Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6953/2024/1
Works approval holder	Pilbara Manganese Pty Ltd (PMPL)
ACN	074 106 577
Registered business address	Level 2, 24 Outram Street WEST PERTH WA 6000
DWER file number	DER2024/000346
Duration	10/03/2025 to 09/03/2028
Date of issue	10/03/2025
Premises details	Woodie Woodie Mine Site Mining Tenements G45/332, G45/333, G45/334, G45/335, G45/336, G45/37-40, G46/4-5, L46/29, M45/107, M45/429-433, M45/517, M45/600-602, M45/637-641, M45/1218, M46/92-93, M46/108, M46/137, M46/150, M46/161-162, M46/383, M46/384 and G45/279-284

Prescribed premises category description (Schedule 1, *Environmental Protection Regulations 1987*)	**Assessed production / design capacity**
Category 5: Processing or beneficiation of metallic or non-metallic ore	750,000 tonnes per annual period (maximum)

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

Timothy Moran

Digitally signed by Timothy Moran
Date: 2025.03.10 11:11:02 +08'00'

MANAGER, RESOURCE INDUSTRIES
INDUSTRY REGULATION (STATE-WIDE DELIVERY)
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Works approval history

Date	Reference number	Summary of changes
10 March 2025	W6953/2024/1	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/or install the infrastructure and/or equipment;

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

(c) at the corresponding infrastructure location,

as set out in Table 1.

Table 1: Design and construction / installation requirements

	Infrastructure	Design and construction / installation requirements	Infrastructure location
1.	Tailings pipelines and return water pipelines	• Fitted with a telemetry system, flow meter and pressure indication transmitter (PIT). • CCTV cameras installed at the booster pump area. • Pipelines will be bound by bund walls within the existing corridor and scour sumps will be located at appropriate distances to capture any spillage. • All pipework will be installed, tested and commissioned in accordance with the scope of work provided by the contractor. • Pipework will either be backfilled and bedded with approved fill (sourced from the waste dumps within the site) or constructed within bunded corridors. • All pipework will be inspected and signed off prior to pipework being covered.	As depicted in Schedule 1, Figure 2.
2.	Paystar In-Pit TSF	• Pontoon-mounted decant pump for water recovery. • Monitoring / recovery bores to be constructed adjacent to the pit rim. • Monitoring bores installed as per condition 2. • The facility will have adequate freeboard available to store the design storm event of a 1% annual exceedance probability (AEP) 72-hour storm event, plus beach freeboard of not less than 0.2 m (total freeboard 0.744 m).	As depicted in Schedule 1, Figure 2.
3.	Stormwater management	• Remove localised low points detrimentally impacting surface water management across the Paystar Pit and adjacent waste rock dump site.	As depicted in Schedule 1, Figure 3.

	Infrastructure	Design and construction / installation requirements	Infrastructure location
		• Bunding with maximum height 10 m constructed along the southern and northern edges of the pit. A minimum offset of 10 m from the pit edge to be adopted to maintain safety requirements. • Four multi-barrel culvert sets constructed to direct water under the haul roads and towards the downstream outlet.	

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 and construction and installation requirements	Monitoring well locations	Timeframe
Groundwater monitoring bores/wells	<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. Where temporary/seasonal perched features are present, wells must be nested, and the perched features individually screened.	As depicted in Schedule 1, Figure 2, groundwater monitoring well locations	Must be constructed, developed (purged), and determined to be operational prior to the commencement of discharge of tailings slurry to Paystar in-pit TSF.
	<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		

Infrastructure	Design and construction and installation requirements	Monitoring well locations	Timeframe
	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.

Compliance reporting

3. The works approval holder must within 60 calendar days of an item of infrastructure or equipment required by conditions 1 and 2 being constructed and/or installed:

(a) undertake an audit of their compliance with the requirements of conditions 1 and 2; and

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

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

(a) certification by a geotechnical engineer that the items of infrastructure or component(s) thereof, as specified in conditions 1 and 2, have been constructed in accordance with the relevant requirements specified in conditions 1 and 2;

(b) as constructed plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in conditions 1 and 2; 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

5. The works approval holder may only commence environmental commissioning of an item of infrastructure listed in conditions 1 and 2 once the Environmental Compliance Report has been submitted for that item of infrastructure in accordance with condition 3 of this works approval.

6. Any environmental commissioning activities undertaken for an item of infrastructure specified in Table 3 may only be carried out:

(a) in accordance with the corresponding commissioning requirements; and

(b) for the corresponding authorised commissioning duration.

Table 3: Environmental commissioning requirements

Infrastructure	Commissioning requirements	Authorised commissioning duration
Paystar in-pit TSF, tailings pipelines and return water pipelines	• Initial testing of the booster pump and pipeline. • All flow meters, telemetry, and pressure transmitters to be calibrated in accordance with manufacture's specifications. • Monitor and adjust tailings discharge spigots (as required) into the TSF to commence tailings beach formation. • Monitor and adjust tailings beach formation (as required) to ensure water flows west toward the decant. • Inspection of the tailings discharge and return pipelines at minimum once per day. • Test the telemetry system.	For a period not exceeding 30 calendar days in aggregate.
Monitoring bore network	• Monitoring of all bores as per condition 7.	Once prior to discharge of tailings to Paystar in-pit TSF.

Monitoring during environmental commissioning

7. The works approval holder must monitor the groundwater during environmental commissioning for concentrations of the identified parameters in accordance with Table 4.

Table 4: Monitoring of ambient concentrations during environmental commissioning

Monitoring location	Parameter	Frequency	Averaging Period	Unit	Method	
					Sampling	Analysis
PIPTSF MB01, PIPTSF MB02, and PIPTSF MB03	Standing water level	Once prior to discharge of tailings to Paystar in-pit TSF	Spot sample	mbgl	Spot sample in accordance with AS/NZS 5667.11	By laboratories with current accreditation from the National Association of Testing Authorities (NATA) for the relevant parameters.
	pH			-		
	Conductivity			µS/cm		
	Total dissolved solids			mg/L		
	Total Nitrogen					
	Arsenic					
	Copper					
	Molybdenum					
	Selenium					
	Uranium					
	Hexavalent Chromium					

8. The works approval holder must record the results of all monitoring activity required by condition 7.

Environmental commissioning report

9. 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 3.

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 timeframes.

(b) the ambient groundwater monitoring results recorded in accordance with condition 8.

(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) hydro-testing of tailings and return water pipelines.
(ii) environmental commissioning of the tailings and return water pipeline; and
(iii) testing the telemetry 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 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 conditions 1 and 2:

(a) where the item of infrastructure is not authorised to undertake environmental commissioning, the Environmental Compliance Report as required by condition 3 has been submitted by the works approval holder for that item of infrastructure; and

(b) where the item of infrastructure is authorised to undertake environmental commissioning under condition 6, 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 180 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 Table 5 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in Table 5.

Table 5: Infrastructure and equipment requirements during time limited operations

	Infrastructure	Operational requirements	Infrastructure location
1.	Tailings pipelines and return water pipelines	• To be maintained as per the design and construction / installation requirements in condition 1. • Daily visual inspections when in operation to check the integrity of pipeline corridor, and bunding; and • Weekly inspection of flow meters, telemetry, and pressure transmitters.	As depicted in Schedule 1, Figure 2.

	Infrastructure	Operational requirements	Infrastructure location
2.	Paystar In-Pit TSF	• Throughput of no more than 750,000 tonnes per year. • To be maintained as per the design and construction / installation requirements in condition 1. • Minimum freeboard requirements maintained: • Operational freeboard (lowest embankment crest RL to the tailings beach) of 300 mm. • Beach freeboard (tailings beach to the supernatant pond after the 1% AEP 72-hour storm) of 200 mm. • The 1 in 100 AEP 72-hour storm (244 mm) on top of the normal operating supernatant pond • Maintain and operate spigots. • A decant water return system to operate at capacity of not less than 200 tonnes per hour at the maximum static head; and • Daily inspection of spigots and supernatant pond level. • Maintain bunding and stormwater diversion infrastructure.	As depicted in Schedule 1, Figure 2.

14. During time limited operations, the works approval holder must ensure that the emission(s) specified in Table 6, are discharged only from the corresponding discharge point(s) and only at the corresponding discharge point location(s).

Table 6: Authorised discharge points

Infrastructure	Design and construction / installation requirements	Infrastructure location
Tailings	Paystar in-pit TSF	As depicted in Schedule 1, Figure 2.

Monitoring during time limited operations

15. The works approval holder must monitor the groundwater during time limited operations for concentrations of the identified parameters in accordance with Table 7 and not exceed the corresponding limit in that table.

Table 7: Monitoring of ambient groundwater concentrations during time limited operations

Monitoring location	Parameter	Frequency	Averaging Period	Unit	Method	
					Sampling	Analysis
PIPTSF MB01,	Standing water level	Monthly	Spot sample	mbgl	Spot sample in	Field reading

Monitoring location	Parameter	Frequency	Averaging Period	Unit	Method	
					Sampling	Analysis
PIPTSF MB02, and PIPTSF MB03	pH – field reading			-	accordance with AS/NZS 5667.11	
	Conductivity			µS/cm		
	pH	Quarterly		-		By laboratories with current accreditation from the National Association of Testing Authorities (NATA) for the relevant parameters
	Total dissolved solids			mg/L		
	Total nitrogen					
	Arsenic					
	Copper					
	Molybdenum					
	Selenium					
	Uranium					
	Hexavalent Chromium					

16. The works approval holder must record the results of all monitoring activity required by condition 15.

17. The works approval must undertake monitoring of the water balance for Paystar in-pit TSF each monthly period, and (as a minimum) record the following information:

(a) site rainfall.

(b) evaporation rate.

(c) decant water recovery volumes.

(d) volume of tailings deposited; and

(e) estimate of seepage losses.

Compliance reporting

18. The works approval holder must, within 7 days of becoming aware of any non-compliance with conditions 6, 13, 14, or 15 of this licence, notify the CEO in writing of that non-compliance and include in that notification the following information:

(a) which condition was not complied with.

(b) the time and date when the non-compliance occurred.

(c) if any environmental impact occurred because of the non-compliance and if so, what that impact is and where the impact occurred.

(d) the details and result of any investigation undertaken into the cause of the non-compliance.

(e) what action has been taken and the date on which it was taken to prevent the non-compliance occurring again; and

(f) what action will be taken and the date by which it will be taken to prevent the non-compliance occurring again.

19. 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.

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

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

(b) a summary of ambient groundwater monitoring results obtained during time limited operations under condition 15.

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

(i) tailings deposited, and

(ii) tailings density (solid vs water content).

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

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

Records and reporting (general)

21. 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.

22. 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 1and 2;

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

(c) monitoring programmes undertaken in accordance with conditions 7 and 15; and

(d) complaints received under condition 21.

23. The books specified under condition 22 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 8 have the meanings defined.

Table 8: Definitions

Term	Definition
ACN	Australian Company Number.
AS/NZS 5667.11	means the Australian Standard AS/NZS 5667.11 (R2016) Water quality – sampling – guidance on sampling groundwater, as amended from time to time.
ASTM D5092/D5092M-16	Standard practice for design and installation of groundwater monitoring bores.
AS1726	Australian Standard Geotechnical Site Investigations
books	has the same meaning given to that term under the EP Act.
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department administering the *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V Division 3 of the EP Act.
discharge	has the same meaning given to that term under the EP Act.
emission	has the same meaning given to that term under the EP Act.
environmental commissioning	means the sequence of activities to be undertaken to test equipment integrity and operation, or to determine the environmental performance, of equipment and infrastructure to establish or test a steady state operation and confirm design specifications.
Environmental Commissioning Report	means a report on any commissioning activities that have taken place and a demonstration that they have concluded, with focus on emissions and discharges, waste containment, and other environmental factors.
Environmental Compliance Report	means a report to satisfy the CEO that the conditioned infrastructure and/or equipment has been constructed and/or installed in accordance with the works approval.

Term	Definition
EP Act	*Environmental Protection Act 1986* (WA).
EP Regulations	*Environmental Protection Regulations 1987* (WA).
mbgl	metres below ground level
mg/L	milligrams per litre
monthly period	means a one-month period commencing from [day X] of a month until [day (X-1)] of the immediately following month. e.g. “means a one-month period commencing from the seventh day of a month until the sixth day of the immediately following month.”
NATA	National Association of Testing Authorities Australia.
NEPM	National Environmental Protection Measures
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 April to 30 June, 1 July to 30 September, 1 October to 31 December and in the following year, 1 January to 31 March.
Schedule 1	means Schedule 1 of this Works Approval unless otherwise stated.
spot sample	means a discrete sample representative at the time and place at which the sample is taken.
suitably qualified	means a person who: • holds a relevant tertiary 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.
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.
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.
TSF	tailings storage facility

Term	Definition
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).

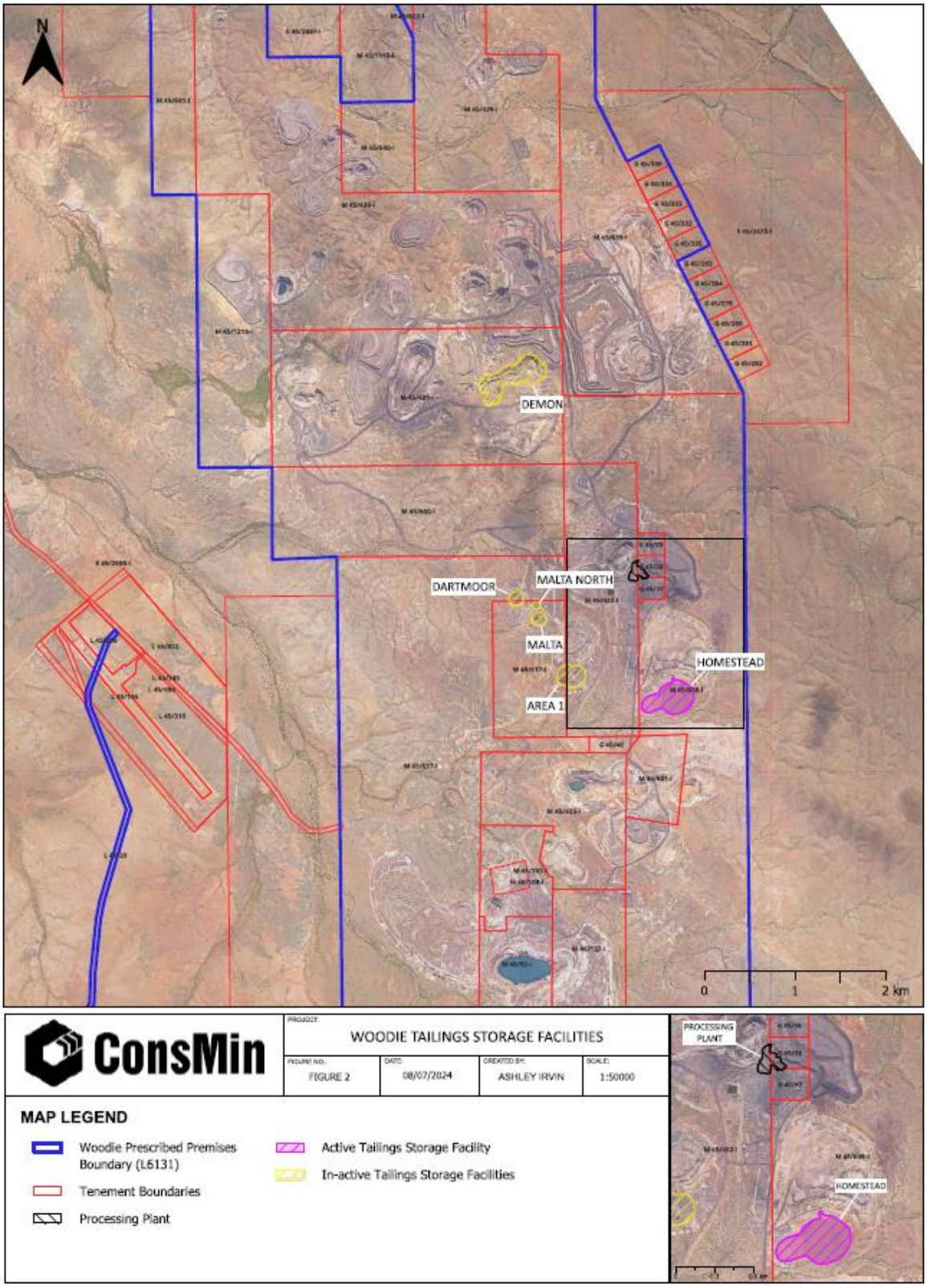

Figure 1: Map of the boundary of the prescribed premises

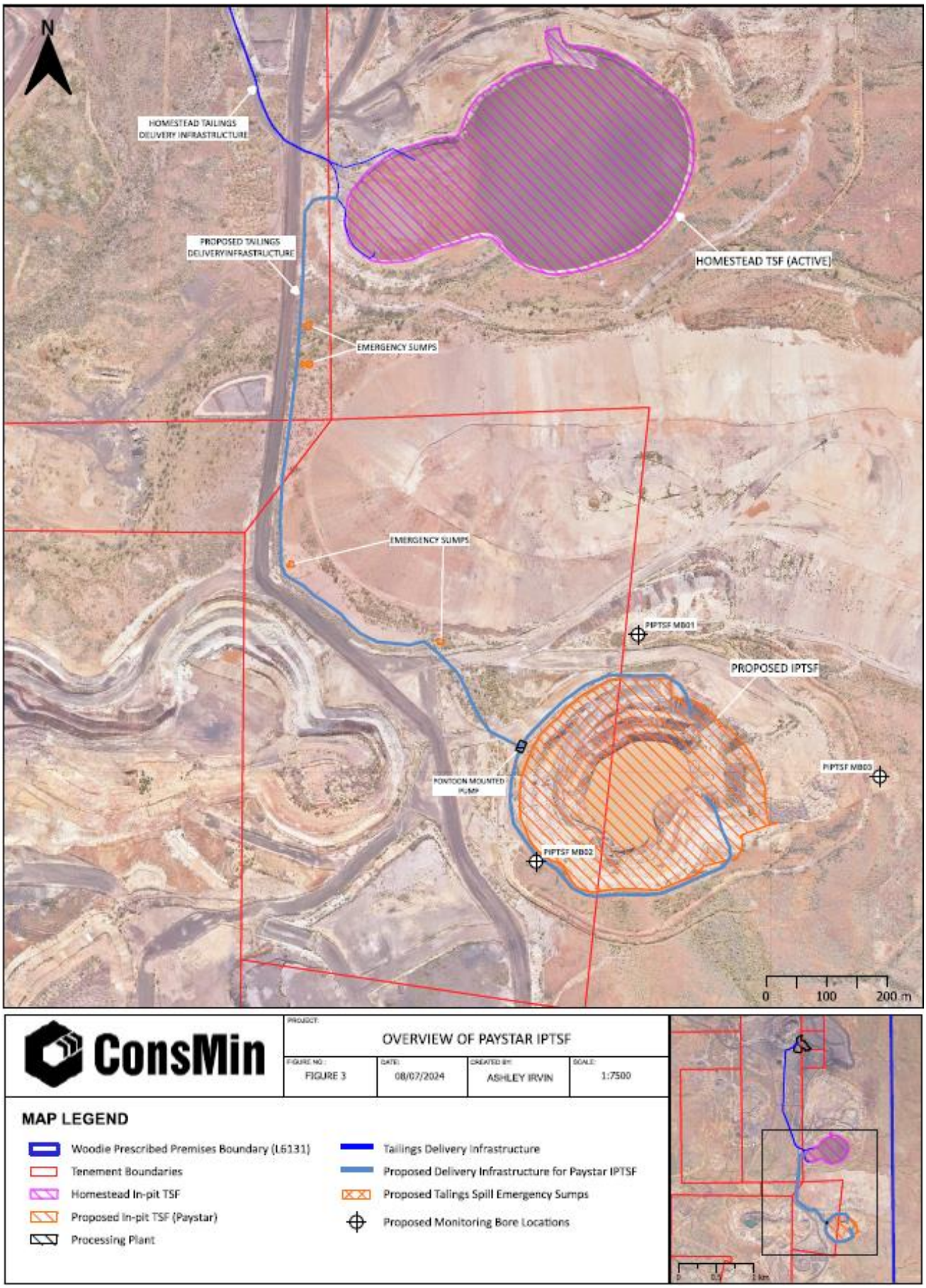

Figure 2: Overview of Paystar in-pit TSF

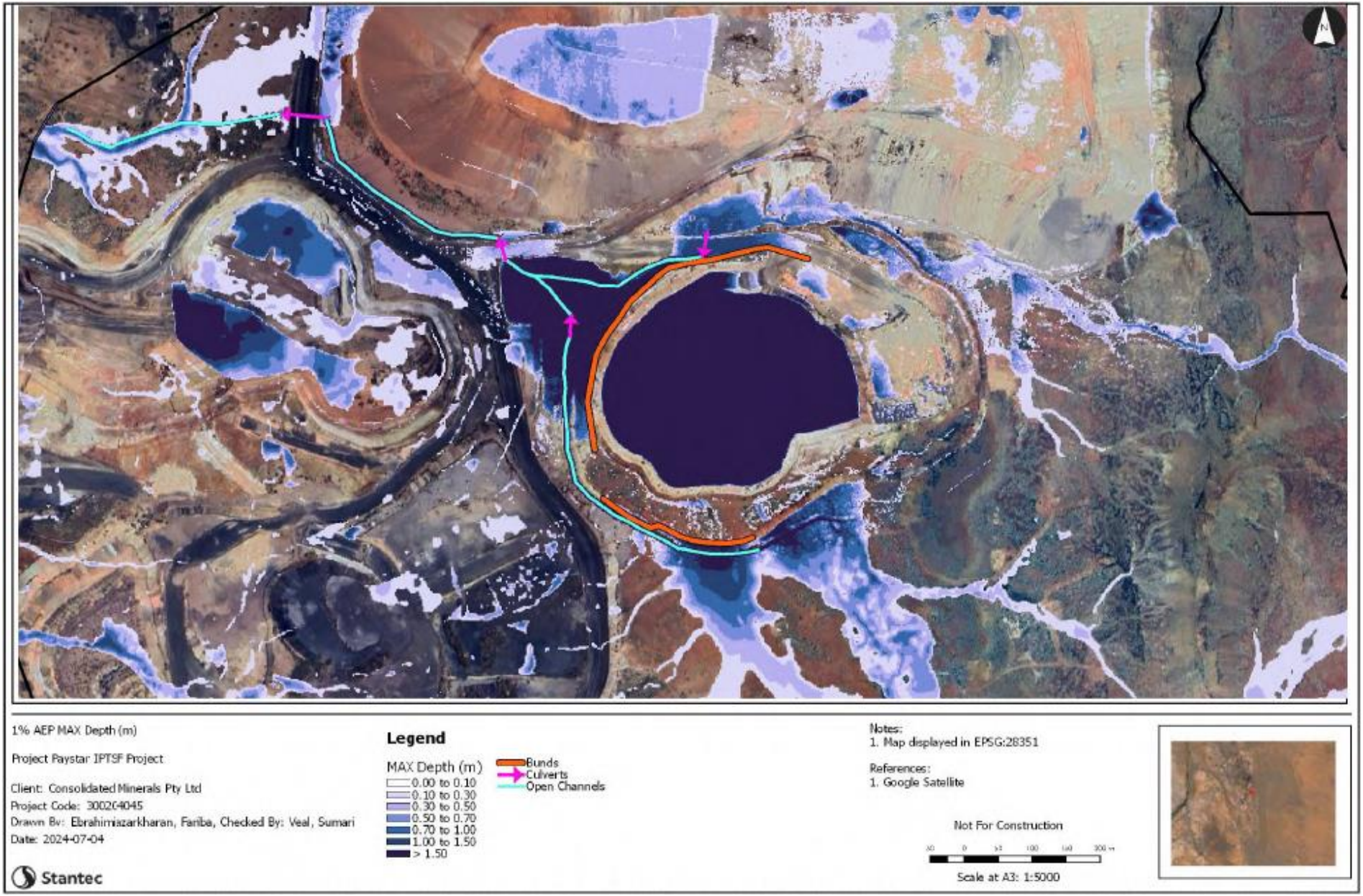

Figure 3: Stormwater management infrastructure including bunds and culvert locations