Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6496/2021/1
Works approval holder	Kalgoorlie Consolidated Gold Mines Pty Ltd
ACN	009 377 619
Registered business address	Kalgoorlie Consolidated Gold Mines Pty Ltd Level 1 388 Hay Street Subiaco WA 6008
DWER file number	DER2020/000663
Duration	07/07/2021 to 06/07/2026
Date of issue	07/07/2021
Premises details	Fimiston Processing Plant – Fimiston II TSF Extension Black Street, KALGOORLIE WA, 6430 Legal description - Mining tenements M26/308, M26/451, M26/503 and M26/778

Prescribed premises category description (Schedule 1, *Environmental Protection Regulations 1987*)	**Assessed design capacity**
Category 5: Processing or beneficiation of metallic or non-metallic ore	14 500 000 tonnes per annual period

This works approval is granted to the works approval holder, subject to the attached conditions, on 7 July 2021, by:

Carmen Standring
Digitally signed by Carmen Standring
Date: 2021.07.07 15:59:15 +08'00'

A/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
07/07/2021	W6496/2021/1	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 the critical containment infrastructure;

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

(c) at the corresponding infrastructure location

as set out in Table 1.

Table 1: Critical containment infrastructure design and construction requirements

	Infrastructure	Design and construction requirements	Infrastructure location
1.	Fimiston TSF II E Paddock – starter embankment	• Height of E Paddock starter embankment maximum of 8m (359.5m RL) • Height of F Paddock starter embankment maximum of 7.5m (367m RL) • An underdrainage system along the upstream toe of the starter embankment and into the TSF, extending to beneath the final decant pond location. • Seepage recovery bores are installed as per condition 4 and at the positions indicated as 'Proposed Stage 1 Production Bores' in Schedule 1, Figure 3. • Starter embankment and decant access causeway constructed such that the fill will be moisture conditioned to a minimum of ±2% of the optimum moisture content, placed in 300 mm thick layers and compacted to a minimum of 95% standard maximum dry density. • Turret system decant with skid mounted surface pump. • The minimum top of embankment freeboard of 300 mm marked. • Stormwater drains installed along the eastern sides of the TSF. • Stormwater storage attenuation pond installed north of F Paddock. • External toe drains.	As shown in Schedule 1, Figures 1 and 2
2.	Fimiston TSF II F Paddock – starter embankment		
3.	Pipelines carrying tailings and decant return water	• Equipped with automatic cut-outs in the event of a pipe failure; or • Provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections.	

Construction of groundwater monitoring wells

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 well(s) identified as ‘‘Proposed monitoring bores’ and ‘Proposed operational footprint bores’ in Schedule 1, Figure 3 (12 bores)	<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]. Where temporary/seasonal perched features are present, wells must be nested, and the perched features individually screened.	As depicted in Schedule 1, Figure 3: Map of groundwater monitoring well locations and labelled as ‘Proposed monitoring bores’ and ‘Proposed operational footprint bores’.	Must be constructed, developed (purged), and determined to be operational by no later than 6 calendar months prior to the commencement of environmental commissioning activities under condition 8.
	<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 contamination must be included in the bore log.		
	<u>Well construction log:</u> 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.		
	<u>Well development:</u> 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.		
	<u>Installation survey:</u> the vertical (top of casing) and horizontal position of each monitoring well must be surveyed and subsequently mapped by a suitably qualified surveyor.		
	<u>Well network map:</u> 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 of seepage recovery bores

4. The works approval holder must design, construct and install the Stage 1 production bores in accordance with the requirements specified in Table 3.

Table 3: Design and construction/installation requirements – production bores

Infrastructure	Design and construction/installation requirements	Seepage recovery bore locations	Timeframe
Stage 1 production bores for recovery of seepage from the Fimiston II TSF Extension	• Installation of a six seepage recovery bores by a suitably qualified hydrogeologist. • Drilling and construction of the seepage recovery bores will be in accordance with the *Minimum Construction Requirements for Water Bores in Australia*. • The vertical (top of casing) and horizontal position of each seepage recovery bore must be surveyed and subsequently mapped by a suitably qualified surveyor. • A seepage recovery bore location map (using aerial image overlay) must be prepared and include the location of all seepage recovery bores and their respective identification numbers.	Proposed Stage 1 production bores as shown in Schedule 1, Figure 3.	Must be constructed and determined to be operational by no later than the commencement of commissioning of E Paddock authorised in accordance with Condition 8.

Compliance reporting

5. The works approval holder must within 60 calendar days of the Critical Containment Infrastructure identified by condition 1 being constructed:

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

(b) prepare and submit to the CEO a Critical Containment Infrastructure Report on that compliance.

6. The Critical Containment Infrastructure Report required by condition 5 must include as a minimum the following:

(a) certification by a suitably qualified geotechnical engineer that each item of critical containment infrastructure or component thereof, as specified in condition 1, has been built and installed in accordance with the requirements specified in condition 1;

(b) as constructed plans and a detailed site plan showing the location and dimensions for each item of critical containment infrastructure or component thereof, as specified in condition 1;

(c) photographic evidence of the installation of the infrastructure;

(d) be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person; and

(e) include monitoring data indicating the baseline ambient environmental conditions at the premises prior to and immediately following construction of Paddock E.

7. The monitoring of the baseline ambient environmental conditions required under condition 6(e) must be undertaken in accordance with the requirements of Table 4.

Table 4: Determination of baseline ambient environmental conditions

Parameter	Monitoring location	Unit	Frequency	Averaging period	Method	
					Sampling	Analysis
SWL	All proposed monitoring bores as established under Condition 2 of this licence.	m bgl	Prior to the commencement of commissioning of Paddock E	Spot sample	In accordance with AS/NZS 5667.11	In accordance with AS/NZS 5667.1
pH[1]		-				
EC[1]		(mS/cm)				
TDS		mg/L				
CN-Free						
WAD-CN						
CN-Total						

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

Environmental commissioning phase

Environmental commissioning requirements and emission limits

8. During environmental commissioning, the works approval holder must ensure that the emission(s) specified in Table 5, are discharged only from the corresponding discharge point(s) and only at the corresponding discharge point location(s).

Table 5: Authorised discharge points during commissioning

Emission	Discharge point	Discharge point location
Tailings	Fimiston II TSF E Paddock	As shown in Schedule 1: Figure 1
	Fimiston II TSF F Paddock	

9. During environmental commissioning, the works approval holder must ensure that the emissions from the discharge point listed in Table 6 do not exceed the corresponding limit(s) when monitored in accordance with condition 10.

Table 6: Emission and discharge limits during environmental commissioning

	Discharge point	Parameter	Limit
1.	Fimiston II TSF E Paddock	Tailings	Deposition to commence on completion of TSF paddock construction. Up to 30,000m^3 per day. Maximum of 2,000,000m^3 of tailings slurry per cell.
2.	Fimiston II TSF F Paddock		

Monitoring during environmental commissioning

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

Table 7: Emissions and discharge monitoring during environmental commissioning

Discharge point	Monitoring location	Parameter	Frequency	Averaging Period	Unit	Method	
						Sampling	Analysis
Fimiston II TSF - E Paddock Fimiston II TSF - F Paddock	Plant-end flowmeter situated at the tailings hopper prior to exiting the processing plant	Volume of tailings discharged	Continuous	Daily	m^3	N/A	N/A
Fimiston II TSF - E Paddock and Fimiston II TSF - F Paddock	Tailings discharge (spigot)	pH,	Monthly	Spot sample	-	In accordance with AS/NZS 5667.11	In accordance with AS/NZS 5667.11
		TDS concentration and cyanide concentrations (total, free and WAD).			mg/L		

11. The works approval holder must record the results of all monitoring activity required by condition 10.

Commissioning – emissions monitoring (ambient)

12. The works approval holder must monitor the groundwater during environmental commissioning for concentrations of the identified parameters in accordance with Table 8.

Table 8: Monitoring of ambient concentrations during environmental commissioning

Parameter	Monitoring location	Unit	Frequency	Averaging period	Method	
					Sampling	Analysis
SWL	All proposed monitoring bores as established under Condition 2 of this licence.	m bgl	Monthly	Spot sample	In accordance with AS/NZS 5667.11	In accordance with AS/NZS 5667.1
pH[1]		-				
EC[1]		(mS/cm)				
TDS		mg/L				
CN-Free						
WAD-CN						
CN-Total						

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

13. The works approval holder must record the results of all monitoring activity required by condition 12.

Compliance reporting

14. The works approval holder must submit to the CEO an Environmental Commissioning Report within 60 calendar days of the completion date of environmental commissioning for each item of infrastructure specified in Table 1.

15. The works approval holder must ensure the Environmental Commissioning Report required by condition 14 of this works approval includes the following:

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

(b) the point-source emissions monitoring and ambient concentrations monitoring results recorded in accordance with conditions 10 and 12;

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

(i) environmental commissioning of the tailings delivery and decant water pipelines including spigots for discharge of tailings into the TSF paddock; and

(ii) testing of the underdrainage system.

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

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

Time limited operations phase

Commencement and duration

16. The works approval holder may only commence time limited operations for an item of critical containment infrastructure identified in condition 18:

(a) where the infrastructure does require commissioning, the Environmental Commissioning Report for that item of infrastructure as required by condition 14 has been submitted to the CEO; and

(b) where the CEO has notified the works approval holder that the Critical Containment Infrastructure Report for that item of infrastructure as required by condition 5 meets the requirements of that condition.

17. The works approval holder may conduct time limited operations for an item of infrastructure specified in condition 18 (as applicable):

(a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 16 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 17(a).

Time limited operations requirements and emission limits

18. During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in Table 9 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in Table 9.

Table 9: Infrastructure and equipment requirements during time limited operations

	Site infrastructure and equipment	Operational requirement	Infrastructure location
1.	Fimiston II TSF - E Paddock	• Minimum freeboard of 300mm. • Decant pond of no more than 15% of surface area of paddock during normal operating conditions. • In the event that the size of the supernatant pool becomes greater than the target size (e.g. due to a high rainfall event), decant water from the TSFs will be used as a priority for mineral processing in preference to groundwater derived from remote saline water borefields. • Underdrainage	As located in Schedule 1, Figures 1 and 2
2.	Fimiston II TSF - F Paddock		
3.	Pipelines carrying tailings and decant return water	• Equipped with automatic cut-outs in the event of a pipe failure; or • Provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections.	

Time limited operations – authorised discharge points for emissions

19. During time limited operations, the works approval holder must ensure that the emission(s) specified in Table 10, are discharged from the corresponding discharge point(s) and at the corresponding discharge point location(s).

Table 10: Authorised discharge points

	Emission	Discharge point	Discharge point location
1.	Tailings	Fimiston II TSF - E Paddock	As located in Schedule 1, Figures 1 and 2
2.		Fimiston II TSF - F Paddock	

Monitoring during time limited operations

20. The works approval holder must monitor the groundwater during time limited operations for concentrations of the identified parameters in accordance with Table 11.

Table 11: Monitoring of ambient concentrations during time limited operations

Parameter	Monitoring location	Unit	Frequency	Averaging period	Method	
					Sampling	Analysis
SWL	All proposed monitoring bores as established under Condition 2 of this licence.	m bgl	Quarterly	Spot sample	In accordance with AS/NZS 5667.11	In accordance with AS/NZS 5667.1
pH[1]		-				
EC[1]		(mS/cm)				
TDS		mg/L				
CN-Free						
WAD-CN						
CN-Total						

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

21. The works approval holder must record the results of all monitoring activity required by condition 20.

Compliance reporting

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

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

(a) a summary of the time limited operations, including timeframes and amount of tailings discharged;

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

Records and reporting (general)

24. 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.

25. 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 18;

(c) monitoring programmes undertaken in accordance with conditions 7, 9, 10, 12, 18 and 20; and

(d) complaints received under condition 24.

26. The books specified under condition 25 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 12 have the meanings defined.

Table 12: Definitions

Term	Definition
annual period	a 12 month period commencing from 1 July until 30 June of the immediately following year.
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
critical containment infrastructure	means the items of infrastructure listed in condition 1.
Critical Containment Infrastructure Report	means a report to satisfy the CEO that works of critical containment infrastructure have been constructed in accordance with the works approval.
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).

Term	Definition
EP Regulations	*Environmental Protection Regulations 1987* (WA).
Freeboard	means the distance between the maximum water surface elevations and the top of retaining banks or structures at their lowest point
m bgl	means metres below ground level.
Minimum Construction Requirements for Water Bores in Australia	means the document titled *Minimum Construction Requirements for Water Bores in Australia – Third edition* (National Uniform Drillers Licensing Committee, February 2012), as amended from time to time.
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.
quarterly	means the 4 inclusive periods from 1 January to 31 March, 1 April to 30 June, 1 July to 30 September, 1 October to 31 December in the same year
suitably qualified geotechnical engineer	means a person who: • holds a Bachelor of Engineering recognised by the Australian Institute of Engineers; and • has a minimum of five years of experience working in geotechnical engineering including experience in the design of tailings storage facilities.
suitably qualified hydrogeologist	means a person who holds a tertiary qualification specialising in environmental science or equivalent and has a minimum of five years of experience working in the area of hydrogeology, including investigation and assessment of groundwater resources, or who is otherwise approved by the CEO to act in this capacity.
SWL	means standing water level
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

Term	Definition
	this works approval.

END OF CONDITIONS

Schedule 1: Maps

Premises map

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

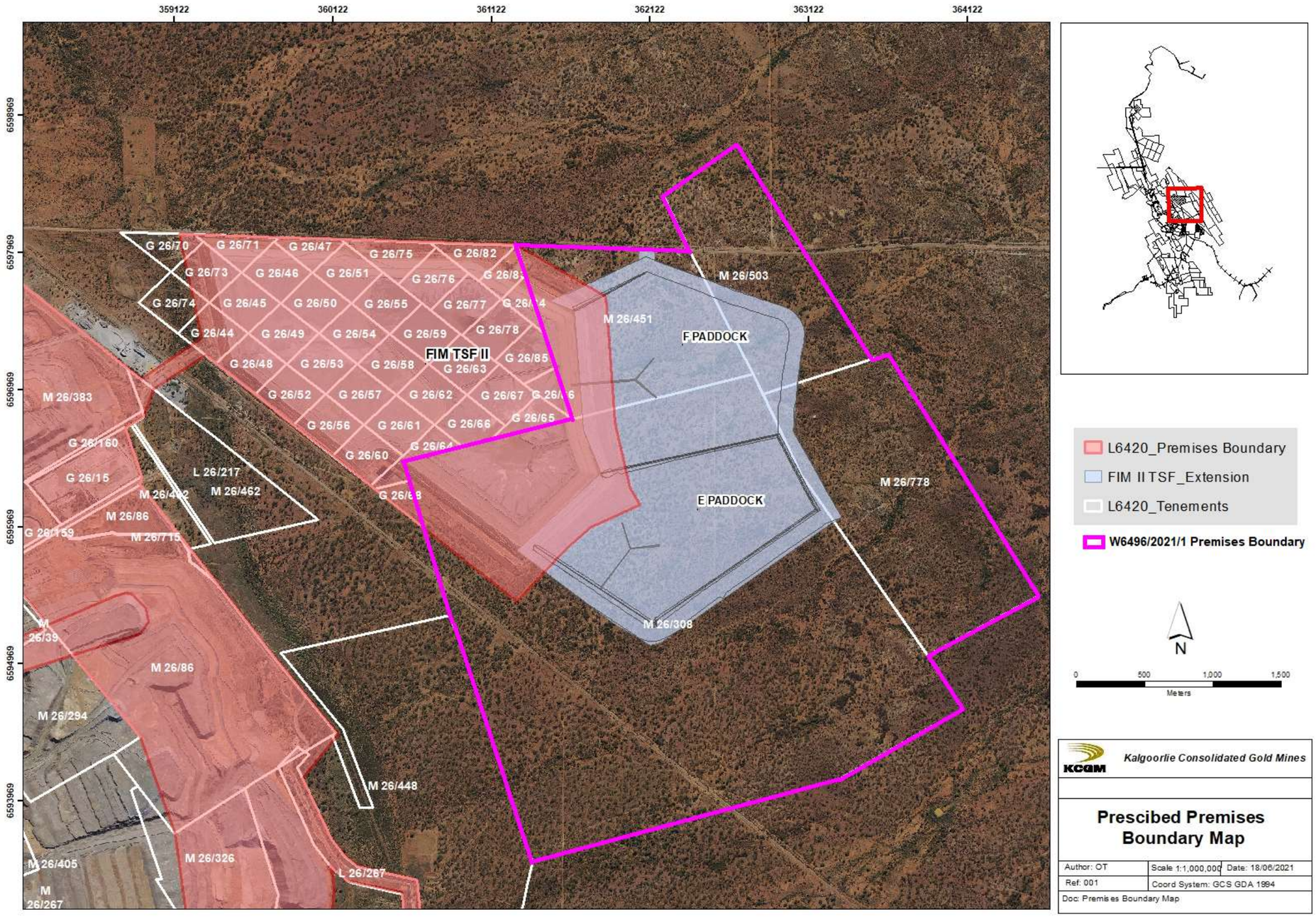


Figure 1: Map of the boundary of the prescribed premises

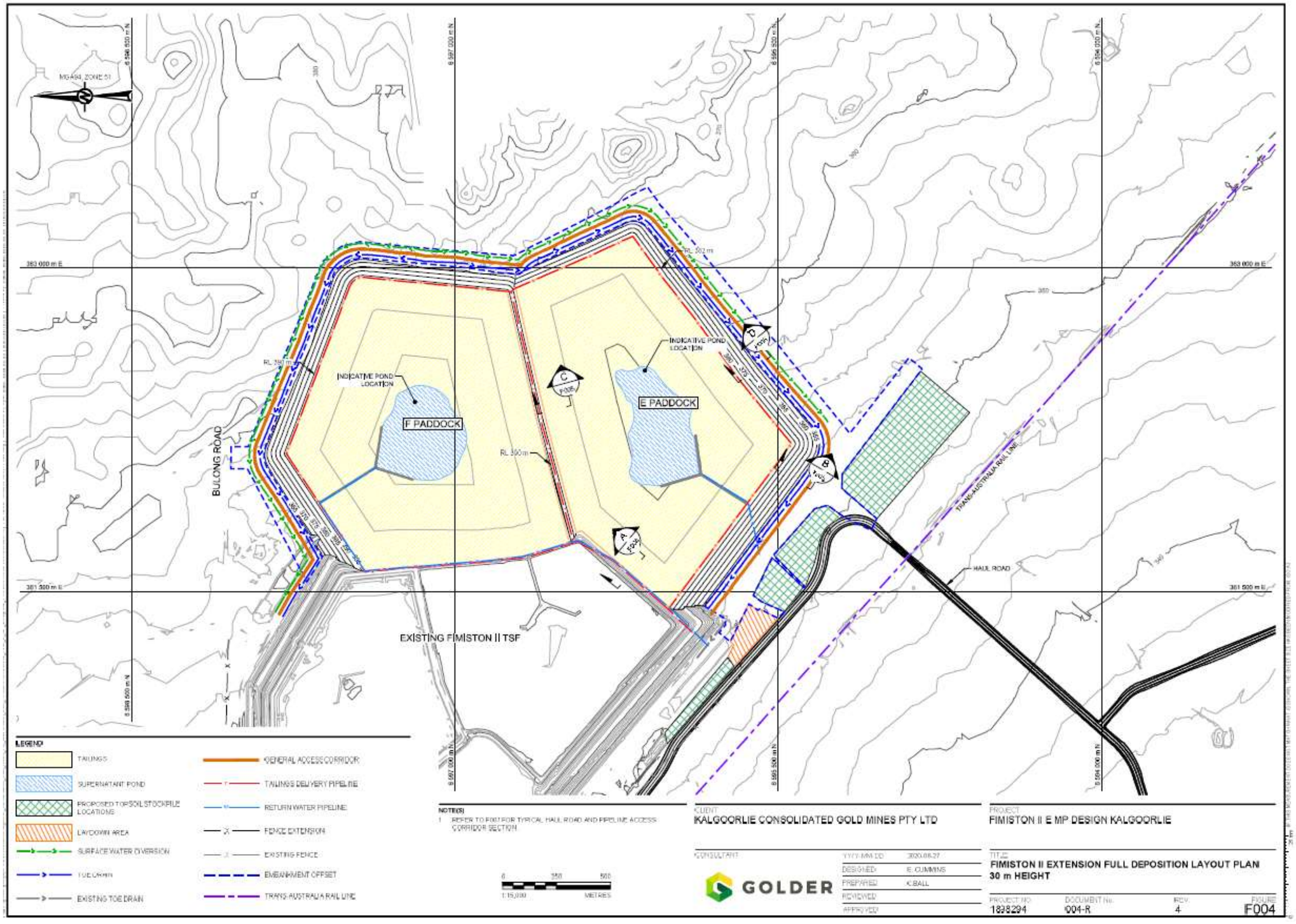
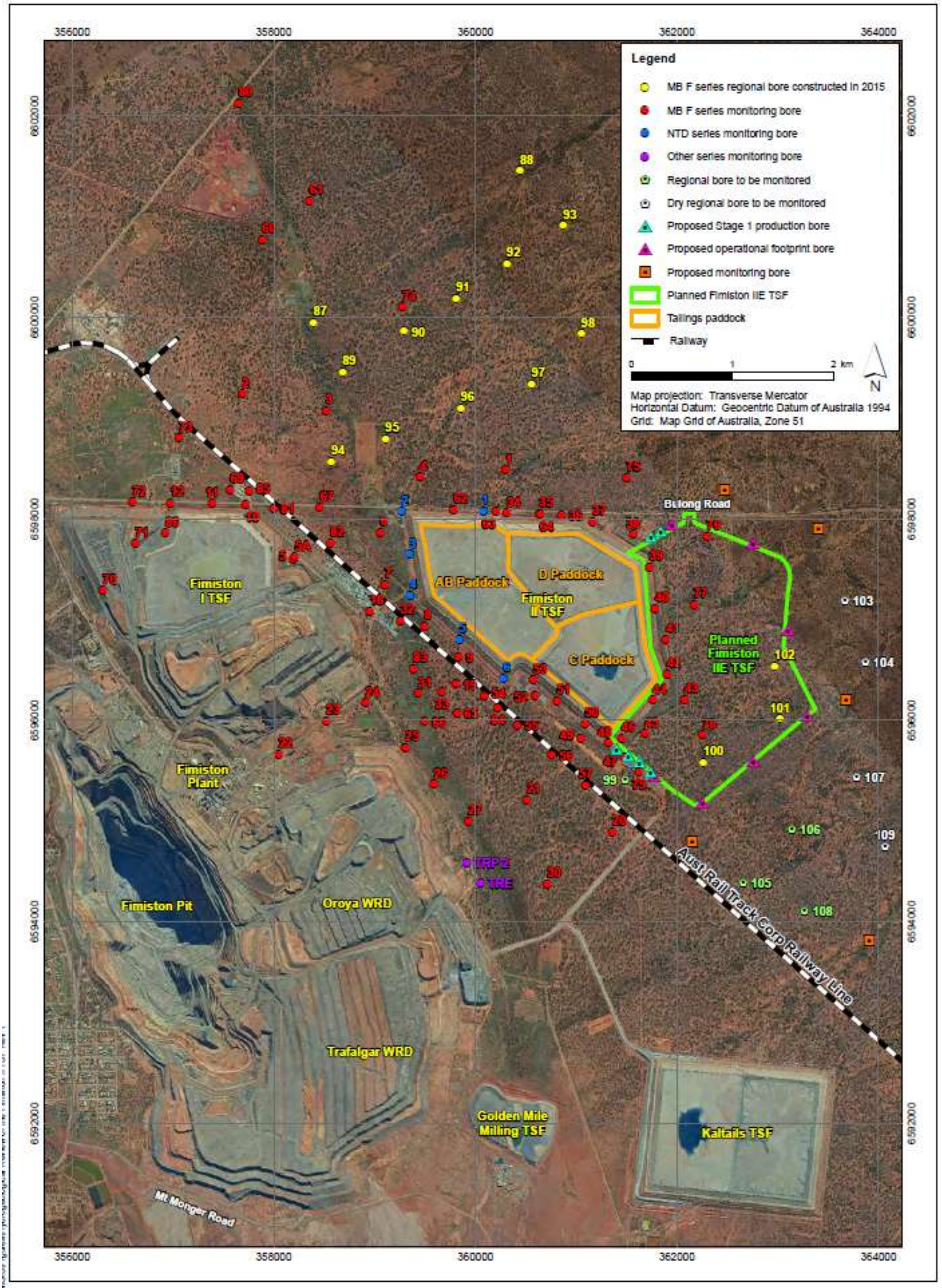


Figure 2: Premises layout



BIG DOG HYDROGEOLOGY	Recommended management of Fimiston IIE TSF	Figure 39 Date: July 2019 Report: Hydrogeological Review of the Fimiston II TSF Rev 1

Figure 3: Monitoring and production bore locations