



Works Approval

Works approval number	W6800/2023/1
Works approval holder	Square Kilometre Array Observatory
Registered business address	26 Dick Perry Avenue KENSINGTON, WA, 6151
DWER file number	DER2018/001042-8~91
Duration	13/07/2023 to 12/07/2028
Date of issue	13/07/2023
Date of amendment	21/11/2024
Premises details	SKAO Construction Camp Legal description - Part of Lot 18 on Deposited Plan 220344 As defined by the coordinates in Schedule 2: Premises boundary

Prescribed premises category description (Schedule 1, <i>Environmental Protection Regulations 1987</i>)	Assessed production capacity
Category 85: Sewage facility: premises — (a) on which sewage is treated (excluding septic tanks); or (b) from which treated sewage is discharged onto land or into waters.	70 m ³ per day

This works approval is granted to the works approval holder, subject to the attached conditions, on 21 November 2024, by:

**MANAGER WASTE INDUSTRIES
REGULATORY SERVICES**

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

Works approval history

Date	Reference number	Summary of changes
13/07/2023	W6800/2023/1	Works approval granted.
03/04/2024	W6800/2023/1	Works approval amendment to increase production capacity to 70 m ³ /day, increase irrigation sprayfield area to 4.2 ha and remove requirement of an earthen bund to the perimeter of the WWTP.
21/11/2024	W6800/2023/1	Works approval amendment to extend commissioning duration, remove blended effluent requirement due to inclusion of new evaporation pond and turkeys nest with additional tanks and increase RO brine limit from 20 m ³ to 50 m ³ per day.

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

Construction phase

Infrastructure and equipment

1. The works approval holder must:
- install the infrastructure and/or equipment;
 - in accordance with the corresponding installation requirements; and
 - at the corresponding infrastructure location;
- as set out in Table 1.

Table 1: Infrastructure and equipment requirements

	Infrastructure	Design and construction / installation requirements	Infrastructure location
1.	Wastewater Treatment Plant (WWTP)	<ol style="list-style-type: none"> Containerised and enclosed WWTP sequence batch reactor system; All sewage storage and treatment tanks, vessels, transfer pipelines and conveyance infrastructure must be impermeable and free of leaks or defects; Stormwater is prevented from entering the sewage treatment system and storage infrastructure; WWTP able to treat up to 50 m³ of sewage per day; WWTP able to treat sewage to the following discharge limits: <ul style="list-style-type: none"> 5-day Biochemical Oxygen Demand (BOD₅) <20 mg/L Total suspended solids (Total suspended solids) <30 mg/L Total nitrogen <20 mg/L Total phosphorus <8 mg/L Thermotolerant coliforms <1000 colony forming units (CFU)/100 ml Residual free chlorine >0.2 mg/L and <2 mg/L Poly chlorine contact/Irrigation storage tank (50 kL) capable of storing all treated wastewater not able to be discharged to the irrigation sprayfield; Two raw sewerage flow balance tanks (50 kL each) capable of storing a total of 50 m³ per day of untreated wastewater; Two wet weather storage storage (50 kL each) tanks; Waste activated sludge storage tank (50 kL) with sealed connection points for pumping out sludge for offsite disposal; Flow meters installed to monitor volumes received at the inlet to WWTP and discharged to the irrigation sprayfield; and Alarm system installed to notify the operator of <ol style="list-style-type: none"> pump fails; high tank levels; and tank overflows. 	Figures 1, 3 and 4 of Schedule 1: Maps

	Infrastructure	Design and construction / installation requirements	Infrastructure location
2.	RO brine supply pipeline	Connected to a volumetric flow meter to monitor the daily volume of RO brine delivered to the turkeys nest and/or evaporation pond and storage tanks.	Figure 1 of Schedule 1: Maps
3.	Brine tanks	(a) Must be able to hold a minimum of 135 m ³ of brine at any one time; and (b) Equipped with automatic water level overflow pipe to turkeys nest to control storage volumes.	Figures 1 and 4 of Schedule 1: Maps
4.	Irrigation spray field	(a) Minimum 2.7 ha irrigation spray field with above ground sprinkler units; (b) Maintain a 5 m spray drift buffer from the edge of the sprinkler radius to the spray field boundary; (c) Fenced with a vehicle access gate; and (d) Warning signage fixed to all sides of the fence advising the area is used for the disposal of treated wastewater.	Figures 1 and 4 of Schedule 1: Maps
5.	Turkeys nest	(a) Volume of 450 m ³ ; (b) 0.05 mm LLDPE lined; (c) Have an earthen bund surrounding the perimeter; (d) Include a minimum freeboard of 0.5 m; and (e) Perimeter fence to prevent unauthorised access.	Figure 1 of Schedule 1: Maps
6.	Evaporation pond	(a) Have an impervious plastic pond liner (b) Have an earthen bund surrounding the perimeter (c) Include a minimum freeboard of 0.5 m; and (d) Perimeter fence to prevent unauthorised access;	Figures 1 and 4 of Schedule 1: Maps
7.	All infrastructure and equipment	(a) All sewage storage and treatment tanks, vessels, pipework, fittings, and joints are to be constructed of impervious material and free from leaks and/or defects; (b) All sewage storage and treatment tanks, vessels, pipework, fittings, and joins must be designed and constructed to ensure that stormwater does not enter the sewage treatment system and treated wastewater storage infrastructure; and (c) All pipework, fittings and pumps must be hydraulically tested to the required pressure and visually inspected for any defects to ensure infrastructure is fit for purpose prior to use.	Figures 1, 3 and 4 of Schedule 1: Maps
8.	Vehicle washdown bay with Oil Waste Separator (OWS)	Installed as per manufacturers specifications.	Figure 1 of Schedule 1: Maps

Compliance reporting

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

- (a) undertake an audit of their compliance with the requirements of condition 1; and
 - (b) prepare and submit to the CEO an Environmental Compliance Report on that compliance.
3. The Environmental Compliance Report required by condition 2, must include as a minimum the following:
- (a) certification by a qualified, competent engineer that the items of infrastructure and components thereof, as specified in condition 1, have been constructed in accordance with the relevant requirements specified in condition 1;
 - (b) as constructed plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in condition 1; and
 - (c) be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person.

Environmental commissioning phase

Environmental commissioning requirements and emission limits

4. The works approval holder may only commence environmental commissioning of an item of infrastructure listed in condition 5 once the Environmental Compliance Report has been submitted for that item of infrastructure in accordance with conditions 2 and 3 of this works approval.
5. Any environmental commissioning activities undertaken for an item of infrastructure specified in Table 2 may only be carried out:
- (a) in accordance with the corresponding commissioning requirements; and
 - (b) for the corresponding authorised commissioning duration.

Table 2: Environmental commissioning requirements

Infrastructure	Commissioning requirements	Authorised commissioning duration
Irrigation sprayfield	<ul style="list-style-type: none"> (a) No more than 50 m³ of treated effluent is discharged to the irrigation sprayfield per day; and (b) Irrigation is managed to prevent ponding and pooling of effluent on the ground surface of the irrigation sprayfield. 	A period not exceeding 90 calendar days in aggregate.
WWTP and pipeline	<ul style="list-style-type: none"> (a) Volumetric flow meters are maintained on the WWTP inlet and outlet to the irrigation sprayfield. (b) Sludge is contained within sealed sludge tanks prior to removal by a licensed waste carrier for disposal to a licensed disposal facility. (c) Screenings are contained within a sealed bin prior to removal for disposal to a licensed disposal facility. (d) Chemicals including sodium hypochlorite are stored in a dangerous goods container. (e) Chemicals are stored in accordance with Australian Standard AS3780-2008 Storage and Handling of Corrosive Substances; and 	

Infrastructure	Commissioning requirements	Authorised commissioning duration
	(f) Spills of wastewater or chemicals outside of a vessel/container are cleaned up immediately.	
Turkeys nest and brine tanks	(a) No more than a combined maximum input of 50 m ³ of RO reject water (Brine) per day (b) Maintain a minimum freeboard of 0.5 m in Turkeys nest; and (c) Conduct routine inspections of the Turkeys nest to prevent overflow	

6. During environmental commissioning, the works approval holder must ensure that the emission specified in Table 3, is discharged only from the corresponding discharge point and only at the corresponding discharge point location.

Table 3: Authorised discharge points during commissioning

Emission	Discharge point	Discharge point location
Treated effluent	Sprinklers within the irrigation sprayfield.	Irrigation sprayfield as shown in Figures 1 and 4 of Schedule 1: Maps
RO reject water (Brine)	Turkeys nest and tanks	Turkeys nest as shown in Figure 1 of Schedule 1: Maps

Monitoring during environmental commissioning

7. The works approval holder must monitor emissions during environmental commissioning in accordance with Table 4.

Table 4: Emissions monitoring during environmental commissioning

Discharge point	Monitoring location	Parameter	Frequency	Averaging Period	Unit
Irrigation sprayfield	WWTP outlet	Thermotolerant coliforms	Weekly	Spot sample	cfu or MPN /100 ml
		BOD ₅			mg/L
		Total suspended solids			
		Total dissolved solids			
		Total nitrogen			
		Total phosphorus			
	pH ¹	Daily or continuous online	pH units		

		Residual chlorine ¹	Daily or continuous online		mg/L
		Cumulative flow volume discharged to sprayfield ¹	Continuous	N/A	m ³ /day

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

8. For the monitoring activity required by condition 7, the works approval holder must:
- (a) record the results;
 - (b) handle and preserve all water samples collected during the monitoring of the WWTP in accordance with AS 5667.1 and AS 5667.10; and
 - (c) have analysis conducted by a laboratory with current National Association of Testing Authorities (NATA) accreditation for the parameters specified.

Environmental Commissioning Report

9. The works approval holder must submit to the CEO an Environmental Commissioning Report within 30 calendar days of the completion date of environmental commissioning for each item of infrastructure specified in Table 2.
10. The works approval holder must ensure the Environmental Commissioning Report required by condition 9 of this works approval includes the following:
- (a) a summary of the environmental commissioning activities undertaken, including timeframes and amount of wastewater processed;
 - (b) a summary of treated effluent monitoring results recorded in accordance with condition 7;
 - (c) copies of laboratory reports for treated effluent monitoring results recorded in accordance with condition 7;
 - (d) a summary of the environmental performance of each item of infrastructure or equipment as installed, which at minimum includes:
 - (i) a comparison of the treated effluent monitoring results against discharge limits specified in condition 1;
 - (ii) assessment of the irrigation sprayfield performance against operational requirements in condition 5;
 - (e) a review of the works approval holder’s performance and compliance against the conditions of this works approval; and
 - (f) where they have not been met, measures proposed to meet the manufacturer’s design specifications and the conditions of this works approval, together with timeframes for implementing the proposed measures.

Time limited operations phase

Commencement and duration

11. The works approval holder may only commence time limited operations for an item of infrastructure identified in condition 1 where the Environmental Commissioning Report for that item of infrastructure as required by condition 9 has been submitted by the works approval holder; and

12. The works approval holder may conduct time limited operations for an item of infrastructure specified in condition 13:
- for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 11 for that item of infrastructure; or
 - until such time as a registration or licence for that item of infrastructure is granted in accordance with Part V of the *Environmental Protection Act 1986* and only where this occurs prior to the time period specified in sub provision (a).

Time limited operations requirements and emission limits

13. During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in Table 5 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in Table 5.

Table 5: Infrastructure and equipment requirements during time limited operations

Site infrastructure and equipment	Operational requirements	Infrastructure location
Irrigation sprayfield	<ol style="list-style-type: none"> No more than 70 m³ per day of treated effluent is discharged to the irrigation sprayfield. Irrigation is managed to prevent ponding and pooling of effluent on the ground surface of the irrigation sprayfield. No treated effluent is permitted to runoff or discharge beyond the premises boundary; and No discharge of undiluted RO brine is permitted. 	Figures 1 and 4 of Schedule 1: Maps
WWTP and pipeline	<ol style="list-style-type: none"> Volumetric flow meters are maintained on the WWTP inlet and outlet to the irrigation sprayfield. Sludge is contained within sealed sludge tanks prior to removal by a licensed waste carrier for disposal to a licensed disposal facility. Screenings are contained within a sealed bin prior to removal for disposal to a licensed disposal facility. Chemicals including sodium hypochlorite are stored in a dangerous goods container. Chemicals are stored in accordance with Australian Standard AS3780-2008 Storage and Handling of Corrosive Substances; and Spills of wastewater or chemicals outside of a vessel/container are cleaned up immediately. 	Figures 1, 3 and 4 of Schedule 1: Maps
RO brine pipeline	<ol style="list-style-type: none"> No more than 50 m³ per day of RO brine is supplied to the WWTP; and Volumetric flow meters are maintained to monitor daily volume of RO brine delivered to the WWTP irrigation storage tanks. 	Figure 1 of Schedule 1: Maps
Turkeys nest and brine tanks	<ol style="list-style-type: none"> No more than a combined maximum input of 50 m³ of RO reject water (Brine) per day. Maintain a minimum freeboard of 0.5 m in Turkeys nest; and 	Figure 1 of Schedule 1: Maps

Site infrastructure and equipment	Operational requirements	Infrastructure location
	(c) Routine inspections of the Turkeys nest conducted to prevent overflow	
Evaporation pond	(a) Maintain a minimum freeboard of 0.5 m; and (b) Daily inspections conducted to prevent overflow	Figures 1 and 4 of Schedule 1: Maps

14. During time limited operations, the works approval holder must ensure that the emission specified in Table 6, is discharged only from the corresponding discharge points and only at the corresponding discharge point location.

Table 6: Authorised discharge points during time limited operations

Emission	Discharge point	Discharge point location
Treated effluent	Sprinklers within the irrigation spray field	Irrigation spray field as shown in Figures 1 and 4 of Schedule 1: Maps
RO reject water (Brine)	Turkeys nest and tanks	Turkeys nest as shown in Figure 1 of Schedule 1: Maps
	Evaporation pond	Evaporation pond as shown in Figures 1 and 4 of Schedule 1: Maps

Monitoring during time limited operations

15. During time limited operations, the works approval holder must ensure that the emissions from the discharge point listed in Table 7 does not exceed the corresponding limit(s) when monitored in accordance with condition 16.

Table 7: Emission and discharge limits during time limited operations

Discharge point	Parameter	Concentration limit	Loading limit
Irrigation spray field	BOD ₅	20 mg/L	30 kg/ha/day
	Total suspended solids	30 mg/L	Not applicable
	Total dissolved solids	2 800 mg/L	Not applicable
	Total nitrogen	30 mg/L	160 kg/ha over 120 days
	Total phosphorus	8 mg/L	40 kg/ha over 120 days
	Thermotolerant coliforms	1,000 cfu/100mL	Not applicable
	Residual chlorine	2.0mg/L	Not applicable
	pH	6.5 to 8.5	Not applicable

16. The works approval holder must monitor emissions during time limited operations in accordance with Table 8.

Table 8: Emissions and discharge monitoring during time limited operations

Discharge point	Monitoring location	Parameter	Frequency	Averaging Period	Unit
Irrigation sprayfield	WWTP outlet	Thermotolerant coliforms	Twice during time limited operations phase	Spot sample	cfu or MPN /100 mL
		BOD ₅			mg/L
		Total suspended solids			
		Total nitrogen			
		Total phosphorus			
		pH ¹			
	Total dissolved solids	Monthly during time limited operations phase		-	
	Residual chlorine ¹	Daily or continuous online	N/A	mg/L	
	Cumulative flow volume discharged to sprayfield ¹	Continuous		m ³	
RO brine pipeline outlets	Cumulative flow volume supplied to the turkeys nest and/or evaporation pond and tanks				

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

- 17.** For the monitoring activity required by condition 16, the works approval holder must:
- record the results;
 - handle and preserve all water samples collected during the monitoring of the WWTP in accordance with AS 5667.1 and AS 5667.10; and
 - have analysis conducted by a laboratory with current National Association of Testing Authorities (NATA) accreditation for the parameters specified.

Compliance reporting

- 18.** The works approval holder must submit to the CEO a report on the time limited operations within 30 calendar days of the completion date of time limited operations or 30 calendar days before the expiration date of the works approval, whichever is the sooner.
- 19.** The works approval holder must ensure the report required by condition 18 includes the following:

- (a) a summary of the time limited operations, including date(s) for commencement of time limited operations, timeframes and amount of wastewater processed;
- (b) a summary of monitoring parameter results obtained during time limited operations under condition 16.
- (c) copies of laboratory reports for treated effluent monitoring results recorded in accordance with condition 16;
- (d) a summary of the environmental performance of each item of infrastructure or equipment as installed, which at minimum includes:
- (e) a comparison of the treated effluent monitoring results against discharge limits specified in condition 15;
- (f) assessment of the spray irrigation field performance against operational requirements in condition 13;
- (g) a review of performance and compliance against the conditions of the works approval and the Environmental Commissioning Report; and
- (h) where the specifications and the conditions of this works approval have not been met, what measures will the works approval holder take to meet them, and what timeframes will be required to implement those measures.

Records and reporting (general)

- 20.** 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.
- 21.** 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 condition 1;
 - (b) any maintenance of infrastructure that is performed in the course of complying with conditions 5 and 13;
 - (c) monitoring programmes undertaken in accordance with conditions 7 and 16; and
 - (d) complaints received under condition 20.
- 22.** The books specified under condition 21 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 9 have the meanings defined.

Table 9: Definitions

Term	Definition
AS3780-2008	means Australian Standard AS3780-2008 Storage and Handling of Corrosive Substances
AS 5667.1	means Australian Standard 5667.1 Water quality - Sampling
AS 5667.10	means Australian Standard 5667.10 Water quality - Sampling Guidance on sampling of waste waters
BOD ₅	5-day Biochemical Oxygen Demand
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 <i>Environmental Protection Act 1986</i> Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
cfu	colony forming units
condition	means a condition to which this works approval is subject under s.62 of the EP Act.
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> 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.
DWER	Department of Water and Environmental Regulation
emission	has the same meaning given to that term under the EP Act.
environmental commissioning	means the sequence of activities to be undertaken to test equipment integrity and operation, or to determine the environmental performance, of equipment and infrastructure to establish or test a steady state operation and confirm design specifications.
Environmental Commissioning Report	means a report on any commissioning activities that have taken place and a demonstration that they have concluded, with focus on emissions and discharges, waste containment, and other environmental factors.
Environmental Compliance Report	means a report to satisfy the CEO that the conditioned infrastructure and equipment has been installed in accordance with the works approval.
EP Act	means the <i>Environmental Protection Act 1986 (WA)</i> .

Term	Definition
EP Regulations	means the <i>Environmental Protection Regulations 1987 (WA)</i> .
ha	hectare
Inspector	means an inspector appointed by the CEO in accordance with s.88 of the EP Act.
kg	kilogram
m ³	cubic metres
mg/L	milligrams per litre
ml	Millilitre
MPN	most probable number
NATA	National Association of Testing Authorities
NATA accreditation	means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis
premises	refers to the premises to which this works approval applies, as specified at the front of this works approval and as shown on the map in Schedule 1 to this works approval.
prescribed premises	has the same meaning given to that term under the EP Act.
RO	Reverse osmosis
spot sample	means a discrete sample representative at the time and place at which the sample is taken.
time limited operations	refers to the operation of the infrastructure and equipment identified under this works approval that is authorised for that purpose, subject to the relevant conditions.
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 s.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

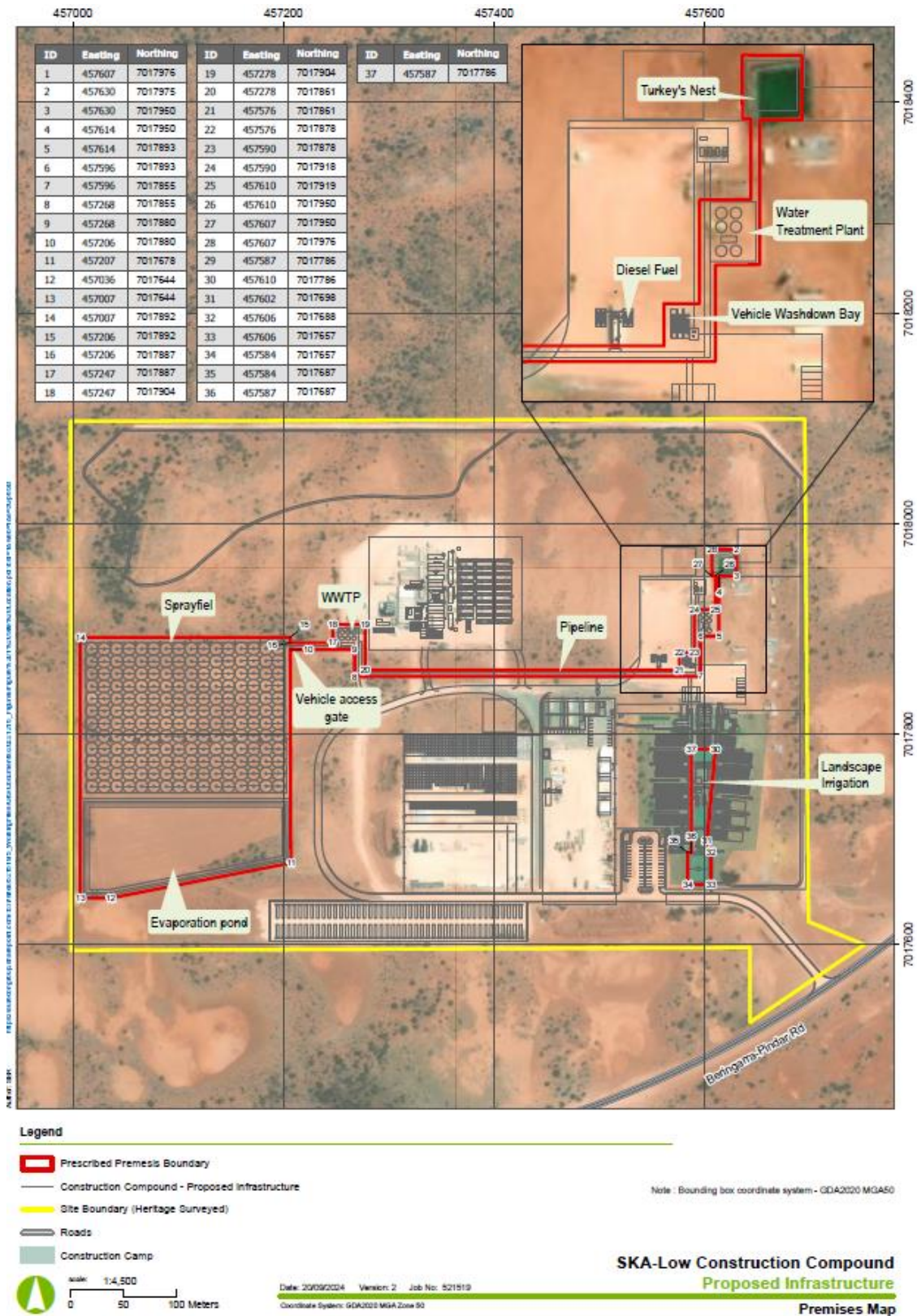


Figure 1: Map of the boundary of the prescribed premises

W6800/2023/1

IR-T05 Works approval template (v6.0) (September 2022)

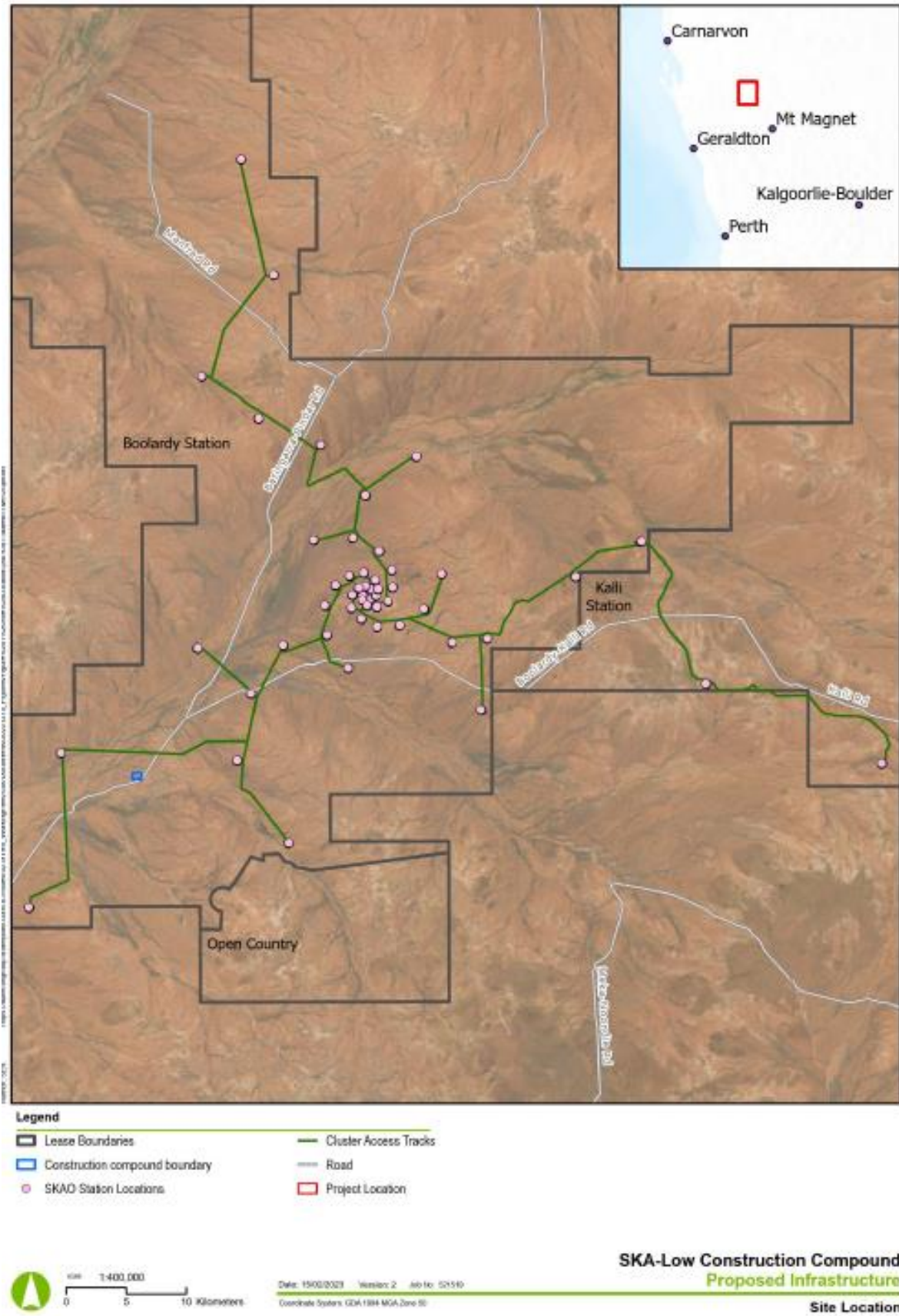


Figure 2: Site location

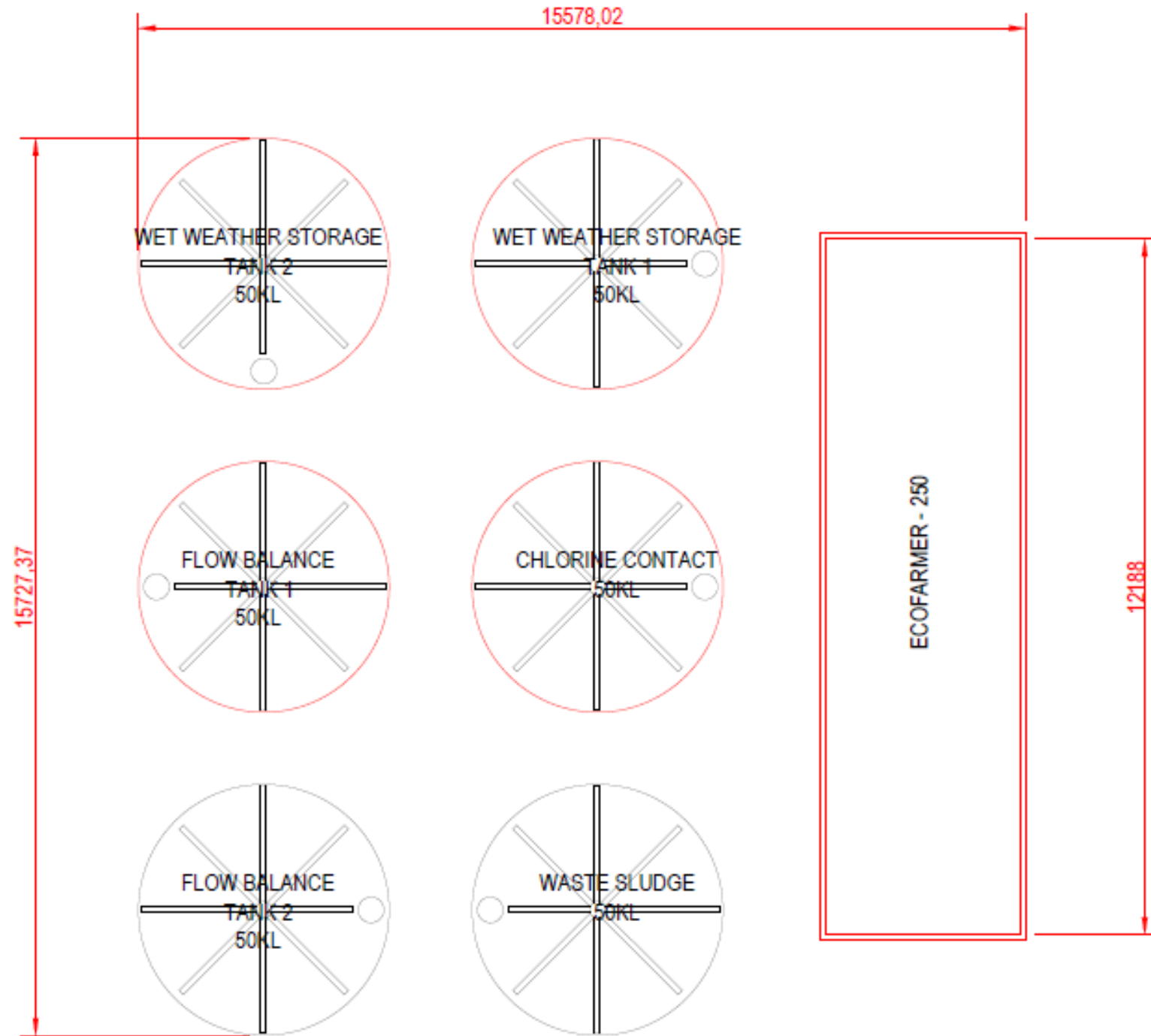


Figure 3: Layout of WWTP

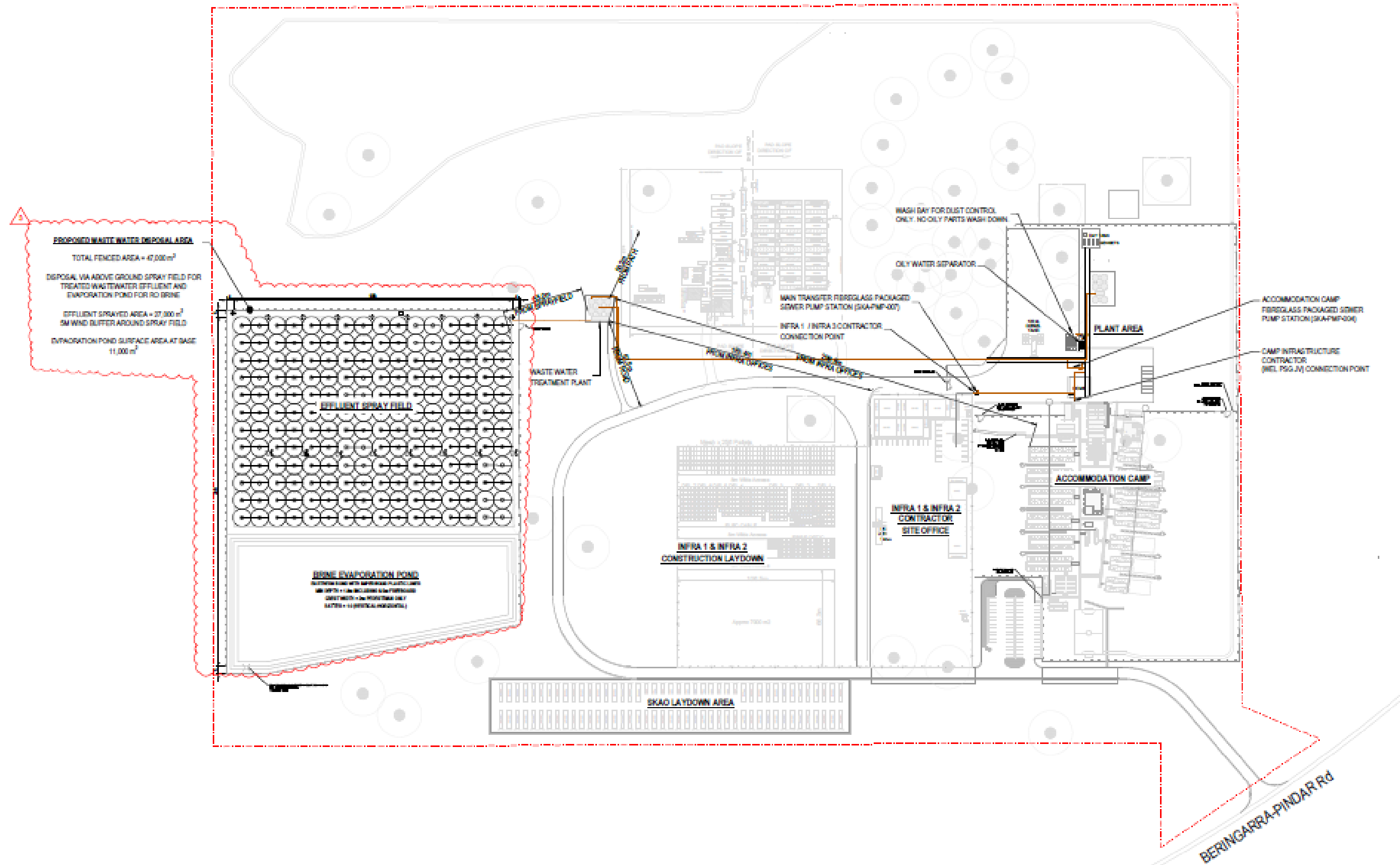


Figure 4: WWTP, WWTP irrigation sprayfield and evaporation pond in relation to the SKAO Accommodation Camp

Schedule 2: Premises boundary

The corners of the premises boundary are the coordinates listed in Table 10.

Table 10: Premises boundary coordinates (GDA2020 MGA Zone 50)

	Easting	Northing
1.	457607	7017976
2.	457630	7017975
3.	457630	7017950
4.	457614	7017950
5.	457614	7017893
6.	457596	7017893
7.	457596	7017855
8.	457268	7017855
9.	457268	7017880
10.	457206	7017880
11.	457207	7017678
12.	457036	7017644
13.	457007	7017644
14.	457007	7017892
15.	457206	7017892
16.	457206	7017887
17.	457247	7017887
18.	457247	7017904
19.	457278	7017904
20.	457278	7017861
21.	457576	7017861
22.	457576	7017878
23.	457590	7017878

24.	457590	7017918
25.	457610	7017919
26.	457610	7017950
27.	457607	7017950
28.	457607	7017976
29.	457587	7017786
30.	457610	7017786
31.	457602	7017698
32.	457606	7017688
33.	457606	7017657
34.	457584	7017657
35.	457584	7017687
36.	457587	7017687
37.	457587	7017786