Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6581/2021/1
Works approval holder	Water Corporation
Registered business address	629 Newcastle Street LEEDERVILLE WA 6007
DWER file number	DER2021/000423
Duration	18/02/2022 to 17/02/2027
Date of issue	18/02/2022
Date of amendment	6/11/2024
Premises details	Woodman Point Water Resource Recovery Facility 837 Cockburn Road HENDERSON WA 6166 Legal description - Being part of Lot 9 on Diagram 31097 As defined by the coordinates in Schedule 2

Prescribed premises category description (Schedule 1, ***Environmental Protection Regulations 1987***)	**Assessed production or design capacity**
Category 54: Sewage facility	180,000 cubic metres per day
Category 61: Liquid waste facility	50,000 tonnes per annual period

This works approval is granted to the works approval holder, subject to the attached conditions, on 6 November 2024, by:

Melissa Chamberlain

Digitally signed by Melissa Chamberlain
Date: 2024.11.06 16:32:35 +08'00'

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

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

Construction Environmental Management Plan (CEMP)

1. The works approval holder must submit a Construction Environmental Management Plan (CEMP) to the CEO a minimum 30 working days prior to construction activities commencing.

2. The CEMP specified in condition 1 should include as a minimum:

(a) details of the potential sources of:

(i) noise emissions;

(ii) odour emissions; and

(iii) dust emissions, including emissions from potentially asbestos contaminated soils;

during the construction works; and

(b) provide mitigation and management measures to reduce and prevent the potential emissions listed under condition 2(a); and

(c) demonstrate how compliance with the *Environmental Protection (Noise) Regulations 1997* will be achieved.

Infrastructure and equipment

3. 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; and

(c) at the corresponding infrastructure location,

as set out in Table 1.

Table 1: Design and construction / installation requirements

	Infrastructure	Design and construction / installation requirements	Infrastructure location
1.	Reclaimed Effluent System (RES) Upgrade	- To include a set of RES pumps and self-cleaning filters.	Within the area referenced as 'Main Sludge Treatment Upgrade' Schedule 1, Figure 2.
2.	Inlet Screen Upgrade	- To accommodate band screens suitable for a plant design flow of 210 ML/day. - To comprise 4 screens. - Peak screen flow rate to be 133 ML/day. - Screens and the inlet hoppers of the new wash presses to be fully enclosed.	Within the area referenced as 'Inlet Screen Upgrade' in Schedule 1, Figure 2.

	Infrastructure	Design and construction / installation requirements	Infrastructure location
3.	Raw Primary Sludge (RPS) Screening Facility	- To include RPS sludge screens, RPS buffer tanks and screenings bins which are to be connected to the odour control facility.	Within the area referenced as 'Main Sludge Treatment Upgrade' Schedule 1, Figure 2.
4.	Rotary Screw Thickeners (RSTs) and Polymer System	- To include RST flocculation tanks, hoppers and sludge pumps. - Each RST is to be connected to the odour control facility.	Within the area referenced as 'Main Sludge Treatment Upgrade' Schedule 1, Figure 2.
5.	Thickened Excess Activated Sludge (TEAS) Screening and Pre-dewatering	- To include a TEAS sludge screen feed tank, pre-dewatering feed tank and TEAS sludge screens. - Each sludge screen, pre-dewatering feed tank and screenings bin is to be connected to the odour control facility.	Within the area referenced as 'Main Sludge Treatment Upgrade' Schedule 1, Figure 2.
6.	Pre-Dewatering Centrifuge Facility	- To include THP pre-dewatering centrifuge, hopper and polymer batching and dosing facility. - Centrifuge and hopper are to be connected to the odour control facility.	Within the area referenced as 'Main Sludge Treatment Upgrade' Schedule 1, Figure 2.
7.	Sludge Receival Facility	- To be suitable for the unloading of semitrailers from satellite sites. - To include a sludge import hopper and a conveyor system to transfer sludge from the hopper to the pre-dewatering conveyor and hopper system. - To be fully enclosed and connected to the odour control facility.	Within the area referenced as 'Main Sludge Treatment Upgrade' Schedule 1, Figure 2.
8.	Digestion Pre-Treatment (THP) Facility	- To comprise infrastructure in which sludge is hydrolysed at high temperature and pressure, which is then fed to three anaerobic digesters. - To comprise a closed system in which sludge is treated in enclosed vessels and conveyed via pipes for further downstream treatment.	Within the area referenced as 'Main Sludge Treatment Upgrade' Schedule 1, Figure 2.

	Infrastructure	Design and construction / installation requirements	Infrastructure location
9.	Digested Sludge Dewatering and Unloading Facility	- To include a powder polymer batching and dosing system. - To include at least 3 centrifuge and dewatered cake hoppers connected to the odour control facility. - The dewatered sludge hoppers must provide at least 540 m^3 of combined storage capacity and 2.5 days holding capacity.	Within the area referenced as 'Main Sludge Treatment Upgrade' Schedule 1, Figure 2.
10.	Odour Control Facility	- Consisting of 6 bio-trickling filters (BTF) followed by 2 chemical scrubbers.	Within the area referenced as 'Odour Facility Upgrade' in Schedule 1, Figure 2.
11.	Energy Recovery and Biogas Facility	- To include hydrogen sulphide treatment, biogas chiller, water chiller, activated carbon filter, biogas flare, wet biogas holder, biogas scrubber, biogas compressor and Engine-Generator. - A heat recovery steam generator (HRSG) to be installed on each engine generator.	Within the area referenced as 'Main Sludge Treatment Upgrade' Schedule 1, Figure 2.

Compliance reporting

4. The works approval holder must within 60 calendar days of the completion of all items of infrastructure or equipment required by condition 3 being constructed and/or installed:

(a) undertake an audit of their compliance with the requirements of condition 3; and

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

5. The Environmental Compliance Report required by condition 5, must include as a minimum the following:

(a) certification by a suitably qualified engineer that the items of infrastructure or component(s) thereof, as specified in condition 3, have been constructed in accordance with the relevant requirements specified in condition 3;

(b) as constructed plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in condition 3; 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

6. The works approval holder may only commence environmental commissioning of all items of infrastructure listed in condition 7 once the Environmental Compliance Report has been submitted for each item of infrastructure in accordance with condition 4 and 5 of this works approval.

7. 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
Reclaimed Effluent System (RES) Upgrade	The existing treatment process must remain operational throughout the construction and commissioning of the new sludge treatment process.	For a period not exceeding 18 calendar months in aggregate.
Inlet Screen Upgrade		
Raw Primary Sludge (RPS) Screening Facility		
Rotary Screw Thickeners (RSTs) and Polymer System		
Thickened Excess Activated Sludge (TEAS) Screening and Pre-dewatering		
Pre-Dewatering Centrifuge Facility		
Sludge Receival Facility		
Digestion Pre-Treatment (THP) Facility		
Digested Sludge Dewatering and Unloading Facility		
Odour Control Facility		
Energy Recovery and Biogas Facility		

Environmental Commissioning Report

8. The works approval holder must submit to the CEO an Environmental Commissioning Report within 60 calendar days of the completion date of environmental commissioning.

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 and volume of wastewater processed;

(b) a summary of the environmental performance of each item of infrastructure or equipment as constructed or installed, which at minimum includes records detailing the:

(i) environmental commissioning of the system;

(ii) testing the system; and

(iii) commissioning of the process control system;

(c) a review of the works approval holder's performance and compliance against the conditions of this works approval; and

(d) 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 only commence time limited operations for an item of infrastructure identified in condition 3 where 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 (as applicable):

(a) for a period not exceeding 180 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*, if one is granted before the end of the period specified in condition 11(a).

Infrastructure and equipment

12. During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in Table 3 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in Table 3.

Table 3: Infrastructure and equipment requirements during time limited operations

	Site infrastructure and equipment	Operational requirement	Infrastructure location
1.	Reclaimed Effluent System Upgrade	- To include a set of RES pumps and self-cleaning filters.	Within the area referenced as 'Main Sludge Treatment Upgrade' Schedule 1, Figure 2.
2.	Inlet Screen Upgrade	- To accommodate band screens suitable for a plant design flow of 210 ML/day. - To comprise 4 screens. - Peak screen flow rate to be 133 ML/day. - Screens and the inlet hoppers of the new wash presses to be fully enclosed.	Within the area referenced as 'Inlet Screen Upgrade' Schedule 1, Figure 2.
3.	Raw Primary Sludge (RPS) Screening Facility	- To include RPS sludge screens, RPS buffer tanks and screenings bins which are to be connected to the odour control facility.	Within the area referenced as 'Main Sludge Treatment Upgrade' Schedule 1, Figure 2.
4.	Rotary Screw Thickeners (RSTs) & Polymer System	- To include RST flocculation tanks, hoppers and sludge pumps. - Each RST is to be connected to the odour control facility.	Within the area referenced as 'Main Sludge Treatment Upgrade' Schedule 1, Figure 2.
5.	Thickened Excess Activated Sludge (TEAS) Screening & Pre-dewatering	- To include a TEAS sludge screen feed tank, pre-dewatering feed tank and TEAS sludge screens. - Each sludge screen, pre-dewatering feed tank and screenings bin is to be connected to the odour control facility.	Within the area referenced as 'Main Sludge Treatment Upgrade' Schedule 1, Figure 2.
6.	Pre-Dewatering Centrifuge Facility	- To include THP pre-dewatering centrifuge, hopper and polymer batching and dosing facility. - Centrifuge and hopper are to be connected to the odour control facility.	Within the area referenced as 'Main Sludge Treatment Upgrade' Schedule 1, Figure 2.
7.	Sludge Receival Facility	- To be suitable for the unloading of semitrailers from satellite sites. - To include a sludge import hopper and a conveyor system to transfer sludge from the hopper to the pre-dewatering conveyor and hopper system. - To be fully enclosed and connected to the odour control facility.	Within the area referenced as 'Main Sludge Treatment Upgrade' Schedule 1, Figure 2.

	Site infrastructure and equipment	Operational requirement	Infrastructure location
8.	Digestion Pre-Treatment (THP) Facility	- To comprise infrastructure in which sludge is hydrolysed at high temperature and pressure, which is then fed to three anaerobic digesters. - To comprise a closed system in which sludge is treated in enclosed vessels and conveyed via pipes for further downstream treatment.	Within the area referenced as 'Main Sludge Treatment Upgrade' Schedule 1, Figure 2.
9.	Digested Sludge Dewatering and Unloading Facility	- To include a powder polymer batching and dosing system. - To include at least 3 centrifuge and dewatered cake hoppers connected to the odour control facility. - The dewatered sludge hoppers must provide at least 540 m^3 of combined storage capacity and 2.5 days holding capacity.	Within the area referenced as 'Main Sludge Treatment Upgrade' Schedule 1, Figure 2.
10.	Odour Control Facility	- Consisting of 6 bio-trickling filters (BTF) followed by 2 chemical scrubbers.	Within the area referenced as 'Odour Facility Upgrade' Schedule 1, Figure 2.
11.	Energy Recovery and Biogas Facility	- To include hydrogen sulphide treatment, biogas chiller, water chiller, activated carbon filter, biogas flare, wet biogas holder, biogas scrubber, biogas compressor and Engine-Generator. - A heat recovery steam generator (HRSG) to be installed on each engine generator.	Within the area referenced as 'Main Sludge Treatment Upgrade' Schedule 1, Figure 2.

Monitoring during time limited operations

13. The works approval holder must monitor emissions during time limited operations in accordance with Table 4.

Table 4: Emissions monitoring during time limited operations

Emission point reference	Parameter	Units[1]	Limit	Averaging period	Frequency[2]	Method
Odour control facility	Hydrogen sulphide – Chemical scrubber inlets	ppm	-	Monthly to achieve a 90% availability	Continuous	-
	Hydrogen sulphide - chemical scrubber outlet prior to entering discharge stack	ppb	1,500			

Emission point reference	Parameter	Units[1]	Limit	Averaging period	Frequency[2]	Method
	Volumetric flow rate	m^3/hr	-		Continuous	USEPA Method 2
Odour control facility – discharge stack sampling	Hydrogen sulphide (concentration)	mg/ m^3	5	Spot sample	Once during time limited operations	Manual
	Hydrogen sulphide (rate)	g/s	0.25			-
	Volumetric flow rate	m^3/s	-			USEPA Method 2
	Stack exit temperature	°celsius	-			-
	Odour units	OU	-			AS 4323.1 AS 4323.3

Note 1: All units are referenced to STP dry.

Note 2: Monitoring shall be undertaken to reflect normal operating conditions.

14. All sample analysis specified in Condition 13 relating to discharge stack sampling must be undertaken by laboratories with current accreditation from the National Association of Testing Authorities (NATA) for the relevant parameters.

15. The works approval holder must retain the services of a suitably qualified person during time limited operations to:

(a) Plan and implement a minimum of four odour field assessments (OFAs) which follow the plume measurement methodology as specified in the DWER *Guideline: Odour Emissions* and the *European Standard EN 16841-2 (plume method)*. OFAs are to be undertaken:

(i) with the prime objective of characterising odour plume extents in the directions of receptors which are most likely to be impacted by odour;

(ii) during meteorological and operational conditions most likely to cause impacts at these receptors;

(iii) over a period of 12 months of the proceeding year (post commencement of time limited operations), at least two OFA's conducted in the summer period, and with each OFA conducted at least two months apart;

(iv) by at least three odour panellists and one odour operator; and

(b) compile and submit to the works approval holder within six weeks of completion of the last OFA field campaign, an OFA report in accordance with condition 16.

16. An OFA report prepared pursuant to condition 15 is to include:

(a) the objective of the assessment;

(b) a description of the measurement strategy, measurement conditions and the odour field survey standards that were followed;

(c) the following details for each single measurement:

(i) odour intensity levels and odour characters;

(ii) location and time;

(iii) field survey odour panellist identification;

(d) the following representative meteorological measurements as recorded during the measurement cycle:

(i) wind speed (metres per second);

(ii) wind direction;

(iii) cloud cover estimate;

(iv) temperature;

(e) map(s) depicting the assessment area, odour sources at the premises and other potential odour sources (if relevant);

(f) a graphical summary of field survey results showing the recorded odour intensity levels as a percentage of total observations using pie charts superimposed at each measurement point on a map of the survey area;

(g) any deviations from the conditions targeted in the OFA strategy and those occurring during the measurement (conclusions should reflect the influence of such deviations on the results); and

(h) detailed analysis, interpretation and conclusions with regard to the objectives of the assessment.

Compliance reporting

17. The works approval holder must submit to the CEO a report on the time limited operations within 60 calendar days of the completion date of time limited operations or 60 calendar days before the expiration date of the works approval, whichever is the sooner.

18. The works approval holder must ensure the report required by condition 17 includes the following:

(a) a summary of the time limited operations, including timeframes and volume of wastewater processed;

(b) a summary of monitoring results obtained during time limited operations under condition 13;

(c) the OFA report as specified in condition 15;

(d) a summary of the environmental performance of all infrastructure as constructed or installed;

(e) a review of performance and compliance against the conditions of the works approval and the Environmental Commissioning Report; and

(f) 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)

19. 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.

20. 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 3;

(b) any maintenance of infrastructure that is performed in the course of complying with condition 12;

(c) monitoring programmes undertaken in accordance with condition 13; and

(d) complaints received under condition 19.

21. The books specified under condition 20 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 5 have the meanings defined.

Table 5: Definitions

Term	Definition
AS 4323.1	means the Australian Standard AS4323.1 *Stationary Source Emissions Method 1: Selection of sampling positions.*
AS 4323.3	means the Australian Standard AS4323.3 *Stationary Source Emissions Part 3: Determination of odour concentration by dynamic olfactory.*
averaging period	means the time over which a limit 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. CEO for the purposes of notification means: Director General Department administering the *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V Division 3 of the EP Act.
discharge	has the same meaning given to that term under the EP Act.
emission	has the same meaning given to that term under the EP Act.
EN 16841-2	means the European Standard EN 16841-2 Ambient air – determination of odour in ambient air by using field inspection – Part 2: Plume method, CEN (European Committee for Standardisation), as amended from time to time.
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	*Environmental Protection Act 1986* (WA).
EP Regulations	*Environmental Protection Regulations 1987* (WA).

Term	Definition
NATA	means the National Association of Testing Authorities
NATA accredited	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.
Odour intensity	means the relative perceived strength of an odour. Intensity descriptor scales should be applied according to the German standards for the determination of odour intensity under field conditions (VDI 3940-3).
Odour operator	means a person who directly coordinates and instructs odour panellists in the field and is independent of the licence holder
Odour panellist	means a person who is qualified to perform field inspections as described in EN 16841-2 and is independent of the licence holder
OFA	odour field assessment as described in the *Guideline: Odour Emissions*
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.
suitably qualified engineer	means a person who: (a) holds a Bachelor of Engineering recognised by the Institute of Engineers; and (b) has a minimum of five years of experience working in a supervisory area of civil, structural or mechanical engineering; and (c) is employed by an independent third-party external to the works approval holder's business; or is otherwise approved in writing by the CEO to act in this capacity
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.
USEPA	means United States (of America) Environmental Protection Agency
USEPA Method 2	means the USEPA Method 2 - Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube).
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).

Figure 1: Map of the boundary of the prescribed premises

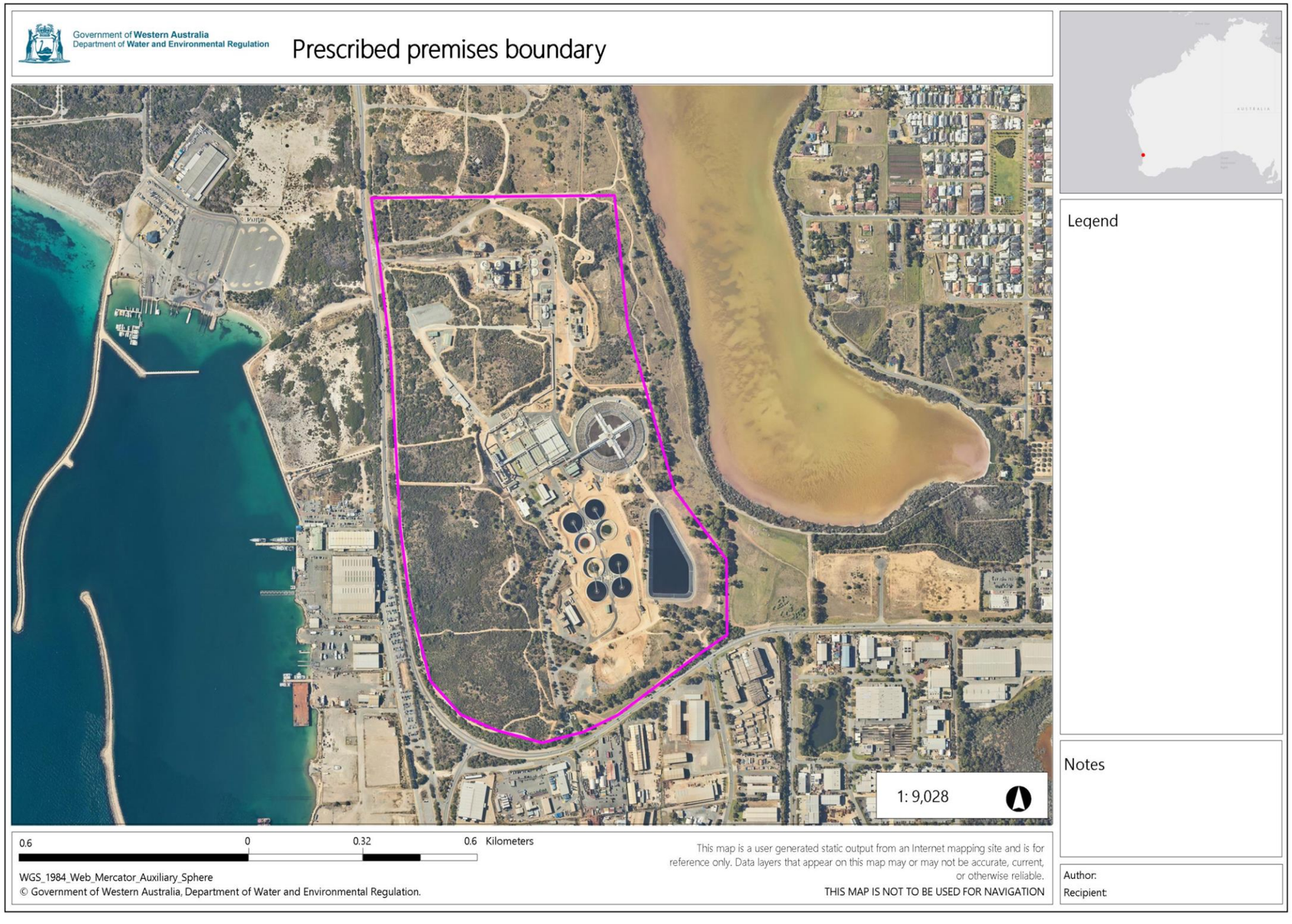
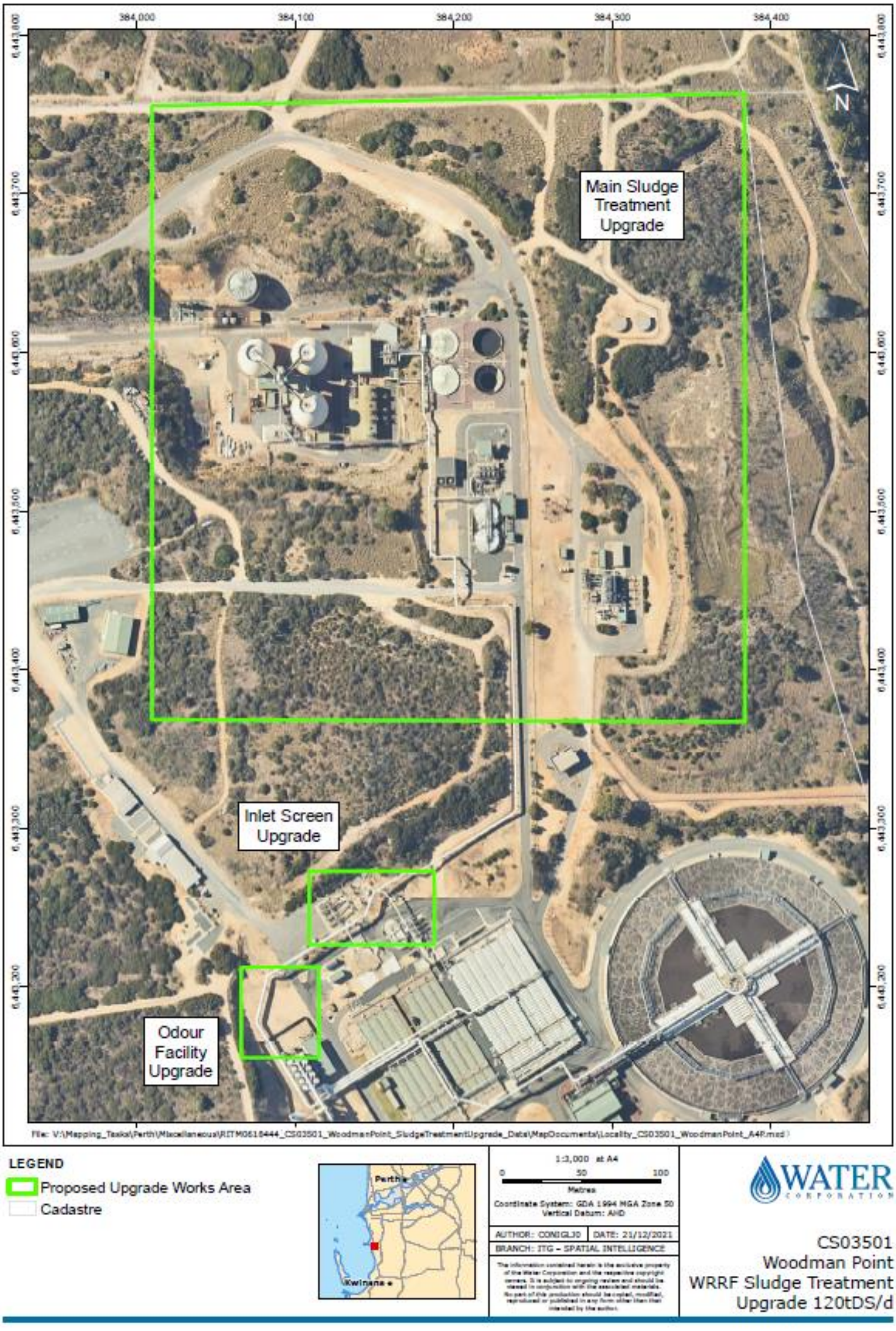


Figure 2: Proposed site layout



Schedule 2: Premises boundary

The premises boundary is defined by the coordinates in Table 6.

Table 6: Premises boundary coordinates

Latitude	Longitude
115.7688	-32.1441
115.7688	-32.1440
115.7687	-32.1436
115.7686	-32.1426
115.7685	-32.1399
115.7680	-32.1367
115.7702	-32.1366
115.7723	-32.1366
115.7731	-32.1366
115.7742	-32.1366
115.7745	-32.1394
115.7757	-32.1428
115.7770	-32.1443
115.7770	-32.1459
115.7767	-32.1461
115.7763	-32.1463
115.7754	-32.1469
115.7750	-32.1471
115.7743	-32.1476
115.7734	-32.1479
115.7723	-32.1482
115.7712	-32.1479
115.7703	-32.1476
115.7695	-32.1468
115.7693	-32.1466
115.769	-32.1452