Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6810/2023/1
Works approval holder	Abra Mining Pty Limited
ACN	110 233 577
Registered business address	Level 11, 216 St Georges Terrace PERTH WA 6000
DWER file number	DER2023/000324
Duration	20/07/2023 to 19/07/2026
Date of issue	20/07/2023
Premises details	Abra Base Metals Project MEEKATHARRA WA 6642 Legal description – Part of mining tenements L52/194, M52/776, G52/292 and L52/210 As defined by the premises maps in Schedule 1

Prescribed premises category description **(Schedule 1, *Environmental Protection Regulations 1987*)**	**Assessed production capacity**
Category 6: Mine dewatering – premises on which water is extracted and discharged into the environment to allow mining of ore.	950,000 kilolitres per year

This works approval is granted to the works approval holder, subject to the attached conditions, on 20 July 2023, by:

Sonya Poor

Digitally signed by Sonya Poor
Date: 2023.07.20 14:37:35 +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
20/07/2023	W6810/2023/1	Works approval granted.

Interpretation

In this works approval:

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

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

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

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

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

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

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

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

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

Works approval conditions

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

Construction phase

Infrastructure and equipment

1. The works approval holder must:

(a) construct and/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.	Discharge pipeline and discharge point (velocity dissipator)	• constructed of 160 mm of high-density polyethylene (HDPE) • construction of velocity dissipator that includes an old tyre below the end of the pipeline and a large rock apron • Have a flow meter to measure volume of water discharged	Schedule 1: Maps, Figure 2
2.	Water transfer pipeline	• constructed of 160 mm of HDPE	Schedule 1: Maps, Figure 2
3.	Turkey's Nest 1 (TN1)	• design storage capacity of 3,000 kilolitres (kL) • diversion drains must be installed around the southern and western edge of the TN	Schedule 1: Maps, Figure 2
4.	Turkey's Nest 2 (TN2)	• design storage capacity of 3,000 kL • install a level sensor set up to automatically turn on the diesel pump • diversion drains must be installed around the southern and western edge of the TN	Schedule 1: Maps, Figure 2
5.	Borrow pit in Tailings Storage Facility (TSF) cell B	• design storage capacity of 200,000 kL • install a staff gauge	Schedule 1: Maps, Figure 2

Compliance reporting

2. The works approval holder must not depart from the requirements specified in column 2 of Table 1 except:

(a) where such departure does not increase risks to public health, public amenity, or the environment; and

(b) all other conditions in this works approval are still satisfied.

3. The works approval holder must within 30 calendar days of an item of infrastructure or 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.

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

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

(b) 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.

Environmental commissioning phase

Environmental commissioning requirements and emission limits

5. The works approval holder may only commence environmental commissioning of items of infrastructure identified in condition 1 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 2 may only be carried out:

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

(b) for the corresponding authorised commissioning duration.

Table 2: Environmental commissioning requirements

	Infrastructure	Commissioning requirements	Authorised commissioning duration
1.	Pipelines (discharge and water transfer route)	• pipelines must be leak tested	For a period not exceeding 120 calendar days
2.	TN1	• mine dewatering water is pumped into the TN to allow for the turbid water to reduce sediment	For a period not exceeding 120 calendar days
3.	TN2	• mine dewatering water is pumped into the HDPE lined TN to allow for further settlement of sediments within the water	For a period not exceeding 120 calendar days
5.	Borrow pit in TSF cell B	• mine dewatering water is pumped into the unlined borrow pit in cell B to allow for further settlement of sediments within the water	For a period not exceeding 120 calendar days

7. During environmental commissioning, the works approval holder must ensure that the emission(s) specified in Table 3, are discharged only from the corresponding discharge point(s) and only at the corresponding discharge point location(s).

Monitoring during environmental commissioning

8. The works approval holder must monitor emissions and discharge water quality during environmental commissioning in accordance with Table 6 and undertake vegetation monitoring in accordance with Table 7.

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

Commissioning reporting

10. The works approval holder must submit to the CEO an Environmental Commissioning Report within 30 calendar days of the completion date of environmental commissioning for each item of infrastructure specified in Table 2.

11. The works approval holder must ensure the Environmental Commissioning Report required by condition 10 of this works approval includes the following:

(a) a summary of the environmental commissioning activities undertaken, including timeframes and the volume of mine dewater discharged;

(b) the emissions and water quality monitoring results recorded in accordance with conditions 16, 17 and 20;

(c) a summary of environmental performance of each item of infrastructure as constructed, which at minimum includes records detailing the leak testing of all pipelines;

(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.

Authorised discharge point

12. During commissioning and time limited operations, the works approval holder must ensure that the emissions specified in Table 3, are discharged only from the corresponding emission point, within the specified limit and only at the corresponding discharge point location.

Table 3: Authorised discharges and emission limits

Emission	Emission Limit	Discharge point	Discharge point location
Mine dewatering water from the boxcut (underground mine)	792,000 kL	Grave Creek discharge point	Schedule 1: Maps, Figures 1 and 2
		Used for dust suppression within the prescribed premises	Schedule 1: Maps, Figure 1

Time limited operations phase

Commencement and duration

13. The works approval holder may only commence time limited operations for an item of infrastructure identified in condition 1, where the Environmental Compliance Report as required by condition 2 has been submitted by the works approval holder for that item of infrastructure.

14. The works approval holder may conduct time limited operations for an item of infrastructure specified in condition 1 (as applicable):

(a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 13 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 14(a).

15. During time limited operations, the works approval holder must ensure that the infrastructure listed in Table 4 is maintained and operated in accordance with the corresponding operation requirements set out in Table 4.

Table 4: Infrastructure and equipment requirements during time limited operations

	Infrastructure	Operation requirements
1.	Water transfer pipeline from boxcut (underground mine) to the TN1 and TN2, and then to the borrow pit in TSF cell B using a dewatering pump.	• daily visual inspections (during active dewatering) to ensure visual integrity of pipelines and no potential leaks. • a written log is required to be maintained for each inspection, with the record of each inspection signed by the responsible person. • if a leak is identified, pumping is to cease immediately, pipeline to be isolated, and repairs will be made prior to pumping recommencing.
2.	Dewatering pipeline from the borrow pit to the discharge point, using a dewatering pump, and velocity dissipator.	• daily visual inspections (during active dewatering) to ensure visual integrity of pipelines, no potential leaks, and minimal erosion from the discharge point. • a written log is required to be maintained for each inspection, with the record of each inspection signed by the responsible person. • if a leak is identified, pumping is to cease immediately, pipeline to be isolated, and repairs will be made prior to pumping recommencing.
3.	Water cart	• dust suppression activities using excess dewater are to be carried out in a manner that minimises spray drift onto vegetation alongside roads and open areas.
4.	TN1	• storage capacity of 3,000 kL is not to be exceeded. • maintain the integrity of the diversion drains around the southern and western edge. • daily visual inspections (during active dewatering) to ensure visual integrity of lining and no potential embankment seepage.
5.	TN2	• storage capacity of 3,000 kL is not to be exceeded. • a minimum vertical freeboard of 0.5 m must be maintained. • operate and maintain the level sensor. • operate and maintain the primary pump and in the event of a failure, operate the secondary pump. • maintain the integrity of the diversion drains around the southern and western edge. • daily visual inspections (during active dewatering) to ensure visual integrity of HDPE lining and no potential embankment seepage.
6.	Borrow pit in TSF cell B	• storage capacity of 200,000 kL is not to be exceeded. • a minimum vertical freeboard of 0.5 m must be maintained. • maintain and operate the staff gauge. • daily visual inspections (during active dewatering) to ensure visual integrity and no potential embankment seepage.
8.	Dewatering discharge point	• daily visual inspections during active dewatering to ensure no erosion or scouring.

Monitoring during time limited operations

16. The works approval holder must monitor emissions during time limited operations in accordance with Table 5.

Table 5: Emissions and discharge monitoring during commissioning and time limited operations

Monitoring Location	Parameter	Unit	Frequency	Method
Dewatering discharge to Grave Creek	Volumetric flow rate	kL	Continuous	Flow metering device

Monitoring of water quality

17. The works approval holder shall take representative water samples from the monitoring sites shown in column 1 of Table 6, at the frequencies stated in column 2 of Table 6 and have analysed for the parameters listed in column 3 of Table 6, at locations listed in column 5 of Table 6.

Table 6: Monitoring of ambient concentrations

Column 1	Column 2	Column 3	Column 4	Column 5
Monitoring sites	**Sampling frequency (Averaging period)**	**Parameters**	**Unit**	**Monitoring location**
Water monitoring				
<u>Creek Monitoring</u> Discharge Point to Grave Creek (GC MP1) GC MP2 GC MP3 GC MP4 GC MP5 Nichol Springs <u>TSF Bores</u> MB3 MB5	Weekly during commissioning and time limited operations (Spot sample)	pH[1] Total Dissolved Solids Total Suspend Solids Total Recoverable Hydrocarbons Chemical Oxygen Demand <u>Major Ions</u> Bicarbonate (HCO_3) Calcium (Ca) Calcium Carbonate (CO_3) Chloride (Cl) Magnesium (Mg) Nitrate (NO_3) Potassium (K) Sodium (Na) Sulphate (SO_4) <u>Metals and metalloids</u> Aluminium (Al) Arsenic (As) Boron (B) Cadmium (Cd) Copper (Cu) Chromium (Cr) Iron (Fe) Lead (Pb) Manganese (Mn) Mercury (Hg)	pH unit mg/L	Schedule 1: Maps, Figure 4 and Schedule 3: Monitoring Locations, Table 10

Column 1	Column 2	Column 3	Column 4	Column 5
Monitoring sites	**Sampling frequency (Averaging period)**	**Parameters**	**Unit**	**Monitoring location**
		Molybdenum (Mo) Nickel (Ni) Silver (Ag) Tin (Sn) Zinc (Zn)		
Sediment monitoring				
Discharge Point to Grave Creek (GC MP1) GC MP2 GC MP3 GC MP4 GC MP5 Nichol Springs	6-month interval - prior to discharge of mine dewater and then end of the discharge campaign. (Spot sample)	Parameters: Aluminium (Al) Arsenic (As) Boron (B) Cadmium (Cd) Copper (Cu) Chromium (Cr) Iron (Fe) Lead (Pb) Manganese (Mn) Mercury (Hg) Molybdenum (Mo) Nickel (Ni) Silver (Ag) Tin (Sn) Zinc (Zn)	mg/kg	Schedule 1: Maps, Figure 3 and Schedule 3: Monitoring Locations, Table 10

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

18. The works approval holder shall collect all water samples required by condition 17 in accordance with the relevant parts of Australian Standard AS/NZS 5667.1, AS/NZS 5667.6, and AS/NZS 5667.11. Samples are to be analysed by a laboratory that is NATA accredited.

Sediment monitoring

19. The works approval holder shall undertake sediment monitoring at the discharge monitoring sites in accordance with Table 6.

Vegetation monitoring

20. The works approval holder shall undertake monitoring of vegetation at the discharge monitoring sites in accordance with Table 7.

Table 7: **Vegetation health monitoring**

Monitoring Location	Parameter	Requirements	Frequency	Method
Discharge Point to Grave Creek (GC MP1) GC MP2 GC MP3	Vegetation identification (species) Vegetation health	The assessment shall include: • photograph and record the presence and condition of vegetation at the specified monitoring sites from fixed GPS locations; • compare the results of the assessment against previous	Fortnightly (during commissioning) Monthly (during time limited operations)	Visual inspection and photographs

Monitoring Location	Parameter	Requirements	Frequency	Method
GC MP4 GC MP5 Nichol Springs Schedule 1: Maps, Figure 3 and Schedule 3: Monitoring Locations, Table 10		years assessments and identify whether any deterioration in the presence and/or health of vegetation has taken place; and • be undertaken by a person suitably qualified in vegetation identification, sampling, and vegetation health monitoring.		

21. The works approval holder must record the results of all monitoring activity required by conditions 16, 17, 19, and 20.

Compliance reporting

22. 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 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, the volume of dewatering discharged, and standing water level;

(b) all monitoring data in tabulated form including sampling date;

(c) an assessment and interpretation of the monitoring data, including comparison to previous data, ANZECC & ARMCANZ (2000) guidelines values, and highlighting any parameter exceedances;

(d) a review of performance and compliance against the conditions of the works approval related to mine dewatering only; and

(e) where the conditions of the 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)

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 conditions 1 and 15;

(b) any maintenance of infrastructure that is performed in the course of complying with conditions 1 and 15;

(c) monitoring programmes undertaken in accordance with condition 16, 17, 19, 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 8 have the meanings defined.

Table 8: Definitions

Term	Definition
ACN	Australian Company Number
Act	means the *Environmental Protection Act 1986.*
annual period	a 12-month period commencing from 1 July to 30 June of the immediately following year.
ANZECC & ARMCANZ (2000)	means the most relevant parts of the Australian and New Zealand Environment and Conservation Council & Agriculture and Resource Management Council of Australia and New Zealand for *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.*
AS/NZS 5667.1	means the Australian Standard AS/NS 5667.1 *Water Quality – Sampling – Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samplings.*
AS/NZS 5667.6	means the Australian Standard AS/NZS 5667.6 *Water Quality – Sampling Guidance on sampling of rivers and streams.*
AS/NZS 5667.11	means the Australian Standard AS/NS 5667.11 *Water Quality – Sampling – Guidance on sampling of groundwaters.*
books	has the same meaning given to that term under the EP Act.
CEO	means Chief Executive Officer of the Department. means "submit to / notify the CEO" (or similar), means either: Director General Department administering the *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 or: info@dwer.wa.gov.au
condition	means a condition to which this works approval is subject under s.62 of the EP Act.
commission	means the process of operation and testing that verifies the works and all relevant systems, plant, machinery, and equipment have been installed and are performing in accordance with Tables 1 and 2.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
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	means the *Environmental Protection Act 1986* (WA).
EP Regulations	means the *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.
HDPE	means high density polyethylene.
kL	means kilolitre.
m	means metre.
mbgl	means metres below ground level.
mg/L	means milligrams per litre.
mm	means millimetres.
Mt	means megatonne, metric unit equivalent to 1 million (10^6) tonnes
NATA	means National Association of Testing Authorities.
NATA accredited	means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis.
premises	refers to the premises to which this works approval applies, as specified at the front of this works approval and as shown on the map in Schedule 1 to this works approval.
prescribed premises	has the same meaning given to that term under the EP Act.
TSF	tailings storage facility
works	refers to the works described in Table 1, at the locations shown in Schedule 1 of this works approval to be carried out at the premises, subject to the conditions.
works approval	refers to this document, which evidences the grant of the works approval by the CEO under s.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).

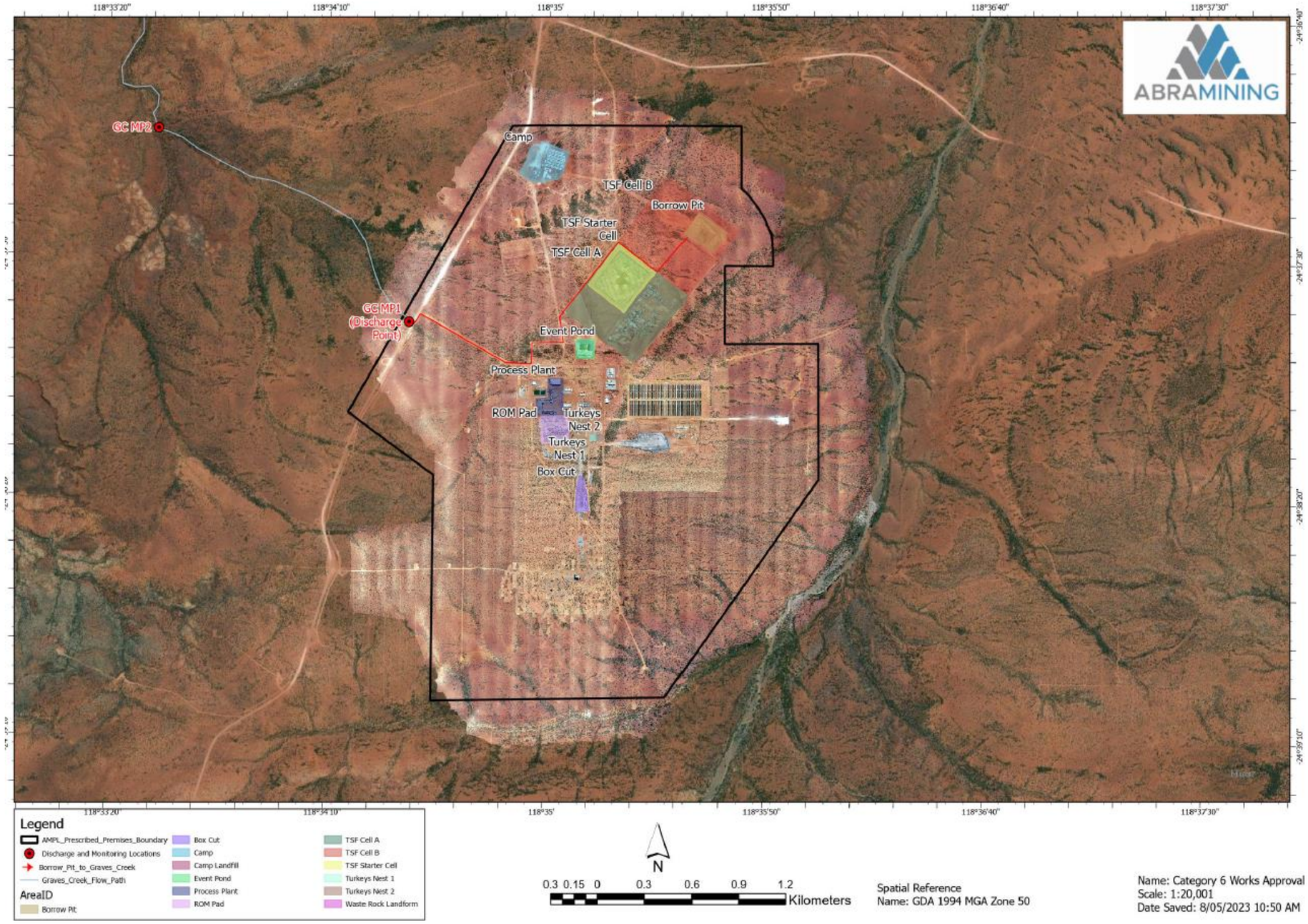

Figure 1: Map of the boundary of the prescribed premises

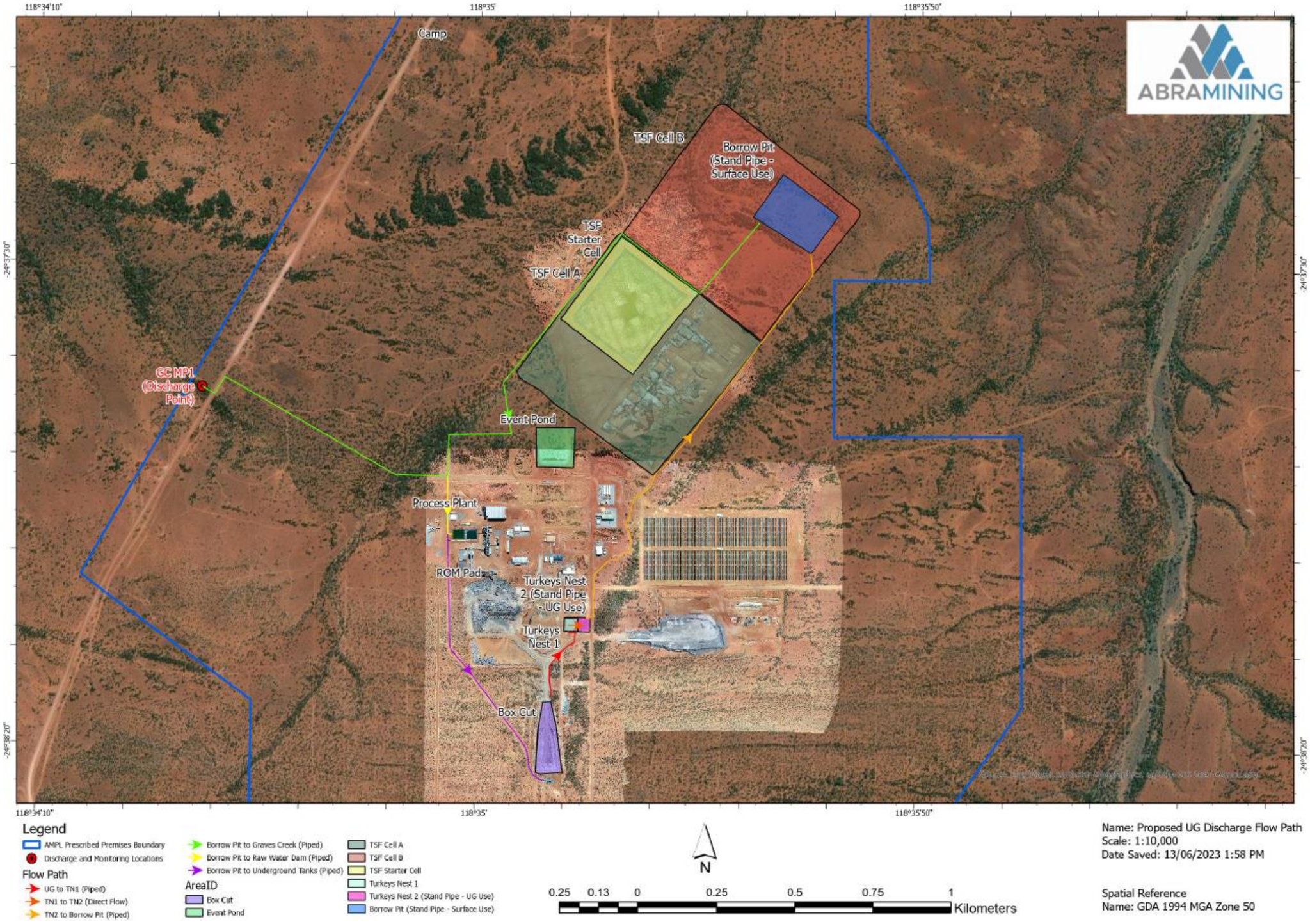

Figure 2: Mine dewatering infrastructure and proposed mine dewatering water discharge flow pathway

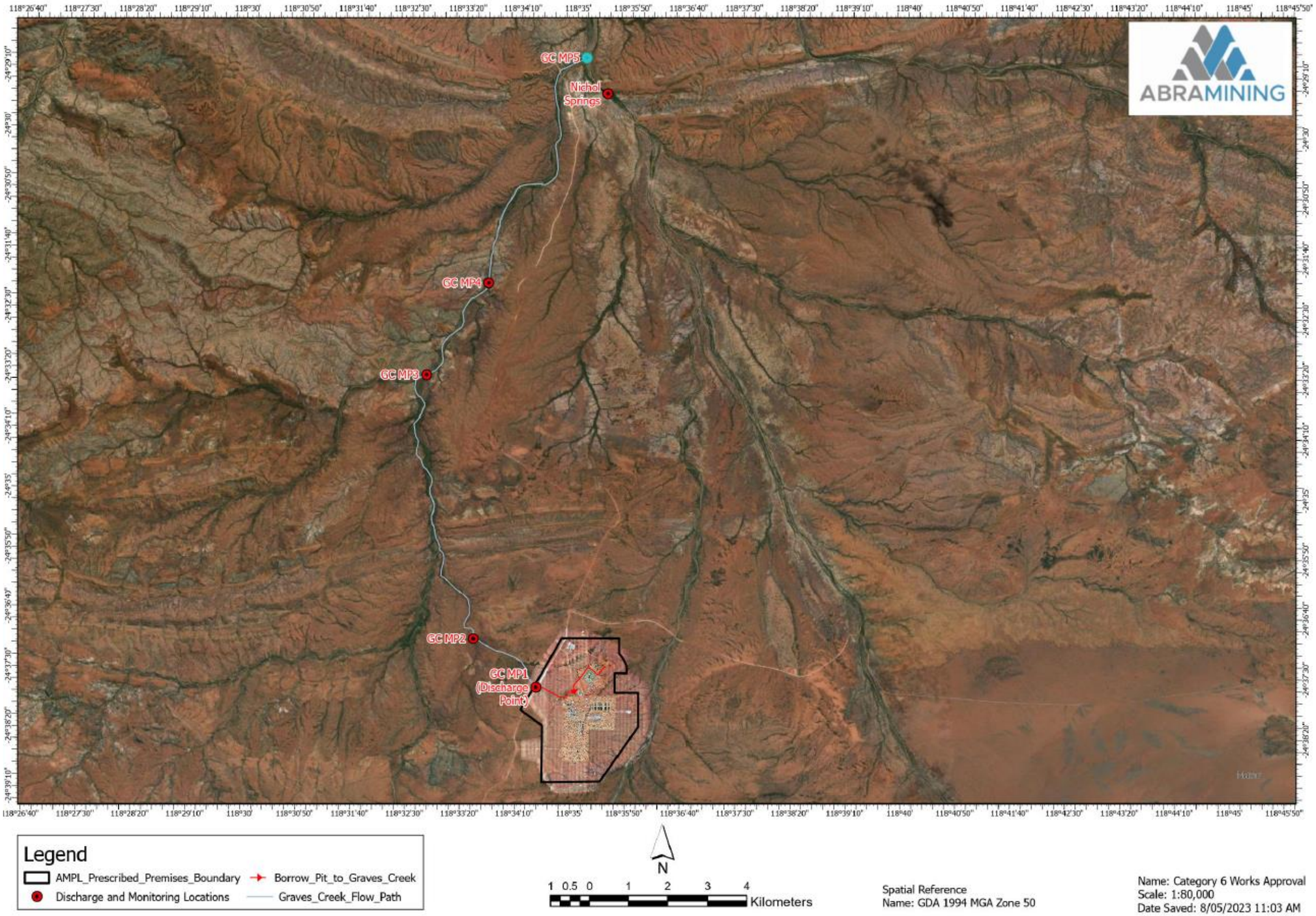

Figure 3: Discharge and monitoring site locations

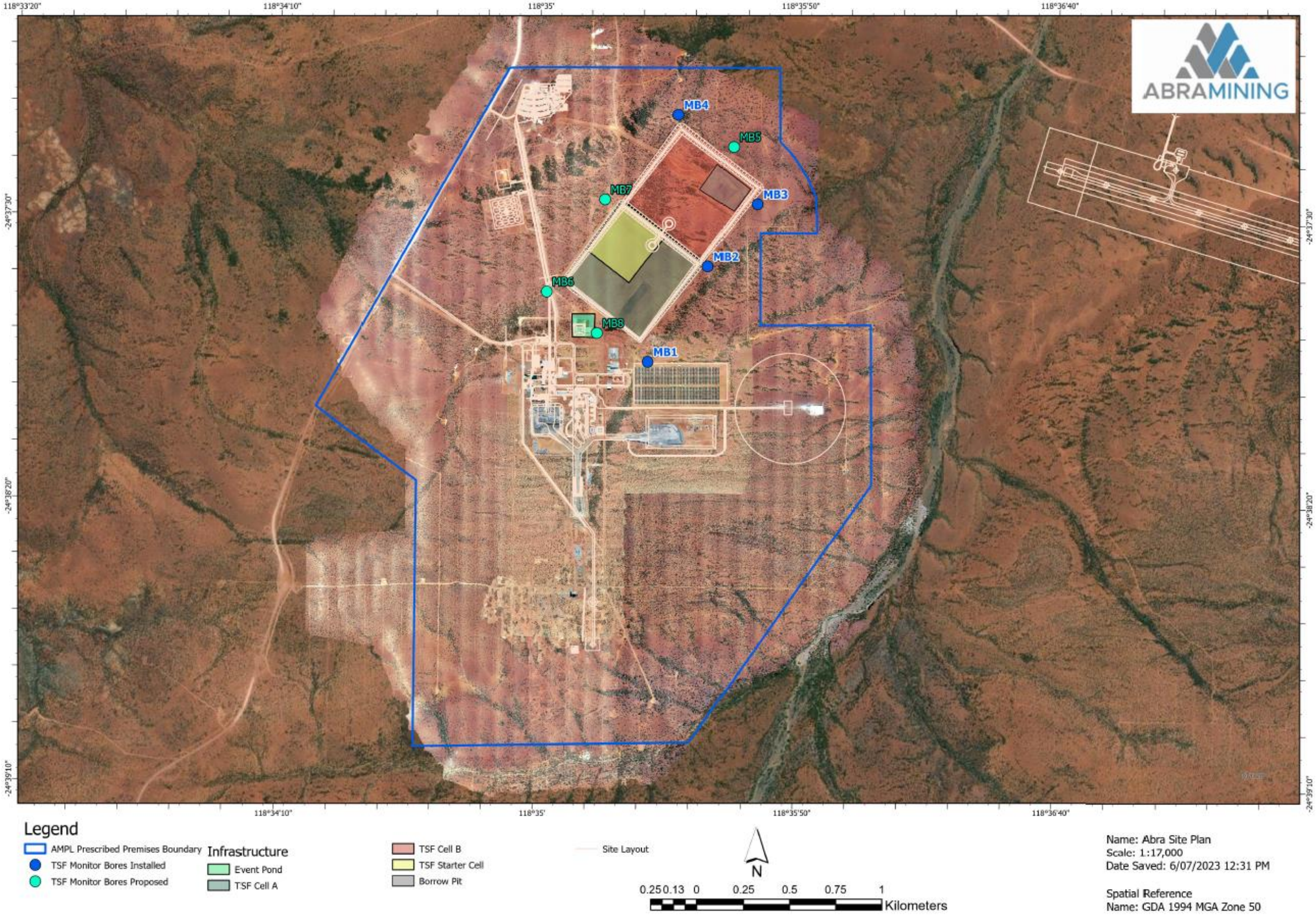

Figure 4: TSF monitoring bore locations

Schedule 2: Premises boundary

The corners of the premises boundary are the coordinates listed in Table 9.

Table 9: Premises boundary coordinates (GDA2020)

	Easting	Northing
1.	661707	7275605
2.	661395	7275605
3.	661395	7275095
4.	661992	7275095
5.	661992	7274222
6.	659521	7274263
7.	660223	7276495
8.	661508	7276495
9.	661508	7276095
10.	661535	7276069
11.	661560	7276042
12.	661568	7276040
13.	661580	7276034
14.	661588	7276026
15.	661594	7276016
16.	661596	7276005
17.	661596	7275994
18.	661620	7275962
19.	661639	7275932
20.	661656	7275899
21.	661673	7275869
22.	661688	7275836
23.	661700	7275795
24.	661706	7275759
25.	661708	7275723
26.	661707	7275682

Schedule 3: Monitoring Locations

The GPS coordinates of the monitoring points along Grave Creek are listed in Table 10.

Table 10: Monitoring location coordinates (GDA2020)

	Easting	Northing
GC MP1 (Discharge point)	659347	7275315
GC MP2	657727	7276543
GC MP3	656647	7283290
GC MP4	658134	7285556
GC MP5	660739	7291305
Nichol Springs	661287	7290537
MB3	661451	7275724
MB5	661323	7276034