Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6664/2022/1
Works approval holder	Fortescue Metals Group Ltd
ACN	002 594 872
Registered business address	Level 2/87 Adelaide Terrace EAST PERTH WA 6004
DWER file number	DER2022/000074
Duration	13/04/2023 to 12/04/2026
Date of issue	13/04/2023
Premises details	Eliwana Flying Fish Camp WWTP Part of Mining Tenement M47/1509 TOM PRICE WA 6751 As defined by the coordinates in Schedule 2

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 (b) from which treated sewage is discharged onto land or into waters	Note more than 114 cubic metres per day

This works approval is granted to the works approval holder, subject to the attached conditions, on 13 April 2023, by:

Daniel Hartnup

Digitally signed by Daniel Hartnup
Date: 2023.04.13 10:39:15 +08'00'

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	Ref number	Summary of changes
13/04/2023	W6664/2022/1	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.

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 construct and/or establish the infrastructure listed in Table 1:

(a) in accordance with the corresponding design and construction requirements; and
(b) at the corresponding infrastructure location;

as set out in that table.

Table 1: Design, construction and installation requirements

	Infrastructure	Design, construction and installation requirements	Infrastructure location
1.	Wastewater Treatment Plant (WWTP)	The WWTP must be designed and installed to meet the following specifications: (a) Comprising of the following equipment: (i) Self-cleaning rotary inlet screen; (ii) 2x Aeration/decant tanks with a combined storage of 100 kL; (iii) Waste sludge storage tank of 50 kL capacity; (iv) Anoxic tank of 50kL capacity; (v) Raw wastewater storage balance tank of 50 kL	"Wastewater treatment plant" as per Schedule 1, Figures 1, 2, 3 and 4

	Infrastructure	Design, construction and installation requirements	Infrastructure location
		capacity; (vi) Chlorine dosing system; (vii) Final blended effluent storage tank of 50kL capacity; (b) All above ground infrastructure must be located on an impervious, bunded hardstand; (c) Must be able to receive and treat a combined sewage inflow of up to 87.5m^3/day; (d) Must be able to treat wastewater to the following output standards: (i) 5-day biochemical oxygen demand (BOD_5) <20 mg/L; (ii) pH 6.5 – 8.5; (iii) Total suspended solids (TSS) <30 mg/L; (iv) Total dissolved solids (TDS) <1,500 mg/L; (v) Total nitrogen (TN) <30 mg/L; (vi) Total phosphorus (TP) <8 mg/L; (vii) *E. coli* <1000 cfu/100 mL; (viii) Residual free chlorine 0.2 – 2.0 mg/L; (e) Must have a sealed connection point for pumping-out tank sludge for offsite disposal to a licensed waste facility; (f) Flow meters must be: (i) installed to record the influent/effluent volumes that are received/sent from the WWTP; (ii) located on the WWTP inlet, RO brine pipeline outlet and output line after the WWTP; (g) Must incorporate an alarm system of warning beacons, as well as audible and visual pump fault alarms, which will activate in the event of: (i) pump faults; (ii) high tank levels; (iii) tank overflows; (h) Must allow for manual operation if necessary; (i) Each pump station must be fitted with a carbon scrubber vent;	
2.	Irrigation spray field	Irrigation spray field must meet the following specifications: (a) Installation of minimum 20 sprinkler units over 3 ha; (b) Above ground sprinklers must be installed; (c) Must maintain a 5 m spray drift buffer from the edge of the sprinkler radius; (d) Bunds and diversion drains must be installed where required to divert uncontaminated stormwater away from the irrigation spray-field.	"Spray field" as per Schedule 1, Figures 1, 2 and 5
3.	Overflow lagoon • Dimensions of 18 m (l) x 12 m (w) x	(a) Overflow lagoon must have a minimum holding capacity of 200 kL; (b) Overflow lagoon must be lined with a synthetic and/or HDPE liner and installed to achieve a permeability of ≤1x10^{-9} m/s;	"Overflow lagoon" as per Schedule 1, Figures 1 and 5

	Infrastructure	Design, construction and installation requirements	Infrastructure location
	2m (d) • Volume – 200 kL	(c) Bunds and diversion drains must be installed where required to divert uncontaminated stormwater away from the overflow lagoon.	
4.	All infrastructure and equipment	(a) All above ground infrastructure must be located on an impervious, bunded hardstand; (b) All sewage storage and treatment tanks, vessels, pipework, fittings and joins must be constructed of impervious material and free from leaks and defects; (c) All pipework, fittings and pumps must be hydraulically tested to the required pressure and visually inspected for any defects to ensure infrastructure is fit for purpose prior to use; (d) All chemicals must be stored separately within an above ground vessel/s that is contained within bunds of a capacity of 110% of the total vessel/s contents; (e) Chemicals must be stored in accordance with Australian Standards AS1940-2004, AS3780-2008 and/or AS3833-2007 dependent on the type of chemical to be stored.	As shown in Schedule 1, Figures 2, 3, 4 and 5

Compliance reporting

2. The works approval holder must within 30 calendar days of the infrastructure or equipment required by condition 1 being installed:

(a) undertake an audit of their compliance with the requirements of condition 1; and
(b) prepare and submit to the CEO an Environmental Compliance Report on that compliance.

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

(a) certification by a suitably qualified engineer the infrastructure or components thereof, as specified in condition 1, have been constructed in accordance with the relevant requirements specified in that condition (including details on how the infrastructure complies with the requirements specified, where applicable);
(b) a detailed site plan for the 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

4. The works approval holder may only commence environmental commissioning of the infrastructure listed in condition 1 once the Environmental Compliance Report as required by condition 2 has been submitted by the works approval holder.

5. Any environmental commissioning activities undertaken for the infrastructure specified in Table 2 may only be carried out in accordance with the requirements of that table.

Table 2: Environmental commissioning requirements

	Infrastructure	Commissioning requirements	Authorised commissioning duration
1.	Irrigation spray field	(a) No more than 114 m^3 per day of blended effluent may be applied to the designated spray irrigation area; (b) Irrigation must be via low drift fan-spray nozzles spaced for even distribution; (c) Irrigation must be managed to prevent ponding and pooling of blended effluent on the ground surface of the irrigation spray field; (d) No blended effluent is permitted to run off or discharge beyond the irrigation spray field;	A period not exceeding 60 calendar days in aggregate
2.	WWTP and Pipeline	(a) Volumetric flow meters must be maintained on the inlet to the WWTP, RO brine pipeline outlet and outlet to the spray irrigation field; (b) Sludge must be contained within sealed sludge tank prior to removal by a licensed controlled waste carrier for disposal to a licensed controlled waste disposal facility; (c) Screenings must be contained within a sealed bin prior to removal for disposal to a licensed disposal facility; (d) Spills of wastewater, RO brine or chemicals outside of a vessel/container must be cleaned up as soon as practicable.	

6. During environmental commissioning, the works approval holder must ensure the emission specified in Table 3 is discharged in accordance with the requirements of that table.

Table 3: Authorised discharge points during commissioning

Emission	Discharge point	Discharge point location
Blended effluent	Sprinklers within the irrigation spray field	Irrigation spray field as shown in Schedule 1, Figures 1, 2 and 5

Monitoring during environmental commissioning

7. The works approval holder must monitor emissions during environmental commissioning in accordance with the requirements of Table 4.

Table 4: Emissions and discharge monitoring during environmental commissioning

Discharge point	Monitoring location	Parameter	Frequency	Averaging period	Unit
Irrigation spray field	WWTP outlet	*E. coli*	Weekly	Spot sample	cfu / 100mL
		Thermotolerant coliforms			
		BOD_5			mg/L
		Total suspended solids			
		Total nitrogen			

Discharge point	Monitoring location	Parameter	Frequency	Averaging period	Unit
		Total phosphorus			
		pH[1]	Daily or continuous	N/A	pH units
		Residual chlorine[1]			mg/L
		Cumulative flow volume	Continuous		m^3

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

8. For the monitoring activity required by condition 7, the works approval holder must:

(a) record the results;
(b) handle and preserve all water samples collected during the monitoring of the WWTP in accordance with AS/NZS 5667.1-1998 Water Quality – Sampling; and
(c) have analysis conducted by a laboratory with current National Association of Testing Authorities (NATA) accreditation for the parameters specified.

Environmental Commissioning Report

9. The works approval holder must submit to the CEO an Environmental Commissioning Report within 30 calendar days of the completion date of environmental commissioning for the infrastructure specified in Table 1.

10. The works approval holder must ensure the report required by condition 9 includes the following:

(a) a summary of the environmental commissioning activities undertaken, including date(s) for commencement of commissioning, timeframes and amount of wastewater processed;
(b) a summary of blended effluent monitoring results recorded in accordance with condition 7;
(c) copies of laboratory reports for blended effluent monitoring results recorded in accordance with condition 7;
(d) a summary of the environmental performance of each item of infrastructure or equipment as installed, which at minimum includes:
    (i) a comparison of the blended effluent monitoring results against discharge limits specified in condition 15;
    (ii) assessment of the irrigation spray field performance against operational requirements in condition 5;
(e) a review of the works approval holder's performance and compliance against the conditions of this works approval; and
(f) where they have not been met, measures proposed to meet the manufacturer's design specifications and the conditions of this works approval, together with timeframes for implementing the proposed measures.

Time limited operations phase

Commencement and duration

11. The works approval holder may conduct time limited operations:

(a) for a period not exceeding 180 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

12. During time limited operations, the works approval holder must ensure the premises infrastructure listed in Table 5 is maintained and operated in accordance with the requirements of that table.

Table 5: Infrastructure and equipment requirements during time limited operations

	Site infrastructure and equipment	Operational requirement	Infrastructure location
1.	Irrigation spray field	(a) No more than 114 m^3 per day of blended effluent may be applied to the designated irrigation spray field area; (b) Irrigation must be via low drift fan-spray nozzles spaced for even distribution; (c) Irrigation must be managed to prevent ponding and pooling of blended effluent on the ground surface of the irrigation spray field; (d) No blended effluent is permitted to run off or discharge beyond the irrigation spray field; (e) Bunds and diversion drains must be maintained and repaired required to ensure uncontaminated stormwater is directed away from and wastewater is contained within the irrigation spray field;	As shown in Schedule 1, Figures 1, 2 and 5
2.	WWTP and Pipeline	(a) Volumetric flow meters must maintained on the RO brine holding tank outlet, WWTP inlet and outlet to the irrigation spray field; (b) Sludge must be contained within sealed sludge tanks prior to removal by a licensed waste carrier for disposal to a licensed disposal facility; (c) Screenings must be contained within a sealed bin prior to removal for disposal to a licensed disposal facility; (d) Spills of wastewater, RO brine or chemicals outside of a vessel/container must be cleaned up as soon as practicable;	As shown in Schedule 1, Figures 2, 3 and 4
3.	RO brine pipeline	No more than 26.25 m^3/day of RO brine supplied to the WWTP;	Not shown
4.	Overflow lagoon	An operational freeboard of at least 0.5 m must be maintained at all times to prevent overtopping;	"Overflow lagoon" as shown in Schedule 1, Figures 1 and 5
5.	Chemical storage	(a) All chemicals must be stored separately within an above ground vessel/s that is contained within bunds of a capacity of 110% of the total vessel/s contents; (b) Chemicals must be stored in accordance with Australian Standards AS1940-2004, AS3780-2008 and/or AS3833-2007 dependent on the type of chemical to be stored.	"Chemical storage" as shown in Schedule 1, Figure 3

13. During limited operations, the works approval holder must ensure that the emission specified in Table 6, is only discharged in accordance with the requirements of that table.

Table 6: Authorised discharge points during time limited operations

Emission	Discharge point	Discharge point location
Blended effluent	Sprinklers within the irrigation spray field	Irrigation spray field as shown in Schedule 1, Figure 3 and 6.

Monitoring during time limited operations

14. During time limited operations, the works approval holder must ensure the emissions from the discharge point specified in Table 7 does not exceed the corresponding limits when monitored in accordance with condition 15.

Table 7: Emission and discharge limits during time limited operations

Discharge point	Parameter	Concentration limit
Irrigation spray field	BOD_5	20 mg/L
	pH	Less than 6.5 (lower limit) More than 8.5 (upper limit)
	Total suspended solids	30 mg/L
	Total nitrogen	30 mg/L
	Total phosphorus	8 mg/L
	E. coli	1,000 cfu/100mL
	Total dissolved solids	1,500 mg/L
	Residual chlorine	2.0 mg/L

15. The works approval holder must monitor emissions during time limited operations in accordance with the requirements of Table 8.

Table 8: Emissions and discharge monitoring during time limited operations

Discharge point	Monitoring location	Parameter	Frequency	Averaging Period	Unit
Irrigation spray field	WWTP outlet	*E. coli*	Monthly	Spot sample	cfu / 100mL
		Thermotolerant coliforms			
		BOD_5			mg/L
		Total suspended solids			
		Total nitrogen			
		Total phosphorus			
		Total dissolved solids			
		Residual chlorine			
		pH[1]			-
		Cumulative flow volume discharged to the irrigation spray field[1]	Continuous	N/A	m^3
	RO brine pipeline outlet	Cumulative flow volume supplied to the WWTP			

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

16. For the monitoring activity required by condition 15, the works approval holder must:

(a) record the results;
(b) handle and preserve all water samples collected during the monitoring of the WWTP in accordance with Australian Standard 5667.1:1998 Water Quality – Sampling; and
(c) have analysis conducted by a laboratory with current National Association of Testing (NATA) accreditation for the parameters specified.

Records and reporting

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

18. The books specified under condition 17 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 9 have the meanings defined.

Table 9: Definitions

Term	Definition
AS 1940-2004	means Australian Standard 1940-2004 The storage and handling of flammable and combustible liquids.
AS 3780-2008	means Australian Standard 3780-2008 The storage and handling of corrosive substances.
AS/NZS 3833:2007	means Australian Standard/New Zealand Standard 3833:2007 The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers.
AS/NZS 5667.1-1998	means Australian Standard/New Zealand Standard 5667.1-1998 Water quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples.
blended effluent	means treated wastewater from the wastewater treatment plant blended with RO brine reject.
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
cfu	colony forming units
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 installed in accordance with the works approval.
EP Act	*Environmental Protection Act 1986* (WA).
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
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.
RO	Reverse Osmosis
spot sample	means a discrete sample representative at the time and place at which the sample is taken.
suitably qualified engineer	means a suitably qualified civil or structural engineer who: - holds a Bachelor of Engineering recognised by Engineers Australia; and - has a minimum of five years of experience working in a supervisory area of civil engineering.
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.
WWTP	wastewater treatment plant

END OF CONDITIONS

Schedule 1: Maps

Premises map and infrastructure placement

The boundary of the prescribed premises is shown in yellow in the map below (Figure 1).

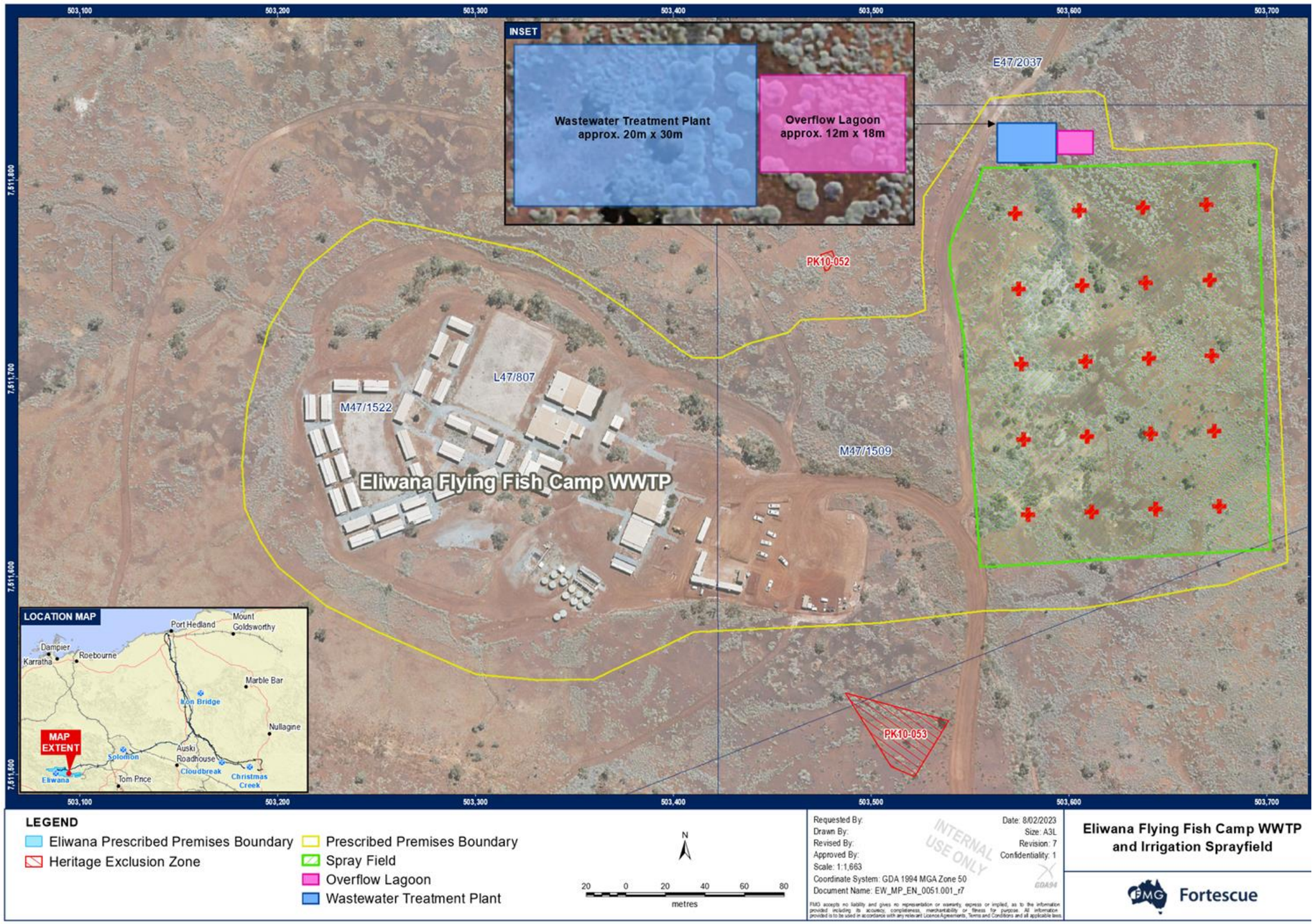

Figure 1: Map of the boundary of the prescribed premises and infrastructure placement

Hydraulic site plan

The sites hydraulics are shown in the map below (Figure 2).

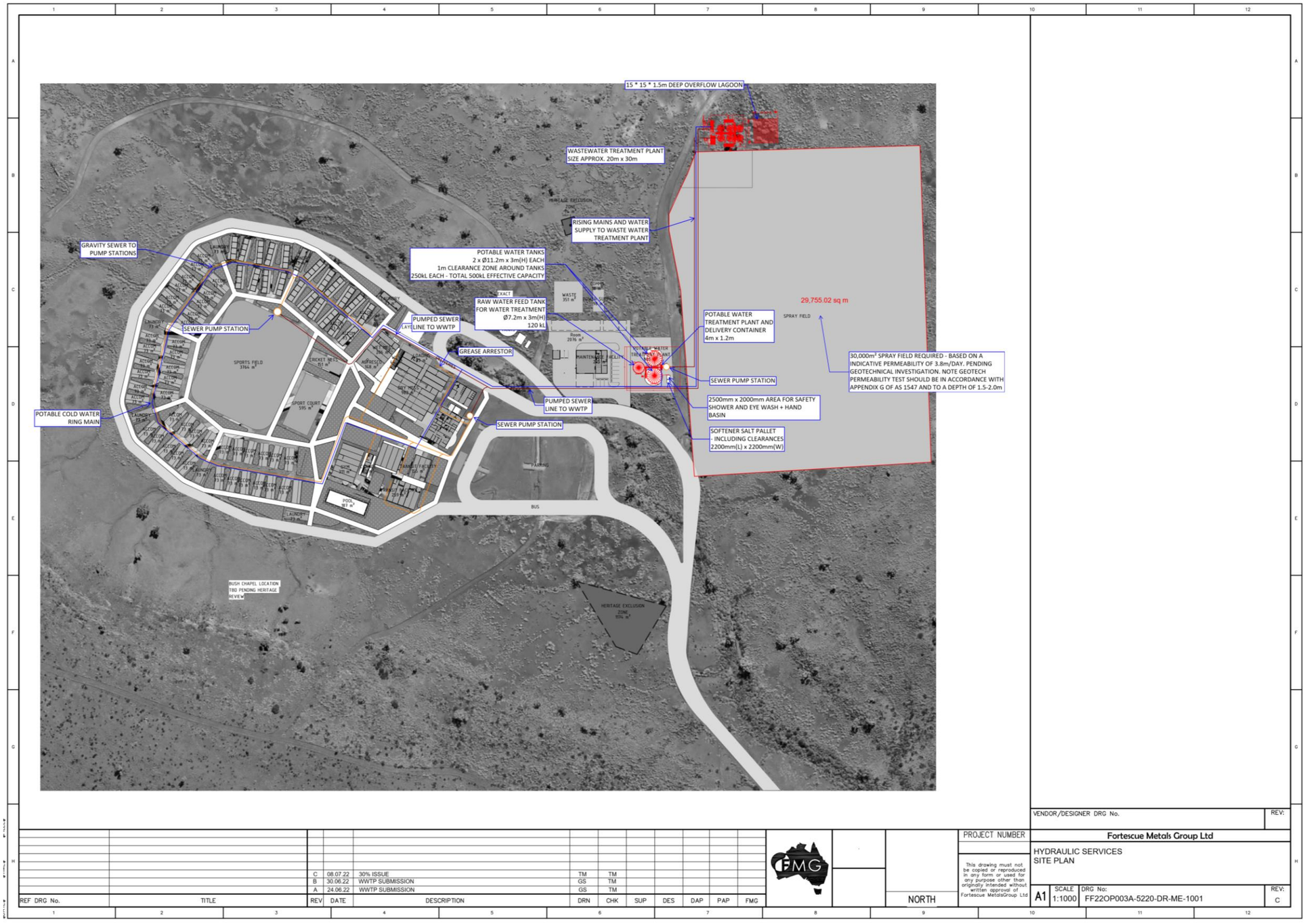

Figure 2: Hydraulics site plan

Wastewater treatment plant layout

The wastewater treatment plant layout is shown in the plan below (Figure 3).

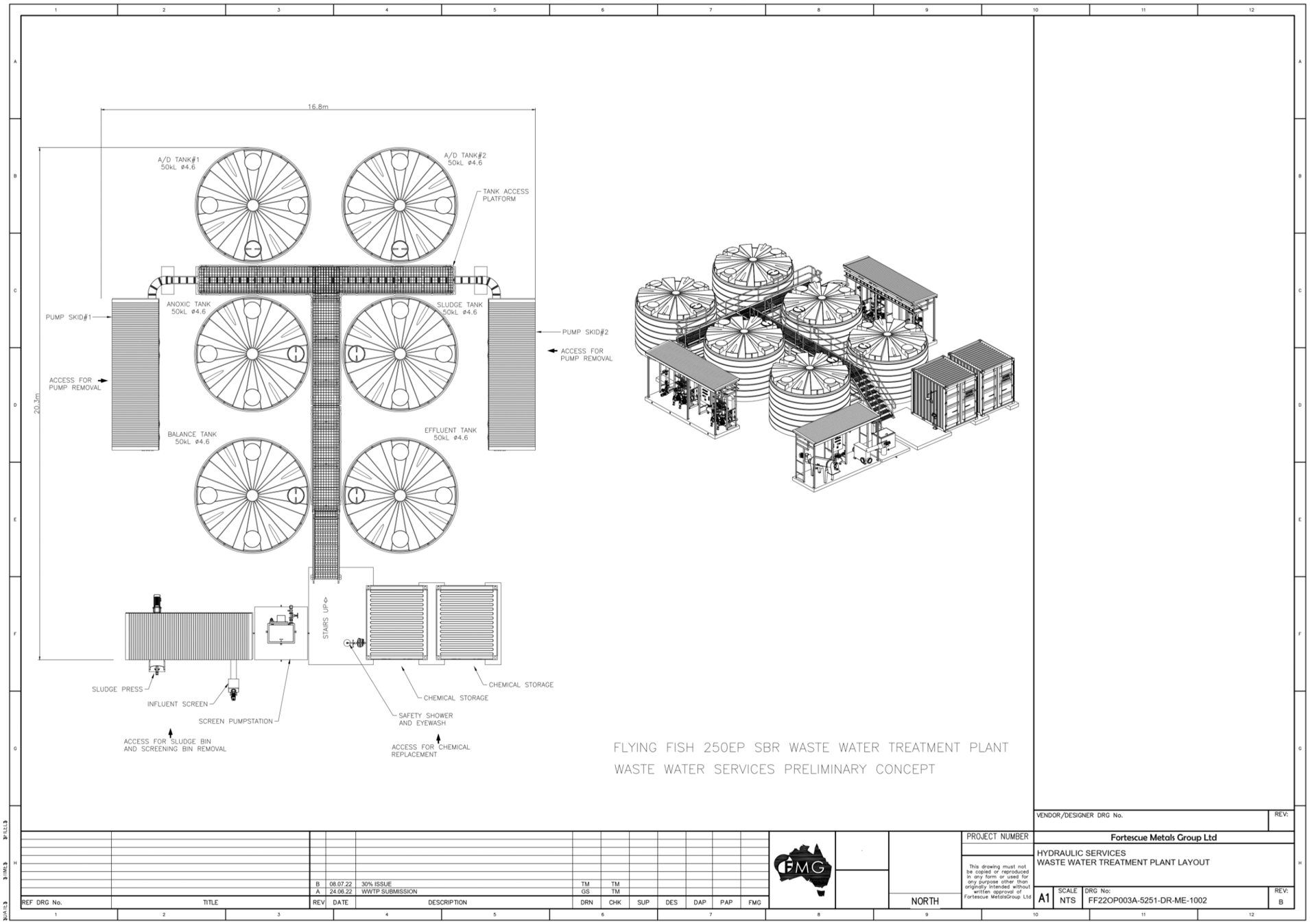

Figure 3: Plan of the wastewater treatment system layout

Wastewater treatment plant process schematic

The wastewater treatment plant process is shown in the plan below (Figure 4).

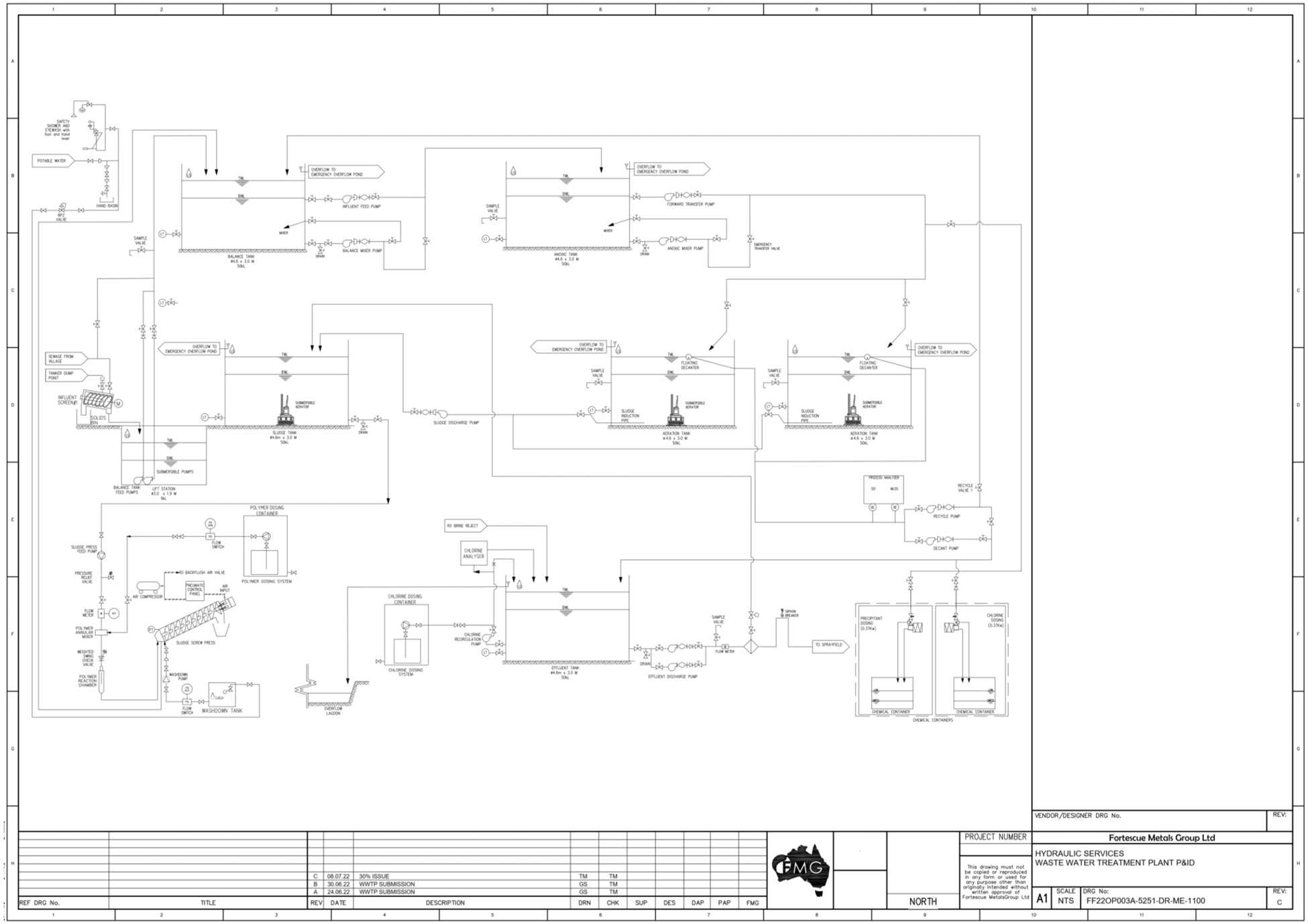

Figure 4: Schematic of the wastewater treatment plant process

Irrigation spray field, bunding and drains layout

The irrigation spray field, bunding and drains are shown in the plan below (Figure 5).

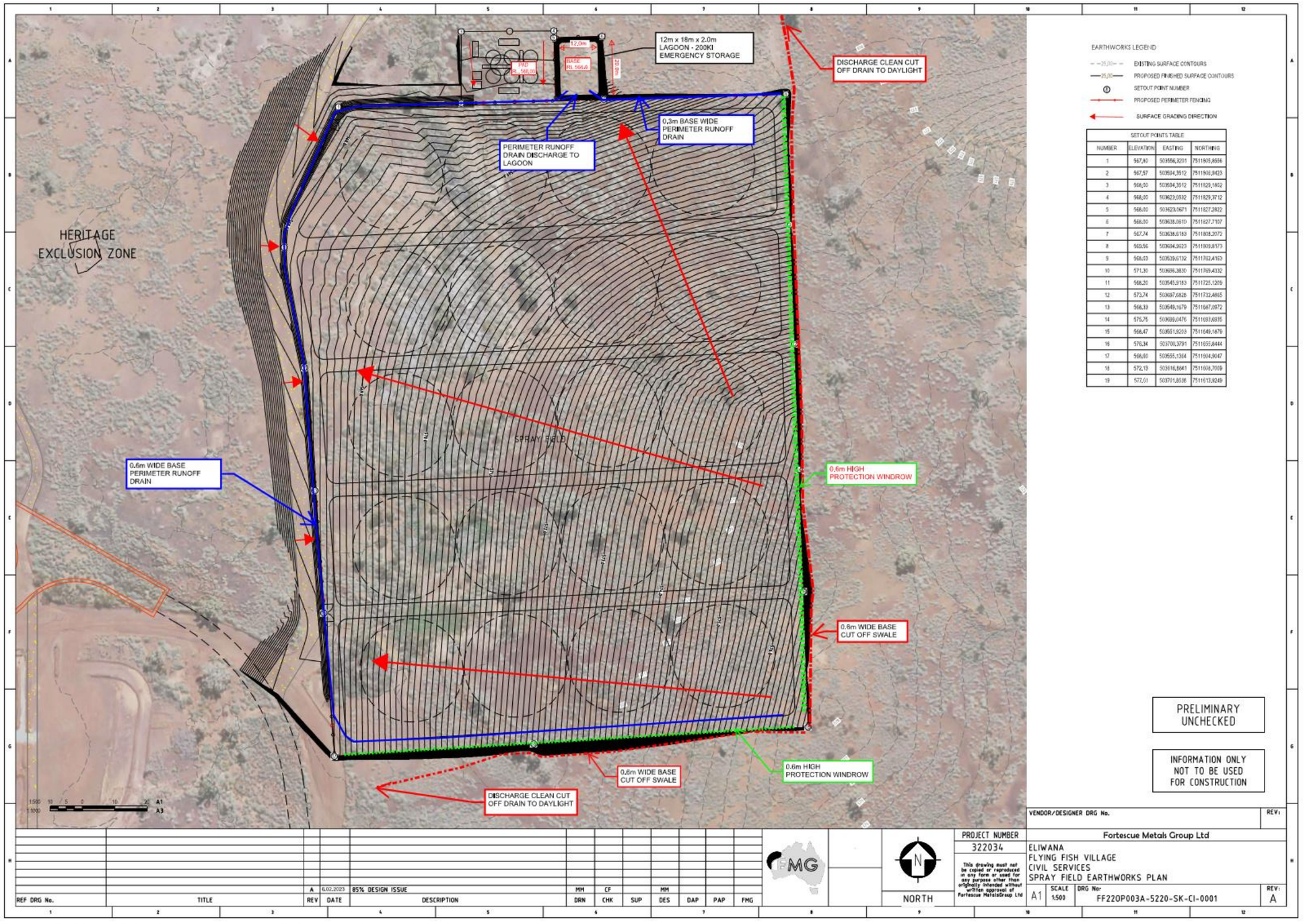

Figure 5: Plan of the irrigation spray field, bunding and drains

Schedule 2: Premises boundary

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

Table 10: Premises boundary coordinates (GDA2020)

Coordinate No.	Easting	Northing	Zone
1.	503184.8856	7511687.281	50
2.	503195.6013	7511725.778	50
3.	503213.4607	7511755.147	50
4.	503236.8763	7511774.197	50
5.	503248.4652	7511780.431	50
6.	503266.6554	7511777.785	50
7.	503329.494	7511763.895	50
8.	503353.3066	7511750.665	50
9.	503378.442	7511733.798	50
10.	503401.9239	7511715.608	50
11.	503409.5173	7511710.697	50
12.	503424.0828	7511710.647	50
13.	503438.6349	7511717.923	50
14.	503457.8172	7511723.215	50
15.	503464.4318	7511729.829	50
16.	503518.6715	7511731.814	50
17.	503527.2705	7511734.79	50
18.	503525.6168	7511758.934	50
19.	503526.2783	7511792.007	50
20.	503528.58	7511795.231	50
21.	503548.49	7511824.269	50
22.	503560.0127	7511841.616	50
23.	503590.1091	7511844.593	50
24.	503612.5988	7511845.254	50
25.	503617.5597	7511842.277	50
26.	503622.1899	7511816.481	50
27.	503631.4504	7511815.488	50
28.	503692.3046	7511819.126	50
29.	503700.2422	7511818.465	50
30.	503704.8724	7511815.819	50
31.	503702.4116	7511794.834	50
32.	503703.6023	7511765.465	50
33.	503705.9835	7511697.6	50
34.	503710.1641	7511607.129	50
35.	503690.9817	7511601.175	50

36.	503679.4062	7511595.884	50
37.	503665.1848	7511594.23	50
38.	503634.4269	7511588.277	50
39.	503605.3227	7511583.977	50
40.	503556.7054	7511582.655	50
41.	503503.4579	7511576.701	50
42.	503410.1921	7511572.071	50
43.	503394.0392	7511564.249	50
44.	503374.4733	7511555.204	50
45.	503359.5904	7511548.259	50
46.	503331.4784	7511547.928	50
47.	503300.3898	7511550.574	50
48.	503250.767	7511572.187	50
49.	503224.5732	7511585.284	50
50.	503200.3638	7511604.731	50
51.	503191.6325	7511617.431	50
52.	503183.2981	7511634.496	50
53.	503182.1075	7511656.721	50