Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6922/2024/1
Works approval holder	Golden Grove Operations Pty Ltd
ACN	114868325
Registered business address	Level 2, 1100 Hay Street West Perth WA 6005
DWER file number	DER2024/000124
Duration	24/07/2024 to 23/07/2027
Date of issue	24/07/2024
Premises details	Golden Grove Mine Mining Tenement M59/92 YALGOO WA 6635 As defined by the premises maps depicted in Schedule 1

Prescribed premises category description **(Schedule 1, *Environmental Protection Regulations 1987*)**	**Assessed design capacity**
Category 6: Mine Dewatering	750,000 tonnes per annual period
Category 63: Class 1 inert landfill	5,000 tonnes per annual period

This works approval is granted to the works approval holder, subject to the attached conditions, on 24 July 2024, by:

Jarrod Abrahams
Digitally signed by Jarrod Abrahams
Date: 2024.07.24 09:34:01 +08'00'

MANAGER, RESOURCE INDUSTRIES REGULATORY SERVICES
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Works approval history

Date	Reference number	Summary of changes
24/07/2024	W6922/2024/1	Works approval granted for mine dewatering of the box cut and the class 1 landfill.

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/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; and

as set out in Table 1.

Table 1: Design and construction / installation requirements

	Infrastructure	Design and construction / installation requirements	Infrastructure location
1.	Inflow dam	• 60 m x 60 m; • Internal batter of 45º; • Lined with a 1.5 mm HDPE liner; • Base of dam to be rolled prior to liner installation to ensure no rocks, sticks or sharp items are present that could potentially impact the integrity of the liner; • Liner edges secured in tie-in trenches; • Fitted with a fauna egress mat; • Spillway connecting to the outflow dam; and • Telemetry installed to provide continuous monitoring of the freeboard level within the dam.	As shown in Schedule 1, Figure 1 and Figure 2
2.	Outflow dam	• 60 m x 60 m; • Internal batter of 45º; • Lined with a 1.5 mm HDPE liner; • Base of dam to be rolled prior to liner installation to ensure no rocks, sticks or sharp items are present that could potentially impact the integrity of the liner; • Liner edges secured in tie-in trenches; • Fitted with a fauna egress mat; and • Telemetry installed to provide continuous monitoring of the freeboard level within the dam.	As shown in Schedule 1, Figure 1 and Figure 2
3.	HDPE outlet pipe to dam wall	• Centralised main HDPE outlet pipe (250 mm diameter) to be attached to the dam wall and fitted with isolation valving and numerous manifolds connecting various pumps.	N/A

	Infrastructure	Design and construction / installation requirements	Infrastructure location
4.	Dam fence	• Perimeter fencing of inflow and outflow dam to prevent entry by livestock and native fauna.	As shown in Schedule 1, Figure 2
5.	Dewatering Pipelines	• Installed in existing road-side drains; • HDPE pipelines PN 12.5 class; • Lengths butt welded; • Telemetry installed to monitor pipeline and flow integrity; and • Pipeline runs have 25 mm or 5 mm breathers spaced every 750 m	Pipeline transport corridor as shown in Schedule1, Figure 1
6.	Underground dewatering equipment	Comprise of the following infrastructure and equipment (or suitable alternative): • 8-20kW Flygt pumps that will feed either a sump or a mono pump hopper directly; • Where a travelling mono pump is used, it will be ~55kW GE084 (or similar pump mounted on a skid for ease of relocation); and • Two primary pump stations constructed towards the up portion of the Gossan Valley South and Grassi orebodies. These will be suitability sized excavations with appropriate life of mine ground support. A concrete floor together with concrete plinths shall house the permanent mono pumps. o Gossan Valley South will be 2 x GE084 (or similar) mono pumps feeding a rising main to the surface and then around to the inflow dam. o Grassi will have 2 x GE086 (or similar) mono pumps feeding the Grassi decline, up through the portal and around to the inflow dam. o Both of these pump selections considered locations, head, frictions losses, etc will be able to pump a nominal 14 L/s; and • Similar primary pump stations may be constructed at various areas of the underground mine as it is developed.	N/A
7.	Reverse Osmosis Plant	Comprise of the following infrastructure and equipment (or suitable alternative): • Raw water supplied from bore GVW005P via a HPDE pipeline; • RO Plant to be contained in a 6m sea-container; • Six (6) x 15,000l poly water tanks: o Two (2) tanks inter-connected for initial	As shown in Schedule 1, Figure 4

	Infrastructure	Design and construction / installation requirements	Infrastructure location
		'brackish water' which will have a float valve connected; ○ A pump from the two 'brackish water' tanks will feed the RO plant. This in turn will supply RO water to three (3) RO water tanks inter-connected to reticulate through the offices via a suitable pressure pump including redundancy and associated plumbing; and ○ The sixth water tank will store the concentrated reject water (Brine). A float system will activate a pump that will pump the brine water to the dams.	
8.	Landfill	• Base of landfill trench minimum 3 m above groundwater level; • Single open trench 115 m in length, 71 m in width and 4 m in depth; and • Progressive construction of a 3 m high by 7 m wide perimeter safety and wind bund.	Within the waste rock dump as shown in Schedule 1, Figure 1 and Figure 3

2. The works approval holder must design, construct, and install groundwater monitoring wells in accordance with the requirements specified in Table 2.

Table 2: Infrastructure requirements – groundwater monitoring wells

Infrastructure	Design, construction, and installation requirements	Monitoring well location(s)	Timeframe
Groundwater monitoring wells: GVROM02 GVWRD05 GVEP01 GVEP02 GVEP03 GVEP04	<u>Well design and construction:</u> Designed and constructed in accordance with ASTM D5092/D5092M-16: Standard practice for design and installation of groundwater monitoring bores. Well screens must target the part, or parts, of the aquifer most likely to be affected by contamination[1].	As depicted in Schedule 1, Figure 5: Map of groundwater monitoring well locations.	Must be constructed, developed (purged), and determined to be operational prior to dewatering operations.
	<u>Logging of borehole:</u> Soil samples must be collected and logged during the installation of the monitoring wells. A record of the geology encountered during drilling must be described and classified in accordance with the Australian Standard Geotechnical Site Investigations AS1726. Any observations of staining / odours or other indications of		

Infrastructure	Design, construction, and installation requirements	Monitoring well location(s)	Timeframe
	contamination must be included in the bore log.		
	Well construction log: Well construction details must be documented within a well construction log to demonstrate compliance with *ASTM D5092/D5092M-16*. The construction logs shall include elevations of the top of casing position to be used as the reference point for water-level measurements, and the elevations of the ground surface protective installations.		
	Well development: All installed monitoring wells must be developed after drilling to remove fine sand, silt, clay and any drilling mud residues from around the well screen to ensure the hydraulic functioning of the well. A detailed record should be kept of well development activities and included in the well construction log.		
	Installation survey: the vertical (top of casing) and horizontal position of each monitoring well must be surveyed and subsequently mapped by a suitably qualified surveyor.		
	Well network map: a well location map (using aerial image overlay) must be prepared and include the location of all monitoring wells in the monitoring network and their respective identification numbers.		

Note 1: refer to Section 8 of Schedule B2 of the *Assessment of Site Contamination NEPM* for guidance on well screen depth and length.

3. The works approval holder must, within 60 calendar days of the monitoring wells being constructed, submit to the CEO a well construction report evidencing compliance with the requirements of condition 2.

Construction compliance reporting

4. The works approval holder must within 60 calendar days of an item of infrastructure and 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.

5. The Environmental Compliance Report required by condition 4, must include as a minimum the following:

(a) certification by a suitably qualified person 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) 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.

Time limited operations phase

Commencement and duration

6. The works approval holder may only commence time limited operations for an item of infrastructure identified in condition 1 once the Environmental Compliance Report as required by condition 4 and 5 has been submitted by the works approval holder for that item of infrastructure; and

7. The works approval holder may conduct time limited operations for an item of infrastructure specified in condition 8 (as applicable):

(a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 6 (as applicable) 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 7(a).

Operational requirements for infrastructure and equipment

8. 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.	Inflow Dam	• Maintain minimum operational freeboard ≥500 mm; • Contingency freeboard ≥330 mm (during pump failure to the mill); and • Maintain integrity of HDPE liner	Schedule 1, Figure 1 and Figure 2
2.	Outflow Dam	• Maintain minimum operational freeboard ≥500 mm; • Contingency freeboard ≥330 mm (during pump failure to the mill); • Maintain integrity of HDPE liner; • Outflow water directed for use in the underground mine, on-site workshop, washdown bay and/or directed to a standpipe to allow recovery for on-site dust suppression activities; and	Schedule 1, Figure 1 and Figure 2

	Site infrastructure and equipment	Operational requirement	Infrastructure location
		• Excess water may be sent to evaporation ponds at the Scuddles & Gossan Hill Mine for storage in evaporation ponds and eventual discharge into Lake Wownaminya (monitoring of discharge water quality as per Part V Licence L8593/2011/2).	
3.	Dewatering pipelines	• Maintained and fit for operational purpose; • Telemetry leak detection system installed to be maintained and operational; and • Pipelines to be inspected once every 24 hours for visual integrity.	Pipeline transport corridor as shown in Schedule 1, Figure 1
4.	Underground dewatering equipment	• Maintained and fit for operational purpose; and • Inspected weekly for visual integrity.	N/A
5.	Landfill	• No more than 5,000 tonnes landfilled per annual period; • Must only dispose of Inert Waste Type 1; • Tipping face no wider than 20 m or 2 m in vertical height; • Progressively cover deposited waste with NAF waste rock; • Maintain perimeter wind bund to prevent incidence of windblown waste the leaving landfill footprint; and • Any windblown waste is collected on at least a weekly basis and returned to the tipping area or otherwise appropriately contained.	Schedule 1, Figure 1 and Figure 3

9. The works approval holder must ensure that water used for dust suppression activities is applied in a manner that does not impact native vegetation or the environment.

Environmental monitoring

10. The licence holder must monitor emissions and groundwater quality in accordance with the requirements specified in Table 4 and record the results of all such monitoring.

Table 4: Water quality monitoring

Reference location and monitoring location	Parameter[1]	Frequency	Averaging period	Unit	Method
Inflow Dam – Inflow lines Outflow Dam – Outflow line to Mill	pH[2]	Monthly	Spot sample	-	In accordance with AS/NZS 5667.1
	EC[2]			µS/cm	
	TDS			mg/L	
	Total acidity				
	Total alkalinity				
	Hardness				
	Major ions: Sodium (Na), Potassium (K), Calcium (Ca), Magnesium (Mg), Bicarbonate (HCO3), Chloride (Cl), sulfate (SO4), Nitrate (NO3), and total				

Reference location and monitoring location	Parameter[1]	Frequency	Averaging period	Unit	Method
	nitrogen (TN) **Total & dissolved trace metals/ metalloids:** Aluminium (Al), Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Iron (Fe), Mercury (Hg), Lead (Pb), Manganese (Mn), Nickel (Ni), Selenium (Se) and Zinc (Zn)				
Infrastructure Area Existing bores: GVW014, GVW015, Bores installed in accordance with Condition 2 and 3: GVROM02, GVWRD05, GVEP01, GVEP02, GVEP03, GVEP04. Locations as depicted in Schedule 1, Figure 5	Standing water levels	Monthly At least one baseline monitoring event prior to dewatering operations. Quarterly after mine dewatering operations commence.	Spot sample	mBGL	In accordance with AS/NZS 5667.11
	pH[2]			-	
	EC[2]			µS/cm	
	TDS			Mg/L	
	Total acidity				
	Total alkalinity				
	Hardness				
	Major ions: Na, K, Ca, Mg, HCO3, Cl, SO4, NO3 and TN **Total & dissolved trace metals/ metalloids:** Al, As, Cd, Cr, Cu, Fe, Hg, Pb, Mn, Ni, Se and Zn				

Note 1: Level of detection is required to be sufficient to enable a comparison with relevant screening assessment criteria

Note 2: In-field non-NATA accredited analysis permitted.

11. The licence holder must ensure that all sample analysis undertaken pursuant to condition 10 is undertaken by a holder of a current accreditation from the National Association of Testing Authorities (NATA) for the relevant parameters unless otherwise specified in Table 4.

Time limited operation compliance reporting

12. 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.

13. The works approval holder must ensure the report required by condition 12 includes the following:

(a) a summary of the time limited operations, including timeframes;

(b) a summary of the environmental performance of all infrastructure as constructed or installed (as applicable), which includes records detailing the:

(i) volumes of mine dewater sent to the inflow/outflow dams;
(ii) volume of mine dewater discharged to the Scuddles & Gossan Hill Mine for storage and eventual discharge into Lake Wownaminya L9423/2024/1; and
(iii) volume of inert waste disposed to the landfill;

(c) a review of performance and compliance against the conditions of the works approval; and

(d) 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)

14. 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.

15. 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 8 and 9; and

(c) complaints received under condition 14.

16. The books specified under condition 15 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
Assessment of Site Contamination NEPM	means the *National Environment Protection (Assessment of Site Contamination) Measure 1999*, as amended from time to time
AS1726	means the Australian Standard AS1762 Geotechnical site investigations, as amended from time to time
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 5667.11	means the Australian Standard *AS/NZS 5667.11 (R2016) Water quality – sampling – guidance on sampling groundwater.*
ASTM D5092/D5092M-16	means the ASTM international standard for Standard practice for design and installation of groundwater monitoring wells (Designation: ASTM D5092/D5092M-16).
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 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
HDPE	High density polyethene
Inert Waste Type 1	Has the same meaning given to the term under the Landfill Waste Classification and Waste Definitions 1996.
mBGL	means metres below ground level.
NAF	Non-acid forming
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 person	Means a person who: • holds a relevant tertiary academic qualification; • has a minimum of five years of experience working in the relevant area/field of expertise; and • holds membership in a relevant professional body.
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).

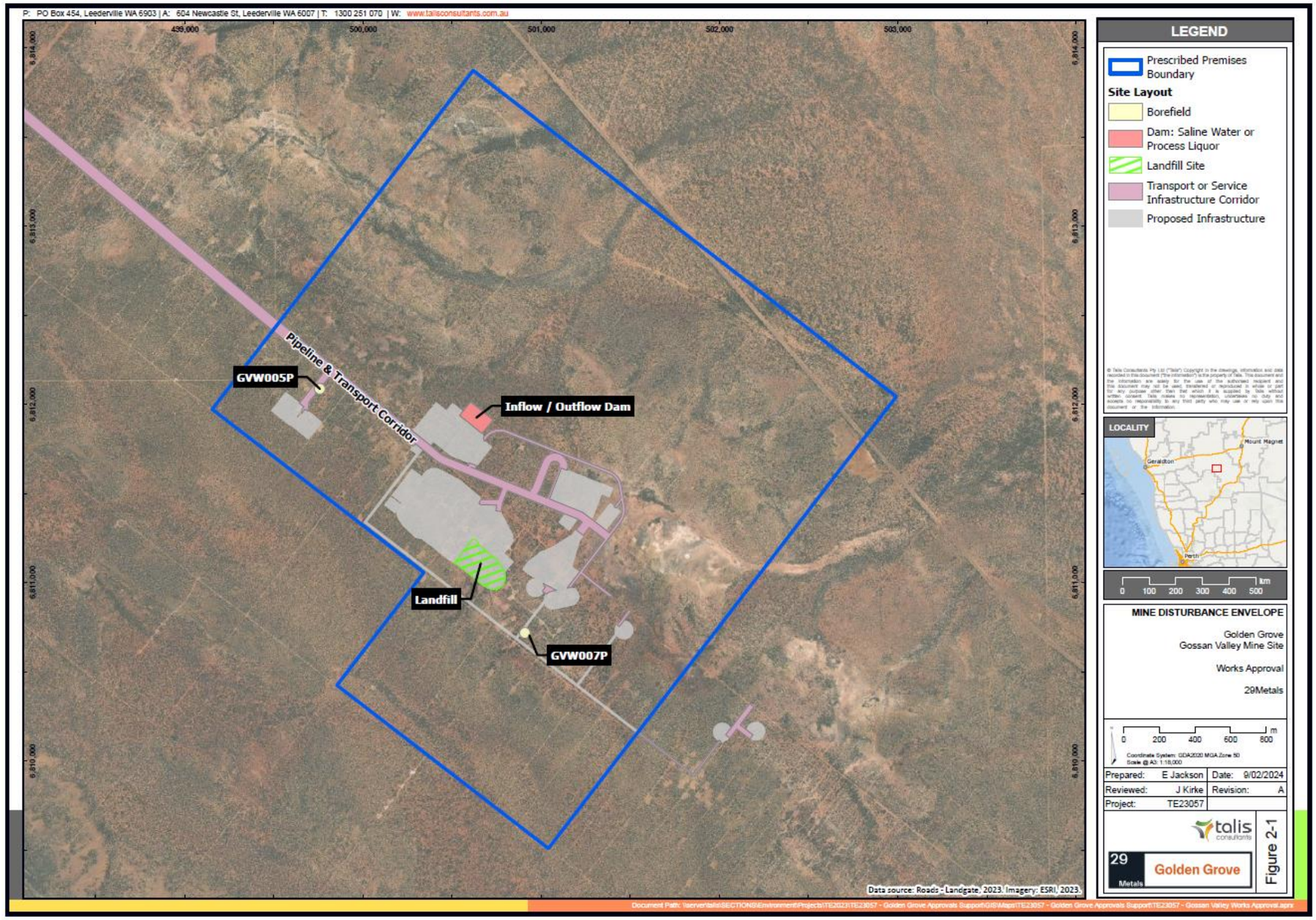

Figure 1: Map of the boundary of the prescribed premises

The layout of the dewatering dams are shown below (Figure 2).

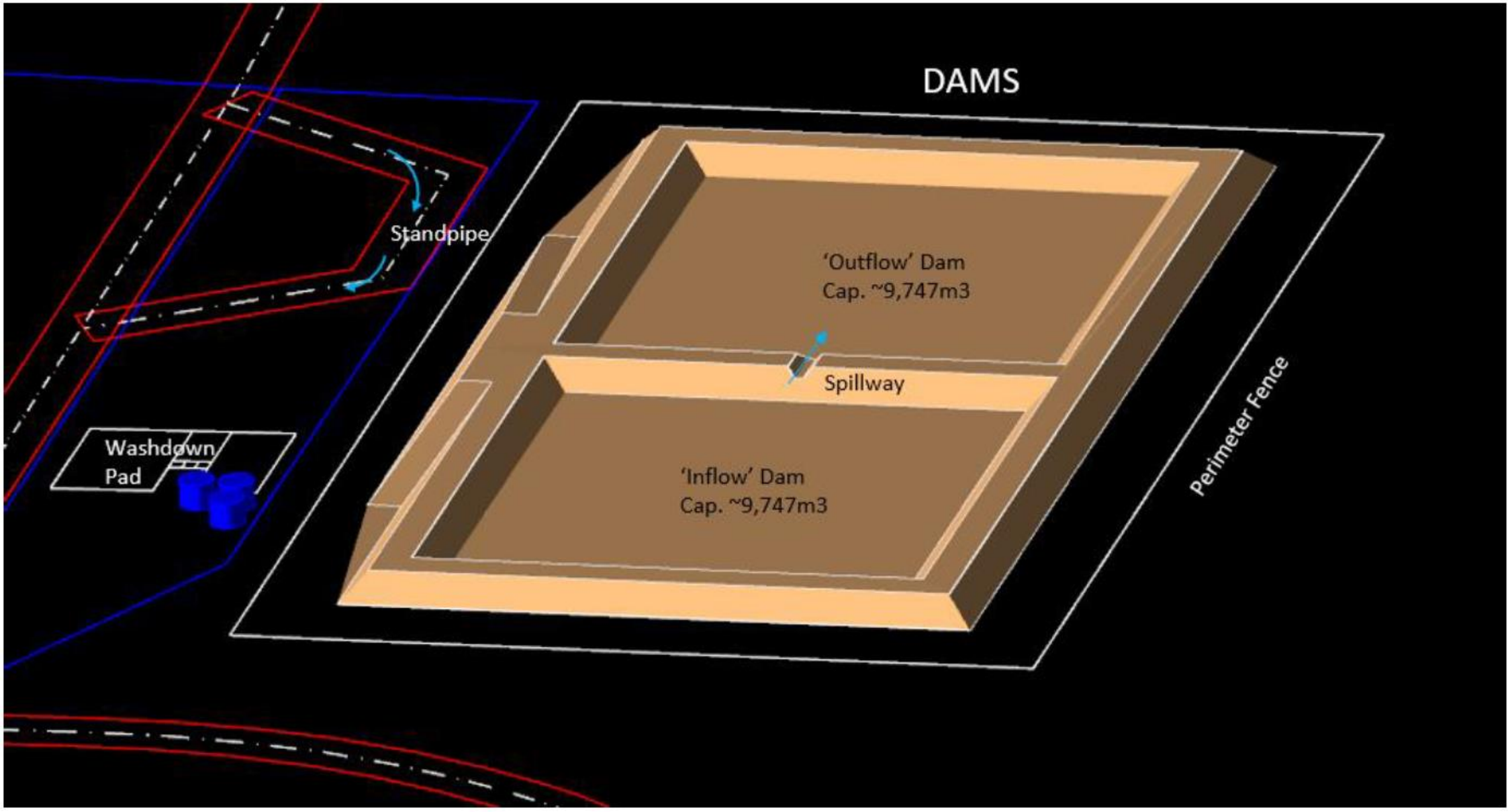

Figure 2: Layout of the dewatering dams

The layout of the landfill is shown below (Figure 3).

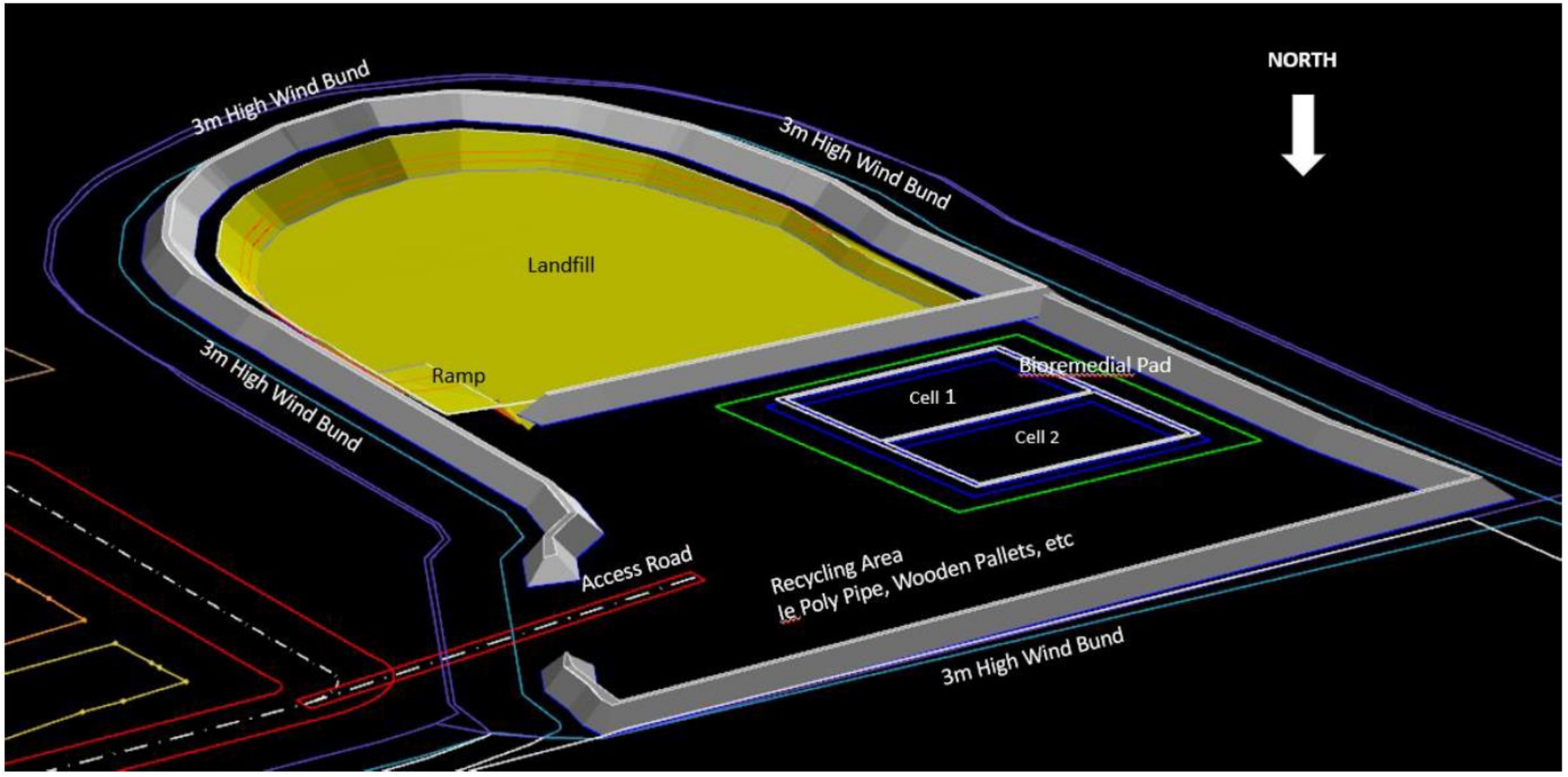

Figure 3: Layout of the landfill

This is an indicative 20 foot sea-container RO Plant and 6 associated water tanks and placement.

Each water tank to by~15-20,000 lite capacity.

RO pipe line is indicative only and does not include fire reels or exterior taps—these will both need to be included

Not to Scale

Schematic Only

29 Metals

GOSSAN VALLEY — OFFICE COMPLEX CONCEPT

RO PLANT

Figure 4: Schematic of the Reverse Osmosis Plant

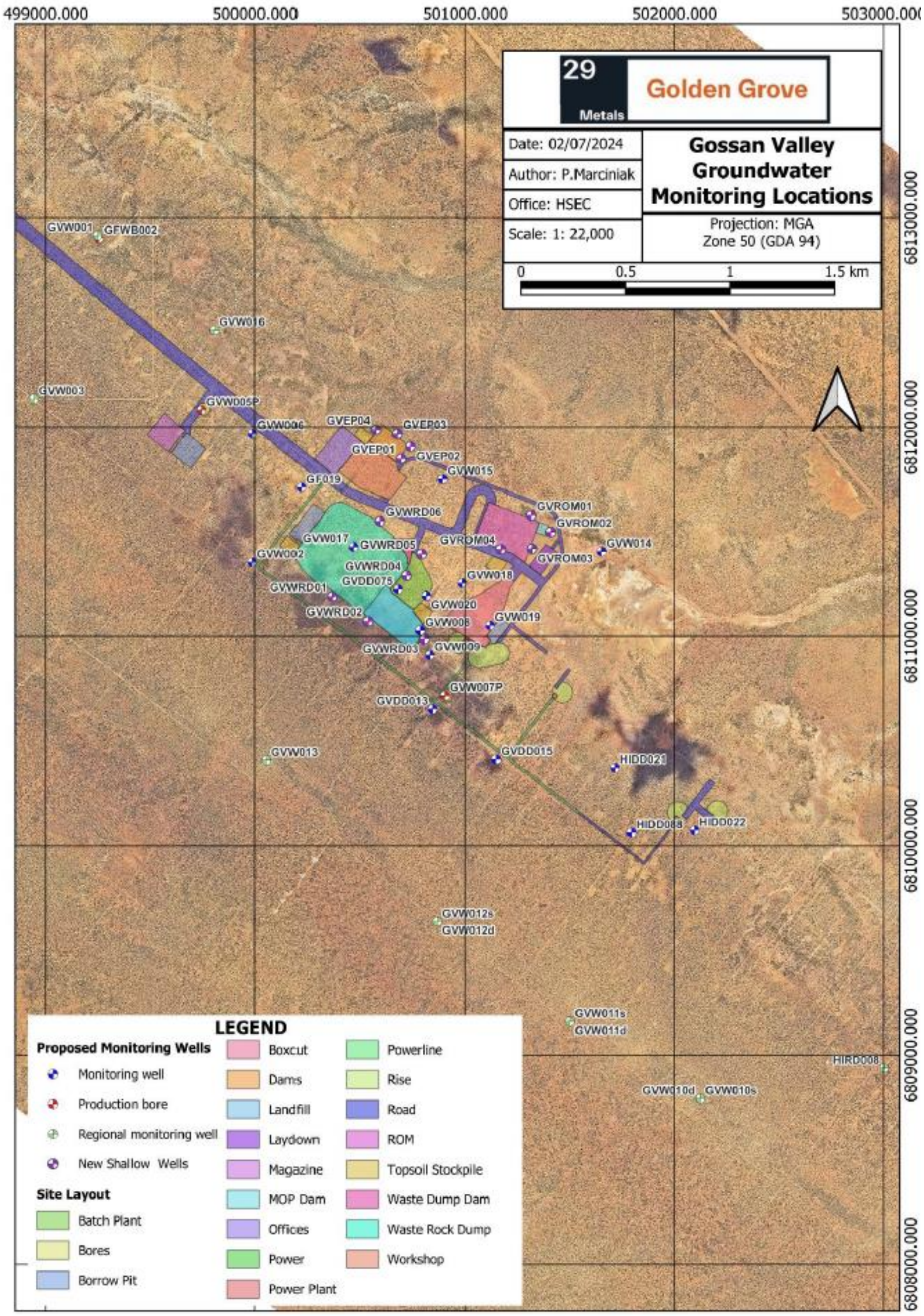

Figure 5: Locations of the groundwater monitoring and production bores