



Works Approval

Works approval number W6569/2021/1

Works approval holder IB Operations Pty Ltd
ACN 165 513 557

Registered business address Level 2
87 Adelaide Terrace
EAST PERTH WA 6004

DWER file number DER2021/000390

Duration 8/11/2021 to 7/11/2024

Date of issue 7/11/2021

Premises details North Star Magnetite Project
Shay Gap Wastewater Treatment Plant

Legal description -
Part of Mining Tenure L45/547
As defined by the coordinates in Schedule 2

Prescribed premises category description (Schedule 1, <i>Environmental Protection Regulations 1987</i>)	Assessed production / design capacity
Category 54: 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	101m ³ /day

This works approval is granted to the works approval holder, subject to the attached conditions, on 7 November 2021, by:

Stephen Checker
MANAGER WASTE INDUSTRIES

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

Works approval history

Date	Reference number	Summary of changes
7/11/2021	W6569/2021/1	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) install the infrastructure and/or equipment;
 - (b) in accordance with the corresponding design and installation requirements;
 - (c) at the corresponding infrastructure location; and
 as set out in Table 1.

Table 1: Design and installation requirements

	Infrastructure	Design and installation requirements	Infrastructure location
1.	Wastewater Treatment Plants (WWTP)	<p>The sewage treatment system must be designed and constructed so as to meet the following specifications:</p> <ol style="list-style-type: none"> a) All above ground infrastructure located on an impervious, bunded hardstand; b) Be able to receive and treat a combined sewage inflow of up to 101 m³/day; c) Able to treat sewage to the following output emission standards: <ol style="list-style-type: none"> i) 5-day Biochemical oxygen demand (BOD₅) <20 mg/L; ii) Total suspended solids (TSS) <30 mg/L; iii) Total nitrogen (TN) <30 mg/L; iv) Total phosphorus (TP) <8 mg/L; v) Thermotolerant coliforms <1000 cfu/100mL; vi) pH 6.5 to 8.5; and vii) Residual Free chlorine 0.2mg/L to 2.0mg/L d) Final treated effluent irrigation storage tank capable of storing all wastewater not able to be discharged to the Spray Irrigation Field; e) Have a sealed connection point for pumping-out tank sludge for offsite disposal to a licensed waste facility; f) Flow meters to be installed to record the influent/effluent volumes that are received/sent from the WWTP. Flow meters to be located on the output line after the WWTP g) Incorporate an alarm system of warning beacons, as well as audible and visual 	Schedule 1 Premises map

	Infrastructure	Design and installation requirements	Infrastructure location
		<p>pump fault alarms, which will activate in the event of:</p> <ul style="list-style-type: none"> i) pump faults; ii) high tank levels; and iii) tank overflows. <p>h) Allow for manual operation if necessary.</p>	
2.	45m ³ /d WWTP	<ul style="list-style-type: none"> a) Comprising the following equipment: <ul style="list-style-type: none"> i) Raw wastewater storage tank(s) of at least 45m³/d capacity; ii) Inlet Screen; iii) Balance Tank; iv) Re-circulating Anoxic Buffer Tank; v) Continuous Aeration Tank; vi) Aeration/Decant Tank; vii) Effluent Tank; viii) Waste Sludge Discharge Cycle; and ix) Chlorine Dosing System. b) All above ground infrastructure located on a hardstand and be bunded. c) Receive inflow Reverse Osmosis reject in the Balance Tank. d) Direct Treated effluent combined with Reverse Osmosis reject to the Spray Irrigation Field. 	Schedule 1 Premises map
3.	Submerged Aerated Filter WWTP (56m ³ /d)	<ul style="list-style-type: none"> a) Comprising the following equipment as two WWTP containers operating in parallel: <ul style="list-style-type: none"> i) Raw wastewater storage tank(s) of at least 56m³/d capacity; ii) Inlet screen; iii) Balance Tank; iv) Primary / Anoxic Tank(s); v) Aerobic Tank(s); vi) Clarifier Tank(s); vii) Irrigation Tank(s); viii) Effluent and Reject Mixing Tank; ix) Waste Sludge Discharge Cycle; and x) Chlorine Dosing System. b) All above ground infrastructure located on an impervious, bunded hardstand. c) Receive inflow Reverse Osmosis reject in the Effluent and Reject Mixing Tank. d) Direct Treated effluent combined with Reverse Osmosis reject to the Spray Irrigation Field. 	Schedule 1 Premises map
4.	Irrigation Spray Field	The spray field must be designed and constructed so as to meet the following specifications:	Schedule 1 Premises map

	Infrastructure	Design and installation requirements	Infrastructure location
		<ul style="list-style-type: none"> a) Above ground sprinklers installed; b) Not less than 4.7ha in size; c) Maintain a 5 m spray drift buffer from the edge of the sprinkler radius; d) Maximum slope gradient of 0.5% across the entire spray field area; e) Ensure no ponding or pooling of treated wastewater occurs; f) Ensure that no treated effluent is discharged from the spray field; g) Fenced with a vehicle access gate; and h) Warning signage fixed to all sides of the fence advising the area is used for the disposal of treated wastewater. 	
5.	All	<ul style="list-style-type: none"> a) All sewage storage and treatment tanks, vessels, transfer pipelines and conveyance infrastructure must be impermeable and free of leaks or defects; b) 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; c) Chemicals, including sodium hypochlorite, must be stored separately within an above ground vessel/s located on a hardstand enclosed by bunds with a holding capacity of 110% of the total vessel/s contents; and d) Chemicals must be stored in accordance with Australian Standard AS3780. 	Schedule 1 Premises map

Compliance reporting

2. The works approval holder must within 30 calendar days of an item of infrastructure or equipment required by condition 1 being 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 civil engineer that the items of infrastructure or component(s) 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 condition 2 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.
 as set out in Table 2.

Table 2: Environmental commissioning requirements

Infrastructure	Commissioning requirements	Authorised commissioning duration
Spray Irrigation Field	<ol style="list-style-type: none"> a) Not more than 147m³ per day of treated effluent to be applied to the designated spray irrigation area; b) Irrigation is managed to prevent ponding and pooling of effluent on the ground surface of the irrigation spray field; and c) No treated effluent is permitted to discharge from the Spray Irrigation Area identified in Schedule 1. 	A period not exceeding 60 calendar days in aggregate.
WWTP and Pipeline	<ol style="list-style-type: none"> a) Volumetric flow meters are maintained on the WWTP inlet and outlet to the spray irrigation field; 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; and 	

Infrastructure	Commissioning requirements	Authorised commissioning duration
	d) Spills of wastewater or chemicals outside of a vessel/container are cleaned up immediately.	

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

Table 3: Authorised discharge points during commissioning

Emission	Discharge point	Discharge point location
Treated effluent including Reverse Osmosis Reject	Sprinklers within the spray irrigation field	Spray irrigation field as shown in Schedule 1 Premises map

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
Spray Irrigation Field	WWTP outlet	<i>E. coli</i>	Weekly	Spot sample	cfu / 100mL
		Thermotolerant coliforms			
		BOD ₅			
		Total suspended solids			
		Total nitrogen			
		Total phosphorus			
		pH ¹	Daily or continuous online	n/a	pH units
		Residual chlorine ¹		n/a	mg/L
		Cumulative flow volume	Continuous	n/a	m ³

Note 1 – non NATA in situ testing 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 Australian Standard 5667.1:1998 Water Quality – Sampling; 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 .
- 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 date(s) for commencement of commissioning, 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 15;
 - (ii) assessment of the spray irrigation field 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 13 where the Environmental Commissioning Report for that item of infrastructure as required by condition 9 has been submitted by the works approval holder.
- 12.** The works approval holder may conduct time limited operations for an item of infrastructure specified in condition 13:
- (a) 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

- (b) until such time as a licence for that item of infrastructure is granted in accordance with Part V of the Environmental Protection Act 1986, if one is granted before the end of the period specified in condition 12(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 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 requirement	Infrastructure location
1.	Spray Irrigation Field	<ul style="list-style-type: none"> a) Not more than 147m³ of blended effluent applied per day to the designated irrigation area; b) Irrigation is managed to prevent ponding and pooling of effluent on the ground surface of the irrigation spray field; and c) No blended effluent is permitted to runoff or discharge beyond the Spray Irrigation Field. 	As shown in Schedule 1 Premises map
2.	WWTP and Pipeline	<ul style="list-style-type: none"> a) Volumetric flow meters are maintained on the RO brine holding tank outlet, WWTP inlet and outlet to the irrigation spray field; 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; and d) Spills of wastewater, RO brine or chemicals outside of a vessel/container are cleaned up immediately. 	As shown in Schedule 1 Premises map
3.	RO brine pipeline	<ul style="list-style-type: none"> a) No more than 46m³/day of RO brine is supplied to the WWTP. 	As shown in Schedule 1 Premises map

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
Blended effluent	Sprinklers within the spray irrigation field	Spray irrigation field as shown in Schedule 1 Premises map

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 do 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
Spray Irrigation Field	BOD ₅	20 mg/L
	Total suspended solids	30 mg/L
	Total nitrogen	30 mg/L
	Total phosphorus	8 mg/L
	Thermotolerant coliforms	1,000 cfu/100mL
	Total dissolved solids	2400 mg/L
	pH	6.5 to 8.5

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
Spray Irrigation Field	WWTP outlet	<i>E. coli</i>	Monthly	Spot sample	cfu / 100mL
		Thermotolerant coliforms			

		BOD ₅			mg/L
		Total suspended solids			
		Total nitrogen			
		Total phosphorus			
		Total dissolved solids			
		pH ¹			
	Cumulative flow volume discharged to the sprayfield ¹	Continuous	n/a	m ³	
RO brine pipeline outlet	Cumulative flow volume supplied to the wastewater treatment plants				

Note 1: In-field non-NATA accredited analysis is 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 Australian Standard 5667.1:1998 Water Quality – Sampling; and
 - have analysis conducted by a laboratory with current National Association of Testing (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 summary of the time limited operations, including date(s) for commencement of time limited operations, timeframes and amount of wastewater processed;
 - a summary of monitoring parameter results obtained during time limited operations under condition 16.
 - copies of laboratory reports for treated effluent monitoring results recorded in accordance with condition 16;
 - a summary of the environmental performance of each item of infrastructure or equipment as installed, which at minimum includes:
 - a comparison of the blended effluent monitoring results against discharge limits specified in condition 15;
 - assessment of the spray irrigation field performance against operational

requirements in condition 13;

- (e) a review of performance and compliance against the conditions of the works approval and the Environmental Commissioning Report; and
- (f) 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 condition(s) 5 and 13;
 - (c) monitoring programmes undertaken in accordance with condition(s) 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 have the meanings defined.

Table 9: Definitions

Term	Definition
AS3780	Means Australian Standard AS3780-2008 Storage and Handling of Corrosive Substances.
AS5667.1:1998	means Australian Standard 5667.1:1998 Water Quality – Sampling.
Blended effluent	means treated effluent from the wastewater treatment plant blended with RO brine reject.
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
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.
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/or equipment has been installed in accordance

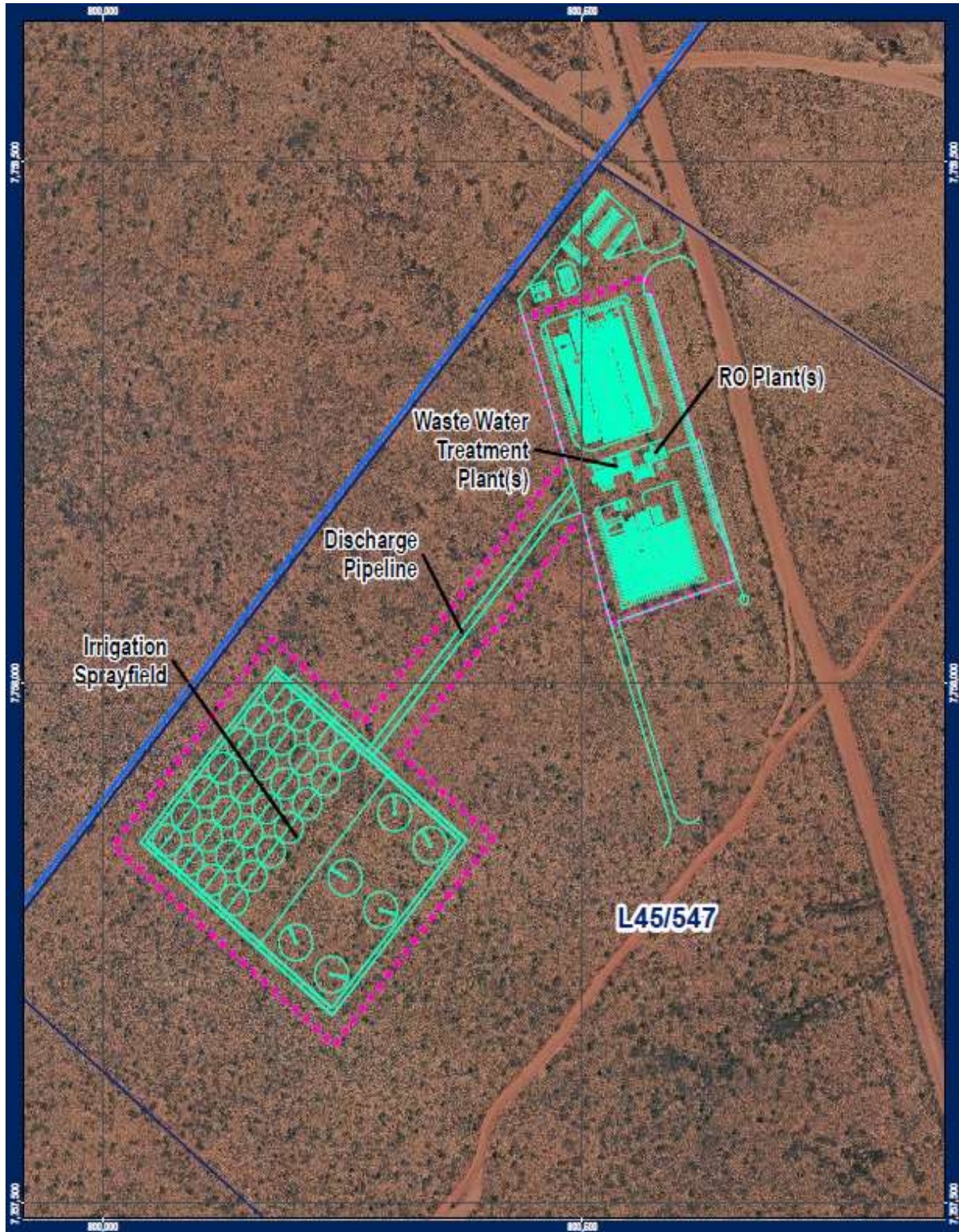
Term	Definition
	with the works approval.
EP Act	<i>Environmental Protection Act 1986 (WA).</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA).</i>
Ha	hectare
kg	kilogram
m ³	cubic metres
mg/L	milligrams per litre
mL	millilitre
monthly period	means a one-month period commencing from first calendar day of a month until the last calendar day of that same month.
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	the premises to which this licence applies, as specified at the front of this licence and as shown on the premises 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
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.
WWTP	Wastewater Treatment Plant
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.

END OF CONDITIONS

Schedule 1: Maps

Premises map

The boundary of the prescribed premises is shown in the map below. The Pink perforated line represents the premises boundary.



Schedule 2: Premises boundary

The premises boundary is defined by the coordinates in Table 10.

Table 10: Premises boundary coordinates

Easting	Northing
800566.1	7758390.2
800661.2	7758099.1
800530.1	7758056.8
800505.7	7758140.5
800499.4	7758160.3
800309.9	7757932.1
800407.2	7757851.3
800241.8	7757652.0
8000011.0	7757843.6
800176.4	7758042.9
800273.0	7757962.7
800474.9	7758205.9
800482.1	7758214.7
800439.1	7758349.8
800566.1	7758390.2