Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6825/2023/1
Works approval holder	IGO Cosmos Pty Ltd
ACN	111 599 323
Registered business address	Suite 4, Level 5, South Shore Centre 85 South Perth Esplanade SOUTH PERTH WA 6151
DWER file number	DER2023/000444
Duration	17/10/2023 to 16/10/2028
Date of issue	17/10/2023
Premises details	Cosmos Wastewater Treatment Plant Mining Tenement M36/371 SIR SAMUEL WA 6437

Prescribed premises category description **(Schedule 1, Environmental Protection Regulations 1987)**	**Assessed production / 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	113 cubic meters per day

This works approval is granted to the works approval holder, subject to the attached conditions, on 17 October 2023, by:

Koby Anderson

Digitally signed by Koby Anderson
Date: 2023.10.17 13:11:16 +08'00'

A/ SENIOR ENVIRONMENTAL OFFICER
INDUSTRY REGULATION
REGULATORY SERVICES
An officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Works approval history

Date	Reference number	Summary of changes
17/10/2023	W6825/2023/1	Works approval granted.

Interpretation

In this works approval:

(a) the words ‘including’, ‘includes’ and ‘include’ in conditions mean “including but not limited to”, and similar, as appropriate;

(b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;

(c) where tables are used in a condition, each row in a table constitutes a separate condition;

(d) any reference to an Australian or other standard, guideline, or code of practice in this works approval:

(i) if dated, refers to that particular version; and

(ii) if not dated, refers to the latest version and therefore may be subject to change over time;

(e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act; and

(f) unless specified otherwise, all definitions are in accordance with the EP Act.

NOTE: This works approval requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this works approval.

Works approval conditions

The works approval holder must ensure that the following conditions are complied with:

Construction phase

Infrastructure and equipment

1. The works approval holder must:

(a) construct and install the infrastructure and/or equipment;

(b) in accordance with the corresponding design and installation requirements; and

(c) at the corresponding infrastructure location

as set out in Table 1.

Table 1: Design, construction and installation requirements

Infrastructure		Design, construction and installation requirements	Infrastructure location
1.	113 m^3/day Membrane Bioreactor (MBR) Wastewater Treatment Plant (WWTP)	a) Must comprise of the following process tanks and equipment: i. 2 mm perforated inlet screen with sealed screenings bagging system. ii. Two balance tanks with 50 kL capacity each. iii. 30 kL anoxic tank. iv. 35 kL aerobic tank with dissolved oxygen sensor. v. 28 kL MBR tank. vi. Two treated wastewater tanks with 50 kL capacity each. vii. 50 kL sludge tank with sealed connection point for pumping-out tank sludge for offsite disposal to a licensed waste facility. viii. 100 L polyaluminium chloride storage tank in a chemical bund and with a dosing pump. ix. 100 L sodium hypochlorite storage tank in a chemical bund and with a dosing pump. x. 100 L sucrose storage tank in a chemical bund and with a dosing pump. xi. 720 L clean-in-place tank. xii. 100 L chemical header tank. xiii. Chlorine and pH analysers. xiv. UV steriliser. b) Must be able to receive and treat a sewage inflow of up to 113 m^3/day. c) Must be able to treat sewage 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) <10 mg/L. iv. Total nitrogen (TN) <20 mg/L. v. Total phosphorus (TP) <4 mg/L. vi. *E. coli* <10 cfu/100mL. vii. Residual free chlorine 0.2mg/L to 2.0mg/L.	MBR wastewater treatment system location as labelled in Schedule 1, Figure 2

Infrastructure		Design, construction and installation requirements	Infrastructure location
		d) Flow meter to be installed to record the outflow volumes that are sent from the WWTP. e) All sewage storage and treatment tanks, pipework, fittings and joints are to be constructed of impervious material and be free from leaks and defects. f) 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. g) WWTP must be installed on concrete or compacted ground with a perimeter bund to divert stormwater away from the infrastructure. h) Incorporate an alarm system of warning beacons, as well as audible and visual pump fault alarms, which will activate in the event of pump faults, high tank levels, tank overflows. i) 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.	
2.	Irrigation spray field 1 extension (1.65 ha addition)	Irrigation spray field 1 extension to meet the following specifications: a) Installation of sprinkler units to provide an additional 1.65 ha of coverage (total 5.2 ha across both irrigation spray fields). b) Above ground sprinklers installed. c) Spray drift from sprinklers must not discharge beyond the irrigation spray field. d) Bunds and/or diversion drains must be installed where required to divert uncontaminated stormwater away from the irrigation spray field extension. e) Fenced with a vehicle access gate. f) Warning signage to be installed on all sides of fencing advising the area is used for the disposal of treated wastewater.	Irrigation spray field extension location labelled in Schedule 1, Figure 2

Compliance reporting

2. The works approval holder must within 30 calendar days of an item of 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 the following:

(a) certification by a suitably qualified engineer that the items of infrastructure or component(s) thereof, as specified in condition 1, have been constructed in accordance with the relevant requirements specified in condition 1;

(b) 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 phase

Environmental commissioning requirements and emission limits

4. The works approval holder may only commence environmental commissioning for an item of infrastructure listed in condition 1 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 as set out in Table 2.

Table 2: Environmental commissioning requirements

Infrastructure		Commissioning requirements	Authorised commissioning duration
1.	Irrigation spray field 1 and Irrigation spray field 2	a) No more than 113 m^3 per day of treated wastewater to be applied across irrigation spray fields 1 and 2. b) Irrigation must be via low drift impact sprinkler heads spaced for even distribution. c) Irrigation must not occur on land that is waterlogged, including following rain. d) Wastewater must be evenly distributed over the irrigation areas, and that no ponding or pooling occurs. e) Irrigation must be managed to prevent ponding and pooling of treated wastewater on the ground surface of the irrigation spray fields. f) No discharged treated wastewater is permitted to run off or discharge over the irrigation spray field boundaries.	A period not exceeding 140 calendar days in aggregate
2.	WWTP and Pipeline	a) Volumetric flow meter must be maintained on the MBR WWTP outlet to each of the spray irrigation fields. 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 or chemicals outside of a vessel/container must be cleaned up immediately.	

6. During environmental commissioning, the works approval holder must ensure that the emission specified in Table 3, are discharged only from the corresponding discharge points and only at the corresponding discharge point locations.

Table 3: Authorised discharge points during commissioning

Emission	Discharge points	Discharge point locations
Treated wastewater	Sprinklers within irrigation spray field 1 and irrigation spray field 2	Irrigation spray field 1 and irrigation spray field 2 as labelled in Schedule 1, Figure 2

Monitoring during environmental commissioning

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

Table 4: Emissions and discharge monitoring during environmental commissioning

Discharge point	Monitoring location	Parameter	Unit	Frequency	Sampling Method
Irrigation spray field 1 and Irrigation spray field 2	MBR WWTP outlet	*E. coli*	cfu or MPN / 100mL	Monthly during commissioning[2]	Spot sample in accordance with AS 5667.1 and AS 5667.10
		BOD_5	mg/L		
		Total suspended solids			
		Total nitrogen			
		Total phosphorus			
		Residual chlorine[1]		Daily or continuous	N/A
		Turbidity[1]	NTU		
		pH[1]	-		
	MBR WWTP flow meter	Volume discharged to each irrigation spray field[1]	m^3	Continuous	

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

Note 2: Subsequent sampling may be required to ensure the WWTP can treat wastewater to the required discharge limits in Table 7.

8. All sample analysis must be undertaken by laboratories with current accreditation from the National Association of Testing Authorities (NATA) for relevant parameters, unless otherwise specified in Table 4.

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 each item of infrastructure specified in Table 2.

10. The works approval holder must ensure the Environmental Commissioning Report required by condition 9 of this works approval 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 treated wastewater monitoring results recorded in accordance with condition 7;

(c) copies of laboratory reports for treated wastewater 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 treated wastewater 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 only commence time limited operations for an item of infrastructure identified in condition 13 where the Environmental Commissioning Report for that item of infrastructure as required by condition 9 has been submitted by the works approval holder.

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

(a) for a period not exceeding 120 calendar days from the day the works approval holder meets the requirements of condition 11 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 12(a).

Time limited operations requirements and emission limits

13. During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirements set out in Table 5.

Table 5: Infrastructure and equipment requirements during time limited operations

Site infrastructure and equipment		Operational requirement	Infrastructure location
1.	Irrigation spray field 1 and Irrigation spray field 2	a) No more than 113 m^3 per day of treated wastewater to be applied across irrigation spray fields 1 and 2. b) Irrigation must be via low drift impact sprinkler heads spaced for even distribution. c) Irrigation must not occur on land that is waterlogged, including following rain. d) Treated wastewater must be evenly distributed over the irrigation areas to ensure no ponding or pooling occurs. e) A healthy vegetation cover must be maintained over the irrigation spray fields. f) No treated wastewater is permitted to run off or discharge over the irrigation spray field boundaries. g) Bunds and diversion drains must be maintained and repaired where required to ensure uncontaminated stormwater is directed away from the irrigation spray fields.	As labelled in Schedule 1, Figure 2
2.	Tanker/vehicle holding treated wastewater for dust suppression and wastewater pipeline to mineral processing plant	a) Only treated wastewater meeting the discharge limits specified in Table 7 is permitted to be used for dust suppression and mineral processing[1]. b) Treated wastewater used for dust suppression must only be used on pre-disturbed locations throughout the prescribed premises including haul roads, access roads and construction areas [1].	Mineral processing plant as shown in Schedule1, Figure 4
3.	WWTP and Pipeline	a) Volumetric flow meter must be maintained on the MBR WWTP outlet to each of the spray irrigation fields. 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 or chemicals outside of a vessel/container must be cleaned up immediately.	WWTP location shown in Schedule 1, Figure 2
4.	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 AS 1940, AS 3780 and/or AS 3833 dependent on the type of chemical to be stored.	Not shown

Note 1: The re-use of treated wastewater for dust suppression or mineral processing must be in accordance with a valid approval from the WA Department of Health.

14. During time limited operations, the works approval holder must ensure that the emission specified in Table 6, is discharged only from the corresponding discharge or reuse points and only at the corresponding discharge point location.

Table 6: Authorised discharge and reuse points during time limited operations

Emission	Discharge or reuse point	Discharge point location
Treated wastewater	Sprinklers within irrigation spray field 1 and irrigation spray field 2	Irrigation spray field 1 and irrigation spray field 2 as labelled in Schedule 1, Figure 2
	Irrigation via truck tanker for dust suppression purposes[1]	Pre-disturbed locations throughout the prescribed premises including haul roads, access roads and areas subject to construction works
	Mineral processing plant (process water) via enclosed wastewater pipeline[1]	Mineral processing plant as shown in Schedule 1, Figure 4

Note 1: The re-use of treated wastewater for dust suppression or mineral processing must be in accordance with a valid approval from the WA Department of Health.

15. During time limited operations, the works approval holder must ensure that the emissions from the discharge point listed in Table 7 does not exceed the corresponding limit(s) when monitored in accordance with condition 16.

Table 7: Emission and discharge limits during time limited operations

Discharge point	Parameter	Concentration limit
All authorised discharge or reuse points in accordance with Table 6	BOD_5	20 mg/L
	Total suspended solids	30 mg/L
	Total nitrogen	20 mg/L
	Total phosphorus	4 mg/L
	Total dissolved solids	2,500 mg/L
	Turbidity	5 NTU (95%ile)
	Residual chlorine	<0.2 mg/L or >2.0 mg/L
	pH	6.5 to 8.5
Irrigation spray field	*E. coli*	1,000 cfu or MPN / 100mL
Dust suppression via vehicle tanker and mineral processing plant via enclosed wastewater pipeline	*E. coli*	10 cfu or MPN / 100mL

Monitoring during time limited operations

16. The works approval holder must monitor emissions during time limited operations in accordance with Table 8.

Table 8: Emissions and discharge monitoring during time limited operations

Discharge points	Monitoring location	Parameter	Unit	Frequency	Method
Irrigation spray field 1 and irrigation spray field 2 Vehicle tanker sprinklers for dust suppression Mineral processing plant via enclosed wastewater pipeline	WWTP outlet to irrigation spray fields, vehicle tanker and mineral processing pipeline	*E. coli*	cfu or MPN / 100mL	Quarterly[2]	Spot sample in accordance with AS 5667.1 and AS 5667.10
		BOD_5	mg/L		
		Total suspended solids			
		Total nitrogen			
		Total phosphorus			
		Total dissolved solids			
		Residual chlorine[1]			
		Turbidity[1]	NTU		
		pH[1]	-		
		Cumulative flow volume discharged to irrigation spray field 1[1]	m^3	Continuous	N/A
		Cumulative flow volume discharged to irrigation spray field 2[1]			
	WWTP outlet to dust suppression equipment	Volume of treated wastewater discharged for dust suppression[1]			
	WWTP outlet to mineral processing plant pipeline	Volume of treated wastewater used for mineral processing[1]			

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

Note 2: At least two sampling rounds must be undertaken during time limited operations.

17. All sample analysis must be undertaken by laboratories with current accreditation from the National Association of Testing Authorities (NATA) for relevant parameters, unless otherwise specified in Table 8.

Compliance reporting

18. The works approval holder must submit to the CEO a report on the time limited operations within 30 calendar days of the completion date of time limited operations or 30 calendar days before the expiration date of the works approval, whichever is the sooner.

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

(a) a summary of the time limited operations, including date(s) for commencement of time limited operations, timeframes and amount of wastewater processed;

(b) a summary of monitoring parameter results obtained during time limited operations under condition 16;

(c) copies of laboratory reports for treated wastewater monitoring results recorded in accordance with condition 16;

(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 treated wastewater monitoring results against discharge limits specified in condition 15;

(ii) assessment of the spray irrigation field performance against operational requirements in condition 13;

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

(f) where the specifications and the conditions of this works approval have not been met, what measures will the works approval holder take to meet them, and what timeframes will be required to implement those measures.

Records and reporting (general)

20. The works approval holder must record the following information in relation to complaints received by the works approval holder (whether received directly from a complainant or forwarded to them by the Department or another party) about any alleged emissions from the premises:

(a) the name and contact details of the complainant, (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.

21. The works approval holder must maintain accurate and auditable books including the following records, information, reports, and data required by this works approval:

(a) the works conducted in accordance with condition 1;

(b) any maintenance of infrastructure that is performed in the course of complying with condition 5 and 13;

(c) monitoring programs undertaken in accordance with conditions 7 and 16; and

(d) complaints received under condition 20.

22. The books specified under condition 21 must:

(a) be legible;

(b) if amended, be amended in such a way that the original version(s) and any subsequent amendments remain legible and are capable of retrieval;

(c) be retained by the works approval holder for the duration of the works approval; and

(d) be available to be produced to an inspector or the CEO as required.

Definitions

In this works approval, the terms in Table 9 have the meanings defined.

Table 9: Definitions

Term	Definition
ACN	Australian Company Number.
AS 1940	means Australian Standard 1940 *The storage and handling of flammable and combustible liquids*.
AS 3780	means Australian Standard 3780 *The storage and handling of corrosive substances*.
AS 3833	means Australian Standard/New Zealand Standard 3833 *The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers*.
AS 5667.1	means Australian Standard/New Zealand Standard 5667.1 *Water quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples*.
AS 5667.10	means the Australian Standard AS/NZS 5667.10 *Water Quality – Sampling – Guidance on sampling of wastewater*.
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.

Term	Definition
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).
EP Regulations	Environmental Protection Regulations 1987 (WA).
ha	hectares.
kL	kilolitres.
m^3	cubic metres.
mg/L	milligrams per litre.
mL	millilitres.
MBR WWTP	membrane bioreactor wastewater treatment plant.
MPN	most probable number.
NATA	National Association of Testing Authorities.
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.
NTU	nephelometric turbidity unit.
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.
prescribed premises	has the same meaning given to that term under the EP Act.
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.
WWTP	wastewater treatment plant.
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 location map

The boundary of the prescribed premises follows Mining Tenement M36/371 as shown in the map below (Figure 1).

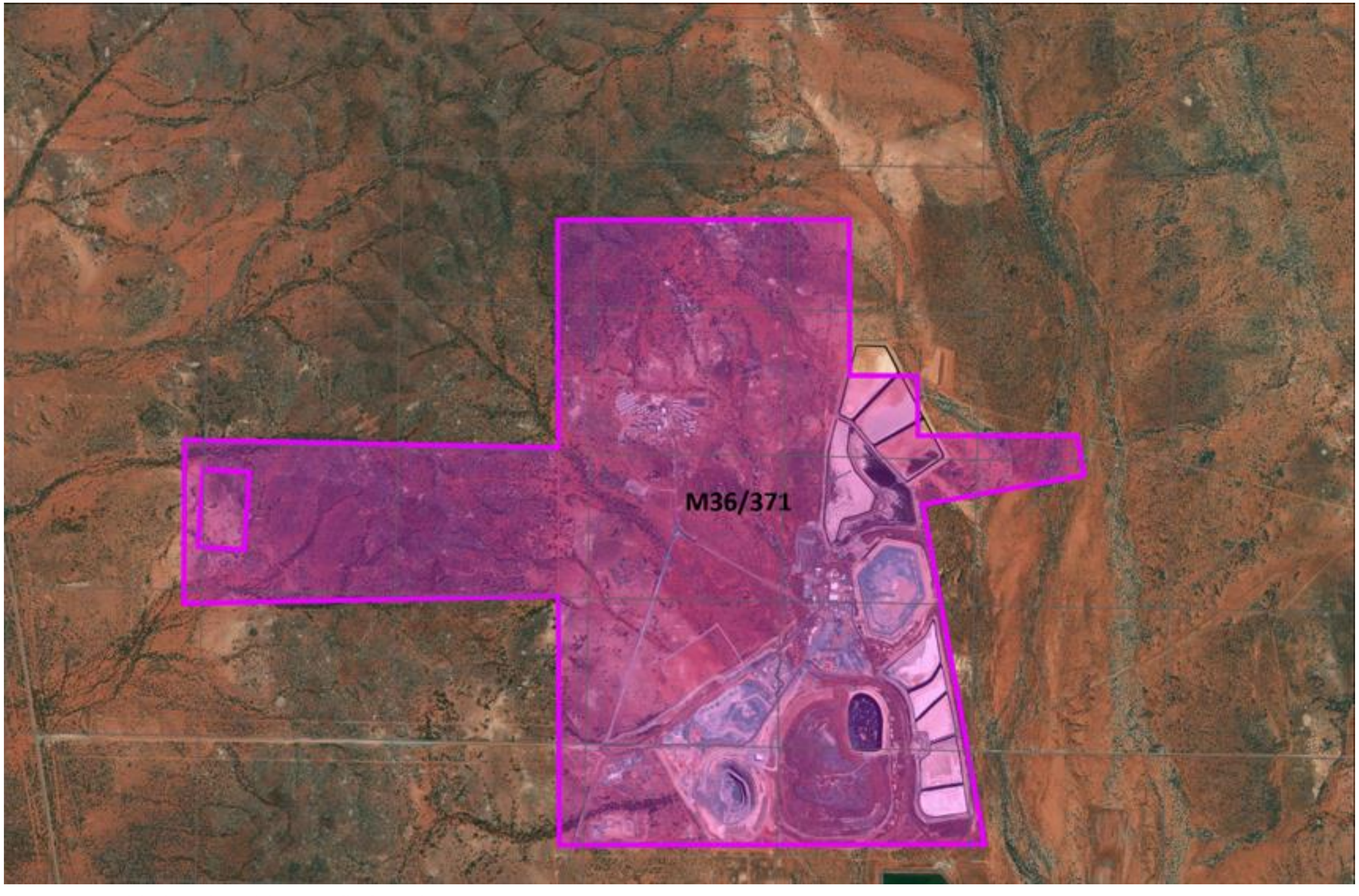

Figure 1: Map of the boundary of the prescribed premises

Wastewater Treatment Plants and irrigation spray-fields location map

The wastewater treatment plants and irrigation spray-fields are shown in the map below with reference to the coordinates in Table 10 (Figure 2).

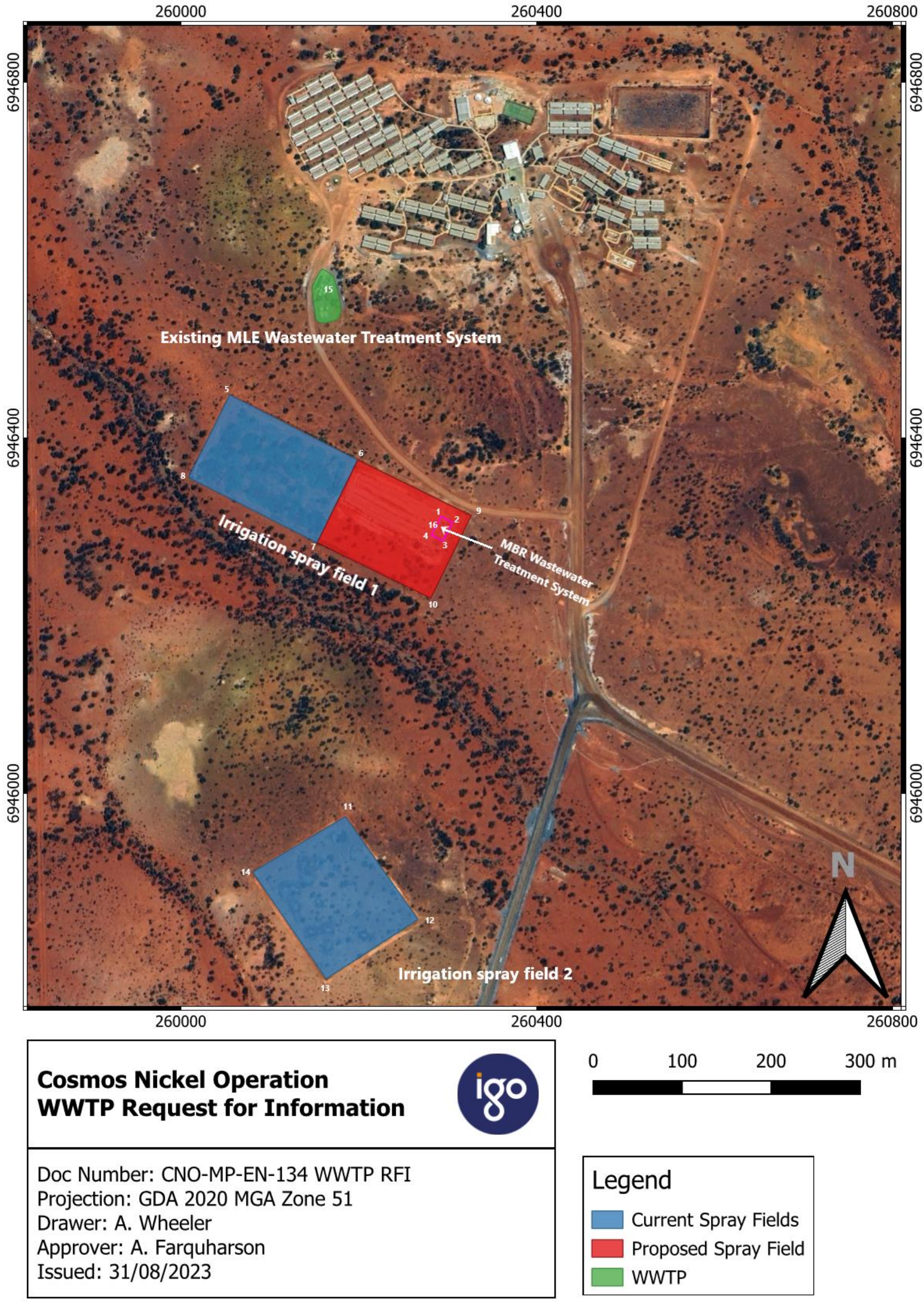

Figure 2: Map of the wastewater treatment plant and irrigation spray-field locations

Wastewater Treatment Plant general layout and bunding schematic

The WWTP general layout and bunding specifications is shown in the schematic below (Figure 3).

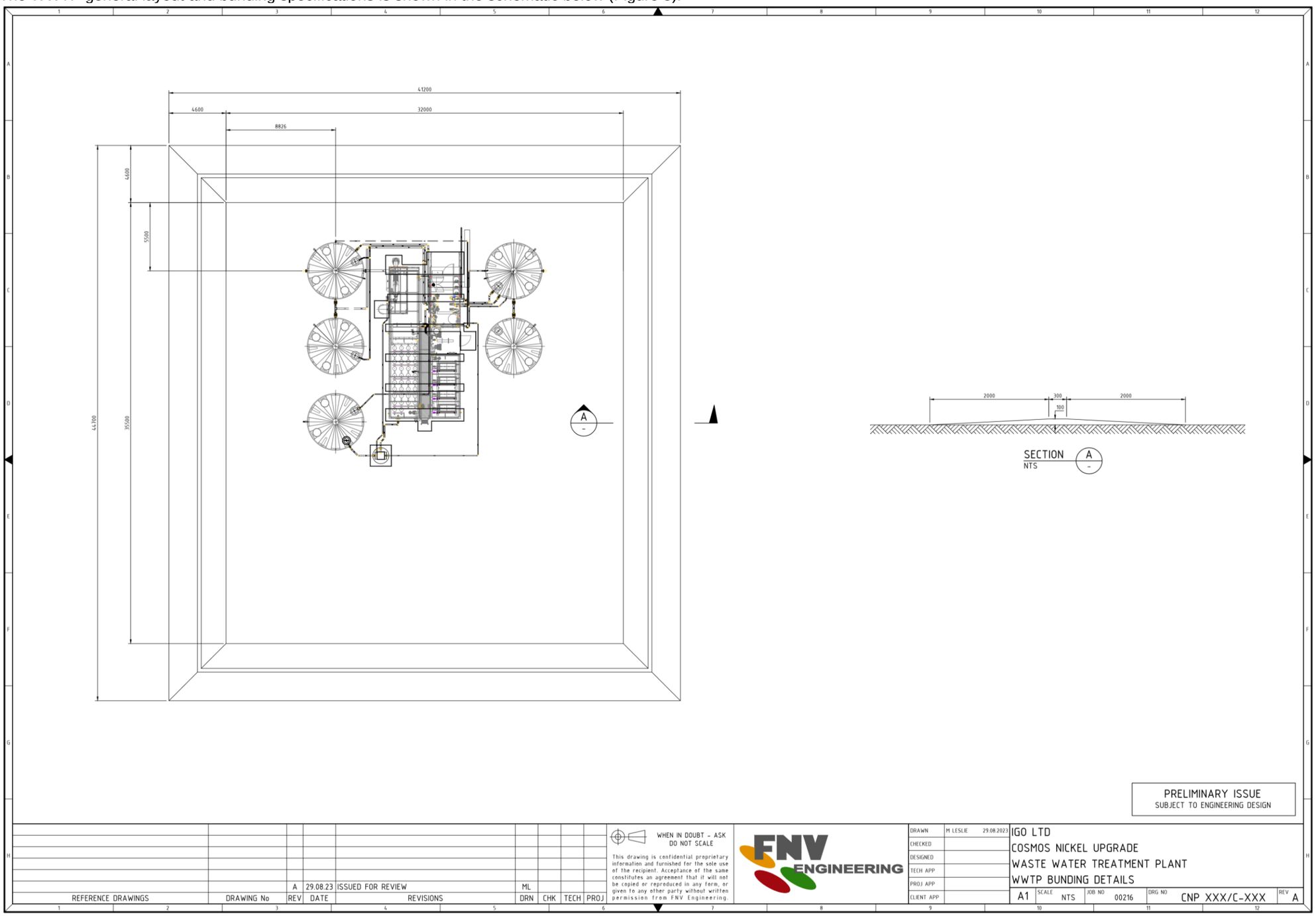

Figure 3: Schematic of the wastewater treatment plant general layout and bunding

Mineral processing plant location

The location of the mineral processing plant is shown in the map below (Figure 4).

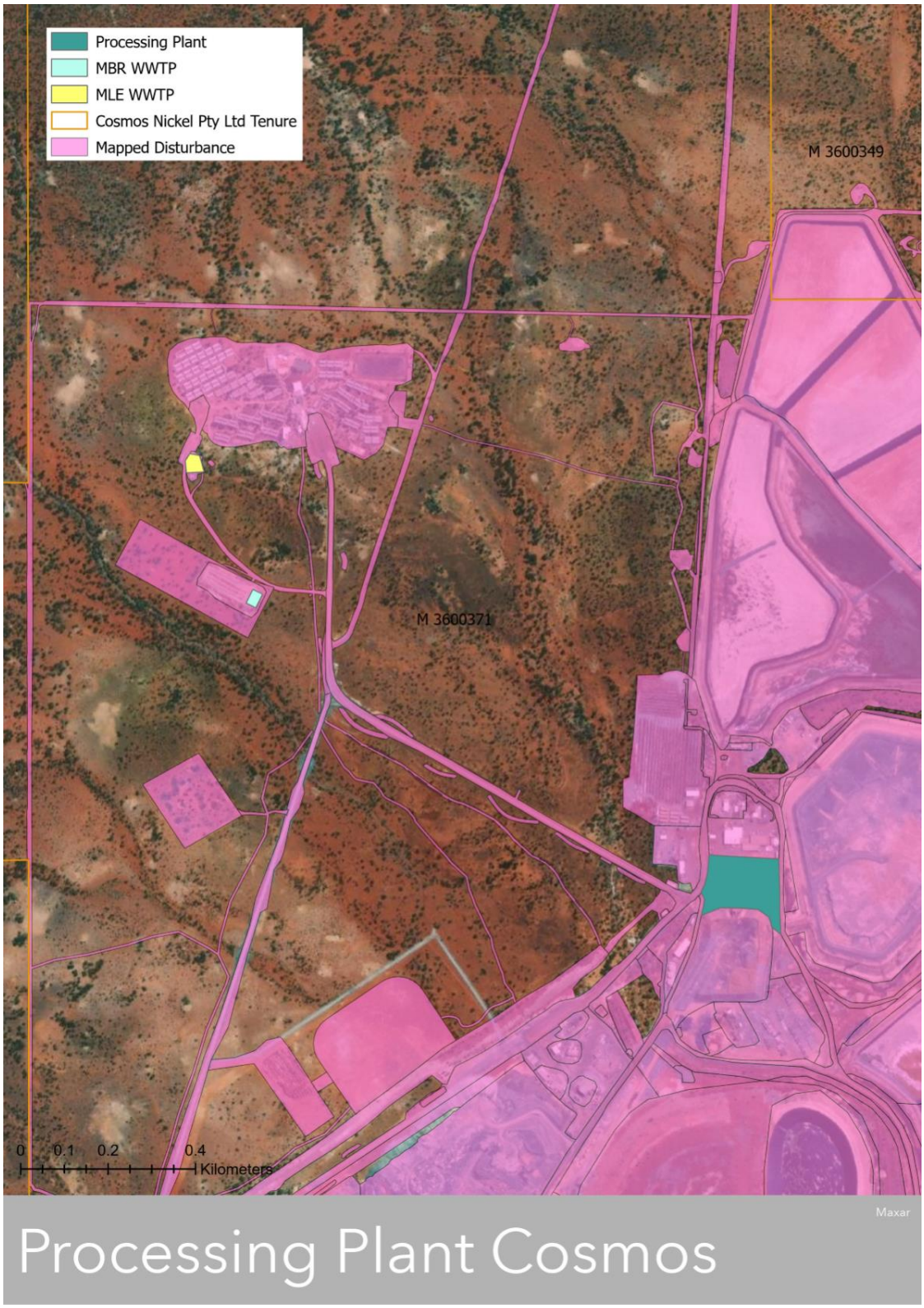

Figure 4: Map showing the location of the mineral processing plant

Schedule 2: Infrastructure location coordinates

The wastewater treatment plants and associated infrastructure locations showin in Figure 2 are located by the coordinates listed in Table 10.

Table 10: Wastewater treatment plants and associated infrastructure coordinates (GDA2020 MGA Zone 51)

Point No.	Easting	Northing
Membrane bioreactor wastewater treatment plant		
1.	260289.57850	6946315.41020
2.	260309.41730	6946305.90100
3.	260296.01800	6946277.94640
4.	260276.17920	6946287.45560
Irrigation spray field 1		
5.	260056.35050	6946449.70219
6.	260200.81830	6946375.25859
7.	260154.06620	6946281.44780
8.	260008.32370	6946357.70749
Irrigation spray field 1 extension		
9.	260332.31230	6946319.86140
10.	260281.13530	6946217.73880
Irrigation spray field 2		
11.	260185.40640	6945981.44759
12.	260274.36830	6945857.85969
13.	260160.92270	6945789.50309
14.	260072.64020	6945916.20019
Modifed Ludzack-Ettinger wastewater treatment plant flow meter		
15.	260177.69770	6946574.37689
Membrane bioreactor wastewater treatment plant flow meter		
16.	260277.29169	6946289.94083