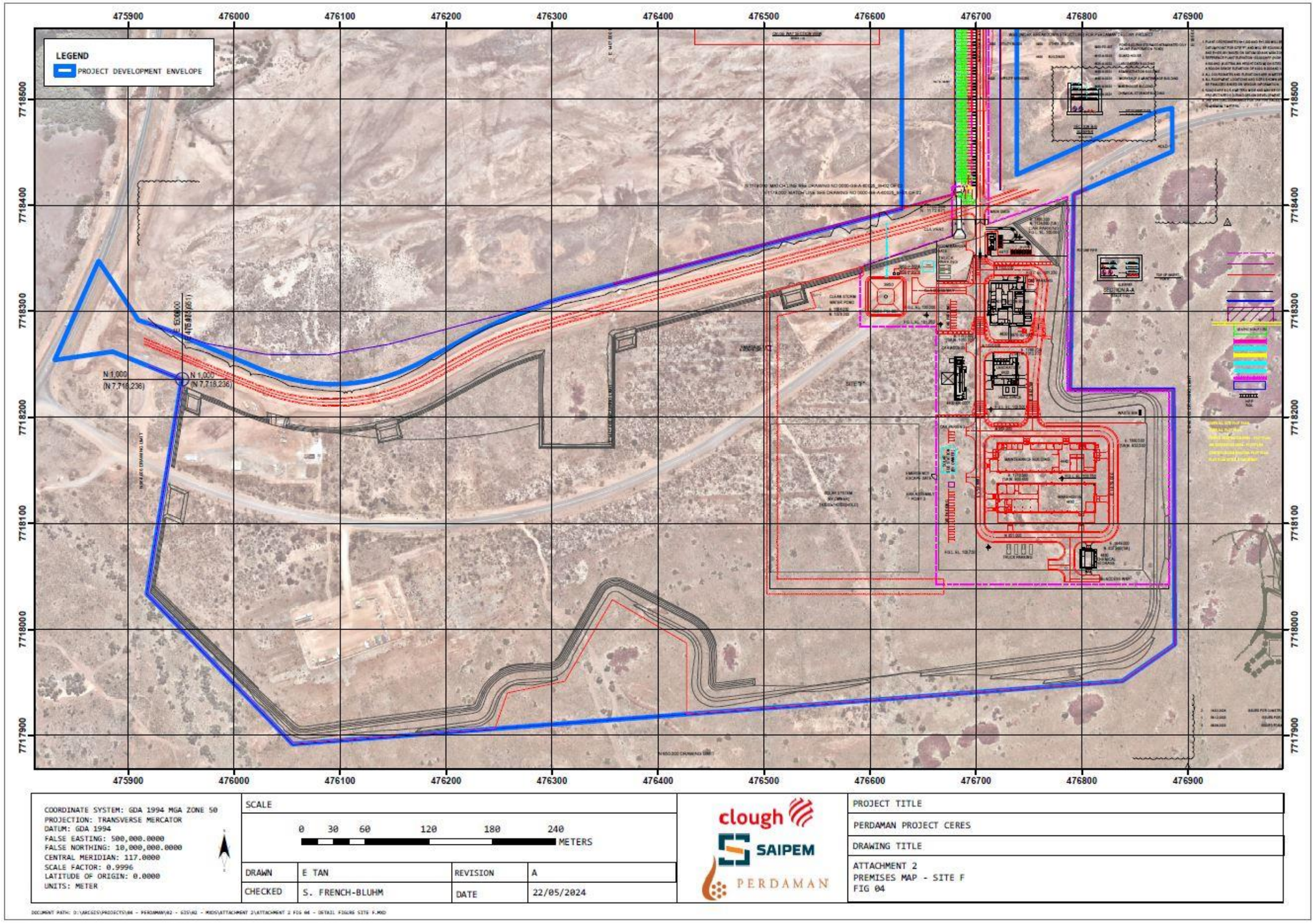


Figure 4: General layout of Site F.

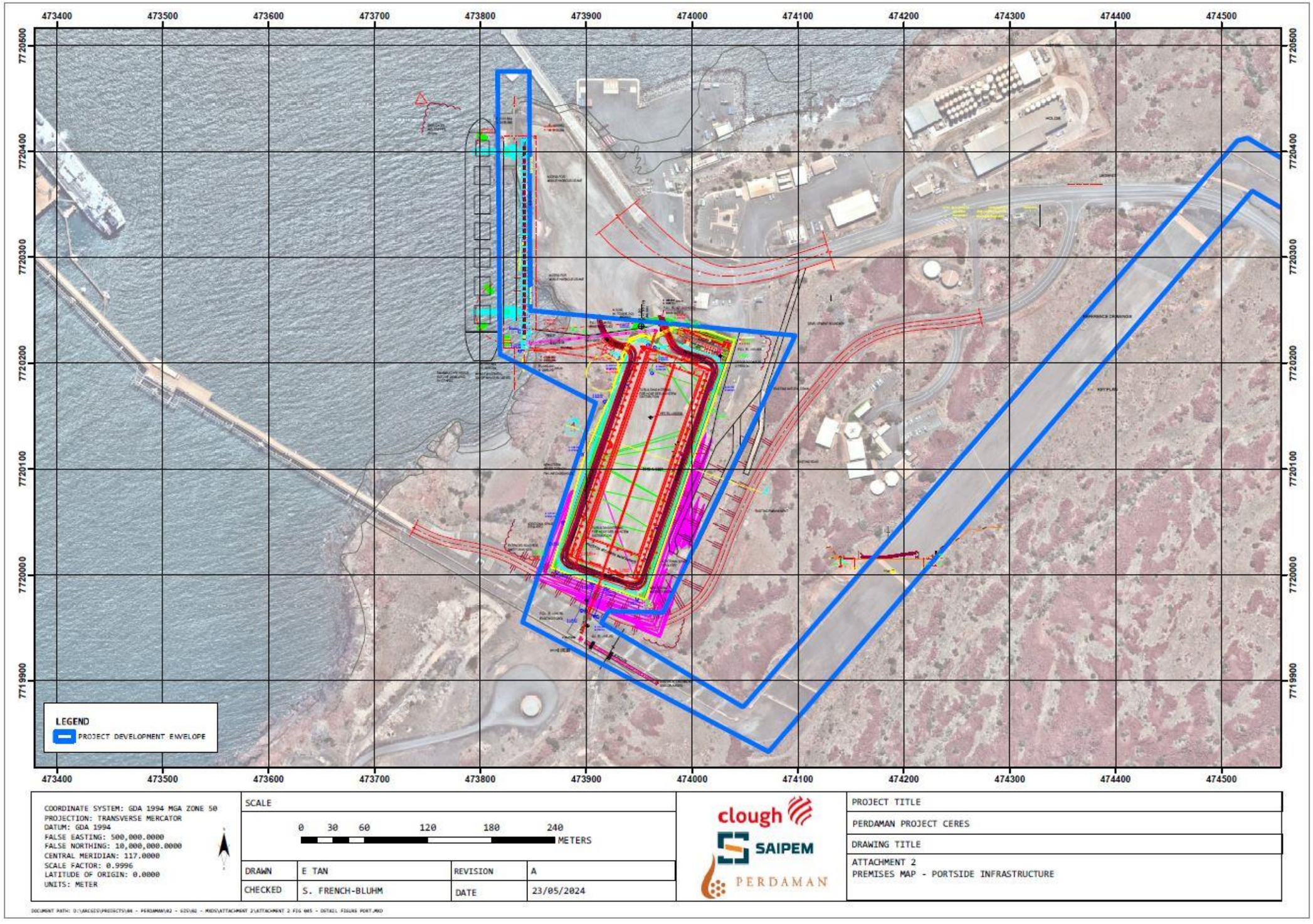


Figure 5: General layout of Port.

Schedule 2: Premises boundary coordinates

The corners of the premises boundary are the coordinates listed in Table 9.

Table 9: Premises boundary coordinates (GDA1994, Zone 50)

Object ID (as referenced in Figure 6)	Easting	Northing
1.	473818.3551	7720208.57
2.	473816.1321	7720475.773
3.	473846.091	7720475.773
4.	473847.1442	7720249.759
5.	474097.4422	7720226.219
6.	473972.4866	7719964.566
7.	473920.9671	7719965.772
8.	473914.2433	7719954.831
9.	474047.9595	7719875.208
10.	474515.1279	7720410.337
11.	474524.6018	7720412.701
12.	474811.3851	7720243.434
13.	474877.7047	7720319.14
14.	474894.9458	7720306.97
15.	474834.8537	7720229.582
16.	475926.0745	7719585.436
17.	475916.2592	7719567.129
18.	475985.1019	7719528.175
19.	476003.607	7719517.305
20.	476166.8922	7719253.508
21.	476351.2455	7719380.385
22.	476450.8959	7719276.285
23.	476333.4507	7719192.65
24.	476344.9185	7719059.03
25.	476553.0302	7719022.749
26.	476859.0902	7719406.636
27.	476859.028	7718742.08
28.	476738.3221	7718741.95
29.	476738.3221	7718428.882
30.	476885.005	7718491.661
31.	476885.2098	7718450.768
32.	476792.2813	7718410.347
33.	476788.6396	7718226.041
34.	476886.2837	7718226.266
35.	476887.5331	7717985.82
36.	476837.8817	7717951.298
37.	476055.2606	7717891.803
38.	475917.4353	7718033.736
39.	475950.5584	7718235.953
40.	475885.2164	7718262.136
41.	475830.6553	7718254.087
42.	475872.1336	7718347.625
43.	475909.7317	7718291.881
44.	475936.9184	7718282.592
45.	475973.2038	7718267.143
46.	476026.6028	7718244.872

47.	476058.4829	7718235.022
48.	476102.7883	7718231.61
49.	476146.5249	7718239.466
50.	476224.8158	7718278.214
51.	476298.5029	7718309.525
52.	476426.8398	7718343.294
53.	476630.4357	7718743.345
54.	476199.9991	7718741.121
55.	476199.9996	7718721.989
56.	476120.2239	7718721.989
57.	476091.9118	7718730.886
58.	475980.5443	7718786.182
59.	475958.7732	7718786.182
60.	475941.0264	7718760.244
61.	475923.5176	7718747.299
62.	475909.1997	7718839.724
63.	475923.1579	7718831.589
64.	475924.1184	7718816.049
65.	475943.0115	7718816.049
66.	475943.0115	7718831.589
67.	475972.5188	7718831.589
68.	476084.79	7718789
69.	476126	7718789
70.	476099.3857	7718892.72
71.	476100.9584	7718941.895
72.	476016.484	7718967.189
73.	475970.7422	7718970.114
74.	475923.7783	7718961.413
75.	475895.0625	7718949.836
76.	475872.7238	7719095.558
77.	475867.7829	7719311.193
78.	475929.5227	7719531.941
79.	474799.9443	7720202.256
80.	474736.9318	7720122.929
81.	474719.6933	7720133.357
82.	474779.0772	7720214.638
83.	474529.002	7720363.02
84.	474072.0963	7719833.009
85.	473839.6914	7719955.536
86.	473908.7541	7720162.824
87.	473818.3551	7720208.57

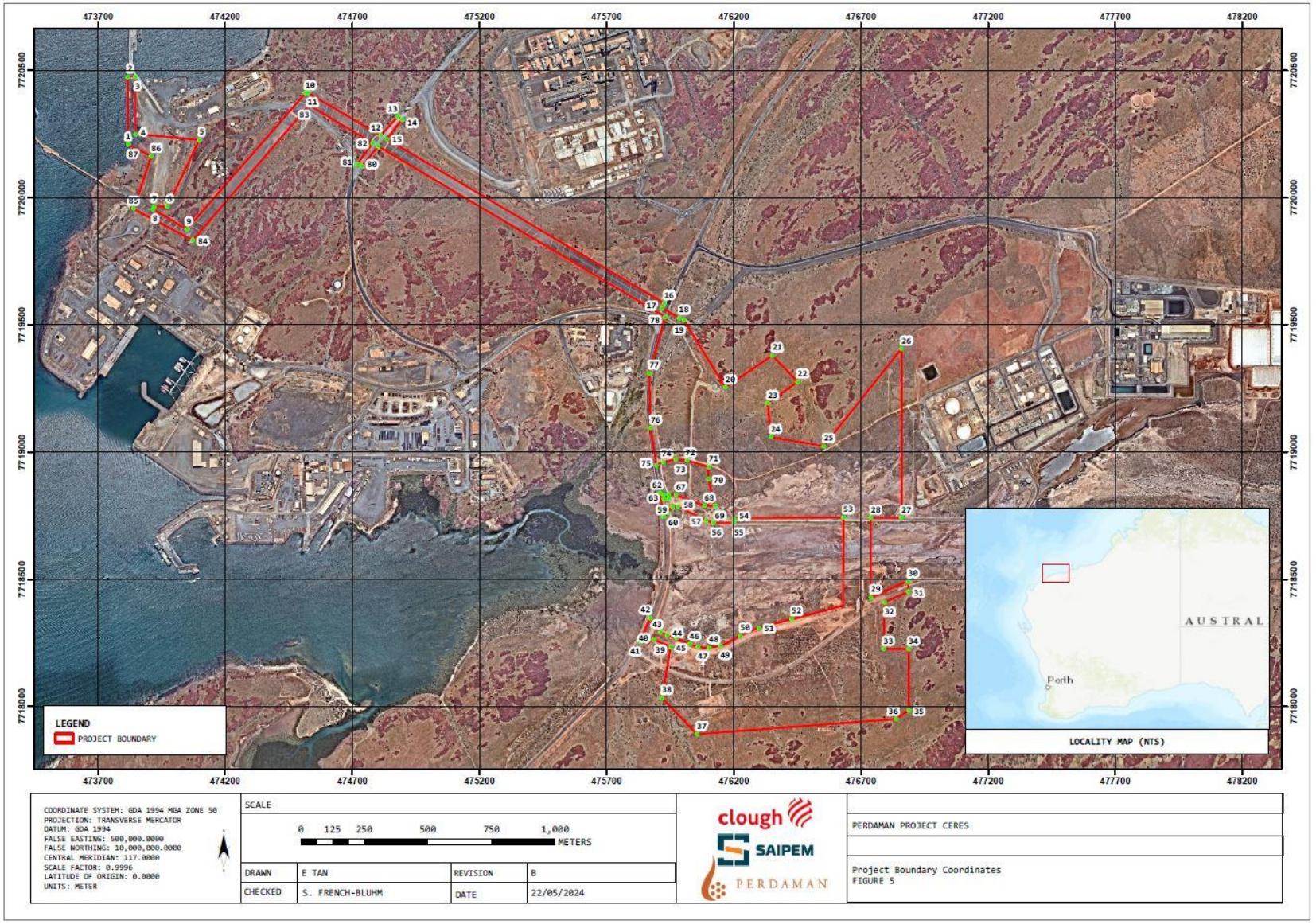
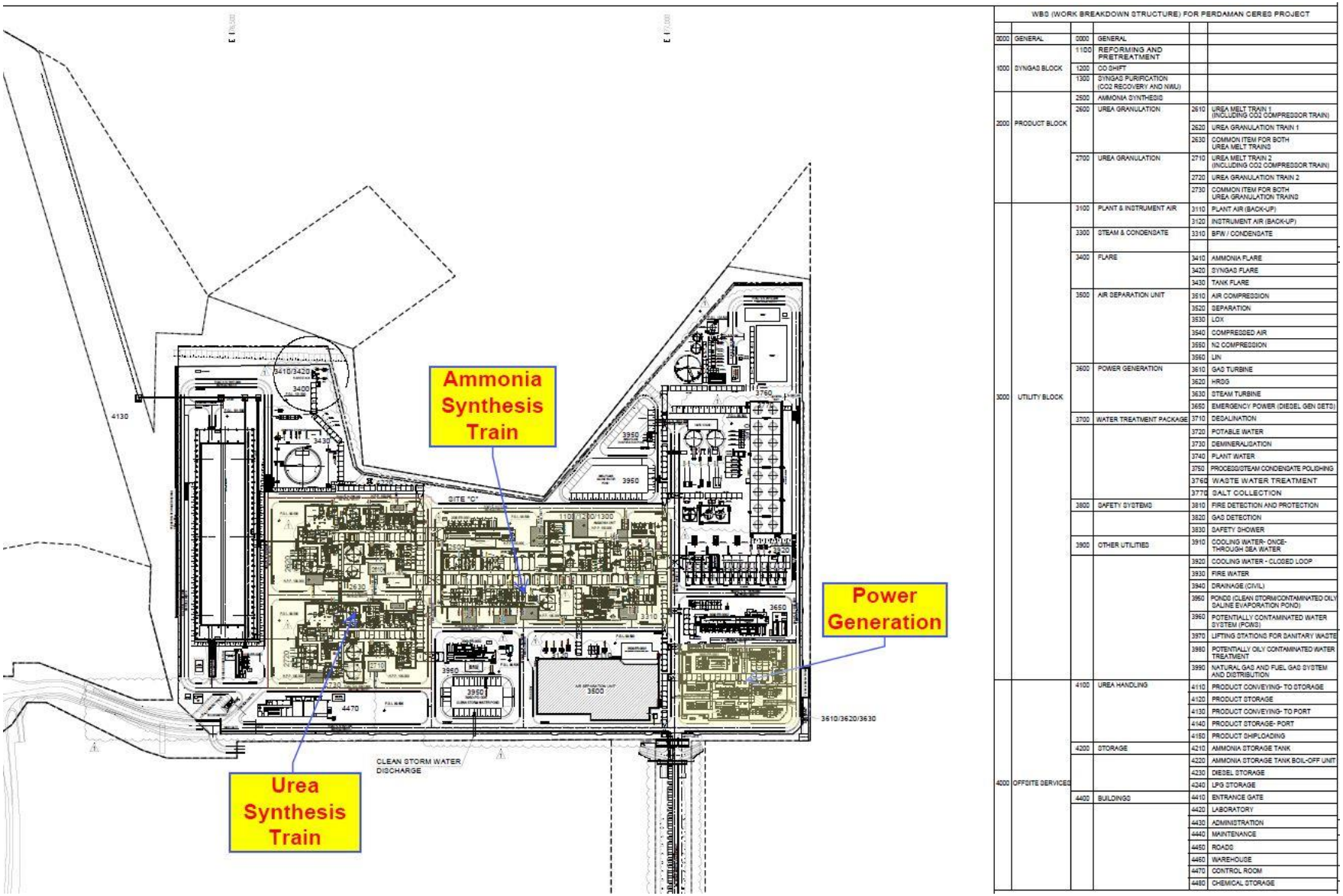


Figure 6: Prescribed premises boundary with cadastral reference point (as specified in Table 9).

Schedule 3: Plans and diagrams



WBS (WORK BREAKDOWN STRUCTURE) FOR PERDAMAN CERES PROJECT

0000	GENERAL	0000	GENERAL		
1000	SYNGAS BLOCK	1100	REFORMING AND PRETREATMENT		
		1200	CO SHIFT		
		1300	SYNGAS PURIFICATION (CO2 RECOVERY AND NWU)		
2000	PRODUCT BLOCK	2500	AMMONIA SYNTHESIS		
		2600	UREA GRANULATION	2610	UREA MELT TRAIN 1 (INCLUDING CO2 COMPRESSOR TRAIN)
				2620	UREA GRANULATION TRAIN 1
				2630	COMMON ITEM FOR BOTH UREA MELT TRAINS
		2700	UREA GRANULATION	2710	UREA MELT TRAIN 2 (INCLUDING CO2 COMPRESSOR TRAIN)
				2720	UREA GRANULATION TRAIN 2
				2730	COMMON ITEM FOR BOTH UREA GRANULATION TRAIN2
3000	UTILITY BLOCK	3100	PLANT & INSTRUMENT AIR	3110	PLANT AIR (BACK-UP)
				3120	INSTRUMENT AIR (BACK-UP)
		3300	STEAM & CONDENSATE	3310	BFW / CONDENSATE
		3400	FLARE	3410	AMMONIA FLARE
				3420	SYNGAS FLARE
				3430	TANK FLARE
		3500	AIR SEPARATION UNIT	3510	AIR COMPRESSION
				3520	SEPARATION
				3530	LOX
				3540	COMPRESSED AIR
				3550	N2 COMPRESSION
				3560	LIN
		3600	POWER GENERATION	3610	GAS TURBINE
				3620	HRSG
				3630	STEAM TURBINE
				3650	EMERGENCY POWER (DIESEL GEN SETS)
		3700	WATER TREATMENT PACKAGE	3710	DESALINATION
				3720	POTABLE WATER
				3730	DEMINERALISATION
				3740	PLANT WATER
				3750	PROCESS/STEAM CONDENSATE POLISHING
				3760	WASTE WATER TREATMENT
				3770	SALT COLLECTION
		3800	SAFETY SYSTEMS	3810	FIRE DETECTION AND PROTECTION
				3820	GAS DETECTION
				3830	SAFETY SHOWER
		3900	OTHER UTILITIES	3910	COOLING WATER- ONCE-THROUGH SEA WATER
				3920	COOLING WATER - CLOSED LOOP
				3930	FIRE WATER
				3940	DRAINAGE (CIVIL)
				3950	PONDS (CLEAN STORM/CONTAMINATED OILY SALINE EVAPORATION POND)
				3960	POTENTIALLY CONTAMINATED WATER SYSTEM (PCWS)
				3970	LIFTING STATIONS FOR SANITARY WASTE
				3980	POTENTIALLY OILY CONTAMINATED WATER TREATMENT
				3990	NATURAL GAS AND FUEL GAS SYSTEM AND DISTRIBUTION
4000	OFFSITE SERVICES	4100	UREA HANDLING	4110	PRODUCT CONVEYING- TO STORAGE
				4120	PRODUCT STORAGE
				4130	PRODUCT CONVEYING- TO PORT
				4140	PRODUCT STORAGE- PORT
				4150	PRODUCT SHIPLOADING
		4200	STORAGE	4210	AMMONIA STORAGE TANK
				4220	AMMONIA STORAGE TANK BOIL-OFF UNIT
				4230	DIESEL STORAGE
				4240	LPG STORAGE
		4400	BUILDINGS	4410	ENTRANCE GATE
				4420	LABORATORY
				4430	ADMINISTRATION
				4440	MAINTENANCE
				4450	ROADS
				4460	WAREHOUSE
				4470	CONTROL ROOM
				4480	CHEMICAL STORAGE

Figure 7: Key infrastructure location - Site C.

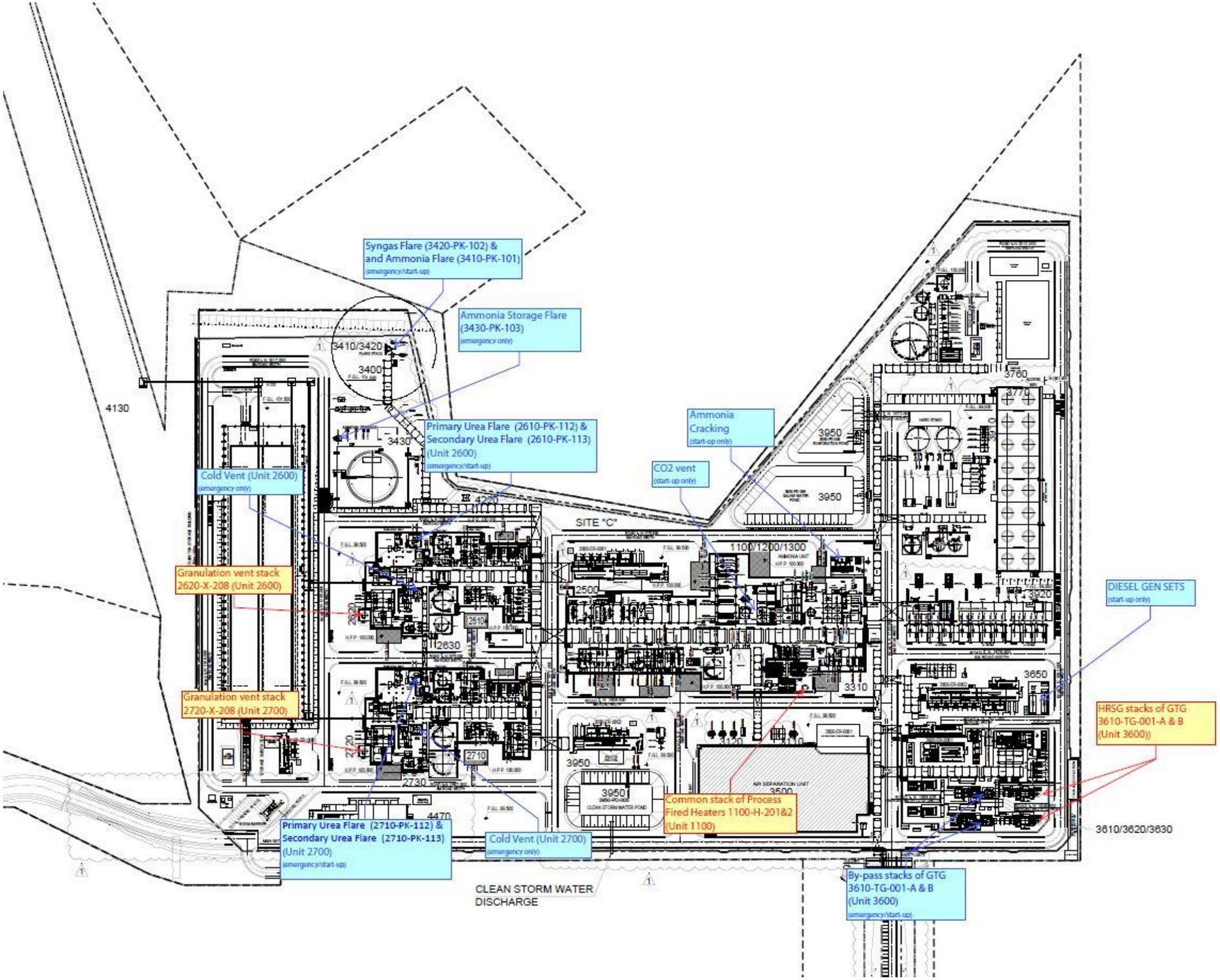


Figure 8: Site C - Plan showing the location primary process infrastructure, exhaust stacks, vents and flares.

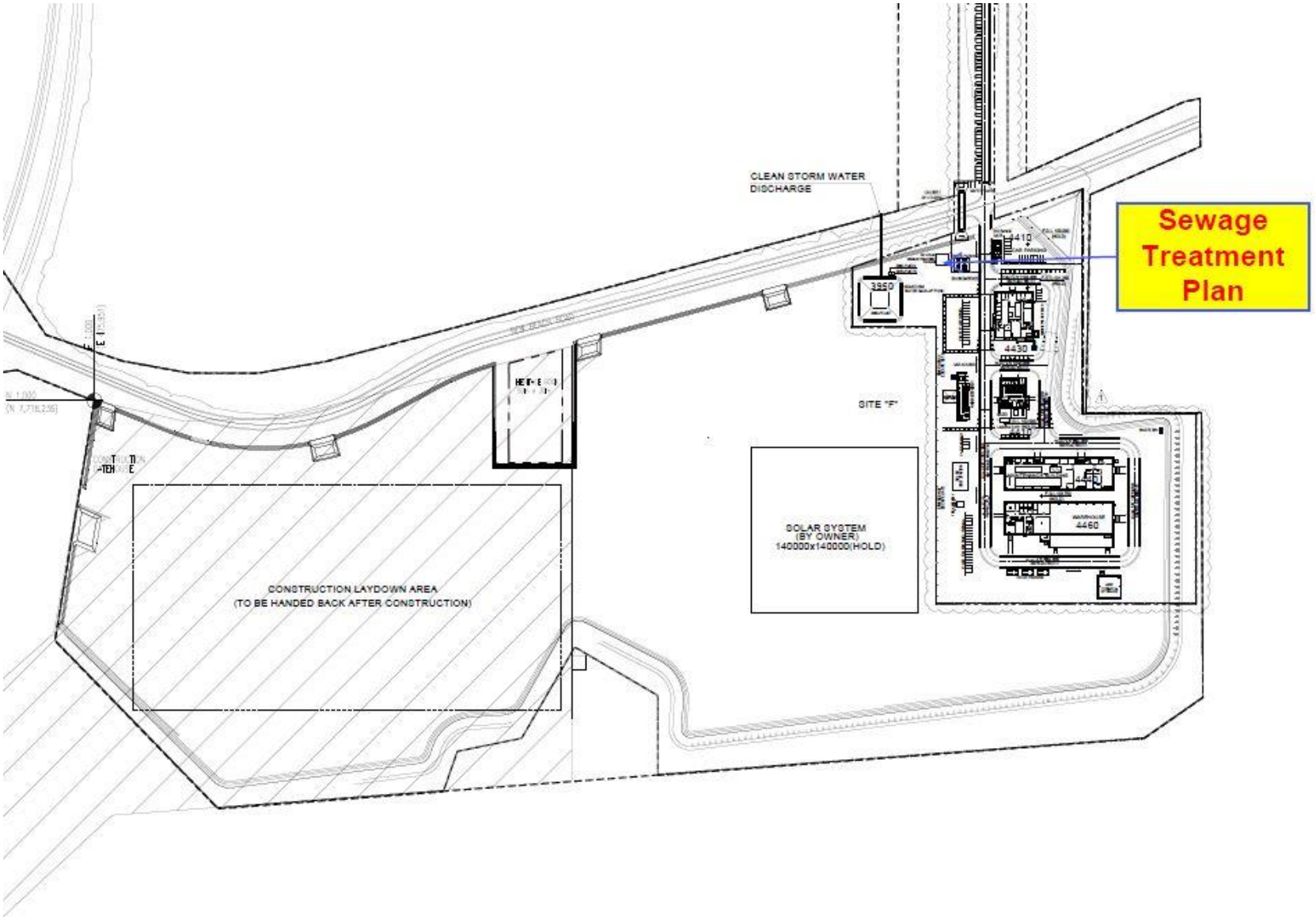


Figure 9: Key infrastructure – Site F.

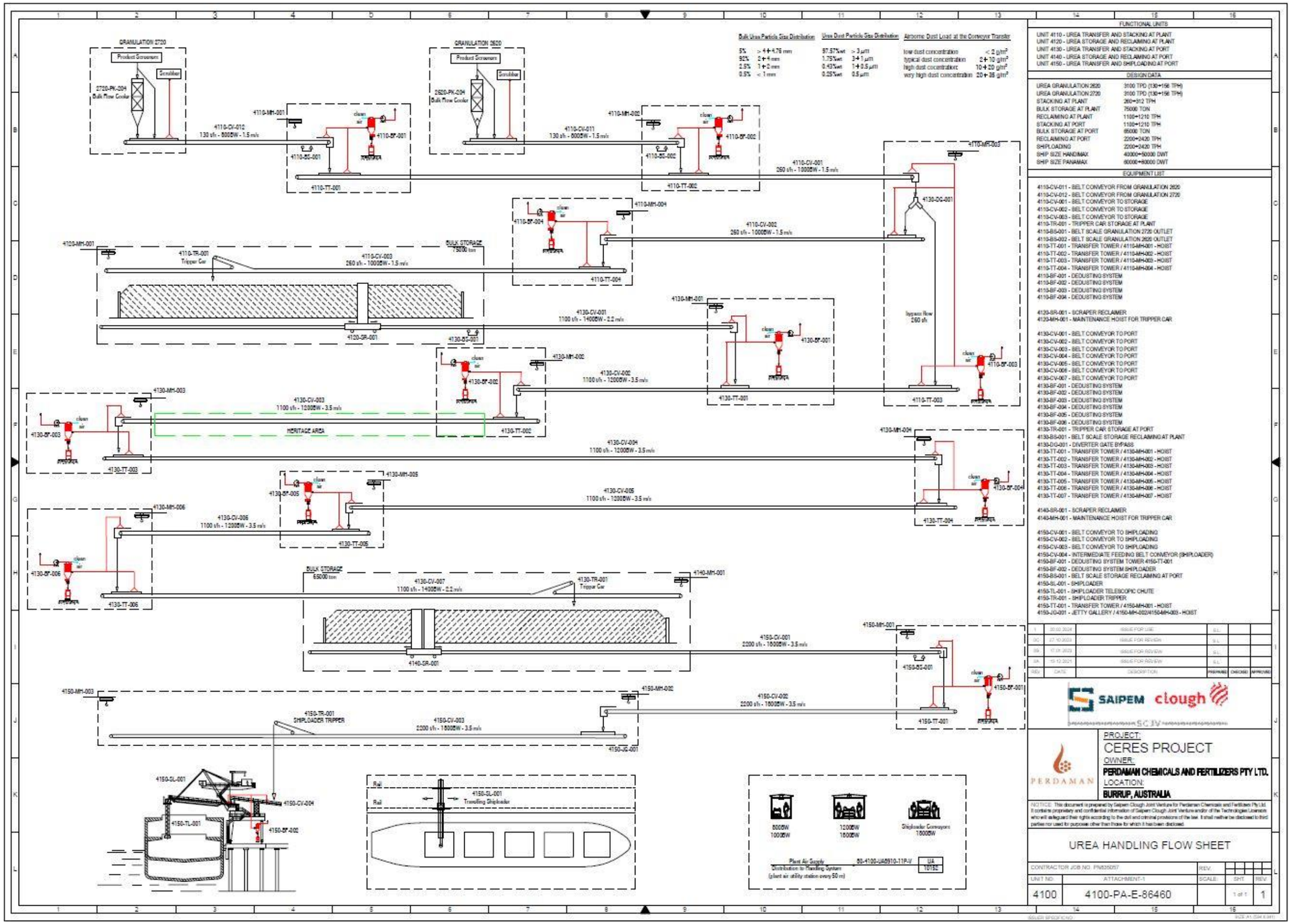


Figure 10: Schematic showing dust control systems on granulator, conveyor and shiploader

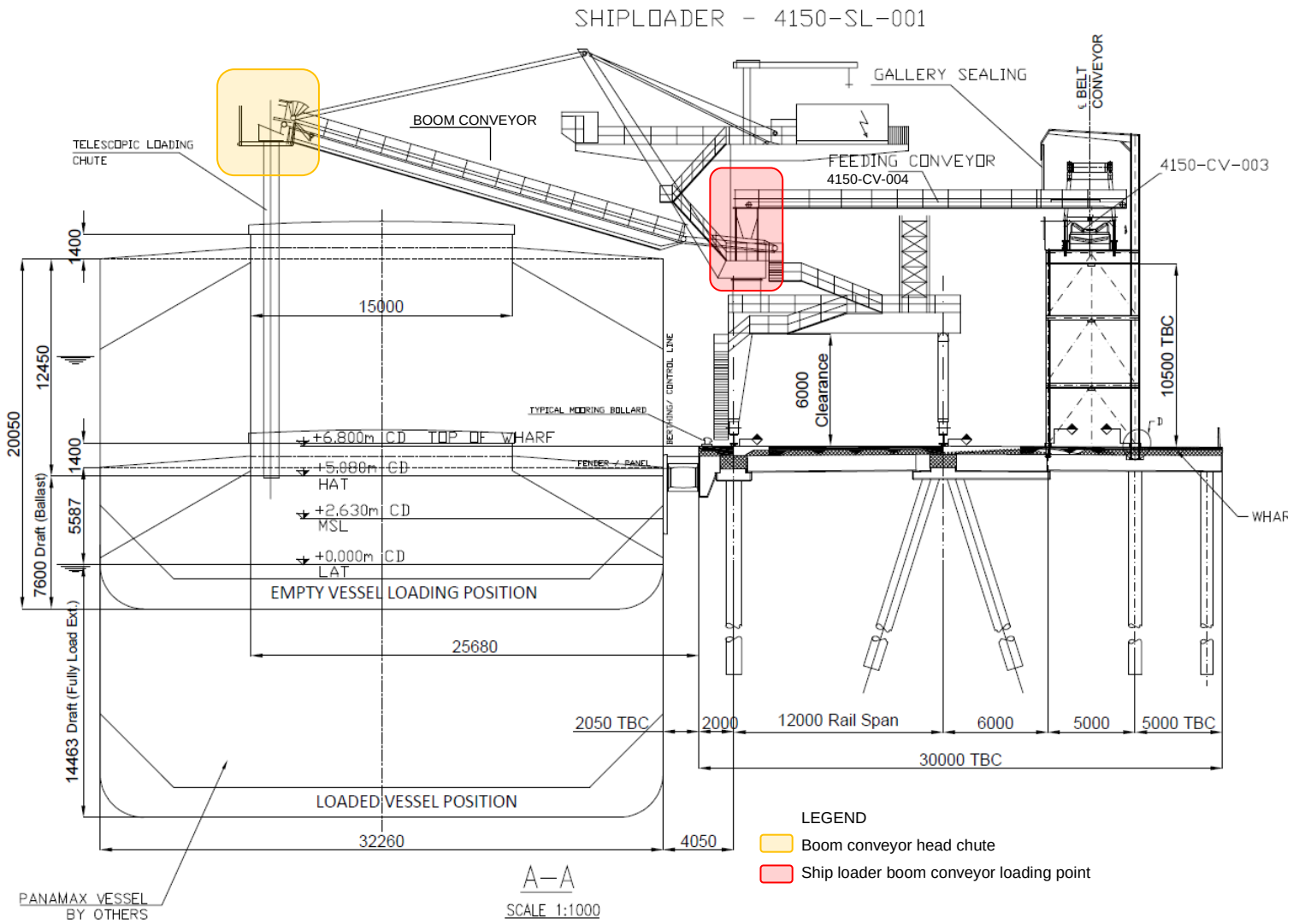


Figure 11: Plan of ship loader and associated conveyors

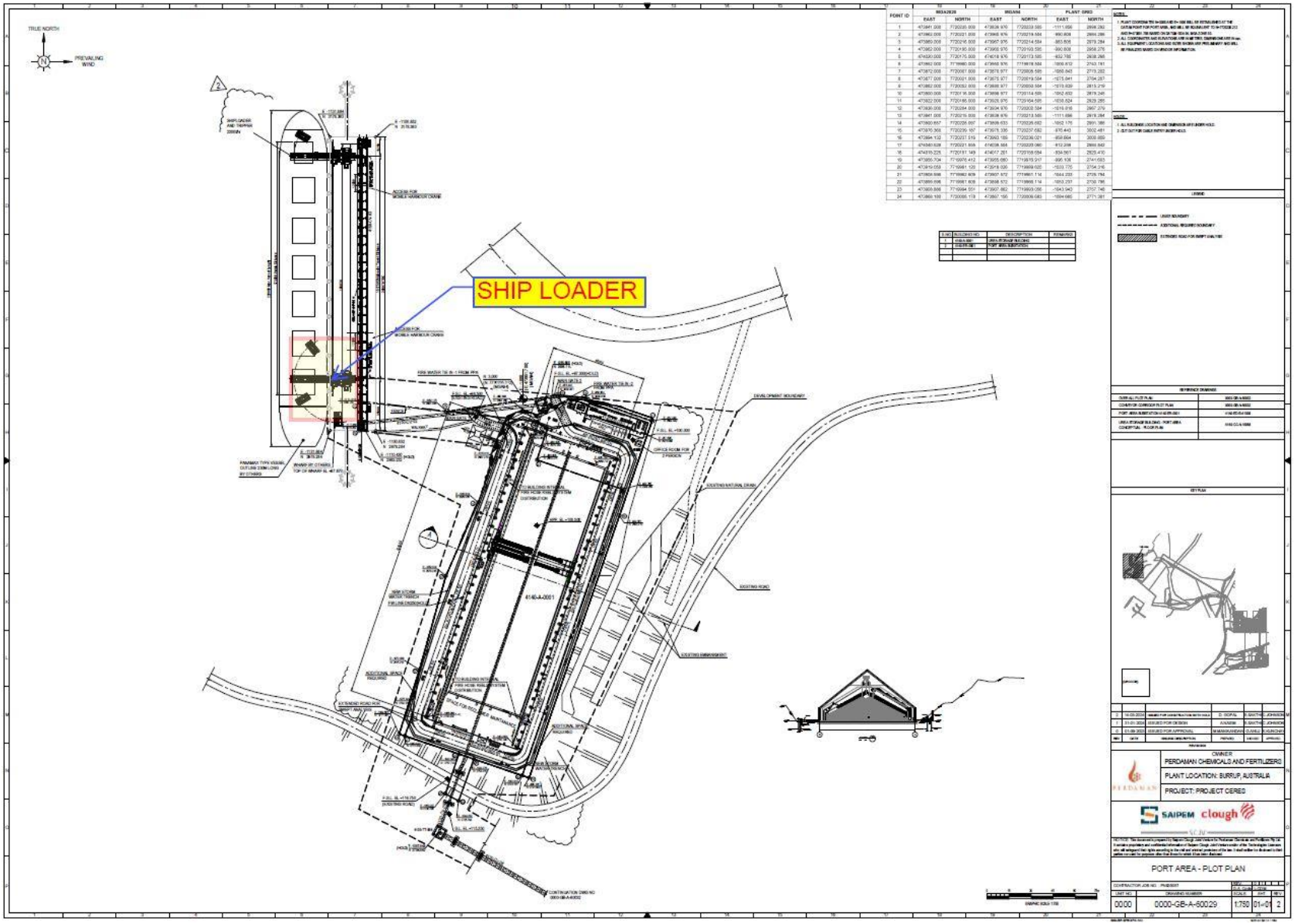


Figure 12: General layout of port infrastructure.

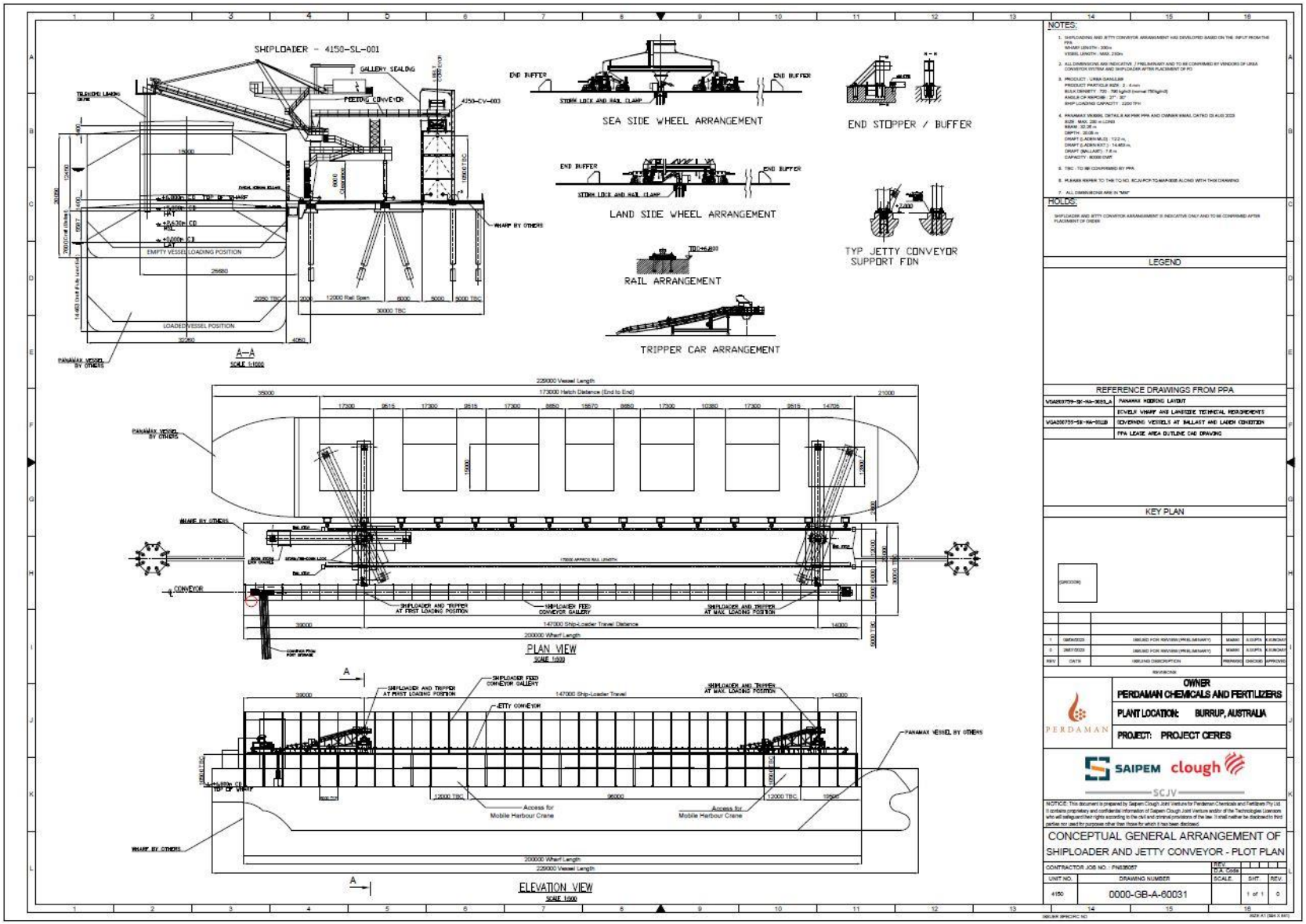


Figure 13: Conceptual layout of shiploader and jetty conveyor.

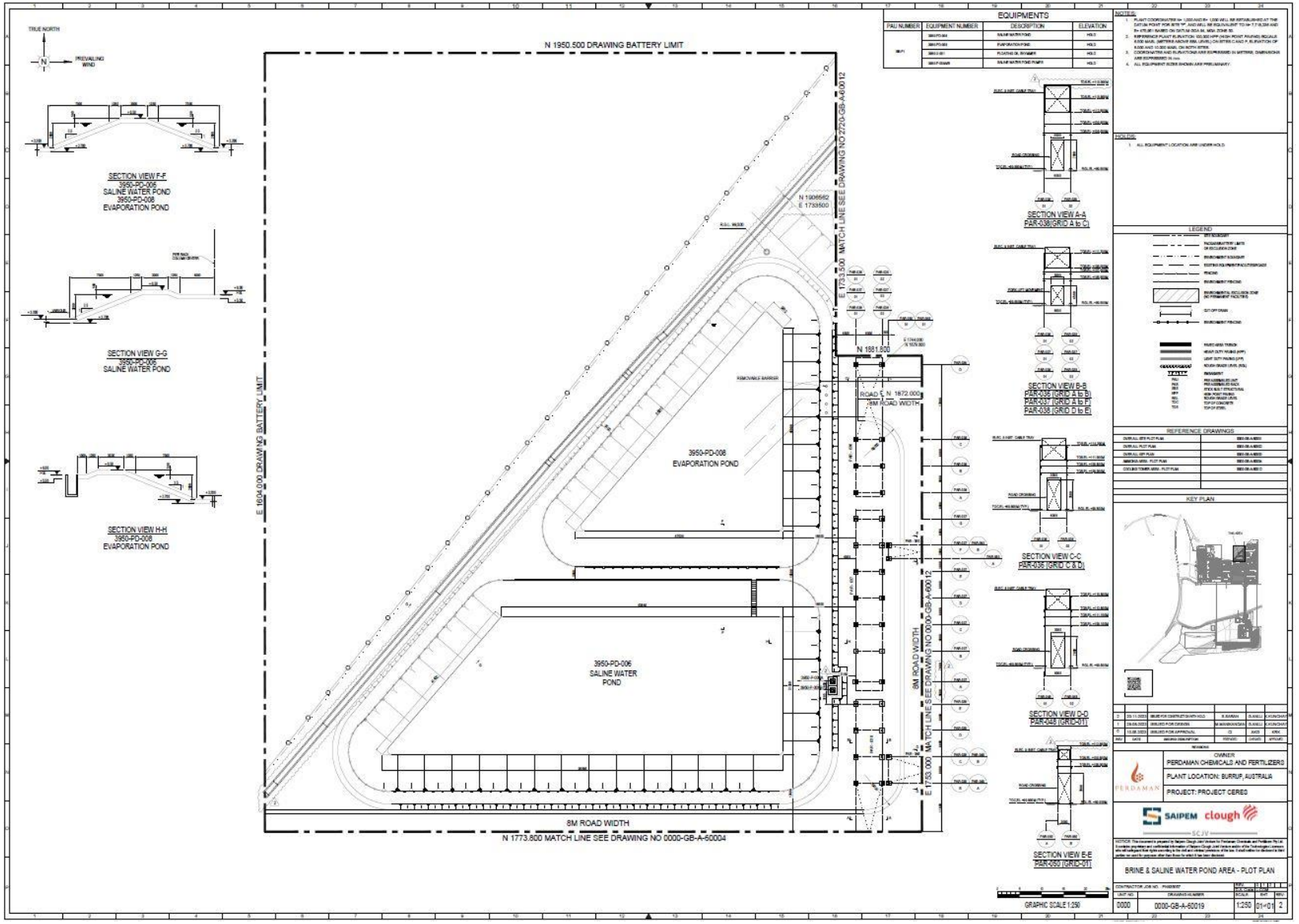


Figure 14: Saline Water Pond and Saline Evaporation Pond

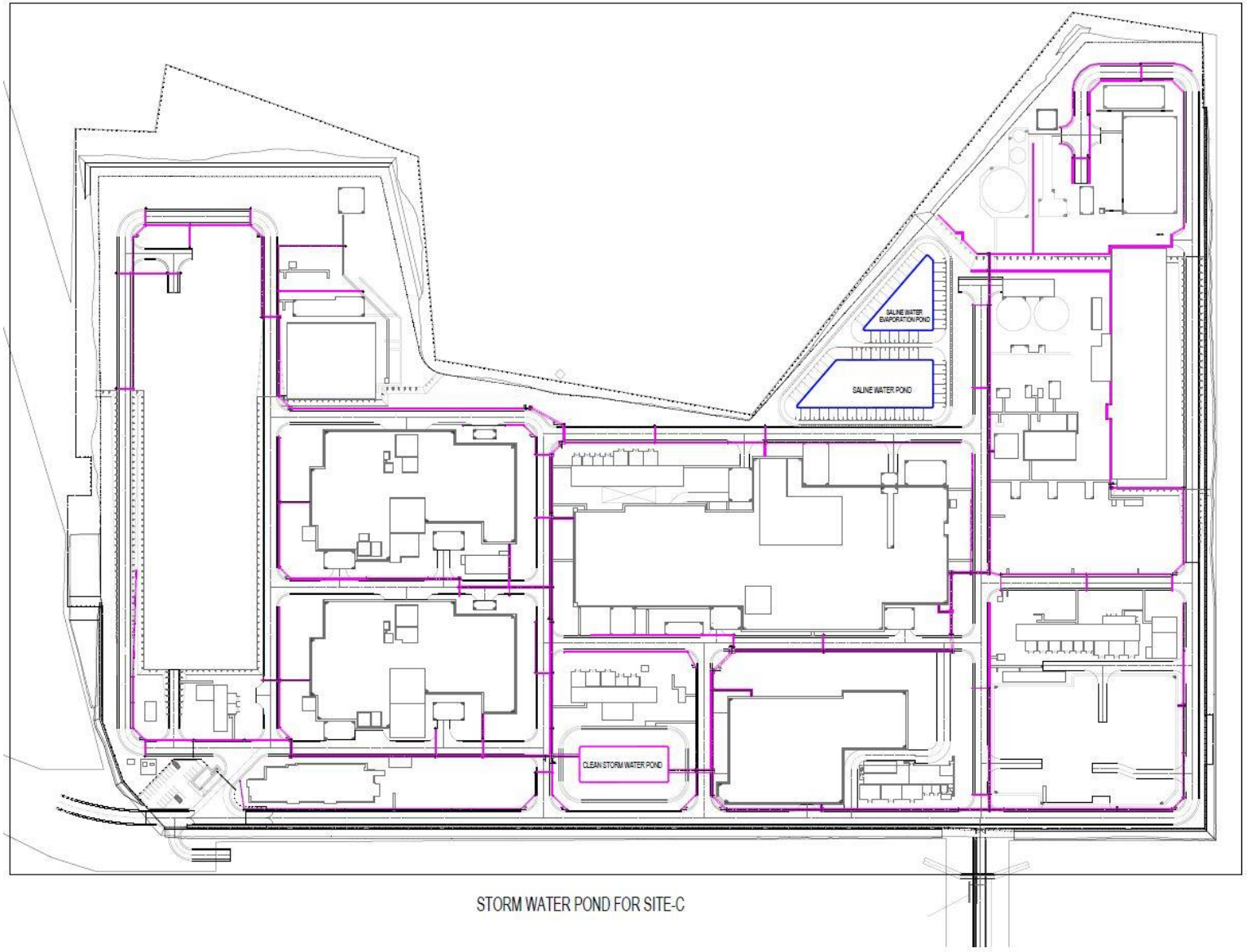


Figure 15: Stormwater plan for Site C

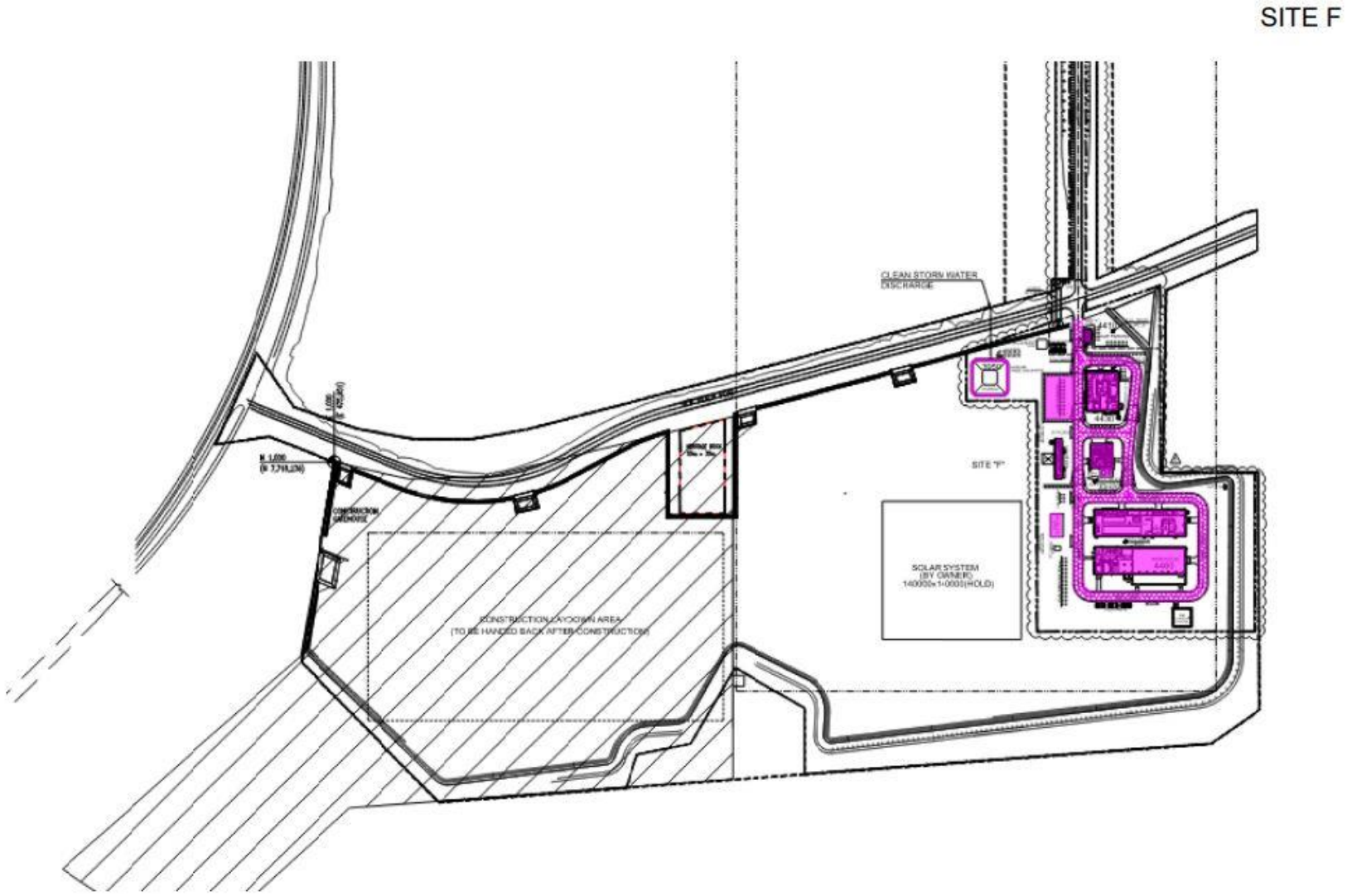


Figure 16: Stormwater plan for Site F.

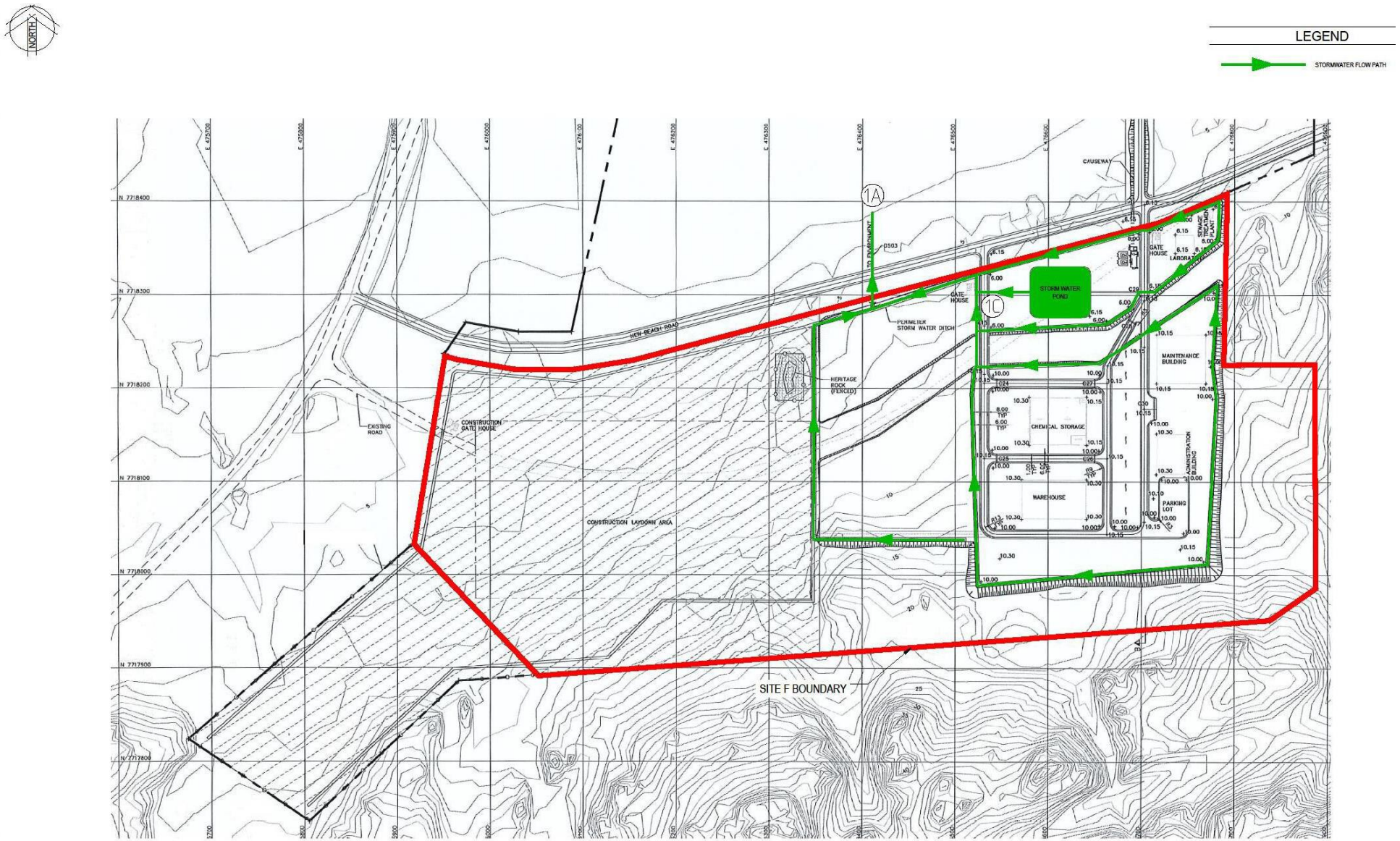


Figure 17: Stormwater flow path – Site F

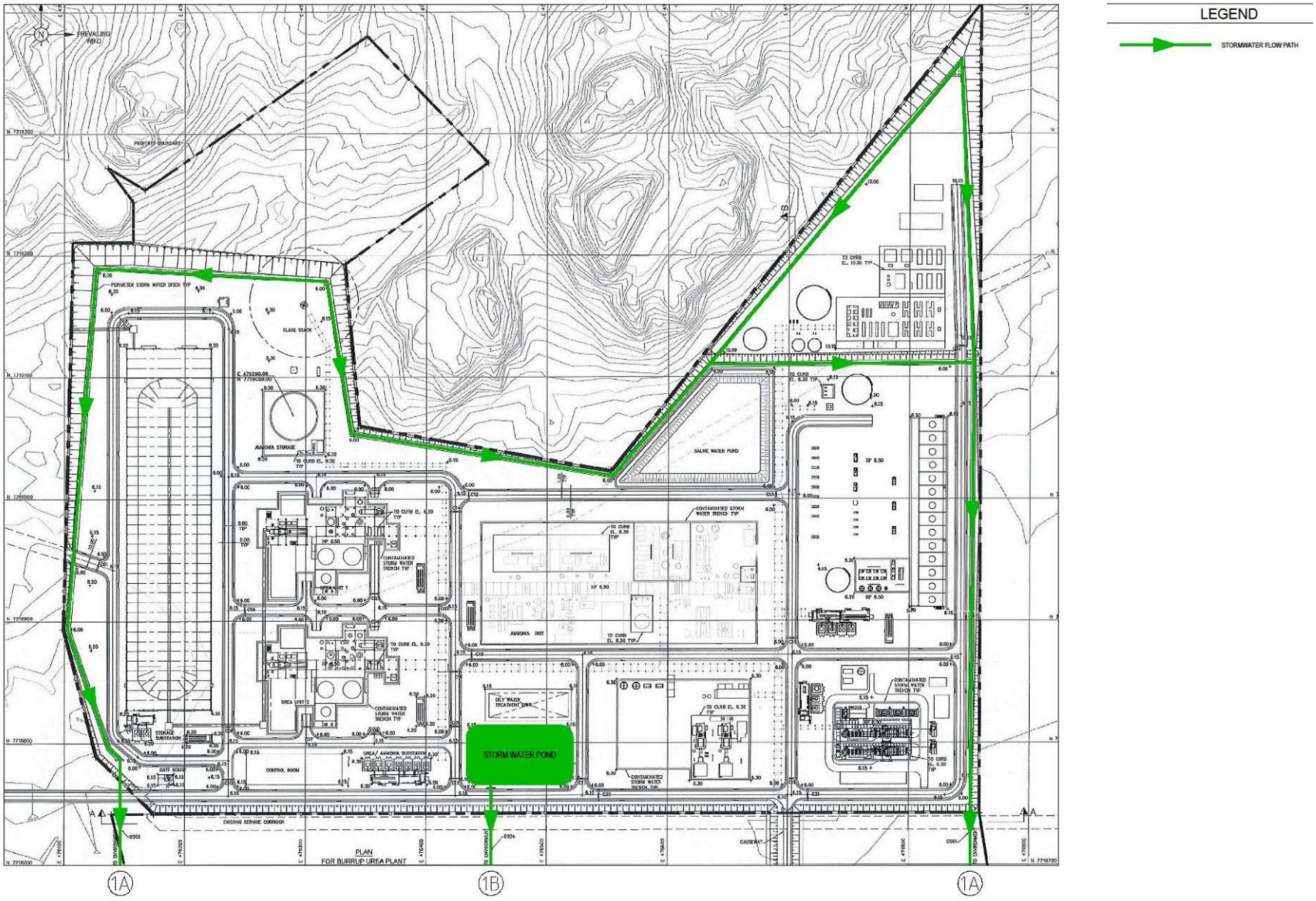


Figure 18: Stormwater flow path - Site C

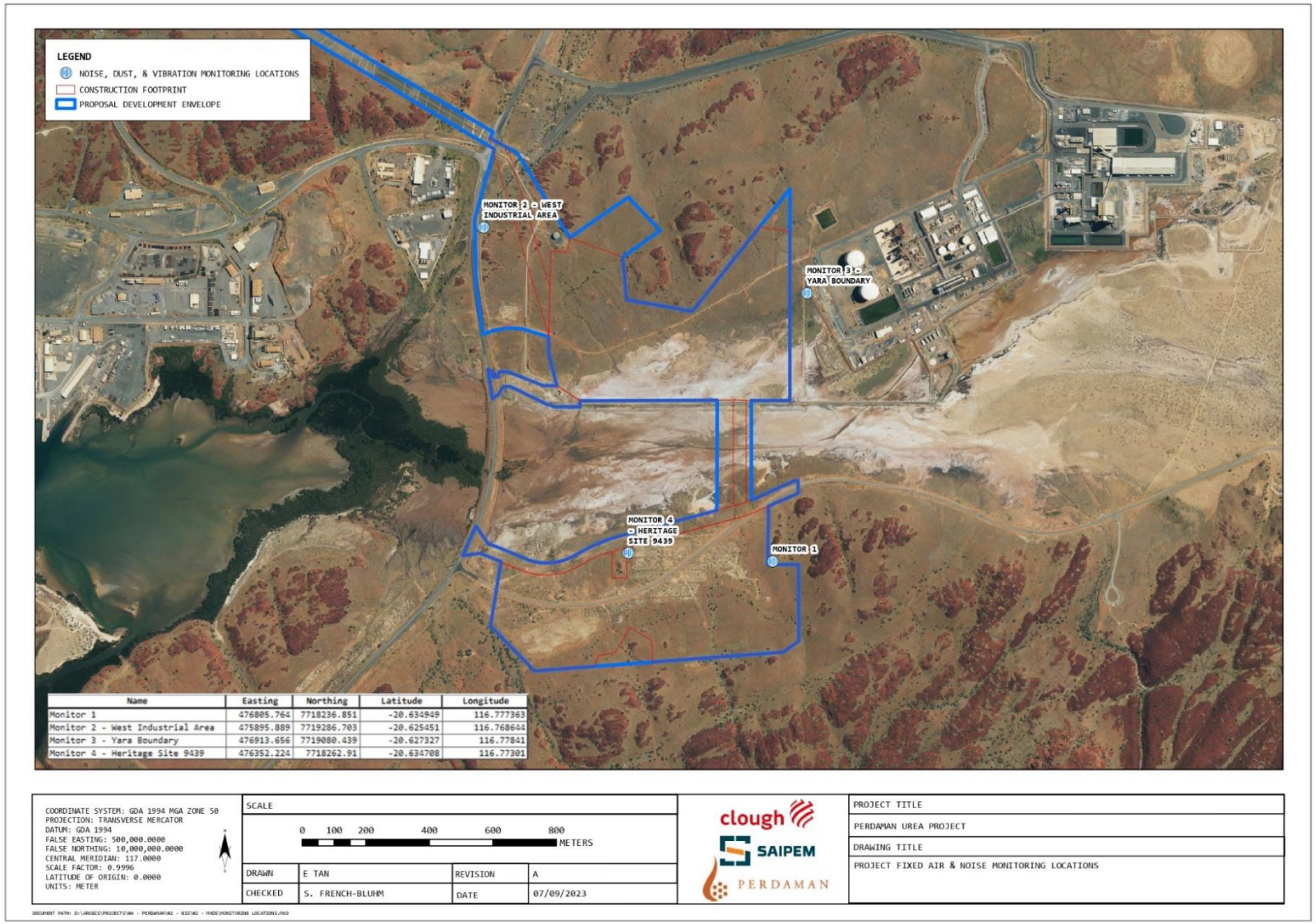


Figure 19: Location of noise and dust monitors – Site C and Site F

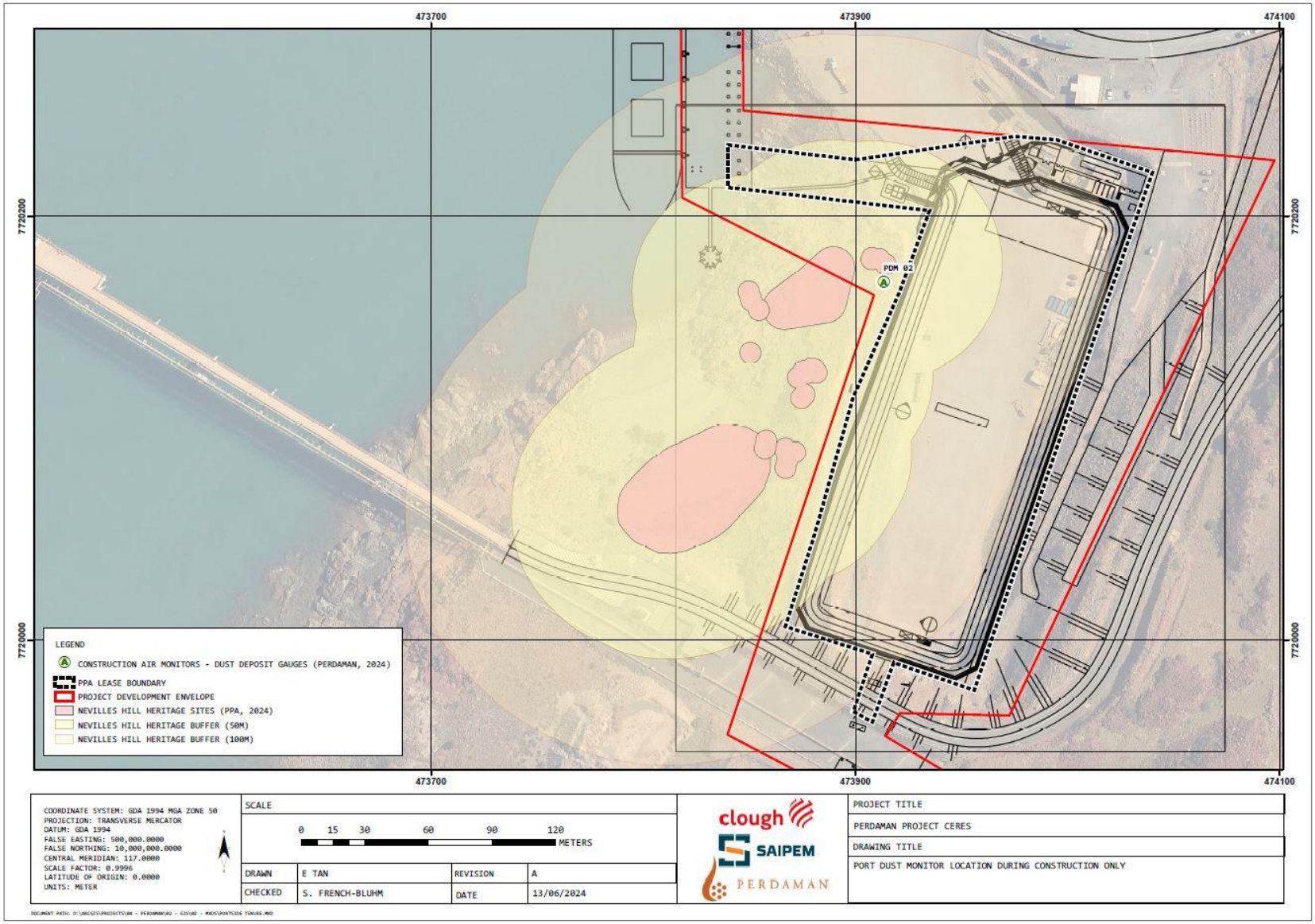


Figure 20: Location of dust monitor – Port

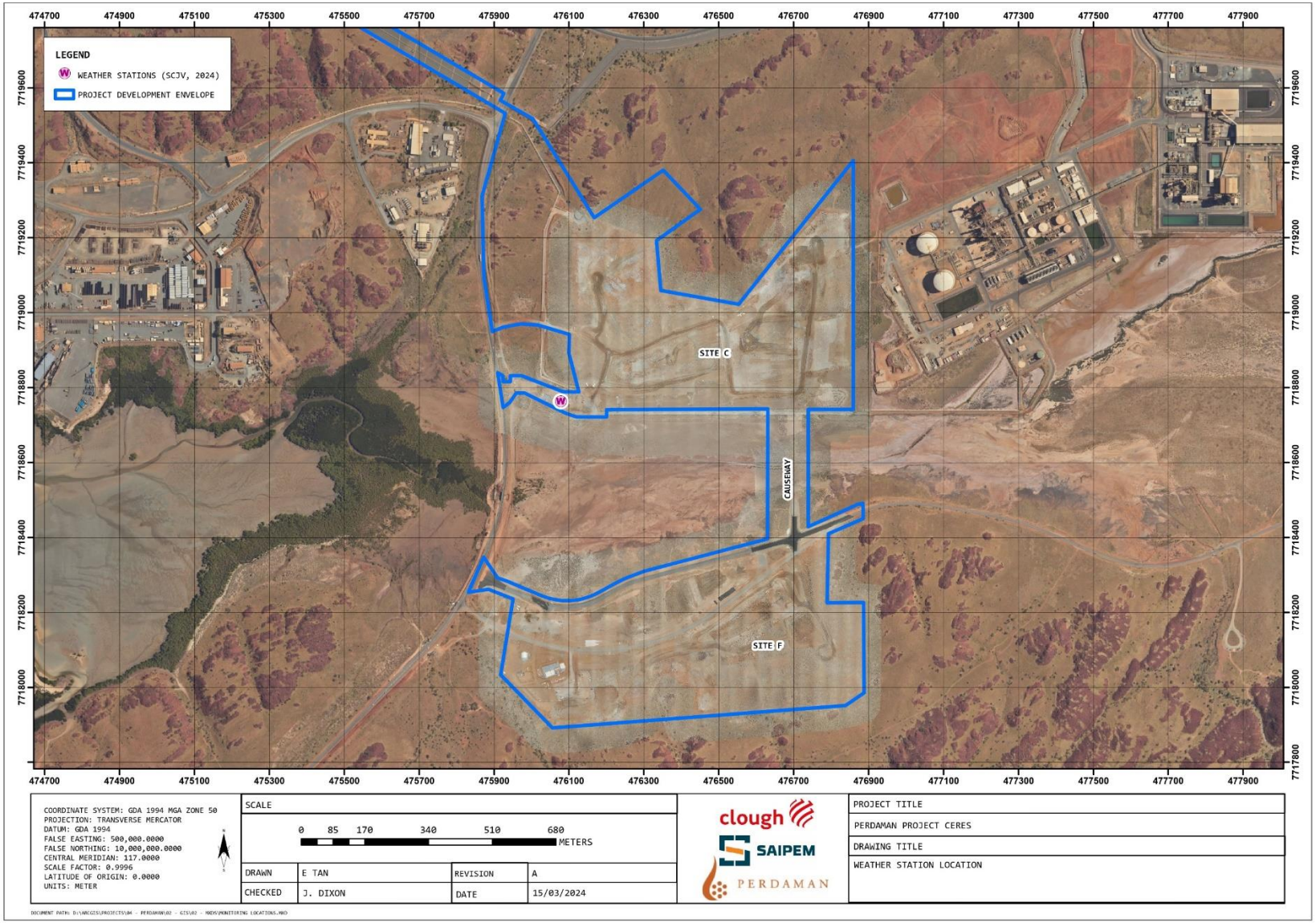


Figure 21: Project weather station location.

Schedule 4: Dust monitor coordinates

The coordinates for the fixed monitors specified in Table 5 and Table 6 are listed in Table 10.

Table 10: Location of Noise and Fixed Dust Monitors (GDA1994; Zone 50)

Monitor	Easting	Northing
Monitor 1	476805.764	7718236.851
Monitor 2 – West Industrial Area	475895.889	7719286.703
Monitor 3 – Yara boundary	476913.656	7719080.439
Monitor 4 – Heritage site 9439	476352.244	7718262.91