



Works approval number	W6413/2020/1
Works approval holder	Greenstone Resources (WA) Pty Ltd
ACN	100 341 599
Registered business address	Level 2 35 Ventor Avenue WEST PERTH WA 6005
DWER file number	DER2020/000245
Duration	04/09/2020 to 03/09/2025
Date of issue	04/09/2020
Premises details	King of the Hills Project Part of the Mining Tenement M37/457 LEONORA WA 6438 As defined by the coordinates in Schedule 2

Prescribed premises category description (Schedule 1, <i>Environmental Protection Regulations 1987</i>)	Assessed design capacity
Category 54: Sewage facility	146.25 m ³ per day
Category 89: Putrescible land site	Less than 5000 tonnes per year

This works approval is granted to the works approval holder, subject to the attached conditions, on 4 September 2020, by:

Steve Checker

**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
4/09/2020	W6413/2020/1	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 and/or install the infrastructure and/or equipment;
 - (b) in accordance with the corresponding design and construction / installation requirements;
 - (c) at the corresponding infrastructure location; and
 - (d) within the corresponding timeframe,
 as set out in Table 1.

Table 1: Design and construction / installation requirements

	Infrastructure	Design and construction / installation requirements	Infrastructure location
1.	Putrescible landfill	<ul style="list-style-type: none"> Initial cell to be approximately 100 metres in width, 200 metres in length, 4 metres in depth; Landfill trench with sufficient cover material located within the footprint of the landfill; Base of the landfill located greater than or equal to 5 metre (m) above the groundwater table; Earthen bunding (1 m minimum height) constructed and perimeter fencing erected around the boundary of the landfill; and To incorporate a vehicle access ramp 	Figure 1 – Landfill
2.	WWTP	<ul style="list-style-type: none"> Containerized five (5) stage tristar designed sequencing batch reactor (SBR450EP) with an average daily capacity of 146.25 m³/day comprising: <ul style="list-style-type: none"> Inlet screen unit 2 x containerised SBR units 2 x 50 kL Balance tanks fitted with low level and high level alarms as well as malfunction alarms 1 x 32 kL Irrigation tank 1 x 32 kL Sludge tank Associated HDPE pipelines Transfer and circulation pumps Chlorine dosing unit Sludge dewatering system All equipment tagged and labelled; 	Figure 1 – WWTP

	Infrastructure	Design and construction / installation requirements	Infrastructure location
		<ul style="list-style-type: none"> • All pipelines will be HDPE with welded joints; • Tanks fitted with malfunction alarms; • Pipelines to be located within bunds to ensure that in the event of a spill or leak, effluent is captured and not released to the environment; • Perimeter fence around the boundary of the WWTP and spray field; • Designed and constructed to meet the following emission standards: <ul style="list-style-type: none"> ○ BOD - <20 mg/L ○ TSS - <30 mg/L ○ TN - <30 mg/L ○ TP - <8 mg/L ○ pH - 6.8-8.5 ○ <i>E.coli</i> - <1000 coliform forming units per 100 mL (cfu/100mL) 	
3.	Irrigation field	<ul style="list-style-type: none"> • Minimum area of 3.6 ha during stage 1 phase; • to receive up to 146.25 m³ per day of treated wastewater; • HDPE pipelines with welded joints; • Safety/warning signage; and • Fenced 	Figure 1 – Sprayfied

Environmental commissioning phase

2. The Works Approval Holder shall Commission the WWTP and irrigation field for a period of no longer than 3 months, following submission of the report required by Condition 3.

Environmental commissioning requirements and emission limits

3. The works approval holder may only commence environmental commissioning of the WWTP and irrigation field identified in condition 1 once the Environmental Compliance Report has been submitted for that item of infrastructure in accordance with condition 16 of this works approval.
4. Any environmental commissioning activities undertaken for an item or 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
1.	WWTP and Irrigation field	<u>Dry (Pre) Commissioning</u> <ul style="list-style-type: none"> static checks on unpowered equipment to confirm that the package plant has been installed according to specification; training operators in testing and maintenance procedures to ensure the plant is operated in accordance with the manufacturer's specifications; and conduct dry commissioning without the addition of chemicals, water or wastewater. 	2 weeks
		<u>Wet Commissioning</u> <ul style="list-style-type: none"> test operation of the package plant and all associated tanks and pipework with water; will not begin until pre-commissioning tests have been passed. 	2 weeks
		<u>Commissioning</u> <ul style="list-style-type: none"> test operation of equipment and facilities with chemicals and wastewater; will not begin until wet commissioning tests have been passed; material feeds to the WWTP will be gradually increased until they reach the steady-state design volumes; treated effluent will be collected in a storage tank and recycled to the WWTP as required to meet effluent irrigation quality specifications; treated effluent water quality will be established according to a sampling and validation program. treated effluent will not be disposed of unless the 	8 weeks

	Infrastructure	Commissioning requirements	Authorised commissioning duration
		measured parameters comply with the expected wastewater quality as shown in Table 3.	

Monitoring during environmental commissioning

5. The Works Approval Holder must ensure that:
 - (a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;
 - (b) all groundwater samples are collected and preserved in accordance with AS/NZS 5667.11;
 - (c) all microbiological samples are collected and preserved in accordance with AS/NZS 2031; and
 - (d) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured.
6. The Works Approval Holder shall undertake the monitoring specified in Table 3 during the Commissioning period of no longer than 3 months.

Table 3: Emissions and discharge monitoring during environmental commissioning

Monitoring point reference	Parameter	Units	Averaging period	Frequency
Final effluent to irrigation storage tank	<i>E.coli</i>	cfu/100ml	Spot sample	Weekly (NATA accredited analysis)
	Total Nitrogen	mg/L		
	Total Phosphorous			
	Biochemical Oxygen Demand			
	Total dissolved solids			
	Total suspended solids (as turbidity) ¹			Weekly (in-field non-NATA accredited analysis permitted); and Weekly NATA accredited testing for verification purposes.
	pH ¹	-	N/A	Weekly (in-field non-NATA accredited analysis permitted)
	Volumetric flow rate	m ³ /day	24 hours	Continuous

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

7. The works approval holder must compare the monitoring results required under Condition 6 with the corresponding level(s) shown in table 4.

Table 4: Authorised Emissions table

	Discharge point	Parameter	Level
1.	Irrigation field discharge point	pH	6.5 - 8.5 ¹
		Biochemical Oxygen Demand	<20 mg/L ¹
		Total suspended solid	<30 mg/L ¹
		Total Nitrogen	<30 mg/L ²
		Total Phosphorus	<8 mg/L ²
		Total Chlorine	0.2 - 2.0 mg/L ¹
		E. coli	<1000 cfu/100ml ¹

Note 1: Guidelines for Non-potable uses of recycled Water in Western Australia 2011, Department of Health

Note 2: WQPN 22 Risk Category C

Environmental commissioning report

8. The works approval holder must submit to the CEO an Environmental Commissioning Report within 14 calendar days of the completion date of environmental commissioning for each item of infrastructure specified in Table 2.
9. The works approval holder must ensure the Environmental Commissioning Report required by condition 8 of this works approval includes the following:
- (a) a summary of the environmental commissioning activities undertaken, including timeframes;
 - (b) the point-source emissions monitoring and/or ambient concentrations monitoring results recorded in accordance with condition 6 with comparison against the authorised emissions specified in Condition 7;
 - (c) a summary of the environmental performance of each item of infrastructure or equipment as constructed or installed;
 - (d) a review of the works approval holder's performance and compliance against the conditions of this works approval; and
 - (e) 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

10. The Works Approval Holder may commence time limited operations for an item of infrastructure specified in Condition 12:
- (a) where an item of infrastructure is not authorised to undertake environmental commissioning, the Environmental Compliance Report as required by condition

16 has been submitted by the works approval holder for that item of infrastructure; and

- (b) where an item of infrastructure is authorised for environmental commissioning under condition 3, the Environmental Commissioning Report for that item of infrastructure as required by condition 8 has been submitted by the works approval holder.

11. The Works Approval Holder may conduct time limited operations for an item of infrastructure specified in Condition 12:

- (a) for a period not exceeding 90 calendar days from the day the Works Approval Holder meets the requirements of Condition 10 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*.

Time limited operations and monitoring requirements

12. 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

No.	Infrastructure and equipment	Operational requirements	Infrastructure and equipment location
1.	<u>WWTP</u> <ul style="list-style-type: none"> • inlet screen unit • 2 x containerised SBR units. • 2 x 50 kL Balance tanks. • 1 x 32 kL Irrigation tank. • 1 x 32 kL Sludge tank. • transfer and circulation pumps. • Sodium hypochlorate dosing unit. • sludge dewatering system. • alarm system. 	<ul style="list-style-type: none"> • must be inspected daily (whilst operating) for any visible seepage and malfunction. • a written log is required to be maintained for each inspection, with the record of each inspection signed by the responsible person. • must meet the following emission standards: <ul style="list-style-type: none"> ○ BOD - <20 mg/L ○ TSS - <30 mg/L ○ TN - <30 mg/L ○ TP - <8 mg/L ○ pH - 6.8-8.5 ○ <i>E.coli</i> - <1000 coliform forming units per 100 mL (cfu/100mL) 	WWTP as shown in Figure 1
2.	Mobile equipment (e.g. vehicles, heavy equipment, generators and pumps)	<ul style="list-style-type: none"> • maintain all mobile equipment as per manufacturer's specifications. 	NA
3	Class II (Category 89) landfill	<ul style="list-style-type: none"> • all waste types must meet acceptance criteria for Class II landfills. • disposal of waste by landfilling shall only take place within the landfill area • to be covered with sufficient quantities of Type 1 inert waste, 	Landfill as shown in Figure 1

No.	Infrastructure and equipment	Operational requirements	Infrastructure and equipment location
		clean fill or other appropriate cover material to prevent the spread of fire and harbouring of disease vectors.	

Monitoring during time limited operations

13. The Works Approval Holder must monitor emissions during time limited operations in accordance with Table 6 and record the results of all such monitoring.

Table 6: Emissions and discharge monitoring during time limited operations

Monitoring location	Parameter	Units	Frequency	Sampling method
Discharge point to the irrigation area	Volumetric flow rate	m ³ /day	Continuous	AS/NZS 5667.1
	pH ¹	-	Within seven days of commencement of discharge and thereafter monthly until flow ceases	
	<i>E. Coli</i>	CFU/100 ml		
	Biological Oxygen Demand (BOD ₅)	mg/L		
	Total Suspended Solids (TSS)			
	Total Dissolved Solids (TDS)			
	Total Nitrogen			
	Total Phosphorus			

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

14. The Works Approval Holder shall undertake the monitoring specified in Table 7.

Table 7: Monitoring of inputs

Input	Parameter	Units	Averaging period	Frequency
Waste inputs	Putrescible waste, waste that complies with Class II criteria in the document titled "Landfill Waste Classification and Waste Definitions" 1996.	tonnes (where a weighbridge is present on the site) m ³ (where no weighbridge is present)	N/A	Each load arriving at the landfill

15. All monitoring equipment used on the premises to comply with the Conditions of this Works Approval is calibrated in accordance with the manufacturer's specifications.

Compliance reporting

16. The Works Approval Holder must within 30 calendar days of the items 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 following the construction works as specified in Table 1 and prior to the commissioning and time limited operations phase.
- 17.** The Environmental Compliance Report required by Condition 16, must include as a minimum the following:
- (a) certification by a suitably qualified 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.
- 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 timeframes and amount of wastewater processed;
 - (b) a summary of treated effluent results obtained during time limited operations under condition 13.
 - (c) a review of performance and compliance against the conditions of the works approval and the Environmental Commissioning Report; and
 - (d) where the manufacturer's design 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;
 - (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 1;

- (c) monitoring programmes undertaken in accordance with condition(s) 5, 6, 13, and 14; 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 8 have the meanings defined.

Table 8: Definitions

Term	Definition
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
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 constructed and/or installed in accordance with the works approval.
EP Act	<i>Environmental Protection Act 1986 (WA)</i> .
EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i> .
premises	the premises to which this licence 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.

Term	Definition
Stage 1	<p>construction of:</p> <ul style="list-style-type: none"> the WWTP to treat up to 146.25 m³ per day of wastewater; a 3.6 hectare irrigation area to receive treated effluent; mobile crushing and screening plant; and putrescible landfill
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 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 (Figure 1). The pink line depicts the Premises boundary

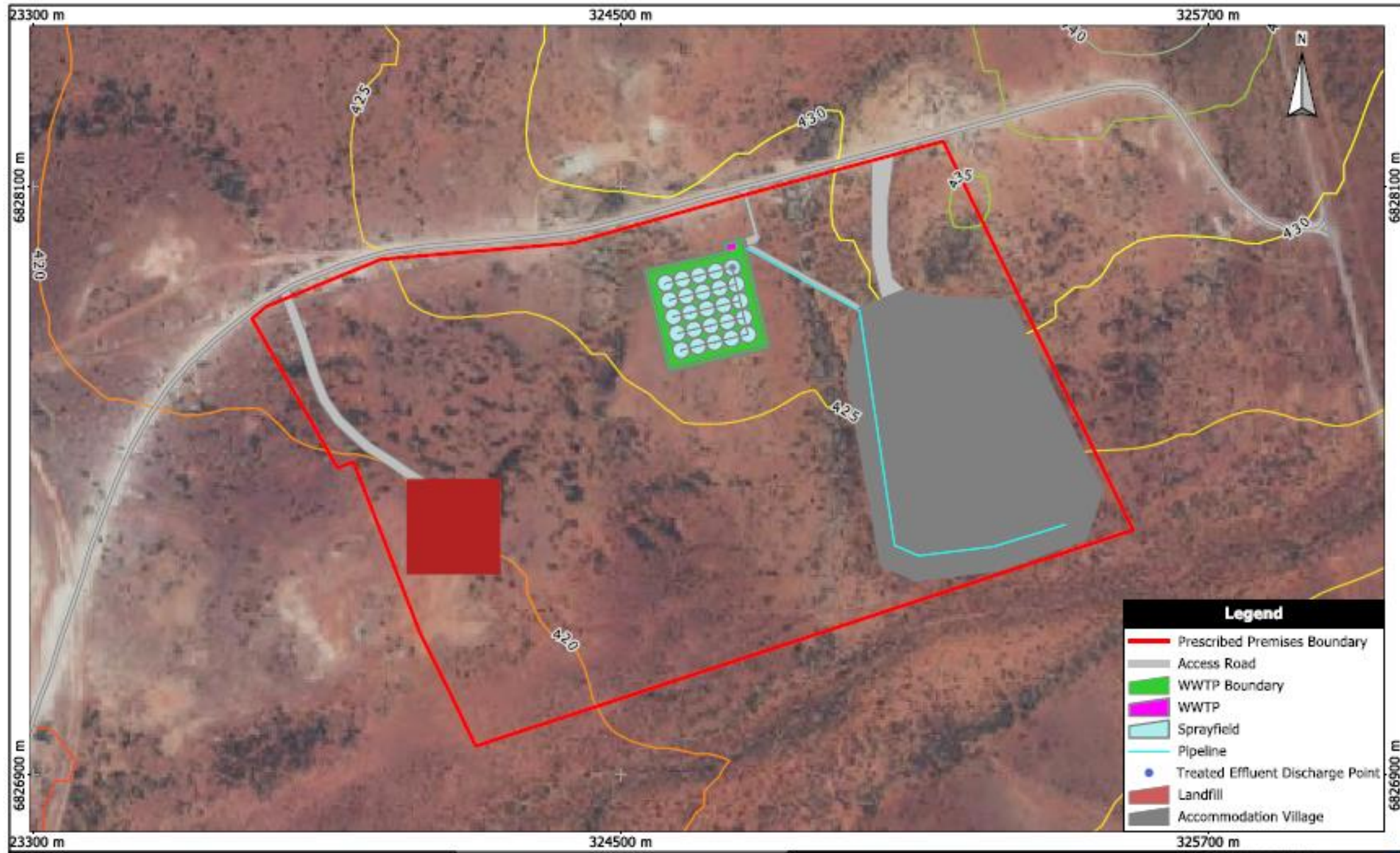


Figure 1: Map of the boundary of the prescribed premises

Schedule 2: Premises boundary

The premises boundary is defined by the coordinates in 9.

Table 9: Premises boundary coordinates

Latitude	Longitude
121.1964	-28.6647
121.2109	-28.6616
121.2147	-28.6688
121.2009	-28.6726
121.1984	-28.6674