Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6637/2022/1
Works approval holder	Bunbury Water Corporation T/A Aqwest
Registered business address	2 Hayes Street EAST BUNBURY WA 6230
DWER file number	DER2021/000595
Duration	10/04/2025 to 09/04/2030
Date of issue	10/04/2025
Premises details	Bunbury Recycled Water Treatment Plant Minninup Road DALYELLUP WA 6230 Part of Lot 5262 on Deposited Plan 183085 As defined by the coordinates in Schedule 2 of the works approval

Prescribed premises category description (Schedule 1, ***Environmental Protection Regulations 1987***)	**Assessed design capacity**
Category 54 Sewage facility: premises – (a) on which sewage is treated (excluding septic tanks); or from which treated sewage is discharged onto land or into waters	5,940 m^3 per day

This works approval is granted to the works approval holder, subject to the attached conditions, on 10 April 2025, by:

Abbie Crawford

Digitally signed by Abbie Crawford
Date: 2025.04.10 09:18:10 +08'00'

Abbie Crawford
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
10/04/2025	W6637/2022/1	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.

This works approval does not provide any implied authorisation for the clearing of native vegetation in order to meet the conditions or activities specified in this works approval. The clearing of native vegetation requires a separate Native Vegetation Clearing Permit issued under the EP Act.

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; 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
Recycled Water Treatment Plant (RWTP) site works and concrete base	Impervious concrete construction, free of cracks and other defects.	As depicted in Schedule 1, Figure 2

Feed pump station	• Three self-priming pumps installed on a concrete pad adjacent to the storage lagoon
	• Proprietary air-purge valve supplied with each pump, discharging back in the lagoon via hosing and associated couplings which are to be impervious and free from leaks, cracks and defects;
	• Common discharge manifold and Recycled Water Treatment Plant (RWTP) Feed delivery main, nominally DN225 HDPEPE1005; and
	• Accompanying pump instrumentation for monitoring and pump-protection:
	  ○ Common discharge pressure transmitter;
	  ○ Discharge high-pressure switch	

RWTP	Designed and constructed to receive and treat a wastewater inflow of up to 5,940 m^3 per day.	
	Floating suctions • HDPE pipe (or equivalent), foot valve and vertical suction to draw fluid in at approximately 1 m below surface • Each pump to have its own suction	
	Course Filtration • Full duty/standby self-cleaning coarse filter (100 micron aperture) inline on the RWTP Feed • Pump Station rising main, installed on the RWTP Waste area at approximately RL 17.80 m; • Each filter to have maximum capacity of ~ 72 L/s; • Filter to be installed on a concrete slab; • Stainless steel (or equivalent) filter body construction; and • Filter must have weather/shade shelter	

Infrastructure	Design and construction / installation requirements	Infrastructure location
	Above ground main that feeds into the reaction tank is to contain: • Coagulant dose point via duty/standby dosing spears • Feed magnetic flowmeter • Manual sample point • Spare dose point **Reaction tank** • 60 kL in size • To contain two duty/standby mixing pumps (ground level mount) • Duty/standby level instruments, via low level pressure sensors • outflow to be via gravity to submerged membrane tanks, with hydraulic level between tanks connected	
	Submerged membrane filtration Four filtration trains consisting of: • A stainless steel (or equivalent) tank situated on a concrete slab • One ultrasonic level instrument on each tank • Submerged membranes in each tank • Associated permeate, blower and clean in place pipework • One end-suction Permeate Pump per filtration train, c/w variable speed drive • One online turbidity analyser, with analyser installed on an Analyser Panel. • Discharge high-pressure switch on each Permeate Pump • Suction pressure transmitter on each Permeate Pump • Magnetic flowmeter on the discharge of each Permeate Pump • Tank feed, drain, outlet flanged or equivalent connections • Permeate recirculate pipework for clean in place procedures • Tank drain valve and actuator, which allows concentrate and backwash to be dumped into the Waste Tank.	
	Backwash pump station End-suction or vertical multistage pumps capable 47L/s, installed in the treatment building	
	Blowers Blowers with a nominal duty of 400 Nm^3/hr, installed in the treatment building	
	Coagulant and chemical storage and dosing • A PE100 tank installed within a shared concrete bund with impervious flooring within treatment building (shed) • Bund sump to discharge into the waste tank • Coagulant storage tank to be 5.5 kL • Citric acid storage tank to be 2.5 kL • Sulphuric acid storage tank to be 1.5 kL • Sodium hypochlorite storage tank 5.5 kL	

Infrastructure	Design and construction / installation requirements	Infrastructure location
	• Dosing cabinet installed on the wall/edge of the shared bund • Chemical delivery and load-in aprons common for all chemicals	
	Chlorine storage and dosing • 920 kg gas drums stored in a tilt-up concrete panel building • Duty/standby 2 kg/hr chlorinators/ejectors for disinfection, including duty/standby ejector pumps	
	Clean in place facility • two 5 kL PE100 tanks installed within a shared concrete bund within the treatment building • Bund sump to discharge into the waste tank • Each tank to contain a dedicated single duty pump	
	UV treatment Duty/standby systems in parallel, both of the closed-vessel type	
Header tank	• Constructed from steel sheet and liner (or equivalent) • Sized to contain 903 kL • Header tank equipped with a level instrument (low mount pressure sensor) and communications link to programmable logic controller • Tank outlet shall be equipped with a flowmeter and communications link to programmable logic controller	
Header Tank Overflow Main	Pipeline approximately 200 m long, delivering header tank overflow back to the storage lagoon	
Waste tank	• Constructed from steel sheet and liner (or equivalent) • Sized to contain a volume of 366 kL • Tank to be footed on concrete ring-beam • To include a small flange mounted mechanical mixer • Equipped with a duty/standby level instrument (low mount pressure sensor) and communications link to programmable logic controller	
Waste return pump station	Approximately 17 L/s end-suction pumps with fixed speed drives, installed on an imp concrete pad adjacent to waste tank	
Waste return main	HDPE PE100 (or equivalent) fusion welded buried pipe circumnavigating the north and east perimeter of the wastewater treatment plant fence, terminating at the Bunbury Water Resource Recovery Facility (WRRF) inlet.	

Compliance reporting

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

(a) undertake an audit of their compliance with the requirements of condition 1; and

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

3. The Environmental Compliance Report required by condition 2, must include as a minimum the following:

(a) certification by a suitably qualified civil engineer that 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.

Environmental commissioning phase

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.

Table 2: Environmental commissioning requirements

Infrastructure	Commissioning requirements	Commissioning period
RWTP and associated infrastructure	(a) Operated to receive and treat a wastewater inflow of up to 5,940 m^3 per day; (b) No treated wastewater is to be directly discharged to the environment; (c) Treated wastewater is to be returned to Bunbury WRRF storage lagoons; (d) Reject wastewater and backwash water is to be returned to the Bunbury WRRF; and (e) Spills of wastewater and chemicals outside of a vessel/container are cleaned up immediately.	For a period not exceeding 90 calendar days.

Monitoring during environmental commissioning

6. The works approval holder must ensure that, during monitoring for environmental commissioning:

(a) all water samples are collected and preserved in accordance with AS/NZS 5667:1;

(b) all wastewater sampling is conducted in accordance with AS/NZS 5667:10;

(d) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured, unless indicated otherwise in the relevant table.

7. The works approval holder must ensure that monitoring is undertaken in each monthly period such that there are at least 15 days in between the days on which samples are taken in successive months.

8. The works approval holder must ensure that all monitoring equipment used to comply with condition 9 is operated and calibrated in accordance with the manufacturer's specifications.

9. The works approval holder must monitor emissions during environmental commissioning in accordance with Table 3 at the locations depicted in Schedule 1 Figure 3.

Table 3: Monitoring during environmental commissioning

Monitoring location	Parameter	Unit	Frequency
Flow meter on RWTP inlet	Cumulative flow volume	m^3/day	Continuous
Flow meter on outflow to Bunbury WRRF	Cumulative flow volume	m^3/day	
RWTP outlet	pH [1]	pH units	
	Residual chlorine [1]	mg/L	
RWTP waste tank	pH [1]	pH units	Monthly
	Residual chlorine [1]	mg/L	
RWTP header tank; and Waste tank	*E. coli* [2]	cfu/100mL	Monthly
	Total coliforms	cfu/100mL	
	5 day Biological Oxygen Demand	mg/L	
	Ammonia (NH_4) as N	mg/L	
	Total Kjeldahl nitrogen (TKN) as N	mg/L	
	Nitrate (NO_3) as N	mg/L	
	Nitrite (NO_2) as N	mg/L	
	Nitrate + Nitrite as N	mg/L	
	Total Nitrogen (TN) as N	mg/L	
	Reactive Phosphorus as P	mg/L	
	Total Phosphorus (TP) as P	mg/L	
	Total Dissolved Solids	mg/L	
	Total Suspended Solids	mg/L	
	Surfactants	mg/L	
	Fluoride	mg/L	
	Oil and grease	mg/L	
	Pesticides	mg/L	
	Electrical conductivity [1]	µS/cm	Monthly
	Redox potential [1]	Eh	
	<u>Major cations:</u> Calcium (Ca^{2+}), Magnesium (Mg^{2+}), Potassium (K^+) and Sodium (Na^+)	mg/L	Monthly
	<u>Major anions:</u> Carbonate (CO_3^{2-}), Bicarbonate (HCO_3^-), Chloride (Cl^-) and Sulfate (SO_4^{2-})	mg/L	Monthly
	<u>Metals and Metalloids:</u> Aluminium, Arsenic, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Mercury, Molybdenum, Nickel, Vanadium and Zinc.	mg/L	Monthly

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

Note 2: Actual units are to be reported except where the result is greater than the highest detectable level of 24,000 cfu/100mL. In this case the reporting of the highest detectable level is permitted.

Environmental commissioning report

10. The works approval holder must submit to the CEO an Environmental Commissioning Report within 30 calendar days of the completion date of environmental commissioning for each item of infrastructure specified in Table 2.

11. The works approval holder must ensure the Environmental Commissioning Report required by condition 10 includes the following:

(a) a summary of the environmental commissioning activities undertaken, including timeframes and amount of wastewater processed;

(b) a summary of the treated effluent monitoring results recorded in accordance with condition 9;

(c) a comparison of the treated effluent monitoring results against the targets in table 3 and the water quality objectives for a 'high' exposure risk level end use as per the *Guidelines for Non-potable Uses of Recycled Water in Western Australia;*

(d) copies of laboratory reports for treated effluent monitoring results recorded in accordance with condition 9;

(e) a summary of the environmental performance of each item of infrastructure or equipment as installed;

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

(g) where they have not been met, measures proposed to meet design specifications and the conditions of this works approval, together with timeframes for implementing the proposed measures.

Time limited operations phase

Commencement and duration

12. The works approval holder may only commence time limited operations for an item of infrastructure identified in condition 14 where the Environmental Commissioning Report as required by condition 10 has been submitted by the works approval holder for that item of infrastructure.

13. The works approval holder may conduct time limited operations for an item of infrastructure specified in condition 14:

(a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 12 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 13(a).

Time limited operations requirements

14. During time limited operations, the works approval holder must ensure that the premises infrastructure listed in Table 4 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in Table 4.

Table 4: Infrastructure and equipment requirements during time limited operations

Site infrastructure	Operational requirement	Infrastructure location
RWTP and associated infrastructure	(a) Operated to receive and treat a wastewater inflow of up to 5,940 m^3 per day; (b) No treated wastewater is to be directly discharged to the environment; (c) Treated wastewater is to be returned to Bunbury WRRF storage lagoons; (d) Reject wastewater and backwash water is to be returned to the Bunbury WRRF; (e) Spills of wastewater and chemicals outside of a vessel/container are cleaned up immediately.	As depicted in Schedule 1, Figure 2

15. The works approval holder shall immediately recover, or remove and dispose of, spills of environmentally hazardous materials including fuel, oil, or other hydrocarbons, whether inside or outside an engineered containment system.

16. The works approval holder shall ensure that all material used for the recovery, removal, and/or disposal of environmentally hazardous materials is stored in an impermeable container prior to disposal at an appropriately authorised facility.

Monitoring during time limited operations

17. The works approval holder must ensure that, during monitoring for time limited operations:

(a) all water samples are collected and preserved in accordance with AS/NZS 5667:1;

(b) all wastewater sampling is conducted in accordance with AS/NZS 5667:10;

(d) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured, unless indicated otherwise in the relevant table.

18. The works approval holder must ensure that monitoring is undertaken in each monthly period such that there are at least 15 days in between the days on which samples are taken in successive months.

19. The works approval holder must ensure that all monitoring equipment used to comply with condition 20 is operated and calibrated in accordance with the manufacturer's specifications.

20. The works approval holder must monitor emissions during time limited operations in accordance with Table 5 at the locations depicted in Schedule 1 Figure 3.

Table 5: Monitoring during time limited operations

Monitoring location	Parameter	Unit	Frequency
Flow meter on RWTP inlet	Cumulative flow volume	m^3/day	Continuous
Flow meter on outflow to Bunbury WRRF	Cumulative flow volume	m^3/day	
RWTP outlet	pH [1]	pH units	
	Residual chlorine [1]	mg/L	
RWTP waste tank	pH [1]	pH units	Monthly
	Residual chlorine [1]	mg/L	
RWTP header tank; and Waste tank	*E. coli* [2]	cfu/100mL	Monthly
	Total coliforms	cfu/100mL	
	5 day Biological Oxygen Demand	mg/L	
	Ammonia (NH_4) as N	mg/L	
	Total Kjeldahl nitrogen (TKN) as N	mg/L	
	Nitrate (NO_3) as N	mg/L	
	Nitrite (NO_2) as N	mg/L	
	Nitrate + Nitrite as N	mg/L	
	Total Nitrogen (TN) as N	mg/L	
	Reactive Phosphorus as P	mg/L	
	Total Phosphorus (TP) as P	mg/L	
	Total Dissolved Solids	mg/L	
	Total Suspended Solids	mg/L	
	Surfactants	mg/L	
	Fluoride	mg/L	
	Oil and grease	mg/L	
	Pesticides	mg/L	
	Electrical conductivity [1]	µS/cm	Monthly
	Redox potential [1]	Eh	
	<u>Major cations:</u> Calcium (Ca^{2+}), Magnesium (Mg^{2+}), Potassium (K^+) and Sodium (Na^+)	mg/L	Monthly
	<u>Major anions:</u> Carbonate (CO_3^{2-}), Bicarbonate (HCO_3^-), Chloride (Cl^-) and Sulfate (SO_4^{2-})	mg/L	Monthly
	<u>Metals and Metalloids:</u> Aluminium, Arsenic, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Mercury, Molybdenum, Nickel, Vanadium and Zinc.	mg/L	Monthly

Note 1: In field, non-NATA accredited analysis permitted
Note 2: Actual units are to be reported except where the result is greater than the highest detectable level of 24,000 cfu/100mL. In this case the reporting of the highest detectable level is permitted.

Time limited operations report

21. 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.

22. The works approval holder must ensure the report required by condition 21 includes the following:

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

(b) a summary of process monitoring results obtained during time limited operations under condition 20.

(c) a summary of the environmental performance of all infrastructure as constructed or installed.

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

(e) 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)

23. 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.

24. 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, 5 and 14;

(c) monitoring programmes undertaken in accordance with conditions 9 and 20; and

(d) complaints received under condition 23.

25. The books specified under condition 24 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
AS/NZS 5667.1	means the Australian Standard AS/NZS 5667.1 *Water Quality – Sampling – Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples.*
AS/NZS 5667.10	means the Australian Standard AS/NZS 5667.10 *Water Quality – Sampling – Guidance on sampling of waste waters.*
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.
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).
monthly period	means a one-month period commencing from day 1 of a month until the final day of that month.
premises	the premises to which this works approval applies, as specified at the front of this works approval and as shown on the premises map (Figure 1) in Schedule 1 to this works approval.

Term	Definition
prescribed premises	has the same meaning given to that term under the EP Act.
suitably qualified civil engineer	means a person who: (a) holds a Bachelor of Engineering degree recognised by Engineers Australia; and (b) has a minimum of five years of experience working in a supervisory role in civil 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.
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

The premises infrastructure layout is shown in the map below (Figure 2).

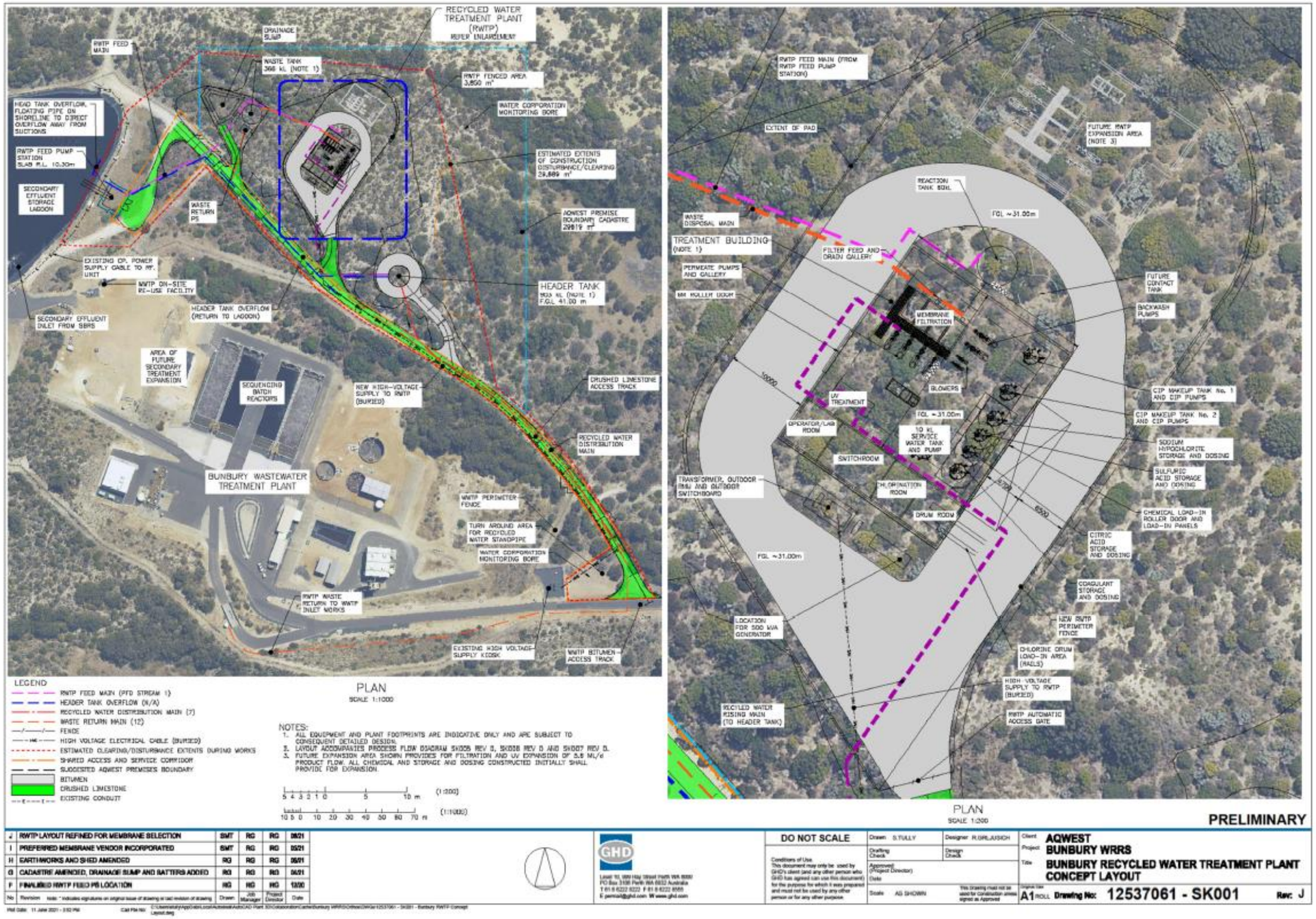

Figure 2: Layout of the prescribed premises

Schematic diagram showing the locations of the two flow metres (yellow), inline continuous monitoring (red), monitoring from the header tank (green) and from the waste tank (blue) (Figure 3)

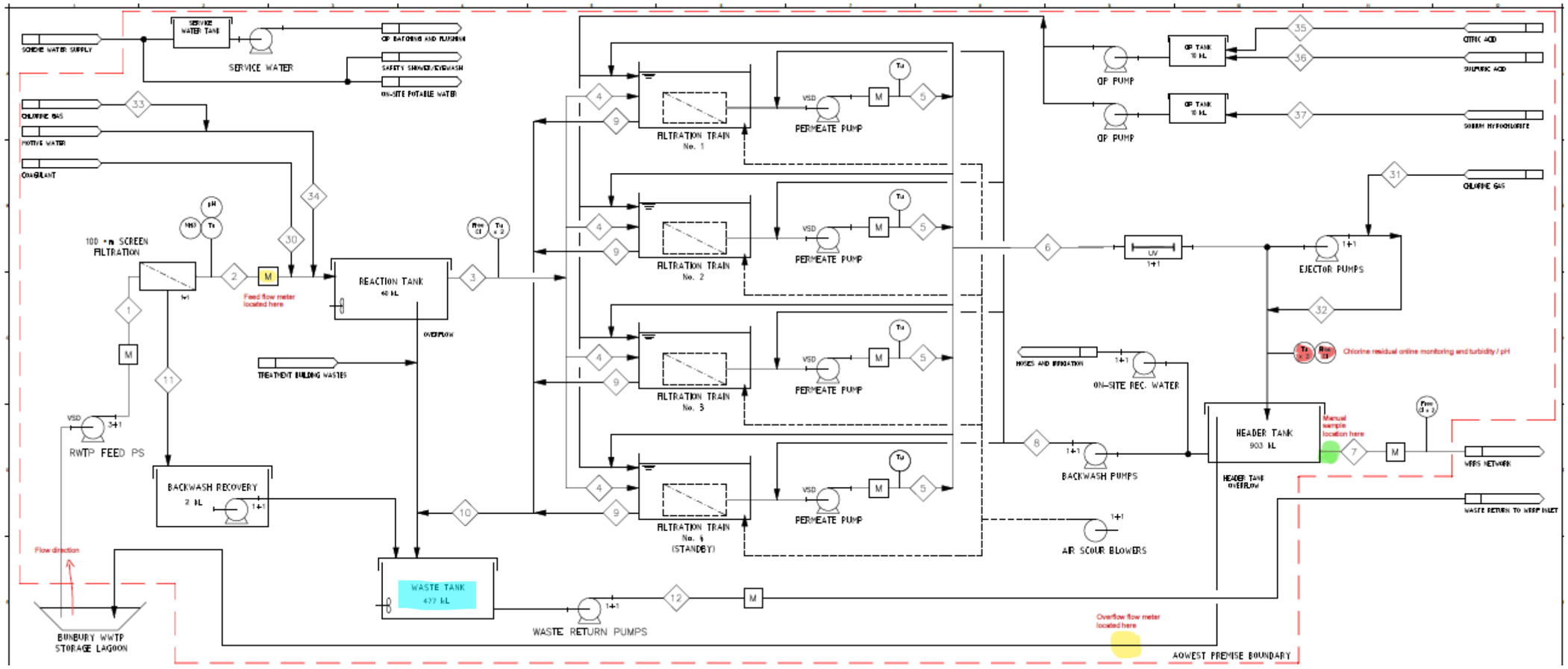

Figure 3: Schematic process diagram with monitoring locations

Schedule 2: Premises boundary

The premises boundary is defined by the coordinates in Table 7.

Table 7: Premises boundary coordinates

#	Easting	Northing	Zone
1	370802.464	6305285.264	50
2	370810.495	6305299.695	50
3	370838.018	6305390.941	50
4	371050.246	6305390.941	50
5	371050.224	6305164.815	50
6	371027.856	6305183.454	50
7	370944.441	6305238.144	50
8	370838.018	6305352.222	50
9	370797.263	6305307.035	50
10	370789.231	6305292.605	50