

# Works Approval

Works approval number	W6739/2022/1		
Works approval holder Trading as	FQM Australia Nickel Pty Ltd Ravensthorpe Nickel Operations Pty Ltd		
ACN	135 761 465		
Registered business address	Level 1, 24 Outram Street WEST PERTH WA 6005		
DWER file number	DER2022/000488		
Duration	04/05/2023 to 03/05/2027		
Date of issue	04/05/2023		
Premises details	Ravensthorpe Nickel Operations JERDACUTTUP WA 6346		
	Legal description –		
	Part of mining tenements M74/54, M74/108, M74/114, M74/115, M74/116, M74/123, M74,142, M74/144, M74/145, M74/167, M74/168, M74/173, M74/174, M74/175 and G74/08		
	As defined by the premises maps in Schedule 1.		

Prescribed premises category description (Schedule 1, <i>Environmental Protection Regulations 1987</i> )	Assessed production capacity	
Category 5: Processing or beneficiation of metallic or non- metallic ore.	21,500,000 tonnes per annual period	

This works approval is granted to the works approval holder, subject to the attached conditions, on 4 May 2023, by:

#### Manager, Resource Industries

an officer delegated under section 20 of the Environmental Protection Act 1986 (WA)

## Works approval history

Date	Reference number	Summary of changes	
04/05/2023	W6739/2022/1	This works approval application for category 5 – processing or beneficiation of metallic or non- metallic ore. To undertake construction and time limited operations for the Stage 4 embankment raise (up to RL 129.7 m) and Stage 5 embankment raise (up to RL 132.7 m) on the existing above ground Tailings Storage Facility (TSF), known as TSF2.	

## 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 is only authorised to construct the TSF2 embankment raises as per specifications listed in Table 1 below.

#### Table 1: TSF2 construction heights

Stages	Construction crest height in reduced level (RL) m	
Stage 4	Up to RL 129.7 m	
Stage 5	Up to RL 132.7 m	

- 2. The works approval holder must:
  - (a) construct and/or install the infrastructure and/or equipment;
  - (b) in accordance with the corresponding design, construction and/or installation requirements;
  - (c) in accordance with the corresponding design drawing(s); and
  - (d) at the corresponding infrastructure location,

as set out in Schedule 2.

- **3.** The works approval holder must:
  - (a) have an operational water cart available on site to effectively wet down dust generating areas during the construction phase; and
  - (b) undertake daily inspections of construction areas to ensure dust control measures are being implemented and are effective.

### **Compliance reporting – Critical Containment Infrastructure**

- **4.** The works approval holder must within 30 calendar days of the critical containment infrastructure identified by condition 2 being constructed and/or installed:
  - (a) undertake an audit of their compliance with the requirements of condition 1 and 2; and
  - (b) prepare and submit to the CEO a Critical Containment Infrastructure Report (CCIR) on that compliance.
- 5. The CCIR required by condition 4, 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 2, has been built and installed in accordance with the requirements specified in condition 2;
  - (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 2;
  - (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) a Quality Control/Quality Assurance Certificate from an independent third party which demonstrates that the:
  - Stage 4 and Stage 5 in-situ compacted embankment raise layers meet the minimum target density of 95% standard maximum dry density (SMDD) for each layer; and
  - (ii) in-situ compacted base of the Stage 5 catchment paddocks demonstrate a hydraulic conductivity of  $1 \times 10^{-7}$  or less.

as specified in Schedule 2.

**6.** The works approval holder must within 90 calendar days prior to undertaking any Stage 5 critical containment infrastructure construction activities, prepare and submit to the CEO the Stage 5 critical containment infrastructure design drawings that have been issued for construction.

### Time limited operations phase

### **Commencement and duration**

- 7. The works approval holder may only commence time limited operations for an item of infrastructure identified in condition 2 where at least 10 business days have passed after the CCIR for that item of infrastructure as required by condition 4 has been submitted to the CEO.
- **8.** The works approval holder may conduct time limited operations for an item of infrastructure specified in condition 2 (as applicable):
  - (a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 7 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 EP Act, if one is granted before the end of the period specified in condition 8(a).

### **Operational requirements**

**9.** The works approval holder must ensure that the premises infrastructure and equipment listed in Table 2 and located at the corresponding infrastructure and equipment location is maintained and operated in accordance with the corresponding operational requirement set out in Table 2.

No.	Infrastructure and equipment	Operational requirements	Infrastructure and equipment location
1.	Mobile equipment	Spill management:	Entire
	(e.g. light vehicles, heavy equipment)	<ul> <li>Maintain mobile equipment as per manufacturer's specifications;</li> </ul>	prescribed premises as shown in
		<ul> <li>Suitably stocked spill response equipment available on site;</li> </ul>	Figure 1 (Schedule 1)

#### Table 2: Infrastructure and equipment operational requirements

No.	Infrastructure and equipment	Operational requirements	Infrastructure and equipment location
		<ul> <li>Ensure all staff are trained to use the spill response equipment; and</li> </ul>	
		<ul> <li>Contain and clean-up spills as soon as they occur.</li> </ul>	
2.	TSF2 (Stage 4 and Stage 5)	• TSF2 and associated infrastructure to be maintained as per the design, construction and/or installation requirements in Schedule 2.	TSF2 as shown in Figure 1 (Schedule 1)
3.	Series of catchment paddocks (Stage 5)	• Removal of any reject stream material and/or contaminated water from the Stage 5 embankment slope that collects in the series of catchment paddocks around TSF2 unless captured waste material is suitably contained with no seepage and/or overtopping risks evident.	
		<ul> <li>A minimum freeboard of 300 mm must be maintained</li> </ul>	

### Monitoring during time limited operations

### General

- **10.** The works approval holder must ensure that all monitoring equipment used on the premises to comply with the conditions of this works approval is calibrated in accordance with the manufacturer's specifications.
- **11.** The works approval holder must ensure that all analysis undertaken pursuant to condition 12 is undertaken by a holder of a current accreditation from the National Association of Testing Authorities (NATA) (unless indicated otherwise in Table 3).

### Water quality monitoring for the series of catchment paddocks (Stage 5)

**12.** Within 30 calendar days upon completion of construction works for the series of catchment paddocks that run along the external perimeter toe of TSF2, the works approval holder must commence monitoring of water quality within this infrastructure for concentrations of the identified parameter(s) in accordance with Table 3.

#### Table 3: Water quality monitoring – Series of catchment paddocks (Stage 5)

Monitoring location	Parameter <sup>1</sup>	Unit	Frequency	Sampling method
Series of catchment paddocks that run along	Electrical conductivity <sup>2</sup> at 25°C	µS/cm	Quarterly <sup>3</sup>	AS/NZS 5667.1
toe of TSF2 (Stage 5)	pH <sup>2</sup>	pH units		
	Total alkalinity as CaCO <sub>3</sub>	mg CaCO₃/L		
	Arsenic (As III)	mg/L		

Monitoring location	Parameter <sup>1</sup>	Unit	Frequency	Sampling method
	Arsenic (As V)			
	Bismuth (Bi)			
	Chromium (Cr III)			
	Chromium (Cr VI)			
	Hexavalent Chromium (Cr6+)			
	Nickel (Ni)			
	Selenium (Se)			
	Tellurium (Te)			
	Total Dissolved Solids (TDS)			

Note <sup>1</sup>: Level of detection is required to be sufficient to enable a comparison with the Australian and New Zealand Guidelines for Fresh & Marine Water Quality (ANZ 2018).

Note <sup>2</sup>: In-field non-NATA accredited analysis permitted.

Note <sup>3</sup>: Quarterly monitoring is undertaken at least 70 days apart.

#### Quality assurance and quality control requirements

- **13.** The works approval holder must adhere to the following field quality assurance and quality control procedures, as specified in Schedule B2 of the Assessment of Site Contamination NEPM, and must include as a minimum:
  - (a) decontamination procedures for the cleaning of tools and sampling equipment before sampling and between samples;
  - (b) field instrument calibration for instruments used on site;
  - (c) blind replicate samples and rinsate blanks must be collected in the field and sent to the primary laboratory to determine the precision of the field sampling and laboratory analytical program;
  - (d) completed field monitoring sheets/sampling logs for each sample collected, showing:
    - (i) time of collection;
    - (ii) location of collection;
    - (iii) initials of sampler;
    - (iv) sampling method;
    - (v) field analysis results;
    - (vi) duplicate type/location (if relevant);
    - (vii) site observations and weather conditions, and
  - (e) chain-of-custody documentation must be completed which details the following information:
    - (i) site identification;

- (ii) the sampler;
- (iii) nature of the sample;
- (iv) collection time and date;
- (v) analyses to be performed;
- (vi) sample preservation method;
- (vii) departure time from site;
- (viii) dispatch courier(s); and
- (ix) arrival time at the laboratory.

## Monitoring of the water balance for the combined tailing storage facility infrastructure (TSF1 West Cell, TSF 1 East Cell and TSF2)

- **14.** The works approval holder must undertake monitoring of the water balance for the combined tailings storage facility infrastructure each monthly period, and (as a minimum) record the following information:
  - (a) site rainfall;
  - (b) evaporation rate;
  - (c) volume of tailings deposited;
  - (d) volume of decant water recovered from the combined TSF infrastructure and subsequently stored within the series of evaporation ponds;
  - (e) volume of decant water transported to the process plant for re-use;
  - (f) estimate of seepage losses, for the following infrastructure:
    - (i) combined TSF infrastructure; and
    - (ii) series of evaporation ponds;
  - (g) volumes of seepage recovered via the following infrastructure:
    - (iii) seepage collection trench;
    - (iv) toe drains;
    - (v) series of catchment paddocks (Stage 5); and
    - (vi) seepage recovery bore network.

### **Compliance reporting – Time limited operations**

- **15.** 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 90 calendar days before the expiration date of the works approval, whichever is the sooner.
- **16.** The works approval holder must ensure the report required by condition 15 includes the following:
  - (a) a summary of the time limited operations (including timeframes);
  - (b) a summary of water quality monitoring results obtained during time limited operations under conditions 10, 11, 12 and 13;
  - (c) a summary of water balance monitoring for the combined tailings storage facility obtained during time limited operations under condition 14;

- (d) a summary of the environmental performance of all infrastructure as constructed or installed;
- (e) a review of performance and compliance against the conditions of the works approval; and
- (f) 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)**

- **17.** 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.
- **18.** 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 2;
  - (b) any maintenance of infrastructure that is performed in the course of complying with condition 9;
  - (c) complaints received under condition 17.
- **19.** The books specified under condition 18 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 4 have the meanings defined.

### Table 4: Definitions

Term	Definition	
AS/NZS 2033	means the Australian Standard AS/NZS 2033 Installation of polyethylene pipe systems.	
AS/NZS 4129	means the Australian Standard AS/NZS 4129 Fittings for polyethylene (PE) pipes for pressure applications.	
AS/NZS 4130	means the Australian Standard AS/NZS 4130 Polyethylene (PE) pipes for pressure applications.	
AS/NZS 4131	means the Australian Standard AS/NZS 4131 Polyethylene (PE) compounds for pressure pipes and fittings.	
annual period	a 12 month period commencing from until 1 May until 30 April 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 <i>Environmental Protection Act</i> 1986 Locked Bag 10 Joondalup DC WA 6919 <u>info@dwer.wa.gov.au</u>	
combined TSF infrastructure	refers to the combined tailing storage facility infrastructure including: TSF1 West Cell, TSF 1 East Cell and TSF2.	
critical containment infrastructure	means the items of infrastructure listed in condition 2.	
CCIR	Critical Containment Infrastructure Report	
Critical Containment Infrastructure Report	nt 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 <i>Public Sector Management Act 1994</i> 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.	

Term	Definition	
EP Act	Environmental Protection Act 1986 (WA).	
freeboard	means the distance between the maximum water surface elevations and the top of retaining banks or structures at their lowest point.	
m	metres	
monthly period	means a one-month period commencing from the first day of a month until the last day of the same month.	
m/s	metres per second	
mm	millimetres	
NAF	non-acid forming	
N/A	not applicable	
NEPM	National Environment Protection Measures	
No.	typographic abbreviation of the word number(s).	
premises	the premises to which this licence applies, as specified at the front of this licence and as shown on the premises map (Figure in Schedule 1 to this works approval.	
prescribed premises	has the same meaning given to that term under the EP Act.	
PVC	polyvinyl chloride	
RL	reduced level	
series of evaporation ponds	Series on nine evaporation ponds including: EP9, EP10, EP11, EP12, EP13, EP14, EP15, EP16, EP17 and EP20 for storage of decant water from the combined TSF infrastructure.	
significant rainfall event a significant rainfall event is defined based on the Bureau of Meteorology website for the location of Ravensthorpe ( <u>http://www.bom.gov.au/water/designRainfalls/revised-</u> <u>ifd/?year=2016</u> ). A significant rainfall event has been based Intensity Frequency Duration (IFD), being 24 hours rainfall duration at 20% Annual Exceedance Probability (AEP). No a 20% AEP is equivalent to a 4.48 Annual Recurrence Inte (ARI).		
SMDD	standard maximum dry density	
suitably qualified	means a person who:	
engineer	<ul> <li>(a) holds a Bachelor of Engineering recognised by the Institute of Engineers; and</li> </ul>	

Term	Definition	
	<ul> <li>(b) has a minimum of five years of experience working in the area of geotechnical engineering,</li> </ul>	
	or is otherwise approved by the CEO to act in this capacity.	
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	tailing storage facility	
TSF1	tailings storage facility (TSF), known as TSF1	
TSF2	tailings storage facility (TSF), known as TSF2	
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 wapproval by the CEO under section 54 of the EP Act, subject 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).







No.	Infrastructure and equipment	Design, construction and/or installation requirements	Design drawing	Infrastructure and equipment location
1.	Stage 4: TSF2 embankment raise	<ul> <li>TSF2 Stage 4 footprint area conditioned and compacted prior to construction of embankment raises.</li> <li>3 m downstream embankment raise (using mine waste materials from Hale-Bopp and other suitable non-acid forming (NAF) borrow materials) to RL 129.7 m (Stage 4) on the existing eastern, southern and portion of the western TSF2 embankments.</li> <li>Stage 4 embankment raise constructed to accommodate inflows from 1:100 year 72 hours rainfall event, atop standard decant pond operation, whilst maintaining a minimum 500 mm total freeboard and wave run up from 1:10 annual exceedance probability (AEP) wind.</li> <li>Stage 4 embankment construction materials placed along the downstream of the existing embankment in layers not exceeding 500 mm in compacted thickness. Embankment walls are to be rolled and compacted to achieve a minimum target density of 95% SMDD for each layer and compaction control tests undertaken.</li> <li>Raise existing TSF2 decant access causeway.</li> <li>Excavation and backfilling of a cut-off trench along the proposed extension of the western embankment and tying it to the existing cut-off trench to reduce shallow seepage.</li> <li>Relocate tailings deposition pipework to the upstream crest margin of the raised TSF 2 (Stage 4) embankments, in line with the following minimum requirements:         <ul> <li>pipelines to meet the following standards:</li></ul></li></ul>	Stage 4 design drawings issued for construction (Schedule 3)	TSF2 as shown in Figure 1 (Schedule 1)
1	1			

## Schedule 2: Design, construction and/or installation requirements

No.	Infrastructure and equipment	Design, construction and/or installation requirements	Design drawing	Infrastructure and equipment location
		<ul> <li>AS/NZS 4130: Polyethylene (PE) pipes for pressure applications; and</li> </ul>		
		<ul> <li>AS/NZS 4131: Polyethylene (PE) compounds for pressure pipes and fittings;</li> </ul>		
		<ul> <li>HDPE pipelines fitted with spigots at centreline spacings of approximately</li> <li>60 m along entire TSF2 perimeter; and</li> </ul>		
		<ul> <li>each spigot off-take equipped with a knife gate valve with each dropper pipe fitted with a section of Polyvinyl chloride (PVC) to direct tailings slurry onto the TSF2 beach.</li> </ul>		
		• Construction of a safety bund on the outer crest margin and a 2% inward crossfall on the embankment crest, designed to direct surface water and/or spilled liquor from tailings distribution pipelines back into the TSF2 basin.		
		• Construction of safety windrows to a minimum height of 500 m on the raised Stage 4 embankment crests.		
2.	Stage 5: TSF2 embankment	• TSF2 Stage 5 footprint area conditioned and compacted prior to construction of embankment raises.	In accordance with condition 6	
	raise	• 3 m downstream embankment raise (using combination of reject stream materials from the processing plant, Hale-Bopp mine waste materials and other suitable NAF borrow materials) to RL 132.7 m (Stage 5) on the existing eastern, southern and portion of the western TSF2 embankments.		
		• Stage 5 embankment raise constructed to accommodate inflows from 1:100 year 72 hours rainfall event, atop standard decant pond operation, whilst maintaining a minimum 500 mm total freeboard and wave run up from 1:10 annual exceedance probability (AEP) wind.		
		• Upstream embankment raise and crest constructed with clay rich low permeability material (mine waste) to provide a low permeability zone adjacent to the deposited tailings within TSF2 (along the upstream side of the Stage 5 embankment raise). Mine waste portion to be at least 5 m wide adjacent to the deposited tailings and at least 1 m thick at the crest.		
		• Stage 5 embankment construction materials placed along the downstream of		

No.	Infrastructure and equipment	Design, construction and/or installation requirements	Design drawing	Infrastructure and equipment location
		the existing embankment in layers not exceeding 500 mm in compacted thickness. Embankment walls are to be rolled and compacted to achieve a minimum target density of 95% SMDD for each layer and compaction control tests undertaken.		
		Raise existing TSF2 decant access causeway.		
		<ul> <li>Excavation and backfilling of a cut-off trench along the proposed extension of the western embankment and tying it to the existing cut-off trench to reduce shallow seepage.</li> </ul>		
		<ul> <li>Relocate tailings deposition pipework to the upstream crest margin of the raised TSF 2 (Stage 5) embankments, in line with the following minimum requirements:</li> </ul>		
		<ul> <li>pipelines to meet the following standards:</li> </ul>		
		<ul> <li>AS/NZS 2033: Installation of polyethylene pipe systems;</li> </ul>		
		<ul> <li>AS/NZS 4129: Fittings for polyethylene (PE) pipes for pressure applications;</li> </ul>		
		<ul> <li>AS/NZS 4130: Polyethylene (PE) pipes for pressure applications; and</li> </ul>		
		<ul> <li>AS/NZS 4131: Polyethylene (PE) compounds for pressure pipes and fittings.</li> </ul>		
		<ul> <li>HDPE pipelines fitted with spigots at centreline spacings of approximately</li> <li>60 m along entire TSF2 perimeter; and</li> </ul>		
		<ul> <li>each spigot off-take equipped with a knife gate valve with each dropper pipe fitted with a section of PVC to direct tailings slurry onto the TSF2 beach.</li> </ul>		
		<ul> <li>Construction of a safety bund on the outer crest margin and a 2% inward crossfall on the embankment crest, designed to direct surface water and/or spilled liquor from tailings distribution pipelines back into the TSF2 basin.</li> </ul>		
		<ul> <li>Construction of safety windrows to a minimum height of 500 m on the raised Stage 5 embankment crests.</li> </ul>		

No.	Infrastructure and equipment	Design, construction and/or installation requirements	Design drawing	Infrastructure and equipment location
		• Construction of a series of catchment paddocks that run along the external perimeter toe of TSF2 to capture any run-off of reject stream material and/or contaminated water from the Stage 5 embankment slope, in line with the following minimum requirements:		
		<ul> <li>constructed using mine waste materials compacted in maximum 500 mm layers to a minimum target density of 95% SMDD for each layer and compaction control tests undertaken;</li> </ul>		
		<ul> <li>nominally 1 m high; and</li> </ul>		
		<ul> <li>base lined with compacted clay (mine waste) to achieve a hydraulic permeability of 1 x 10<sup>-7</sup> or less.</li> </ul>		



## Schedule 3: Stage 4 design drawings issued for construction



### W6739/2022/1

IR-T05 Works approval template (v6.0) (September 2022)

B/	BANKMENT RAISE SETOUT TABLE								
<b>)</b> .	EASTING (m)	NORTHING (m)	ELEVATION (RL)						
	257,326.718	6,268,807.66	129.70						
	257,599.462	6,267,850.42	129.70						
	257,604.679	6,267,840.57	129.70						
	257,687.187	6,267,741.99	129.70						
	257,714.625	6,267,733.29	129.70						
	259,210.239	6,268,131.53	129.70						
	259,229.325	6,268,150.87	129.70						
	259,419.885	6,268,906.18	130.91						
	259,410.423	6,268,919.41	132.66						
	259,403.878	6,268,921.14	132.94						

0 A RE		MATCHLINE	E	MATCHLINE		MATCHLINE			
20 20 20					39,000		GEOME CHAIN		
22-11-( 22-10-( YY-M)	2010	1 121.00.121.00.12	000001	0.1221 00.171	00.076	0/221 00/221	AGE		
09 03 M-DD	2860.65	3.07 126.63 129.70	1900.65	2.70 127.00 129.70	940.65	3.15 126.55 129.70 1		UM 120 GROUI ROUNE	
ISSUE ISSUE DESCR	2880.65	2.70 127.00 129.70	1920.65	2.70 127.00 129.70	960.65	3.20 126.50 129.70	0.00 4.51	0.00 129.94 2 0 0.00 129.67 129.68 0	
D FOR ( D FOR ( RIPTION	2900.65	2.70 127.00 129.70	L=15	2.70 127.00 129.70	980.65	4.03 125.67 129.70	20.65	0.31 129.37 129.68	
	2920.65	2.70 127.00 129.70	547.73 -	3.06 126.64 129.70	1000.65	3.03 126.67 129.70 10	40.65	0.68 129.00 129.68	
RUCTION	2940.65	270 127 00 129 70	1980 65	3 20 126 50 129 70	27.26 90.1101	2.70 127.00 129.70 2.74 126.96 129.70	(SOP-3	1.18 128.50 129.68	
1									
	2960.65	2.70 127.00 129.70	2000.65	3.20 126.50 129.70	1040.65	2.98 126.72 129.70	80.65	1.36 128.32 129.68	
	2980.65	2.70 127.00 129.70	2020.65	3.20 126.50 129.70 1	1060.65	2.97 126.73 129.70	100.65	1.84 127.84 129.68	
	3000.65	2.73 126.97 129.70	2040.65	3.20 126.50 129.70	L=128.5	3.10 126.60 129.70 1	120.65	1.71 127.96 129.68	
	3020.65	2.70 127.00 129.70	2060.65	2.81 126.89 129.70	1100.65	3.01 126.69 129.70	140.65	2.28 127.40 129.68	
	3040.65	2.70 127.00 129.70	2080.65	3.21 126.49 129.70	1120.65	1.78 127.92 129.70 l	160.65	2.36 127.32 129.68 1	
	3060.65	2.70 127.00 129.70	2100.65	3.20 126.50 129.70	1140.65	2.22 127.47 129.70 000	180.65	2.26 127.42 129.68	
	3080.65	2.70 127.00 129.70	2120.65	2.98 126.72 129.70	R=26.80	2.40 127.30 129.70	200.65	2.68 127.00 129.68	
	3100.65	2.70 127.00 129.70	2140.65	2.98 126.72 129.70	1170.00	2.70 127.00 129.70 1 2.70 127.00 129.70 1	220.65	2.68 127.00 129.68	
	3120.65	2.70 127.00 129.70	2160.65	2.96 126.75 129.70	1200.65	2.20 127.50 129.70 {	240.65	2.95 126.73 129.68	
	3140.65		2180.65	2.96 126.74 129.70	1220.65	2 20 127 50 129.70	260.65	3.20 126.48 129.68	
		3.98 -	0						
SP SP DE	3160.65	2.70 127.00 129.70	2200.65	2.94 126.76 129.70 1	1240.65	2.41 127.29 129.70	280.65	3.20 126.48 129.68	
PB PB SIGNED	3180.65	2.70 127.00 129.70	2220.65	3.20 128.50 129.70	1260.65	2.39 127.31 129.70 {	300.65	3.18 126.50 129.68	
LD LD D PRE	3200.65	2.40 127.30 129.70	2240.65	3.20 126.50 129.70	1280.65	2.70 127.00 129.70	320.65	3.20 126.48 129.68	
EPARED	3220.65	2.26 127.44 129.70	2260.65	3.27 126.43 129.70	1300.65	2.70 127.00 129.70	340.65	3.19 126.49 129.68	
GLR GLR ) REV									
R R VIEWED	3240.65	2.60 127.10 129.70	2280.65	3.20 126.50 129.70 1	1320.65	2.68 127.02 129.70	360.65	3.18 126.50 129.68	
GLR GLR ) APP	3260,65	2.70 127.00 129.70	2300.65	3.20 126.50 129.70	1340.65	2.70 127.00 129.70	380.65	3.23 126.46 129.68	
ROVED	3280.65	2.70 127.00 129.70	2320.65	3.22 126.48 129.70	1360.65	2.48 127.22 129.70	400.65	3.20 126.49 129.68	
	3300.65	3.14 126.56 129.70	2340.65	3.20 126.50 129.70	1380.65	2.35 127.35 129.70	420.65	3.23 126.46 129.69	
	3320.65	3.01 126.69 129.70	2360.65	3.21 126.49 129.70	1400.65	2.67 127.03 129.70	440.65	3.20 126.49 129.69	
	3340.65	3.03 126.67 129.70	2380.65	3.20 126.50 129.70	1420.65	2.70 127.00 129.70	460.65	3.19 126.49 129.69	
	3360.65	3.05 126.65 129.70	2400.65	3.20 126.50 129.70 1	1440.65	2.70 127.00 129.70	480.65	3.19 126.49 129.69	
STRA	3380.65	3.04 126.66 129.70	2420.65	3.20 126.50 129.70	1460.65	3.00 126.70 129.70	199005	3.19 126.50 129.69	
	3400.65	3.06 126.64 129.70	2440.65	3.20 126.50 129.70	1480.65	2.70 127.00 129.70	520.65	3.19 126.50 129.69	
	3420.65	3.06 126.64 129.70	2460.65	3.20 126.50 129.70	1500.65	2.70 127.00 129.70	540.65	3.19 126.50 129.69	
ER	3440.65	3.02 126.68 129.70	2480.65	3.19 126.51 129.70	1520.65	2.70 127.00 129.70	560.65	3.19 126.50 129.69	
PEF LEV PEF AUS [+61	3460.65	3.01 126.69 129.70	2500.65	3.20 126.50 129.70	1540.65	2.70 127.00 129.70	580.65	3.19 126.50 129.69	
RTH OF /EL 2, 5 RTH, W STRALI 1] (8) 9-	20,004.0				10 00 11		800.85	3 10 120 60	
FICE 5 SPRIN /A 6000 IA 489 970	0400.00	3.01 120.09 123.10	00'0707	3.20   1.25.50   1.23.70	co.0001	Z.85 120.05 125./0	Ma a rea		
NG STRI	3500.65	3.03 126.67 129.70	2540.65	3.20 126.50 129.70	1580.65	2.71 126.99 129.70 {	620.65	3.19 126.50 129.69	
EET	3520.65	4.79 126.12 130.41	5260.65	3.32 126.38 129.70	1600.65	2.50 127.20 129.70 1	640.65	3.19 126.50 129.69	
	3540.65	101 101 101 101 101 101 101 101	8: 6: 6: 6: 6: 6: 6: 6: 6: 6: 6: 6: 6: 6:	3.03 126.67 129.70 1	1620.65	2.37 127.33 129.70	660.65	3.19 126.50 129.69	
			\$9.00 89.00 97-10	3.20 126.50 129.70	1640.65	2.21 127.49 129.70	680.65	3.19 126.50 129.69	
RAVE TAILII STAG IITLE EMB/ PROJEC 2149:	PRO.IF(	3.38	2620.65	3.20 126.50 129.70	1660.65	2.22 127.48 129.70	700.65	3.19 126.50 129.69	
	СТ		- SEE D EMBA 090 090 090 090	3.20 126.50 129.70	1680.65	2.37 127.33 129.70	720.65	3.19 126.50 129.69	
HORF STOF MBA		C	006 FOI NKMEN LS	3 20 128 50 129.70	1700.65	2.70 127.00 129.70	740.65	3.19 126.50 129.69	
	1:2,50	0	R NOR T CON		1.000				









252-----







![](_page_23_Figure_1.jpeg)

NT CAUSEWAY SETOUT TABLE									
EASTING (m)	NORTHING (m)	ELEVATION (RL)							
258,313.35	6,268,685.62	120.00							
258,338.95	6,268,780.07	132.70							
258,389.59	6,268,967.07	132.70							
258,447.75	6,269,181.82	132.70							
258,379.49	6,268,947.02	132.70							
258,432.24	6,269,141.87	132.70							
258,426.85	6,269,155.29	132.70							
258,349.77	6,269,202.62	132.70							

;	REV.	8 of 10	DRAWING
1	1		D008

![](_page_24_Figure_0.jpeg)

#### W6739/2022/1

IR-T05 Works approval template (v6.0) (September 2022)

		(50	P-5) A I
132.70	132.70	132.70	MATCHI
126.50	126.53	126.82	INE
6.20	6.17	5.88	
240.00	260.00	269.67	
			A

±0%;qued F	REV.	YYYY-MM-DD	DESCRIPTION	DESIGNE	D PREPARI	ED REVIEWE	D APPROVED	_				PROJECT NO. DOC 21493687 011
older.gds/g	0 A	2022-11-09 2022-10-03	ISSUED FOR CONSTRUCTION ISSUED FOR COMMENT	SPB SPB	LD	GLR	GLR	_ IISI) GOLĐEI	R AUSTRA [+61] (8)	WA 6000 LIA 9489 9700		
ap/Perth/Ge	1	2022-11-29	ISSUED FOR CONSTRUCTION	SPB	JF	GLR	GLR	CONSULTANT	PERTH C LEVEL 2,	OFFICE , 5 SPRING STRE	ET	EXISTING INSTRUM
somatics/First_Quantu								FQM AUSTRALIA NICKEL P	TY. LTD.			PROJECT RAVENSTHORPE NI TAILINGS STORAGE STAGE 4 EMBANKM
um_Minerals_Australia_Noke/Ravensthorpel98_PRO.ECTS/2149368	6,26	7.750 m N	WIP-10 UOGGERBOX 2 UNP-10 UOGGERBOX 2 UOGGERBOX 2	289.375 m E			288.780m E	6.267.750 m N	POINT No. LOGGERBOX LOGGERBOX LOGGERBOX LOGGERBOX LOGGERBOX LOGGERBOX LOGGERBOX LOGGERBOX	EASTING (m)           1         257,497,66           2         257,817,00           3         258,135,55           4         258,338,00           5         258,633,06           6         258,874,82           7         259,133,08           8         259,334,84	NORTHING (m) 6,267,864.45 6,267,853.14 6,267,743.66 6,267,800.25 6,267,873.66 6,267,938.90 6,268,040.48 6,268,296.49	0 1:1,000 0 1:7,
7-FQM_TSF2_Emb_Rais				A PZC	09				LOGGER		JT TABLE	

![](_page_25_Figure_2.jpeg)