



Works approval number	W6408/2020/1	
Works approval holder	Cleanaway Co Pty Ltd	
ACN	127 853 561	
Registered business address	4/441 St Kilda Road MELBOURNE VIC 3004	
DWER file number	DER2019/000570	
Duration	14/04/2022 to	13/04/2025
Date of issue	13/04/2022	
Premises details	Karratha Liquid Waste Treatment Plant and Waste Transfer Station Lot 126 Warlu Road COOYA POOYA WA 6714 Legal description – Lot 126 on Plan 183297	

Prescribed premises category description (Schedule 1, Environmental Protection Regulations 1987)	Assessed design capacity
Category 60: Incineration: premises (other than premises within category 59) on which waste, excluding clean paper and cardboard, is incinerated.	11,000 tonnes per annual period 1,256 kilograms per hour

This works approval is granted to the works approval holder, subject to the attached conditions, on 13/04/2022, by:

Daniel Hartnup
A/MANAGER, PROCESS 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
13/04/2022	W6408/2020/1	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 the infrastructure;
 - (b) in accordance with the corresponding design and construction requirements; and
 - (c) at the corresponding infrastructure location,
 as set out in Table 1.

Table 1: Design and installation specifications

	Infrastructure	Design and installation specifications	Infrastructure location
Hottpad system			
1	2 x containerised Hottpad units	Each Hottpad unit must be installed with: <ul style="list-style-type: none"> • Maximum 22 m² grid mesh floor equipped with heating elements and at least one air injection induced draft (ID) fan per unit; • ID fans must be capable of maintaining: <ul style="list-style-type: none"> - flow extraction rate at least 1.25 times greater than the air injection flow rate; and - a net negative pressure in the system; 	"Hott pad 1" and "Hott pad 2" as depicted in Figure 3' in Schedule 1

	Infrastructure	Design and installation specifications	Infrastructure location
		<ul style="list-style-type: none"> Removable emissions extraction canopy, equipped with sprinkler system for quenching and flexible emissions exhaust pipe. 	
2	Exhaust gas management system	<p>System must be designed to receive exhaust fumes from both Hottpad units into a common duct, and comprise:</p> <ul style="list-style-type: none"> At least 2 particulate/oil/moisture 'knock out' (KO) pots, that: <ul style="list-style-type: none"> are designed to operate at ambient temperature; fitted with high efficiency filters that are capable of capturing up to 99.99% of aerosols down to 4 microns; fitted with mist eliminators. A mercury recovery unit (MRU), that comprises: <ul style="list-style-type: none"> at least two vessels filled with sulfur-impregnated and pelletised activated carbon (AC) designed specifically for the treatment of air streams containing mercury vapours; sampling ports installed upstream and downstream of the MRU for performance verification; sampling ports installed for monitoring saturation levels of the AC. An odour control system ('Ecosorb'), that is: <ul style="list-style-type: none"> installed prior to the exhaust stack; has variable injection rate; capable of adsorbing odorous substances in the gas phase. An exhaust stack, that must be installed: <ul style="list-style-type: none"> at least 10 m above the as-built ground level; with at least 3 sampling ports that comply with the requirements of AS 4323.1, to allow periodic stack testing. 	"Knockout Pot", "MRU", "Ecosorb", "Stack", as depicted in Figure 3 in Schedule 1
3	Continuous emissions monitoring system (CEMS)	<p>Must install a calibrated process gas analyser that is:</p> <ul style="list-style-type: none"> located after the MRU and before the exhaust stack; capable of accurate and continuous monitoring of volumetric flow rate and process gases (NO_x, SO₂, CO, CO₂, O₂). 	"CEMS" as depicted in Figure 3' in Schedule 1
On-site power generation			
1	1 x generator	<ul style="list-style-type: none"> 1 x 420 kW diesel engine driven generator; Must be specified to achieve ambient air quality and workplace exposure standard criteria; Stack exhaust height must be at least 3.0 m above as-built ground level; Stack must be fitted with a sampling port that complies with the requirements of AS 4323.1, to allow periodic stack testing. 	"Genset" as depicted in Figure 3' in Schedule 1

Compliance audit and reporting

2. The works approval holder must within 60 calendar days of the infrastructure specified in condition 1 being constructed:
 - (a) undertake an audit of their compliance with the requirements of condition 1 for that item of infrastructure; 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:
 - (a) certification by a suitably qualified engineer, whether the items of infrastructure or 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.
4. Subject to condition 3(a), where an item of infrastructure or component of infrastructure has been certified as not being constructed, or does not comply with the corresponding requirements, or contains material defects, the works approval holder must:
 - (a) correct the non-compliant or defective works, prior to re-certifying in accordance with condition 3(a); or
 - (b) provide to the CEO a description of, and explanation for, any departures from the requirements specified in Table 1 that do not require rectification and do not constitute a material defect along with the Environmental Compliance Report required by condition 2.

Environmental commissioning phase

Environmental commissioning plan

5. The works approval holder must, at least 3 months prior to the commencement of environmental commissioning, provide to the CEO an environmental commissioning plan.
6. The plan required by condition 5 must include, but not be limited to:
 - (a) the stages, processes and expected timeframes of environmental commissioning;
 - (b) how accidents or malfunctions will be managed;
 - (c) start up and shut down procedures and how emissions will be managed during start up and shut down; and
 - (d) procedures for monitoring and managing emissions and discharges during environmental commissioning including, but not limited to:
 - (i) details of parameters to be included in any monitoring programs;
 - (ii) targets and/or trigger levels for each parameter; and
 - (iii) contingency actions to be implemented if target and/or trigger levels are exceeded.

Environmental commissioning requirements

7. The works approval holder may only commence environmental commissioning once the reports required by condition 2 and condition 5 have both been submitted by the works approval holder.
8. The works approval holder must conduct environmental commissioning in accordance with the plan submitted in accordance with condition 5.

9. The works approval holder must monitor mercury (total) emissions:
 - (a) at least once per day for at least the first 6 weeks of environmental commissioning, commencing from the moment the first sludge is loaded into a Hottpad unit until all treated sludge has been removed; and
 - (b) at the following locations:
 - (i) upstream of the KO pots;
 - (ii) downstream of the KO pots; and
 - (iii) downstream of the MRU.
10. The works approval holder must notify the CEO:
 - (a) at least 7 days prior to, the commencement date of environmental commissioning; and
 - (b) within 7 days after, the completion date of environmental commissioning.
11. The works approval holder must, within 60 calendar days of the completion of environmental commissioning, submit to the CEO an Environmental Commissioning Report.
12. The report required by condition 11 must include, but not be limited to:
 - (a) a summary of environmental commissioning activities undertaken, including timeframes and the amount of feedstock processed, total amount of feedstock processed per batch (for each Hottpad unit) and volumes of by-products produced;
 - (b) a summary of the environmental performance of all plant and equipment as installed, including air emissions monitoring conducted on all point sources;
 - (c) a review of the plant's performance against the design specifications;
 - (d) where they have not been met, measures proposed to meet the design specification, together with timeframes for implementing the proposed measures; and
 - (e) the proposed rate of replacement of activated carbon in the MRU.

Time limited operational phase

Commencement and duration

13. The works approval holder may only commence time limited operations once the Environmental Commissioning Report required by condition 11 has been submitted by the works approval holder.
14. The works approval holder may conduct time limited operations for the infrastructure and equipment specified in condition 15:
 - (a) for a period not exceeding 120 calendar days from the completion date of environmental commissioning; or
 - (b) until such time as a licence is granted in accordance with Division 3, Part V of the *Environmental Protection Act 1986*,whichever is sooner.

Infrastructure and equipment

15. During time limited operations, the works approval holder must ensure the premises infrastructure listed in Table 2 is maintained and operated in accordance with the corresponding operational requirement set out in that table.

Table 2: Infrastructure and operational requirements during time limited operations

	Site infrastructure	Operational requirement
1	Feedstock handling	<ul style="list-style-type: none"> Untreated feedstock must be blended with clean sand (or equivalent treated material from a previous batch) to achieve a spadeable consistency, prior to being loaded into the Hottpad units;
2	Exhaust gas management system	<ul style="list-style-type: none"> Exhaust gas from the Hottpad units must pass through an exhaust gas treatment system, comprising: <ul style="list-style-type: none"> KO pots, with mist eliminators; and MRU, prior to discharge via a 10 m stack; ID fans must be operated to maintain: <ul style="list-style-type: none"> (i) a flow extraction rate at least 1.25 times greater than air injection flow rate; and (ii) net negative pressure in each Hottpad system
3	Mercury recovery and management	<ul style="list-style-type: none"> During operation, material must be 'quenched' with water until the bed temperature reaches 120°C or less when mercury emissions, as monitored in accordance with condition 9(b)(iii), exceed 0.05 mg/m³ (30-minute average) on three consecutive measurements; Spent AC must be replaced in the MRU before it reaches 90% saturation level; Spent AC must be removed from the premises and taken to a facility that is authorised to accept, store and treat mercury-contaminated waste
4	Odour control	<ul style="list-style-type: none"> Odour control unit must be operated when there is a risk of odour causing impacts to workers and off-site receptors

Authorised emission points to air

16. During time limited operations, the works approval holder must ensure the emissions listed in Table 3 are only emitted from the corresponding emission point and location specified in that table.

Table 3: Authorised emission points to air

Emission	Emission point	Minimum stack height (m) ¹	Emission point location ³
NO, NO ₂ , NO _x , SO ₂ , CO, Hg, VOCs	Hottpad exhaust stack	10.0	"Stack", as depicted in Figure 3 in Schedule 1
PM, NO _x , SO ₂ , CO	Diesel generator stack	3.0	"Genset", as depicted in Figure 3 in Schedule 1

Note 1: Height from ground level to emission exit point of stack.

Note 2: Emission point location reference Schedule 1: Map of emission points.

Monitoring – general

17. The works approval holder must ensure that all monitoring equipment used on the premises to comply with conditions of this works approval is calibrated in accordance with the manufacturer's specifications.
18. The works approval holder must, where the requirements for calibration cannot be practicably met, or a 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.

Monitoring of point source air emissions

19. During time limited operations, the works approval holder must monitor point source air emissions in accordance with Table 4 and Table 5.

Table 4: Continuous monitoring of point source air emissions

Monitoring point location	Parameter	Frequency	Reporting averaging period	Reporting Unit	Method
"CEMS", as depicted in Figure 3 in Schedule 1	CO, O ₂ , SO ₂ , NO, NO ₂ and NO _x	Continuous	1 min	mg/m ³	CEMS
	Velocity			g/s	
	Temperature			m/s	
	Volumetric flow rate			°C	Calculated from velocity and temp
	Nm ³ /s				

Table 5: Manual stack testing during time limited operation

Monitoring point	Parameter	Frequency and timing	Monitoring duration (min-max)	Reporting Unit ¹	Method ²
"Stack sample port", as depicted in Figure 3 in Schedule 1	VOCs (speciated)	At least once during time limited operations	30 - 35 min	mg/m ³ g/s	USEPA Method 18
	Particulates		120 - 125 min		USEPA Method 5 – combined with USEPA Method 29
	Metals and metalloids				USEPA Method 29
	Total mercury				
	Ammonia, HCl, HF		60 - 65 min		USEPA Method 26
	SO ₂				USEPA Method 6C
	NO _x				USEPA Method 7E
	CO				USEPA Method 10
	Dioxins and furans PAHs			360 – 365 min	µg/m ³ g/s

Note 1: All volumes to be referenced to STP, dry.

Note 2: Where a USEPA method refers to USEPA Method 1 for the sampling plane, this can be read as a referral to AS/NZS 4323.1.

20. The works approval holder must record the results of all monitoring activity required by condition 19.
21. The works approval holder must ensure the equipment used for continuous monitoring in accordance with Table 4 is available for at least 90% of operational time in a calendar month during time limited operations.
22. The works approval holder must ensure all non-continuous sampling and analysis undertaken in accordance with Table 5 is undertaken by a holder of NATA accreditation for the relevant methods of sampling and analysis.
23. The works approval holder must record the volume of every batch of feedstock treated in the Hottpad units.

24. The works approval holder must sample the AC in the MRU at the same time as the manual stack testing required by condition 19 for laboratory analysis of the carbon to determine the mercury saturation level.

Compliance reporting

25. The works approval holder must, within 30 calendar days of the completion date of time limited operations or 90 calendar days before the expiration date of the works approval, whichever is sooner, submit to the CEO a Time Limited Operations Report.
26. The report required by condition 25 must include, but not be limited to:
- (a) a summary of the time limited operations, including timeframes and amount of feedstock processed;
 - (b) a summary of monitoring and sampling results conducted in accordance with condition 19, including an appraisal of the results against the predicted air emission rates and expected emission control efficiencies;
 - (c) an appraisal of the relationship between feedstock composition and air emissions;
 - (d) an appraisal of the performance of the MRU and information used to determine the level of saturation and efficiency of AC; and
 - (e) a review of performance and compliance against the conditions of the works approval.

Records and reporting (general)

27. The works approval holder must record the following information in relation to complaints received by the works approval holder (whether 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 issues raised; and
 - (d) the complete details and dates of action(s) taken by the works approval holder to investigate or respond to any complaint.
28. 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) the results of monitoring mercury emissions in accordance with condition 9;
 - (c) any maintenance of infrastructure that is performed in the course of complying with condition 15;
 - (d) results of all monitoring activity required by condition 20;
 - (e) records to demonstrate availability of continuous monitoring required by condition 21;
 - (f) records of weighing feedstock required by condition 23; and
 - (g) complaints received under condition 27.
29. The books specified under condition 28 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 6 have the meanings defined.

Table 6: Definitions

Term	Definition
AC	activated carbon
AS 4323.1	means the most recent version and relevant parts of the Australian Standard AS 4323.1 <i>Stationary source emissions – selection of sampling positions</i>
averaging period	means the time over which a limit or target is measured or a monitoring result is obtained
books	has the same meaning given to that term under the EP Act
CEO	means Chief Executive Officer of the Department 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
CEMS	Continuous Emissions Monitoring System
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
emission	has the same meaning given to that term under the EP Act
environmental commissioning	means an activity or sequence of activities undertaken after pre-commissioning has demonstrated the integrity of the plant and equipment. The purpose of commissioning is to test equipment, infrastructure, and processes after the input of raw materials, to confirm design specifications, optimise process conditions, and to monitor/validate emissions or discharges in order to establish a steady-state operation
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 has been constructed in accordance with the works approval
EP Act	<i>Environmental Protection Act 1986</i> (WA)
KO pots	Knock out pots
MRU	Mercury Recovery Unit
NATA	National Association of Testing Authorities, Australia
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
normal operating conditions	means the operation of infrastructure (including abatement equipment) excluding start up, shut down and upset conditions
NO _x	means oxides of nitrogen, calculated as the sum of nitric oxide and nitrogen dioxide and expressed as nitrogen dioxide
PM	means total particulate matter including both solid fragments of material

	and miniscule droplets of liquid
pre-commissioning	means an activity or sequence of activities undertaken after construction (but prior to commissioning) to test equipment and infrastructure for functionality, and for any installation defects or failures. Examples include hydraulic pump, pipeline and valve testing; hydrostatic testing of vessels, tanks and ponds; electrical component testing; and liner integrity tests for storage facilities and wastewater containment ponds
premises	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
spadeable	means a physical state of a material where the material behaves sufficiently like a solid, to be moved by a spade at normal outdoor temperatures
STP, dry	means standard temperature and pressure (0°Celsius and 101.325 kilopascals, respectively), dry
suitably qualified engineer	means a person who: (a) holds a tertiary academic qualification in engineering; and (b) has a minimum 5 years of experience working in their area of expertise; (c) or is otherwise approved by the CEO to act in this capacity
SW-846 0010	means SW-846 Test Method 0010: <i>Modified method 5 sampling train, part of test methods for evaluating solid waste, physical/chemical methods</i>
time limited operations	means operation of the infrastructure identified under this works approval that is authorised for that purpose, subject to the relevant conditions
USEPA Method 5	means USEPA Method 5 <i>Determination of particulate matter emissions from stationary sources</i>
USEPA Method 6C	means USEPA Method 6C <i>Determination of sulfur dioxide emissions from stationary sources (Instrument Analyzer Procedure)</i>
USEPA Method 7E	means USEPA Method 7E <i>Determination of nitrogen oxides emissions from stationary sources (Instrument Analyzer Procedure)</i>
USEPA Method 10	means USEPA Method 10 <i>Determination of carbon monoxide emissions from stationary sources (Instrument Analyzer Procedure)</i>
USEPA Method 18	means USEPA Method 18 <i>Measurement of gaseous organic compound emissions by gas chromatography</i>
USEPA Method 23	means USEPA Method 23 <i>Determination of polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans from stationary sources</i>
USEPA Method 29	means USEPA Method 29 <i>Determination of metals emissions from stationary sources</i>
VOCs	Volatile organic compounds
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

END OF CONDITIONS

Schedule 1: Maps

Premises map

The boundary of the prescribed premises is shown in the map below (red line).

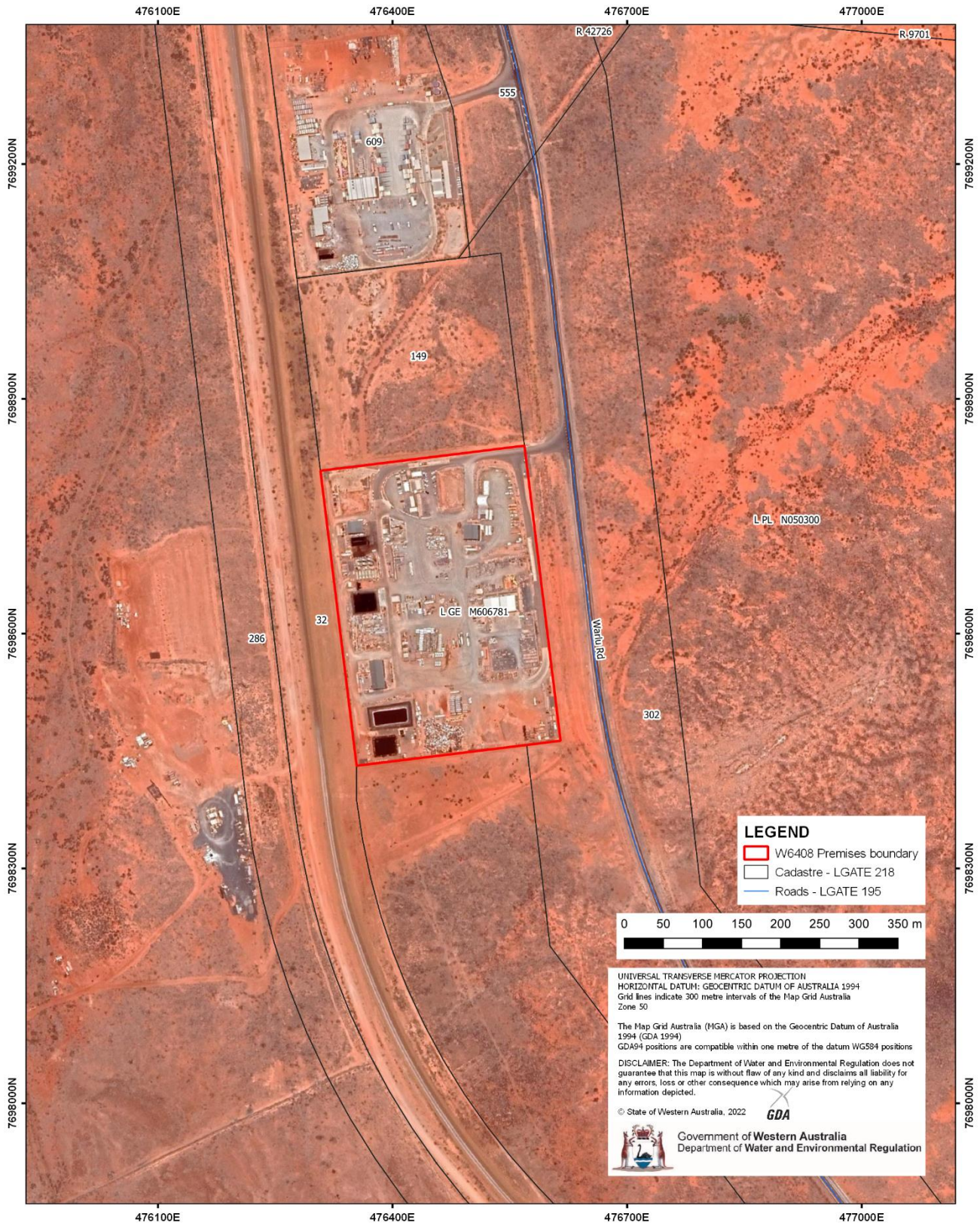


Figure 1: Boundary of the prescribed premises

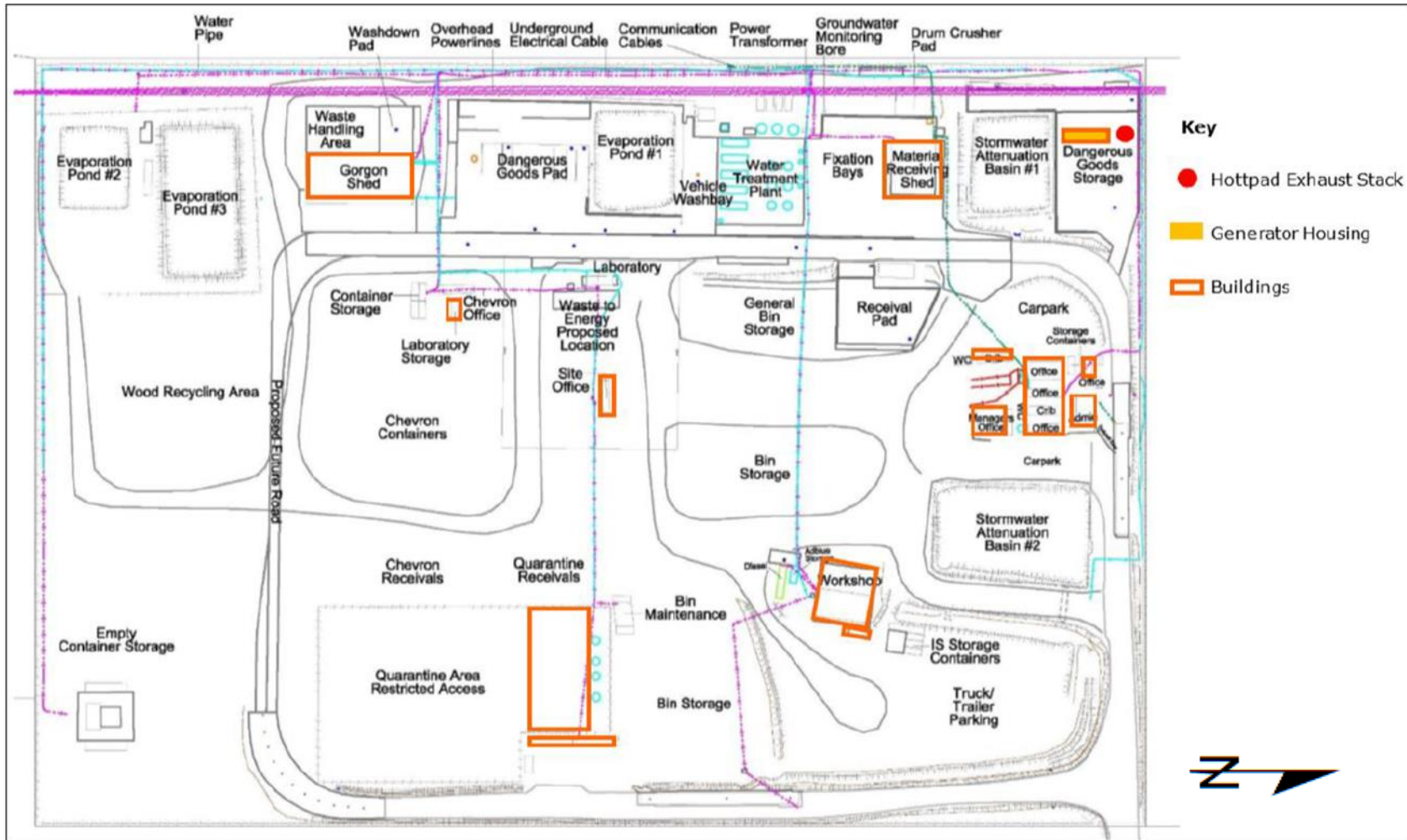


Figure 2: Site Layout at the premises

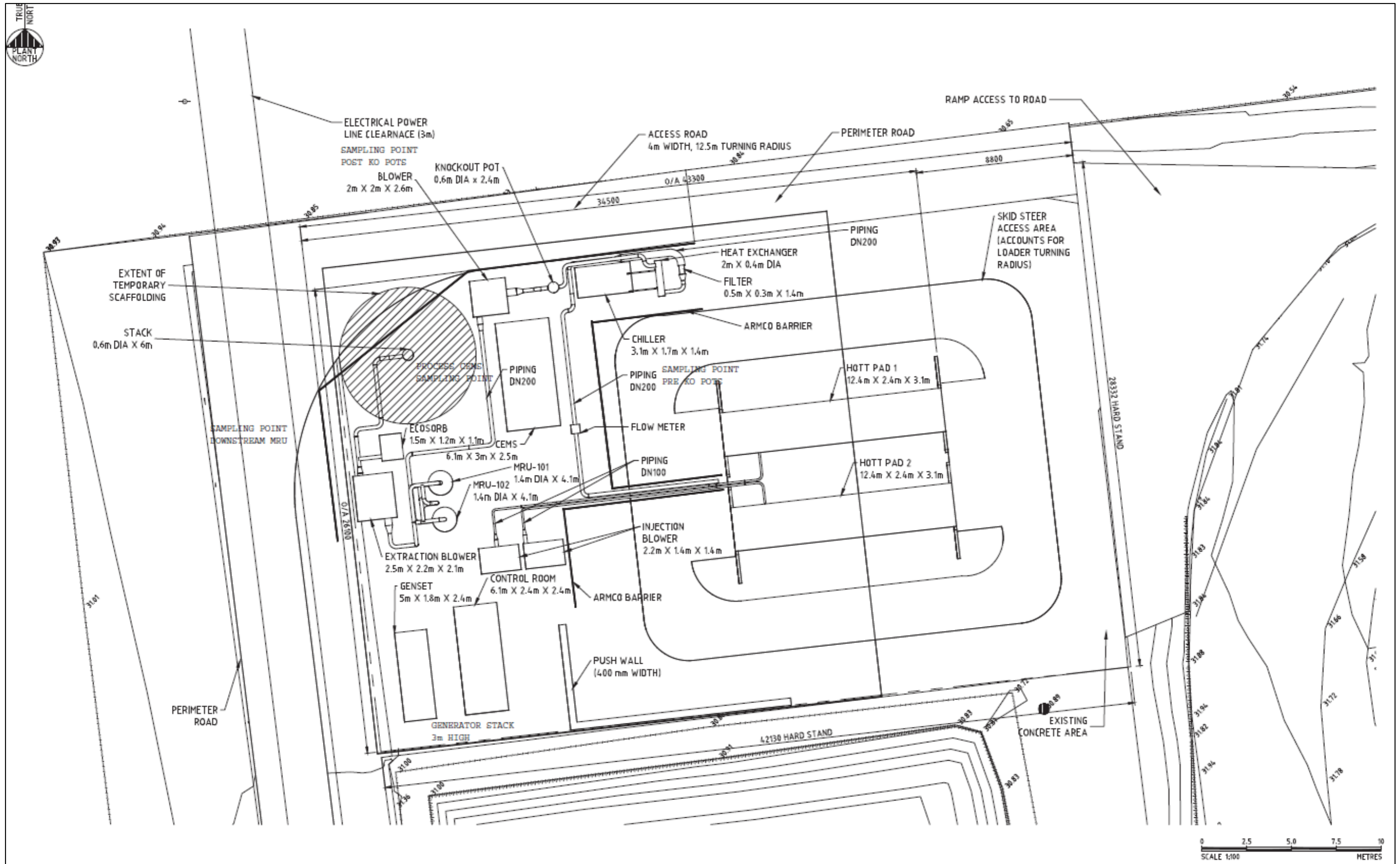


Figure 3: Detailed site layout of the Hottpad System