Permit

Environmental Protection Act 1994

Environmental Authority EPML00863313

This environmental authority is issued by the administering authority under Chapter 5 of the Environmental Protection Act 1994.

Environmental authority number: EPML00863313

Environmental authority takes effect on 10 September 2026.

The anniversary date of this environmental authority is 23 December each year.

Environmental authority holder(s)

Name(s)	Registered address
Materra Metals Limited	28 Halifax St, ADELAIDE SA 5000

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Resource Activity, Schedule 3, ERA 17: Mining copper ore.	ML2492; ML2494; ML2635; ML2636; ML2705; ML2706; ML2708; ML2715; ML2747; ML100152; ML2748; ML2784; ML7520; ML90066; ML90090; ML90091; ML90092; ML90101; ML90141; ML90142; ML90154
Ancillary Activity, Schedule 2, ERA 8 – Chemical storage, 3: Storing more than 500m3 of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection (1)(c).	
Ancillary Activity, Schedule 2, ERA 8 – Chemical storage, 5: Storing 200m^3 or more of chemicals that are liquids, other than chemicals mentioned in items 1 to 3, under subsection (1)(d).	
Ancillary Activity, Schedule 2, ERA 15 – Fuel burning: Using fuel burning equipment that is capable of burning at least 500kg of fuel in an hour.	
Ancillary Activity, Schedule 2, ERA 31 – Mineral processing, 2: Processing, in a year, the following quantities of mineral products, other than coke—, (a) 1,000t to 100,000t.	

DELIVERING FOR QUEENSLAND | Queensland Government

Environmentally relevant activity/activities	Location(s)
Ancillary Activity, Schedule 2, ERA 60 – Waste disposal, 1: Operating a facility for disposing of, in a year, the following quantity of waste mentioned in subsection (1)(a)—, (d) more than 200,000t.	
Ancillary Activity, Schedule 2, ERA 60 – Waste disposal, 2: Operating a facility for disposing of, in a year, the following quantity of waste mentioned in subsection (1)(b)—, (a) less than 2,000t.	
Ancillary Activity, Schedule 2, ERA 62 – Resource recovery and transfer facility operation, 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing—, (c) category 2 regulated waste.	
Ancillary Activity, Schedule 2, ERA 63 – Sewage Treatment, 1: Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of—, (b) more than 100 but not more than 1500EP—, (i) if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme.	

Additional information for applicants

Environmentally relevant activities

The description of any environmentally relevant activity (ERA) for which an environmental authority (EA) is issued is a restatement of the ERA as defined by legislation at the time the EA is issued. Where there is any inconsistency between that description of an ERA and the conditions stated by an EA as to the scale, intensity or manner of carrying out an ERA, the conditions prevail to the extent of the inconsistency.

An EA authorises the carrying out of an ERA and does not authorise any environmental harm unless a condition stated by the EA specifically authorises environmental harm.

A person carrying out an ERA must also be a registered suitable operator under the *Environmental Protection Act 1994* (EP Act).

Mobile and temporary activities

If you operate a mobile and temporary ERA, other than regulated waste transport, you are required to maintain a work diary. You must:

- use the approved form for a work diary (ESR/2015/1696);
- keep the work diary records for 2 years after the last entry;
- inform the administering authority within 7 days of the work diary being lost or stolen;
- record the information required in the work diary for each location within 1 day of leaving the location.

Contaminated land

It is a requirement of the EP Act that an owner or occupier of land give written notice to the administering authority if they become aware of the following:

- the presence of, or happening of an event involving, a hazardous contaminant on the land that is causing, or is reasonably likely to cause, serious or material environmental harm (notice must be given within 24 hours); or
- if the land is contaminated land – a change in the condition of the land that is causing, or is reasonably likely to cause, serious or material environmental harm (notice must be given within 24 hours); or
- a notifiable activity (as defined in Schedule 3) having been carried out, or is being carried out, on the land (notice must be given within 20 business days).

For further information, including the form for giving written notice, refer to the Queensland Government website www.qld.gov.au, using the search term 'duty to notify'.

Take effect

Please note that, in accordance with section 200(1) of the EP Act, an EA has effect:

(a) if the authority is for a prescribed ERA and it states that it takes effect on the day nominated by the holder of the authority in a written notice given to the administering authority—on the nominated day; or

(b) if the authority states a day or an event for it to take effect—on the stated day or when the stated event happens; or

(c) otherwise—on the day the authority is issued.

However, in accordance with section 200(2) of the EP Act, the day that the EA takes effect may not be before:

(a) if the authority is for a resource activity—the day the relevant tenure is granted to the applicant; or

(b) if a development permit for a material change of use of premises under the *Planning Act 2016* is necessary for carrying out an activity that related to the authority—the day the development permit takes effect; or

(c) if an SDA Approval under the *State Development and Public Works Organisation Act 1971* is necessary for carrying out an activity that relates to the authority—the day the approval takes effect.

If this EA takes effect when the additional authorisation takes effect, you must provide the administering authority written notice within 5 business days of receiving notification of the related additional authorisation taking effect.

If you have incorrectly claimed that an additional authorisation is not required, carrying out the ERA without the additional authorisation is not legal and could result in your prosecution for providing false or misleading information or operating without a valid EA.

	10 September 2026
Signature	Date

Gus Gonzo

Department of the Environment, Tourism, Science and Innovation
Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:

Minerals Business Centre
PO Box 7230, Cairns QLD 4870
Phone: (07) 4222 5352
Email: ESCairns@detsi.qld.gov.au

Obligations under the *Environmental Protection Act 1994*

In addition to the requirements found in the conditions of this EA, the holder must also meet their obligations under the EP Act, and the regulations made under the EP Act. For example, the holder must comply with the following provisions of the Act:

- general environmental duty (section 319)
- duty to restore the environment (section 319C)
- duty to notify environmental harm (section 320-320G)
- offence of causing serious or material environmental harm (sections 437-439)
- offence of causing environmental nuisance (section 440)
- offence of depositing prescribed water contaminants in waters and related matters (section 440ZG)
- offence to place contaminant where environmental harm or nuisance may be caused (section 443).

Other permits required

This permit only provides an approval under the EP Act. In order to lawfully operate you may also require permits / approvals from your local government authority, other business units within the department, and other State and Federal Government agencies prior to commencing any activity at the site. For example, this may include permits or approvals with your local Council (for planning approval), the Department of Transport and Main Roads (to access State controlled roads), the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development (to clear vegetation), and the Department of Primary Industries (to clear marine plants or to obtain a quarry material allocation).

Obligations under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

Matters of national environmental significance (MNES) are regulated under the Commonwealth EPBC Act rather than under state legislation. You may need to submit a referral if your project potentially impacts any matters protected under the EPBC Act. For more information on self-assessments, and referral and assessment processes, please visit the Australian Government Department of Climate Change, Energy, the Environment and Water's website at www.dcceew.gov.au/environment/epbc/advice.

Obligations under the *Mining and Quarrying Safety and Health Act 1999*

If you are operating a quarry, other than a sand and gravel quarry where there is no crushing capability, you will be required to comply with the *Mining and Quarrying Safety and Health Act 1999*. For more information on your obligations under this legislation, visit Resources Safety and Health Queensland's website at www.rshq.qld.gov.au, or call 13 QGOV (13 74 68) or your local Mines Inspectorate Office.

Development approval

This permit is not a development approval under the *Planning Act 2016*. The conditions of this EA are separate, and in addition to, any conditions that may be on the development approval. If a copy of this EA is attached to a development approval, it is for information only and may not be current. Please contact the Department of the Environment, Tourism, Science and Innovation to ensure that you have the most current version of the EA relating to this site.

Obligations under the *Aboriginal Cultural Heritage Act 2003* and *Torres Strait Islander Cultural Heritage Act 2003* (the Cultural Heritage Acts)

The Cultural Heritage Acts require anyone who carries out a land-use activity to exercise a duty of care. This 'duty of care' means land users must take all reasonable and practicable measures to ensure their activity does not harm Aboriginal or Torres Strait Islander cultural heritage, and applies to any activity where Aboriginal or Torres Strait Islander cultural heritage is located. For more information on your obligations under this legislation, please visit the Department of Women, Aboriginal and Torres Strait Islander Partnerships and Multiculturalism webpage at, www.dwatsipm.qld.gov.au.

Conditions of environmental authority

The environmentally relevant activities conducted at the locations as described above must be conducted in accordance with the following site-specific conditions of approval. This environmental authority consists of the following Schedules:

Schedule A	General
Schedule B	Air
Schedule C	Surface water
Schedule D	Noise and vibration
Schedule E	Waste
Schedule F	Land
Schedule G	Regulated structures
Schedule H	Groundwater
Schedule I	Definitions
Schedule J	Maps/plans

Schedule A - General

Activity

A1 This environmental authority authorises environmental harm referred to in the conditions. Where there is no condition or this environmental authority is silent on a matter, the lack of a condition or silence does not authorise environmental harm.

A2 The environmental authority holder must ensure that the activity is carried out in accordance with Schedule A – Table 1.

Schedule A – Table 1 (Authorised disturbance)

Disturbance type	Maximum disturbance area (hectares)	Reference site identification central peg
Mount Cuthbert[1]		
Mine pit	4	386452 7789377
Overburden dumps	6	386274 7789413
Old Kalkadoon workings and laydown	2	386562 7789479
Topsoil dumps and borrow pits	7	386948 7788222
Roads/tracks	7	N/A
ROM and crushing area	6.5	386416 7789203
Plant area	1	386712 7788795
Plant laydown areas	1	386725 7788911
Process water ponds	0.6	386559 7788818
Stormwater dam	3.1	386559 7788703
Stormwater dam 2	8.0	386649 7788573
Offices, workshops and fuel areas	0.6	386784 7788819
Mining contractor workshop and laydown	1.5	386886 7788784
Leach pads	16	386439 7789003
Septic systems/treatment plant	0.1	387146 7788517
Sediment and seepage ponds	2	386383 7788909
Freshwater dam	1	386113 7789065
Diversion channels	4.5	386169 7788909
Pipelines and powerlines	0.5	N/A

Disturbance type	Maximum disturbance area (hectares)	Reference site identification central peg
Rubbish dumps	1.0	386891 7788427
Air strip	3.0	386959 7788001
Accommodation village	3.2	387194 7788328
Core shed	0.1	386543 7790104
Exploration	2	386454 7789380
Total	**81.7**	
Mighty Atom		
Mine pit	12.5	394320 7794382
Overburden dumps	32	394357 7794387
Topsoil dumps	4	394320 7794382
Silt traps	0.5	394320 7794382
Roads/tracks	6.0	N/A
Stockpiles	3	394333 7794337
Total	**58**	
Hidden Treasure		
Mine pit	3.0	375282 7823764
Diversions	0.1	375282 7823764
Overburden dumps	4.5	375282 7823764
Topsoil dumps	0.2	375282 7823764
Silt traps	0.1	375282 7823764
Roads/tracks	1.0	N/A
Workshop areas	0.2	375282 7823764
Storage areas	0.2	375282 7823764
Stockpiles	0.9	375282 7823764
Total	**10.2**	
Dobbyn		
Mine pit	3.0	395116 7810599

Disturbance type	Maximum disturbance area (hectares)	Reference site identification central peg
Diversions	0.1	395119 7810471
Overburden dumps	6.5	394962 7810703
Topsoil dumps	0.5	395152 7810726
Silt traps	0.1	395226 7810449
Roads/tracks	0.4	N/A
Workshop areas	0.2	395071 7810718
Storage areas	0.2	395000 7810472
Stockpiles	0.5	394964 7810443
Total	**11.5**	
Ned Kelly		
Mine pit	1.2	393571 7785656
Diversions	0.1	393571 7785656
Overburden dumps	3.5	393571 7785656
Topsoil dumps	0.5	393571 7785656
Silt traps	0.1	393571 7785656
Roads/tracks	0.5	N/A
Storage areas	0.1	393571 7785656
Stockpiles	0.5	393571 7785656
Total	**6.5**	
Leichhardt		
Mine pit	3	388884 7749972
Overburden dumps	4.5	388884 7749972
Topsoil dumps	0.5	388884 7749972
Silt traps	0.1	388884 7749972
Roads/tracks	0.5	N/A
Storage areas	0.1	388884 7749972
Stockpiles	0.5	388884 7749972

Disturbance type	Maximum disturbance area (hectares)	Reference site identification central peg
Total	**9.2**	
Warwick Castle		
Mine pit	3	384474 7798403
Diversions	0.3	384718 7798522
Overburden dumps	5.0	384567 7798466
Topsoil dumps	0.2	384639 7798281
Silt traps	0.1	384507 7798724
Roads/tracks	1.0	N/A
Storage areas	0.5	384621 7798382
Total	**10.1**	
Crusader		
Mine pit	5.12	400176 7808076
Diversions and Silt Traps	0.7	400178 7807860
Overburden dumps	8.88	400184 7807924
Topsoil dumps	1.5	400205 7807939
Roads/tracks	1.95	N/A
Workshop and Storage Areas	0.96	400047 7807981
ROM Pad	4.14	400040 7808040
Exploration	3.78	N/A
Water Storage	0.3	400090 7808116
Office and Laydown	0.6	400237 7807834
Box Cut and Underground Portal Infrastructure	0.65	400154 7808051
Escapeway Access	0.02	400429 7807828
Ventilation Shaft	0.05	400330 7807902
Total	**28.62**	
Orphan		
Mine pit	1.2	397696 7811869

Disturbance type	Maximum disturbance area (hectares)	Reference site identification central peg
Overburden dumps	1.5	397839 7811706
Topsoil stockpiles	1	397788 7811933
Silt traps	0.1	397833 7811817
ROM pad	1	397767 7811708
Roads/tracks	0.5	N/A
Workshop areas	0.5	397574 7811862
Total	**5.8**	
Standby		
Mine pit	10	393990 7785560
Overburden dumps	10	393990 7785560
Topsoil stockpiles	2	393990 7785560
Silt trap	0.2	393990 7785560
ROM pad	1	393990 7785560
Roads/tracks	0.5	N/A
Workshop areas	0.25	393990 7785560
Total	**23.95**	
Sparklet		
Mine pit	3	401340 7807300
Overburden dumps	3	401340 7807300
Topsoil stockpiles	0.5	401340 7807300
Silt trap	0.1	401340 7807300
ROM pad	0.25	401340 7807300
Roads/tracks	0.1	N/A
Workshop areas	0.25	401340 7807300
Total	**7.2**	
Borefield		
Gravel excavations	10	391840 7781300

Disturbance type	Maximum disturbance area (hectares)	Reference site identification central peg
Topsoil stockpiles	1	391840 7781300
Gravel stockpiles	1	391840 7781300
Roads/tracks	5	N/A
Total	**17**	
Mount Watson		
Watson pit	21.2	383311 7813699
Waste rock dump	18	383093 7813538
Low grade stockpile	5	383749 7813170
Topsoil dumps	1.5	382715 7813320
Roads/tracks	5	N/A
Workshops	1	384135 7813056
ROM pads	3	383866 7813147
Explosives magazine	0.5	382859 7813242
Turkeys nest dam	0.5	383451 7813678
Sediment dams and drains	1.8	383043 7813291
Helipad	0.2	383859 7813066
Heap leach facility (heap leach pad, launder drains, and associated disturbance)	31.2	384327 7812854
Process water ponds	0.9	384240 7813048
Stormwater pond	9.8	384445 7813206
Clean water diversion drain	1.2	N/A
Total	**101.3**	

Notes:

1. *Disturbance area of Mount Cuthbert depicted in Schedule J – Map 1A (Project Infrastructure Layout – Mount Cuthbert)*

A3 The environmental authority holder must:

(a) install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority;

(b) maintain such measures, plant and equipment in a proper and efficient condition;

(c) operate such measures, plant and equipment in a proper and efficient manner; and

(d) ensure all instruments and devices used for the measurement or monitoring of any parameter under any condition of this environmental authority are properly calibrated.

A4 Except where specified in another condition of this environmental authority, all monitoring data, records, plans, programs and reports required by this environmental authority or related to environmental management of the activities must be:

(a) carried out by an appropriately qualified person;

(b) kept for a period of not less than five (5) years;

(c) provided to the administering authority in the specified format within **ten (10) business days** of a request;

(d) undertaken in accordance with the most recent version of any applicable standard or guideline for the activity; and

(e) any laboratory testing must be undertaken using a laboratory accredited for the method of analysis being used.

Risk management

A5 The environmental authority holder must develop, maintain and implement a risk management system for mining activities which mirrors the content requirement of the Standard for Risk Management (ISO31000:2009), or the latest edition of an Australian standard for risk management, to the extent relevant to environmental management.

Notification of emergencies, incidents and exceptions

A6 The environmental authority holder must notify the administering authority by written notification within **twenty-four (24) hours**, after becoming aware of:

(a) any emergency or incident which results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with the conditions of this environmental authority; or

(b) any monitoring result that indicates an exceedance of any environmental authority release limit.

A7 Within **ten (10) business** days following the initial notification of an emergency or incident, or receipt of monitoring results, whichever is the latter, further written advice must be provided to the administering authority, including the following:

(a) results and interpretation of any samples taken and analysed;

(b) outcomes of actions taken at the time to prevent or minimise unlawful environmental harm; and

(c) proposed actions to prevent a recurrence of the emergency or incident.

Complaints

A8 The environmental authority holder must record all environmental complaints received about the mining activities including:

(a) name, address and contact number for complainant;

(b) time and date of complaint;

(c) reasons for the complaint;

(d) investigations undertaken;

(e) conclusions formed;

(f) actions taken to resolve complaint;

(g) any abatement measures implemented; and

(h) person responsible for resolving the complaint.

A9 The environmental authority holder must, when requested by the administering authority

(a) undertake relevant specified monitoring within a reasonable timeframe nominated or agreed by the administering authority to investigate any complaint of environmental harm; and

(b) provide to the administering authority, the results of the investigation (including an analysis and interpretation of the monitoring results) and abatement measures, where implemented, within **ten (10) business days** of completion of the investigation, or no longer than **ten (10) business days** after the end of the timeframe nominated by the administering authority to undertake the investigation.

Heap leach pads

A10 The environmental authority holder must install and maintain a leak detection system for the heap leach pads.

A11 Contaminants must not be released outside the lined area of the heap leach pads.

A12 Prior to the construction of the heap leach facility at Mount Watson (ML90154), an appropriately qualified person must submit a design report and certify that the proposed liner of the heap leach pad and associated process ponds is chemically compatible with the fluids it will be exposed to, and that the integrity of the liner will be maintained throughout its proposed operational use as a heap leach liner for the life of the facility.

Heap leach operational plan

A13 The environmental authority holder must:

(a) develop and implement a Heap Leach Operational Plan certified by suitably qualified and experienced person;

(b) include in the current and any amended/replacement plan of operations; and

(c) undertake a review of the Heap Leach Operational Plan at a minimum frequency of every three (3) years.

A14 The Heap Leach Operational Plan (as required under condition **A13**) must address as a minimum the following:

(a) regular inspections of the heap leach liner and an assessment of its ability to contain contaminants;

(b) sizing of launders, perimeter drains and containment bunds to prevent the release of contaminants or potentially contaminated waters;

(c) diversion of uncontaminated stormwater away from the heap leach pads and minimising catchment size;

(d) procedures to prevent tears in the liner including but not limited to equipment on the pads, fly rock and the placement of ore;

(e) contingency plans in the event of the release of contaminants;

(f) records of as constructed and design plans, all pipes and infrastructure associated with the heap leach operation; and

(g) procedures to minimise erosion of the heap leach pads and exclude ore from entering the launders and/or perimeter drains.

Third party compliance reporting

A15 The environmental authority holder must:

(a) obtain from an appropriately qualified person a report on compliance with the conditions of this environmental authority, at regular intervals, not exceeding **three (3)- yearly** intervals, from **11 February 2013**;

(b) ensure the third party auditor certifies the independent findings of the audit in the compliance report; and

(c) provide each report to the administering authority within ninety (90) days of its completion.

Storage and handling of flammable, combustible and corrosive liquids

A16 All explosive, hazardous chemicals, corrosive substances, toxic substances, gases and dangerous goods must be stored and handled in accordance with the relevant Australian Standard where such is available.

A17 Flammable and combustible liquids, including petroleum products and associated piping and infrastructure must be stored and handled in accordance with the latest edition of Australian Standard 1940 – *The Storage and Handling of Flammable and Combustible Liquids*.

A18 Notwithstanding the requirements of any Australian Standard, any liquids stored on site that have the potential to cause environmental harm must be stored in or serviced by an effective containment system that is impervious to the materials stored and managed to prevent the release of liquids to waters or land.

A19 All containment systems for chemicals and flammable or combustible liquids must be designed to minimise rainfall collection within the system.

A20 Spillage of any contaminant must be contained and rectified to prevent environmental harm.

Transition to new standards

A21 Where a condition of this environmental authority requires compliance with a standard, policy or guideline published externally to this environmental authority and the standard is amended or changed subsequent to the issue of this environmental authority, the environmental authority holder must:

(a) comply with the amended or changed standard within two (2) years of the amendment or change being made, unless a different period is specified in the amended standard or relevant legislation, or where the amendment or change relates specifically to regulated structures referred to in condition **G3**, the time specified in that condition; and

(b) until compliance with the amended or changed standard, policy or guideline is achieved; continue to remain in compliance with the corresponding provision that was current immediately prior to the relevant amendment or change.

Exploration

A22 All exploration activities carried out on the mining leases must comply with each of the Standard Environmental Conditions contained in the most recent version of the *'Eligibility criteria and standard conditions for exploration and mineral development projects—Version 2'* (ESR/2016/1985).

Cultural heritage

A23 In the carrying out of the mining activity the environmental authority holder must not adversely impact on the cultural heritage values of any place registered on the Queensland Heritage Register.

END OF SCHEDULE A

Schedule B - Air

General

B1 The release of dust or particulate matter, noxious, or offensive odour, or any other airborne contaminant resulting from the mining activities must not cause environmental harm at any sensitive place or commercial place.

B2 The mining activity must not cause exceedance of any of the following levels when measured at any sensitive place or commercial place:

(a) dust deposition of 120 milligrams per square metre per day, averaged over one month, when monitored in accordance with the most recent version of Australian Standard *AS3580.10.1 Methods for sampling and analysis of ambient air—Determination of particulate matter—Deposited matter – Gravimetric method;* and

(b) a concentration of particulate matter with an aerodynamic diameter of less than 10 micrometres (PM_{10}) suspended in the atmosphere of 50 micrograms per cubic metre over a 24-hour averaging time, when monitored in accordance with the most recent version of either:

(i) Australian Standard *AS3580.9.6 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM_{10} high volume sampler with size-selective inlet – Gravimetric method; or*

(ii) Australian Standard *AS3580.9.9 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM_{10} low volume sampler—Gravimetric method.*

(c) concentration of copper with an aerodynamic diameter less than 10 micrometres (PM_{10}) suspended in the atmosphere of 350 micrograms per cubic metre over a one (1) year averaging time, when monitored in accordance with the most recent version of either:

(i) Australian Standard *AS3580.9.6 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM_{10} high volume sampler with size-selective inlet – Gravimetric method; or*

(ii) Australian Standard *AS3580.9.9 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM_{10} low volume sampler—Gravimetric method.*

(d) a concentration of particulate matter with an aerodynamic diameter of less than 2.5 micrometres ($PM_{2.5}$) suspended in the atmosphere of 25 micrograms per cubic metre over a 24-hour averaging time, when monitored in accordance with the most recent version of AS/*NZS3580.9.10 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM (sub)$_{2.5}$(/sub) low volume sampler—Gravimetric method*; and

(e) a concentration of total particulate matter suspended in the atmosphere of 90 micrograms per cubic metre over a **one (1) year** averaging time, when monitored in accordance with the most recent version of *AS/NZS3580.9.3:2003 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—Total suspended particulate matter (TSP)—High volume sampler gravimetric method.*

B3 Samples taken for air quality monitoring specified in this environmental authority must be collected and analysed in accordance with the requirements of the administering authority's latest edition of the *Air Quality Sampling Manual*, or more recent editions or supplements to that document as are published by the administering authority, unless otherwise agreed by the administering authority in writing.

Meteorological monitoring

B4 The environmental authority holder must establish an automatic weather station to continuously measure and record wind speed, wind direction, temperature and rainfall. The automatic weather station must be installed in accordance with the latest edition of the Bureau of Meteorology's guideline: *'Guidelines for the positioning and exposure of meteorological instruments and observing facilities.'*

B5 By **28 February 2023**, the environmental authority holder must establish an automatic weather station on ML 90154 that provides for offsite and real-time data access, and that continuously measures and records wind speed, wind direction. temperature and rainfall. The automatic weather station must be installed in accordance with the latest addition of the Bureau of Meteorology's guideline: *'Guidelines for the siting and exposure of meteorological instruments and observing facilities.'*

END OF SCHEDULE B

Schedule C - Water

Release to waters

C1 Contaminants that will, or have the potential to cause environmental harm must not be released directly or indirectly to any waters except as permitted under the conditions of this environmental authority.

C2 The release of contaminants to waters must only occur from the release points specified in **Schedule C - Table 1.**

C3 The release of contaminants to waters in accordance with condition **C2** must not exceed the release limits stated in **Schedule C - Table 2** when measured at the release monitoring points specified in **Schedule C - Table 1** for each quality characteristic.

C4 The release of contaminants to waters from the release points must be monitored at the locations and frequency specified in **Schedule C - Table 1** for each quality characteristics specified in **Schedule C - Table 2**.

C4A For interpretive purposes, releases of water from sediment dams must be monitored at the locations and frequency specified in **Schedule C – Table 1A** for each quality characteristics specified in **Schedule C - Table 2**.

C5 The holder must ensure a stream flow gauging station/s is installed, operated and maintained to determine and record stream flows at the locations and flow recording frequency specified in **Schedule C - Table 3** for any receiving water into which a release occurs.

C6 The daily quantity of waters released from each release point specified in **Schedule C - Table 1** must be measured and recorded.

C7 Notwithstanding any other condition of this environmental authority, the release of contaminants to waters in accordance with condition **C2** must only take place during periods of natural flow events specified as minimum flow in **Schedule C - Table 3** for the contaminant release point(s) specified in **Schedule C - Table 1**.

C8 At the time of release the flow rate in the receiving water must be at least twenty (20) times the rate at which contaminated waters are released.

C9 In the event that water in Stormwater Dam 2, Crusader Pit and Mount Watson Stormwater Pond meets trigger levels as specified in **Schedule C - Table 2,** the environmental authority holder may release during a period of natural creek flow.

C10 Releases to waters must be undertaken so as not to cause erosion of the bed and banks of the receiving waters, or cause a material build-up of sediment in such waters.

C11 The environmental authority holder must take all reasonable and practicable measures to install all weather access and a safe sampling location at the authorised release points, and take reasonable action to provide all weather access to the receiving environment and background monitoring locations defined in **Schedule C – Table 1**.

*Note: the administering authority will take into consideration any extenuating circumstances prior to determining an appropriate enforcement response in the event condition **C11** is contravened due to a temporary lack of safe or practical access*

Receiving waters contaminant levels

C12 The quality of the receiving waters must be monitored at the locations and frequency specified in **Schedule C - Table 1** for each quality characteristic stated in **Schedule C - Table 2**.

C13 If quality characteristics of the receiving water at any of the downstream monitoring points specified in **Schedule C – Table 1** exceed any of the trigger levels specified in **Schedule C - Table 2** during a release event, the environmental authority holder must compare the downstream results to the applicable upstream background monitoring site and:

(a) where the downstream result is the same or a lower value than the upstream background value for the quality characteristic then no further action is to be taken; or

(b) where the downstream result measured at the monitoring point is greater than the contaminant concentration measured at the applicable upstream background monitoring site:

(i) complete an investigation in accordance with the ANZECC (2000) methodology into the potential for environmental harm and provide a written report to the administering authority within 3 months, outlining:

(ii) details of the investigations carried out; and

(iii) actions taken to prevent environmental harm.

*Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with **C13 (b)** of this condition, no further reporting is required for subsequent trigger events for that quality characteristic within the investigation period.*

C14 If an exceedance in accordance with condition **C13** is identified, the holder of the authority must notify the administering authority within 14 days of receiving the result.

Schedule C - Table 1 (Contaminant release points, upstream background monitoring points and downstream receiving water monitoring points, receiving waters description and monitoring frequency)

Monitoring point	Northing GDA94 MGA Zone 54	Easting GDA94 MGA Zone 54	Contaminant source and location	Receiving waters description	Monitoring frequency
Release points[1]					
Release point 1	7788596	386831	Release from Stormwater Dam 2 spillway	Ephemeral creek	Daily during release (the first sample must be taken within 2 hours of commencement of release).
Release point 2	7807818	400270	Release from Crusader Pit	Ephemeral creek	
Release point 3	7813395	384554	Release from Mount Watson Stormwater Pond spillway	Ephemeral creek	
Reference sites **Upstream background monitoring points**					
US1 – US Mount Cuthbert	7790019	386431	-	Ephemeral creek	Upon commencement of release and thereafter weekly during release. Upon commencement of flow of river/creek and weekly thereafter whilst river/creek is flowing.
US2 – US Mount Cuthbert	7791535	386567		Ephemeral creek	
RC3 – US Mount Cuthbert	7790315	386499		Ephemeral creek	
MW1 - Reference Site Mount Watson	7810181	387358		Ephemeral creek	
MW2 – Reference Site Mount Watson	7811905	386238		Ephemeral creek	
MW6 – Reference Site Mount Watson	7812901	380717		Ephemeral creek	
CUS – Reference Site Crusader	7807345	398755		Ephemeral creek	

Monitoring point	Northing GDA94 MGA Zone 54	Easting GDA94 MGA Zone 54	Contaminant source and location	Receiving waters description	Monitoring frequency
CUS2 – Reference Site Crusader	7806840	398510		Ephemeral creek	
CUS3 – Reference Site Crusader	7807830	400290	-	Ephemeral creek	
Compliance sites **Downstream monitoring points[2]**					
RC1 – DS Mount Cuthbert	7789489	386986	-	Ephemeral creek (may need further information on receiving waters and what it is monitoring	Upon commencement of release and there after weekly during release. Upon commencement of flow of river/creek and weekly thereafter whilst river/creek is flowing.
RO1 - Six Mile Creek Dam	7789047	388001		Ephemeral creek	
RO5 – DS Mount Cuthbert	7789373	393540		Ephemeral creek	
RO6 – DS Mount Cuthbert	7789595	392186		Ephemeral creek	
RC6 – DS Mount Cuthbert	7789132	387110		Ephemeral creek	
MW3 – DS Mount Watson	7813939	384605		Ephemeral creek	
MW4 – DS Mount Watson	7813802	382352		Ephemeral creek	
MW5 – DS Mount Watson	7813974	382096		Ephemeral creek	
CDS3 – DS Crusader	7807805	398555		Ephemeral creek	

Monitoring point	Northing GDA94 MGA Zone 54	Easting GDA94 MGA Zone 54	Contaminant source and location	Receiving waters description	Monitoring frequency
CDS4 – DS Crusader	7811510	397976		Ephemeral creek	
CDS5 – DS Crusader	7807682	398690		Ephemeral creek	

Notes:

Reference sites must:

(a) be from the same bio-geographic and climatic region; and

(b) have similar geology, soil types and topography; and

(c) contain a range of habitats similar to those at the test sites; and

(d) have a similar flow regime; and

(e) not be so close to the test sites that any disturbance at the test site also results in a change at the reference site.

1. *Release points are depicted in Schedule J - Map 2A, Map 2B and Map 2C*
2. *Receiving points depicted in Schedule J - Map 3A and Map 3B*

Schedule C - Table 1A (Sediment dam monitoring points and monitoring frequency – sampling for interpretive purposes)

Monitoring point	Northing DA94 MGA Zone 54	Easting GDA94 MGA Zone 54	Contaminant source and location	Receiving waters description	Monitoring frequency
Sediment dam monitoring points[1]					
MW Sed3	7813123	383683	Historical low-Grade stockpile / Mount Watson run of mine pad	Ephemeral unnamed drainage line, first order drainage line, tributary to Eureka Creek, Leichardt River drainage basin (Gulf Basins)	Daily during release
MW Sed4	7813206	383525	Eastern spill point from sediment control system	Ephemeral creek	
MW Sed6	7813550	382844	Western spill point from sediment control system	Ephemeral creek	

Notes:

1. *Monitoring points depicted in **Schedule J - Map 3E***

Schedule C - Table 2 (Contaminant release limits and trigger levels)

Quality characteristic	Contaminant release limit (for metals (mg/L) based on total metal concentrations)	Trigger levels (for metals (µg/L) based on filtered samples)
Electrical conductivity (µS/cm)	1000(1)	435(6)
pH (pH Unit)	6.0 (minimum) 9.0 (maximum)	6.0 (minimum) 7.5 (maximum)
Turbidity (NTU)	NA*	15(3)
Suspended solids (mg/L)	Same as reference(4) data or 50mg/L, whichever is the highest	-
Hardness	Interpretational purposes	
Sulphate (SO_4^{2-}) (mg/L)	1000(5)	80th percentile of the reference(4)
Aluminium	5 (mg/L)(5)	55 (µg/L) (2)
Arsenic	0.5 (mg/L) (5)	13 (µg/L) (2)
Boron	5 (mg/L) (5)	370 (µg/L) (2)
Cadmium	0.01 (mg/L) (5)	0.2 (µg/L) (2)
Chromium	1 (mg/L) (5)	1 (µg/L) (2)
Cobalt	1 (mg/L) (5)	90 (µg/L) (2)
Copper	1 (mg/L) (5)	1.4 (µg/L) (2)
Lead	0.1 (mg/L) (5)	3.4 (µg/L) (2)
Manganese	not sufficiently toxic (5)	1900 (µg/L) (2)
Mercury	0.002 (mg/L) (5)	0.6 (µg/L) (2)
Molybdenum	0.15 (mg/L) (5)	NA*
Nickel	1 (mg/L) (5)	11 (µg/L) (2)
Selenium	0.02 (mg/L) (5)	11 (µg/L) (2)
Zinc	20 (mg/L) (5)	8 (µg/L) (2)

Notes:

**NA – not available, * local trigger and values need to be developed and provided to the administering authority when a suitable number of data sets have been collected, in accordance with ANZECC (2000) methodology*

1. *Contaminant limit based on ANZECC (2000) default trigger values for conductivity (Table 3.3.9)*
2. *Default trigger values – from ANZECC (2000) trigger levels for aquatic ecosystems 95th percentile protection*
3. *Trigger level based on ANZECC (2000) Table 3.3.3*
4. ***Reference sites are defines in Schedule C - Table 1***
5. *Contaminant limit based on ANZECC (2000) stock water quality guideline*
6. *Based on Queensland Water Quality Guidelines (Table G.4)*

Schedule C - Table 3 (Contaminant release during flow events)

Receiving water description	Release point	Gauging station description	Latitude or northing (GDA94)	Longitude or easting (GDA94)	Minimum flow in receiving water required for a release event	Flow recording frequency
Ephemeral creek being Six Mile Creek	Release point 1	Gauging station 1	7788469	386709	During natural creek flow. *For release of contaminants in accordance with the contaminant limits specified in **Schedule C – Table 2**, natural flow must be at least twenty (20) times the rate at which contaminated water is released.*	Continuous (minimum daily)
Ephemeral unnamed creek	Release point 2	Gauging station 2	7807818	400270	During natural creek flow. *For release of contaminants in accordance with the contaminant limits specified in **Schedule C – Table 2**, natural flow must be at least twenty (20) times the rate at which contaminated water is released.*	Daily
Ephemeral creek	Release point 3	Gauging station 3	7813395	384554	During natural creek flow. *For release of contaminants in accordance with the contaminant limits specified in **Schedule C – Table 2**, natural flow must be at least twenty (20) times the rate at which contaminated water is released.*	Daily

Note: Due to the remote location of Crusader, upstream flow will be approximated by daily height levels observed at Gauging station 2 when safe access permits.

Notification of release event

C15 The environmental authority holder must notify the administering authority as soon as practicable and no later than 24 hours after commencing to release mine affected water to the receiving environment. Notification must include the submission of written advice to the administering authority of the following information:

(a) release commencement date/time;

(b) details regarding the compliance of the release with the conditions of **Schedule C – Surface Water** of this environmental authority (that is, contaminant limits, natural flow, discharge volume);

(c) release point/s;

(d) release rate;

(e) release salinity; and

(f) receiving water/s including the natural flow rate.

C16 The environmental authority holder must notify the administering authority as soon as practicable and nominally no later than 24 hours after cessation of a release event of the cessation of a release notified under condition **C15** and within 28 days provide the following information in writing:

(a) release cessation date/time;

(b) natural flow rate in receiving water;

(c) volume of water released;

(d) details regarding the compliance of the release with the conditions **Schedule C – Surface Water** of this environmental authority (i.e. contaminant limits, natural flow, discharge volume);

(e) all in-situ water quality monitoring results; and

(f) any other matters pertinent to the water release event.

*Note: Successive or intermittent releases occurring within 24 hours of the cessation of any individual release can be considered part of a single release event and do not require individual notification for the purpose of compliance with conditions **C15** and **C16**, provided the relevant details of the release are included within the notification provided in accordance with conditions **C15** and **C16**.*

Stream sediment contaminant levels

C17 Sediment quality of receiving waters and upstream background reference waters must be monitored twice a year (once at the end of the wet season and once at the end of the dry season) at the monitoring locations defined in **Schedule C - Table 1** and **Schedule C - Table 1A** and for the parameters defined in **Schedule C - Table 4.**

C18 If quality characteristics of sediment at any of the downstream monitoring points specified in **Schedule C – Table 1** exceed any of the trigger levels specified in **Schedule C – Table 4** during a release event, the environmental authority holder must compare the downstream results to the applicable upstream background reference site and:

(a) where the downstream result is the same or a lower value than the upstream background reference value for the quality characteristic then no further action is to be taken; or

(b) where the downstream result measured at the monitoring point is greater than the contaminant concentration measured at the applicable upstream background monitoring site:

(i) complete an investigation in accordance with the ANZECC (2000) methodology into the potential for environmental harm and provide a written report to the administering authority within 3 months, outlining:

(ii) details of the investigations carried out; and

(iii) actions taken to prevent environmental harm.

*Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with **C18 (b)** of this condition, no further reporting is required for subsequent trigger events for that quality characteristic within the investigation period.*

C19 If an exceedance in accordance with condition **C18** is identified, the holder of the authority must notify the administering authority within 14 days of receiving the result.

C20 The release of contaminants to water must not result in an exceedance of sediment contaminant limits stated in **Schedule C - Table 4** when measured at the monitoring points specified in **Schedule C - Table 1** or **Schedule C – Table 5** for each quality characteristic.

Schedule C - Table 4 (Stream sediment trigger and contaminant levels)

Parameter	Unit	Trigger level	Contaminant limit
Arsenic	mg/kg	Reference value(1) or 20(2), whichever is higher.	70(3) or twice the reference value(1), whichever is higher
Boron	mg/kg	Reference value(1)	Twice the reference value(1)
Cadmium	mg/kg	Reference value(1) or 1.5(2), whichever is higher.	10(3) or twice the reference value(1), whichever is higher
Chromium	mg/kg	Reference value(1) or 80(2), whichever is higher.	370(3) or twice the reference value(1), whichever is higher.
Cobalt	mg/kg	Reference value (1)	Twice the reference value(1)
Copper	mg/kg	Reference value (1) or 65(2), whichever is higher.	270(3) or twice the reference value(1), whichever is higher.
Lead	mg/kg	Reference value(1) or 50(2), whichever is higher.	220(3) or twice the reference value(1), whichever is higher.
Manganese	mg/kg	Reference value (1)	Twice the reference value(1)
Mercury	mg/kg	Reference value(1) or 0.15(2), whichever is higher.	1(3) or twice the reference value(1), whichever is higher.
Molybdenum	mg/kg	Reference value (1)	Twice the reference value(1)
Nickel	mg/kg	Reference value(1) or 21(2), whichever is higher.	52(3) or twice the reference value(1), whichever is higher.
Selenium	mg/kg	Reference value(1)	Twice the reference value(1)
Zinc	mg/kg	Reference value(1) or 200(2) or, whichever is higher.	410(3) or twice the reference value(1), whichever is higher.

1. *Reference sites are defined in **Schedule C - Table 1.***
2. *ANZECC (2000) Interim Sediment Quality Guidelines – low values based on total sediments*
3. *ANZECC (2000) Interim Sediment Quality Guidelines – high values based on total sediments*

Haul road dust suppression

C21 Water from Satellite Pits[1] may be used for dust suppression and stock watering to the area defined as the Mount Watson / Mount Cuthbert Haul Road and the Crusader Haul Road identified in Schedule J – Map 3D, where water quality in Satellite Pits does not exceed on-site water storage quality contaminant limits defined in **Schedule C - Table 7**.

[1] *Satellite Pit water is defined as water from Warwick Castle Pit, Crusader Pit, Orphan Pit, Mount Watson Pit and Dobbyn Pit as described in Schedule C- Table 6 (Water Storage Monitoring)*

Haul road receiving waters

C22 Receiving waters affected by the release of Satellite Pit Water for dust suppression along Mount Watson / Mount Cuthbert Haul Road and Crusader Haul Road must be monitored at the locations and frequencies defined in **Schedule C - Table 5.**

Schedule C - Table 5 (Haul road dust suppression receiving waters and monitoring frequency)

Monitoring point[1]	Northing GDA94 MGA Zone 54	Easting GDA94 MGA Zone 54	Receiving waters description	Monitoring frequency
Hare creek crossing downstream	7807283	387955	Ephemeral creek	If Satellite Pit water is being used for dust suppression of the Crusader Haul Road and Mount Watson / Mount Cuthbert Haul Road, monitoring must occur upon commencement of flow of the river/creek and weekly thereafter whilst river/creek is flowing.
St Pauls creek crossing downstream	7801145	386339	Ephemeral creek	
Warwick Castle crossing downstream	7797811	386079	Ephemeral creek	
MW1 – Downstream	7810302	387556	Ephemeral creek	
MW2 – Downstream	7811980	386245	Ephemeral creek	
Crusader 2 - Downstream	7807433	398729	Ephemeral creek	
Coppermine Creek 2 - Downstream	7803259	394991	Ephemeral creek	
Coppermine Creek 3- Downstream	7800941	393955	Ephemeral creek	
Crusader 4 - Downstream	7796299	390708	Ephemeral creek	
Hare creek crossing reference[2]	7807207	387617	Ephemeral creek	
St Pauls creek crossing reference[2]	7800919	386085	Ephemeral creek	
Warwick Castle crossing reference[2]	7797775	386154	Ephemeral creek	
Crusader 1 - Upstream	7807100	398680	Ephemeral creek	
Coppermine Creek 1- Upstream	7803064	395153	Ephemeral creek	
Coppermine Creek 4 - Upstream	7800934	393301	Ephemeral creek	
Crusader 3 - Upstream	7795950	390514	Ephemeral creek	

1. *Monitoring points depicted in Schedule J –Map 3C and Schedule J –Map 3D*
2. *Reference sites are defined in Schedule C – Table 1.*

Haul road receiving waters contaminant levels

C23 If quality characteristics of the waters affected by the release of Satellite Pit Water for dust suppression along Mount Watson/ Mount Cuthbert Haul Road and Crusader Haul Road, when monitored at the locations specified in **Schedule C – Table 5**, exceed any of the trigger levels specified in **Schedule C – Table 2**, then the environmental authority holder must compare the downstream results to the applicable upstream background monitoring sites and:

(a) where the downstream result is the same or a lower value than the applicable upstream background site for the quality characteristic then no further action is to be taken; or

(b) where the downstream result measured at the monitoring point is greater than the contaminant concentration measured at the applicable upstream background monitoring site:

(i) complete an investigation in accordance with the ANZECC (2000) methodology into the potential for environmental harm and provide a written report to the administering authority within 3 months, outlining:

(ii) details of the investigations carried out; and

(iii) actions taken to prevent environmental harm.

*Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with condition **C23 (b)** of this condition, no further reporting is required for subsequent trigger events for that quality characteristic within the investigation period.*

C24 If an exceedance in accordance with condition **C23** is identified, the holder of the authority must notify the administering authority within 14 days of receiving the result.

C25 Receiving waters affected by the release of Satellite Pit Water for dust suppression from along Mount Watson / Mount Cuthbert Haul Road and Crusader Haul Road must not exceed the contaminant limits defined in **Schedule C - Table 2**.

Haul road stream sediment contaminant levels

C26 Sediment quality of reference waters and receiving waters affected by the release of Satellite Pit water for dust suppression along the Mount Watson / Mount Cuthbert Haul Road and Crusader Haul Road must be monitored twice a year (once at the end of the wet season and once at the end of the dry season) at the monitoring locations defined in **Schedule C – Table 5** and for the parameters defined in **Schedule C – Table 4**.

C27 If quality characteristics of the sediments within receiving waters affected by the release of Satellite Pit Water for dust suppression along Mount Watson/ Mount Cuthbert Haul Road and Crusader Haul Road, when monitored at the locations specified in **Schedule C – Table 5**, exceed any of the trigger levels specified in **Schedule C – Table 4**, then the environmental authority holder must compare the downstream results to the applicable upstream background monitoring sites and:

(a) where the downstream result is the same or a lower value than the applicable upstream background monitoring site for the quality characteristic then no further action is to be taken; or

(b) where the downstream result measured at the monitoring point is greater than the contaminant concentration measured at the applicable upstream background monitoring site:

(i) complete an investigation in accordance with the ANZECC (2000) methodology into the potential for environmental harm and provide a written report to the administering authority within 3 months, outlining:

i. details of the investigations carried out; and
ii. actions taken to prevent environmental harm.

*Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with condition **C27 (b)** of this condition, no further reporting is required for subsequent trigger events for that quality characteristic within the investigation period.*

C28 If an exceedance in accordance with condition **C27** is identified, the holder of the authority must notify the administering authority within 14 days of receiving the result.

Receiving environment monitoring program (REMP)

C29 The environmental authority holder must develop and implement a REMP to monitor, identify and describe any adverse impacts to surface water environmental values, quality and flows due to the authorised mining activity. This must include monitoring the effects of the mine on the receiving environment periodically (under natural flow conditions) and while mine affected water is being discharged from the site. For the purposes of the REMP, the receiving environment is the waters of the Leichhardt River catchment, and connected or surrounding waterways within five (5) kilometres downstream of the release. The REMP should encompass any sensitive receiving waters or environmental values downstream of the authorised mining activity that will potentially be directly affected by an authorised release of mine affected water.

C30 A REMP Design Document that addresses the requirements of the REMP must be prepared and made available to the administering authority upon request.

C31 A report outlining the findings of the REMP, including all monitoring results and interpretations must be prepared annually and made available on request to the administrating authority. This must include an assessment of background reference water quality, the condition of downstream water quality compared against water quality objectives, and the suitability of current discharge limits to protect downstream environmental values.

Monitoring of water storage quality

C32 Water storages stated in **Schedule C - Table 6** must be monitored for the water quality characteristics specified in **Schedule C - Table 7** at the monitoring locations and at the monitoring frequency specified in **Schedule C - Table 6**.

C33 In the event that waters storages defined in **Schedule C - Table 6** exceed the contaminant limits defined in **Schedule C - Table 7**, the holder of the environmental authority must implement measures to prevent access to waters by all livestock and minimise access by native fauna.

Schedule C - Table 6 (Water storage monitoring)

Water storage description	Latitude or northing (GDA94)	Longitude or easting (GDA94)	Monitoring location	Frequency of monitoring
PLS Pond (High hazard dam)	7788816	0386561	Within PLS Pond	Annually, March
ILS Pond (High hazard dam)	7788790	0386505	Within ILS Pond	Annually, March
Raffinate Pond (High hazard dam)	7788845	0386619	Within Raffinate Pond	Annually, March
Stormwater Dam (High hazard dam)	7788727	0386584	Within Stormwater Dam	Annually, March
Stormwater Dam 2 (High hazard dam)	7788603	386712	Within Stormwater Dam 2	Annually, March
Mount Watson PLS Pond	7813005	384252	Within PLS Pond	Annually, March
Mount Watson ILS Pond	7813048	384241	Within ILS Pond	Annually, March
Mount Watson Raffinate Pond	7813090	384230	Within Raffinate Pond	Annually, March
Mount Watson Stormwater Pond	7813179	384512	Within Stormwater Pond	Annually, March
Mount Cuthbert Pit	7789383	0386456	Within Mount Cuthbert Pit	Monthly
Dobbyn Pit	7810602	0395117	Within Dobbyn Pit	Monthly
Warwick Castle Pit	7798439	0384467	Within Warwick Castle Pit	Monthly
Crusader Pit	7808043	0400162	Within Crusader Pit	Monthly
Water storage	7808116	400090	Within Crusader turkey nest water storage	Monthly
Orphan Pit	7811868	0397717	Within Orphan Pit	Monthly
Mount Watson Pit	N/A	N/A	Within Mount Watson Pit	Monthly

*Note: Water storage monitoring points depicted in **Schedule J – Map 4A** and **Map 4B**.*

Schedule C - Table 7 (Onsite water storage contaminant limits)

Quality characteristic	Test value	Contaminant limit
pH (pH unit)	Range	Greater than 4, less than 9[2]
EC (µS/cm)	Maximum	5970[1]
Sulphate (mg/L)	Maximum	1000[1]
Boron(mg/L)	Maximum	5[1]
Aluminium (mg/L)	Maximum	5[1]
Arsenic (mg/L)	Maximum	0.5[1]
Cadmium (mg/L)	Maximum	0.01[1]
Cobalt (mg/L)	Maximum	1[1]
Copper (mg/L)	Maximum	1[1]
Lead (mg/L)	Maximum	0.1[1]
Manganese (mg/L)	Maximum	3.6[1]
Nickel (mg/L)	Maximum	1[1]
Zinc (mg/L)	Maximum	20[1]

Notes: Total measurements (unfiltered) must be taken and analysed

1. *Contaminant limit based on ANZECC & ARMCANZ (2000) stock water quality guidelines.*
2. *Page 4.2-15 of ANZECC & ARMCANZ (2000) "Soil and animal health will not generally be affected by water with pH in the range of 4–9".*

C34 By 1 July 2018, the environmental authority holder must dewater the Mount Cuthbert Pit to 186.344m AHD (m RL).

C35 The environmental authority holder must take action to reduce the Mount Cuthbert pit water level when the level reaches 221.344m AHD (m RL).

C36 From **1 July 2018**, the Mount Cuthbert pit water level must not exceed 239.344m AHD (m RL).

Mount Cuthbert Pit operational plan

C37 The environmental authority holder must:

(a) develop and implement a Mount Cuthbert Pit Operational Plan to prevent any contaminated waters from recharging from the Mount Cuthbert Pit into the receiving environment;

(b) address, as a minimum, the following:

(i) diversion of uncontaminated stormwater away from the Mount Cuthbert Pit and minimising catchment size;

(ii) monitoring of groundwater/water levels surrounding and within the Mount Cuthbert Pit; and

(iii) contingency plans to prevent the release of contaminated waters from the Mount Cuthbert Pit into the receiving environment, particularly groundwater;

(iv) undertake a review of the Mount Cuthbert Pit Operational Plan at a minimum frequency of every three (3) years; and

(v) provide the Mount Cuthbert Pit Operational Plan to the administering authority upon request.

Water monitoring reporting

C38 The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the administering authority in the specified format when requested:

(a) the date on which the sample was taken;

(b) the time at which the sample was taken;

(c) the monitoring point at which the sample was taken;

(d) the measured or estimated daily quantity of the contaminants released from all release points;

(e) the release flow rate at the time of sampling for each release point;

(f) the results of all monitoring and details of any exceedances with the conditions of this environmental authority; and

(g) water quality monitoring data must be provided to the administering authority in the specified electronic format upon request.

C39 The release of contaminants directly or indirectly to waters:

(a) must not produce any visible discolouration of receiving waters; or

(b) must not produce any slick or other visible or odorous evidence of oil, grease or petrochemicals nor contain visible floating oil, grease, scum, litter or other objectionable matter.

Water management plan

C40 A Water Management Plan must be developed by an appropriately qualified person and implemented no later than **22 August 2016.**

Saline, acid rock and metalliferous drainage

C41 The environmental authority holder must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of saline, acid rock and/or metalliferous mine drainage.

Stormwater, sediment and erosion controls

C42 An Erosion and Sediment Control Plan must be developed by an appropriately qualified person and implemented for all stages of the mining activities on the site to prevent or minimise erosion and the release of sediment to receiving waters and the contamination of stormwater.

C43 Erosion protection measures and sediment control measures must be implemented and maintained to minimise erosion and the release of sediment and contamination of storm water.

Sewage effluent

C44 All effluent released from the treatment plant must be monitored at the frequency and for the parameters specified in **Schedule C - Table 10**.

Schedule C - Table 10 (Sewage effluent quality targets for dust suppression and irrigation)

Quality characteristics	Release limit	Units	Limit type	Monitoring frequency
pH	6.5- 8	pH	Range	Quarterly
Faecal Coliforms, based on the average of a minimum of five samples collected	1000	Colonies per 100ml	Max	Quarterly
5 day Biochemical Oxygen Demand (BOD)	20	mg/L	Max	Quarterly
Total Suspended Solids	30	mg/L	Max	Quarterly

C45 Sewage effluent must not exceed sewage effluent release limits defined in **Schedule C - Table 10**.

C46 Sewage effluent used for dust suppression or irrigation must not cause spray drift or over spray to any sensitive or commercial place, and must not be applied at a rate that causes pooling, ponding and/or runoff of any effluent irrigated.

C47 Sewage effluent from sewage treatment facilities must be reused or evaporated and must not be released from the sewage treatment plant to any waterway or drainage line.

END OF SCHEDULE C

Schedule D - Noise and vibration

Noise and vibration nuisance

D1 Noise and vibration from the mining activity must not cause an environmental nuisance, at any sensitive or commercial place.

D2 Noise from the mining activity must not exceed the levels identified in **Table D1 (Noise limits)** at any sensitive place or commercial place.

Table D1 (Noise limits)

Noise level measured in dB(A)	Monday to Saturday			Sunday and Public Holidays		
	7am–6pm	6pm–10pm	10pm–7am	9am–6pm	6pm–10pm	10pm–9am
	Noise measured a sensitive place					
$L_{Aeq\ adj,\ 1\ hr}$	BG + 5	BG + 3	BG + 0	BG + 5	BG + 3	BG + 0
Max $L_{pA,\ 15\ min}$	N/A	N/A	47	N/A	N/A	47
	Noise measured at a commercial place					
$L_{Aeq\ adj,\ 1\ hr}$	BG + 8	BG + 5	BG + 5	BG + 8	BG + 5	BG + 5

Table D1 Notes:

1. All monitoring devices must be correctly calibrated and maintained according to the manufacturer's instruction manual.
2. Any monitoring must be in accordance with the most recent version of the administering authority's *Noise Measurement Manual.*
3. Any monitoring of noise emissions from the activity must be undertaken when the activity is in operation.
4. Monitoring location(s) must be relevant to the matter(s) under the investigation.
5. All monitoring must be performed by an appropriately qualified person.
6. Monitoring must include:
    a. $L_{Aeq,\ adj,\ 1hr}$;
    b. Max L_{pA}, for the purpose of protecting from sleep disturbance in accordance with the WHO Guideline for Community Noise;
    c. Background noise (BG) as $L_{A90,\ adj,\ T}$;
    d. The level and frequency of occurrence of impulsive or tonal noise;
    e. Atmospheric conditions including wind speed and direction;
    f. Effects due to extraneous factors such as traffic noise; and
    g. Location, date and time of recording.

Blasting at Crusader mine area

D3 Blasting must not cause the limits prescribed in **Table D2 (Blasting noise and vibration limits)** to be exceeded at any sensitive place or commercial place.

Table D2 (Blasting noise and vibration limits)

Blasting noise and vibration limits	Sensitive place and commercial place limits	
	7am to 6pm	6pm to 7am
Airblast overpressure	115 dB (Linear) Peak for 9 out of 10 consecutive blasts initiated and not greater than 120 dB (Linear) Peak at any time	115 dB (Linear) Peak
Ground vibration peak particle velocity	5 mm/second peak particle velocity for 9 out of 10 consecutive blasts and not greater than 10 mm/second peak particle velocity at any time	2 mm/second peak

D4 All monitoring of noise emissions from the activity must be undertaken in accordance with the most recent version of Queensland Government's '*Noise Measurement Manual'* (ESR/2016/2195), the relevant Australian Standard and the Environmental Protection Regulation 2019 (Chapter 5, Part 4).

END OF SCHEDULE D

Schedule E - Waste

Storage and disposal of tyres

E1 Storage and disposal of scrap tyres resulting from the mining activities authorised under this environmental authority must be undertaken in accordance with the Operational Policy '*Disposal and storage of scrap tyres at mine sites* (EM729)', and any updates made to the document from time to time.

E2 The environmental authority holder may burn vegetation cleared in the course of carrying out extraction activities provided the activity does not cause environmental harm at any sensitive place or commercial place.

Waste management

E3 The environmental authority holder must develop, implement and maintain a Waste Management Plan. The plan must include a program for safe recycling or disposal of all wastes; a program for the disposal procedure for hazardous wastes, and re-using and recycling where possible.

E4 Unless otherwise permitted by the conditions of this environmental authority or with prior approval from the administering authority and in accordance with a relevant standard operating procedure, waste must not be burnt.

Regulated waste

E5 Regulated waste, other than that authorised to be disposed of on site under this authority, must be removed from the site that is over 250kg in weight, must be transported by a person who holds a current authority to transport such wastes to a facility that is lawfully able to accept the waste under the provisions of the *Environmental Protection Act 1994.*

General waste disposal

E6 General waste must only be disposed of into the waste disposal trench facility of ML90090 as identified in **Schedule J, Map 1A (Project Infrastructure Layout – Mount Cuthbert)**, and be in accordance with the Waste Management Plan under condition **E3**.

E7 The environmental authority holder must not cause, allow or permit any waste generated outside the mine to be received at the mine for storage, treatment, processing or disposal.

END OF SCHEDULE E

Schedule F - Land

F1 Land disturbed by mining must be rehabilitated in accordance with the approved PRCP schedule for this environmental authority.

F2 Topsoil and subsoils must be stripped separately and stockpiled ahead of mining and used in rehabilitation.

F3 When topsoil is stored in stockpiles it should be in a manner that ensures stability. Measures must include:

(a) vegetating stockpiles;

(b) minimising the height of stockpiles; and

(c) re-using stockpiles as soon as possible.

Environmental offsets

F4 An environmental offset must be made in accordance with the *Environmental Offsets Act 2014* and Queensland Environmental Offsets Policy, where a significant residual impact occurs to a prescribed environmental matter.

F5 Prior to the commencement of any impacts to a prescribed environmental matter for which an environmental offset is required by condition **F4**, an analysis of the estimated maximum extent of impact to each prescribed environmental matter must be provided to the administering authority, consistent with **Schedule F – Table 3** and **Schedule J – Map 6**.

Schedule F – Table 3 (Authorised impacts to prescribed environmental matters)

<table>
<tr><th>Prescribed environmental matter</th><th>Location of prescribed environmental matter (GDA94 – Zone 54)</th><th>Maximum extent of impact</th><th>Environmental offset required</th></tr>
<tr><td colspan="4">Regulated vegetation (riparian)</td></tr>
<tr><td>Regional ecosystem (not in an urban area) within a defined distance from the defining banks of a relevant watercourse – Regional Ecosystems 1.3.6x1a and 1.5.4d</td><td>Two ephemeral order one watercourses located at the top of the catchment area on Mount Watson ML90154.
Coordinates:
<table>
<tr><th></th><th>Easting
(MGA GDA94, Z54)</th><th>Northing
(MGA GDA94, Z54)</th></tr>
<tr><td colspan="3">Creek 1</td></tr>
<tr><td>Upstream extent</td><td>384294.26</td><td>7812606.89</td></tr>
<tr><td>Downstream extent</td><td>384491.57</td><td>7813509.86</td></tr>
<tr><td colspan="3">Creek 2</td></tr>
<tr><td>Upstream extent</td><td>383997.39</td><td>7812846.34</td></tr>
<tr><td>Downstream extent</td><td>383933.18</td><td>7812898.43</td></tr>
</table></td><td>5.5 ha</td><td>Yes</td></tr>
</table>

F6 The analysis required by condition **F5** must be approved by the administering authority before the notice of election, if applicable, is given to the administering authority.

F7 The notice of election for the environmental offset required by condition **F4**, if applicable, must be provided to the administering authority no less than three months before the proposed commencement of the significant residual impacts for which the environmental offset is required.

Infrastructure

F8 All infrastructure, mining equipment and plant erected and/or used for the mining activities, including water storage structures, must be removed from the licensed place prior to surrender, except where agreed in writing by the administering authority.

Waste rock characterisation

F9 Waste rock and spoil disposal must not occur on the site unless:

(a) the environmental authority holder has submitted to the administering authority a waste rock and spoil disposal plan, together with the certification of an appropriately qualified person that the plan has addressed the requirements of condition **F10** in accordance with best practice environmental management; and

(b) the administering authority has approved the plan.

F10 The waste rock and spoil disposal plan required under condition **F9** must include, at a minimum:

(a) effective characterisation of the waste rock and spoil to predict under the proposed placement and disposal strategy the quality of runoff and seepage generated concerning potentially environmentally significant effects including salinity, acidity, alkalinity and dissolved metals, metalloids and non metallic organic substances and nutrients;

(b) a program of progressive sampling and characterisation to identify dispersive and non dispersive spoil, and the salinity, acid and alkali producing potential, metal and nutrient concentrations of waste rock;

(c) a materials balance and disposal plan;

(d) a sampling program to verify encapsulation and/or placement of potentially acid forming and acid forming waste rock;

(e) how often the performance of the plan will be assessed;

(f) the indicators or other criteria on which the performance of the plan will be assessed;

(g) research trials to verify the requirements and methods for decommissioning including the prevention and management of acid mine drainage, nutrient rich drainage, erosion minimisation and establishment or vegetation cover.

F11 PAF material at the Crusader mining area may only be placed at the surface:

(a) at the location identified in **Map 7**; and

(b) within an area fully underlain with a low permeability liner that prevents contaminants migrating to the receiving environment; and

(c) where stormwater and runoff drains directly to the Crusader void.

F12 All PAF material at the Crusader mining area must be disposed of in the underground workings in such a way that prevents the release of contaminants to groundwater and in accordance with the waste rock and spoil disposal plan required in condition **F9** and **F10**.

F13 Subsidence is not authorised to occur as a result of mining activities at the Crusader mining area.

Contaminated lands

F14 Before applying for surrender of a mining lease, the holder must (if applicable) provide to the administering authority a site investigation report under the Act, in relation to any part of the mining lease which has been used for notifiable activities or which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use.

F15 Minimise the potential for contamination of land by hazardous contaminants.

Off-site transport

F16 The environmental authority holder must take all action necessary to prevent any materials discharging from vehicles or other transport infrastructure.

END OF SCHEDULE F

Schedule G – Regulated structures

All dams – location and limits

G1 The construction or operation of any dam containing hazardous waste within the operational land must comply with Schedule G - Table 1.

Schedule G — Table 1 (Size and purpose of dams containing hazardous waste)

Name of dam containing hazardous waste[1]	Maximum surface area of dam (ha)	Maximum volume of dam (m^3)	Maximum depth of dam (m)[2]	Purpose of dam[3]
Mt Cuthbert				
Pregnant Leachate Solution (PLS) Pond	0.2	6,000	3.0	Storage of pregnant leach solution
Intermediate Leachate Solution (ILS) Pond	0.2	6,000	3.0	Storage of intermediate leach solution
Raffinate Pond	0.2	6,000	3.0	Storage of raffinate solution
Stormwater Dam	3.1	150,000	5.0	Storage of storm water runoff from processing area
Stormwater Dam 2	8.0	188,000	11.2	Additional storage capacity for stormwater runoff from processing area.
Mt Watson				
Mount Watson PLS Pond	0.3	6,000	3.0	Storage of pregnant leach solution
Mount Watson ILS Pond	0.3	6,000	3.0	Storage of intermediate leach solution
Mount Watson Raffinate Pond	0.3	6,000	3.0	Storage of raffinate solution
Mount Watson Stormwater Pond	9.8	391,000	8.0	Storage of storm water runoff from heap leach area

1. *The name of the dam containing hazardous waste should refer to the name of the dam e.g. process residue facility and decant dam.*
2. *For dams that do not require a dam wall, input the maximum void depth e.g. where dams are formed by excavating below the land surface or backfilling a residual void.*
3. *Purpose of the dam should outline the designed function, e.g. "the permanent containment of tailings resulting from the extraction of nickel, cobalt and other metals at the XYZ Refinery".*

Location of dam

G2 The location of any dam containing hazardous waste within the licensed place must be located within the polygonal area defined by the co-ordinates defined in **Schedule G - Table 2**.

Schedule G — Table 2 (Location of dams containing hazardous waste)

Name of dam containing hazardous waste[1]	Northing (Zone 54, AMG 84)[2]	Easting (Zone 54, AMG 84)[2]
PLS Pond	7788829 7788854 7788804 7788781	386522 386573 386598 386551
ILS Pond	7788805 7788827 7788777 7788752	386468 386517 386534 386493
Raffinate Pond	7788857 7788881 7788832 7788807	386581 386631 386656 386548
Stormwater Dam	7788664 7788819 7788721 7788595	386474 386641 386695 386548
Stormwater Dam 2	7788593 7788779 7788528 7788378	386438 386787 386926 386586
Mount Watson PLS Pond	7813016 7813036 7812998 7812978	384210 384282 384293 384221
Mount Watson ILS Pond	7813058 7813078 7813039 7813019	384199 384271 384282 384209
Mount Watson Raffinate Pond	7813099 7813119 7813081 7813061	384187 384260 384270 384198
Mount Watson Stormwater Pond	7813427 7813132 7813005 7813118 7813096 7813129 7813265 7813387	384633 384740 384310 384263 384189 384175 384396 384478

1. *The name of the dam containing hazardous waste should refer to the name of the dam e.g. process residue facility and decant dam.*
2. *A minimum of 3 control points is required to constrain the location of all activities associated with the dam containing hazardous waste. Additional infrastructure which forms part of any dam containing hazardous waste may include appurtenant works consisting of tailings discharge pipelines, seepage collection systems, runoff diversion bunds, containment systems, pressure relief wells, decant and recycle water systems.*

G3 The consequence category of any structure must be assessed by a suitably qualified and experienced person in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures* (EM635) at the following times:

(a) prior to the construction of the structure, if it is not an existing structure; or

(b) if it is an existing structure, by **22 August 2016**; or

(c) prior to any change in its purpose or the nature of its stored contents.

G4 A consequence assessment report and certification must be prepared for each structure assessed and the report may include a consequence assessment for more than one structure.

G5 Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*.

Design and construction of a regulated structure

G6 Conditions **G7** to **G11** inclusive do not apply to existing structures.

G7 All regulated structures must be designed by, and constructed under the supervision of, a suitably qualified and experienced person in accordance with the requirements of the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*.

G8 Construction of a regulated structure is prohibited unless the environmental authority holder has submitted to the administering authority and ten (10) business days have elapsed, the following:

(a) a consequence category assessment report, as required by condition **G4**;

(b) the suitably qualified and experienced person certified design and design plan; and

(c) the associated suitably qualified and experienced person certified operating procedures.

G9 Certification must be provided by the suitably qualified and experienced person who oversees the preparation of the design plan in the form set out in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*, and must be recorded in the Regulated Structures register.

G10 Regulated structures must:

(a) be designed and constructed in accordance with and conform to the requirements of the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635);*

(b) be designed and constructed with due consideration given to ensuring that the design integrity would not be compromised on account of:

(i) floodwaters from entering the regulated structure from any watercourse or drainage line; and

(ii) wall failure due to erosion by floodwaters arising from any watercourse or drainage line.

G11 Certification by the suitably qualified and experienced person who supervises the construction must be submitted to the administering authority within 10 days of the completion of construction of the regulated structure, and state that:

(a) the 'as constructed' drawings and specifications meet the original intent of the design plan for that regulated structure; and

(b) construction of the regulated structure is in accordance with the design plan.

Operation of a regulated structure

G12 Operation of a regulated structure must not commence unless the environmental authority holder has submitted to the administering authority:

(a) one paper copy and one electronic copy of the design plan and certification of the 'design plan' in accordance with condition **G9**;

(b) a set of 'as constructed' drawings and specifications;

(c) certification of those 'as constructed drawings and specifications' in accordance with condition **H9**;

(d) where the regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the design storage allowance (DSA) volume across the system, a copy of the certified system design plan; and

(e) a statement that confirms:

(i) The requirements of this authority relating to the construction of the regulated structure have been met;

(ii) The details required under this authority, have been entered into a Register of Regulated Structures; and

(iii) There is a current operational plan for the regulated structures.

G13 For existing structures that are regulated structures:

(a) where the existing structure that is a regulated structure is managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, the environmental authority holder must submit to the administering authority within three (3) months of the commencement of this condition a copy of the certified system design plan including that structure; and

(b) there must be a current operational plan for the existing structures.

G14 Each regulated structure must be maintained and operated, for the duration of its operational life until decommissioned and rehabilitated, in a manner that is consistent with the current operational plan and, if applicable, the current design plan and associated certified 'as constructed' drawings.

Mandatory reporting level

G15 Conditions **G16** to **G19** inclusive only apply to Regulated Structures which have not been certified as low consequence category for 'failure to contain – overtopping'.

G16 The Mandatory Reporting Level (the MRL) specified in **Schedule G – Table 3** must be marked on a regulated structure in such a way that during routine inspections of that structure, it is clearly observable.

G17 The environmental authority holder must, as soon as practical and within forty-eight (48) hours of becoming aware, notify the administering authority when the level of the contents of a regulated structure reaches the MRL.

G18 The environmental authority holder must, immediately on becoming aware that the MRL has been reached, act to prevent the occurrence of any unauthorised discharge from the regulated structure.

G19 The environmental authority holder must record any changes to the MRL in **Schedule G – Table 3** and in the Register of Regulated Structures.

Design storage allowance

G20 The environmental authority holder must assess the performance of each regulated structure or linked containment system over the preceding November to May period based on actual observations of the available storage in each regulated structure or linked containment system taken prior to 1 July of each year.

G21 By **1 November** of each year, storage capacity must be available in each regulated structure (or network of linked containment systems with a shared DSA volume), to meet the Design Storage Allowance (DSA) volume for the structure (or network of linked containment systems), as specified in **Schedule G – Table 3**.

G22 The environmental authority holder must, as soon as possible and within forty-eight (48) hours of becoming aware that the regulated structure (or network of linked containment systems) will not have the available storage to meet the DSA volume on **1 November** of any year, notify the administering authority.

G23 The environmental authority holder must, immediately on becoming aware that a regulated structure (or network of linked containment systems) will not have the available storage to meet the DSA volume on **1 November** of any year, act to prevent the occurrence of any unauthorised discharge from the regulated structure or linked containment systems.

Annual inspection report

G24 Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person no later than **1 November** each year.

G25 At each annual inspection, the condition and adequacy of all components of the regulated structure must be assessed and a suitably qualified and experienced person must prepare an annual inspection report containing details of the assessment and include recommended actions, if applicable, to ensure the integrity of the regulated structure.

G26 The suitably qualified and experienced person who prepared the annual inspection report must certify the report in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*.

G27 The environmental authority holder must within twenty (20) business days of receipt of the annual inspection report, provide to the administering authority:

(a) the recommendations section of the annual inspection report; and

(b) if applicable, any details of any actions being taken in response to those recommendations.

Transfer arrangements

G28 The environmental authority holder must provide a copy of any reports, documentation and certifications prepared under this authority, including but not limited to any Register of Regulated Structures, consequence assessment, design plan and other supporting documentation, to a new holder on transfer of this authority.

Decommissioning and rehabilitation

G29 Regulated structures and structures must not be abandoned. They must be decommissioned and rehabilitated to achieve compliance with conditions addressed under Schedule **F**.

Register of regulated structures

G30 A Register of Regulated Structures must be established and maintained by the environmental authority holder for each regulated structure.

G31 The environmental authority holder must provisionally enter the required information in the Register of Regulated Dams when a design plan for a regulated dam is submitted to the administering authority.

G32 The environmental authority holder must make a final entry of the required information in the Register of Regulated Structures once compliance with condition **G12** and **G13** has been achieved.

G33 The environmental authority holder must ensure that the information contained in the Register of Regulated Structures is current and complete on any given day.

G34 All entries in the Register of Regulated Structures must be approved by the chief executive officer for the holder of this authority, or their delegate, as being accurate and correct.

G35 The environmental authority holder must, at the same time as providing the annual return, supply to the administering authority a copy of the records contained in the Register of Regulated Structures, in the electronic format required by the administering authority.

G36 All existing structures that have not been assessed in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* must be assessed and certified in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* by **22 August 2016.**

Hydraulic performance of regulated structures

G37 Each regulated structure authorised by this environmental authority as specified in **Schedule A – Table A1,** must meet the hydraulic performance criteria listed in **Schedule G – Table 3** for that structure.

Schedule G - Table 3 (Hydraulic performance criteria)

Name of regulated structure	Consequence category	Spillway capacity		Design storage allowance		Mandatory reporting level		Purpose of structure
		Design criteria	mAHD	Design criteria	mAHD	Design Criteria	mAHD	
Mt Cuthbert								
PLS Pond	Significant	1: 100 Year ARI (0.001 AEP)	N/A	1:100 Year ARI 2 month wet season plus process inputs for the 2 month wet season	N/A	1:10 AEP 72 hr storm event	N/A	Storage of pregnant leach solution
ILS Pond								Storage of intermediate leach solution
Raffinate Pond								Storage of raffinate solution
Stormwater Dam			254.0					Storage of storm water runoff from processing area
Stormwater Dam 2 – Combined system (Process water ponds and Stormwater Dam overflow to Stormwater Dam 2)			253.8		(Volume 263ML)		251.2	Additional storage capacity for stormwater runoff from processing area.
Mt Watson								
Mount Watson PLS Pond	TBA[1]	TBA[1]	TBA[1]	TBA[1]	TBA[1]	TBA[1]	TBA[1]	Storage of pregnant leach solution
Mount Watson ILS Pond	TBA[1]	TBA[1]	TBA[1]	TBA[1]	TBA[1]	TBA[1]	TBA[1]	Storage of intermediate leach solution
Mount Watson Raffinate Pond	TBA[1]	TBA[1]	TBA[1]	TBA[1]	TBA[1]	TBA[1]	TBA[1]	Storage of raffinate solution
Mount Watson Stormwater Pond	High	1: 1000 Year ARI (0.001 AEP)	TBA[1]	1:100 Year ARI 2 month wet season plus process inputs for the 2 month wet season	TBA[1]	1:100 AEP 72 hr storm event	TBA[1]	Storage of storm water runoff from heap leach area

1. *TBA – To be provided to the administering authority prior to construction.*

Transitional arrangements

G38 All existing structures that have not been assessed in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Structures (EM635)* must be assessed and certified in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* by **22 August 2016**.

G39 Certification of the transitional assessment required by **G38** must be provided to the administering authority within **ten (10) business days** of completion of the requirements of condition **G38**.

G40 All existing structures identified in **Schedule G – Table 4** must comply with conditions **G42** to **G43** until the assessment and certification required under conditions **G38** and **G39** has been completed, submitted to the administering authority, and an amendment to the environmental authority to include existing structures into **Schedule G – Table 3** has occurred.

G41 The construction and operation of existing regulated structures specified in **Schedule G – Table 4** must comply with **Schedule G – Table 4**.

G42 All existing high hazard dams containing hazardous waste must comply with the *Code of Environmental Compliance for High Hazard Dams Containing Hazardous Waste*.

G43 All low hazard dams containing hazardous waste must comply with the criteria outlined in Appendix B of the *Code of Environmental Compliance for Mining Leases*.

Schedule G – Table 4 (Storage design* criteria for high hazard dams)

Storage type	Design storage allowance** critical wet period	Spillway capacity critical design storm***	Mandatory**** reporting level
Storm Water Dam (Process water ponds overflow to the Stormwater dam) Effective for the period	1:100 Year ARI 2 month wet season plus process inputs for the 2 month wet season	1: 100 Year ARI	1:100 year ARI

** Calculations are to be carried out in accordance with the Site Water Management Guideline in the Technical Guidelines for Environmental Management of Exploration and Mining in Queensland (DME 1995).*

*** The design storage allowance on **1st November** of each year for any regulated dam constructed within the operational land must be sufficient to contain the run-off from the critical wet period - plus the volume of any other inputs to the storage facility during that critical wet period, as part of operations. Such inputs could be tailings, contaminated site waters, process waters, and any other materials.*

**** The critical storm has a duration that produces the peak discharge for the catchment.*

***** The level below spillway crest that can accommodate runoff from a 72 hour storm at the specified AEP, or the wave allowance at the specified AEP - whichever level is lower.*

END OF SCHEDULE G

Schedule H – Groundwater

H1 The environmental authority holder must not release contaminants, directly or indirectly, to groundwater.

H2 Groundwater quality and level must be monitored at the locations and frequencies defined in **Table H1** for parameters identified in **Table H2**.

Table H1 (Groundwater monitoring locations and frequency)

Monitoring point[2]	Easting MGA (GDA94)	Northing MGA (GDA94)	Surface RL[1] (mAHD)	Monitoring frequency
Compliance bores				
MB3[5] – Mount Cuthbert	386660	7788785	255.40	Quarterly
MB4 – Mount Cuthbert	386792	7788928	252.37	
MB5 – Mount Cuthbert	386893	7788603	246.52	
MB6 – Mount Cuthbert	387110	7789132	237.01	
MB7[5] – Mount Cuthbert	386468	7789528	259.17	
MB8[5] – Mount Cuthbert	386574	7789297	260.61	
MB9 – Mount Cuthbert	386986	7789489	239.75	
MB16 – Mount Cuthbert	387017	7788839	242.56	
MB17 – Mount Cuthbert	387166	7788675	250.83	
MB18 – Mount Cuthbert	386907	7788853	243.97	
MB19 – Mount Cuthbert	386885	7788351	256.05	
MB20 – Mount Cuthbert	386818	7789524	247.65	
MB21 – Mount Cuthbert	386904	7789215	253.08	
LMB1 – Mount Watson	382817	7813273	252.76	Monthly
LMB4[3] – Mount Watson	384262	7813113	259.64	
LMB5 – Mount Watson	384581	7813856	250.24	
LMB6 – Mount Watson	384710	7812760	262.76	
LMB7 – Mount Watson	384157	7813173	265.96	
LMB8 – Mount Watson	384553	7813414	253.88	
CRUMB06 – Crusader (alluvial / GDE)	TBD	TBD	TBD	Monthly
CRUMB07 – Crusader (alluvial / GDE)	TBD	TBD	TBD	
CRUMB08 – Crusader (alluvial / GDE)	TBD	TBD	TBD	
CRUMB09 – Crusader (alluvial / GDE)	TBD	TBD	TBD	
CRUMB10 – Crusader (Nested deep & alluvial)	TBD	TBD	TBD	
CRUMB11 – Crusader (Nested deep & alluvial)	TBD	TBD	TBD	
CRUMB12 – Crusader	400154	7808400	TBD	
CRUMB13 – Crusader	399813	7808241	TBD	
CRUMB14 – Crusader	399872	7808117	TBD	
CRUMB15 – Crusader	400015	7807961	TBD	
Observation bores				
LRPB1 – Mount Cuthbert	391471	7781036	161.67	Yearly
RN118985 – Mount Cuthbert	390677	7781559	168.71	
CRUMB01 – Crusader	400821.6	7807722	192.78	Monthly
CRUMB02 – Crusader	400467.3	7808176	186.85	
CRUMB03 – Crusader	399885	7808512	166.898	
CRUMB04 – Crusader	399944.5	7807812	182.63	
CRUMB05 – Crusader	399245.4	7807706	153.41	
Reference bores[4]				
MB10 – Mount Cuthbert	386425	7789972	248.16	Quarterly
MB11 – Mount Cuthbert	386872	7787707	251.93	
LMB2 – Mount Watson	382327	7813903	244.02	Monthly
LMB3 – Mount Watson	383442	7814173	281.40	
CRUMB16 – Crusader	400212	7807763	TBD	
CRUMB17 – Crusader	400568	7807977	TBD	
CRUMB18 – Crusader (Nested deep & alluvial / GDE)	TBD	TBD	TBD	

Table H1 *Notes:*

1. *RL measurement to be taken from top of bore casing.*
2. *Monitoring points depicted in Schedule J – Map 5A and Map 5B.*
3. *Monitoring bore lies within footprint of Mount Watson Heap Leach Facility and will be decommissioned. Monthly monitoring will continue until bore is decommissioned.*
4. *Reference sites are defined in Schedule C – Table 1.*
5. *Condition C36 and C38 do not apply to monitoring bores MB7 and MB8 until* ***15 December 2026*** *when site specific limits are to be agreed to by the department through an amendment application.*

H3 All Crusader monitoring bores specified in **Table H1** must be installed and the location and surface RL details provided to the administering authority prior to the commencement of underground mining activities.

OFFICIAL

Table H2 (Groundwater contaminant limits and trigger levels)

Quality characteristic	Contaminant limit (mg/L)[6]	Contaminant limit - Crusader compliance bores (µg/L)[6]	Trigger levels (µg/L)[6]
Electrical conductivity (µS/cm)	1000[(1)]	250[(5)]	250[(5)]
pH (pH Unit)	6.0 (minimum) 9.0 (maximum)	6.0 (minimum) 7.5 (maximum)	6.0 (minimum) 7.5 (maximum)
Standing water level (mAHD)	(interpretational purposes)	(interpretational purposes)	(interpretational purposes)
Chloride (mg/L)	(interpretational purposes)	(interpretational purposes)	(interpretational purposes)
Sulphate (SO_4^{2-}) (mg/L)	1000[(4)]	80th percentile of reference [(8)]	80th percentile of the reference[(3)]
Aluminium	5 (mg/L) [(4)]	55 (µg/L) [(7)]	55 (µg/L) [(2)]
Arsenic	0.5 (mg/L) [(4)]	13 (µg/L) [(7)]	13 (µg/L) [(2)]
Boron	5 (mg/L) [(4)]	940 (µg/L) [(7)]	370 (µg/L) [(2)]
Cadmium	0.01 (mg/L) [(4)]	0.2 (µg/L) [(7)]	0.2 (µg/L) [(2)]
Chromium	1 (mg/L) [(4)]	1 (µg/L) [(7)]	1 (µg/L) [(2)]
Cobalt	1 (mg/L) [(4)]	80th percentile of reference [(8)]	90 (µg/L) [(2)]
Copper	1 (mg/L) [(4)]	1.4 (µg/L) [(7)]	1.4 (µg/L) [(2)]
Lead	0.1 (mg/L) [(4)]	3.4 (µg/L) [(7)]	3.4 (µg/L) [(2)]
Manganese	not sufficiently toxic[(4)]	1900 (µg/L) [(7)]	1900 (µg/L) [(2)]
Mercury	0.002 (mg/L) [(4)]	0.06 (µg/L) [(7)]	0.6 (µg/L) [(2)]
Molybdenum	0.15 (mg/L) [(4)]	80th percentile of reference [(8)]	TBD*
Nickel	1 (mg/L) [(4)]	11 (µg/L) [(7)]	11 (µg/L) [(2)]
Selenium	0.02 (mg/L) [(4)]	5 (µg/L) [(7)]	11 (µg/L) [(2)]
Zinc	20 (mg/L) [(4)]	8 (µg/L) [(7)]	8 (µg/L) [(2)]

*Notes: *TBD – not available, local trigger and values need to be developed before commencement of underground mining activities.*

1. *Contaminant limit based on ANZECC (2000) default trigger values for conductivity (Table 3.3.9)*
2. *Default trigger values – from ANZECC (2000) trigger levels for aquatic ecosystems 95th percentile protection*
3. *Reference sites are defined in **Schedule H - Table H1***
4. *Contaminant limit based on ANZECC (2000) stock water quality guideline*
5. *Based on Queensland Water Quality Guidelines (Table G.4)*
6. *Contaminant limits for metals (mg/L) are based on total metal concentrations, and trigger levels (µg/L) are based on filtered samples – To remove any doubt, the contaminant limits for metals at the Crusader mining area are based on filtered samples*
7. *Contaminant limit based on ANZECC (2018) default trigger values for slightly to moderately disturbed aquatic ecosystems.*
8. *Reference bores are defined in **Table H1**.*

Exceedance investigation – groundwater quality

H4 If quality characteristics of groundwater at a compliance bore specified in **Table H1**, excluding bores CRUMB06 through CRUMB15**,** exceeds any of the groundwater quality trigger levels specified in **Table H2**, the environmental authority holder must compare the compliance monitoring bore results to the relevant reference site and:

(a) if the level of contaminants at the compliance site does not exceed the reference monitoring site data, then no action is to be taken; and

(b) if the level of contaminants at the compliance site is greater than the reference monitoring site data, complete an investigation in accordance with the ANZECC (2000) methodology, into the potential for environmental harm and provide a written report to the administering authority within **ninety (90) days**, outlining:

(i) details of the investigations carried out; and

(ii) actions taken to prevent environmental harm.

*Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with **H4(b)** of this condition, no further reporting is required for subsequent trigger events for that quality characteristic within the investigation period.*

H5 If an exceedance in accordance with condition **H4** is identified, the holder of the authority must notify the administering authority within **ten (10) business days** of receiving the result.

Note: Where an investigation under condition H4(b) is ongoing, no further notification under condition H5 is required for the subsequent exceedances of that quality characteristics until completion of the investigation, unless a materially different trend or new contamination is identified.

H6 Groundwater quality characteristics measured at all the compliance bores specified in **Table H1,** excluding the **Mount Cuthbert** compliance bores**,** must not exceed the corresponding contaminant limit defined in **Table H2.**

H6A Groundwater quality characteristics measured at the **Mount Cuthbert** compliance bores specified in Table H1, must not exceed the corresponding contaminant limit defined in Table H2 on any **three (3) consecutive sampling occasions.**

H6B Underground mining activities at the Crusader mining area must cease where groundwater quality characteristics at bores 'CRUMB12' through 'CRUMB15' identified in **Table H1** exceed the contaminant limits defined in **Table H2** for the Crusader mining area.

H7 The construction, maintenance and management of groundwater bores (including groundwater monitoring bores) must be undertaken in a manner that:

(a) prevents contaminants entering groundwater; and

(b) ensures representative groundwater samples from the target hydrogeological unit.

H8 A bore report must be kept for each monitoring bore at the Crusader mining area which includes:

(a) identification reference number and geographic coordinate location;

(b) construction information including but not limited to depth of bore, depth and length of casing, depth and length of screening and bore sealing details;

(c) lithological strata, stratigraphies and target hydrogeological unit of the bore; and

(d) pre-development standing groundwater level at the time the bore was drilled.

H9 All monitoring and sampling required under the conditions of this environmental authority must be carried out in accordance with the requirements of the latest version of the following documents unless otherwise approved by the administering authority:

(a) '*Monitoring and Sampling Manual: Environmental Protection (Water) Policy 2009'*, Department of Environment and Science, 2018;

(b) '*Groundwater Sampling and Analysis – A Field Guide'* (2009:27 GeoCat#6890.1); and

(c) Australian Standard AS/NZS 5667.11:1998 '*Water quality—Sampling, Part 11: Guidance on sampling of groundwaters'*.

Groundwater Monitoring and Management Program

H10 Before the commencement of underground mining activities at the Crusader mining area, a groundwater monitoring and management program (GMMP) for the Crusader mining area must be developed, documented, implemented and maintained by appropriately qualified persons.

H11 The GMMP required by condition **H10** must, at a minimum:

(a) identify of all environmental values potentially impacted by mining activities;

(b) identify all hydrogeological units potentially impacted by mining activities;

(c) identify all potential sources of contamination to groundwater resultant from mining activities;

(d) ensure that all potential groundwater impacts due to the activity are identified, monitored and mitigated

(e) ensure that adequate groundwater monitoring and data analysis is undertaken to achieve the following objectives:

(i) detect any impacts to groundwater levels due to the mining activities;

(ii) detect any impacts to groundwater quality due to the mining activities;

(iii) determine trends in groundwater quality; and

(f) a description of the groundwater monitoring and data analysis that will be undertaken to determine trends and detect any impacts to groundwater quality and standing water level (SWL);

(g) document groundwater management and monitoring methodologies undertaken for the duration of mining activities;

(h) a hydrogeological groundwater model in accordance with the most recent version of the '*Australian Groundwater Modelling Guidelines'* (2012);

(i) provision of an appropriate quality assurance and quality control program;

(j) include a review process to identify improvements to the GMMP that include addressing any comments provided by the administering authority.

H12 The GMMP must be reviewed on an annual basis by an appropriately qualified person to determine if it continues to meet the requirements stated in condition **H11**.

Groundwater Dependent Ecosystems (GDEs)

H13 The taking of or interference with groundwater must not cause environmental harm to any groundwater dependant ecosystems (GDEs).

H14 A Groundwater Dependent Ecosystem Management Plan (GDEMP) prepared by an appropriately qualified person must be submitted to the administering authority prior to the commencement of underground mining activities at the Crusader mining area.

H15 The GDEMP specified in condition **H14**, and any revision of the GDEMP, must:

(1) be designed to ensure compliance with condition **H13**; and

(2) include a description of all GDEs that have the potential to be impacted by the mining activities at the Crusader mining area that includes, but is not limited to:

(a) baseline conditions for each GDE for all performance criteria; and

(b) vegetation structure, health and composition for each GDE; and

(c) characterisation of vegetation in each GDE; and

(d) permeability of aquifers that support GDEs; and

(e) isotope analysis of vegetation for each GDE; and

(f) identification of root depth for all vegetation types within each GDE; and

(g) minimum standing water level required to sustain the GDE; and

(3) identify:

(a) all GDEs that may be impacted by the mining activities as the Crusader mining area; and

(b) performance criteria for the identified GDEs; and

(c) trigger values that will provide early warning of any impact to GDEs; and

(d) limits that will detect when a GDE is impacted; and

(4) include, and provide justification of:

(a) hydrogeological conceptual modelling , including local scale modelling and consideration of cumulative impacts; and

(b) a site-specific risk assessment; and

(c) past and proposed ongoing monitoring; and

(d) proposed mitigation strategy(s), including corrective action(s) if trigger values and/or limits are reached or exceeded and consideration of cumulative impacts; and

(5) incorporate the findings of the most recent hydrogeological groundwater modelling.

(6) identify where groundwater monitoring bores should be located in order to:

(a) detect the predicted potential drawdown in aquifers; and

(b) detect predicted potential impacts to GDEs; and

(c) provide early warning of potential impacts to GDEs; and

(7) include a monitoring program that is sufficient to detect impacts to GDEs which includes, but is not limited to:

(a) groundwater bore monitoring locations, frequency, aquifers and parameters (including standing water level); and

(b) surface water monitoring locations, frequency and parameters (including stream height); and

(c) reference sites for groundwater and surface water monitoring, including locations, frequency and parameters (and aquifers for groundwater); and

(d) isotope analysis of surface water and groundwater; and

(e) ecological surveying of GDE flora and fauna; and

(f) analysis of satellite remote sensing derived moisture condition in GDEs; and

(8) be updated with the most recent data available.

H16 The GDEMP must be implemented and thereafter reviewed every **twelve (12) months**.

H17 The limits specified in the GDEMP in accordance with condition **H15(3)(d)** must not be exceeded.

H18 If the EA holder detects that a trigger value in the GDEMP has been reached or exceeded, the EA holder must:

(1) notify the administering authority within five business days of becoming aware of the detection; and

(2) submit within **three (3) months** of becoming aware of the detection, any proposed corrective action(s) to the administering authority in writing.

Hydrogeological Groundwater Model Review

H19 The hydrogeological groundwater model required by condition **H11(h)** must:

(a) be reviewed in accordance with the most recent version of the '*Australian Groundwater Modelling Guidelines'* (2012), before the commencement of underground mining activities at the Crusader mining area and thereafter annually, and

(b) include all aquifers potentially impacted by the activity; and

(c) model the full potential impacts caused by the activity (including spatial extent, as well as over the lifetime of the impact); and

(d) be undertaken with sufficient resolution to allow any potential impacts to be identified; and

(e) include sensitivity analysis and uncertainty analysis; and

(f) be updated by an appropriately qualified person to include

(ii) validation and recalibration with all available monitoring data

(iii) additional hydraulic properties for all bores.

H20 Annual groundwater monitoring reports must be prepared and submitted to the administering authority with each annual return, and include the following:

(a) analysis of groundwater chemistry;

(b) the hydro-geological status of all groundwater bores; and

(c) groundwater conditions.

END OF SCHEDULE H

Schedule I - Definitions

Key terms and/or phrases used in this document are defined in this section. Where a term is not defined, the definition in the *Environmental Protection Act 1994*, its regulations or environmental protection policies must be used. If a word remains undefined it has its ordinary meaning.

"20th percentile flow" means the 20th percentile of all daily flow measurements (or estimations) of daily flow over a 10 year period for a particular site. The 20th percentile calculation should only include days where flow has been measured (or estimated), i.e. not dry weather days.

"acceptance criteria" means the measures by which the actions implemented to rehabilitate the land are deemed to be complete. The acceptance criteria indicate the success of the rehabilitation outcome or remediation of areas which have been significantly been disturbed by the mining activities. Acceptance criteria may include information regarding:

(a) vegetation establishment, survival and succession;

(b) vegetation productivity, sustained growth and structure development;

(c) fauna colonisation and habitat development;

(d) ecosystem processes such as soil development and nutrient cycling, and the recolonisation of specific fauna groups such as collembola, mites and termites which are involved in these processes;

(e) microbiological studies including recolonisation by mycorrhizal fungi, microbial biomass and respiration;

(f) effects of various establishment treatments such as deep ripping, topsoil handling, seeding and fertiliser application on vegetation growth and development;

(g) resilience of vegetation to disease, insect attack, drought and fire;

(h) vegetation water use and effects on ground water levels and catchment yields.

"administering authority" means the Department of Environment and Heritage Protection or its successors or predecessors.

"AEP" means annual exceedance probability - being the probability that at least one event as specified will occur in a particular year.

"AHD" means Australian height datum.

"annual inspection report" means an assessment prepared by a suitably qualified and experienced person containing details of the assessment against the most recent consequence assessment report and design plan (or system design plan);

(a) against recommendations contained in previous annual inspections reports;

(b) against recognised dam safety deficiency indicators;

(c) for changes in circumstances potentially leading to a change in consequence category;

(d) for conformance with the conditions of this authority;

(e) for conformance with the 'as constructed' drawings;

(f) for the adequacy of the available storage in each regulated dam, based on an actual observation or observations taken after 31 May each year but prior to **1 November** of that year, of accumulated sediment, state of the containment barrier and the level of liquids in the **dam** (or network of linked containment systems);

(g) for evidence of conformance with the current operational plan.

"ambient (or total) noise" at a place, means the level of noise at the place from all sources (near and far), measured as the Leq for an appropriate time interval.

"annual exceedance probability" or **"AEP"** the probability that at least one event in excess of a particular magnitude will occur in any given year.

"appropriately qualified person" means any person who has professional qualification, training, skills or experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis on performance relating to the subject matter using the relevant protocols, standards, methods or literature.

"ARD" is acid rock drainage and means any contaminated discharge emanating from a mining activity formed through a series of chemical and biological reactions, when geological strata is disturbed and exposed to oxygen and moisture.

"assessed" or "**assessment"** by a suitably qualified and experienced person in relation to a consequence assessment of a dam, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit of the assessment:

(a) exactly what has been assessed and the precise nature of that determination;

(b) the relevant legislative, regulatory and technical criteria on which the assessment has been based;

(c) the relevant data and facts on which the assessment has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and

(d) the reasoning on which the assessment has been based using the relevant data and facts, and the relevant criteria.

"baseline conditions" means conditions of a GDE that is not impacted, or potentially impacted by the mining activities.

"blasting" means the use of explosive materials to fracture:

(a) rock, coal and other minerals for later recovery; or

(b) structural components or other items to facilitate removal from a site or for reuse.

"commercial place" means a workplace used as an office or for business or commercial purposes, which is not part of the mining activity and does not include employees' accommodation or public roads.

"competent person" means a person with the demonstrated skill and knowledge required to carry out the task to a standard necessary for the reliance upon collected data or protection of the environment.

"consequence category" means a category, either low, significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*.

"construction" or "constructed" in relation to a dam includes building a new dam and modifying or lifting an existing dam, but does not include investigations and testing necessary for the purpose of preparing a design plan.

"Crusader mining area" means ML2706, ML2708 and/or ML100152.

"dam" means a land-based structure or a void that contains, diverts or controls flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works.

"design plan" is a document setting out how all identified consequence scenarios are addressed in the planned design and operation of a regulated structure.

"design storage allowance" or **"DSA"** means an available volume, estimated in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* published by the administering authority, must be provided in a dam as at **1 November** each year in order to prevent a discharge from that dam to an **annual exceedance probability** (AEP) specified in that Manual.

"environmental authority" means an environmental authority granted in relation to an environmentally relevant activity under the *Environmental Protection Act 1994*.

"environmental authority holder" means the holder of this environmental authority.

"environmental nuisance" as defined in the *Environmental Protection Act 1994.*

"environmental value" as defined in the *Environmental Protection Act 1994***.**

"existing structure" means a structure that was in existence prior to the adoption of Schedule G –Regulated Structures under the environmental authority.

"flow event" means a flow event producing sufficient water to permit a monitoring creek bed flow of 30cm or more at the sampling station.

"flowable substance" means matter or a mixture of materials which can flow under any conditions potentially affecting that substance. Constituents of a flowable substance can include water, other liquids fluids or solids, or a mixture that includes water and any other liquids fluids or solids either in solution or suspension.

"general waste" means waste other than regulated waste.

"groundwater dependent ecosystem" or **"GDE"** means ecosystems which require access to groundwater on a permanent or intermittent basis to meet all or some of their water requirements so as to maintain their communities of plants and animals, ecological processes and ecosystem services.

"Haul Road Verge" means the edge, rim or margin of the Mount Watson / Mount Cuthbert Haul Road

"hazardous waste" means any substance, whether liquid, solid or gaseous, derived by or resulting from, the processing of minerals that tends to destroy life or impair or endanger health.

"hydraulic performance" means the capacity of a regulated dam to contain or safely pass flowable substances based on the design criteria specified for the relevant consequence category in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*.

"infrastructure" means water storage dams, roads and tracks, buildings and other structures built for the purpose of mining activities but does not include facilities required for the long terms management of mining impacts or the protection of potential resources. Such facilities include dams containing hazardous waste, waste rock dumps, voids, or ore stockpiles and buildings or other structures whose ownership can be transferred and which have a residual beneficial use for the next owner of the operational land or the background land owner.

"$L_{A\ 10,\ adj,\ 10\ mins}$" means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 10% of any 10-minute measurement period, using Fast response.

"$L_{A\ 1,\ adj,\ 10\ mins}$" means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 1% of any 10-minute measurement period, using Fast response.

"$L_{A,\ max\ adj,\ T}$" means the average maximum A-weighted sound pressure level, adjusted for noise character and measured over any 10 minute period, using Fast response.

"land" in the "land schedule" of this document means land excluding waters and the atmosphere.

"land capability" as defined in the DME 1995 Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland.

"land suitability" as defined in the DME 1995 Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland.

"land use" term to describe the selected post mining use of the land, which is planned to occur after the cessation of mining operations.

"leachate" means a liquid that has passed through or emerged from, or is likely to have passed through or emerged from, a material stored, processed or disposed of at the operational land which contains soluble, suspended or miscible contaminants likely to have been derived from the said material.

"limit/s", in relation to GDEs, means a threshold that, should it be reached or exceeded, indicates an impact to a GDE cause by the activity.

"low consequence dam" means any dam that is not a high or significant consequence category as assessed using the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*

"mandatory reporting level" means a warning and reporting level determined in accordance with the criteria in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* published by the administering authority.

"manual" means the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* published by the administering authority.

"measures" includes any measures to prevent or minimise environmental impacts of the activity such as bunds, silt fences, diversion drains, capping, and containment systems.

"metalliferous mine drainage" means any waters, contaminated with metals / metalloids or other contaminants as a result of the mining activities.

"mineral" means a substance which normally occurs naturally as part of the earth's crust or is dissolved or suspended in water within or upon the earth's crust and includes a substance which may be extracted from such a substance, and includes—

(a) clay if mined for use for its ceramic properties, kaolin and bentonite;

(b) foundry sand;

(c) hydrocarbons and other substances or matter occurring in association with shale or coal and necessarily mined, extracted, produced or released by or in connection with mining for shale or coal or for the purpose of enhancing the safety of current or future mining operations for coal or the extraction or production of mineral oil therefrom;

(d) limestone if mined for use for its chemical properties;

(e) marble;

(f) mineral oil or gas extracted or produced from shale or coal by in situ processes;

(g) peat;

(h) salt including brine;

(i) shale from which mineral oil may be extracted or produced;

(j) silica, including silica sand, if mined for use for its chemical properties;

(k) rock mined in block or slab form for building or monumental purposes;

(l) but does not include—

(i) living matter;

(ii) petroleum within the meaning of the *Petroleum Act 1923*;

(iii) soil, sand, gravel or rock (other than rock mined in block or slab form for building or monumental purposes) to be used or to be supplied for use as such, whether intact or in broken form;

(iv) water.

"natural flow" means the flow of water through waters caused by nature.

"noxious" means harmful or injurious to health or physical wellbeing, other than trivial harm.

"non-standard" means a mining operation that if in the opinion of the administering authority does not have a low risk of serious environmental harm and the activities can not comply with the criteria for standard mining activities prescribed in schedule 1A of the *Environmental Protection Regulation 1998*. The standard mining activity trigger criteria are as follows;

(a) The mining activities do not or will not cause more than 10 ha of land to be significantly disturbed at any one time;

(b) The mining activities do not or will not cause more than 5 ha of land to be significantly disturbed at any one time;

(c) In a riverine area;

(d) Because of mine workings;

(e) the mining activities are not or will not be carried out in, or within 2 km of a category A Environmentally Sensitive Area;

(f) the mining activities are not or will not be carried out in, or within 1 km of a category B environmentally sensitive area;

(g) the mining activities do not include a level 1 environmentally relevant activity

(h) no more than 20 persons are carrying out or will, at any one time, carry out the mining activities;

"offensive" means causing reasonable offence or displeasure; is disagreeable to the sense; disgusting, nauseous or repulsive, other than trivial harm.

"PAF" means potentially acid forming.

"peak particle velocity (ppv)" means a measure of ground vibration magnitude which is the maximum rate of change of ground displacement with time, usually measured in millimetres/second (mm/s).

"performance criteria", in relation to GDEs, means specific parameters, associated with and relevant to each GDE, that will be monitored to demonstrate that the outcomes of no adverse impact or environmental harm are being achieved, measured at a specific time and place.

"protected area" means –

(a) a protected area under the *Nature Conservation Act 1992*; or

(b) a marine park under the *Marine Parks Act 1992*; or

(c) a World Heritage Area.

"progressive rehabilitation" means rehabilitation (defined below) undertaken progressively or a staged approach to rehabilitation as mining operations are ongoing.

"receiving environment" means all groundwater, surface water, land, and sediments that are not disturbed areas authorised by this environmental authority.

"receiving waters" means all groundwater and surface water that are not disturbed areas authorised by this environmental authority.

"reference site" (or analogue site) may reflect the original location, adjacent area or another area where rehabilitation success has been completed for a similar biodiversity. Details of the reference site may be as photographs, computer generated images and vegetation models etc.

"Register of Regulated Dams" includes**:**

(a) Date of entry in the register;

(b) Name of the dam, its purpose and intended/actual contents;

(c) The consequence category of the dam as assessed using the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635);

(d) Dates, names, and reference for the design plan plus dates, names, and reference numbers of all document(s) lodged as part of a design plan for the dam;

(e) Name and qualifications of the suitably qualified and experienced person who certified the design plan and 'as constructed' drawings;

(f) For the regulated dam, other than in relation to any levees –

(i) The dimensions (metres) and surface area (hectares) of the dam measured at the footprint of the dam;

(ii) Coordinates (latitude and longitude in GDA94) within five metres at any point from the outside of the dam including its storage area

(iii) Dam crest volume (megalitres);

(iv) Spillway crest level (metres AHD).

(v) Maximum operating level (metres AHD);

(vi) Storage rating table of stored volume versus level (metres AHD);

(vii) Design storage allowance (megalitres) and associated level of the dam (metres AHD);

(viii) Mandatory reporting level (metres AHD);

(g) The design plan title and reference relevant to the dam;

(h) The date construction was certified as compliant with the design plan;

(i) The name and details of the suitably qualified and experienced person who certified that the constructed dam was compliant with the design plan;

(j) Details of the composition and construction of any liner;

(k) The system for the detection of any leakage through the floor and sides of the dam;

(l) Dates when the regulated dam underwent an annual inspection for structural and operational adequacy, and to ascertain the available storage volume for 1 November of any year;

(m) Dates when recommendations and actions arising from the annual inspection were provided to the administering authority;

(n) Dam water quality as obtained from any monitoring required under this authority as at 1 November of each year.

"regulated dam" means any dam in the significant or high consequence category as assessed using the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* published by the administering authority.

"regulated structure" includes land-based containment structures, levees, bunds and voids, but not a tank or container designed and constructed to an Australian Standard that deals with strength and structural integrity.

"regulated waste" means non domestic waste mentioned in Schedule 7 of the *Environmental Protection Regulation 2008* (whether or not it has been treated or immobilised), and includes –

(a) for an element – any chemical compound containing the element; and

(b) anything that has contained the waste.

"rehabilitation" the process of reshaping and revegetating land to restore it to a stable landform and in accordance with the acceptance criteria set out in this environmental authority and, where relevant, includes remediation of contaminated land.

"representative" means a sample set which covers the variance in monitoring or other data either due to natural changes or operational phases of the mining activities.

"residual void" means an open pit resulting from the removal of ore and/or waste rock which will remain following the cessation of all mining activities and completion of rehabilitation processes.

"saline mine drainage" The movement of waters, contaminated with salt(s), as a result of the mining activity.

"self sustaining" means an area of land which has been rehabilitated and has maintained the required acceptance criteria without human intervention for a period nominated by the administering authority.

"sensitive place" means;

(a) a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or

(b) a motel, hotel or hostel; or

(c) an educational institution; or

(d) a medical center or hospital; or a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 1992* or a World Heritage Area; or

(e) a public park or gardens.

"significant disturbance" – includes land

(a) if it is contaminated land; or

(b) it has been disturbed and human intervention is needed to rehabilitate it.

i. to a state required under the relevant environmental authority; or

ii. if the environmental authority does not require the land to be rehabilitated to a particular state – to its state immediately before the disturbance.

Some examples of disturbed land include:

- areas where soil has been compacted, removed, covered, exposed or stockpiled;
- areas where vegetation has been removed or destroyed to an extent where the land has been made susceptible to erosion; (vegetation & topsoil)
- areas where land use suitability or capability has been diminished;
- areas within a watercourse, waterway, wetland or lake where mining activities occur;
- areas submerged by tailings or hazardous contaminant storage and dam walls in all cases;
- areas under temporary infrastructure. Temporary infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dams, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc.) which is to be removed after mining activities have ceased; or
- areas where land has been contaminated and a suitability statement has not been issued.

However, the following areas are not included:

- areas off lease (e.g. roads or tracks which provide access to the mining lease);
- areas previously significantly disturbed which have achieved the rehabilitation outcomes;
- by agreement with the EPA, areas previously significantly disturbed which have not achieved the rehabilitation objective(s) due to circumstances beyond the control of the mine operator (such as climatic conditions);
- areas under permanent infrastructure. Permanent infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dams, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc.) which is to be left by agreement with the landowner. The agreement to leave permanent infrastructure must be recorded in the Landowner Agreement and lodged with the administering authority;
- disturbances that pre-existed the grant of the tenure unless those areas are disturbed during the term of the tenure.

"spillway" means passage or outlet from the dam through which surplus water flows.

"stable" means land form dimensions are or will be stable within tolerable limits now and in the foreseeable future. Stability includes consideration of geotechnical stability, settlement and consolidation allowances, bearing capacity (traffic ability), erosion resistance and geochemical stability with respect to seepage and contaminant generation.

"structure" means dam or levee.

"spillway" means a weir, channel, conduit, tunnel, gate or other structure designed to permit discharges form the dam, normally under flood conditions or in anticipation of flood conditions.

"suitably qualified and experienced person" in relation to regulated structures means a person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the *Professional Engineers Act 2002*, and has demonstrated competency and relevant experience:

1) for regulated dams, an RPEQ who is a civil engineer with the required qualifications in dam safety and dam design.

2) for regulated levees, an RPEQ who is a civil engineer with the required qualifications in the design of flood protection embankments.

Note: It is permissible that a suitably qualified and experienced person obtain subsidiary certification from an RPEQ who has demonstrated competence and relevant experience in either geomechanics, hydraulic design or engineering hydrology.

"tolerable limits" means that a range of values could be accepted to achieve an overall environmental management objective (eg a range of settlement of a tailing capping could still meet the objective of draining the cap quickly, preventing pondage and limiting infiltration and percolation).

"trigger values", in relation to GDEs, means a threshold for the performance criteria that, should it be reached or exceeded (either through modelling or monitoring), the EA holder will implement a management response to prevent a limit being reached and the trigger value is no longer exceeded.

These trigger values must provide sufficient time for the EA holder to take all required action to avoid any impact to GDEs

"trivial harm" means environmental harm which is not material or serious environmental harm and will not cause actual or potential loss or damage to property of an amount of, or amounts totalling more than $5,000.

"underground mining activities" means works to develop, and the carrying out of, underground mining at the Crusader mining area below a height of 125 metres Australian Height Datum (mAHD), and for the purposes of this definition only, does not include the following activities:

(a) historic underground mining activities that took place prior to **8 May 2024**.

(b) surface mining activities; and

(c) disturbance associated with environmental monitoring and exploration activities.

"void" means any constructed, open excavation in the ground.

"watercourse" has the same meaning given in the *Water Act 2000.*

"waters" includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water natural or artificial watercourse, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, and groundwater and any part thereof.

"**water release event**" means release of any waters that are or maybe contaminated by the mining activity.

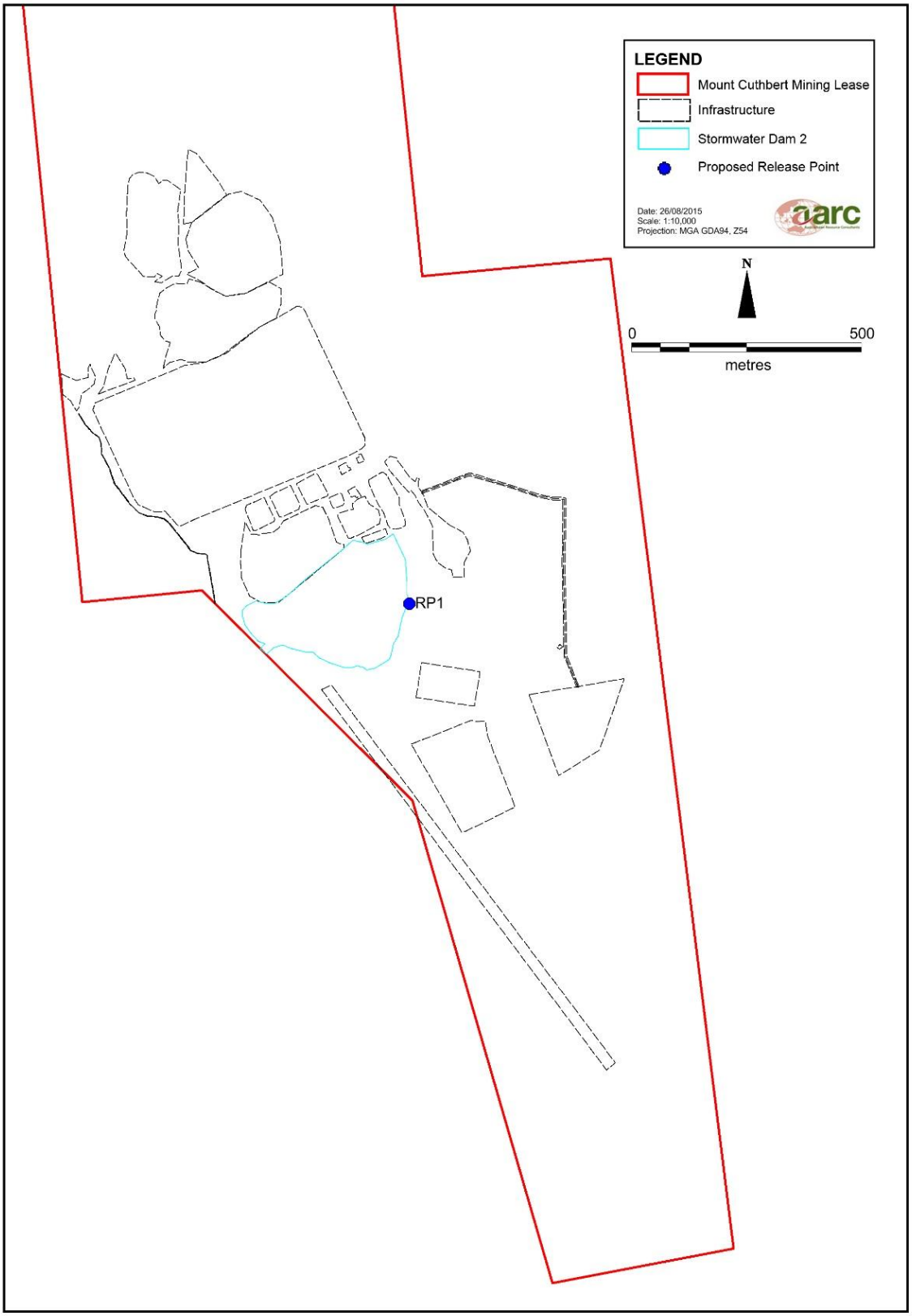
"wet season" means the time of year, covering one or more months, when most of the average annual rainfall in a region occurs. For the purposes of DSA determination this time of year is deemed to extend from **1 November** in one year to 31 May in the following year inclusive.

END OF SCHEDULE I

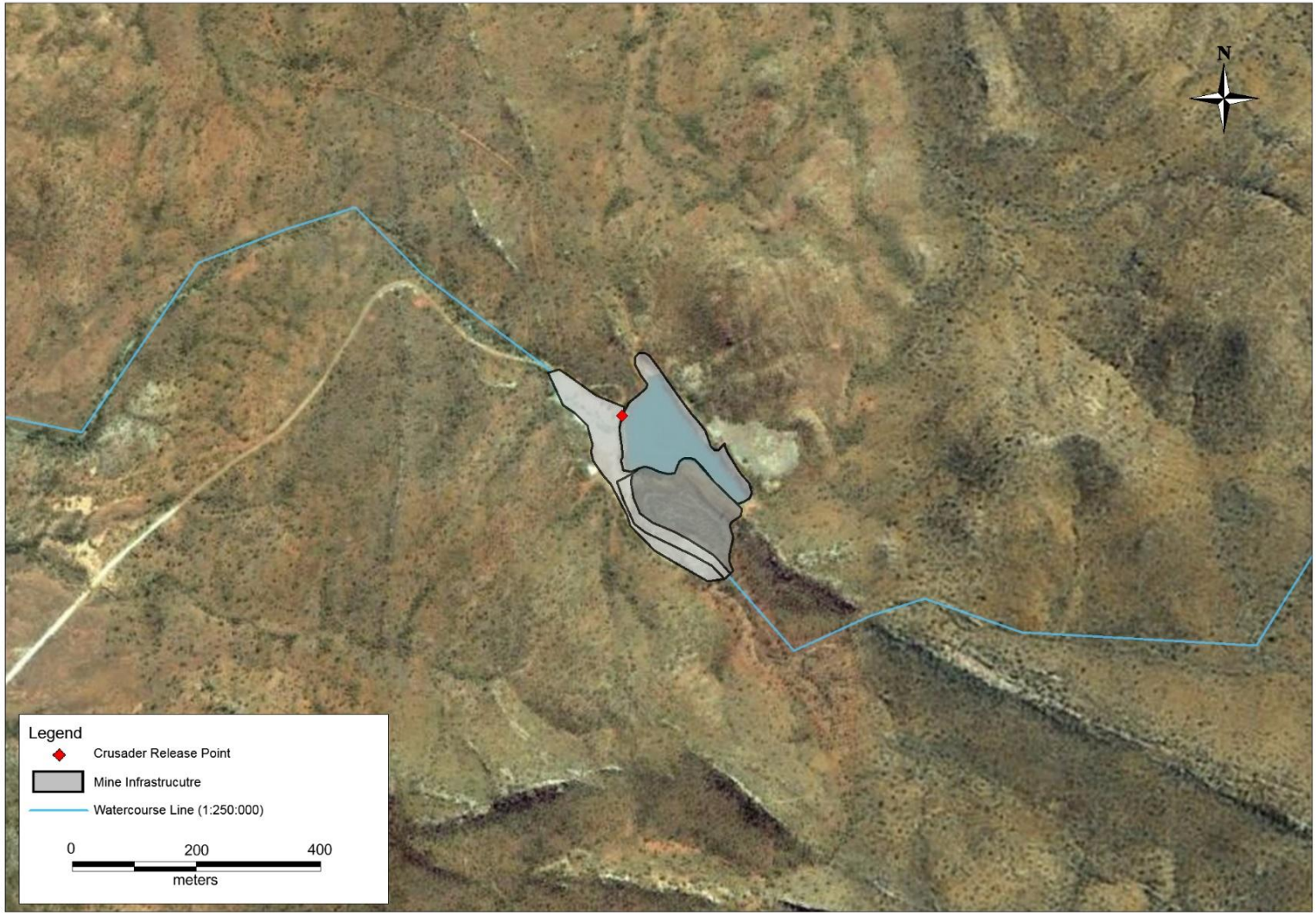
Schedule J - Maps/plans

Map 1A (Project infrastructure layout – Mount Cuthbert)

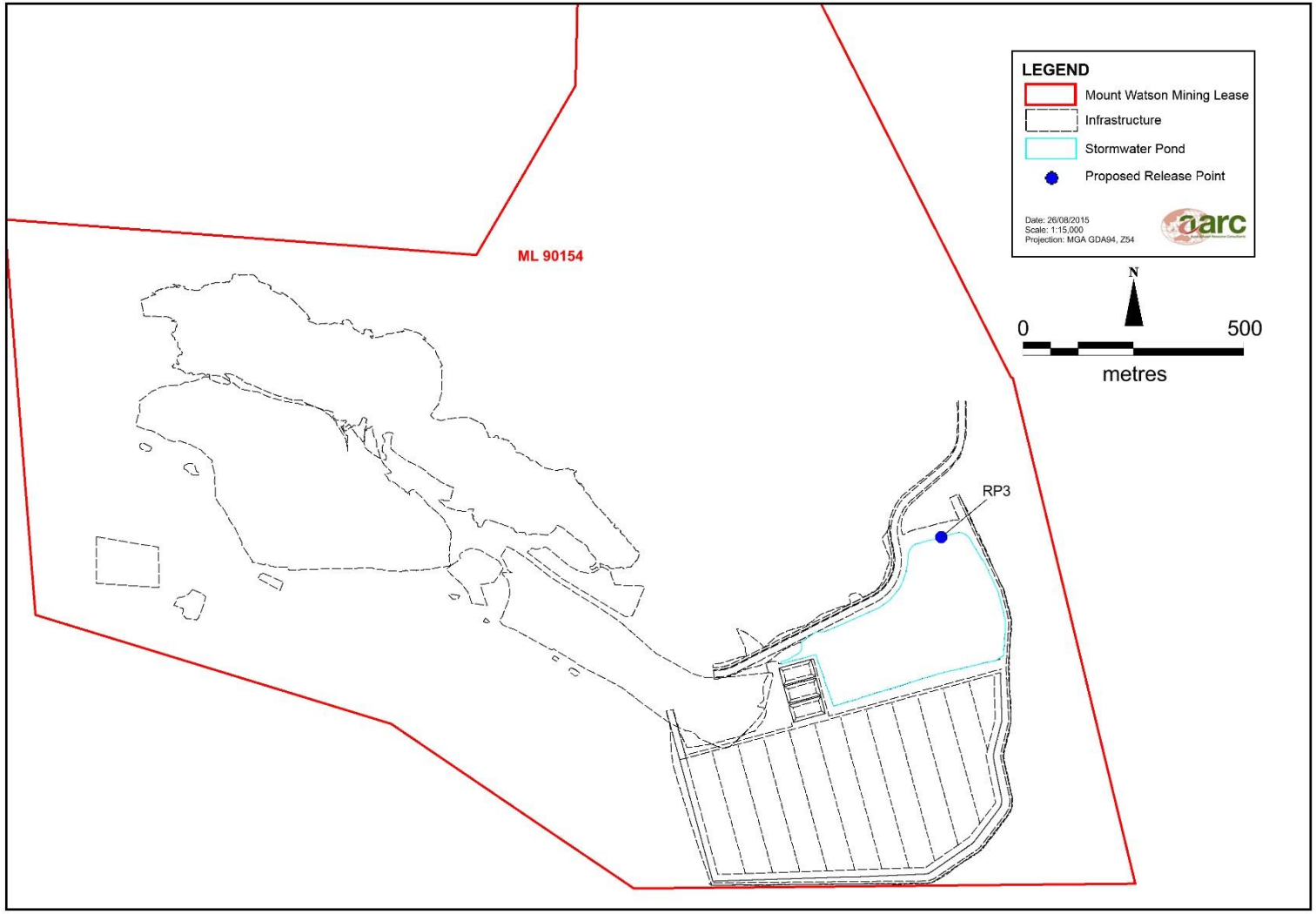
Map 2A - Contaminant release point for Mount Cuthbert



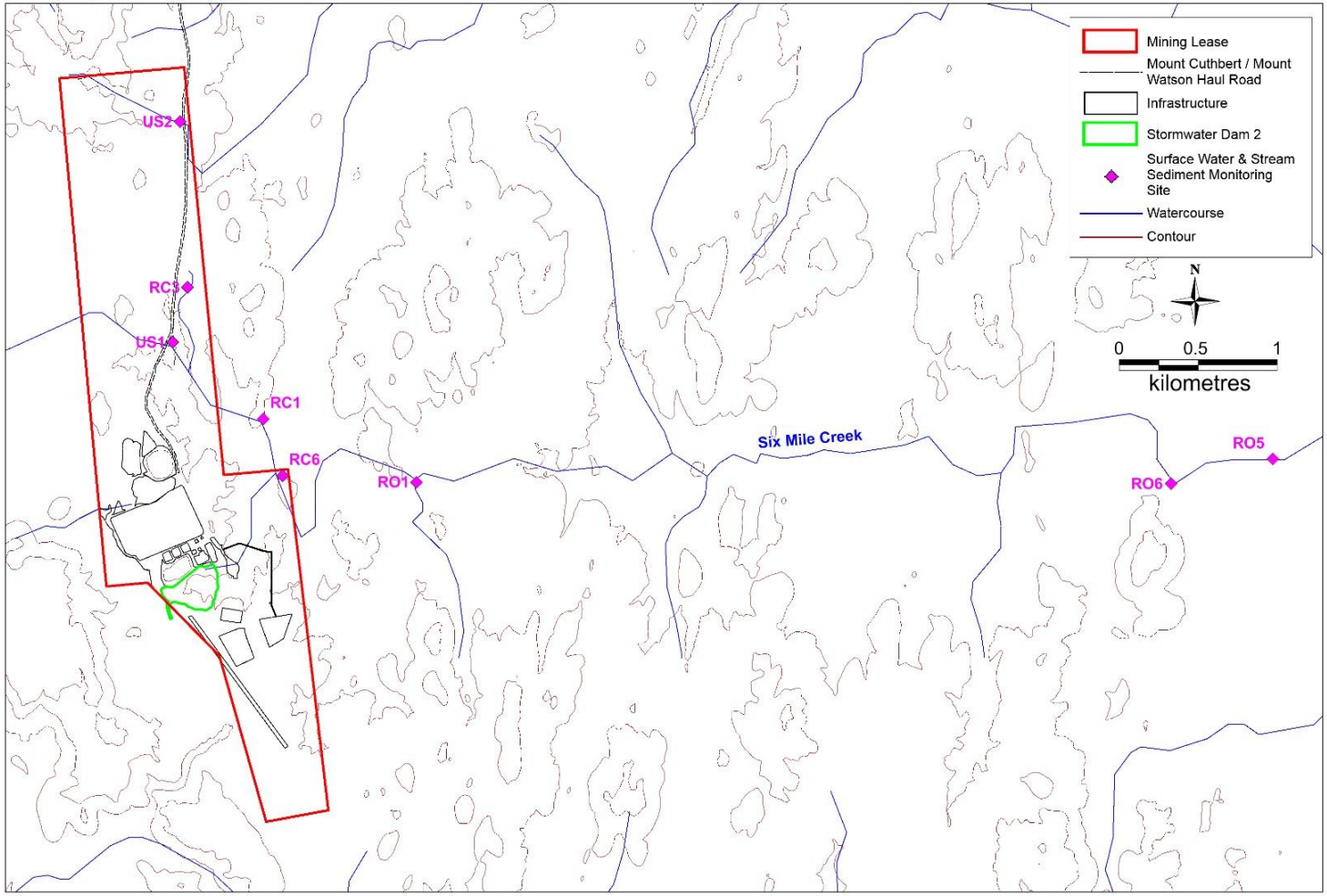
Map 2B – Contaminant release point (RP2) for Crusader



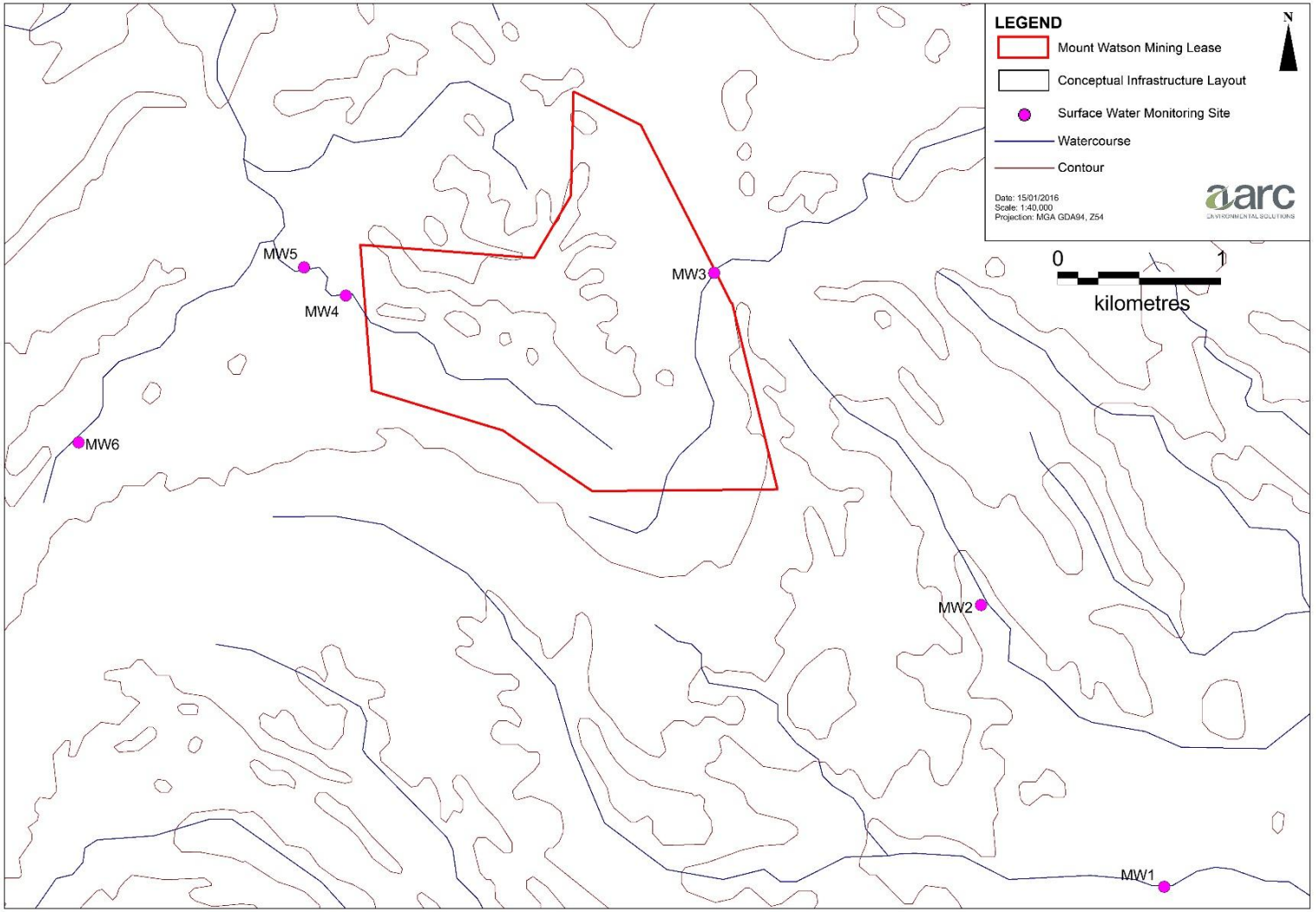
Map 2C – Contaminant release point for Mount Watson



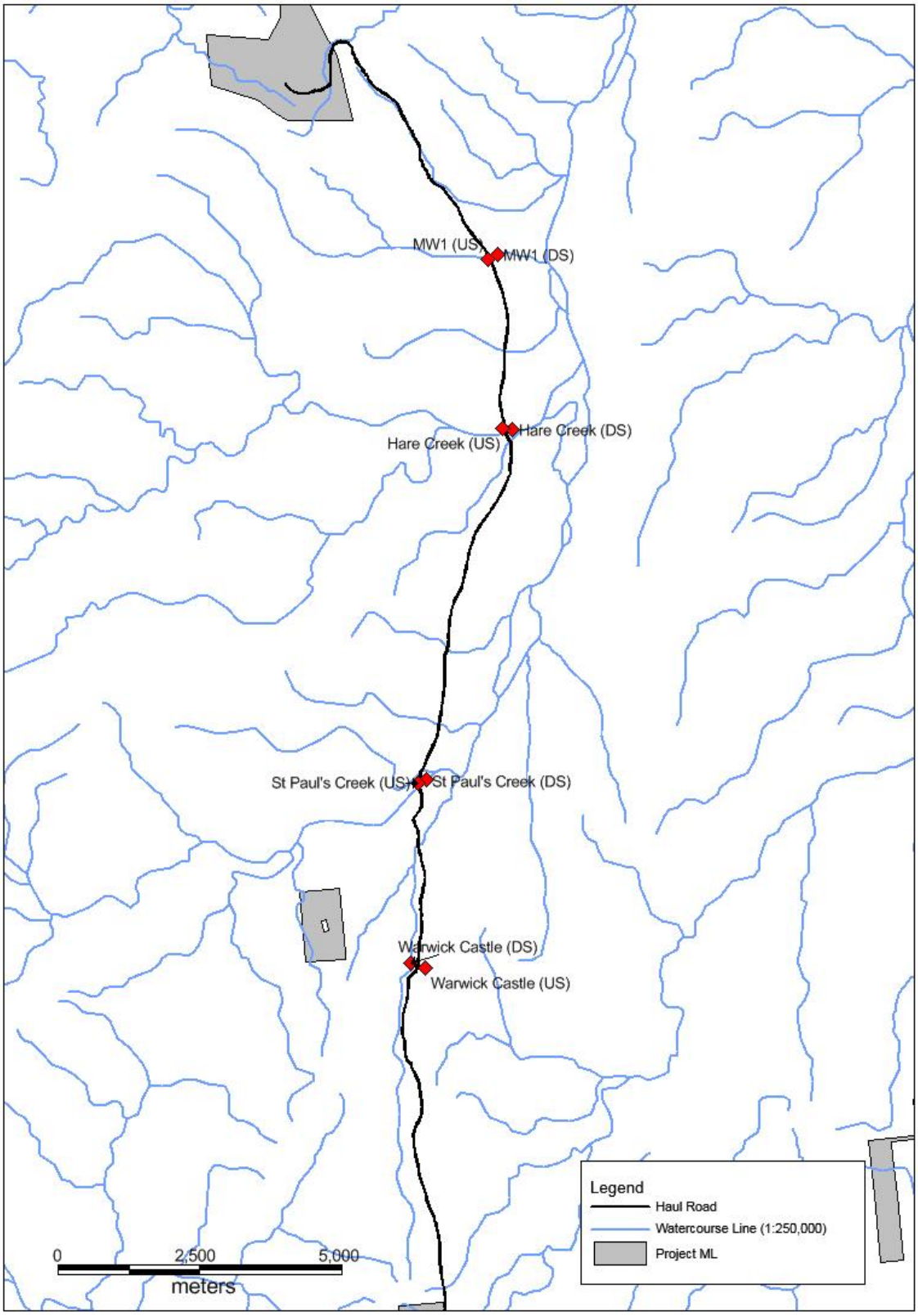
Map 3A - Stream sediment and receiving water monitoring locations for Mount Cuthbert



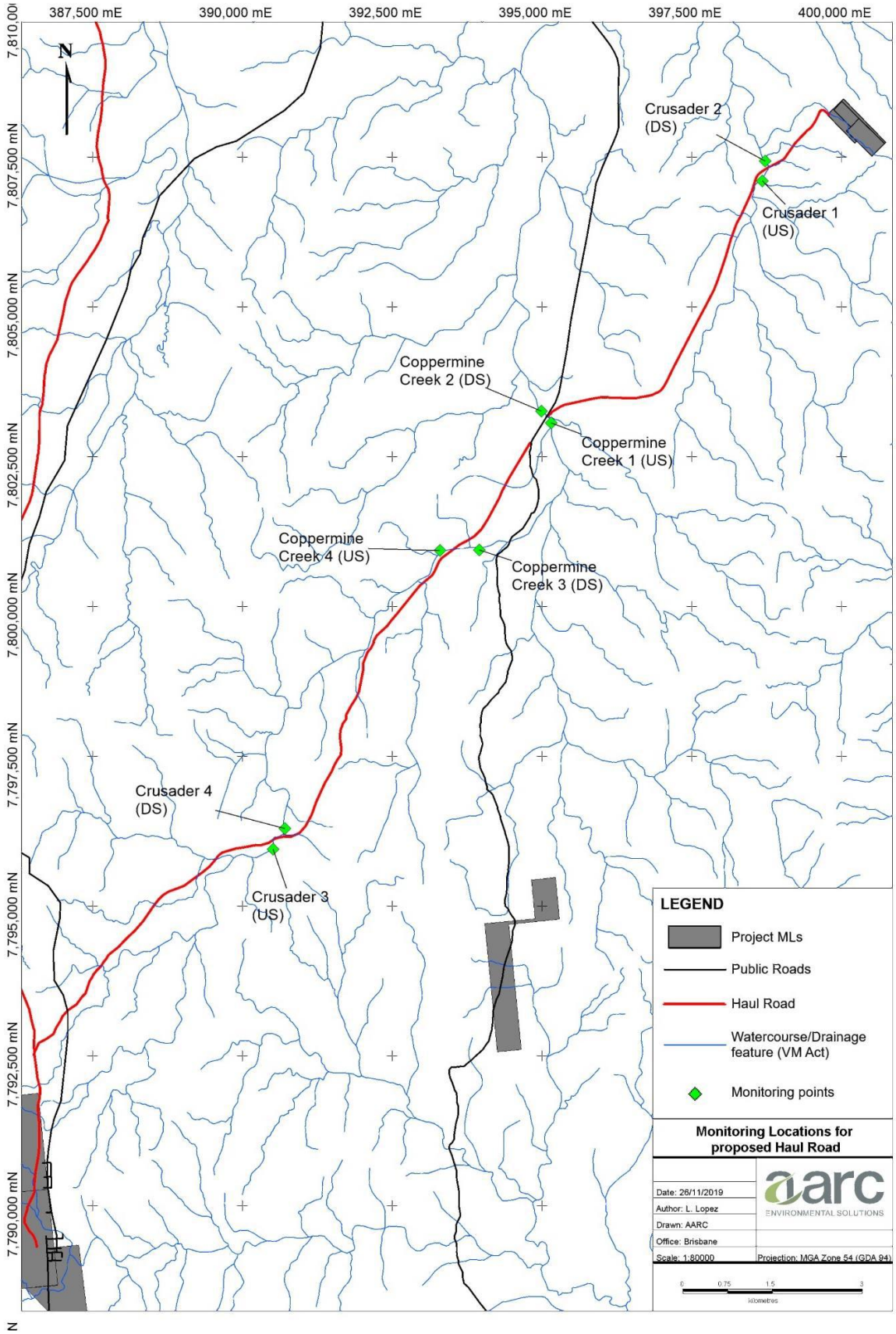
Map 3B - Stream sediment and receiving water monitoring locations for Mount Watson



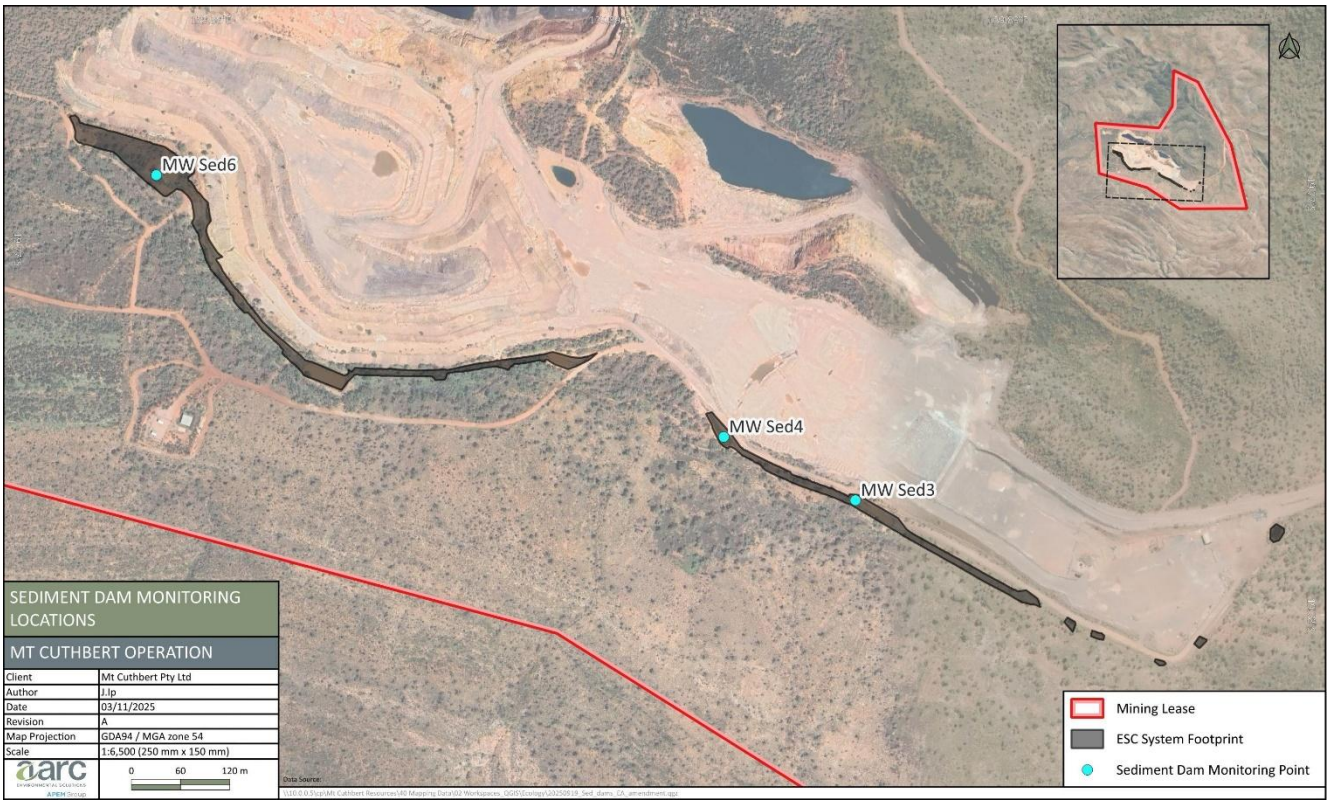
Map 3C – Receiving water and stream sediment monitoring locations for Mount Cuthbert/Mount Watson haul road



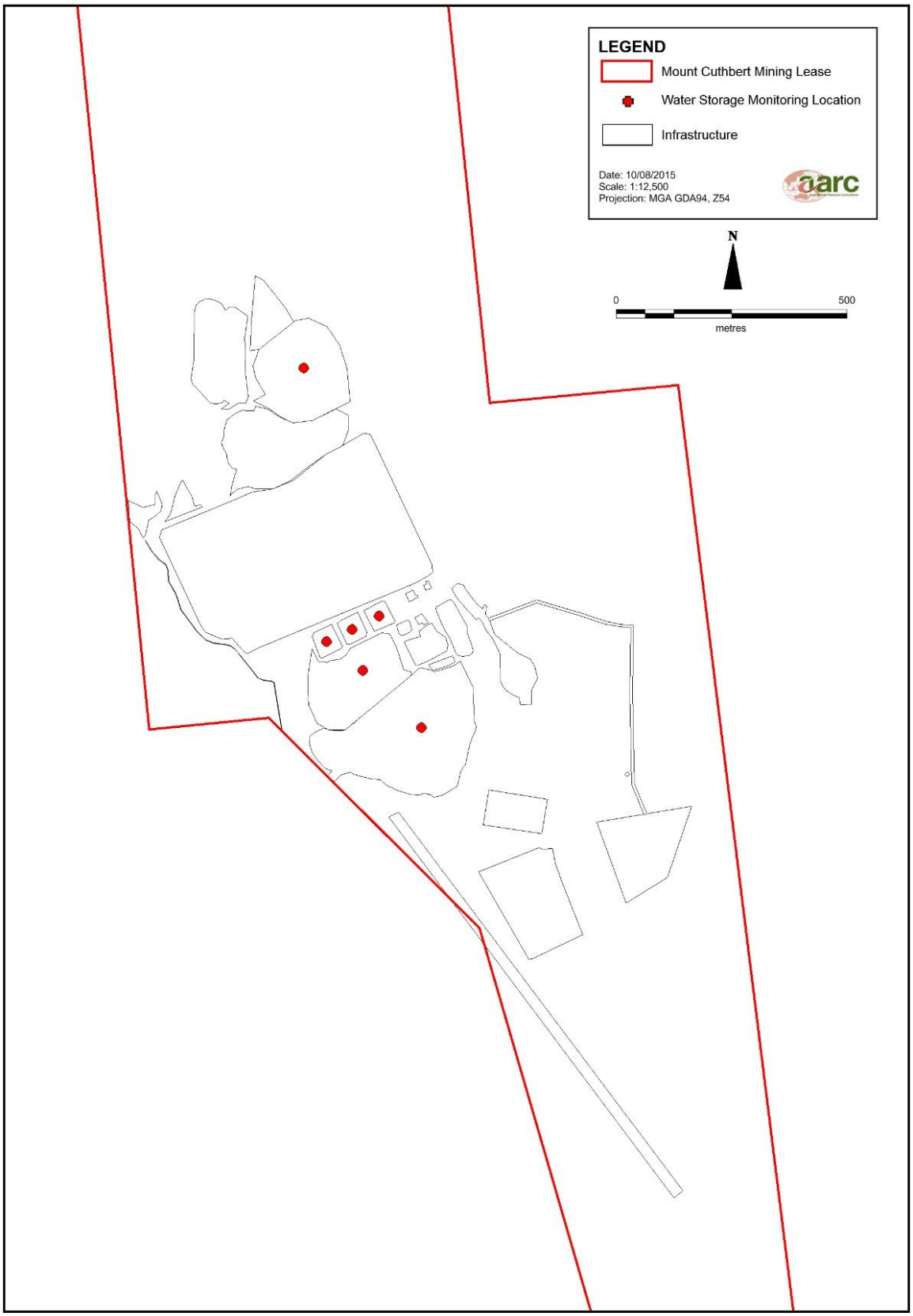
Map 3D – Crusader Haul Road



Map 3E – Sediment dam monitoring points Mount Watson

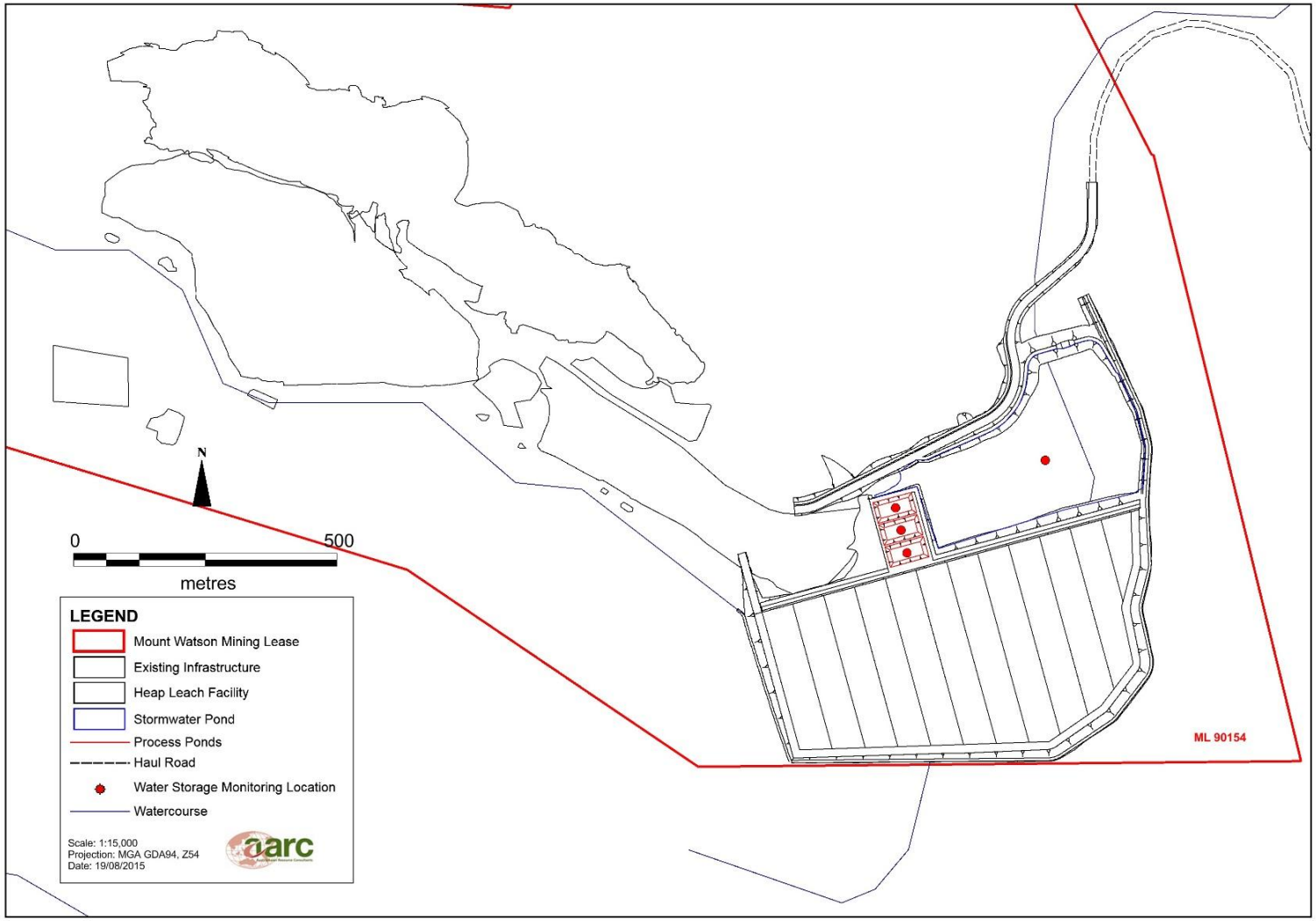


Map 4A - Water storage monitoring locations of hazardous dams at Mount Cuthbert

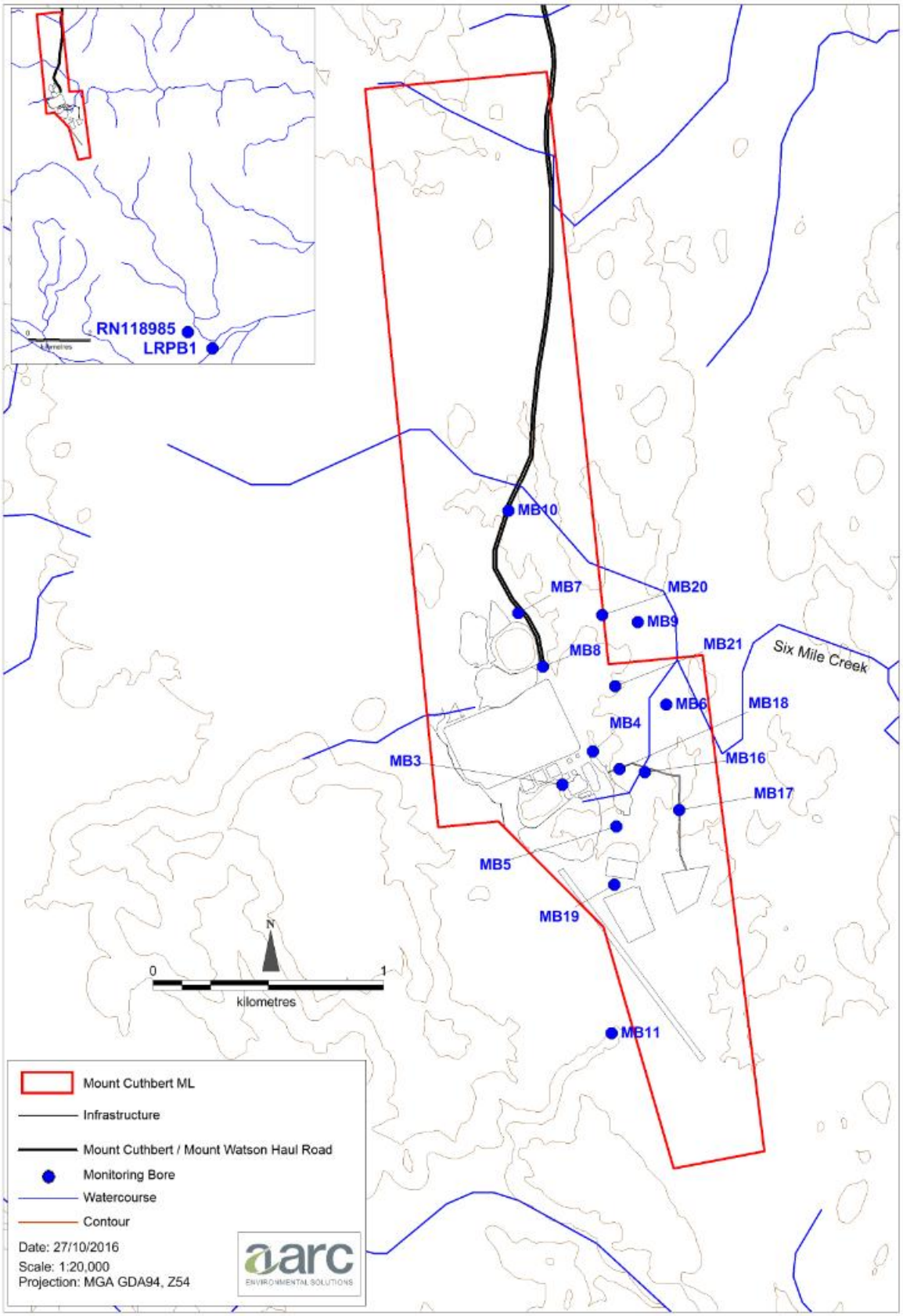


OFFICIAL

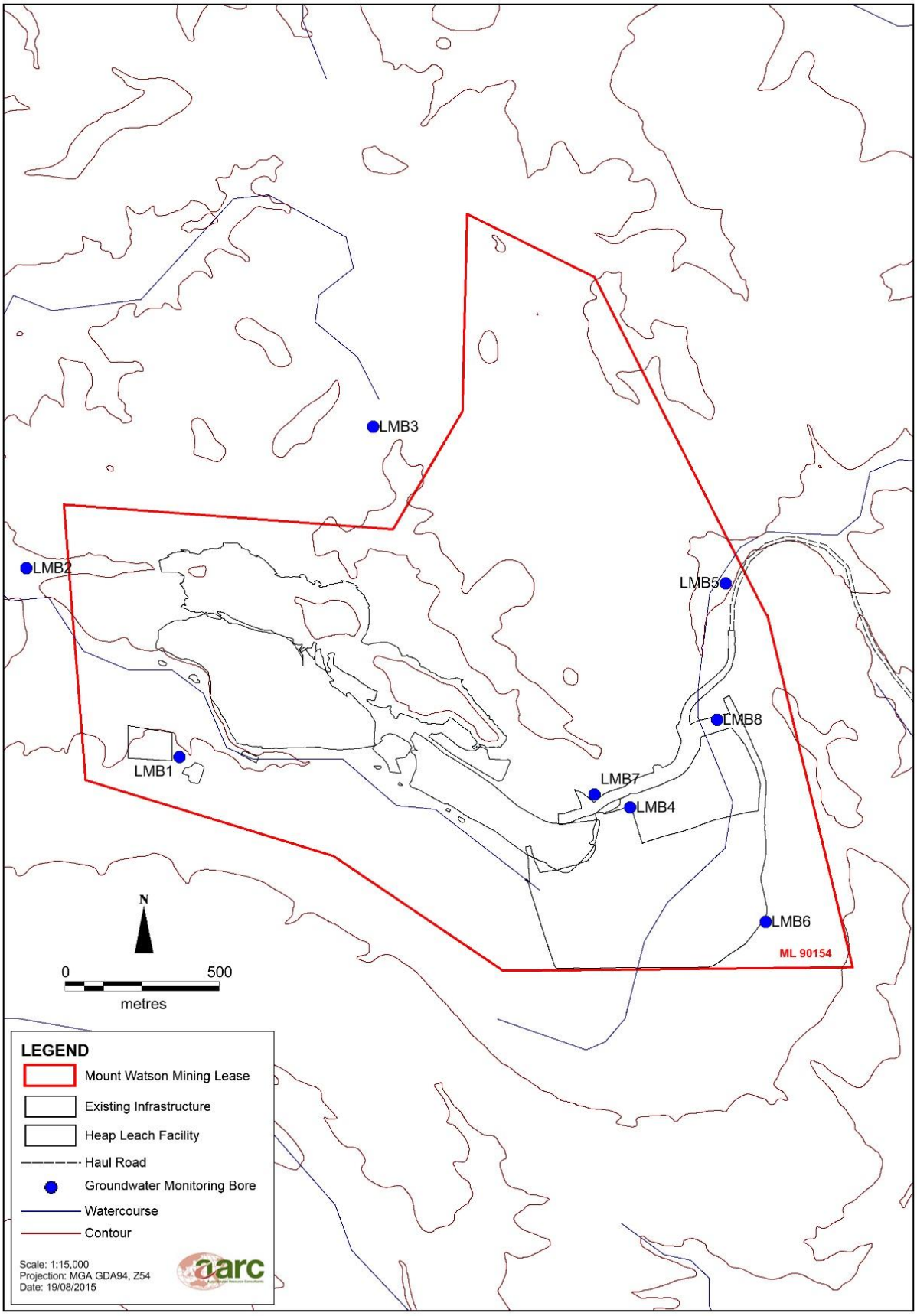
Map 4B – Water storage monitoring locations of hazardous dams at Mount Watson



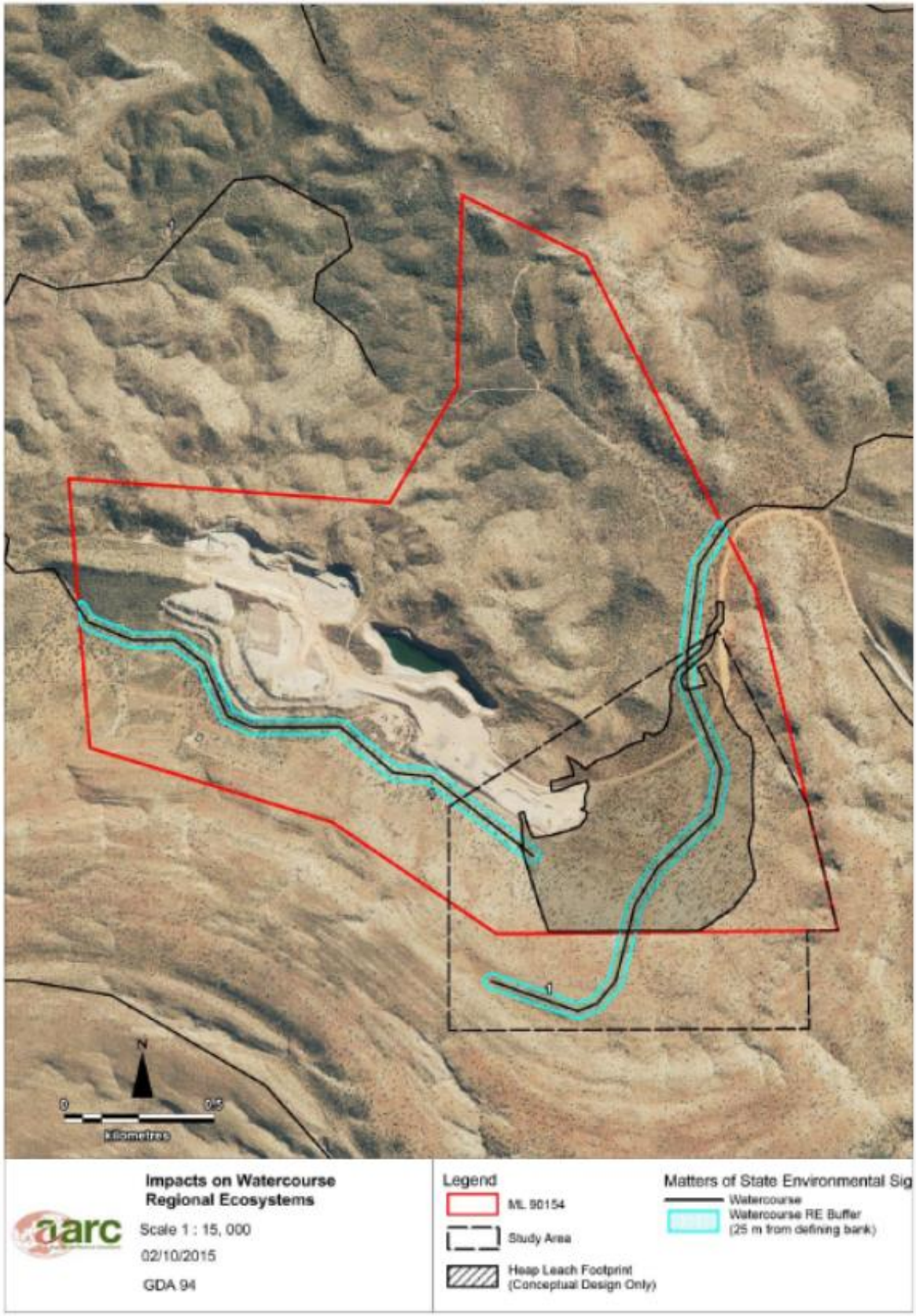
Map 5A - Groundwater monitoring locations at Mount Cuthbert



Map 5B - Groundwater monitoring locations at Mount Watson



Map 6 – Matters of State Environmental Significance (regulated vegetation associated with a watercourse)



Map 7 – PAF Placement Area at the Crusader Mining Area

Notes for Map 7: PAF material may only be placed at the surface of the Crusader mining area within the extent of the pink polygon.

END OF SCHEDULE J

END OF ENVIRONMENTAL AUTHORITY