Permit

Environmental Protection Act 1994

Environmental authority EPML00977513

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

Environmental authority number: EPML00977513

Environmental authority takes effect on 12 April 2023

The anniversary date of this environmental authority is 28 February each year.

An annual return will be due each year on 1 April.

Environmental authority holder(s)

Name(s)	Registered address
Mount Isa Mines Limited	Level 44 1 Macquarie Place SYDNEY, NSW 2000

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Ancillary 29 - Metal Foundry Operation 1: Producing, in a year, the following quantity of ferrous metal castings (d) more than 10,000t Ancillary 63 - Sewage Treatment 1: Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of (d) more than 4000 but not more than 10,000EP Schedule 3 18: Mining lead, silver or zinc seperately or in any combination Ancillary 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 55 - Other waste reprocessing or treatment 1: Operating a facility for receiving and either reprocessing or treating, in a year, the following quantity of general waste- (c) more than 10,000t	Mount Isa Mine ML8058

Queensland Government

Environmentally relevant activity/activities	Location(s)
Ancillary 38 - Surface Coating 2: Coating, painting or powder coating, using, in a year, more than 100t of surface coating materials Ancillary 16 - Extraction and Screening 3: Screening, in a year, the following quantity of material (c) more than 1,000,000t Ancillary 55 - Other waste reprocessing or treatment 4: Operating a facility for receiving and either reprocessing or treating clinical waste or biosecurity waste Ancillary 55 - Other waste reprocessing or treatment 2: Operating a facility for receiving and either reprocessing or treating, in a year, the following quantity of category 2 regulated waste- (c) more than 10,000t Ancillary 30 - Metal smelting and refining 1: Processing in a year (d) more than 10,000t of metals or metalloids Ancillary 10 - Gas Producing Manufacturing, processing or reforming 200t or more of hydrocarbon gas in a year Ancillary 08 - Chemical Storage 3: Storing more than 500 cubic metres of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection (1)(c) Ancillary 61 - Thermal waste reprocessing and treatment 4: Thermally reprocessing or treating clinical waste or quarantine waste Ancillary 55 - Other waste reprocessing or treatment 3: Operating a facility for receiving and either reprocessing or treating, in a year, the following quantity of category 1 regulated waste- (c) more than 10,000t Ancillary 31 - Mineral processing 2: Processing, in a year, the following quantities of mineral products, other than coke (b) more than 100,000t Ancillary 07 - Chemical Manufacturing 3: Manufacturing, in a year, a total of 200t or more of any of the following (d) explosives Ancillary 61 - Thermal waste reprocessing and treatment 1: Thermally reprocessing or treating, in a year, the following quantity of general waste- (c) more than 10,000t	

Environmentally relevant activity/activities	Location(s)
Ancillary 62 - Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing- (d) category 1 regulated waste Ancillary 29 - Metal Foundry Operation 2: Producing, in a year, 50t or more of non-ferrous metal castings using permanent moulds Ancillary 07 - Chemical Manufacturing 5: Manufacturing, in a year, the following quantities of organic chemicals, other than organic chemicals to which items 1 to 4 apply (d) more than 100,000t Ancillary 61 - Thermal waste reprocessing and treatment 2: Thermally reprocessing or treating, in a year, the following quantity of category 2 regulated waste- (c) more than 10,000t Ancillary 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 57 - Regulated Waste Transport Transporting regulated waste, other than end-of-life tyres (01 vehicle only) Schedule 3 17: Mining copper ore Ancillary 16 - Extraction and Screening 2: Extracting, other than by dredging, in a year, the following quantity of material (c) more than 1,000,000t Ancillary 07 - Chemical Manufacturing 6: Manufacturing, in a year, the following quantities of inorganic chemicals, other than inorganic chemicals to which items 1 to 4 apply (d) more than 100,000t Ancillary 61 - Thermal waste reprocessing and treatment 3: Thermally reprocessing or treating, in a year, the following quantity of category 1 regulated waste- (c) more than 10,000t Ancillary 54 - Mechanical waste reprocessing 2: Operating a facility for receiving and mechanically reprocessing, in a year, the following quantity of general waste- (c) more than 10,000t	

Environmentally relevant activity/activities	Location(s)
Ancillary 14 - Electricity Generation 2: Generating electricity by using a fuel, other than gas, at a rated capacity of (a) 10MW electrical to 150MW electrical Ancillary 38 - Surface Coating 1: Anodising, electroplating, enamelling or galvanising using, in a year, the following quantity of surface coating materials (d) more than 10,000t Ancillary 62 - Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing- (a) scrap metal, non-putrescible waste or green waste only Ancillary 54 - Mechanical waste reprocessing 3: Operating a facility for receiving and mechanically reprocessing, in a year, the following quantity of category 2 regulated waste- (c) more than 10,000t Ancillary 14 - Electricity Generation 1: Generating electricity by using gas at a rated capacity of 10MW electrical or more Ancillary 15 - Fuel burning Using fuel burning equipment that is capable of burning at least 500kg of fuel in an hour Schedule 3 12: Mining mineral sand Ancillary 62 - Resource recovery and transfer facility operation 1: Operating a facility for receiving and sorting, dismantling, baling or temporarily storing- (b) general waste Ancillary 54 - Mechanical waste reprocessing 4: Operating a facility for receiving and mechanically reprocessing, in a year, the following quantity of category 1 regulated waste- (c) more than 10,000t	
Schedule 3 21: A mining activity that is an ineligible ERA, other than a mining activity mentioned in items 9 to 20	Greenwood Mine Leases ML2721, ML2722, ML2723, ML2724
Schedule 3 21: A mining activity that is an ineligible ERA, other than a mining activity mentioned in items 9 to 20	Limestone Leases – General ML2484, ML2485, ML2725, ML2726, ML2727, ML5414, ML5424, ML5432, ML5434, ML5576

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).

Contaminated land

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

- the happening of an event involving a hazardous contaminant on the contaminated land (notice must be given within 24 hours); or
- a change in the condition of the contaminated land (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 contaminated land (notice must be given within 20 business days)

that is causing, or is reasonably likely to cause, serious or material environmental harm.

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 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, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the *Planning Act 2016* or an SDA Approval under the *State Development and Public Works Organisation Act 1971*), this EA will not take effect until the additional authorisation has taken 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.

The anniversary day of this environmental authority is the same day each year as the effective date. The payment of the annual fee will be due each year on this day. An annual return will be due each year on 01 April.

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 environmental authority.

T.Gibbs	12 April 2023
Signature	Date

Teale Gibbs
Department of Environment and Science
Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:
Minerals Business Centre
Department of Environment and Science
Phone: 07 4222 5352
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Conditions of environmental authority

Location	Relevant conditions
Mount Isa Mines ML8058	All conditions of this Environmental Authority apply to any mining activities undertaken on ML8058.
Limestone Leases ML2484 ML5414 ML2485 ML5424 ML2725 ML5432 ML2726 ML5434 ML2727 ML5576	Condition A33 Appendix 2
Greenwood Mine Leases ML2721 ML2722 ML2723 ML2724	Conditions A1-A10, A14-19, A26, A29-30 and A34-A47 Appendix 2

This environmental authority incorporates the following schedules:

Schedule A	General
Schedule B	Air
Schedule C	Land and Rehabilitation
Schedule D	Regulated Dams
Schedule E	Mining, Mineral Processing and Smelting Waste
Schedule F	General and Regulated Waste other than Mining, Mineral Processing and Smelting Waste
Schedule G	Noise and Vibration
Schedule H	Water
Schedule I	Sewage Treatment
Schedule J	Definitions
Schedule K	Figures
Appendix 1	List of Authorised Regulated Dams
Appendix 2	Authorised Mining Activities

Schedule A - General

Activity

A1 This environmental authority authorises environmental harm caused by the carrying out of mining activities by the holder of this environmental authority. Where mining activities are undertaken in accordance with the conditions of this environmental authority, environmental harm caused in compliance with the conditions is taken to be authorised. Where there is no condition or this environmental authority is silent on a matter, the lack of a condition or silence shall not be construed as authorising environmental harm.

A2 In carrying out the mining activities, the holder of the environmental authority must comply with Appendix 2 (Authorised Mining Activities).

Maintenance of Measures, Plant and Equipment

A3 The 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;

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

A4 No change, replacement or alteration of any plant or equipment is permitted if the change, replacement or alteration materially increases, or is likely to materially increase, the risk of environmental harm caused by the mining activities.

Plans, Systems, Programs and Monitoring

A5 If a condition of this environmental authority requires the holder to prepare a plan or a program, the holder of this environmental authority may include such plan or program in its Plan of Operations.

A6 Any management or monitoring plans, systems or programs required to be developed and implemented by a condition of this environmental authority must be reviewed for effectiveness in minimising the likelihood of environmental harm on an annual basis, or in accordance with the timeframe as otherwise specified in this environmental authority, and amended promptly if required.

A7 Monitoring records or reports required under this environmental authority must be maintained and be readily accessible at the place to which this environmental authority relates for a period of not less than five (5) years.

A8 The holder of this environmental authority must, upon request from the administering authority, supply monitoring records, plans and reports in the form and by the means requested by the administering authority within fourteen (14) days, or a timeframe otherwise agreed between the administering authority and the holder of this environmental authority.

Financial assurance

A9 The holder of this environmental authority must provide financial assurance of an amount determined by the administering authority in accordance with the most recent edition of the administering authority's *Guideline – Calculating financial assurance for mining projects*, and in a form acceptable to the administering authority.

A10 The financial assurance must remain in force until the administering authority is satisfied no claim on the financial assurance will be required.

Risk management

A11 The holder of this environmental authority must maintain a risk management system for mining activities which conforms to the Standard for Risk Management (ISO31000:2009) or the Standard for Environmental Management Systems (ISO14001:2004), or the latest edition of the equivalently recognised Standard.

Emergency Response / Contingency

A12 Within six (6) months of the commencement of this environmental authority, the holder of this environmental authority must develop and implement an emergency response/contingency plan to respond to emergency events and incidents.

A13 The emergency response/contingency plan required under condition A12 must address the following matters as a minimum:

(a) response procedures to be implemented to prevent or minimise the risk of environmental harm arising from incidents;

(b) response procedures to minimise the extent and duration of environmental harm caused by an incident;

(c) the practices and procedures to be employed to restore the environment or mitigate any environmental harm caused;

(d) the resources to be used in response to an incident;

(e) procedures to investigate the cause of any incidents, including releases, and where necessary, implement remedial actions to reduce the likelihood of recurrence of similar events;

(f) the provision and availability of documented procedures to staff attending any incident to enable them to effectively respond;

(g) training of staff that will be called upon to respond to incidents to enable them to effectively respond;

(h) timely and accurate reporting of the circumstance and nature of incidents to the administering authority in accordance with conditions of this environmental authority;

(i) procedures for accessing monitoring points during incidents;

(j) procedures to notify any potentially impacted person or group of persons who may be affected by the event.

Notification of Incidents and Exceptions

A14 The holder of this environmental authority must notify the administering authority either by telephone, email or facsimile promptly but within forty-eight (48) hours, after becoming aware of any 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.

A15 The holder of this environmental authority must notify the administering authority either by telephone, email or facsimile promptly but within forty-eight (48) hours, after becoming aware of any monitoring result that demonstrates an exceedance of any limit imposed in this environmental authority.

A16 The notification required under condition A14 must include, but not be limited to, the following:

(a) the environmental authority number and name of the holder;
(b) the name and telephone number of the designated contact person;
(c) the location of the incident;
(d) the date and time of the incident;
(e) the time the holder of the environmental authority became aware of the incident;
(f) the estimated quantity and type of substances involved in the incident;
(g) the cause of the incident if known;
(h) a description of the nature and effects of the incident including environmental risks, and any risks to public health or livestock;
(i) any sampling conducted or proposed, relevant to the incident;
(j) immediate actions taken to prevent or mitigate any further environmental harm caused by the incident;
(k) what notification to person or persons who may be affected by the incident has occurred/is being undertaken.

A17 Within fifteen (15) business days, or a timeframe otherwise agreed between the holder of this environmental authority and the administering authority, following the initial notification of an 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 incident.

Complaints

A18 The holder of this environmental authority must record all environmental complaints received about the mining activities including the following details:

(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.

A19 When requested by the administering authority, the holder of this environmental authority must undertake relevant specified monitoring within a timeframe nominated by the administering authority to investigate any complaint of environmental harm. The results of the investigation (including an analysis and interpretation of the monitoring results) and abatement measures implemented must be provided to the administering authority within fifteen (15) business days of completion of the investigation, and no later than fifteen (15) business days after the end of the timeframe nominated by the administering authority to undertake the investigation.

Community

A20 The holder of this environmental authority must establish, promote and maintain easily accessible lines of communication between residents, local businesses, community members, land owners and temporary residents, reasonably expected to be affected by the mining activities. This must include but not be limited to the following:

(a) regular public community forums at intervals of not less than six (6) months; or

(b) the establishment of a consultative committee with representation from local businesses, residents and other relevant community members that meets at regular intervals as determined by the committee.

Third party auditing

A21 Compliance with the conditions of this environmental authority must be audited by an appropriately qualified third party auditor, nominated by the holder, within one (1) year of the commencement of this environmental authority, and then at regular intervals not exceeding three (3) years.

A22 Within one (1) month of receiving the final version of the third party auditor's report, the holder of this environmental authority must submit a copy to the administering authority. Within three (3) months of providing a copy of the final report to the administering authority, the holder of this environmental authority must provide a written report to the administering authority addressing the:

(a) actions taken, or proposed to be taken, by the holder to ensure compliance with this environmental authority;

(b) actions taken to prevent a recurrence of any non-compliance issues identified by the audit.

A23 The third party auditor must certify the independent findings of the audit in the report.

A24 The financial costs of the third party audit are the responsibility of the holder of this environmental authority.

A25 The holder of this environmental authority must as soon as practicable act upon any recommendations arising from the final issued audit report by:

(a) investigating any non-compliance issues identified by the audit;

(b) implementing measures or taking necessary action to ensure compliance with the requirements of this environmental authority.

Exploration

A26 Disturbance due to exploration activities in areas not scheduled to be mined must be rehabilitated in accordance with provisions detailed in the administering authority's *Eligibility criteria and standard conditions for exploration and mineral development projects*.

Abrasive Blasting

A27 Where reasonable and practicable, abrasive blasting and metal surface coating must be carried out inside buildings or spray booths, so as to contain spent blasting media and other material.

A28 Where reasonable and practicable, open air abrasive blasting and / or spray painting activities must be carried out using temporary shrouding, screens, polythene sheeting or other methods to prevent the release of contaminants that may cause a nuisance at any nuisance sensitive or commercial place.

NOTE: Refer to the Department of Employment Training and Industrial Relations – Workplace Health and Safety for any safety requirements that may apply to your specific operations.

Definitions

A29 Words and phrases used throughout this environmental authority are defined in Schedule J – Definitions. Where a definition for a term used in this environmental authority is sought and the term is not defined within this environmental authority, the definitions in the *Environmental Protection Act 1994*, its Regulations and Environmental Protection Policies must be used.

Standards and Guidelines

A30 Where a condition of this environmental authority requires compliance with a standard, guideline or manual published externally to this environmental authority and the standard, guideline or manual is amended or changed subsequent to the issue of this environmental authority, the holder must:

(a) comply with the amended or changed standard, guideline or manual:

(i) within twelve (12) months of the amendment or change being made, unless a different period is specified in the amended standard, guideline, manual or relevant legislation; or

(ii) a timeframe otherwise agreed between the holder of this environmental authority and the administering authority;

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

Existing Fuel Storages

A31 The fuel storages listed in Schedule A - Table 1 (Fuel Storages that do not meet the Australian Standard AS1940) are not required to be upgraded to the Australian Standard AS1940 for the aspects listed in Schedule A - Table 1.

A32 The fuel storages listed in Schedule A - Table 1 (Fuel Storages that do not meet the Australian Standard AS1940) must be maintained to ensure their performance in accordance the relevant standard listed in Schedule A - Table 1.

Schedule A – Table 1 (Fuel Storages that do not meet the Australian Standard AS1940)

Fuel storage	Aspects not in compliance with AS 1940	Relevant standard at time of construction
Copper Smelter Tank 1	Insufficient bund capacity, insufficient wall height, sealing required, not certified.	AS-CB5 : 1957 SAA Code for Oil Fuel Installations (Built prior to 1960)
Copper Smelter Tank 2	Insufficient bund capacity, insufficient wall height, sealing required, not certified.	AS-CB5 : 1957 SAA Code for Oil Fuel Installations (Built prior to 1960)
Copper Smelter Tank 3	Insufficient bund capacity, insufficient wall height, sealing required, not certified.	AS-CB5 : 1957 SAA Code for Oil Fuel Installations (Built prior to 1960)

A33 Mining activities undertaken on ML2484, ML2485, ML2725, ML2726, ML2727, ML5414, ML5424, ML5432, ML5434 and ML5576 (referred to as Limestone Leases) must be undertaken in accordance with the Eligibility criteria and standard conditions for mining lease activities and Appendix 2.

A34 Mining activities undertaken on ML2721, ML2722, ML2723 and ML2724 (referred to as Greenwood Mine Leases) must be undertaken in accordance with Conditions A1-A10, A14-19, A26, A29-30 and A35-A47 and Appendix 2.

A35 The release of noxious or offensive odours or any other airborne contaminants from the mining activities must not cause environmental harm at any sensitive place or commercial place.

A36 Noise from the mining activities must not cause environmental harm at any sensitive place or commercial place.

A37 Contaminants that will or may cause environmental harm must not directly or indirectly be released to land except as permitted under this environmental authority.

A38 Any spillage of wastes, contaminants or other materials must be cleaned up as soon as practicable.

A39 Land disturbed by mining activities must be rehabilitated in accordance with the administering authority's Guideline - Rehabilitation Requirements for Mining Resource Activities.

A40 Areas that are available for rehabilitation must be identified in the current Plan of Operations.

NOTE: Areas that are available for rehabilitation are those where the limestone seam has been extracted and that are not required for the working face of further limestone extraction.

A41 Rehabilitation must commence progressively as areas become available for rehabilitation in accordance with the Plan of Operations.

A42 All explosives, hazardous chemicals, corrosive substances, toxic substances, gases, flammable or combustible liquids and dangerous goods must be stored and handled in accordance with the current, relevant Australian Standard where such is applicable.

A43 The holder of this environmental authority must not directly or indirectly release waste from the mining area to any waters.

A44 All waste generated in carrying out the mining activity must be lawfully reused, recycled or removed to a facility that can lawfully accept the waste.

A45 Regulated waste must only be removed to a place lawfully able to accept it.

A46 The holder of this environmental authority must not directly or indirectly release contaminants to any waters, or the bed or bank of any waters.

A47 The holder of this environmental authority must develop an Erosion and Sediment Control Plan by **31 December 2016**. The 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 minimise erosion and the release of sediment to receiving waters and contamination of stormwater.

END OF CONDITIONS FOR SCHEDULE A

Schedule B – Air

General

B1 Unless authorised by this environmental authority, the release of noxious or offensive odours or any other airborne contaminants from the mining activities must not cause environmental harm at any sensitive place or commercial place.

Point source releases to air

B2 Subject to condition B19, point source emissions released to the atmosphere must only be released from release point/s specified in Schedule B - Table 1 (Point Source Air Emissions) and identified in Schedule K - Figure 1 (Authorised Point Source Air Emissions) and must be monitored at the frequencies and for the contaminants specified in Schedule B - Table 1.

B3 The releases from a release point shown in Schedule B - Table 1 (Point Source Air Emissions) must be directed vertically upwards, with no impedance or hindrance.

Schedule B - Table 1 (Point Source Air Emissions)

Release point	Release Height (m)	Coordinates (GDA94 MGA Zone 54)		Contaminant	Monitoring Frequency
		Easting	Northing		
Copper Smelter Stack	155	341806	7707100	Sulfur dioxide	Continuous[1]
				Total of arsenic, cadmium and lead	Isokinetic quarterly
				Particulate matter	Isokinetic quarterly
Lead Smelter Stack	270	341975	7707737	Sulfur dioxide	Continuous[1]
				Total of arsenic, cadmium and lead	Isokinetic quarterly
				Particulate matter	Isokinetic quarterly
HMA Stack	40	342067	7707382	Sulfur dioxide	Continuous[1]
				Total of arsenic, cadmium and lead	Isokinetic quarterly
				Particulate matter	Isokinetic quarterly
Lead Zinc Filter Plant Shed Stack	17	342031	7708817	Sulfur dioxide	Continuous[1]
				Total of arsenic, cadmium and lead	Isokinetic quarterly
				Particulate matter	Isokinetic quarterly

1 Monitoring which provides data equal to at least 75 percent of the total possible data required in any period of:
(a) twelve (12) calendar months; and
(b) three (3) calendar months;
satisfies this requirement.

B4 Point source emissions released to the atmosphere from the release points specified in Schedule B - Table 1 (Point Source Air Emissions) must be released at a height not less than the corresponding height stated for that release point in Schedule B - Table 1.

B5 The holder of this environmental authority must conduct and keep records of a monitoring program of the concentrations of contaminants specified in Schedule B - Table 1 (Point Source Air Emissions) released to the atmosphere at the release points and at the frequency specified in Schedule B - Table 1 (Point Source Air Emissions). This program must comply with the following:

(a) monitoring for the release points specified in Schedule B - Table 1 (Point Source Air Emissions) must comply with the Australian Standard AS 4323.1 - 1995 "*Stationary source emissions Method 1: Selection of sampling provisions*";

(b) all determinations of contaminant releases to the atmosphere must be made in accordance with methods prescribed in the most recent version of the administering authority's *Air Quality Sampling Manual*. If monitoring requirements for specific contaminants are not described in the Manual, monitoring protocols must be in accordance with a method as approved by New South Wales DEC/EPA, Victorian EPA or United States EPA and agreed to by the administering authority;

(c) the following determinations must also be made for each monitoring event specified in Schedule B – Table 1 (Point Source Air Emissions):

(i) gas velocity and volume flow rate;

(ii) temperature and pressure; and

(iii) water vapour.

Ambient Air Quality Monitoring Program

B6 The holder of this environmental authority must carry out an ambient air quality monitoring program for the air quality indicators at the monitoring locations specified in Schedule B - Table 2 (Ambient Air Quality Monitoring Program) and Schedule K - Figure 2 (Ambient Air Quality Monitoring Program Locations) and Schedule K - Figure 3 (Ambient Air Quality Zones and Locations) using the methodology and at the frequency specified in Schedule B - Table 2a (Ambient Air Quality Monitoring Program).

Schedule B – Table 2 (Ambient Air Quality Monitoring Program)

Station Number	Monitoring Location	Air Quality Indicators	Coordinates (GDA94 MGA Zone 54)	
			Easting	Northing
1	Soldiers' Hill (*Wau St, Soldiers Hill*)	TSP and PM_{10} via HVAS Heavy metals via HVAS[1] Dust deposition and metals in deposited dust[2] Sulfur dioxide	342541	7709936
2	Sunset State School (*Able Smith Pde, Sunset*)	Sulfur dioxide	344967	7709189
3	Corella Street (*Corella St, Townview*)	Sulfur dioxide	344870	7707257
4	Healy State School (*Thompson* Road, Healy)	Sulfur dioxide	343656	7705584
5	Suter Road (*Suter Rd, Healy Heights*)	TSP and PM_{10} via HVAS PM_{10} and $PM_{2.5}$ via BAM[4] Heavy metals via HVAS[1] Dust deposition and metals in deposited dust[2] Sulfur dioxide	344222	7704865
6	RSL (*Carbonate St, Soldiers Hill*)	TSP and PM_{10} via HVAS PM_{10} and $PM_{2.5}$ via BAM[4] Heavy metals via HVAS[1] Heavy metals via XACT[3] Dust deposition and metals in deposited dust[2] Sulfur dioxide	342493	7708826
7	Zena Street (*Zena St, Menzies*)	Sulfur dioxide	343189	7708660
8	Police Reserve (*Camooweal St, Mount Isa*)	Sulfur dioxide	343026	7707107
9	Spinifex State College (*Fifth Ave, Parkside*)	TSP and PM_{10} via HVAS Heavy metals via HVAS[1] Heavy metals via XACT[3] Dust deposition and metals in deposited dust[2] Sulfur dioxide	342565	7706466
10	Parkside Apartments (*Parkside, Mount Isa*)	Sulfur dioxide	342643	7705759
11	Mary Street (*Mary St, Mount Isa*)	TSP and PM_{10} via HVAS Heavy metals via HVAS[1] Dust deposition and metals in deposited dust[2]	343195	7707870

Station Number	Monitoring Location	Air Quality Indicators	Coordinates (GDA94 MGA Zone 54)	
			Easting	Northing
		Sulfur dioxide		
12	May Downs Homestead (*May Downs Rd*)	TSP and PM_{10} via HVAS PM_{10} and $PM_{2.5}$ via BAM[4] Heavy metals via HVAS[1] Dust deposition and metals in deposited dust[2] Sulfur dioxide	327200	7722200
13	Nineteenth Avenue (*Nineteenth Ave, Parkside*)	TSP and PM_{10} via HVAS Heavy metals via HVAS[1] Dust deposition and metals in deposited dust[2] Sulfur dioxide	342643	7705595
C1	C1	Sulfur dioxide – Passive sampling - annual average	327421	7720556
C15	C15	Sulfur dioxide – Passive sampling - annual average	327390	7744811
C23	C23	Sulfur dioxide – Passive sampling - annual average	329762	7714051
C20	C20	Sulfur dioxide – Passive sampling - annual average	332364	7701462
C36	C36	Sulfur dioxide – Passive sampling - annual average	351304	7688022
C37	C37	Sulfur dioxide – Passive sampling - annual average	316907	7730485

1 Heavy metals via HVAS (High Volume Air Sampler) means the concentration of arsenic measured as the total metal content in PM_{10}, cadmium as the total metal content in PM_{10} and lead measured as the total metal content in Total Suspended Particulates (TSP).
2 The following metals must be monitored in deposited dust: arsenic, cadmium, copper and lead.
3 The following metals must be monitored via XACT (continuous metals analyser): arsenic, cadmium and lead.
4 BAM means Beta Attenuation Monitor.

Schedule B – Table 2a (Ambient Air Quality Monitoring Program)

Air Quality Indicators[1]	Monitoring Method[6]	Monitoring Frequency
TSP and PM_{10} via HVAS	High Volume Air Sampler (HVAS) AS/NZS 3580.9.15	Once every 6 days[2, 5]
Heavy Metals via HVAS	High Volume Air Sampler (HVAS) AS/NZS 3580.9.15	Once every 6 days[2, 5]
Heavy Metals via XACT	Continuous Metals Analyser (XACT)	Hourly[3]
PM_{10} and $PM_{2.5}$ via BAM	Beta Attenuation Monitor (BAM) AS/NZS 3580.9.11	Continuous[2]
Sulfur dioxide	Sulfur Dioxide Analyser	Continuous[2]
Sulfur dioxide – annual average	Passive sampling – annual average Sulfur dioxide	Once every calendar month for annual average
Dust deposition and metals in deposited dust	Dust Deposition AS/NZS 3580.10.1	Once every calendar month[4]

1 Details for Air Quality Indicators set out in Schedule B - Table 2 (Ambient Air Quality Monitoring Program).
2 Monitoring which provides data equal to at least 75 percent of the total possible data required in any period of:
  a. twelve (12) calendar months; and
  b. three (3) calendar months;
  satisfies this requirement.
3 With the exception of periods where external equipment supply or service prevents effective operation of the XACT units, monitoring which provides data equal to at least sixty percent (60%) of the total possible data, for averaged heavy metals, required in any period of twelve (12) calendar months satisfies this requirement. The holder of this environmental authority must inform the administering authority within one (1) week of an equipment supply issue that may interfere with the requirement.
4 Monitoring which provides data equal to at least 75 percent (75%) of the total possible data required in any period of twelve (12) calendar months satisfies this requirement.
5 Due to accessibility restrictions at May Downs Homestead, a variation of monitoring frequency is allowable.
6 Monitoring methods to be completed in line with the latest editions of the Australian Standard, where applicable.

Ambient Air Quality – Particulate Matter

B7 The mining activities must not cause the maximum concentrations specified in Schedule B - Table 3 (Ambient Air Quality - Particulate Matter Maximum Contaminant Concentrations) to be exceeded when measured at any commercial or sensitive place.

Schedule B - Table 3 (Ambient Air Quality - Particulate Matter Maximum Contaminant Concentrations)

Air Quality Indicator	Averaging Time	Maximum Concentration ($\mu g/m^3$)
Total Suspended Particulates	Calendar year	90
Particulate matter with an aerodynamic diameter of less than 10 microns (PM_{10})[1]	24 hours	50
Particulate matter with an aerodynamic diameter of less than 2.5 microns ($PM_{2.5}$)	24 hours	25
Particulate matter with an aerodynamic diameter of less than 2.5 microns ($PM_{2.5}$)	Calendar year	8
Arsenic (measured as the total metal content in PM_{10})	Calendar year	0.006[2]
Cadmium (measured as the total metal content in PM_{10})	Calendar year	0.005
Lead (measured as the total metal content in total suspended particulates)	Calendar year	0.5

1 The maximum concentration of PM_{10} is authorised to be exceeded for not more than five (5) days each calendar year. If there are more than five (5) days in a calendar year on which the average PM_{10} concentration at any commercial or sensitive place exceeds $50\mu g/m^3$ ('exceedance days'), the holder of this environmental authority must determine PM_{10} contributions from Mount Isa Mines for each exceedance day. The maximum PM_{10} contribution by Mount Isa Mines to the measured 24 hour average PM_{10} concentration at any commercial or sensitive place must not exceed $25ug/m^3$ on more than five (5) exceedance days in a calendar year.
2 Subject to condition B26.

Ambient Air Quality – Dust Deposition

B8 The mining activities must not cause an exceedance of the dust deposition maximum limit specified in Schedule B - Table 4 (Ambient Air Quality - Dust Deposition Limits and Trigger Values) at a commercial or sensitive place.

Schedule B – Table 4 – (Ambient Air Quality - Dust Deposition Limits and Trigger Values)

Contaminant	Limit type	Value of Deposition Limit/Trigger
Arsenic and its compounds as arsenic[2]	Trigger value	4 $\mu g/m^2$/day (calculated as an annual average per calendar year)
Cadmium and its compounds as cadmium[2]	Trigger value	2 $\mu g/m^2$/day (calculated as an annual average per calendar year)
Copper and its compounds as copper[2]	Trigger value	330 $\mu g/m^2$/day (calculated as an annual average per calendar year)
Lead and its compounds as lead[2]	Trigger value	100 $\mu g/m^2$/day (calculated as an annual average per calendar year)
Dust deposition measured as total insoluble matter (insoluble analysis and particulate matter deposition rate)[1]	Maximum limit	120 mg/m^2/day (calculated as an annual average per calendar year)

1 The dust deposition limit is the arithmetic mean of the daily deposition rate values for individual samples expressed to a 30-day month as per AS/NZS 3580.10.1:2016 (or more recent edition) over the calendar year.
2 Metal analysis is to be carried out in accordance with a methodology, sufficient to produce representative results capable of comparison against the respective trigger values.

B9 In the event of monitoring results showing an exceedance of any of the trigger values specified in Schedule B – Table 4 (Ambient Air Quality – Dust Deposition Limits and Trigger Values) at a commercial or sensitive place, the holder of this environmental authority must:

(a) complete an investigation to identify the potential cause of the exceedance;

(b) consider all risk assessments and identified controls from conditions C35 and C36;

(c) if the investigation shows that the exceedance is not attributable to the mining activities then no further action is required and this must be advised to the administering authority;

(d) if the investigation shows that the exceedance is attributable to the mining activities, provide a written report to the administering authority within four (4) months of the date of receipt of monitoring results, outlining:

(i) details of the investigation carried out;
(ii) identification of relevant sources and controls;
(iii) an assessment of potential and actual impacts to environmental values; and
(iv) actions taken or to be taken to minimise environmental harm.

Ambient Air Quality – Sulfur Dioxide

B10 The mining activities must not cause the maximum concentrations specified in Schedule B – Table 5 (Ambient Air Quality – Maximum Sulfur Dioxide Concentrations) to be exceeded when measured at any commercial or sensitive place.

Schedule B – Table 5 (Ambient Air Quality – Maximum Sulfur Dioxide Concentrations)

Averaging Time	Maximum Sulfur Dioxide Concentration ($\mu g/m^3$)
Annual	57
1 day	230[1, 2]
1 hour	570[1, 2]

1. Subject to condition B26.
2. The maximum 1 day and 1 hour concentration of sulfur dioxide is authorised to be exceeded for not more than one (1) day each calendar year.

B11 The mining activities must not cause the annual concentration specified in Schedule B - Table 6 (Ambient Air Quality - Maximum Sulfur Dioxide Concentrations in each Zone) to be exceeded when measured at a place that is not a commercial or sensitive place outside the boundary of the mining lease and in the relevant zone as specified in Schedule B - Table 6 and Schedule K – Figure 3 (Ambient Air Quality Zones and Locations).

Schedule B – Table 6 (Ambient Air Quality - Maximum Sulfur Dioxide Concentrations in each Zone)

Zone	Maximum Annual Sulfur Dioxide Concentration ($\mu g/m^3$)
Zone 1 - Eastern Zone - outside of town	32
Zone 2 – Western Zone up to 15 kilometres from the mining lease boundary	40* *Interim maximum annual sulfur dioxide concentration. The maximum annual sulfur dioxide concentration for Zone 2 will be notified to the administering authority by **30 June 2023**.
Zone 3 – Western Zone greater than 15km from the mining lease boundary	32

B12 An Environmental Impact Monitoring Program (EIMP) must be implemented and maintained to monitor and record the effects of the release of contaminants to air on the receiving environment, with the aims of identifying and describing the extent of any adverse impacts to local environmental values and monitoring any changes in the receiving environment.

Note: For the purposes of the EIMP, the receiving environment is Zone 2 as defined in Schedule B - Table 6 (Ambient Air Quality - Maximum Sulfur Dioxide Concentrations in each Zone) and Schedule K – Figure 3 (Ambient Air Quality Zones and Locations).

B13 The EIMP must include:

(a) monitoring of the potential adverse environmental impacts caused by the release of contaminants to air by the mining activities to flora and fauna communities and soil quality including nutrient loads, acidity, erosion and heavy metals;

(b) sufficient spatial and temporal replication (including controls) to enable statistically valid conclusions to be made concerning impacts of the release of contaminants to air on the receiving environment.

B14 A report detailing the findings of the EIMP must be submitted to the administering authority by **30 June 2023**, and every four (4) years on **30 June**. The report must include a revised EIMP, and the holder of the environmental authority must give due consideration to any comments made on the revised EIMP by the administering authority.

B15 The maximum annual sulfur dioxide concentration for Zone 2 (as defined in Schedule B - Table 6 (Ambient Air Quality - Maximum Sulfur Dioxide Concentrations in each Zone) and Schedule K – Figure 3 (Ambient Air Quality Zones and Locations) is an interim limit of 40 µg/m^3, until such time as a site-specific limit is determined. The holder of this environmental authority will undertake a further study (or studies), which may be a part of the EIMP, to determine a site specific maximum annual sulfur dioxide limit specific to Zone 2 on or before **30 June 2023**.

Ambient Air Quality Monitoring Program Requirements

B16 Samples taken for the ambient air quality monitoring program 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.

Air Quality Control System

B17 The holder of this environmental authority must implement and maintain an Air Quality Control System (AQC System).

B18 The AQC System must include:

(a) development and implementation of enhanced operating protocols, including mandatory requirements for a reduction or cessation of smelting operations if the hourly and daily sulfur dioxide levels specified in this environmental authority are likely to be reached or exceeded.

(b) appointed and authorised air quality control personnel (AQC personnel) with responsibility:

(i) for all or part of the smelting operations, having regard to the conditions of this environmental authority, to decide whether or not meteorological conditions are suitable;

(ii) for other mining activities including blasting, having regard to the conditions of this environmental authority, to advise about meteorological conditions;

(c) requirements that smelter operating management act on the advice of the AQC personnel in accordance with the operating protocols, except under conditions of emergency, or when plant and individual safety are of concern;

(d) real-time access to and recording of sulfur dioxide concentration data measured at the relevant continuous monitoring locations specified in Schedule B – Table 2 (Ambient Air Quality Monitoring Program);

(e) access to relevant meteorological information available from the Bureau of Meteorology or an equivalent provider, including vertical profile of wind speed and direction indicators, air temperature, relative humidity, or related parameter; and

(f) a fully operational and calibrated Emissions Forecast and Control System (eFACS), which must:

(i) predict sulfur dioxide ground level concentrations ahead of time;

(ii) provide an estimated breakdown of the percentage contribution from the main sources when sulfur dioxide is measured at the continuous sulfur dioxide monitoring stations specified in this environmental authority; and

(iii) provide improved ability to AQC personnel to direct smelting operations to meet the sulfur dioxide ground level concentrations to the levels stipulated in this environmental authority.

Power Generation

B19 The release of emissions to air from the Xstrata Power Station and Mines Power Station must only occur from those release points identified in Schedule B – Table 7 (Power Station Point Source Air Emissions) and must be directed vertically upwards without any impedance or hindrance.

B20 Emissions must be monitored at a frequency not less than that specified in Schedule B - Table 7 (Power Station Point Source Air Emissions).

B21 Monitoring of any releases to the air from the Xstrata Power Station and Mines Power Station required by a condition of this environmental authority must be carried out in accordance with the following requirements:

(a) monitoring provisions for the release points listed in Schedule B - Table 7 (Power Station Point Source Air Emissions) must comply with the Australian Standard AS4323.1 – 1995 ‘Stationary source emissions Method 1: Selection of sampling positions’ (or more recent editions);

(b) the following tests must be performed for the power station release points specified in Schedule B - Table 7 (Power Station Point Source Air Emissions):

(i) gas velocity and volume flow rate;

(ii) temperature;

(iii) water vapour concentration (moisture content);

(iv) NOx as NO_2;

(v) CO; and

(vi) TSP for diesel fuelled operations only.

(c) where practicable, samples must be taken when emissions are expected to be at maximum rates;

(d) during the sampling of the Xstrata Power Station and Mines Power Station release points, the following additional information must be gathered:

(i) production rate at the time of sampling;

(ii) raw materials used;

(iii) number of equipment operating;

(iv) operation or mixing temperature; and

(v) reference to the actual test methods and accuracy of the methods.

Schedule B – Table 7 (Power Station Point Source Air Emissions)

Location	Source Description	Coordinates (GDA94 MGA Zone 54)		Release Points	Monitoring Frequency
		Easting	Northing		
Xstrata Power Station	Natural gas fired reciprocating engines	341786	7705453	XPS1, XPS2, XPS3, XPS4, XPS5, XPS6, XPS7, XPS8, XPS9, XPS10, XPS11, XPS12, XPS13, XPS14.	1 Sampling event for each release point every four (4) years
Mines Power Station	Boilers, diesel fired and natural gas fired.	342064	7707230	Boiler stacks	

Accreditation of monitoring program

B22 Subject to condition B23, for both ambient air and point source emissions, the monitoring program methods must be accredited by the National Association of Testing Authorities.

B23 The holder of this environmental authority may apply an equivalent system for ensuring adequate monitoring, quality assurance, auditing, and validation procedures. The holder of this environmental authority must seek approval from the administering authority for the use of an equivalent system.

Reporting Requirements

B24 The holder of this environmental authority must ensure all information recorded in the monitoring programs specified in this Schedule B is reviewed by an appropriately qualified person.

B25 The holder of this environmental authority must ensure all information recorded in the monitoring programs specified in Schedule B is supplied to the administering authority:

(a) at the intervals of time specified in Schedule B - Table 8 (Reporting Requirements);

(b) in the format specified by the administering authority; and

(c) except for information that is required hourly, by the last day of the month following the end of the period to which the information relates.

Schedule B – Table 8 (Reporting Requirements)

Air Quality Indicator	Monitoring Method	Reporting Frequency
Ambient Continuous Sulfur Dioxide (Schedule B – Table 2)	Sulfur dioxide – continuous	Hourly, Monthly
Ambient Particles, Metals (Schedule B – Table 2)	TSP[2], PM_{10} and Heavy metals – once every 6 days (HVAS)	Monthly
Ambient Particles, Metals (Schedule B – Table 2)	Heavy metals – Continuous metals analyser (XACT)	Hourly, Monthly, Quarterly Raw data provision to administering authority hourly, with QA/QC data provided monthly and a correlation to HVAS on a quarterly basis.
Ambient Particles (Schedule B – Table 2)	PM_{10} and $PM_{2.5}$ – continuous BAM[3] or equivalent	Hourly, Monthly
Dust deposition (Schedule B – Table 2)	Dust deposition – once every calendar month (deposition gauge)	Quarterly
Point source air emissions (Schedule B – Table 1)	Continuous monitoring of the concentration of sulfur dioxide	Monthly
Point source air emissions (Schedule B – Table 1)	Isokinetic quarterly testing for particulate matter and total arsenic, cadmium and lead	Quarterly
Meteorology[1]	Daily wind speed, wind direction temperature, rainfall, humidity, pressure, total solar radiation (TSR)	Monthly

1. Representative stations as agreed.
2. TSP means Total Suspended Particulates.
3. BAM means Beta Attenuation Monitor.

Copper Smelter Extension Project

B26 Conditions B27 to B39c apply whilst the copper smelter is operational, up to **31 December 2036**. If any part of conditions B1 to B25 are inconsistent with conditions B27 to B39c, then conditions B27 to B39c prevail to the extent of the inconsistency.

Arsenic

B27 The mining activities must not cause the maximum concentrations for arsenic specified in Schedule B - Table 9 (Arsenic Ambient Air Quality - Maximum Contaminant Concentrations) to be exceeded for the relevant year specified when measured at any commercial or sensitive place.

Schedule B - Table 9 (Arsenic Ambient Air Quality Maximum Contaminant Concentrations)

Arsenic (measured as the total metal content in PM_{10})	Averaging Time	Maximum Concentration ($\mu g/m^3$)[1]
2022 to 2023	Calendar year	0.015
2024 to 2026		0.014
2027 to 2031		0.013
2032 to 2036		0.012

1. Applies to all stations specified in Schedule B – Table 2 (Ambient Air Quality Monitoring Program), excluding May Downs Homestead (May Downs Rd).

Sulfur Dioxide

B28 The mining activities must not cause the maximum concentrations specified in Schedule B - Table 10 (Sulfur Dioxide Concentrations) to be exceeded when measured at each monitoring location specified in Schedule B Table 2 (Ambient Air Quality Monitoring Program) or any commercial or sensitive place.

Schedule B – Table 10 (Sulfur Dioxide Concentrations)[1,2,3]

Period	Averaging Time	Percentile[1]	Sulfur Dioxide (SO_2) Concentration ($\mu g/m^3$)
2022	1 day	99th percentile (3 days)	230
	1 hour	98th percentile (175 hours)	570
		99.6th percentile (35 hours)	1,140
2023-2024	1 day	99.45th percentile (2 days)	230
	1 hour	98.5th percentile (131 hours)	570
		99.7th percentile (26 hours)	1,140
2025 to 2026	1 day	99.45th percentile (2 days)	230
	1 hour	98.75th percentile (110 hours)	570
		99.75th percentile (22 hours)	1,140
2027 to 2031	1 day	99.45th percentile (2 days)	230
	1 hour	99th percentile (88 hours)	570
		99.8th percentile (17 hours)	1,140
2032 to 2036	1 day	99.73rd percentile (1 day)	230
	1 hour	99.43rd percentile (50 hours)	570
		99.86th percentile (12 hours)	1,140

1. Percentile values to be calculated at each monitoring location on a calendar year basis with averaging times based on whole clock hours and calendar days.
2. Monitoring data will be adjusted to 0°C and 1 atmosphere pressure.
3. Applies to all stations specified in Schedule B – Table 2 (Ambient Air Quality Monitoring Program), excluding May Downs Homestead (May Downs Rd).

B29 An early warning and response system for the May Downs Homestead area must be developed and implemented by the environmental authority holder.

B30 The mining activities must not cause the maximum concentrations specified in Schedule B – Table 10a (Arsenic Ambient Air Quality Maximum Contaminant Concentrations – May Downs) or Schedule B – Table 10b (Sulfur Dioxide Concentrations – May Downs) to be exceeded when measured at station 12 – May Downs Homestead (*May Downs Rd*) specified in Schedule B Table 2 (Ambient Air Quality Monitoring Program).

Schedule B – Table 10a (Arsenic Ambient Air Quality Maximum Contaminant Concentrations – May Downs)

Arsenic (measured as the total metal content in PM_{10})	Averaging Time	Maximum Concentration ($\mu g/m^3$)
2022	N/A May Downs is not subject to any air quality limits until 1 January 2023.	
2023 to 2024	Calendar year	0.019
2025 to 2026		0.018
2027 to 2031		0.017
2032 to 2036		0.016

Schedule B – Table 10b (Sulfur Dioxide Concentrations – May Downs)[1,2]

Period	Averaging Time	Percentile	Sulfur Dioxide (SO_2) Concentration ($\mu g/m^3$)
2022	N/A May Downs is not subject to any air quality limits until 1 January 2023.		
2023-2026	1 hour	98th percentile (175 hours)	570
		99.6th percentile (35 hours)	1,140
2027 to 2031	1 hour	98.5th percentile (131 hours)	570
		99.65th percentile (31 hours)	1,140
2032 to 2036	1 hour	98.75th percentile (110 hours)	570
		99.7th percentile (26 hours)	1,140

1. Percentile values to be calculated at each monitoring location on a calendar year basis with averaging times based on whole clock hours and calendar days.
2. Monitoring data will be adjusted to 0°C and 1 atmosphere pressure.

B31 The holder of this environmental authority must develop, implement and maintain a community information program which highlights and informs the community of the risk to the at-risk population groups from exposure to sulfur dioxide and other significant contaminants.

B32 The program required under condition B31 must include but not be limited to:

(a) providing a real-time health risk indicator for sulfur dioxide to the Mount Isa community through a smart phone application and the environmental authority holder's website;

(b) providing real-time information for arsenic, cadmium and lead via HVAS to the Mount Isa community through the environmental authority holder's website;

(c) an alert system as part of the real-time health risk indicator to warn the community when the sulfur dioxide concentration is likely to exceed 500µg/m^3 for 15 consecutive minutes;

(d) promoting the community feedback hotline for people with questions or concerns relating to potential impacts of sulfur dioxide and other significant contaminants;

(e) publication of 'air quality in Mount Isa information' using a range of communication platforms and tools to provide the community with information about air quality management by the environmental authority holder;

(f) information sessions to community groups including at risk populations, schools and childcare centres on air quality in Mount Isa at least annually;

(g) community information sessions in relation to air quality in Mount Isa at least once every six (6) months. These sessions can be a part of the forums specified under condition A20; and

(h) consultation with the Queensland Department of Health and primary health care professionals in Mount Isa in relation to management of at-risk population groups.

Emissions

B33 An Arsenic Emissions Source Study must be developed by an appropriately qualified person and provided to the administering authority by **30 September 2023**.

B33a The Arsenic Emissions Source Study in condition B33 must:

(a) identify and quantify contributions from individual arsenic emission sources at a resolution sufficient to enable the design of emissions controls or remedies, specifically applicable to the respective sources;

(b) derive refined arsenic air dispersion modelling and emission estimates;

(c) determine key emission sources by including analysis of all available and relevant air quality monitoring data:

(i) at the monitoring locations specified in Schedule B – Table 2 (Ambient Air Quality Monitoring Program);

(ii) at the boundary of the mining lease;

(d) include a review of feed sources, volumes and compositions and identify any correlation to emissions; and

(e) detail any other matters required to understand arsenic emission sources.

B34 An Air Quality Emissions Management Plan (AQEMP) for sulfur dioxide and arsenic must be developed by an appropriately qualified person and provided to the administering authority by **30 November 2023,** and then at regular intervals not exceeding four (4) years.

B34a The AQEMP, required under condition B34 must be implemented and include the following, for the relevant four (4) yearly reporting period:

(a) consideration of existing information including, but not limited to dispersion modelling studies and air quality monitoring programs;

(b) an overview of air quality emission sources;

(c) an overview of potential of air quality impacts;

(d) describe management strategies to minimise emissions from the identified sources through best practice environmental management;

(e) a schedule to incorporate best practice emission mitigation; and

(f) an update on the schedule implementation for the preceding 4-year period.

B35 An Air Quality Performance Review Report for sulfur dioxide and arsenic must be completed by an appropriately qualified person and provided to the administering authority by **1 November 2026**, and then at regular intervals not exceeding four (4) years.

B35a The Air Quality Performance Review Report required by Condition B35 must include the following:

(a) an analysis of air quality data of the previous four (4) calendar years;

(b) predicted future air quality for the next five (5) years, based on anticipated future emissions and dispersion modelling;

(c) an updated human health risk assessment in accordance with the most recent version of the *enHealth Environmental Health Risk Assessment - Guideline for assessing human health risks from environmental hazards*, accounting for lifetime exposure risk, based on all available and valid air quality data;

(d) consideration of contemporary air quality standards and guidance on health impacts from air pollution;

(e) an assessment on the adequacy of current operational controls and a review of best practice emission mitigation;

(f) an assessment of the controls identified through any risk assessment completed under conditions C35 and C36;

(g) an update on the action implementation for the preceding 4-year period; and

(h) provide recommendations for minimising air emissions through best practice emission mitigation.

Trigger Action Response Plan (TARP)

B36 The holder of this environmental authority must develop, implement, and maintain a Trigger Action Response Plan (TARP) that ensures compliance with the limits specified in:

(a) Schedule B - Table 3 (Ambient Air Quality - Particulate Matter Maximum Contaminant Concentrations) for cadmium and lead; or

(b) Schedule B - Table 9 (Arsenic Ambient Air Quality - Maximum Contaminant Concentrations); or

(c) Schedule B - Table 10 (Sulfur Dioxide Concentrations).

B36a The TARP required by condition B36 must be reviewed by **31 March** annually and as often as necessary to ensure compliance with the limits specified in:

(a) Schedule B - Table 3 (Ambient Air Quality - Particulate Matter Maximum Contaminant Concentrations) for cadmium and lead; or

(b) Schedule B - Table 9 (Arsenic Ambient Air Quality - Maximum Contaminant Concentrations); or

(c) Schedule B - Table 10 (Sulfur Dioxide Concentrations).

B36b Actions taken under or in response to the TARP must be documented in an auditable form.

Notification

B37 After **1 April** each year, by the tenth business day of each calendar month, the holder of this environmental authority must notify the administering authority in accordance with condition A16, of any monitoring results in the preceding month which cause the average of the year-to-date concentration of the applicable metal, over the predicted number of sampling events for the corresponding calendar year to exceed the corresponding proportion of the applicable annual limit, as specified in:

(a) Schedule B - Table 3 (Ambient Air Quality - Particulate Matter Maximum Contaminant Concentrations) for cadmium and lead; or

(b) Schedule B - Table 9 (Arsenic Ambient Air Quality - Maximum Contaminant Concentrations).

NOTE: In the event that MIM have submitted a notification for an exceedance of a trigger level as required under this condition, and the year- to-date concentration remains above the notification level in the following months, an additional notification is not required, however the holder of this Environmental Authority shall provide an update of the actions taken as per condition B37a.

B37a The notification required by condition B37 must include advice on actions taken or intended to be taken under the TARP.

B38 The holder of this environmental authority must initiate and maintain regular engagement that includes briefings on the progress of third-party investigations required under condition B39, with the administering authority and the Queensland Department of Health, immediately upon becoming aware of any exceedance of a limit specified in:

(a) Schedule B - Table 3 (Ambient Air Quality - Particulate Matter Maximum Contaminant Concentrations) for cadmium, and lead; or

(b) Schedule B - Table 9 (Arsenic Ambient Air Quality - Maximum Contaminant Concentrations).

Investigations

B39 The holder of this environmental authority must engage a third party that is an appropriately qualified person/s to investigate and report on any exceedance of a limit specified in:

(a) Schedule B - Table 3 (Ambient Air Quality - Particulate Matter Maximum Contaminant Concentrations) for cadmium and lead; or

(b) Schedule B - Table 9 (Arsenic Ambient Air Quality - Maximum Contaminant Concentrations).

B39a The third-party investigation required by condition B39, must include:

(a) a systematic analysis (Root Cause Analysis - RCA) to identify factors that contributed to the accumulation of the relevant contaminant above the maximum contaminant concentrations, carried out:

(i) in accordance with International Standard AS/NZ IEC 62740:2016; or

(ii) if applicable, and by agreement with the administering authority, using an alternative standard that establishes relevant alternative methodologies; and

(b) a human health risk assessment to identify potential environmental harm associated with the release of the relevant contaminant above the maximum contaminant concentrations, carried out:

(i) in accordance with the most recent version of the *enHealth Environmental Health Risk Assessment - Guideline for assessing human health risks from environmental hazards*, if applicable;

(ii) if applicable, an alternative standard that establishes alternative methodologies, in agreement with the administering authority, in consultation with the Queensland Department of Health; and

(c) the human health risk assessment required by condition B39a(b) must include:

(i) a review of all available and valid data as required to assess the lifetime exposure risk, including the historic and projected exposure risk over the potential life of the mining activities; and

(ii) an assessment of the likely acute and chronic human health impact/s of the exposure.

B39b The investigation report required by conditions B39 and B39a, must be provided to the administering authority by **30 June**, following the period of the exceedance of a limit specified in Schedule B - Table 3 (Ambient Air Quality - Particulate Matter Maximum Contaminant Concentrations) for cadmium, and lead; or Schedule B - Table 9 (Arsenic Ambient Air Quality - Maximum Contaminant Concentrations), or at a further timeframe as agreed by the administering authority.

B39c The investigation report required by condition B39b must include:

(a) a documented record of the investigations undertaken, including the methods and analysis and any assumptions or uncertainties; and

(b) conclusions relating to the RCA and human health risk assessment; and

(c) recommendations for the holder of the environmental authority, including any necessary actions or updates to processes, procedures, or site infrastructure to prevent a reoccurrence of the non-compliance; and

(d) a certification of:

(i) the independence and accuracy of the third-party report; and

(ii) the appropriately qualified person/s professional qualifications, training, skills and experience relevant to the investigation.

END OF CONDITIONS FOR SCHEDULE B

Schedule C – Land and Rehabilitation

General

C1 Unless authorised by this environmental authority, contaminants that will or may cause environmental harm must not directly or indirectly be released to land except as permitted under this environmental authority.

C2 Subject to condition C1, any spillage of wastes, contaminants or other materials must be cleaned up as soon as practicable. Such spillages must be cleaned up using dry methods that minimise the release of wastes, contaminants or materials to any stormwater drainage system, roadside gutter or receiving waters.

Land Management Plan

C3 The holder of this environmental authority must maintain a Land Management Plan to manage fire, weeds and feral animals on site.

Rehabilitation Objectives

C4 Land disturbed by mining activities must be rehabilitated in accordance with Schedule C - Table 1 (Rehabilitation Requirements) and the Rehabilitation Plan required under condition C7.

C5 Areas that are available for rehabilitation must be identified in the current Plan of Operations.

C6 Rehabilitation must commence progressively as areas become available in accordance with the Plan of Operations.

Schedule C - Table 1 (Rehabilitation Requirements)

Mine Domain	Mine Feature Name	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
Dams	All dams which form part of the containment systems	All land subject to mining activities must be rehabilitated in accordance with the administering authority's *Guideline - Rehabilitation requirements for mining resource activities* and will be defined in the Rehabilitation Plan required under condition C7. Exploration must be rehabilitated in accordance with condition A26.	In accordance with the Rehabilitation Plan required under condition C7	In accordance with the Rehabilitation Plan required under condition C7	In accordance with the Rehabilitation Plan required under condition C7
Waste Rock	BSOC waste rock dump (including Mount Isa Mines Landfill)				
	HHOC waste rock dump				
	BROC waste rock dump				
Pits (residual voids)	BSOC				
	HHOC				
	BROC				
	KSOC				
Underground Mining	X41				
	Enterprise				
	George Fisher				
Bulk Products / Materials	Slag Piles				
	Processing Materials				
Infrastructure	Isa Infrastructure				
	George Fisher / HHOC Infrastructure				
Other	Exploration				
	Miscellaneous				
Pits (residual voids)	BSOC	**Residual Voids** will be safe, stable and non-polluting and will not be required to sustain a post-mining land use.			
	HHOC				
	BROC				
	KSOC				

Rehabilitation Plan

C7 The holder of this environmental authority must develop and submit to the administering authority a Rehabilitation Plan within three (3) years of commencement of this environmental authority and update on a regular basis not exceeding five (5) years. The Rehabilitation Plan must describe how the rehabilitation objectives will be achieved. The Rehabilitation Plan must include:

(a) schematic representation of final landform inclusive of drainage features;
  (i) slope design;
  (ii) cover design;
  (iii) drainage design and features;
  (iv) erosion controls proposed on reformed land;

(b) proposed revegetation criteria;

(c) proposed revegetation methods inclusive of plant species selection, re-profiling, respreading soil, soil ameliorants/amendments, surface preparation and method of propagation;

(d) rehabilitation objectives, indicators and completion criteria per domain to achieve the rehabilitation goals which must be consistent with the administering authority's *Guideline - Rehabilitation requirements for mining resource activities and this EA*;

(e) measurable completion criteria for each rehabilitation indicator (for each domain) that enables determination of rehabilitation success for each disturbance type or domain;

(f) materials balance including available growth medium and low permeability capping material;

(g) geotechnical, geochemical and hydrological studies;

(h) completion criteria for residual voids;

(i) performance criteria for the tailings dam and waste rock dump cover system;

(j) decommissioning criteria for regulated dams so that each regulated dam either:
  (i) becomes a stable landform; or
  (ii) is approved or authorised under relevant legislation for a beneficial use; or
  (iii) is a void authorised by the administering authority to remain after decommissioning; and

(k) a proposed rehabilitation monitoring program prepared by an appropriately qualified person , which must include sufficient spatial and temporal replication to enable scientifically justifiable conclusions, to assess rehabilitation against the measurable completion criteria and must include monitoring for:
  (i) surface water quality;
  (ii) groundwater quality;
  (iii) erosion rates;
  (iv) integrity and effectiveness of final cover system; and
  (v) health and resilience of vegetation cover.

Rehabilitation Monitoring

C8 The holder of this environmental authority must conduct rehabilitation monitoring in accordance with the rehabilitation monitoring program developed in the Rehabilitation Plan to verify rehabilitation success for each domain.

Topsoil

C9 Topsoil and subsoils must be stripped and stockpiled ahead of mining to a depth determined from soil surveys to ensure that useable soil resources are preserved for rehabilitation.

C10 Topsoil and subsoil stockpiles must be managed to ensure stability and minimise the release of contaminants.

C11 The Rehabilitation Plan for the site must be updated at least eighteen (18) months prior to final production on site, and implemented thereafter for a nominal period of:

(a) at least thirty (30) years following final production on site; or

(b) a shorter period if it is proven that the site has been successfully rehabilitated to the satisfaction of the administering authority.

C12 The Rehabilitation Plan updated in accordance with condition C11 must include the following elements:

(a) operation and maintenance of:

(i) wastewater collection and reticulation systems;

(ii) wastewater treatment systems;

(iii) the groundwater monitoring network;

(iv) final cover systems;

(v) vegetative cover (if any).

(b) monitoring of:

(i) surface water quality;

(ii) groundwater quality;

(iii) seepage rates;

(iv) erosion rates;

(v) the integrity and effectiveness of final cover systems;

(vi) the health and resilience of vegetative cover (if any).

Infrastructure

C13 All buildings, structures, mining equipment and plant erected and/or used for the mining activities must be removed from the site prior to surrender, except where agreed in writing by the administering authority, the Minister responsible for the *Mineral Resources Act 1989* and the landowner.

Note: consideration must be given to other relevant legislation including the *Queensland Heritage Act 1992*.

Chemicals and Flammable or Combustible Liquids

C14 All explosives, hazardous chemicals, corrosive substances, toxic substances, gases, flammable or combustible liquids and dangerous goods must be stored and handled in accordance with the current, relevant Australian Standard where such is applicable.

C15 Notwithstanding the requirements of any Australian Standard, any liquids, being hazardous chemicals, corrosive substances, toxic substances, flammable or combustible liquids or dangerous goods stored on site that have the potential to cause environmental harm must be stored in or serviced by an effective system of containment that is impervious to the materials stored and managed to prevent the release of such liquids to waters or land.

C16 Where no relevant Australian Standard is available for the storage of liquids, being hazardous chemicals, corrosive substances, toxic substances, flammable or combustible liquids or dangerous goods, the following must be applied:

(a) storage tanks must be bunded so that the capacity and construction of the bund is sufficient to contain at least 110% of the volume of a single storage tank or 110% of the volume of the largest storage tank plus 10% of the volume of the second largest storage tank in multiple storage areas;

(b) drum storages must be bunded so that the capacity and construction of the bund is sufficient to contain at least 100% of the maximum design storage volume within the bund; or

(c) other systems which achieve secondary containment of the substance.

C17 All systems for the containment of any liquids, being hazardous chemicals, corrosive substances, toxic substances, flammable or combustible liquids or dangerous goods must be designed to minimise rainfall collection within the system.

C18 Subject to condition A31, any systems for the containment of any liquids, being hazardous chemicals, corrosive substances, toxic substances, flammable or combustible liquids or dangerous goods that do not meet the current, relevant Australian Standard at commencement of this environmental authority must meet the current, relevant Australian Standard by 31 March 2015.

Contaminated Land

C19 The holder of this environmental authority must maintain a register of land areas on the mining lease that are potentially contaminated by the mining activities, that includes:

(a) maps of potentially contaminated land;

(b) details, including reports on the investigation of these areas;

(c) details, including reports, on the remediation of these areas;

(d) details of any management plans for remediated areas.

C20 The holder of this environmental authority must include in its current Plan of Operations details of its procedures to assess, investigate and manage any potentially contaminated land that is proposed to be disturbed during the Plan of Operations.

Bulk storage and handling of materials

C21 Bulk storage and handling of materials (including waste) must be carried out in a manner which minimises the release of dust and particulate matter, prevents or minimises the contamination of land and stormwater, meets the requirements of Condition E12 and incorporates the following control measures:

(a) for trafficable and plant areas (including haul roads) measures must be installed, operated and maintained, at all times, in a condition that minimises the release of wind-blown or traffic generated dust. Measures may include:

(i) sealing of roads;

(ii) compaction of trafficable areas;

(iii) the use of water trucks or water sprays;

(iv) application of sealants (dust suppressants);

(v) wheel wash facilities;

(vi) the use of ore conveying systems.

(b) for bulk material handling and material stockpiles measures must be installed, operated and maintained at all times to minimise the release of dust and particulate matter to the environment. Measures may include:

(i) confining material stockpiles to dedicated storage areas;

(ii) covering of stockpiles;

(iii) implementing erosion and sediment control measures including capturing any contaminated waters with the containment systems for the surface water containment areas shown in Schedule K – Figure 4 (TSF Containment Area), Schedule K – Figure 5 (Mount Isa East Containment Area) and Schedule K – Figure 6 (GFM / HHOC Containment Area);

(iv) using water trucks or water sprays;

(v) application of sealants;

(vi) compaction;

(vii) the use of ore conveying systems;

(viii) installation of dust trapping devices on equipment.

Bulk Mineral Concentrate Management – Zinc Concentrate

C22 Bulk zinc concentrate storage and handling must be carried out in a manner which minimises the release of dust and particulate matter, minimises the contamination of land and stormwater and incorporates the following control measures:

(a) under normal operating conditions, zinc concentrate must be stored and stockpiled in enclosed buildings*;

(b) where condition C22(a) does not apply, zinc concentrate is authorised to be stored outside of enclosed buildings* in the designated zinc storage area as specified in Schedule K - Figure 7 (Designated Zinc Storage Area);

(c) the designated zinc storage area must:

(i) be fully fenced (except for access areas) including either a concrete barrier, dust screen or mesh around the perimeter of the area;

(ii) include control measures to minimise the release of contaminants such as:

- covering of stockpiles (where possible);
- implementing erosion and sediment control measures including capturing any contaminated waters with the containment systems for the surface water containment areas shown in Schedule K – Figure 5 (Mount Isa East Containment Area);
- using water trucks or water sprays;
- application of sealants;
- compaction of trafficable areas;
- minimising vehicle access and provision of wheel wash facilities;
- minimising the footprint of the zinc concentrate stored in the designated zinc storage area;

(d) zinc concentrate stored outside the buildings may be loaded outside only when wind is blowing from the easterly direction (0 –180 degrees).

*Note for existing buildings, enclosed buildings means enclosed apart from the access points to the building.

Bulk Mineral Concentrate Management – Copper Concentrate

C23 Bulk copper concentrate storage and handling must be carried out in a manner which minimises the release of dust and particulate matter and minimises the contamination of land and stormwater.

Bulk copper concentrate is authorised to be stored only in the copper concentrate storage areas as specified in Schedule K - Figure 8 (Designated Copper Storage Areas) and must include control measures to minimise the release of contaminants.

Bulk Mineral Concentrate Management – Lead Concentrate

C24 Bulk lead concentrate is authorised to be stored on the mining lease only for the purposes of smelter feed, and for loading onto rail and/or road transport.

C25 Bulk lead concentrate must only be stored, handled and loaded:

(a) within the designated enclosed concentrate storage facility identified in Schedule K – Figure 26; or

(b) within holding tanks for the purposes of smelter feed.

C26 Lead concentrate storage, handling and loading within the designated enclosed concentrate storage facility must only occur when the following control measures are in place:

(a) the storage facility is under negative air pressure and has a fully operational dust filtration system;

(b) all conveyors used to transport lead concentrate are fully enclosed; and

(c) all emissions from the conveyors and storage facility are vented through a negative pressure filtration system and monitored as per Schedule B – Table 1 (Point Source Air Emissions).

C27 All vehicles carrying lead concentrate (including trains) must be washed in a designated wash bay prior to leaving the mining lease.

C28 The storage, handling or loading of lead concentrate must not cause a net increase in any of the air quality indicators specified in Schedule C – Table 2 (Air Quality Indicators) at any sensitive or commercial place.

Schedule C – Table 2 (Air Quality Indicators)

Air Quality Indicator	Averaging Time
Total Suspended Particulates	Calendar year
Particulate matter with an aerodynamic diameter of less than 10 microns (PM_{10})	24 hours
Particulate matter with an aerodynamic diameter of less than 2.5 microns ($PM_{2.5}$)	24 hours
Particulate matter with an aerodynamic diameter of less than 2.5 microns ($PM_{2.5}$)	Calendar year
Arsenic (measured as the total metal content in PM_{10})	Calendar year
Cadmium (measured as the total metal content in PM_{10})	Calendar year
Lead (measured as the total metal content in total suspended particulates)	Calendar year

C29 The holder of this environmental authority must develop and implement a monitoring program to determine compliance with condition C28. A report detailing the results of the monitoring program must be provided to the administering authority by **1 March** every two years from **1 March 2018**.

Bulk Mineral Concentrate, Packaged Mineral Concentrate and Bulk Material Handling Management - General

C30 The holder of the environmental authority must develop and implement an operating procedure, which must include, but not be limited to:

(a) the wash down of lead concentrate packages prior to storage onsite;

(b) the completion of periodic inspections of the mining lease where mining activities are carried out including all structures, plant, equipment and trafficked surfaces to identify and remove or stabilise exposed bulk materials or mineral concentrate that may be mobilised by wind, water or equipment movement;

(c) an ongoing cleaning and maintenance schedule to minimise any potential release of bulk materials or mineral concentrate and to ensure there is no build up of bulk materials or mineral concentrate over time in areas where it may be mobilised;

(d) placement of any removed materials or concentrates in a designated storage area;

(e) periodic review of the management and operation of bulk materials and bulk mineral concentrate storage, packaged mineral concentrate and handling activities, including identification of options for continuous improvement.

Transport of Bulk Mineral Concentrate, Packaged Mineral Concentrate and Bulk Materials

C31 The holder of this environmental authority must ensure that vehicles used for transporting bulk mineral concentrate, packaged mineral concentrate and bulk materials (including waste) have appropriate load preparation to minimise the spillage and / or loss of particulate matter and / or windblown dust during transport.

C32 The holder of this environmental authority must ensure that any trains or vehicles carrying bulk material or mineral concentrate from site are covered.

Bio-Remediation Pads

C33 Soil and absorbent materials potentially contaminated with hydrocarbons may be treated on site in situ or in a designated bioremediation area. Treated material will not be used for any purpose unless contamination thresholds defined in Schedule C – Table 2 (TPH Thresholds in Treated Soils) are achieved.

Schedule C – Table 2 (TPH Thresholds in Treated Soils)

Recoverable Hydrocarbon Fraction	Maximum[1]
C6-C10	217 mg/kg
>C10-16	172 mg/kg
>C16-C34	1700 mg/kg
>C34	3300 mg/kg
Benzene	75 mg/kg
Ethylbenzene	165 mg/kg
Toluene	135 mg/kg
Xylenes	180 mg/kg
Benzo(a)pyrene	0.7 mg/kg

1 Guidelines currently under review for inclusion in new Assessment of Site Contamination National Environment Protection Measure (NEPM).

C34 If the environmental authority holder or an authorised person observes a visible release of dust emissions caused by activities within the copper concentrate storage areas as specified in Schedule K - Figure 8 (Designated Copper Storage Areas) to the atmosphere beyond the boundary of those areas, the environmental authority holder must:

(a) Immediately review and, where necessary, adjust control measures.
(b) If visible releases of dust emissions continue or are repetitive then:
    i. cease all relevant activities; and
    ii. review applicable control measures to minimise the release of contaminants; and
    iii. prior to recommencing activities, implement any reasonable identified improvements to the control measures to minimise the release of contaminants.

Third Party Ore

C35 The environmental authority holder is authorised to receive, stockpile and process material from third party mining operations, provided:

1. such activities comply with the requirements set out in this environmental authority; and
2. a risk assessment must be undertaken prior to processing, if the characteristics of the third-party material are substantially different to the characteristics of material authorised for processing under this environmental authority.

C36 Any risk assessment undertaken under Condition C35, must

(a) detail controls identified to manage any risks;
(b) be implemented to manage risk; and
(c) be documented and made available to the administering authority upon request.

Packaged Mineral Concentrate Management

C37 Mineral concentrates handled and stored in a packaged manner must be:

(a) handled and stored in a manner that prevents releases to the environment;
(b) stored only in the areas specified in Schedule K - Figure 27 (Designated Packaged Mineral Concentrate Areas); and
(c) clearly labelled to allow for content identification.

END OF CONDITIONS FOR SCHEDULE C

Schedule D – Regulated Dams

General

D1 Condition removed on 1 February 2017 and no longer applies.

System Design Storage Allowance

D2 Condition removed on 1 February 2017 and no longer applies.

D3 Condition removed on 1 February 2017 and no longer applies.

D4 Condition removed on 1 February 2017 and no longer applies.

D5 Condition removed on 1 February 2017 and no longer applies.

D6 Condition removed on 1 February 2017 and no longer applies.

Containment Performance

D7 The holder of this environmental authority must develop, implement and maintain an operational simulation water balance model representing system behaviour in response to seasonal and decadal climatic variations, which meets the minimum capabilities defined in this Schedule D.

D8 On **1 November** of each year, the containment system for a surface water containment area must achieve the containment performance specified in Schedule D – Table 1 (Containment Performance) as determined by the operational simulation water balance model.

D9 If at any other time when the operational simulation water balance model is run, the results indicate that the containment performance specified in Schedule D – Table 1 (Containment Performance) is not met, the holder of this environmental authority must notify the administering authority within forty-eight (48) hours.

Schedule D - Table 1 (Containment Performance)

Name of surface water containment area	Surface Water Containment Area (km^2)	Containment Performance
TSF Containment Area	28.2 (Schedule K – Figure 4)	Less than or equal to 1% AEP of overflow
Mount Isa East Containment Area	12.9 (Schedule K – Figure 5)	Less than or equal to 1% AEP of overflow
GFM / HHOC Containment Area	8.9 (Schedule K – Figure 6)	Less than or equal to 1% AEP of overflow

Operational Simulation Water Balance Model

D10 The operational simulation water balance model must be run for a simulation period of nine (9) months (forward looking from the day it is run):

(a) weekly during the period November to March;

(b) monthly during other periods;

(c) promptly after each rainfall event greater than fifty (50) millimetres within a twenty four (24) hour period within the relevant surface water containment area, with documentation of inputs and outputs from each run being stored and retrievable for a minimum period of one (1) year.

D11 The operational simulation water balance model must incorporate provisions for:

(a) simulation of observed containment system water volumes;

(b) reporting on the simulated water volumes and discharges;

(c) determining and describing the probability of discharges overflowing from the containment system by ranking model results;

(d) starting a simulation of a containment system from any day of a year using the configuration of the components within the system on that day;

(e) running the simulation using:

(i) all relevant available historical daily rainfall data;

(ii) operating rules for transfer within and between containment systems;

(iii) expected water inputs and outputs and solid inputs that affect storage capacity;

(f) recording and substantiation of model inputs, assumptions, methods and schematic diagrams, to enable independent replication by an appropriately qualified person;

(g) representation of differences in hydrological characteristics of modified catchment surfaces and conditions that occur in the surface water containment areas with reasoned and conservative assumptions;

(h) representation of operation of the surface water containment systems, including limitations to the operability of active transfer systems in extreme rainfall events and other relevant hazard scenarios;

(i) representation of failure scenarios (such as failure of a pump, storage, or blockage of sub-surface drainage or transfer systems);

(j) production of graphical outputs that can be reasonably interpreted; and

(k) validation with available monitoring data.

D12 Monitoring to operate and validate the operational simulation water balance model must include:

(a) monitoring data from on-site weather stations;

(b) surface water volumes and water quality in storages within the containment system;

(c) changes in the storage elevation relationship;

(d) water volumes actively transferred through the containment system;

(e) additional sources of water (other than rainfall runoff) into the containment system;

(f) extractions of water from the containment system;

(g) mapping of landforms, topography, drainage routes, and catchment conditions, as relevant to their influence on hydrology of the catchments within the surface water containment areas.

D13 The extent, scope, and detail of the monitoring in condition D12 shall be sufficient to demonstrate actual system performance and operational simulation water balance model validation.

D14 Containment systems must be designed, assessed and documented as whole systems that include all relevant catchments, infrastructure and operations that have potential to influence the probability of overflow discharges at the authorised release points specified in Schedule H – Table 1 (Contaminant Release Points).

D15 Assessments utilising the operational simulation water balance model to evaluate containment performance in response to rainfall must be undertaken by an appropriately qualified person.

D16 Assessments using the operational simulation water balance model must use a minimum of 100 years of historical rainfall data.

Transitional Environmental Program – Dams and Water

D17 Condition removed on 9 April 2015 and no longer applies.

D18 Condition removed on 9 April 2015 and no longer applies.

D19 Condition removed on 9 April 2015 and no longer applies.

D20 Condition removed on 9 April 2015 and no longer applies.

D21 Condition removed on 9 April 2015 and no longer applies.

Dams and consequence category assessments

D22 The consequence category of any dam must be assessed and certified by a suitably qualified and experienced person:

(a) in accordance with the most recent edition of the administering authority's guideline *Manual for assessing consequence categories and hydraulic performance of structures* (ESR/2016/1933), and

(b) in any of the following situations:

(i) prior to the design and construction of any new dams or augmentations to existing dams; or

(ii) prior to any change in its purpose or its stored contents.

D23 A consequence category assessment report and certification must be prepared for any dam assessed and the report may include a consequence category assessment for more than one dam.

D24 The environmental authority holder must, on receipt of a consequence category assessment report and certification, provide to the administering authority an electronic copy of the hazard assessment report and certification.

Regulated Dams

D25 Subject to Condition D38, all regulated dams must be listed in Appendix 1.

D26 Subject to Condition D38, the holder of the environmental authority must comply with Appendix 1 (List of Authorised Dams)

D27 Condition removed on 1 February 2017 and no longer applies.

D28 Condition removed on 1 February 2017 and no longer applies.

D29 Condition removed on 1 February 2017 and no longer applies.

Design and Construction

D30 All new regulated dams or augmentations to existing regulated dams must:

(a) be designed by, and constructed under the supervision of, a suitably qualified and experienced person; and

(b) be designed and constructed in accordance with the most recent edition of the administering authority's guideline *Manual for assessing consequence categories and hydraulic performance of structures* (ESR/2016/1933).

D31 The construction of all new regulated dams or augmentations to existing regulated dams is prohibited unless the holder of this environmental authority has submitted a design plan to the administering authority twenty (20) business days prior to construction, or a shorter period as agreed to by the administering authority.

D32 The design plan for a regulated dam must include, but is not limited to:

(a) a design report which provides:

(i) certification of the design plan;

(ii) a description of all the documents which constitute the design plan;

(iii) a statement of:

- the applicable standards including engineering criteria, industry guidelines, relevant legislation and regulatory documents, relied upon in preparing the design plan; and
- all relevant facts and data used in preparing the design plan, including any efforts made to obtain necessary facts and data, and any limitations or assumptions to facts and data used in preparing the design plan;
- the consequence category of the dam; and

(iv) documentation of hydrological analyses and estimates required to determine all elements of the design including volumes and flow capacities;

(v) documentation of geotechnical analysis and stability;

(vi) detailed criteria for the design, operation, maintenance and concepts and objectives for decommissioning of the dam, including any assumptions;

(vii) design, specification and operational rules for any related structures and systems used to prevent failure scenarios;

(viii) reasoning how the design plan is capable of providing the required performance;

(ix) details of any other matter which may substantially affect, or is critical to, the design plan;

(x) evidence that the certifier is a suitably qualified and experienced person;

(b) drawings showing the lines and dimensions of built structures and land forms associated with the dam;

(c) an operational plan that includes:

(i) normal operating procedures and rules;

(ii) contingency and emergency action plans including operating procedures designed to avoid and/or minimise environmental impacts including threats to human life resulting from any overtopping or loss of structural integrity of the dam;

(d) details of reports on investigations and studies done in support of the design plan;

(e) any other matter required by the suitably qualified and experienced person;

(f) sufficient documentation so that a suitably qualified and experienced person could reasonably conduct an independent review without seeking further information.

Operation of Regulated Dams

D33 When construction of all new regulated dams or augmentations to existing regulated dams is complete and prior to commencing operation of that construction, the holder of this environmental authority must submit to the administering authority an electronic copy of 'as constructed' drawings, together with the certification by the suitably qualified and experienced person who supervises the construction which states:

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

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

(c) the regulated dam has the capability of delivering the performance stated in the design plan.

D34 In case of all new high consequence category dams or augmentations to existing high consequence category dams, the certification required under D33(a) must be provided by the designer or a similarly suitably qualified and experienced person.

D35 Each regulated dam must be maintained and operated in a manner that is consistent with the current design plan and the associated certified 'as constructed' drawings for the duration of its operational life until decommissioned and rehabilitated.

D36 For those regulated dams constructed prior to commencement of this environmental authority, in the absence of a design plan, the dam safety review, after submission and acceptance by the administering authority, is taken to be the accepted design plan and the associated certified 'as constructed' drawings for the regulated dam.

D37 Where designs have previously been submitted to the administering authority and accepted, the documentation in support of the design is taken to be the accepted design plan and the associated certified 'as constructed' drawings.

D38 Where not already listed as a regulated dam in Appendix 1, or where a change to details included in Appendix 1 is required, an application to amend this environmental authority must be lodged with the administering authority within ninety (90) days of completion of construction of a new regulated dam or augmentation to existing regulated dams, or where a change to the information contained in Appendix 1 is otherwise identified.

D39 The Mandatory Reporting Level (MRL), as determined by the MRL (physical marker) capacity information specified in Appendix 1, must be marked on a regulated dam by **30 June 2017**.

D40 Where a change to the MRL (physical marker) in Appendix 1 is approved, the holder of this environmental authority must mark the MRL (physical marker) on the relevant regulated dam within 30 days of the change being made to Appendix 1, or an alternative period agreed to in writing by the administering authority.

D41 The holder of this environmental authority must notify the administering authority as soon as practical and within forty eight (48) hours of becoming aware when the MRL of the relevant regulated dam as specified in Appendix 1, is reached.

D42 The holder of this environmental authority must, immediately on becoming aware that any MRL has been reached, act to prevent the occurrence of any unauthorised discharge from the regulated dam.

Annual Inspection of Regulated Dams

D43 Each regulated dam must be inspected each calendar year by a suitably qualified and experienced person.

D44 At each annual inspection, the condition and adequacy of all components of the regulated dam must be assessed:

(a) against the most recent consequence category assessment report and design plan;

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

(c) against relevant dam safety deficiency indicators recommended in guidelines published by recognised professional dam engineering organisations (e.g. ANCOLD, ICOLD, NSW Dam Safety Committee, USBR, USACE);

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

(e) for conformance with the relevant conditions of this environmental authority;

(f) for conformance with the design plan and 'as constructed' drawings.

D45 A suitably qualified and experienced person must:

(a) prepare an annual inspection report containing details of the assessment under condition D44, including recommended actions to ensure the integrity of the dam; and

(b) provide certification of the inspection report.

D46 The holder of this environmental authority must:

(a) upon receipt of the final annual inspection report, consider the report and its recommendations and take action in response to the recommendations; and

(b) within twenty (20) business days of receipt of the final annual inspection report, notify the administering authority in writing of the recommendations of the final inspection report and the actions being taken or to be taken in response to the recommendations.

END OF CONDITIONS FOR SCHEDULE D

Schedule E – Mining, Mineral Processing and Smelting Waste

General

E1 The only mining, mineral processing and smelting waste (excluding waste water and process water) authorised to be generated on site are those detailed Schedule E - Table 1 (Mining, Mineral Processing and Smelting Waste).

Note: Waste water and process water are addressed in Schedules D and H.

E2 Mining, mineral processing and smelting waste must only be handled and disposed of in accordance with Schedule E - Table 1 (Mining, Mineral Processing and Smelting Waste).

Schedule E - Table 1 (Mining, Mineral Processing and Smelting Waste)

Waste Type	Source of Waste	Authorised Disposal / Handling
Mining Waste		
Black Star Waste Rock	Black Star Open Cut Pit	Black Star Waste Rock Dump, underground disposal or in accordance with Condition E13.
Black Rock Waste Rock	Black Rock Open Cut Pit	Black Rock Waste Rock Dump or underground disposal or in accordance with Condition E13.
Handlebar Hill Waste Rock	Handlebar Hill Open Cut Pit	Handlebar Hill Waste Rock Dump, underground disposal or in accordance with Condition E14.
George Fisher Waste Rock	George Fisher Mine	Underground disposal or in accordance with Condition E14.
Other mining waste that does not require special treatment	George Fisher Mine	Underground disposal or in accordance with Condition E14.
Mineral Processing Waste (Tailings)		
Copper Tailings	Copper Concentrator	Tailings Storage Facility or Copperbalt Plant or underground disposal
Lead / Zinc Tailings	Lead / Zinc Concentrator	Tailings Storage Facility or underground disposal
Heavy Media Reject	Heavy Medium Plant	Underground disposal or in waste rock dumps
Other mineral processing waste that does not require special treatment	Miscellaneous	Tailings Storage Facility or underground disposal
Miscellaneous (Smelting Wastes, Other)		
Slag	Smelters	Underground disposal or in waste rock dumps
Cadmium ex-slimes filtrate	Baghouse Pulping Tanks	Tailings Storage Facility
Thallium ex-slimes filtrate	Baghouse Pulping Tanks	Tailings Storage Facility
Other smelting waste that does not require special treatment	Miscellaneous	Tailings Storage Facility
Other Liquid waste (excluding sewage)	Miscellaneous	Tailings Storage Facility

Tailings

E3 By **31 December 2012**, the holder of this environmental authority must develop and implement a Tailings Management Plan that includes provisions for:

(a) containment of tailings in accordance with the most recent version of the accepted design plan;

(b) the management and monitoring of seepage and leachates;

(c) the control of fugitive emissions to air;

(d) a program of progressive sampling and characterisation to identify acid producing potential and metal concentrations of tailings:

(i) all tailings material must be progressively characterised during disposal for net acid producing potential, Net Acid Generation and the following contaminants: Ag, As, Bi, Cd, Cu, Hg, Mo, Pb, Se, Sb, Tl, and Zn;

(ii) tailings characterisation must be undertaken quarterly;

(iii) where the acid producing potential of tailings material has not been conclusively determined, geochemical kinetic testing or another suitable recognised method must be conducted to indicate oxidation rates, potential reaction products and effectiveness of control strategies, or the tailings material must be classified and treated as potentially acid forming tailings.

E4 Any surface seepage or runoff from any tailings dam must be captured with the containment systems for the surface water containment areas shown in Schedule K – Figure 4 (TSF Containment Area), Schedule K – Figure 5 (Mount Isa East Containment Area) and Schedule K – Figure 6 (GFM / HHOC Containment Area).

Waste Rock Disposal

E5 The holder of this environmental authority must implement and maintain a Waste Rock Management Plan certified by an appropriately qualified person and update the plan on a regular basis not exceeding five (5) years.

E6 The Waste Rock Management Plan must include provisions for:

(a) characterisation of the waste rock to predict the quality of runoff and seepage generated, including salinity, acidity, alkalinity, dissolved metals, metalloids and non-metallic inorganic substances;

(b) the management and monitoring of seepage and leachates;

(c) a progressive sampling program to validate pre-mine waste rock characterisation. The waste rock sampling program must include validation of salinity, acid and alkali producing potential and metal concentrations including Ag, As Bi, Cd, Cu, Hg, Mo, Pb, Se, Sb, Tl, and Zn;

(d) where the acid rock drainage potential / neutral mine drainage potential of waste rock material has not been conclusively determined, geochemical kinetic testing or another suitable recognised method to indicate oxidation rates, potential reaction products and effectiveness of control strategies, or the waste rock must be classified and treated as potentially acid forming waste rock;

(e) records to be maintained of all waste rock characterisation and disposal;

(f) a materials balance and disposal strategy demonstrating how potentially acid forming, acid forming, neutral and/or saline mine drainage waste rock will be selectively placed and/or encapsulated to minimise the generation of acid, neutral and/or saline mine drainage;

(g) management of any interim cover to minimise infiltration and leachate generation;

(h) how often the performance of the plan will be assessed.

E7 The waste rock dumps must be constructed to prevent any water, other than rainfall, from entering the waste rock dumps.

E8 Any surface seepage from any waste rock dump must be captured with the containment systems for the surface water containment areas shown in Schedule K – Figure 4 (TSF Containment Area), Schedule K – Figure 5 (Mount Isa East Containment Area) and Schedule K – Figure 6 (GFM / HHOC Containment Area).

Mineral Processing and Smelting Waste

E9 The holder of this environmental authority must develop and implement a Mineral Processing and Smelting Waste Management Plan certified by an appropriately qualified person by **31 December 2012** and update the plan on a regular basis not exceeding five (5) years.

E10 The Mineral Processing and Smelting Waste Management Plan must include:

(a) details of the volume of waste that is generated through the mineral processing and / or smelting operations carried out on site;

(b) characterisation of the waste including the physical and chemical nature of the waste, and the predicted quality of runoff and/or seepage that could be generated from the waste;

(c) details on how the waste is handled, stored and disposed of on site, and the environmental control measures in place to minimise the release of contaminants to air, land or waters.

E11 Any surface seepage or runoff from mineral processing and/or smelting waste stockpiles must be captured with the containment systems for the surface water containment areas shown in Schedule K – Figure 4 (TSF Containment Area), Schedule K – Figure 5 (Mount Isa East Containment Area) and Schedule K – Figure 6 (GFM / HHOC Containment Area).

Saline, acid and metalliferous drainage

E12 The holder of this environmental authority must ensure measures are taken to avoid or otherwise minimise the generation of saline, acid and/or metalliferous mine drainage.

Waste Rock, Construction and Demolition Waste Disposal in the Open Cut Pits

E13 Waste rock and construction and demolition waste may be disposed in the Black Star Open Cut Pit provided it meets the requirements of Schedule E – Table 2 (Requirements for disposal of waste in the Black Star Open Cut Pit).

Schedule E – Table 2 (Requirements for disposal of waste in the Black Star Open Cut Pit)

Criteria	Description
Location	Within the Black Star Open Cut Pit, below 240m AHD
Quantity	Waste rock to a maximum volume of 500,000m^3. Construction and demolition waste to a maximum volume of 2,200,000m^3.

E14 Waste rock and other mining waste that does not require special treatment may be disposed in the Handlebar Hill Open Cut Pit provided it meets the requirements of Schedule E – Table 3 (Requirements for waste disposal in the Handlebar Hill Open Cut Pit).

Schedule E – Table 3 (Requirements for waste disposal in the Handlebar Hill Open Cut Pit)

Criteria	Description
Location	Within the Handlebar Hill Open Cut Pit, below 285m AHD
Maximum Quantity	Waste rock to a maximum volume of 4,116,000m3. Construction and demolition waste to a maximum volume of 690,000m3.

E15 In addition to the requirements of Condition E5 and E6, for any waste disposed of in accordance with E13 and E14, the holder of this environmental authority must maintain records of the quantity, location and waste type disposed of in-pit.

E16 The environmental authority holder must prevent the water level in the Handlebar Hill Open Cut pit reaching a level higher than 314m AHD.

E17 Potentially buoyant construction and demolition waste disposed of in Black Star Open Cut Pit or in Handlebar Hill Open Cut Pit must be selectively placed and buried.

E18 A pit lake water balance assessment for the Black Star Open Cut Pit and Handlebar Hill Open Cut Pit must:
(a) be reviewed at a frequency that does not exceed five (5) years;
(b) be prepared by an appropriately qualified person; and
(c) take into consideration the site's water management arrangement and waste disposed of to date.

END OF CONDITIONS FOR SCHEDULE E

Schedule F – General and Regulated Waste other than Mining, Mineral Processing and Smelting Waste

General

F1 Unless otherwise authorised by this environmental authority, all general and regulated waste must:

(a) be stored and disposed of at the Mount Isa Mines Landfill located within the mining lease and identified in Schedule K – Figure 11a (Mount Isa Mines Landfill);

(b) incinerated or disposed of in accordance with Schedule F; or

(c) be removed to an alternative facility that can lawfully accept these wastes under the *Environmental Protection Act 1994*.

F2 General and regulated waste generated by the mining activities can be temporarily stored on site, awaiting removal off-site or disposal in accordance with this Schedule F, provided it is stored to ensure it does not cause fire or contamination.

F3 Each container of regulated waste must be clearly marked to identify the contents.

F4 The conditions in this Schedule F only relate to general and regulated wastes which are not otherwise dealt with in Schedule E (Mining, Mineral Processing and Smelting Waste).

F5 Subject to conditions F1 and F2, the holder of this environmental authority must ensure that waste disposal does not extend beyond the boundary of the Mount Isa Mines Landfill.

F6 The following wastes may be disposed of at the Mount Isa Mines Landfill:

(a) domestic waste;

(b) commercial waste;

(c) industrial waste;

(d) regulated waste, subject to condition F9;

(e) construction and demolition waste; and

(f) Until **1 May 2021**, liquid waste and wastes yielding free liquid must only be disposed of in a dedicated cell (sludge pit); and

(g) Post **1 May 2021**, liquid waste is not authorised for disposal in the Mount Isa Landfill

F7 Scrap steel, aluminium, lead acid batteries and waste oil that has been segregated for recycling must not be disposed of in the Mount Isa Mines Landfill, but must be dealt with in accordance with the following hierarchy with the preference reducing down the list:

(a) reuse;

(b) recycling; or

(c) energy recovery.

F8 Notwithstanding any other condition of this environmental authority, the following waste materials are not permitted to be disposed of in the Mount Isa Mines Landfill:

(a) hot ash;

(b) material that is smoldering or aflame;

(c) radioactive wastes;

(d) explosives;

(e) ammunition, other than ammunition that no longer contains explosives, pyrotechnics or propellants apart from trace residues that are no longer capable of supporting combustion or an explosive reaction;

(f) clinical waste;

(g) filled or partly filled containers containing liquid wastes;

(h) filled or partly filled containers containing pesticides, herbicides, fungicides;

(i) wet cell, nickel metal hydride or nickel cadmium batteries;

(j) gas bottles unless decommissioned.

F9 Regulated wastes which exhibit the hazard characteristics specified in Schedule F – Table 1 (Hazard Characteristics) can only be disposed of in the sludge pit or contaminated cells at the Mount Isa Mines Landfill.

Schedule F – Table 1 (Hazard Characteristics)

Hazard Characteristic	Description of the Hazard Characteristic
Ignitability	Regulated wastes that are capable of causing a fire when ignited through friction, absorption of moisture, or spontaneous chemical changes under standard temperature and pressure.
Corrosivity	Regulated wastes which on dissolution exhibit a pH of 2 or less or 12.5 or greater.
Reactivity	Regulated wastes that have any of the following properties: • react violently with water; and/or, • form potentially explosive mixtures with water and other substances likely to be disposed of in the landfill facility; and/or, • generate toxic gases, vapours, or fumes dangerous to human health or the environment when mixed with water and other substances likely to be disposed of in the landfill facility; and/or, • contain substances which generate toxic gases, vapours or fumes when exposed to pH conditions between 2 and 12.5; and/or, • are capable of detonation or explosive reaction when subjected to a strong initiating source or if heated under confinement; and/or, • are readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

F10 Records of the volume of waste disposed of at each cell at the Mount Isa Mines Landfill must be kept and maintained.

F11 The holder of this environmental authority must not burn waste except for incineration of the following wastes in the lead smelter blast furnace and the copper smelter:

(a) clinical waste other than:

(i) cytotoxic;

(ii) human body parts;

(iii) pharmaceutical;

(iv) radioactive;

(v) chemical waste;

(b) lead products including batteries;

(c) wooden products;
(d) paper and cardboard;
(e) copper products.

F12 The holder of this environmental authority must implement and maintain a Waste Management Program for general and regulated waste for the site. The Waste Management Program must include:

(a) a description of the mining activities that may generate waste;
(b) waste management control strategies including:
    (i) the types and amounts of wastes generated by the mining activities;
    (ii) segregation of the wastes;
    (iii) storage of the wastes;
    (iv) transport of the wastes;
    (v) monitoring and reporting matters concerning the waste.
(c) the hazardous characteristics of the wastes generated including disposal procedures for hazardous wastes;
(d) a program for reusing, recycling or disposing of all wastes;
(e) how the waste will be dealt with in accordance with the waste management hierarchy;
(f) procedures for identifying and implementing opportunities to minimise the amount of waste generated, promote efficiency in the use of resources and improve the waste management practices employed;
(g) procedures for dealing with accidents, spills and other incidents;
(h) how often the performance of the waste management program will be assessed;
(i) staff training and induction to the waste management program;
(j) a Landfill Development Plan identifying all activities to be carried out on the Mount Isa Mines Landfill and must include details of at least the following:
    (i) dimensions of cells used for waste disposal or storage;
    (ii) an accurate level survey of any area utilised for the disposal or storage of wastes. The levels must be reduced to a common datum and related to contour plans;
    (iii) the dimensions of the active waste disposal cell;
    (iv) location of any new landfill infrastructure or extensions such as new leachate tanks, or pump well or other plant and equipment required for the leachate collection, storage and recirculation infrastructure installed to serve the new cell;
    (v) location of any new stormwater drains, diversion embankments or settling ponds required to serve the new cell; and
    (vi) location of any areas requiring a low permeability cover, and the proposed surface levels and contours of those areas;
    (vii) specifications on low permeability material to be used in closure of the Mount Isa Mines Landfill;
(k) if waste tyres are disposed of in the waste rock dumps, a record of the disposal location of waste tyres in the waste rock dumps.

F13 The holder of this environmental authority must ensure that at all times waste disposal at the Mount Isa Mines Landfill is carried out in accordance with directions from the person responsible for the control and operation of the Mount Isa Mines Landfill. At least one (1) person who is responsible for the control and operation of the Mount Isa Mines Landfill must be present during normal day time operating hours.

F14 The holder of this environmental authority must ensure that measures are taken to ensure the Mount Isa Mines Landfill is operated and managed so as to minimise the generation of leachate.

F15 Any surface migration of leachate and contaminated stormwater from the boundary of the Mount Isa Mines Landfill must be captured with the containment systems for the surface water containment areas shown in Schedule K – Figure 4 (TSF Containment Area) and/or Schedule K – Figure 5 (Mount Isa East Containment Area).

F16 Large items for disposal must be compacted to minimise residual void space in the Mount Isa Mines Landfill.

F17 Wastes deposited in any active waste disposal cell must be consolidated, compacted and covered with a layer of earthen material, as often as is necessary to effectively minimise the quantity of wind blown litter, odour and fly nuisance resulting from exposure of putrescible waste.

F18 Material for the layer of earthen material must be readily available at all times in a quantity sufficient for not less than two (2) weeks normal operation of the waste disposal cell.

F19 The holder of this environmental authority must apply interim cover on waste disposal cells. This cover is to be placed on areas that are inactive for a period of four months or greater and does not include the operational areas at the cell face. The interim cover must conform to the following criteria:

(a) consists of at least 300 mm of compacted material;

(b) minimise infiltration of water into the waste and ponding of water on the surface of the cell;

(c) is resistant to erosion by surface water flows.

F20 Waste oil and used wet cell batteries may be temporarily stored in drums or other containers provided that the drums or containers are:

(a) stored in an area designated for this purpose;

(b) bunded to contain spillages and leakages;

(c) securely sealed to prevent spillage.

F21 Waste refrigerators, freezers, air conditioners or any other equipment containing ozone depleting gases received at the Mount Isa Mines Landfill must be either degassed by an appropriately qualified person at the Mount Isa Mines Landfill or, if degassed off site, accompanied by a degassing certificate signed by a qualified person.

F22 All loading and unloading of regulated wastes must only take place in areas capable of containing and permitting recovery of any spill.

F23 The holder of this environmental authority must ensure that sufficient equipment is available for the containment and recovery of regulated waste spills.

F24 Where regulated waste is removed from the site, other than as permitted under another Schedule of this environmental authority, the holder of this environmental authority must ensure that:

(a) the removal and transport of such wastes, where it constitutes an environmentally relevant activity under the *Environmental Protection Regulation 2008*, is carried out by a person licensed for carrying out this activity to a facility that is lawfully able to accept the waste under the *Environmental Protection Act 1994*;

(b) records are kept of the following:

(i) the date, quantity and type of waste removed;

(ii) name of the regulated waste transporter(s) that removed the waste;

(iii) the intended treatment/disposal destination of the waste.

Note: Records of documents maintained in compliance with a waste tracking system established under the *Environmental Protection Act 1994* or any other law for regulated waste will be deemed to satisfy this condition.

F25 All vehicles (including load areas), containers and secondary containers used to transport regulated waste must be:

(a) maintained in a proper and efficient condition at all times to prevent spillage or leakage of waste;

(b) kept clean at all times whilst regulated waste is not being transported;

(c) mounted securely, sealed and maintained in a condition that will prevent spillage or leakage of the waste.

F26 Regulated waste is not permitted to be released from any vehicle or any container transported by that vehicle other than at the regulated waste disposal areas authorised under this Schedule.

F27 Litter control methods must be effectively implemented at the Mount Isa Mines Landfill and arranged so as to confine windblown litter generated by the disposal of wastes in the waste disposal cells.

F28 The holder of this environmental authority must ensure deterrents are utilised at the Mount Isa Mines Landfill so as to minimise the number of birds scavenging wastes deposited on any area of the Mount Isa Mines Landfill.

F29 Tyres stored awaiting disposal or transport for take-back and recycling or waste-to-energy options must be stockpiled in volumes less than three (3) metres in height and 200 square metres and at least ten (10) metres from any other tyre storage area.

F30 Fire prevention measures must be implemented including the removal of all combustible materials, including grass and vegetation, within a ten (10) metre radius of any tyre storage area.

F31 Subject to demonstrating to the administering authority that no other use higher in the waste management hierarchy can be practicably implemented, bulk rubber waste generated from the mining activities may be disposed of on site, preferentially

(a) in non-acid forming materials within the waste rock dumps; or

(b) in underground stopes; or

(c) in the Existing Landfill at the Mount Isa Mines landfill

F32 The Expansion Cell of the Mount Isa Mines Landfill must be designed and constructed:

(a) under the supervision of an appropriately qualified person(s); and

(b) in accordance with Schedule K – Figure 11b (Mount Isa Mines Landfill Expansion Cell)

F33 The minimum standard landfill liner system for the Expansion Cell must include:
(a) a 300mm select fill layer (e.g. compacted clay or compacted engineered fill);
(b) a protection geotextile;
(c) a 2mm HDPE geomembrane; and
(d) a Geosynthetic Clay Liner.

F34 A Construction Quality Assurance plan must be prepared by an appropriately qualified person and provided to the administering authority for:
(a) the construction of the Expansion Cell, prior to commencement of the cell works; and
(b) the final capping of the Expansion Cell, prior to the commencement of capping.

F35 A landfill gas collection system for the Expansion Cell must be designed, installed, operated, and maintained by an appropriately qualified person(s).

F36 A landfill gas monitoring program, developed by an appropriately qualified person in the fields of hydrogeology and landfill gas monitoring program design, must be implemented for the Expansion Cell to measure methane levels in the landfill structures and at the landfill site boundary.

F37 The landfill gas monitoring program must monitor landfill gas at a minimum frequency of quarterly.

F38 Upon approval from the administering authority, conditions F35, F36, F37, F38, F39 and F40 cease to apply where the risk of landfill gas is demonstrated to be low risk for the Expansion Cell, in accordance with the administering authority's guideline – Landfill siting, design, operation and rehabilitation based on either:
(a) landfill gas monitoring program described in Condition F36; or
(b) landfill gas assessment developed by an appropriately qualified person in the fields of hydrogeology and landfill gas monitoring program design for the Expansion Cell.

F39 A landfill gas monitoring network must be installed during the closure of the General and Contaminated Waste Expansion Cell to measure methane levels. The network must consist of gas monitoring devices, such as monitoring bores and be developed by an appropriately qualified person in the fields of hydrogeology and landfill gas monitoring program design.

F40 Methane gas monitored must not exceed the following limits:
(a) 500 parts per million at a height of 50mm above the final and intermediate cover surface including the batter slopes of the **landfill unit**
(b) 25% of the lower explosive limit of the landfill site **boundary** when measured in facility structures (but excluding facility structures used for landfill gas control and recovery, and **leachate** collection system components)
(c) 25% of the lower explosive limit in subsurface geology at or beyond the landfill site **boundary**
(d) landfill gas collected is reused or efficiently flared in a manner that avoids environmental harm
(e) 25% of the lower explosive limit within service pits, service trenches, stormwater drains or other structures beyond the landfill site **boundary.**

F41 If methane gas levels exceeding methane standards referred to in condition F40 are detected, all necessary steps must immediately be taken to ensure protection of human health.

F42 The following materials must not be used for dust suppression purposes:
(a) leachate or landfill gas condensate
(b) waste oil or other hydrocarbons.

F43 A leachate collection system for the Expansion Cell must be designed and installed by an appropriately qualified person and maintained to:

(a) collect leachate generated in the Expansion Cell;
(b) convey the collected leachate out of the Expansion Cell to an appropriate leachate storage facility; and
(c) restrict the height of the leachate above the liner system to a maximum level of 300 mm.

F44 Leachate and stormwater runoff which has been in contact with waste materials in the Expansion Cell, must be collected in the leachate storage facility, and must be dealt with in accordance with the following hierarchy:
(a) evaporation within the leachate storage facility; or
(b) disposed to Kennedy Siltstone Open Cut where leachate storage facility capacity cannot be met; or
(c) disposed of in accordance with condition F1 of this environmental authority.

F45 Disposal of waste described in Condition F6 in the Existing Landfill must cease following the commissioning of the Expansion Cell by no later than **1 November 2023** with the exception of asbestos and bulk rubber waste.

F46 When the deposition of waste to the Expansion Cell ceases, a final capping system must be designed by an appropriately qualified person and installed to:
(a) minimise infiltration of water into the Expansion Cell and water ponding on the surface; and
(b) minimise the likelihood of any erosion occurring to either the final capping system or the landfilled materials; and
(c) allow for a landfill gas dissipation layer within the capping system.

END OF CONDITIONS FOR SCHEDULE F

Schedule G – Noise and Vibration

General

G1 Unless otherwise authorised by this environmental authority, noise from the mining activities must not cause environmental harm at any sensitive place or commercial place.

G2 In the event of a complaint made to the administering authority (which is neither frivolous or vexatious or based on mistaken belief) about noise generated in carrying out the mining activities, the holder of this environmental authority must undertake noise monitoring and recording within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint of environmental nuisance at any sensitive place or commercial place, and the results must be notified within fifteen (15) business days to the administering authority following completion of monitoring.

G3 Noise generated by the mining activities will not be considered environmental harm if it complies with the limits detailed in Schedule G – Table 1 (Noise Limits).

Schedule G - Table 1 (Noise Limits)

Noise level dB(A) measured as:	Place of measurement	Monday to Sunday		
		7am to 6pm	6pm to 10pm	10pm to 7am
$L_{Aeq,adj,1hour}$	External noise limit	Background[1] + 3	Background[1] + 3	Background[1] + 3
$L_{A1,adj,1hour}$	Internal noise limit	45	45	45

1 'background' is the background noise level as defined in Schedule K - Figures 12a to 12d for day time noise at Mount Isa mine and Schedule K - Figure 14 for day time noise at George Fisher mine, and Schedule K – Figures 13a to 13d for evening and night time noise at Mount Isa mine and Schedule K – Figure 14 for evening and night time noise at George Fisher mine.

Noise Monitoring

G4 The holder of this environmental authority must develop and implement a noise monitoring program at a frequency not exceeding every six (6) months, to demonstrate compliance with the noise limits identified in Schedule G – Table 1 (Noise Limits).

G5 Noise monitoring and recording must include the following descriptor characteristics and matters:

(a) $L_{AN,T}$ (where N equals the statistical levels of 1, 10 and 90 and T = 60 mins);

(b) $L_{Aeq,adj,1hour}$; $L_{A1,adj,1hour}$;

(c) Background noise level L_{A90};

(d) The level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to statistical levels;

(e) Atmospheric conditions including temperature, relative humidity and wind speed and directions;

(f) Effects due to any extraneous factors such as traffic noise;

(g) Location, date and time of monitoring;

(h) If the noise monitoring is due to a complaint and the complaint concerns low frequency noise:

(i) Max $Lp_{Lin,T}$; and

(ii) one third octave band measurements in dB(Lin) for centre frequencies in the 10 – 200 Hz range.

G6 The method of measurement and reporting of noise levels must comply with the most recent edition of the administering authority's *Noise Measurement Manual* or the most recent version of AS1055 *Acoustics – Description and measurement of environmental noise.*

Vibration and Overpressure

G7 The carrying out of the mining activities must not cause the peak particle velocity and air blast overpressure limits specified in Schedule G - Table 2 (Blasting Overpressure and Vibration Limits) to be exceeded when measured at any sensitive place or commercial place.

Schedule G - Table 2 (Blasting Overpressure and Vibration Limits)

	Limit
Airblast overpressure	4 out of any 5 consecutive blasts must not be greater than 115 dB (Linear) Peak and no blasts are to be greater than 120 dB (Linear) Peak
Ground vibration peak particle velocity	10mm/second peak particle velocity for vibrations of less than or equal to 35Hz and 25mm/second peak particle velocity for vibrations of greater than 35Hz

G8 The holder of this environmental authority must monitor for peak particle velocity and air blast overpressure as set out in Schedule G - Table 2 (Blasting Overpressure and Vibration Limits) at the monitoring locations specified in Schedule G - Table 3 (Blasting Overpressure and Vibration Monitoring Locations) and Schedule K – Figure 15 (Blasting Monitoring Locations) for every blast on site.

Schedule G - Table 3 (Blasting Overpressure and Vibration Monitoring Locations)

Location	**Coordinates (GDA94 MGA Zone 54)**	
	Easting	**Northing**
Open Cut Blasting		
Softball Oval	342355	7709368
Sunflower	342528	7708151
St. Joseph's Training Centre	342331	7707025
Underground Blasting		
Softball Oval	342359	7709368
Sunflower	342528	7708151
Parkside North	342300	7705735
Parkside South	342294	7705494
St. Joseph's Training Centre	342331	7707025

G9 The method of measurement and reporting of vibration levels must comply with the most recent edition of the administering authority's guideline *Noise and vibration from blasting.*

G10 Unless surface blasting is required at any time for safety reasons, surface blasting must only occur between 6.00am and 8.30pm on weekdays and between 7.30am and 8.30pm on weekends when:

(a) wind speeds are equal to or less than 19km/h; or

(b) wind speeds are greater than 19km/h and there is no westerly wind.

END OF CONDITIONS FOR SCHEDULE G

Schedule H – Water

General

H1 Contaminants must not be released directly or indirectly to any waters other than in accordance with the contaminant release requirements, conditions and limits stated in this environmental authority.

Contaminant Release to Waters

H2 Unless otherwise permitted under the conditions of this environmental authority, the release of mine affected water from the mining activities must only occur from the release points specified in Schedule H - Table 1 (Contaminant Release Points) and depicted in Schedule K – Figure 16 (Contaminant Release Points – Mount Isa East Containment Area), Schedule K – Figure 17 (Contaminant Release Points –TSF Containment Area) and Figure 18 (Contaminant Release Points – GFM / HHOC Containment Area).

Note The release of mine affected water to any infrastructure contained within the surface water containment areas is permitted.

Schedule H - Table 1 (Contaminant Release Points)

Release Point[1]	Coordinates (GDA94 MGA Zone 54)		Receiving Waters Description	
	Easting	Northing		
Mount Isa East Containment Area				
DAG Weir	342192	7707010	Leichhardt River	Via Death Adder Gully into Leichhardt River
Old Workshops Pit	342179	7707275		Via gully into Leichhardt River
Superpit Wall	342219	7707802		
Railway Pond	342227	7708221		
Main Workshops Pond	342166	7710011		
Lower Star Gully Pond	342209	7709219		Via Lower Star Gully into Leichhardt River
Western Drain Pond	341827	7710425	King Gully	Via King Gully into Leichhardt River
Clean In Clean Out Pond	341543	7710218		
King Gully Diversion Weir	341126	7710656		
X41 South Dam	341946	7705333	Lena Creek	Via Lena Creek into Leichardt River
BSOC WRD North Sump	339429	7709417	Hazeldene Creek	Via Hazeldene Creek into Leichardt River
BSOC WRD South Sump	339158	7708957		Via Hazeldene Creek into Leichardt River
TSF Containment Area				
TD5 West Seepage Pond	338700	7707590	Hazeldene Creek	Via Hazeldene Creek into Leichhardt River

Release Point[1]	Coordinates (GDA94 MGA Zone 54)		Receiving Waters Description	
	Easting	Northing		
Tailings Dam 5 South Spillway	339043	7706735		
Tailings Dam 5 North Spillway	339057	7708115		
TD7 Evaporation Pond	338414	7706035		
Tailings Dam 8 spillway	336655	7704486		
TD8 East Seepage Pond	340285	7702632	Lena Creek	Via Lena Creek into Leichhardt River
Kennedy Saddle TSF Seepage Dam	339741	7704908		
Future Kennedy Saddle Dam Seepage Pond	340019	7704820		
GFM / HHOC Containment Area				
Sediment Dam 4	341537	7723474	Spring Creek	Via Spring Creek into Lake Moondarra
Sediment Dam 6	341427	7723606		
Sediment Dam 3	341410	7724167		
Sediment Dam 1	341350	7724583		
Sediment Dam 12	341449	7725253		
Heavy Vehicle Sediment Dam	342122	7725709		
Sediment Dam 15	341234	7725743		
Sediment Dam 20	340874	7725714		
Sediment Dam 21	340807	7726003		
Sediment Dam 22	340726	7726311		
Sediment Dam 23	340706	7726382		
Sediment Dam 24	340948	7726317		
Sediment Dam 26	341572	7724304		
Sediment Dam 151	340790	7726485		
BLOB Sediment Dam	340095	7726694		
Sediment Dam 9	340054	7727246		
Sediment Dam 201	340418	7727647		
Sediment Dam 201 (Controlled Release Point)	340661	7727728		

1 For a controlled release the release monitoring point is at the point of the release into the receiving water.

Contaminant Release Monitoring

H3 The release of mine affected water from the release points must be monitored for the quality characteristics and at the frequency specified in Schedule H - Table 2 (Contaminant Release Monitoring) at the location specified in Schedule H - Table 1 (Contaminant Release Points) or for a controlled release, at the point of the release into the receiving water.

Schedule H - Table 2 (Contaminant Release Monitoring)

Quality Characteristic	Unit	Monitoring applies to the following surface water containment area	Monitoring Frequency[3]
Physicochemical			Event based sampling[2] of discharge: One sample must be taken within 15 hours of a discharge event[1] commencing. A second sample must be taken between 15 and 30 hours after the discharge event[1] commences. Where a discharge event[1] has a duration of 30 hours or greater, samples must be taken daily for one week, and once a week thereafter until discharge ceases.
Electrical conductivity	µS/cm	All	
pH[6]	pH units	All	
Turbidity	NTU	All	
Total Suspended Solids	mg/L	All	
Ammonia (as N)	mg/L	MIE, TSF	
Nitrate	mg/L	MIE, TSF	
Total Phosphorus	mg/L	MIE, TSF	
Total Hardness (as $CaCO_3$)	mg/L	All	
Major Cations & Anions			
All major ions: Sulphate, Fluoride Chloride, Calcium, Magnesium, Sodium, Potassium, Bicarbonate, Carbonate	mg/L	All	
Metals & Metalloids (measured as total and dissolved)[2,4]			
Aluminium	mg/L	All	
Antimony	mg/L	MIE[5], TSF[5]	
Arsenic	mg/L	All	
Beryllium	mg/L	MIE[5], TSF[5]	
Boron	mg/L	MIE[5], TSF[5]	
Cadmium	mg/L	All	
Copper	mg/L	All	
Chromium	mg/L	All	
Cobalt	mg/L	MIE[5], TSF[5]	
Lead	mg/L	All	
Manganese	mg/L	MIE[5], TSF[5]	
Mercury	mg/L	MIE[5], TSF[5]	
Molybdenum	mg/L	MIE[5], TSF[5]	

Quality Characteristic	Unit	Monitoring applies to the following surface water containment area	Monitoring Frequency[3]
Nickel	mg/L	All	
Selenium	mg/L	All	
Silver	mg/L	MIE[5], TSF[5]	
Thallium	mg/L	All	
Uranium	mg/L	MIE[5], TSF[5]	
Vanadium	mg/L	MIE[5], TSF[5]	
Zinc	mg/L	All	
Organics			
Total Petroleum Hydrocarbons	mg/L	All	
Non Metallic Inorganics			Event based sampling[2] of discharge: One sample must be taken within 15 hours of a discharge event[1] commencing. A second sample must be taken between 15 and 30 hours after the discharge event[1] commences.
Free Cyanide	mg/L	All	
WAD Cyanide	mg/L	All	
Total Cyanide	mg/L	All	

MIE Mount Isa East Containment Area
TSF TSF Containment Area
All All surface water containment areas

1 Discharge event is a release of water from a release point as specified in Schedule H - Table 1 (Contaminant Release Points).
2 Grab sampling is the preferred method for sampling collection, however the use of remote sampling techniques such as automated methods is acceptable.
3 Monitoring during discharge events will only be conducted where safe access can be gained.
4 For grab samples, all metals and metalloids must be measured as total (unfiltered) and dissolved (filtered) – filtering must be conducted in the field.
5 Must be measured until BROC geochemical work is finalised to show that these contaminants are not mobilised at concentrations above water quality objectives specified in Schedule H –Table 5 (Interim Release Limits for Controlled Releases).
6 May be measured on site using a calibrated pH meter. Field measured pH may be used as the EA comparable result and the laboratory tested pH sample be used as a reference.

Stream Flow Monitoring

H4 The holder of this environmental authority must install, operate and maintain a stream flow gauging station to determine and record stream flows at the locations specified in Schedule H - Table 3 (Stream Flow Monitoring). For the purpose of Schedule H, flow events are determined by data recorded at the relevant gauging stations specified in Schedule H – Table 3 (Stream Flow Monitoring).

Schedule H - Table 3 (Stream Flow Monitoring)

Receiving water description	Release point	Gauging station description	Coordinates (GDA94 MGA Zone 54)		Flow recording Frequency
			Easting	Northing	
Leichhardt River	All release points from TSF Containment Area and Mount Isa East Containment Area	Gauging station - 23rd Avenue Leichhardt River	343230	7705344	Continuous – measured at 15 minutes intervals[2]
Spring Creek[1]	All release points from GFM / HHOC Containment Area	Gauging station – Spring Creek	345245	7723683	Continuous – measured at 15 minutes intervals[2]
Hazeldene Creek[1]	All release points from TSF Containment Area that reports to Hazeldene Creek	Gauging station – Hazeldene Creek	338108	7710594	Continuous – measured at 15 minutes intervals[2]

1 These two stations must be installed by **1 November 2012**.
2 Flows may be measured as water heights during flow events.

Mine Affected Water Release Events

H5 Unless otherwise permitted under the conditions of this environmental authority, the release of mine affected water to receiving waters must only take place in accordance with the maximum release rate for all combined release points for the relevant flow event specified in Schedule H - Table 4 (Contaminant Release During Flow Events) for the release point(s) specified in Schedule H - Table 1 (Contaminant Release Points).

H6 Unless otherwise permitted under the conditions of this environmental authority, the release of mine affected water to receiving waters must not exceed the release limits stated in Schedule H - Table 5 (Interim Release Limits for Controlled Releases) when measured at the release point(s) specified in Table 1 for each quality characteristic specified in Schedule H - Table 5.

H7 If during any release of mine affected water during a medium or high flow event specified in Schedule H - Table 4 (Contaminant Release During Flow Events), the water quality objectives as specified in the low flow column of Schedule H - Table 5 (Contaminant Release During Flow Events) are exceeded at the downstream compliance point as specified in Schedule H – Table 8a (Receiving Water Reference Sites, Downstream Compliance Monitoring Points and Other Monitoring Points) and Table 8b (Sample Sites and Monitoring) the holder of this environmental authority must compare the downstream results to the reference site results and:

(a) where the downstream result is the same or a lower value than the reference site value for the quality characteristic during the same sampling event then no action is to be taken;

(b) where the downstream results exceed the reference site, undertake an investigation as to whether the exceedance is attributable to the mining activities and this must be advised to the administering authority;

(c) if the exceedance is not attributable to the mining activities then no further action is required;

(d) if the exceedance is attributable to the mining activities, complete the investigation in accordance with the ANZECC & ARMCANZ 2000 methodology, into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining:

(i) details of the investigations carried out;

(ii) actions taken or to be taken to minimise environmental harm; and

(iii) if applicable propose revised discharge criteria.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with condition H7(d), no further reporting is required for subsequent trigger events of an equal-to or lesser extent for that quality characteristic.

Schedule H - Table 4 (Contaminant Release During Flow Events)

Receiving water description	Release point	Flow event[1]	Maximum release rate for all combined release points	Release limit
Leichhardt River	All release points from TSF Containment Area that report to Lena Creek and all release points from Mount Isa East Containment Area	Any flow	No restriction during flow event	As specified in Schedule H - Table 5 (Interim Release Limits For Controlled Releases)
		Post low flow a flow event period of at least four (4) days, with one day of at least 1m^3/s average flow.	Release may also occur for up to 4 weeks after the natural low flow event ceases Maximum total release rate is 200l/s[2]	As specified in Schedule H - Table 5 (Interim Release Limits For Controlled Releases)
		Medium flow - Minimum natural river flow 10m^3/s	Minimum natural river flow 10m^3/s Maximum release rate is 5% of river flow (minimum 1:20 dilution rate)	As specified in Schedule H - Table 5 (Interim Release Limits For Controlled Releases)
		High Flow - Minimum natural river flow 50m^3/s	Minimum natural river flow 50m^3/s Maximum release rate is 5% of river flow (minimum 1:20 dilution rate)	As specified in Schedule H - Table 5 (Interim Release Limits For Controlled Releases)
Spring Creek	All release points from GFM / HHOC Containment Area	Any flow	No restriction during flow event	As specified in Schedule H – Table 5 (Interim Release Limits For Controlled Releases)
		Post low flow a flow event period of at least four (4) days, with one day of at least 0.1m^3/s average flow	Release may also occur for up to 4 weeks after the natural low flow event ceases Maximum total release rate is 100l/s[2]	As specified in Schedule H - Table 5 (Interim Release Limits For Controlled Releases)

Receiving water description	Release point	Flow event[1]	Maximum release rate for all combined release points	Release limit
		Medium flow - Minimum natural river flow 1m^3/s	Minimum natural river flow 1m^3/s Maximum release rate is 5% of river flow (minimum 1:20 dilution rate)	As specified in Schedule H - Table 5 (Interim Release Limits For Controlled Releases)
		High Flow - Minimum natural river flow 5m^3/s	Minimum natural river flow 5m^3/s Maximum release rate is 5% of river flow (minimum 1:20 dilution rate)	As specified in Schedule H - Table 5 (Interim Release Limits For Controlled Releases)
Hazeldene Creek	All release points from TSF Containment Area that report to Hazeldene Creek	Any flow	No restriction during flow event	As specified in Schedule H - Table 5 (Interim Release Limits For Controlled Releases)
		Post low flow a flow event period of at least four (4) days, with one day of at least 0.1m^3/s average flow	Release may also occur for up to 4 weeks after the natural low flow event ceases Maximum total release rate is 100l/s[2]	As specified in Schedule H - Table 5 (Interim Release Limits For Controlled Releases)
		Medium flow - Minimum natural river flow 1m^3/s	Minimum natural river flow 1m^3/s Maximum release rate is 5% of river flow (minimum 1:20 dilution rate)	As specified in Schedule H - Table 5 (Interim Release Limits For Controlled Releases)
		High Flow – Minimum natural river flow 5m^3/s	Minimum natural river flow 5m^3/s Maximum release rate is 5% of river flow (minimum 1:20 dilution rate)	As specified in Schedule H - Table 5 (Interim Release Limits For Controlled Releases)

1 Flow events as recorded under condition H4.

Schedule H - Table 5 (Interim[5] Release Limits for Controlled Releases)

Quality Characteristic	Release limit[1] for any flow and post low flow[8] and water quality objectives[9]	Release limit for medium flow[6, 8]	Release limit for high flow[7, 8]
Physicochemical			
Electrical Conductivity (µS/cm)	435[5]	2000	2300
pH (pH units)	6.0 – 8.0	6.0 - 8.5	6.0 - 8.5
Turbidity (NTU)	For interpretation purposes	For interpretation purposes	For interpretation purposes
Suspended Solids (mg/L)	14	140	630
Ammonia (mg/L)	0.9	9	9
Nitrate (mg/L)	0.7	7	7.2
Total Phosphorus (mg/L)	0.01	0.1	0.78
Major Cations & Anions			
Sulphate (SO_4^2) (mg/L)	26	260	335
Fluoride (mg/L)	80th percentile of reference[4]	10 times 80th percentile of reference[4]	10 times 95th percentile of reference[4]
Chloride (mg/L)	80th percentile of reference[4]	10 times 80th percentile of reference[4]	10 times 95th percentile of reference[4]
All other major ions Calcium, Magnesium, Sodium, Potassium, Bicarbonate, Carbonate	For interpretation purposes		
Total hardness as $CaCO_3$	For interpretation purposes		
Metals & Metalloids[10]			
Total Aluminium (µg/L)	820	8200	15075
Total Antimony (µg/L)	1	10	10
Total Arsenic[2] (µg/L)	13	130	130
Total Beryllium (µg/L)	0.13	1.3	1.3
Total Boron (µg/L)	370	3700	3700
Total Cadmium (µg/L)	1.14 – for discharge into Leichhardt River	11.4 – for discharge into Leichhardt River	11.4 – for discharge into Leichhardt River

Quality Characteristic	Release limit[1] for any flow and post low flow[8] and water quality objectives[9]	Release limit for medium flow[6, 8]	Release limit for high flow[7, 8]
	0.2 – for discharge into Hazeldene Creek and Spring Creek	2 – for discharge into Hazeldene Creek and Spring Creek	4.5 – for discharge into Hazeldene Creek and Spring Creek
Total Copper (µg/L)	24	240	713
Total Chromium[3] (µg/L)	1.0	10	17.5
Total Cobalt (µg/L)	2.8	28	28
Total Lead (µg/L)	40.12 – for discharge into Leichhardt River 4 – for discharge into Hazeldene Creek and Spring Creek	401.2 – for discharge into Leichhardt River 40 – for discharge into Hazeldene Creek and Spring Creek	401.2
Total Manganese (µg/L)	1900	1900	1900
Total Mercury (µg/L)	0.6	6	6
Total Molybdenum (µg/L)	34	340	340
Total Nickel (µg/L)	11	110	110
Total Selenium (µg/L)	11	110	110
Total Silver (µg/L)	0.05	0.5	0.5
Total Thallium (µg/L)	1	10	100
Total Uranium (µg/L)	0.5	5	5
Total Vanadium (µg/L)	6	60	60
Total Zinc (µg/L)	41.6 – for discharge into Leichhardt River 10 – for discharge into Hazeldene Creek and Spring Creek	416 – for discharge into Leichhardt River 100 – for discharge into Hazeldene Creek and Spring Creek	416 – for discharge into Leichhardt River 200 – for discharge into Hazeldene Creek and Spring Creek
Organics			
Hydrocarbons	No visible film		
Non Metallic Inorganics			
Free Cyanide (mg/L)	0.022[11]	0.22	0.22

Quality Characteristic	Release limit[1] for any flow and post low flow[8] and water quality objectives[9]	Release limit for medium flow[6, 8]	Release limit for high flow[7, 8]
WAD Cyanide (mg/L)	0.5[11]	5	5
Total Cyanide (mg/L)	Interpretational purposes only		

1 The low flow and post low flow release limits are based on default trigger limits or the 80th percentile of reference system, whichever is the higher. Where appropriate the default trigger values may be hardness adjusted in accordance with ANZECC/ARMCANZ (2000) section 7.4.4. The default trigger values – from ANZECC/ARMCANZ (2000) trigger values for aquatic ecosystems indicative of slightly-to-moderately disturbed tropical Australian upland river ecosystems Tables 3.3.4, Table 3.4.1 (high reliability trigger values) and moderate or low reliability triggers values (Section 8.3) if no value available in Table 3.4.1. Locally-derived trigger values are proposed to be developed in accordance with the guidance provided in Section 7.4.4. of the ANZECC/ARMCANZ (2000) guidelines (or later editions). The reference data set must be based on grab samples. For grab samples all metals and metalloids must be measured as total (unfiltered) and dissolved (filtered) – filtering must be conducted in the field.
2 Speciated arsenic concentrations can be included from the outset, or alternatively, an arsenic (total species) sample can be determined with analysis for As (III) and As (V) only required if 13 µg/L is exceeded - note that the sample bottle requirements for As (total species) and As (speciated) may differ.
3 Speciated chromium concentrations can be included from the outset, or alternatively, a chromium (total species) sample can be determined with analysis for Cr (III) and Cr (VI) only required if 1.0 µg/L is exceeded - note that the sample bottle requirements for Cr (total species) and Cr (speciated) may differ.
4 Reference sites are the relevant reference sites in Schedule H – Table 8a (Receiving Water Reference Sites, Downstream Compliance Monitoring Points and Other Monitoring Points) and Table 8b (Sample Sites and Monitoring).
5 Based on the Queensland Water Quality Guidelines (2009).
6 The medium flow release limits for total metals is based on 10 times 80th percentile of reference or 10 times default trigger limits, whichever is the higher.
7 The high flow release limits for total metals is based on 10 times 95th percentile of reference or 10 times default trigger limits, whichever is the higher, except for manganese.
8 Any flow, Post low flow, medium flow and high flow as specified in the flow event column of Schedule H - Table 4 (Contaminant Release During Flow Events).
9 The values specified in this column are the water quality objectives for the receiving waters referred to in condition H7.
10 Sample analysis for metals must include dissolved and total analysis
11 Based on *Implementation Guidance for the International Cyanide Management Code, International Cyanide Management Institute, Standard of Practice 4.5*

H8 The uncontrolled release of mine affected water to receiving waters may only occur:

(a) if the holder of this environmental authority has complied with condition D8; and

(b) the holder of this environmental authority has taken all reasonable and practicable measures to prevent an uncontrolled release from the surface water containment area.

H9 An uncontrolled release of mine affected water to receiving waters must not:

(a) exceed the release limits at the spillway stated in Schedule H - Table 6 (Interim Release Limits for an Uncontrolled Release); and

(b) cause the limit at the downstream compliance point as specified in Schedule H - Table 6 (Interim Release Limits for an Uncontrolled Release) to be exceeded.

Schedule H - Table 6 (Interim Release Limits for an Uncontrolled Release)

Quality Characteristic	Release limit at the spillway	Limit at downstream compliance point[1]
Physicochemical		
Electrical conductivity [5] (µS/cm)	5000	1000
pH[4] (pH units)	5.5 to 9	6 to 8.5
Turbidity (NTU)	Must be measured for interpretation purposes	
Suspended Solids (mg/L)	Must be measured for interpretation purposes	69
Ammonia (mg/L)	Must be measured for interpretation purposes	99th percentile of reference[2]
Nitrate (mg/L)	Must be measured for interpretation purposes	99th percentile of reference[2]
Phosphorus (mg/L)	Must be measured for interpretation purposes	99th percentile of reference[2]
Major Cations & Anions		
Sulphate (SO_4^{2-}) (mg/L)	Must be measured for interpretation purposes	250
Fluoride (mg/L)	Must be measured for interpretation purposes	2
Chloride (mg/L)	Must be measured for interpretation purposes	99th percentile of reference[2]
All other major ions Calcium, Magnesium, Sodium, Potassium, Bicarbonate, Carbonate	Must be measured for interpretation purposes	
hardness as $CaCO_3$	Must be measured for interpretation purposes	
Metals & Metalloids		
Total Aluminium (µg/L)	Must be measured for interpretation purposes	2280
Total Antimony (µg/L)	Must be measured for interpretation purposes	3
Total Arsenic[3] (µg/L)	Must be measured for interpretation purposes	13
Total Beryllium (µg/L)	Must be measured for interpretation purposes	100
Total Boron (µg/L)	Must be measured for interpretation purposes	370
Total Cadmium (µg/L)	Must be measured for interpretation purposes	12.5

Quality Characteristic	Release limit at the spillway	Limit at downstream compliance point[1]
Total Copper (µg/L)	Must be measured for interpretation purposes	86
Total Chromium (µg/L)	Must be measured for interpretation purposes	3
Total Cobalt (µg/L)	Must be measured for interpretation purposes	6
Total Lead (µg/L)	Must be measured for interpretation purposes	67
Total Manganese (µg/L)	Must be measured for interpretation purposes	1900
Total Mercury (µg/L)	Must be measured for interpretation purposes	1
Total Molybdenum (µg/L)	Must be measured for interpretation purposes	24
Total Nickel (µg/L)	Must be measured for interpretation purposes	20
Total Selenium (µg/L)	Must be measured for interpretation purposes	10
Total Silver (µg/L)	Must be measured for interpretation purposes	100
Total Thallium (µg/L)	Must be measured for interpretation purposes	10
Total Uranium (µg/L)	Must be measured for interpretation purposes	10
Total Vanadium (µg/L)	Must be measured for interpretation purposes	99th percentile of reference[2]
Total Zinc (µg/L)	Must be measured for interpretation purposes	41.6
Organics		
Hydrocarbons	No visible film	
Non-Metallic Inorganics		
Free Cyanide (mg/L)	Must be used for interpretation purposes	0.022[6]
WAD Cyanide (mg/L)	Must be used for interpretation purposes	0.5[6]
Total Cyanide (mg/L)	Interpretational purposes only	

1 Downstream receiving water limit is applied to the respective downstream compliance point in Schedule H – Table 8a and Table 8b.

2 Reference sites are the relevant reference sites in Schedule H – Table 8 (Receiving Water Reference Sites, Downstream Compliance Monitoring Points and Other Monitoring Points) and Table 8b (Sample Sites and Monitoring).

3 Speciated arsenic concentrations can be included from the outset, or alternatively, an arsenic (total species) sample can be determined with analysis for As (III) and As (V) only required if 13 µg/L is exceeded - note that the sample bottle requirements for As (total species) and As (speciated) may differ.

4 May be measured on site using a calibrated pH meter. Field measured pH may be used as the EA comparable result and the laboratory tested pH sample be used as a reference.
5 May be measured on site using a basic test kit.
6 Based on *Implementation Guidance for the International Cyanide Management Code, International Cyanide Management Institute, Standard of Practice 4.5*
7 Metals analysis must be undertaken for total and dissolved concentrations

H10 An estimate of the daily quantity of contaminants released from each release point must be based on available measured data recorded at the release points in Schedule H - Table 1 (Contaminant Release Points).

H11 The release of contaminants directly or indirectly to waters:

(a) must not produce any visible discolouration of receiving waters; nor

(b) must not produce any slick or other visible or odorous evidence of oil, grease or petrochemicals; nor

(c) contain visible floating oil, grease, scum, litter or other objectionable matter.

H12 Releases to waters must be undertaken so as to minimise erosion of the bed and banks of the receiving waters, or cause a material build up of sediment in such waters.

Onsite Water Storages

H13 Water storages stated in Appendix 1 – Tables 1, 2 and 3 of this environmental authority must be monitored on a regular basis, but at least annually for the water quality characteristics specified in Schedule H - Table 7 (Onsite Water Stock Exclusion Limits).

H14 In the event that waters storages defined in Appendix 1 – Tables 1, 2 and 3 of this environmental authority exceed the stock exclusion limits defined in Schedule H - Table 7 (Onsite Water Stock Exclusion Limits), the holder of this environmental authority must implement measures, where practicable, to prevent access to waters by livestock.

Schedule H - Table 7 (Onsite Water Stock Exclusion Limits)

Quality Characteristic	Test Value	Stock Exclusion Limit[3]
pH[4] (pH unit)	Range	Greater than 4, less than 9[2]
EC[5] (µS/cm)	Maximum	5970[1]
Sulphate (mg/L)	Maximum	1000[1]
Fluoride (mg/L)	Maximum	2[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]
Nickel (mg/L	Maximum	1[1]
Zinc (mg/L)	Maximum	20[1]

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”.
3 Total concentrations (unfiltered) must be taken and analysed.

4 May be measured on site using a calibrated pH meter. Field measured pH may be used as the EA comparable result and the laboratory tested pH sample be used as a reference.
5 May be measured on site using a basic test kit.

Receiving water monitoring

H15 For a controlled release of mine affected water during a medium or high flow event or an uncontrolled release, the holder of this environmental authority must monitor the quality characteristics relevant to the release in accordance with Schedule H – Table 2 (Contaminant Release Monitoring) of the water at each monitoring point specified in Schedule H - Table 8 (Receiving Water Reference Sites, Downstream Compliance Monitoring Points and Other Monitoring Points) and in Schedule K – Figure 22 (Receiving Water Reference Sites, Downstream Compliance Monitoring Points and Other Monitoring Points) for the relevant release point.

Schedule H - Table 8a (Receiving Water Reference Sites, Downstream Compliance Monitoring Points and Other Monitoring Points)

<table>
<tr><th>Release Point</th><th>Downstream compliance point[1]</th><th>Reference site[1]</th><th>Other monitoring location[1]</th></tr>
<tr><td colspan="4">Mount Isa East Containment Area</td></tr>
<tr><td>DAG Weir</td><td>LR4</td><td rowspan="3">LR1, MC_01, SC01, LR_UP, LRSCJ</td><td>DAG1, LR3, LR8, LR9, LR10</td></tr>
<tr><td>Old Workshops Pit</td><td rowspan="2">LR5</td><td rowspan="2">LR3, LR8, LR9, LR10</td></tr>
<tr><td>Superpit Wall</td></tr>
<tr><td>Railway Pond</td><td>LR6</td><td rowspan="5">LR1, MC_01, SC01. LR_UP, LRSCJ</td><td>LR3, LR8, LR9, LR10</td></tr>
<tr><td>Main Workshops Pond</td><td rowspan="2">LR7</td><td rowspan="2">LSG1, LR3, LR8, LR9, LR10</td></tr>
<tr><td>Lower Star Gully Pond</td></tr>
<tr><td>Western Drain Pond</td><td rowspan="3">LR8</td><td rowspan="3">LR3, LR7, LR9, LR10</td></tr>
<tr><td>CICO Pond</td></tr>
<tr><td>King Gully Diversion Weir</td></tr>
<tr><td>X41 South Dam</td><td>LR2, LR3</td><td>LR1, MC_01, SC01, LR_UP, LRSCJ</td><td>LR3, LR7, LR9, LR10</td></tr>
<tr><td>BSOC WRD North Sump</td><td rowspan="2">SP1, HZL, LR10</td><td rowspan="2">SCNRS, MC01, LR1, BSC</td><td rowspan="2">SP2, LR9,</td></tr>
<tr><td>BSOC WRD South Sump</td></tr>
<tr><td colspan="4">TSF Containment Area</td></tr>
<tr><td>TD5 West Seepage Pond</td><td rowspan="5">SP1</td><td rowspan="5">SCNRS, MC01, LR1, BSC</td><td rowspan="5">SP2, LR9, LR 10</td></tr>
<tr><td>Tailings Dam 5 South Spillway</td></tr>
<tr><td>Tailings Dam 5 North Spillway</td></tr>
<tr><td>TD7 Evaporation Pond</td></tr>
<tr><td>Tailings Dam 8 spillway</td></tr>
<tr><td>TD8 East Seepage Pond</td><td>LR2</td><td></td><td>LR3, LR8, LR9, LR 10</td></tr>
</table>

Kennedy Saddle Dam Seepage Pond		LR1, MC_01, SC01, BSC	
Future Kennedy Saddle Dam Seepage Pond			
GFM / HHOC Containment Area			
Sediment Dam 4	SC3	SPC04, SPC08	SC5
Sediment Dam 6			
Sediment Dam 3	SC4		
Sediment Dam 26			
Sediment Dam 1			
Sediment Dam 12	SC6, SPCD		
Sediment Dam 15			
Sediment Dam 20			
Sediment Dam 21			
Sediment Dam 22			
Sediment Dam 23			
Sediment Dam 24			
Sediment Dam 151			
BLOB Sediment Dam			
Heavy Vehicle Sediment Dam			
Sediment Dam 9	SC2		
Sediment Dam 201			
Sediment Dam 201 (Controlled Discharge Outlet)			

1 Monitoring will only be conducted where safe access can be gained.

Schedule H - Table 8b (Sample Sites and Monitoring)

Sample point name	Location Description	Coordinates (GDA94 MGA Zone 54)		Site Type	Monitoring[2]
		Easting	Northing		
Leichardt River					
LR_UP	Upper reaches of Leichardt River	338941	7690635	Reference	WQ
WFH[1]	Waterfall Hole – South of	340160	7684011	Reference	WQ, Macro

	Browns Waterhole				
BRW[1]	Browns Waterhole	340113	7687725	Reference	WQ, Macro
SC_01	Sybella Creek	338941	7690635	Reference	WQ, SQ
LRSCJ	Leichhardt River upstream of Sybella Creek confluence	344242	7695059	Reference	WQ, SQ, Macro
MC_01	Mica Creek	339849	7696864	Reference	WQ, SQ
LR1	Leichhardt River upstream of Mount Isa Mines and Mount Isa township	343347	7701557	Reference	WQ, SQ
LR2	Lena Creek at Old Mica Creek Road - downstream of Tailings Dam 8 prior to confluence with Leichhardt River	342909	7704855	Compliance	WQ, SQ
LR3	Leichhardt River at 23rd Avenue - downstream of Lena Creek	343230	7705344	Compliance	WQ, SQ
DAG1	Death Adder Gully just upstream of release into the Leichhardt River	342772	7706495	Compliance	WQ, SQ
LR4	Leichhardt River at Isa St - downstream of Death Adder Gully	342697	7707298	Compliance	WQ, SQ, Macro
LR5	Leichhardt River at Velodrome Walkway Crossing - upstream of Railway Pond	342766	7708138	Compliance	WQ, SQ

LR6	Leichhardt River at Alma St - downstream of Railway Pond	342862	7708484	Compliance	WQ, SQ
LR7	King Gully just upstream of release into Leichardt River at Davis Rd	343118	7710165	Compliance	WQ, SQ, Macro
LR8	Leichhardt River at Moondarra Crossing – downstream of King Gully	343314	7712132	Compliance	WQ, SQ, Macro
LR9	Leichhardt River just upstream of Spear Creek inflow	346382	7718279	Compliance	WQ, SQ, Macro
LR10	Leichhardt River – near inflow into Lake Moondarra – downstream of Spear Creek inflow	348095	7721261	Compliance	WQ
BCRS	Breakaway Creek downstream of urban influences	343605	7709687	Monitoring	WQ, SQ, Macro
BCRS_UP	Breakaway Creek upstream of urban influences	345935	7707714	Monitoring	WQ, SQ, Macro
Spear Creek					
BSC	Big Sandy Creek upstream of road crossing	335403	7712492	Reference	WQ, SQ
SCNRS	Spear Creek - North	341301	7716001	Reference	WQ, SQ
HZL	Hazeldene Creek – adjacent to the existing stream	338111	7710592	Compliance	WQ, SQ

	flow monitoring gauge				
SP1	Spear Creek – just upstream of GF Haul Road	341598	7714786	Compliance	WQ, SQ
SP2	Spear Creek just upstream of release into Leichhardt River	342792	7715705	Compliance	WQ, SQ
Spring Creek					
SPC_04	Spring Creek	337344	7729769	Reference	WQ, SQ, Macro
SPC_06	Spring Creek Upstream	342600	7728790	Reference	WQ, SQ
SC2	North Spring Creek Weir downstream of Sediment Dam 9	341027	7728141	Compliance	WQ, SQ
SC3	Spring Creek Weir downstream of Sediment Dam 4 and 6	341753	7723586	Compliance	WQ, SQ
SC4	Offset Creek Weir downstream of Sediment Dam 1 and 3	341642	7724390	Compliance	WQ, SQ
SC5	Spring Creek inflow into Lake Moondarra	345073	7723677	Compliance	WQ, SQ, Macro
SC6	O50 Weir downstream of Sediment Dam 12	341983	7724789	Compliance	WQ, SQ
SPCD	Spring Creek upstream of Gidyea Creek	343542	7725188	Compliance	WQ, SQ
ELR1[1]	East Leichhardt River – upstream of Kajabbi Road Crossing	369944	7726605	Reference	WQ, Macro

[1] Water quality sampling to be completed at these sites to support macroinvertebrate sampling interpretation.

[2] WQ – Water Quality, SQ – Sediment Quality, Macro - Macroinvertebrates

H16a This condition was deleted on 10 June 2021.

H16b This condition was deleted on 10 June 2021.

H16c This condition was deleted on 10 June 2021.

Receiving Environment Monitoring Program

H17 A Receiving Environment Monitoring Program (REMP) must be implemented to monitor and record the effects of the release of contaminants on the receiving environment periodically and whilst contaminants are being discharged from the site, with the aims of identifying and describing the extent of any adverse impacts to local environmental values and monitoring any changes in the receiving waters.

For the purposes of the REMP, the receiving environment is the waters of the Leichhardt River and tributaries including Spring Creek and Hazeldene Creek within the Lake Moondarra Catchment and includes Lake Moondarra.

H18 The REMP must:

(a) assess the condition or state of receiving waters and sediments, including upstream conditions, spatially within the REMP area, considering background water quality and sediment quality characteristics based on accurate and reliable monitoring data that takes into consideration temporal variation (e.g. seasonality);

(b) be designed to facilitate assessment against water quality and sediment quality objectives for the relevant environmental values that need to be protected;

(c) include monitoring from reference sites, downstream compliance points and other monitoring points at the locations specified in Schedule H - Table 8a (Receiving Water Reference Sites, Downstream Compliance Monitoring Points and Other Monitoring Points), and Schedule H - Table 8b (Sample Sites and Monitoring) and Schedule H – Table 9 (Sediment Quality Monitoring Points and Frequency);

(d) specify the frequency and timing of sampling required in order to reliably assess ambient conditions and to provide sufficient data to derive site specific background reference values in accordance with the *Queensland Water Quality Guidelines*. This should include monitoring during periods of natural flow irrespective of mine or other discharges;

(e) include monitoring for potential adverse environmental impacts caused by a release of mine affected waters from the mining activities (if any);

(f) include monitoring of water quality and sediment quality characteristics specified in Schedule H - Table 2 (Contaminant Release Monitoring) (in addition to dissolved oxygen saturation and temperature) and Schedule H – Table 10 (Sediment Trigger Levels and Contaminant Limits) to assess the extent of the compliance of concentrations with water quality and sediment quality objectives nominated in this environmental authority;

(g) include monitoring of biological indicators;

(h) apply procedures and/or guidelines from ANZECC & ARMCANZ 2000, CSIRO (2013), and the latest edition of the administering authority's *Monitoring and Sampling Manual* or other relevant guideline documents / suitable modification of any of those methods including design for program, sampling and analysis methods and quality assurance and control;

(i) incorporate stream flow and hydrological information in the interpretation of water, sediment and biological data.

H19 An amendment application in accordance with the *Environmental Protection Act 1994*, must be prepared and submitted to the administering authority by **1 October 2023**, supported by a revised REMP, that:

(a) specifies criteria for when a sampling event will occur; and
(b) nominates flow conditions for background and event flow pursuant to Table 4; and
(c) nominates at least one sampling location on King Gully; and
(d) nominates site specific trigger values and contaminant limits for receiving waters in accordance with requirements of the Queensland Water Quality Guidelines (2009) for inclusion in the environmental authority; and
(e) nominates sediment trigger values and contaminant limits for insertion into Schedule H – Table 10 (Sediment Trigger Values and Contaminant Limits); and
(f) provides raw data in support of the methodology and nomination of the site specific trigger values and limits; and
(g) assesses any assimilative capacity for contaminants monitored and the suitability of current discharge limits to protect downstream environmental values; and
(h) proposes associated adjustments to Schedule H, including the incorporation of surface water site specific trigger values and limits.

H20 Each year from **1 July 2018**, a report outlining the findings of the REMP, including all monitoring results and interpretations for the period 1 July to 30 June the following year, must be prepared and demonstrate the REMP has been implemented in accordance with condition H18 and submitted to the administering authority by **1 November** each year. This report should include an assessment of background water quality and sediment quality, any assimilative capacity for those contaminants monitored and the suitability of current discharge limits to protect downstream environmental values. The report may include revisions to the REMP and the holder of this environmental authority must give due consideration to any comments made on the revised REMP by the administering authority.

Sediment

H21 Sediment quality must be monitored at the locations and frequency specified Schedule H – Table 9 (Sediment Quality Monitoring Points and Frequency) for each quality characteristic and at the monitoring frequency specified in Schedule H – Table 10 (Sediment Trigger Values and Contaminant Limits).

Schedule H – Table 9 (Sediment Quality Monitoring Points and Frequency)

Monitoring Point	Coordinates (GDA94 MGA Zone 54)		Frequency
	Easting	Northing	
Leichardt River Catchment			
Reference points			
SC_01	338941	7690635	Two sampling rounds per wet season: 1. During the wet season after the creeks have been flushed once by rainfall. 2. After the wet season flows have ceased, but water is still present
MC_01	339849	7696864	
LRSCJ	344242	7695059	
LR1	343347	7701557	
Compliance points			
LR2	342909	7704855	Two sampling rounds per wet season: 1. During the wet season after the creeks have been flushed once by rainfall.
LR3	343230	7705344	

Monitoring Point	Coordinates (GDA94 MGA Zone 54)		Frequency
	Easting	Northing	
DAG1	342772	7706495	2. After the wet season flows have ceased, but water is still present
LR4	342766	7708138	
LR5	342766	7708138	
LR6	342862	7708484	
LR7	343163	7710286	
LR8	343314	7712132	
LR9	346382	7718279	
Spear Creek Catchment			
Reference points			
BSC	335403	7712492	Two sampling rounds per wet season: 1. During the wet season after the creeks have been flushed once by rainfall. 2. After the wet season flows have ceased, but water is still present
SCNRS	341,301	7716001	
Compliance points			
HZL	338111	7710592	Two sampling rounds per wet season: 1. During the wet season after the creeks have been flushed once by rainfall. 2. After the wet season flows have ceased, but water is still present
SP1	341598	7714786	
SP2	342792	7715705	
Spring Creek Catchment			
Reference points			

Monitoring Point	Coordinates (GDA94 MGA Zone 54)		Frequency
	Easting	Northing	
SPC_04	336457	7730233	Two sampling rounds per wet season: 1. During the wet season after the creeks have been flushed once by rainfall. 2. After the wet season flows have ceased, but water is still present
SPC_06	342600	7728790	
Compliance points			
SC2	341027	7715705	Two sampling rounds per wet season: 1. During the wet season after the creeks have been flushed once by rainfall. 2. After the wet season flows have ceased, but water is still present
SC6	341983	7724789	
SPCD	343542	7725188	
SC5	345073	7723677	

[1] In accordance with Condition H16b, Sediment Quality Monitoring Points and Frequency are to be nominated via an amendment application under the *Environmental Protection Act 1994*.

Schedule H – Table 10 (Sediment Trigger Values and Contaminant Limits [1,2,3])

Quality Characteristic	Trigger Level	Contaminant Limit
Leichardt River		
Arsenic (mg/kg)	To be nominated through REMP	To be nominated through REMP
Boron (mg/kg)	To be nominated through REMP	To be nominated through REMP
Cadmium (mg/kg)	To be nominated through REMP	To be nominated through REMP
Chromium (mg/kg)	To be nominated through REMP	To be nominated through REMP
Cobalt (mg/kg)	To be nominated through REMP	To be nominated through REMP
Copper (mg/kg)	To be nominated through REMP	To be nominated through REMP
Lead (mg/kg)	To be nominated through REMP	To be nominated through REMP

Manganese (mg/kg)	To be nominated through REMP	To be nominated through REMP
Nickel (mg/kg)	To be nominated through REMP	To be nominated through REMP
Uranium (mg/kg)	To be nominated through REMP	To be nominated through REMP
Zinc (mg/kg)	To be nominated through REMP	To be nominated through REMP
Selenium (mg/kg)	To be nominated though REMP	To be nominated though REMP
Silver (mg/kg)	To be nominated through REMP	To be nominated through REMP
Particle size distribution	For interpretive purposes	
Spear Creek		
Arsenic (mg/kg)	To be nominated through REMP	To be nominated though REMP
Boron (mg/kg)	To be nominated through REMP	To be nominated through REMP
Cadmium (mg/kg)	To be nominated through REMP	To be nominated through REMP
Chromium (mg/kg)	To be nominated through REMP	To be nominated through REMP
Cobalt (mg/kg)	To be nominated through REMP	To be nominated through REMP
Copper (mg/kg)	To be nominated through REMP	To be nominated through REMP
Lead (mg/kg)	To be nominated through REMP	To be nominated through REMP
Manganese (mg/kg)	To be nominated through REMP	To be nominated through REMP
Nickel (mg/kg)	To be nominated through REMP	To be nominated through REMP
Uranium (mg/kg)	To be nominated through REMP	To be nominated through REMP
Zinc (mg/kg)	To be nominated through REMP	To be nominated through REMP
Silver (mg/kg)	To be nominated through REMP	To be nominated through REMP
Selenium (mg/kg)	To be nominated through REMP	To be nominated through REMP
Particle size distribution	For interpretive purposes	
Spring Creek		
Arsenic (mg/kg)	To be nominated through REMP	To be nominated through REMP
Boron (mg/kg)	To be nominated through REMP	To be nominated through REMP
Cadmium (mg/kg)	To be nominated through REMP	To be nominated through REMP
Chromium (mg/kg)	To be nominated through REMP	To be nominated through REMP
Cobalt (mg/kg)	To be nominated through REMP	To be nominated through REMP
Copper (mg/kg)	To be nominated through REMP	To be nominated through REMP
Lead (mg/kg)	To be nominated through REMP	To be nominated through REMP

Manganese (mg/kg)	To be nominated through REMP	To be nominated through REMP
Nickel (mg/kg)	To be nominated through REMP	To be nominated through REMP
Uranium (mg/kg)	To be nominated through REMP	To be nominated through REMP
Zinc (mg/kg)	To be nominated through REMP	To be nominated through REMP
Silver (mg/kg)	To be nominated through REMP	To be nominated through REMP
Selenium (mg/kg)	To be nominated through REMP	To be nominated through REMP
Particle size distribution	For interpretive purposes	

[1] In accordance with condition H19, trigger and contaminant limits are to be nominated via an amendment application under the *Environmental Protection Act 1994*.

[2] Analysis for metals/metalloids concentrations in sediment must be conducted in a manner consistent with CSIRO (2013)

[3] Total metals/metalloids concentrations in sediment are to be measured in the fine fraction (<63µm)

H22 If quality characteristics of sediments measured at the compliance points specified in Schedule H – Table 9 (Sediment Quality Monitoring Points and Frequency) exceed any of the corresponding trigger levels specified in Schedule H – Table 10 (Sediment Trigger Levels and Contaminant Limits), the compliance points results must be compared to the reference points results and:

(a) where the compliance results is less than or equal to the reference point result for the quality characteristic then no action is to be taken, or

(b) where the compliance point results exceed the reference point results for the quality characteristic, then the environmental authority holder must complete an investigation in accordance with the ANZECC & ARMCANZ 2000 methodology and provide a written report to the administering authority within 3 months from receipt of the sample results, including:

(i) reasons for the variation in the parameter level

(ii) the potential for impact to environmental values;

(iii) if the variation is attributable to the mining activity, what actions taken to minimise impact to environmental values; and

(iv) details of the investigation carried out.

H23 The mining activities must not cause the quality characteristics of sediments measured at the compliance points specified in Schedule H – Table 9 (Sediment Quality Monitoring Points and Frequency) to exceed any of the corresponding contaminant levels specified in Schedule H – Table 10 (Sediment Trigger Levels and Contaminant Limits).

Water used for dust suppression

H24 Water contaminated by the mining activities can only be used for dust suppression if used within the surface water containment areas as specified in Schedule K – Figure 4 (TSF Containment Area), Schedule K – Figure 5 (Mount Isa East Containment Area) and Schedule K – Figure 6 (GFM / HHOC Containment Area).

Water General

H25 All determinations of water quality must be:

(a) performed by a person or body possessing appropriate experience and qualifications to perform the required measurements;

(b) made in accordance with methods prescribed in the latest edition of the latest edition of the administering authority's *Monitoring and Sampling Manual*;

(c) downstream compliance samples must be collected as soon practicable after the release sample is taken;

(d) carried out on representative samples;

(e) for laboratory determinations, carried out in a laboratory accredited (i.e. accredited by the National Association of Testing Authorities) for the method of analysis being used.

Water Management Plan

H26 A Water Management Plan must be developed by **1 November 2012** that provides for the proper and effective management of water to ensure compliance with the relevant conditions of this environmental authority.

H27 The holder of this environmental authority must implement the Water Management Plan.

H28 The Water Management Plan must include at least the following elements:

(a) a description of the containment systems and their sub-components;

(b) sources of water and contaminants into the containment systems;

(c) an operational simulation water balance model in accordance with the conditions in Schedule D;

(d) measures to minimise contamination of water;

(e) emergency and contingency planning;

(f) monitoring and review.

H29 Each year the holder of this environmental authority must undertake a review of the Water Management Plan following the wet season (i.e. by 1 May) to evaluate the effectiveness of the Water Management Plan. The review must also consider longer term simulations using contiguous sequences of historical rainfall data.

Erosion and Sediment Control Plan

H30 By **1 November 2012** the holder of this environmental authority must develop an Erosion and Sediment Control Plan. The 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 minimise erosion and the release of sediment to receiving waters and contamination of stormwater.

H31 The Erosion and Sediment Control Plan may be included in the Plan of Operations or the Water Management Plan, and provide for at least the following stormwater management functions:

(a) prevent or minimise the contamination of stormwater;

(b) diverting uncontaminated stormwater run-off around areas disturbed by mining activities or where contaminants or wastes are stored or handled;

(c) contaminated stormwater runoff, rainfall and leachate is collected, treated, reused, or released in accordance with the conditions of this environmental authority;

(d) roofing or minimising the size of areas where contaminants or wastes are stored or handled;

(e) erosion and sediment control structures are placed to minimise erosion of disturbed areas and prevent the contamination of any receiving waters;

(f) processes or procedures to ensure that erosion and sediment control structures are maintained and adequate storage is available in sediment dams;

(g) training of staff that will be responsible for maintenance and operations of sediment and erosion control structures.

Maintenance and cleaning of vehicles, plant or equipment

H32 The maintenance and cleaning of any vehicles, plant or equipment must be carried out in the surface water containment areas shown in Schedule K – Figure 4 (TSF Containment Area), Schedule K – Figure 5 (Mount Isa East Containment Area) and Schedule K – Figure 6 (GFM / HHOC Containment Area).

Groundwater

H33 The extraction of groundwater by current mining activities must not cause environmental harm to any groundwater dependant ecosystems outside of the zone of influence as depicted in Schedule K - Figure 19c. Figure 19c must be lodged with the administering authority as an application to amend this environmental authority within 30 business days of the administering authority accepting the environmental report submitted in relation to Environmental Evaluation STAT1185.

H34 Groundwater quality and standing water level must be monitored:

(a) at the locations specified in Schedule H – Table 11 (Interim groundwater monitoring locations and frequency); and
(b) at the frequencies specified in Schedule H – Table 11 (Interim groundwater monitoring locations and frequency); and
(c) for the quality characteristics identified in Schedule H –Table 12 (Interim groundwater quality limits) for the aquifer in which the bore is located.

Schedule H –Table 11 (Interim groundwater monitoring locations and frequency)[1]

Monitoring Point	Location (GDA 94)		Surface RL (m AHD)[2]	Screened interval RL (m bgl)	Monitoring Frequency	
	Easting	Northing			Standing Water Level	Groundwater Quality
Alluvium						
Compliance bores						
NB12	343,578	7,713,983	11 m	6-11 m	Quarterly	Quarterly
NB15	343,214	7,710,094	11 m	5-10 m	Quarterly	Quarterly
BOCO-BOML (GFA)						
Compliance bores						
NB24	341,445	7,720,327	103 m	90-102 m	Quarterly	Quarterly
BOCO-BOML (MIA)						
Compliance bores						
NB16	343,214	7,710,094	31 m	25-30 m	Quarterly	Quarterly
NB17	343,214	7,710,094	50 m	40-50 m	Quarterly	Quarterly
NB19	342,624	7,707,676	30 m	20-29 m	Quarterly	Quarterly
NB20	342,624	7,707,676	52 m	36-49 m	Quarterly	Quarterly
Bore 31	342,076	7,711,983	36 m	22-36 m	Quarterly	Quarterly
Fractured Rock (GFA)						
Compliance bores						

Bore 47	342,180	7,724,490	30 m	24-30 m	Quarterly	Quarterly
Bore 48	342,160	7,724,880	30 m	24-30 m	Quarterly	Quarterly
Fractured Rock (MIA West)						
Compliance bores						
Bore 4	337,812	7,706,950	41 m	unknown	Quarterly	Quarterly
Bore 4a	338,035	7,707,765	49 m	unknown	Quarterly	Quarterly
Bore 40	338,940	7,709,746	25 m	19-25 m	Quarterly	Quarterly
Fractured Rock (MIA East)						
Compliance bores						
Bore 30	340,802	7,711,635	60 m	42-60 m	Quarterly	Quarterly

Schedule H –Table 12 (Interim groundwater quality limits)

Quality Characteristic [1]	Unit	Limit Type	Alluvium		BOCO-BOML (GFA)		BOCO-BOML (MIA)		Fractured Rock – GFA		Fractured Rock MIA West		Fractured Rock MIA East	
			Limit A	Limit B	Limit A	Limit B	Limit A	Limit B	Limit A	Limit B	Limit A	Limit B	Limit A	Limit B
pH [2]	pH units	Range	6-8.5	6-8.5	6-8.5	6-8.5	6-8.5	6-8.5	6-8.5	6-8.5	6-8.5	6-8.5	6-8.5	6-8.5
Electrical conductivity [2]	µS/cm	Max	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
Sulfate (SO_4^{2-})	mg/L	Max	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
Ammonia	mg/L	Max	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	TBA	TBA	0.9	0.9
Nitrate	mg/L	Max	0.7	0.7	0.7	0.7	TBA	TBA	0.7	0.7	TBA	TBA	TBA	TBA
Total Phosphorus	mg/L	Max	TBA	TBA	0.03	0.05	TBA	TBA	TBA	TBA	TBA	TBA	0.1	0.1
Fluoride	mg/L	Max	TBA	TBA	2.4	2.4	TBA	TBA	TBA	TBA	TBA	TBA	2.4	2.4
Aluminium	µg/L	Max	55	55	55	55	55	55	55	55	55	55	55	55
Antimony	µg/L	Max	9	9	9	9	9	9	9	9	9	9	9	9
Arsenic	µg/L	Max	TBA	TBA	13	13	13	13	13	13	13	13	13	13
Boron	µg/L	Max	370	370	370	370	370	370	370	370	TBA	TBA	370	370
Cadmium	µg/L	Max	TBA	TBA	0.2	0.2	TBA	TBA	0.2	0.2	TBA	TBA	0.2	0.5
Chromium	µg/L	Max	3	3	3	3	3	3	3	3	3	3	3	3
Cobalt	µg/L	Max	TBA	TBA	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Copper	µg/L	Max	6	12	5	10	4	13	TBA	13	11	25	TBA	TBA
Lead	µg/L	Max	3.4	7.1	3.4	TBA	3.4	9.4	3.4	9.4	3.4	11	3.4	8
Manganese	µg/L	Max	TBA	TBA	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Mercury	µg/L	Max	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Molybdenum	µg/L	Max	34	34	34	34	34	34	34	34	34	TBA	34	34
Nickel	µg/L	Max	11	11	11	11	11	11	11	11	11	11	11	20
Selenium	µg/L	Max	11	11	11	11	11	11	11	11	11	11	11	11
Thallium	µg/L	Max	1	1	1	1	TBA	TBA	1	1	1	1	1	1
Uranium	µg/L	Max	TBA	TBA	7	8	2	7	TBA	TBA	TBA	TBA	TBA	TBA
Vanadium	µg/L	Max	10	20	10	10	10	10	10	10	TBA	TBA	10	20
Zinc	µg/L	Max	TBA	TBA	30	50	TBA	TBA	TBA	TBA	30	160	TBA	50
Calcium	mg/L	For interpretive purposes												
Magnesium	mg/L	For interpretive purposes												
Sodium	mg/L	For interpretive purposes												
Potassium	mg/L	For interpretive purposes												
Chloride	mg/L	For interpretive purposes												
Carbonate	mg/L	For interpretive purposes												
Bicarbonate	mg/L	For interpretive purposes												

Notes:

1. All metals must be derived and metalloids must be measured as total (unfiltered) and dissolved (filtered) concentrations. Groundwater quality limits are based on dissolved metals.
2. May be measured on site using calibrated instruments which are appropriately operated and maintained.

3. Historical and current laboratory analysis of Cr is Total Cr. There are no results for hexavalent Cr and therefore a limit based on hexavalent Cr is not suitable. The ANZECC value for Total Cr (3µg/L) is to be the interim limit.
4. The LOR for Thallium (1µg/L) is to be the interim limit.
5. An amendment application can be made at any time under the *Environmental Protection Act 1994* to update the dataset used to derive site specific limits for compliance bores, based on natural variations.
6. TBA values must be lodged with the administering authority as an application to amend this environmental authority within 30 business days of the administering authority accepting the environmental report submitted in relation to Environmental Evaluation STAT1185.

H35 The mining activity must not cause groundwater measured from any compliance bore specified in Schedule H –Table 11 (Interim groundwater monitoring locations and frequency) to exceed the corresponding Limit A specified in Schedule H –Table 12 (Groundwater quality limits) on any five consecutive sampling occasions.

H36 The mining activity must not cause groundwater measured from any compliance bore specified in Schedule H –Table 11 (Interim groundwater monitoring locations and frequency) to exceed the corresponding Limit B specified in Schedule H –Table 12 (Interim groundwater quality limits) on any four consecutive sampling occasions**.**

H37 If groundwater measured from any compliance bore specified in Schedule H –Table 11 (Interim groundwater monitoring locations and frequency) exceeds the corresponding Limit B specified in Schedule H –Table 12 (Interim groundwater quality limits) on any one sampling occasion the environmental authority holder must resample the groundwater within the compliance bore for all exceeding parameters within ten business days of receipt of results.

NOTE: Upon completion of the resample referred to in this Condition, no further resamples are required for the sampling event.

H38 By 30 May 2018, a Groundwater Monitoring Program must be developed by appropriately qualified persons.

H39 The Groundwater Monitoring Program required by Condition H38 must be implemented and must:

(a) identify potential sources of contamination to groundwater from the mining activities*; and

(b) ensure that all potential impacts on environmental values due to the mining activities are identified, monitored and mitigated*; and
(c) document sampling and monitoring methodology; and
(d) ensure that adequate groundwater monitoring and data analysis is undertaken to achieve the following objectives:
    a. detect any change to groundwater levels due to the mining activities;
    b. detect any change to groundwater quality due to the mining activities;
    c. determine compliance with condition H36 and H37; and
    d. determine trends in groundwater quality; and
(e) include an appropriate quality assurance and quality control program; and
(f) include a conceptual groundwater model*; and
(g) include a review process to identify improvements to the program that includes addressing any comments provided by the administering authority.

* Within 30 business days of the administering authority accepting the environmental report submitted in relation to Environmental Evaluation STAT1185, these requirements are to be incorporated into the Groundwater Monitoring Program.

H40 From 30 May 2019, the Groundwater Monitoring Program must be reviewed on an annual basis by an appropriately qualified person to determine if it continues to meet the requirements stated in condition H39.

H41 The construction, maintenance and decommissioning of groundwater monitoring bores must be undertaken in a manner that:

(a) prevents contaminants entering the groundwater; and
(b) ensures the integrity of the bores to obtain representative groundwater samples from the target aquifer; and
(c) maintains the hydrogeological environment within the aquifer.

H42 A bore drill log must be kept for each groundwater bore listed in Schedule H – Table 11 (drilled since 1 June 2015) which includes:

(a) bore identification reference and geographic coordinate location;
(b) specific 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) standing groundwater level (if available);
(d) lithological data and stratigraphic interpretation by an appropriately qualified person to identify important features associated with groundwater monitoring; and
(e) target aquifer and/or stratigraphic formation of the bore.

H43 The holder of this environmental authority must maintain quarterly monitoring of a network of groundwater bores located at the monitoring points specified in Schedule H – Table 13 (Seepage monitoring network for tailings storage facilities) and Schedule K – Figure 25a (Seepage Monitoring Bore Network – Mount Isa Area) and Schedule K – Figure 25b (Seepage Monitoring Bore Network – George Fisher Area) for the quality characteristics specified in Schedule H - Table 12 with the purpose of monitoring possible seepage from the tailings storage facilities.

Schedule H - Table 13 (Seepage monitoring network for tailings storage facilities)

Monitoring Point	Coordinates (GDA94 MGA Zone 54)		Monitoring Frequency[1]
	Easting	Northing	
S1	340301	7725808	Quarterly
S2	340317	7710495	Quarterly
S3	338115	7707751	Quarterly
S4	335548	7702879	Quarterly
S5	336384	7700149	Quarterly

1 Monitoring will only be conducted where safe access can be gained.

H44 Any new groundwater bores installed or existing groundwater bores re-developed must be constructed and maintained in accordance with methods prescribed in Minimum Construction Requirements for Water Bores in Australia – Third Edition (or equivalent).

END OF CONDITIONS FOR SCHEDULE H

Schedule I – Sewage Treatment

General

I1 The operation of the sewage treatment systems must be carried out by a person(s) with appropriate experience and/or qualifications to ensure the effective operation of that treatment system.

Disposal of Sewage Effluent

I2 Subject to conditions I11 and I12, treated sewage effluent must only be released to the effluent release locations identified in Schedule I – Table 1 (Sewage Effluent Release Points) and Schedule K – Figure 20 (Sewage Effluent Release Points – Mount Isa Area) and Schedule K - Figures 21 (Sewage Effluent Release Points – George Fisher Mine Area).

Schedule I – Table 1 (Sewage Effluent Release Points)

Treatment Plant	Effluent Release Location	Effluent Disposal Method	Coordinates (GDA94 MGA Zone 54)		Effluent Quality Type[4]
			Easting	Northing	
Rosehill	Mount Isa Golf Club	Irrigation	342184	7704020	1
	Irish Club Oval	Irrigation			1
	Pony Club	Irrigation			1
	Rosehill STP evaporation pond (Lake Tahoe)	Evaporation	341882[2]	7705106[2]	1
	Blow Down Line to slag dams	Evaporation			1
George Fisher Mine including offices, workshop and underground	Small sewage package system Designated disposal area – minimum area of 6.2Ha[1]	Absorption Bed or Irrigation	341184 341165 341039 340970 340936 341112 341206	7725386 7725601 7725601 7725586 7725361 7725301 7725322	2
Zinc Barracks	Small sewage package system and Worm farm waste system Designated disposal area – minimum area of 1.5Ha[1]	Absorption Bed or Irrigation	341730 341939 341927 341730	7724800 7724758 7724825 7724723	2
GF Engineering	Septic system	Absorption trench	341789	7725476	N/A[3]
GF Southern Cross workshop	Septic System	Absorption trench	341942	7725475	N/A[3]

Treatment Plant	Effluent Release Location	Effluent Disposal Method	Coordinates (GDA94 MGA Zone 54)		Effluent Quality Type[4]
			Easting	Northing	
GF Warehouse/Engineering	Septic System	Absorption Trench	341959	7725179	N/A[3]
HHOC Offices	Septic system	Absorption trench	341283	7723744	N/A[3]
HHOC Haulage	Septic system	Absorption trench	341347	7723466	N/A[3]
Zinc Surface Crushing (ISA) (Pac rim)	Pumpout/ Transfer tank[5]	Sewer main or Rose Hill STP	340887	7707803	N/A
BSOC 1 (Offices)	Pumpout / Transfer tank[5]	Sewer main or Rose Hill STP	341061	7710474	N/A
BSOC 2 (Hot seat)	Worm farm waste system	Absorption trench	340575	7708274	N/A[3]
Clean in Clean Out (May Downs Rd)	Septic system	Absorption trench	341639	7710141	N/A[3]
Heavy Medium Plant	Pumpout/ Transfer tank.[5]	Evaporation trench with excess via Davidson Pond to KSOC Pit	341354	7707860	2
Piping Workshop (HMP)	Septic System	Absorption trench	341409	7707860	N/A[3]
George Fisher Mine Expansion Crusher	Septic System	Absorption trench	340568	7727154	N/A
TD5 mining area	Septic System	Absorption trench	339650	7707517	N/A[3]
LE72	Septic System	Absorption trench	340367 340369	7727034 7727035	N/A[3]

1 The minimum area of land to be used for irrigation, excludes any necessary buffer zones.
2 In relation to the Rosehill Treatment Plant, the Easting and Northing specified is the location of the distribution valve at which the treated effluent is provided to the Mount Isa Golf Club, Irish Club Oval and Pony Club.
3 Refer to conditions I20 to I22 for performance requirements for septic systems and worm farm waste systems.
4 The effluent quality type is associated with the type of Treatment Plant.
5 The holder of this environmental authority must take measures to prevent sewage overflows from all pump out and transfer tanks.

I3 For the Treatment Plants with effluent quality type 1 or 2 identified in Schedule I – Table 1 (Sewage Effluent Release Points), sewage effluent must be monitored at the relevant Treatment Plant identified in Schedule I – Table 1 (Sewage Effluent Release Points) for the quality characteristics and at the frequency detailed in Schedule I – Table 2 (for the Treatment Plants with effluent quality type 1) or Table 3 (for the Treatment Plants with effluent quality type 2).

I4 Sewage effluent from the relevant Treatment Plants with effluent quality type 1 or 2 identified in Schedule I – Table 1 (Sewage Effluent Release Points) must not exceed the release limits specified in Schedule I – Table 2 (for the Treatment Plants with effluent quality type 1) or Table 3 (for the Treatment Plants with effluent quality type 2).

I5 If a response value as specified in Schedule I – Table 2 (Effluent Release Limits - Effluent Quality Type 1) is exceeded, another sample must be immediately taken. If this sample exceeds the response value again, the effluent disposal method of irrigation must be suspended, until a subsequent sample shows that the effluent quality has returned to below the response value.

Schedule I – Table 2 (Effluent Release Limits – Effluent Quality Type 1) – Trickling Filter Plant

Quality Characteristics				Frequency
	Median Release Limit[1]	Response value	Maximum Release Limit	
5-day Biochemical Oxygen Demand (mg/L)	20	30	45	Monthly
Suspended Solids (mg/L)	30	45	60	Monthly
Total Nitrogen (mg/L)	30	30	40	Monthly
Total Phosphorus (mg/L)			15	Monthly
pH (pH unit)[2]			6 – 8.5 (range)	Weekly
Electrical conductivity (µS/cm)[2]			1600	Weekly
Free Residual Chlorine (mg/L) [2]			2	Daily[2]
*E coli (*CFU/100mL)	1000	1500	4000	Weekly

[1] The median value must be based on 12 consecutive samples.
[2] May be measured on site using a basic test kit.

Schedule I – Table 3 (Effluent Release Limits – Effluent Quality Type 2) – Small Package Plants (<1000EP)

Quality characteristics	Release Limit - Maximum	Frequency
5-day Biochemical Oxygen Demand (mg/L)	20	Monthly
Suspended Solids (mg/L)	30	Monthly
Total Nitrogen (mg/L)	30	Monthly
Total Phosphorus (mg/L)	15	Monthly
pH (pH unit)[1]	6 – 8.5 (range)	Fortnightly
Electrical conductivity (µS/cm)[1]	1600	Fortnightly
Free Residual Chlorine (mg/L)[1]	0.7	Weekly[1]
*E coli (*CFU/100mL)	1000	Monthly

[1] May be measured on site using a basic test kit.

Release to land

I6 Subject to conditions I11 and I12, the total quantity of treated effluent released to land via the effluent release locations listed in Schedule I – Table 1 (Sewage Effluent Release Points) must not exceed the respective quantities stated in Schedule I – Table 7 (Maximum Release Quantities).

Schedule I – Table 7 (Maximum Release Quantities)

Sewage Treatment Plant	Maximum Daily Release Quantity
Rosehill	1.2 ML
George Fisher Mine including offices, workshop and underground	130 KL
Zinc Barracks	100 KL
GF Engineering	20 KL
GF Southern Cross workshop	5 KL
GF Warehouse/Engineering	10KL
HHOC Offices	5 KL
HHOC Haulage	5 KL
Zinc Surface Crushing (ISA) (Pac rim)	6 KL
BSOC 1 (Offices)	12 KL
BSOC 2 (Hot seat)	5 KL
Clean in Clean Out (May Downs Rd)	40KL
Heavy Medium Plant	3 KL
George Fisher Mine Expansion Crusher	5 KL
Piping Workshop (HMP)	5 KL

TD5 Mining Area	5 KL
LE72	5 KL

Land Disposal Management

I7 Subject to conditions I11 and I12, in all designated irrigation areas, the irrigation of treated effluent to land must be carried out in a manner such that:

(a) vegetation is not damaged;
(b) soil erosion and soil structure damage is avoided;
(c) there is no surface ponding or runoff of effluent;
(d) percolation of effluent beyond the plant root zone is minimised;
(e) the capacity of the land to assimilate nitrogen, phosphorous, salts, organic matter as measured by oxygen demand and water is not exceeded;
(f) the quality of ground water is not adversely affected;
(g) sodicity in the soil is controlled;
(h) the build-up of nutrient and heavy metals in the soil and subsoil from effluent and other sources is controlled.

I8 If areas irrigated with effluent are accessible to employees or the general public, prominent signage must be provided advising that effluent is present and care should be taken to avoid consuming or otherwise coming into unprotected contact with the effluent.

I9 The holder of this environmental authority must take all reasonable measures to ensure that persons are not exposed to pathogens in treated sewage effluent released to land.

Irrigation Monitoring Program

I10 The holder of this Environmental Authority must develop, implement and maintain an irrigation monitoring program (IMP) to evaluate the impacts of the release of contaminants to land(s) from the Rose Hill sewage treatment plant to:

(a) groundwater (including but not limited to sub-surface groundwater);
(b) soils and sub soils; and
(c) vegetation and nutrient export.

Wet Weather Release

I11 The holder of this environmental authority is authorised to release treated sewage effluent from the relevant release points specified in Schedule I – Table 8 (Treated Effluent Release Points) during a wet weather event if the treated sewage effluent complies with the relevant release limits specified in Schedule I – Table 8.

I12 During wet weather, treated sewage effluent may also be disposed of to the containment systems for the surface water containment areas shown in Schedule K – Figure 4 (TSF Containment Area), Schedule K – Figure 5 (Mount Isa East Containment Area) and Schedule K – Figure 6 (GFM / HHOC Containment Area).

Schedule I – Table 8 (Treated Effluent Release Points)

Release Point	Coordinates (GDA94 MGA Zone 54)		Release Limits
	Easting	Northing	
Rosehill STP evaporation pond (Lake Tahoe)	341862	7705121	Release limits specified in Schedule I – Table 2
Zinc Barracks	341969	7724812	Release limits specified in Schedule I – Table 3

I13 All ponds used for the storage or treatment of treated effluent must be constructed, installed and maintained so as to ensure the stability of the ponds' construction.

Provision of Treated Effluent to Other Persons

I14 If responsibility of the treated effluent is given or transferred to another person:

(a) the responsibility of such effluent must only be given or transferred in accordance with a written agreement (the third party agreement);

(b) include in the third party agreement a commitment from the person utilising the effluent to use effluent in such a way as to prevent environmental harm or public health incidences and specifically make the persons aware of the General Environmental Duty (GED) under section 319 of the *Environmental Protection Act 1994*, environmental sustainability of any effluent disposal and protection of environmental values of waters;

(c) upon being notified or otherwise becoming aware that the person's use of effluent is causing or threatens to cause environmental harm or is posing a human health risk, and if the person does not rectify the situation upon written request, the giving and transferring responsibility for such effluent must cease.

I15 Condition I14 does not apply until 12 months after the commencement of this environmental authority.

Sewage Pump Stations

I16 By **1 January 2013**, the sewage pumping stations associated with the Rosehill Treatment Plant and the Zinc Barracks Treatment Plant must be fitted with stand-by pumps and pump-failure alarms as well as high level alarms to warn of imminent pump station overflow.

I17 All duty and stand-by pumps must be inspected, tested and maintained on a regular basis to ensure they remain in a constant state of service.

I18 Any new sewage pump station installed by the holder of this environmental authority must be designed taking into consideration sewage overflows and overflow control structures which incorporate:

(a) installation of basins to isolate and contain sewage pump station overflows and for such contained overflow to be returned back into the sewerage treatment system;

(b) locating the overflow points and control structures, as far as reasonably practicable away from environmentally sensitive locations including waterways and natural wetlands;

(c) stand-by pumps and pump-failure alarms as well as high level alarms to warn of imminent pump station overflow.

Sludge, Screening and Grit

I19 Sludge, screenings and grit generated by the sewage treatment process must not be:

(a) disposed of on site at locations other than the site's authorised landfill; or

(b) stored on site for any period of time longer than that necessary to dewater the sludge, screenings and grit and prepare it for transport to and disposal.

Note:

(i) This condition does not apply to sludge stored in the short term and used for the carrying out of trials into recycling or reprocessing of the sludge for beneficial reuse, however sludge reuse must not be trialled on any area that has undergone, is currently undergoing or is to undergo effluent irrigation.

(ii) Storage of sludge onsite until a full skip bin load is obtained is considered to be storage necessary to prepare sludge for transport for disposal.

(iii) This condition does not apply to the long term storage of sludge in combination with other organic matter for use in rehabilitation / closure activities.

Septic systems

I20 All new septic systems and worm farms must be designed, operated and maintained in accordance with the relevant Australian Standard.

I21 The holder of this environmental authority is authorised to continue to operate the existing septic systems without upgrade or replacement of the existing septic systems to the current relevant Australian Standard.

I22 Septic systems and worm farms must be operated and maintained in accordance with the relevant Australian Standard.

I23 Dewatered cake generated from the Rosehilll sewage treatment plant must not exceed the disposal limits specified in Schedule I – Table 9 (Dewatered Cake Disposal Limits).

Schedule I – Table 9 (Dewatered Cake Disposal Limits)

Dewatered Cake	Monthly Median disposal limit[1]	Monthly Maximum Disposal Limit
Rosehill Dewatered cake (m3)	60	154

[1] The median value must be based on the last 12 consecutive months

END OF CONDITIONS FOR SCHEDULE I

Schedule J – Definitions

Words and phrases used throughout this environmental authority are defined below except where identified in the *Environmental Protection Act 1994* or its Regulations and Environmental Protection Policies. Where a word or term is not defined, the ordinary English meaning applies, and regard should be given to the Macquarie Dictionary.

Interpretation - Word definitions

"acceptance criteria" means the measures by which the actions implemented to rehabilitate the land are deemed to be complete (same as completion criteria). The acceptance criteria indicate the success of the decommissioning and rehabilitation outcomes or remediation of areas which have been significantly disturbed by the environmentally relevant activities. Acceptance criteria may include information regarding:

(a) stability of final land forms in terms of settlement, erosion, weathering, ponding and drainage;
(b) control of geochemical and contaminant transport processes;
(c) quality of runoff waters and potential impact on receiving environment;
(d) vegetation establishment, survival and succession;
(e) vegetation productivity, sustained growth and structure development;
(f) fauna colonisation and habitat development;
(g) ecosystem processes such as soil development and nutrient cycling, and the re-colonisation of specific fauna groups such as collembola, mites and termites which are involved in these processes;
(h) microbiological studies including recolonisation by mycorrhizal fungi, microbial biomass and respiration;
(i) effects of various establishment treatments such as deep ripping, topsoil handling, seeding and fertiliser application on vegetation growth and development;
(j) resilience of vegetation to disease, insect attack, drought and fire;
(k) vegetation water use and effects on ground water levels and catchment yields.

"active waste disposal cell" means a cell currently being used for the disposal of wastes accepted under a condition of this environmental authority and includes all or part of a disposal cell.

"administering authority" means the Department of Environment & Resource Management or its successor.

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

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

"Approved TEP" means a Transitional Environmental Program approved or taken to be approved by the administering authority.

"ARD" or "acid rock drainage" refers to the low pH, high heavy metal pollutant typical of sulfidic mine wastes, and most commonly associated with the production of ferrous iron and sulfuric acid through the oxidation of sulfide minerals.

"assessed" and **"assessment"** by a suitably qualified and experienced person in relation to a hazard assessment of a dam, means that 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.

"associated works" in relation to a dam, means:

(a) operations of any kind and all things constructed, erected or installed for that dam; and

(b) any land used for those operations.

"augmentation" in relation to a dam includes modifying or lifting an existing dam, but does not include investigations and testing necessary for purposes of preparing a design plan.

"beneficial use" in respect of dams means that the current or proposed owner of the land on which a dam stands, has found a use for that dam that is:

(a) of benefit to that owner in that it adds value to their business or to the general community;

(b) in accordance with relevant provisions of the *Environmental Protection Act 1994*;

(c) sustainable by virtue of written undertakings given by that owner to maintain that dam; and

(d) the transfer and use have been approved or authorised under any relevant legislation.

"best practice environmental management" is defined under section 21 of the *Environmental Protection Act 1994*.

"business day" means a day other than a Saturday, Sunday or public holiday in Mount Isa.

"certification", "**certifying**", "**certify**" or "**certified**" by a suitably qualified and experienced person in relation to any assessment or documentation required by the conditions in Schedule D of this environmental authority, means that a statutory declaration made by the person and when taken together with any attached or appended documents (including subsidiary certifications of specialist components) referenced in the certificate, all of the following aspects are addressed and are sufficient to allow an independent audit at any time:

(a) exactly what is being certified and the precise nature of that certification;

(b) where appropriate, what is not included in the certification;

(c) the level of inspection/supervision which the certifier has undertaken;

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

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

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

"clinical waste" means waste that has the potential to cause disease including, for example, the following:

(a) animal waste;

(b) discarded sharps;

(c) human tissue waste;

(d) laboratory waste.

"commencement of this environmental authority" where a condition of this environmental authority refers to a timeframe relative to the commencement of this environmental authority, the commencement of this environmental authority is taken to be the date which the environmental authority was originally issued, which is **16 December 2011**.

"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 (ESR/2016/1933)*.

"construction" or "constructed" in relation to a dam includes building a new dam, but does not include investigations and testing necessary for purposes of preparing a design plan.

"Construction Quality Assurance plan" means a framework with defined procedures and practices to ensure that the completed products meet or exceed the specified quality requirements.

"**containment system**" means all water storage infrastructure (including but not limited to tanks, tailings storage facilities and other dams) and associated water conveyance infrastructure (including pumps, pipelines, gates, drains, and diversions) installed and operated to contain surface water in each of the surface water containment areas. For this definition surface water includes water generated from rainfall runoff from the surface water containment areas and added tailings and waters such as groundwater dewatering brought to the surface and process and waste waters. Infrastructure that does not influence the capability to contain surface waters in the surface water containment areas is not defined as part of the containment system.

"contamination of land" and **"contaminated land"** means the presence in, on, or under the land of a substance at a concentration above the concentration at which the substance is normally present in, on, or under (respectively) land in the same locality, being a presence that presents a risk of harm to human health or any other aspect of the environment.

"commercial place" means a place:

(a) used as an office or for business or commercial purposes, other than a place within the boundaries of the mining lease on which mining activities are being undertaken by or for the environmental authority holder; and

(b) does not include employee accommodation or public roads.

"dam" means land-based structure that contains, diverts, or controls surface waters or flowable substances and includes any substances that are thereby contained, diverted or controlled by that land-based structure and associated works. Dam includes dams, voids, pits, diversion drains or bunds (used to prevent the ingress of clean water into a contaminated surface water containment system). Dam excludes sumps, tanks, containers, and pipelines manufactured to recognised standards that deal with strength and structural integrity of that tank or container. The definition of dam in this environmental authority does not include Lake Moondarra or Rifle Creek Dam.

"dB" means decibel. A unit of measurement of sound pressure level.

"**deciles method**" means methods of determining the system design storage allowance, in accordance with "Technical Guidelines for Environmental Management of Exploration and Mining in Queensland – Department of Mines and Energy 1995".

"design plan" means the documentation required to describe the physical dimensions of the dam, the materials and standards to be used for construction of the dam, and the criteria to be used for operating the dam. The documents must include all investigation and design reports, plans and specifications sufficient to hand to a contractor for construction, and concepts and objectives for decommissioning and rehabilitation outcomes; so as to address all hazard scenarios that would be identified by a properly conducted hazard assessment for the structure. A condition in this environmental authority may indicate minimum content that should be included.

"emergency action plan" means documentation forming part of the operational plan held by the holder or a nominated responsible officer, that identifies emergency conditions and sets out procedures and actions that will be followed and taken by the holder of this environmental authority in the event of an emergency. The actions are to minimise the risk and consequences of failure, and ensure timely warning to potentially impacted downstream communities and the implementation of protection measures. The plan must require holder of this environmental authority to annually update contact details that are part of the plan, and be comprehensively reviewed at least every five years.

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

"extreme storm storage" or "**ESS**" means a storm storage allowance determined in accordance with the criteria in the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)* published by the administering authority or another methodology agreed to by the administering authority.

"foreseeable future" is the period used for assessing the total probability of an event occurring. Permanent structures and ecological sustainability should be expected to still exist at the end of a 100 year period.

"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.

"hazard 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 "Technical Guidelines for Environmental Management of Exploration and Mining in Queensland – Department of Mines and Energy 1995". A hazard category is assigned for failure to contain and for dam break scenarios.

"**historical rainfall data**" means rainfall recorded at an official rainfall station, where necessary supplemented with records from Silo Data Drill for a point representative of the site.

"land" in Schedule C – Land of this environmental authority means land excluding waters and the atmosphere.

"land capability" as defined in the "Technical Guidelines for Environmental Management of Exploration and Mining in Queensland – Department of Mines and Energy 1995".

"land suitability" as defined in the "Technical Guidelines for Environmental Management of Exploration and Mining in Queensland – Department of Mines and Energy 1995".

"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 on the mining lease which contains soluble, suspended or miscible contaminants likely to have been derived from the said material.

"leachate pond" means the Leachate Pond referred to in Schedule K – Figure 11a (Mount Isa Mines Landfill) and Schedule K – Figure 11b – (Mount Isa Mines Landfill Expansion Cell).

"mandatory reporting level" or **"MRL"** means a warning and reporting level for a relevant regulated dam or containment system determined in accordance with the criteria in the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)* published by the administering authority.

"mine affected water" means the following types of water:
(a) any water captured within the surface water containment areas;
(b) pit water, tailings dam water, processing plant water;
(c) rainfall runoff which has been in contact with any areas disturbed by mining activities which have not yet been successfully rehabilitated, excluding rainfall runoff discharging through release points associated with erosion and sediment control structures that have been installed in accordance with the standards and requirements of an Erosion and Sediment Control Plan to manage runoff containing sediment only, provided that this water has not been mixed with waters captured within the surface water containment areas, pit water, tailings dam water, processing plant water or workshop water;
(d) groundwater which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated.

"measures" includes any measures to prevent or minimise environmental impacts of the mining activities.

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

"mining activities" means activities authorised under the *Environmental Protection Act 1994* in addition to any ancillary activities to be undertaken as part of the resource activity. The activities authorised by the *Mount Isa Mines Limited Agreement Act 1985* are authorised as mining activities on the mining lease for the purposes of the *Mineral Resources Act 1989*.

"mining lease" means Mining Lease Number 8058.

"mining related infrastructure" means the facilities, structures and installations needed for mining including but not limited to mining transportation networks, processing plant, communications systems and tailings storage facilities.

"Mount Isa Mine Landfill" means the landfill shown in Schedule K – Figure 11 (Mount Isa Mines Landfill)

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

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

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

*"o***perational***"* as it relates to the copper smelter is defined as the operation of the copper smelter, as permitted by the conditions of this environmental authority. Operational includes any temporary shut-downs for maintenance or re-bricking, etc.

"operational plan" for a dam means a document that amongst other things sets out procedures and criteria to be used for operating a dam during a particular time period.

"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 (mms).

"permeability" means a measure of the rate at which a fluid will pass through a medium. The coefficient of permeability of a given fluid is an expression of the rate of flow through unit area and thickness under unit differential pressure at a given temperature. Synonymous with hydraulic conductivity when the fluid is water.

"point source emissions" means emissions from a stationary source that are exhausted into a vent (excluding roof vents) or stack and are emitted through a single point source into the atmosphere but excludes fugitive emissions, emissions from ventilation shafts, steam vents, cooling towers, inert gas vents and hot air exhausts and from mobile plant and equipment including without limitation vehicles, pumps and small generators.

"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, and excludes land within the surface water containment areas.

"receiving waters" means all groundwater and surface water that are not in disturbed areas authorised by this environmental authority and excludes land within the surface water containment areas.

"regulated dam" means any dam in the significant or high hazard category as assessed using the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933).

"rehabilitation" the process of reshaping and revegetating land to restore it to a stable landform and in accordance with the Rehabilitation Plan required 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" refers to an open pit resulting from the removal of ore and/or waste rock which will remain following the cessation of all mining activities, that is not required to sustain a post mining land use, but must be rehabilitated to be safe, stable and non-polluting.

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

"sensitive place" means:

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

(b) an educational institution; or

(c) a medical centre or hospital; or

(d) 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 garden,

but does not include employee accommodation or public roads.

"spillway" means an overflow structure or embankment protected for overtopping capacity with the intent to safely pass the required design flood through the dam without failing the dam.

"stable" in relation to land, means land form dimensions are and will remain within tolerable limits now and in the foreseeable future. Issues to be properly considered in regard to whether or not the landform is stable include geotechnical stability, settlement and consolidation allowances, bearing capacity (trafficability), erosion resistance and geochemical stability with respect to seepage, leachate and related contaminant generation.

"suitably qualified and experienced person" in relation to dams means a person (or persons) who is/are a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the *Professional Engineers Act 2002*, or at the relevant time holds a 'deemed registration' within the meaning of the *Mutual Recognition (Queensland) Act 1992*; and has knowledge, suitable experience and demonstrated expertise in relevant fields, as set out below:

(a) knowledge of engineering principles related to the structures, geomechanics, hydrology, hydraulics, chemistry and environmental impact of dams; and

(b) a total of five years of demonstrated expertise in the geomechanics of dams with particular emphasis on stability, geology and geochemistry, and

(c) a total of five years of demonstrated expertise in at least three of the following categories:

- investigation and design of dams.
- construction, operation and maintenance of dams.
- hydrology with particular reference to flooding, estimation of extreme storms, water management or meteorology.
- hydraulics with particular reference to sediment transport and deposition, erosion control, beach processes.
- hydrogeology with particular reference to seepage, groundwater.
- solute transport processes and monitoring thereof.
- dam safety.

"system design storage allowance" means an available volume that must be provided in a containment system as at the first of November each year in order to contain rainfall runoff from the relevant surface water containment area and added tailings and waters such as groundwater dewatering brought to the surface, and process and waste waters over the period of the critical wet season as defined in the "Technical Guidelines for Environmental Management of Exploration and Mining in Queensland – Department of Mines and Energy 1995", and in accordance with the conditions of this environmental authority.

"**surface water containment area**" means the areas specified in Schedule D - Table 1 (System Design Storage Allowance) and Schedule K – Figure 4 (TSF Containment Area), Schedule K – Figure 5 (Mount Isa East Containment Area) and Schedule K – Figure 6 (GFM / HHOC Containment Area).

"tolerable limits" means a range of parameters regarded as being sufficient to meet the objective of protecting relevant environmental values. For example, a range of settlement for a tailings capping, rather than a single value, could still meet the objective of draining the cap quickly, preventing pondage and limiting infiltration and percolation.

"µS/cm" means micro Siemens per centimetre.

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

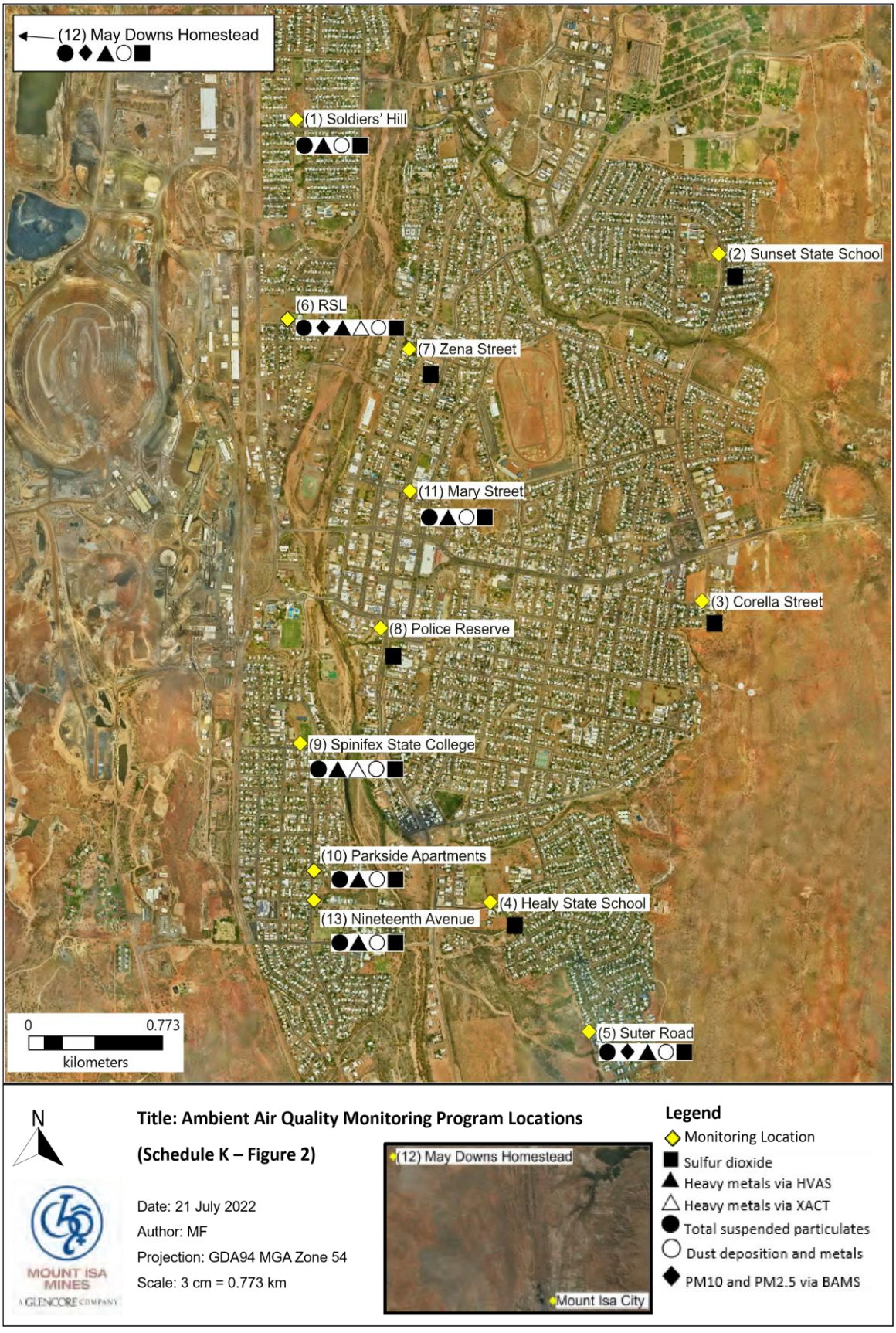
"waters" includes all or any part of a river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water in natural or artificial watercourses, bed and banks of a watercourse, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and groundwater.

END OF SCHEDULE J

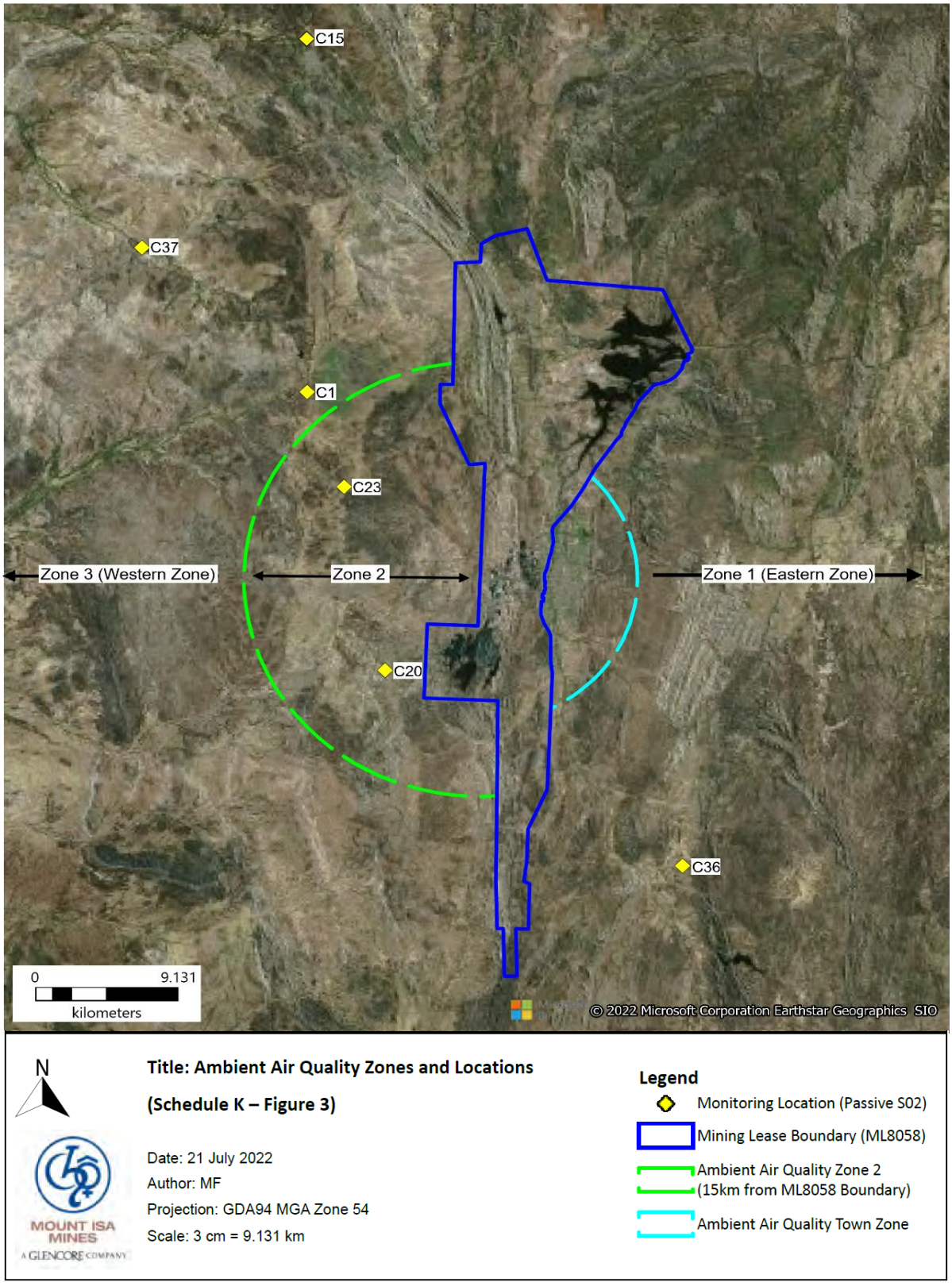
Schedule K – Figures

Schedule K – Figure 1 (Authorised Point Source Air Emissions)

Schedule K – Figure 2 (Ambient Air Quality Monitoring Program Locations)



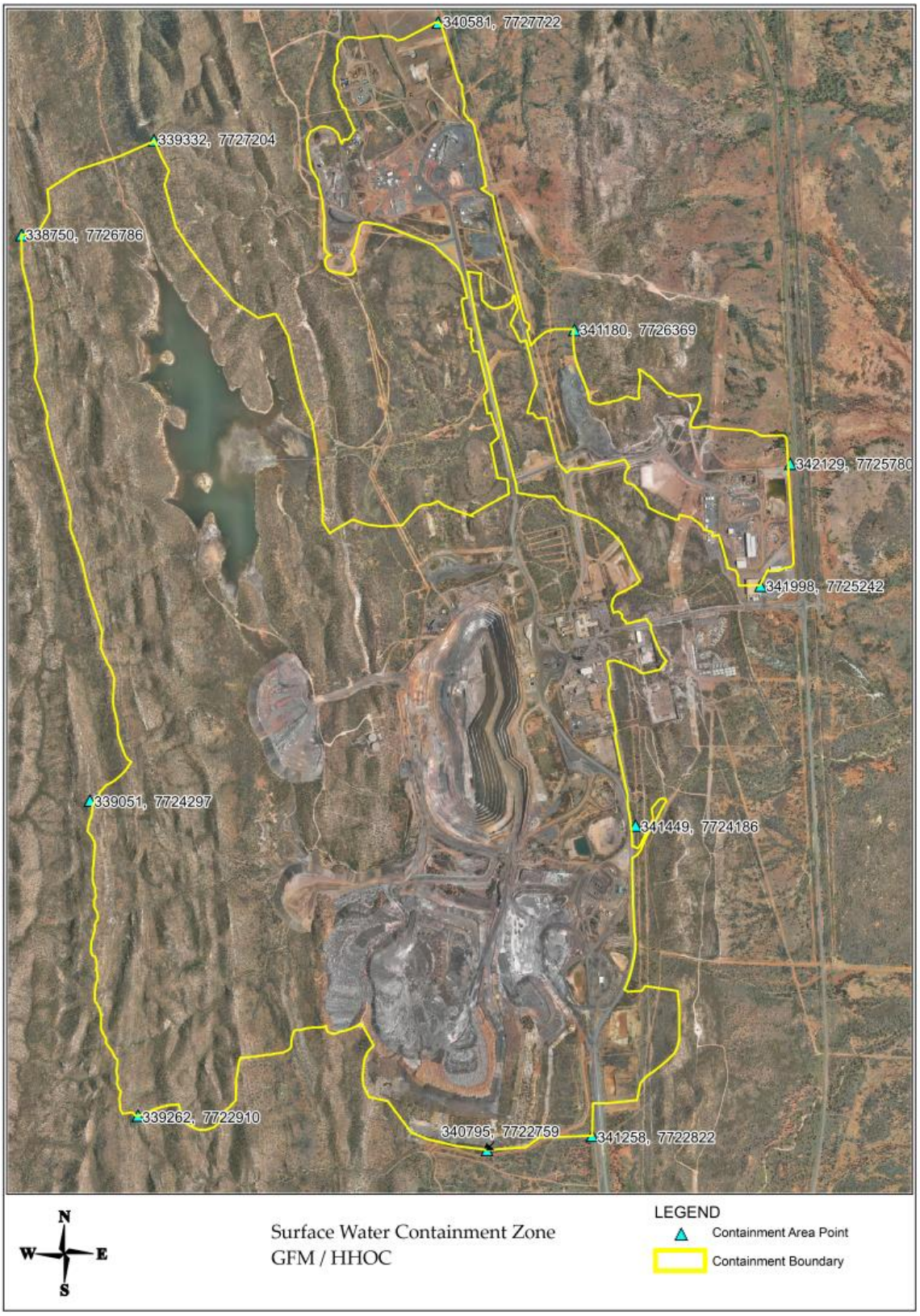
Schedule K – Figure 3 (Ambient Air Quality Zones and Locations)



Schedule K – Figure 4 (TSF Containment Area)

Schedule K – Figure 5 (Mount Isa East Containment Area)

Schedule K – Figure 6 (GFM/HHOC Containment Area)



Schedule K – Figure 7 (Designated Zinc Storage Area)

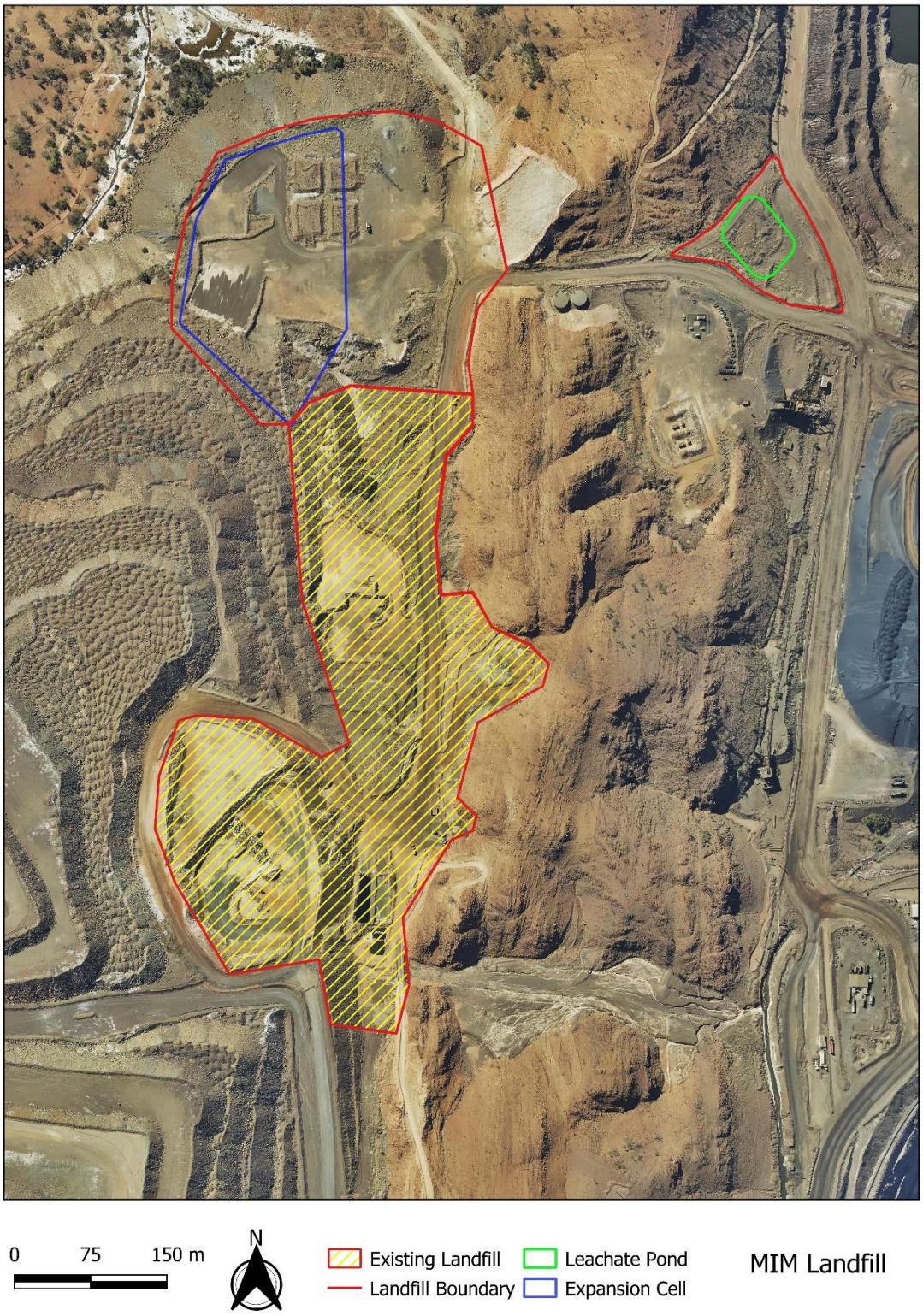
Schedule K – Figure 8 (Designated Copper Storage Areas)

Schedule K – Figure 9 (Designated Copper Loading Area)

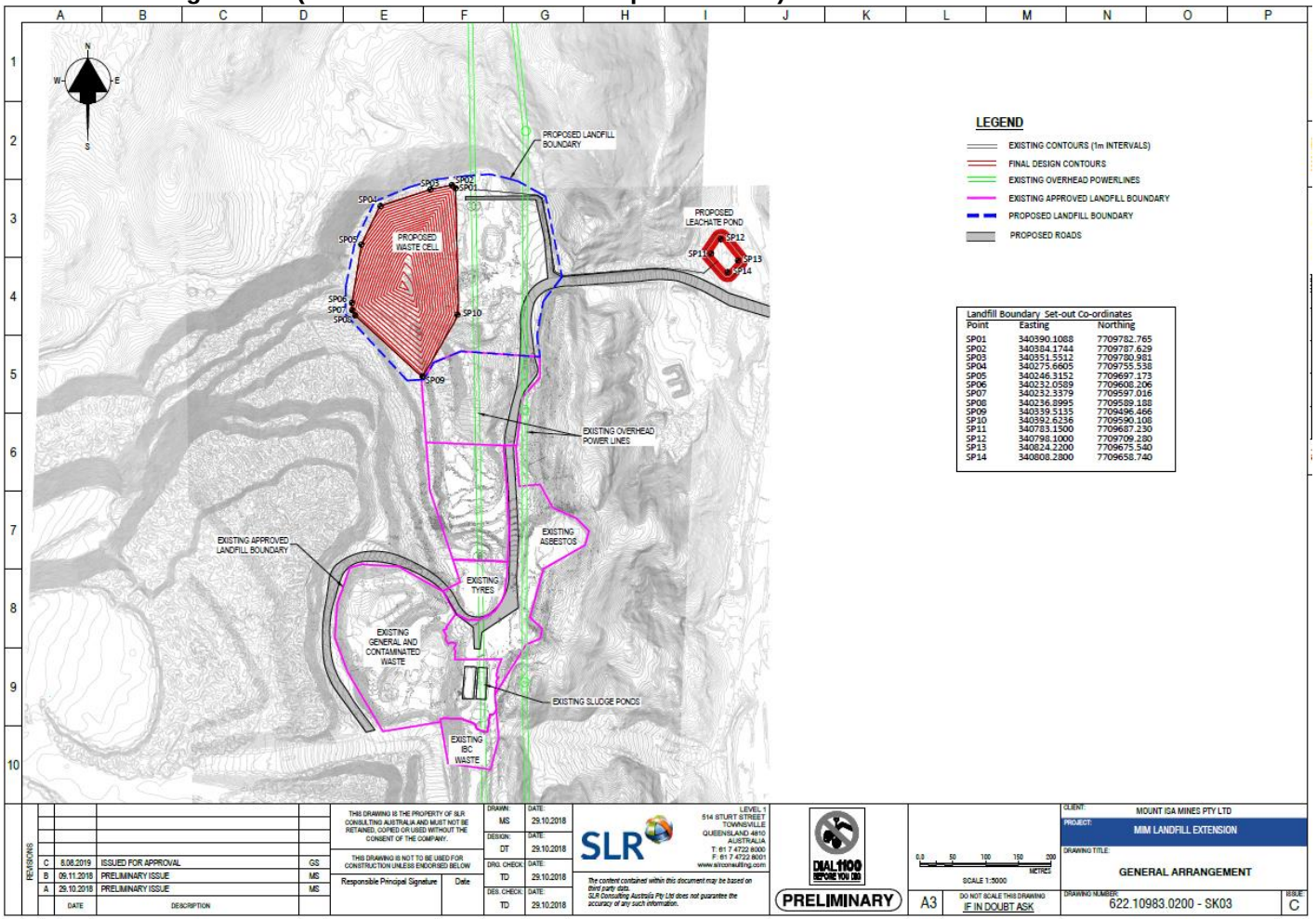
Schedule K – Figure 10 (Designated Lead Concentrate Storage Areas)

No longer applicable – conditions removed

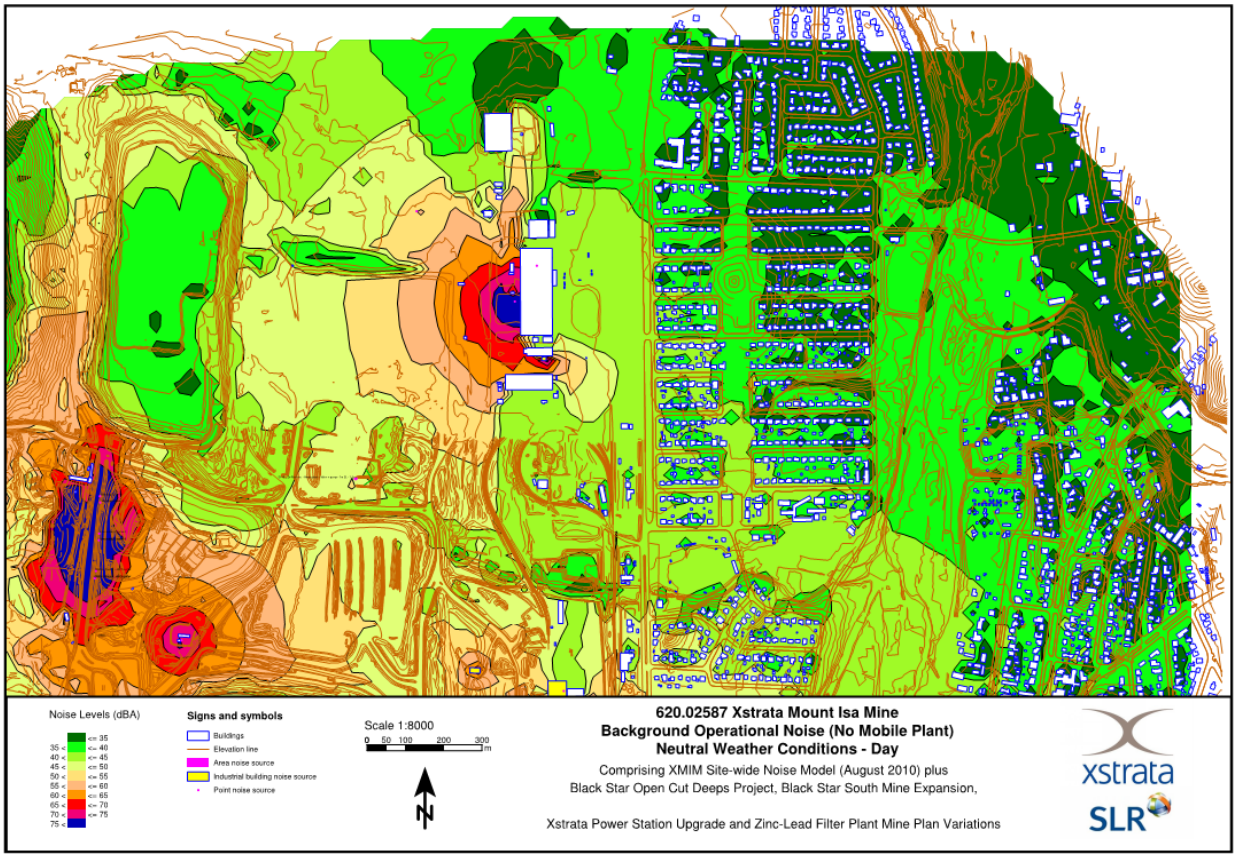
Schedule K – Figure 11a (Mount Isa Mines Landfill)



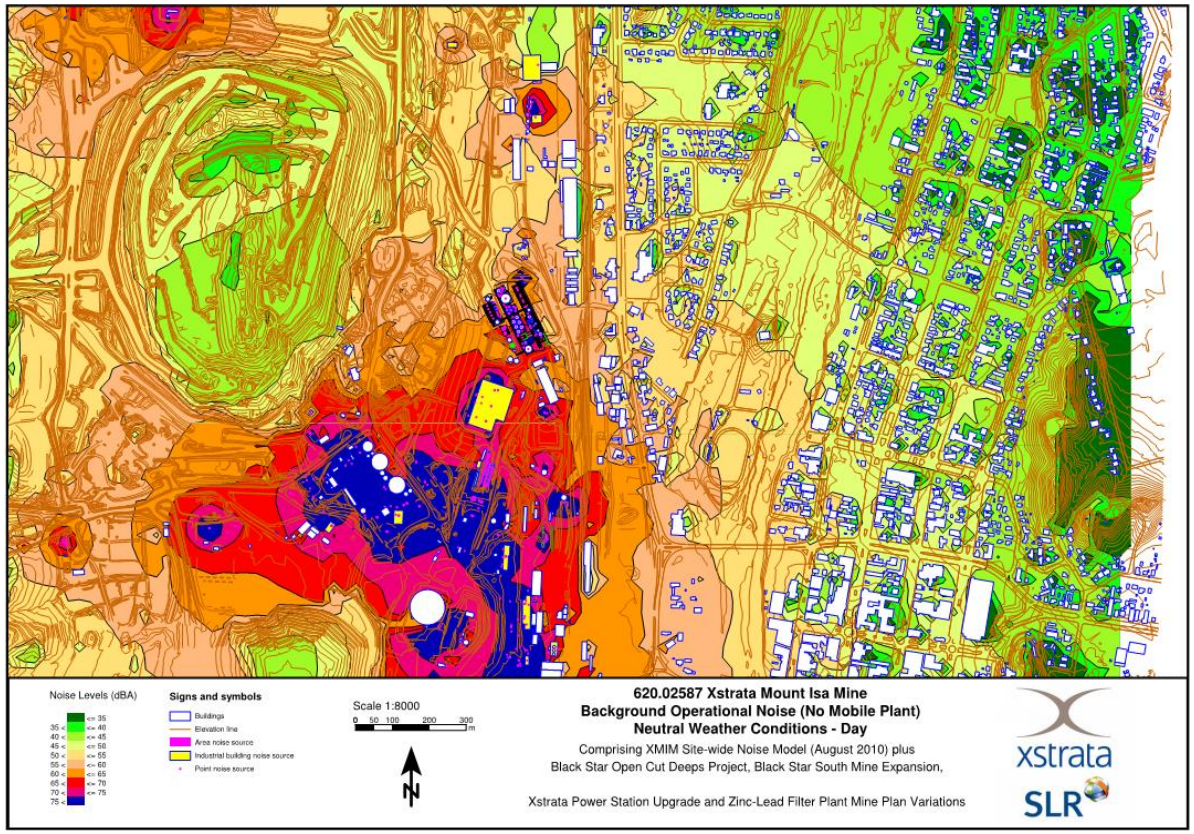
Schedule K – Figure 11b (Mount Isa Mines Landfill Expansion Cell)



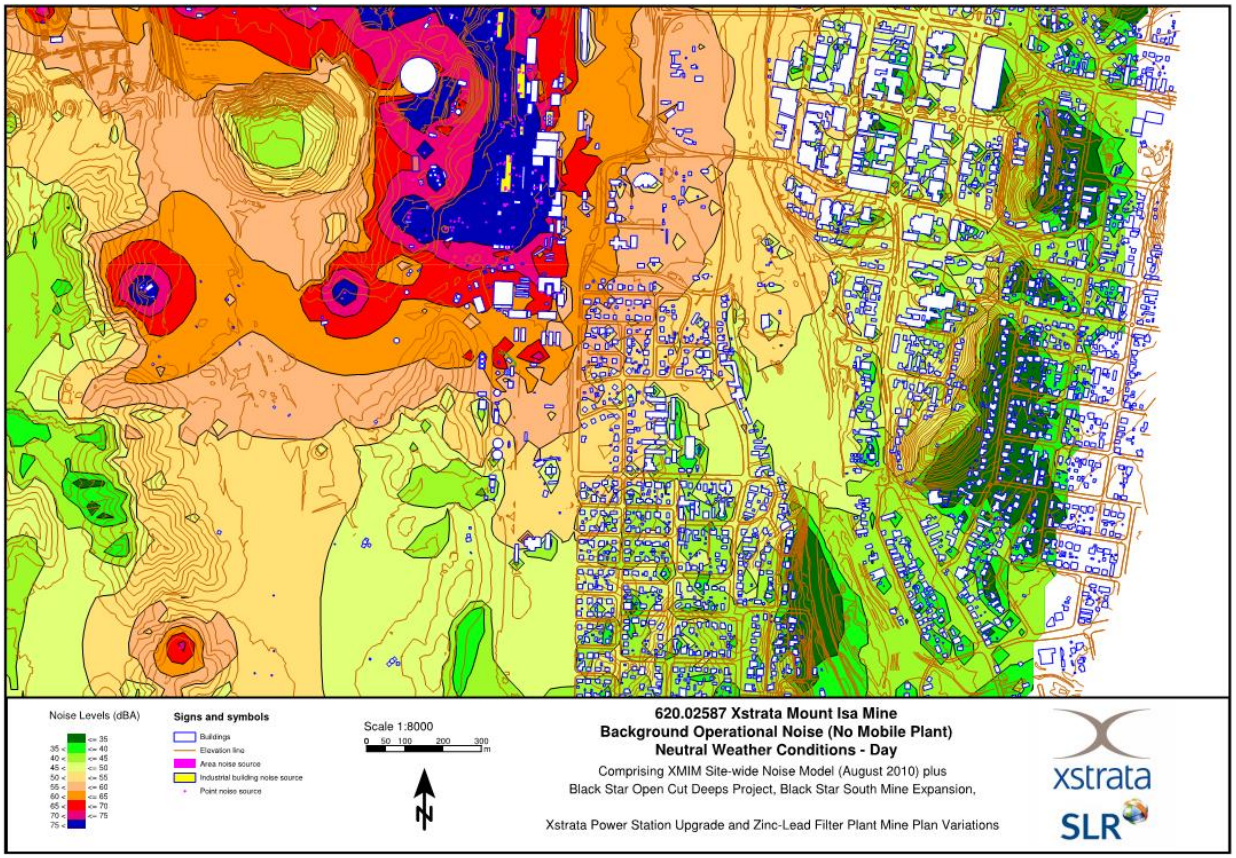
Schedule K – Figure 12a (Mount Isa Mine Daytime Background Noise Levels)



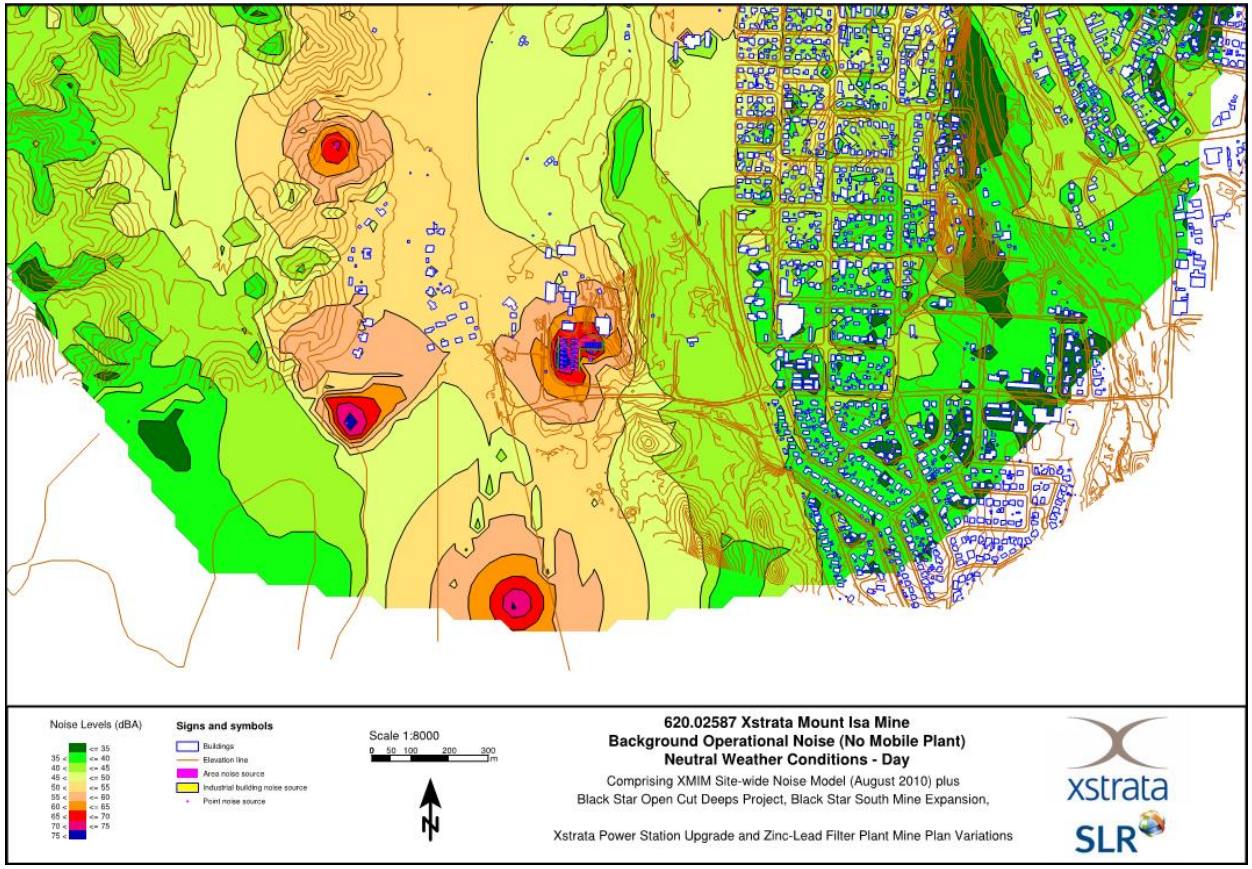
Schedule K – Figure 12b (Mount Isa Mine Daytime Background Noise Levels)



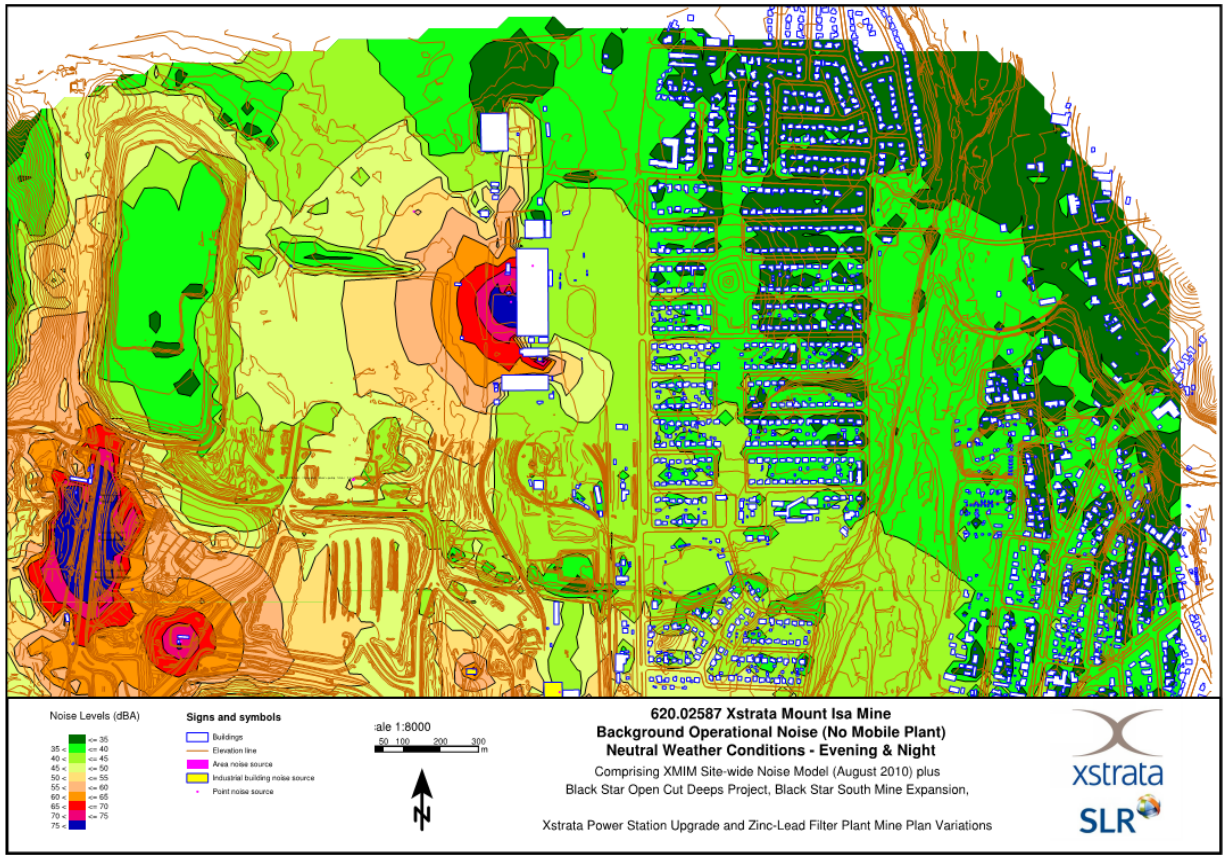
Schedule K – Figure 12c (Mount Isa Mine Daytime Background Noise Levels)



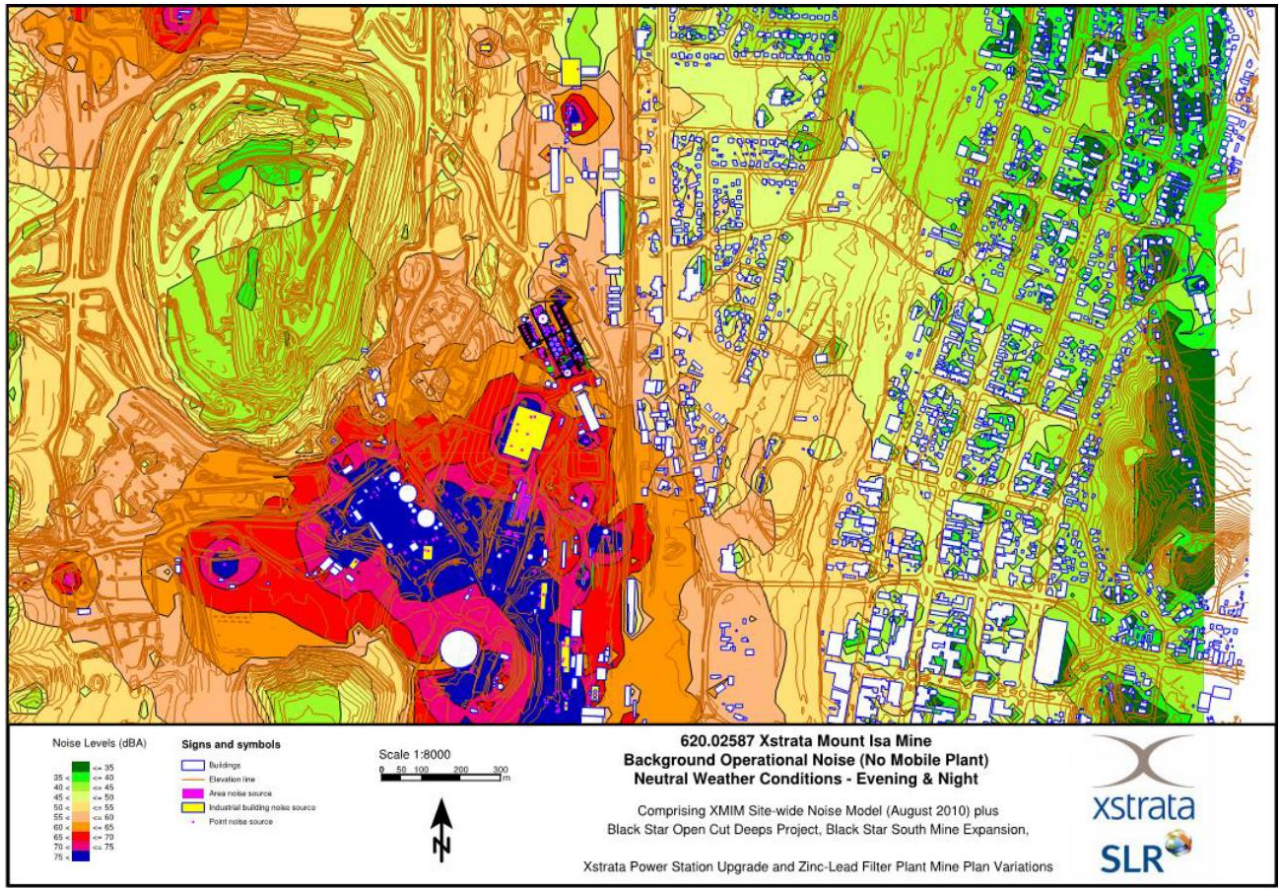
Schedule K – Figure 12d (Mount Isa Mine Daytime Background Noise Levels)



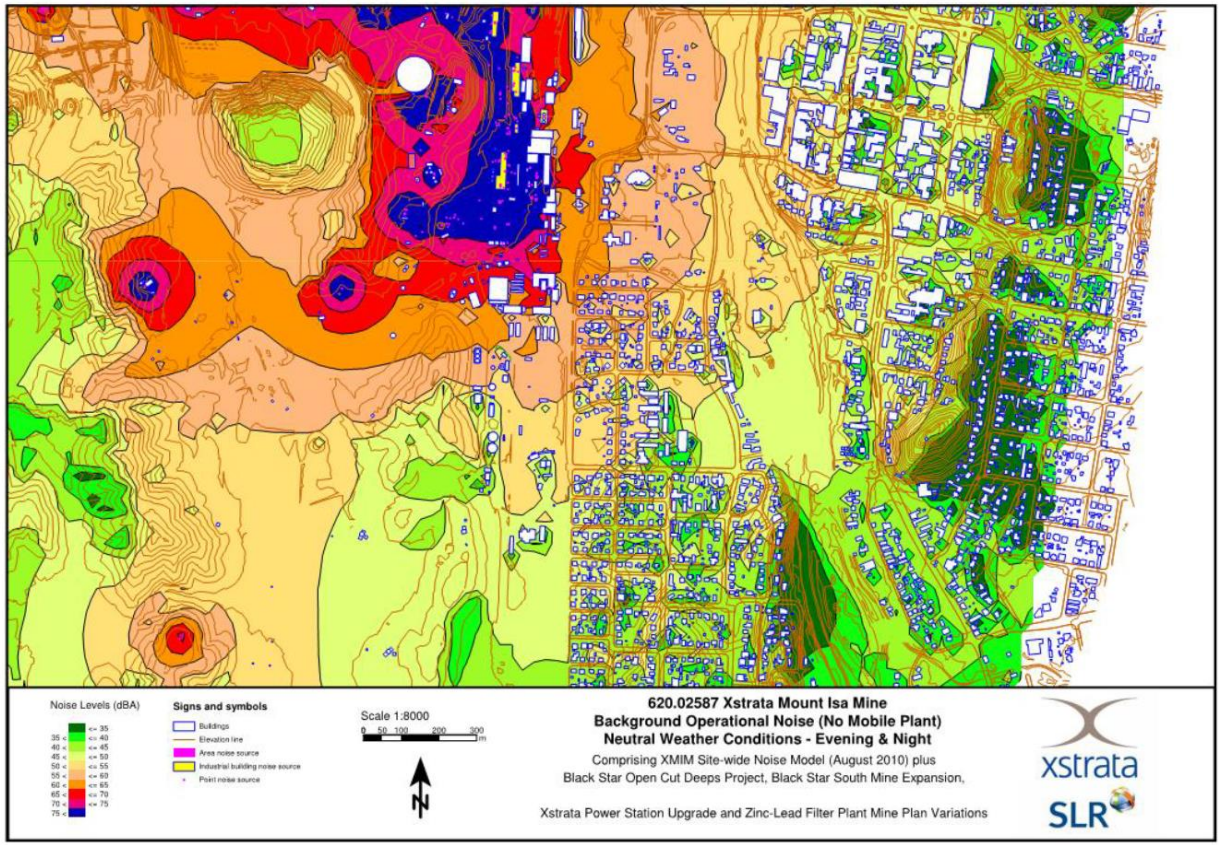
Schedule K – Figure 13a (Mount Isa Mine Evening and Night time Background Noise Levels)



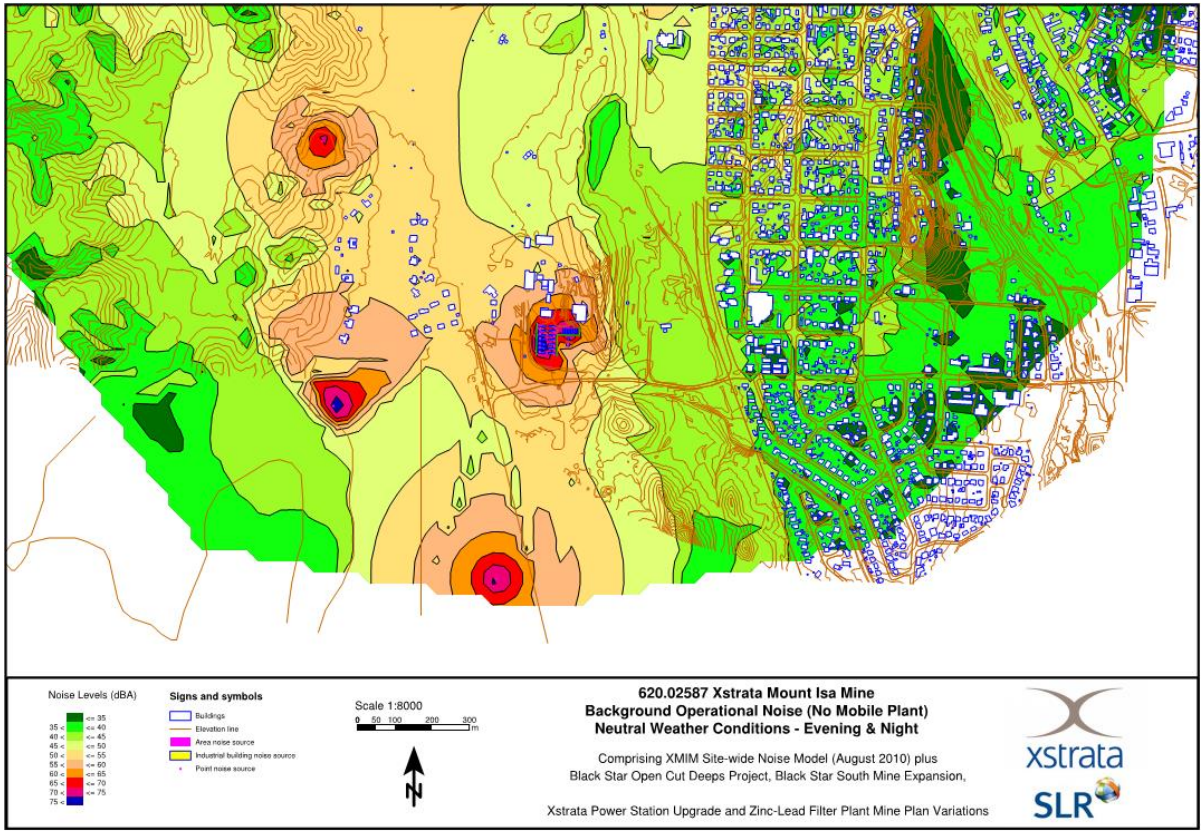
Schedule K – Figure 13b (Mount Isa Mine Evening and Night time Background Noise Levels)



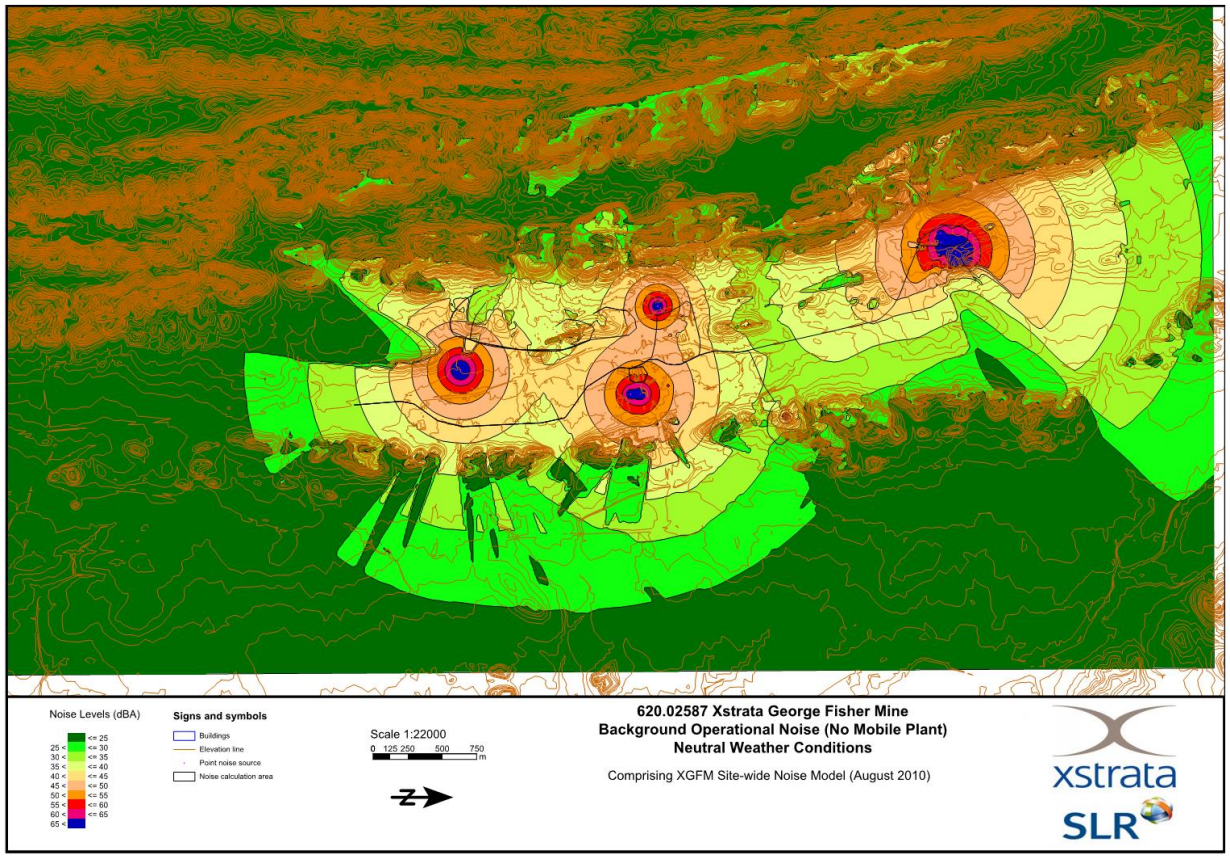
Schedule K – Figure 13c (Mount Isa Mine Evening and Night time Background Noise Levels)



Schedule K – Figure 13d (Mount Isa Mine Evening and Night time Background Noise Levels)



Schedule K – Figure 14 (George Fisher Mine Daytime, Evening and Night time Background Noise Levels)

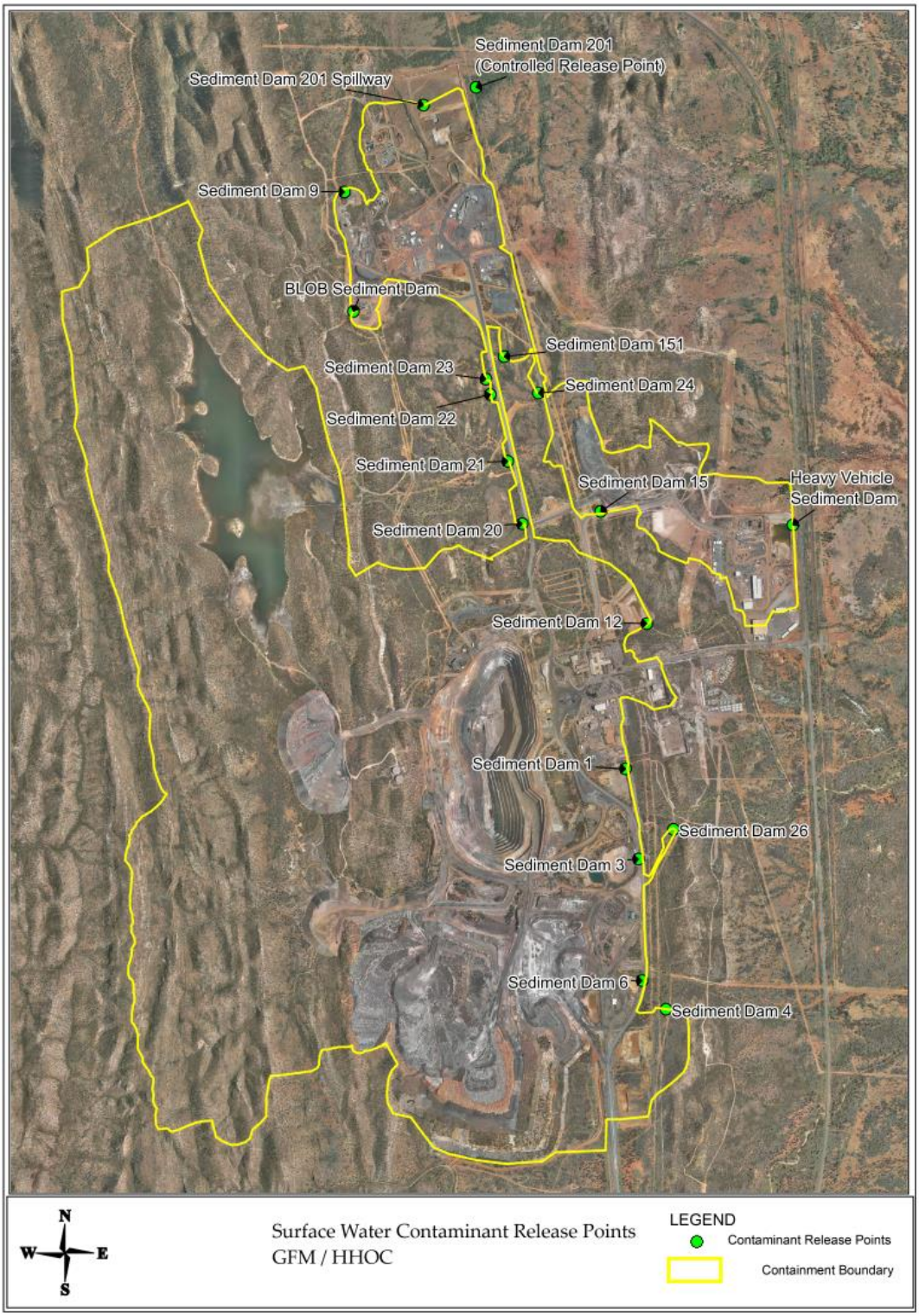


Schedule K – Figure 15 (Blasting Monitoring Locations)

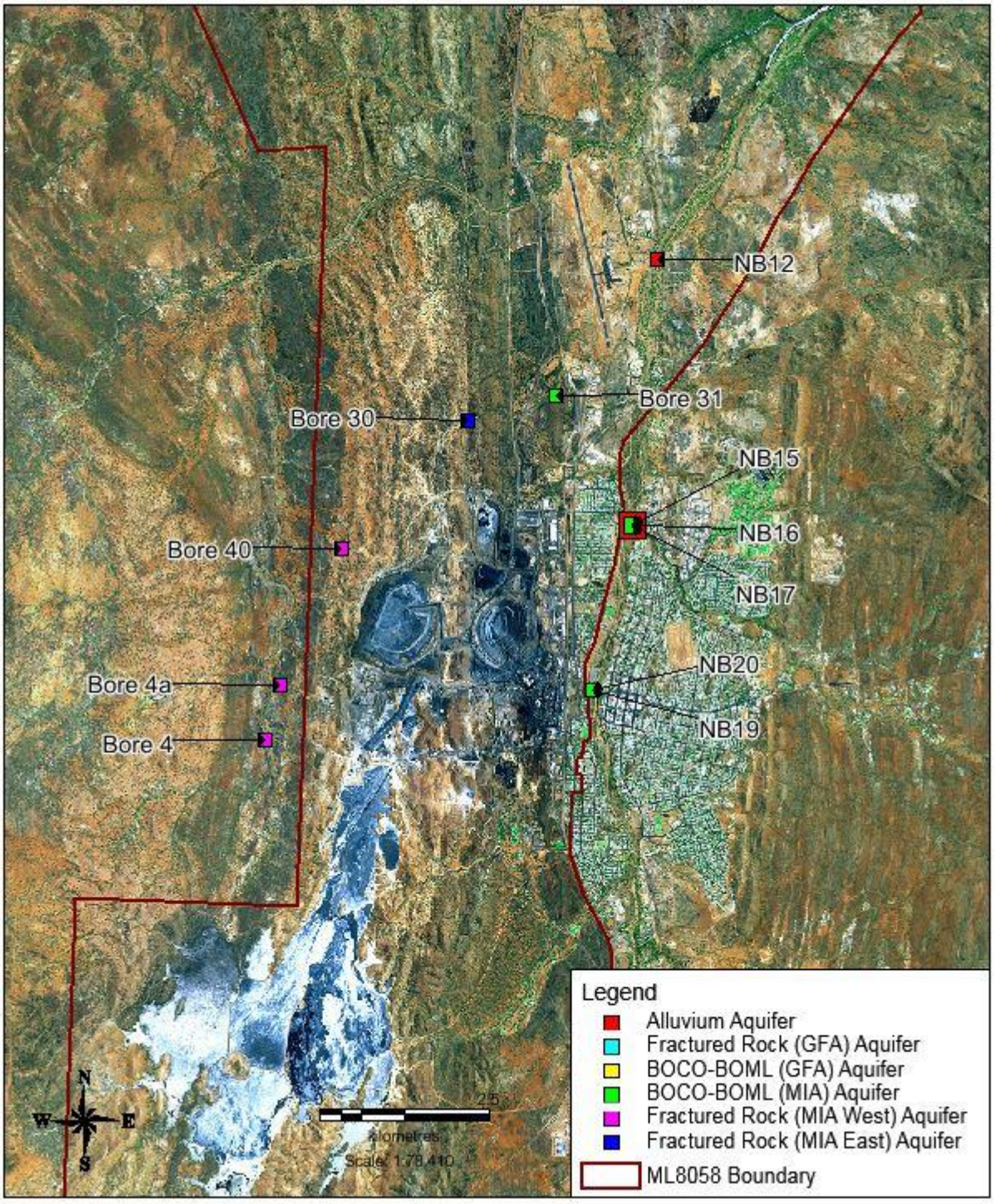
Schedule K – Figure 16 (Contaminant Release Points – Mount Isa East Containment Area)

Schedule K – Figure 17 (Contaminant Release Points –TSF Containment Area)

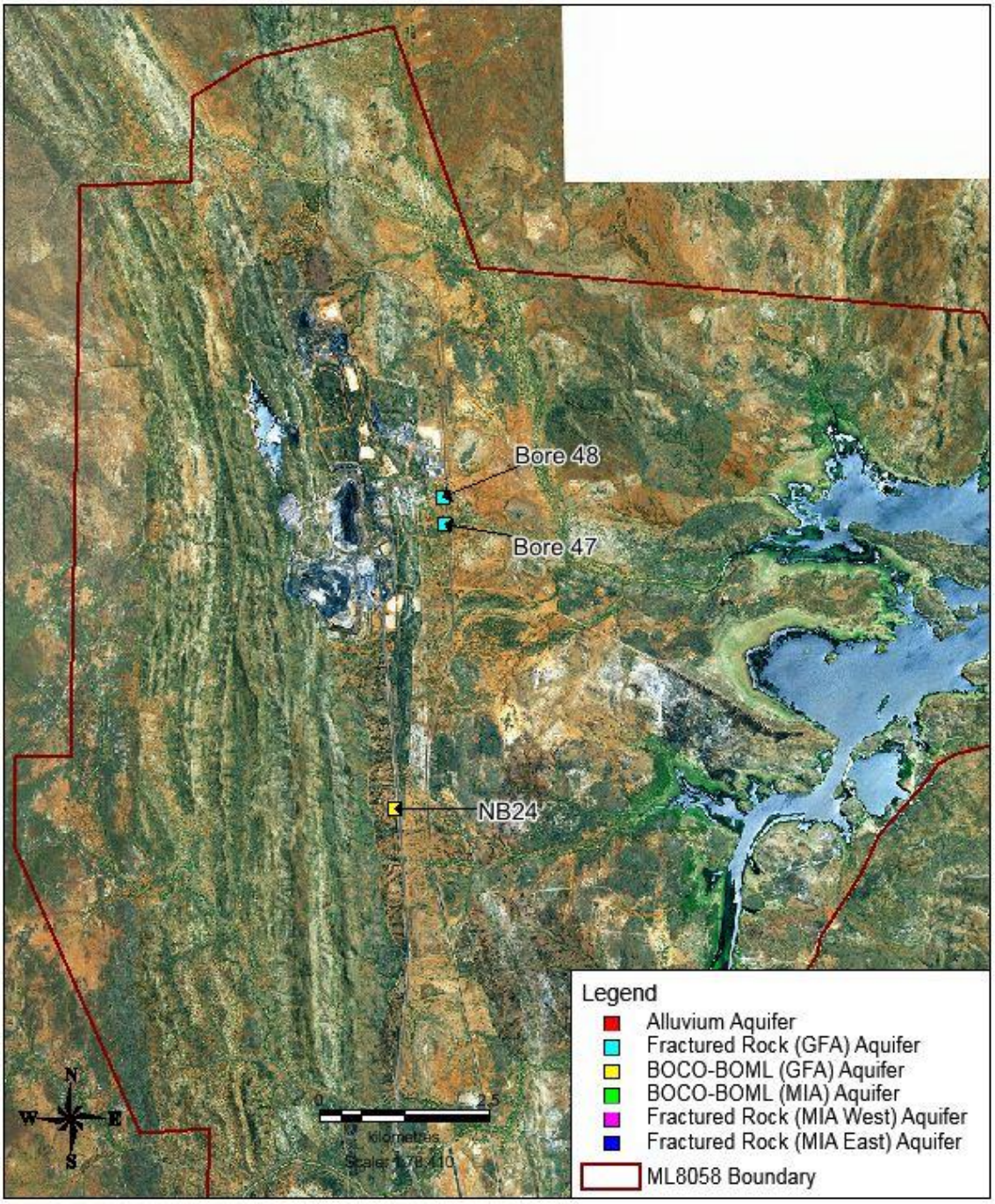
Schedule K – Figure 18 (Contaminant Release Points – GFM/HHOC Containment Area)



Schedule K – Figure 19a (Groundwater Monitoring Bore Network – Mount Isa Area)



Schedule K – Figure 19b (Groundwater Monitoring Bore Network – George Fisher Area)

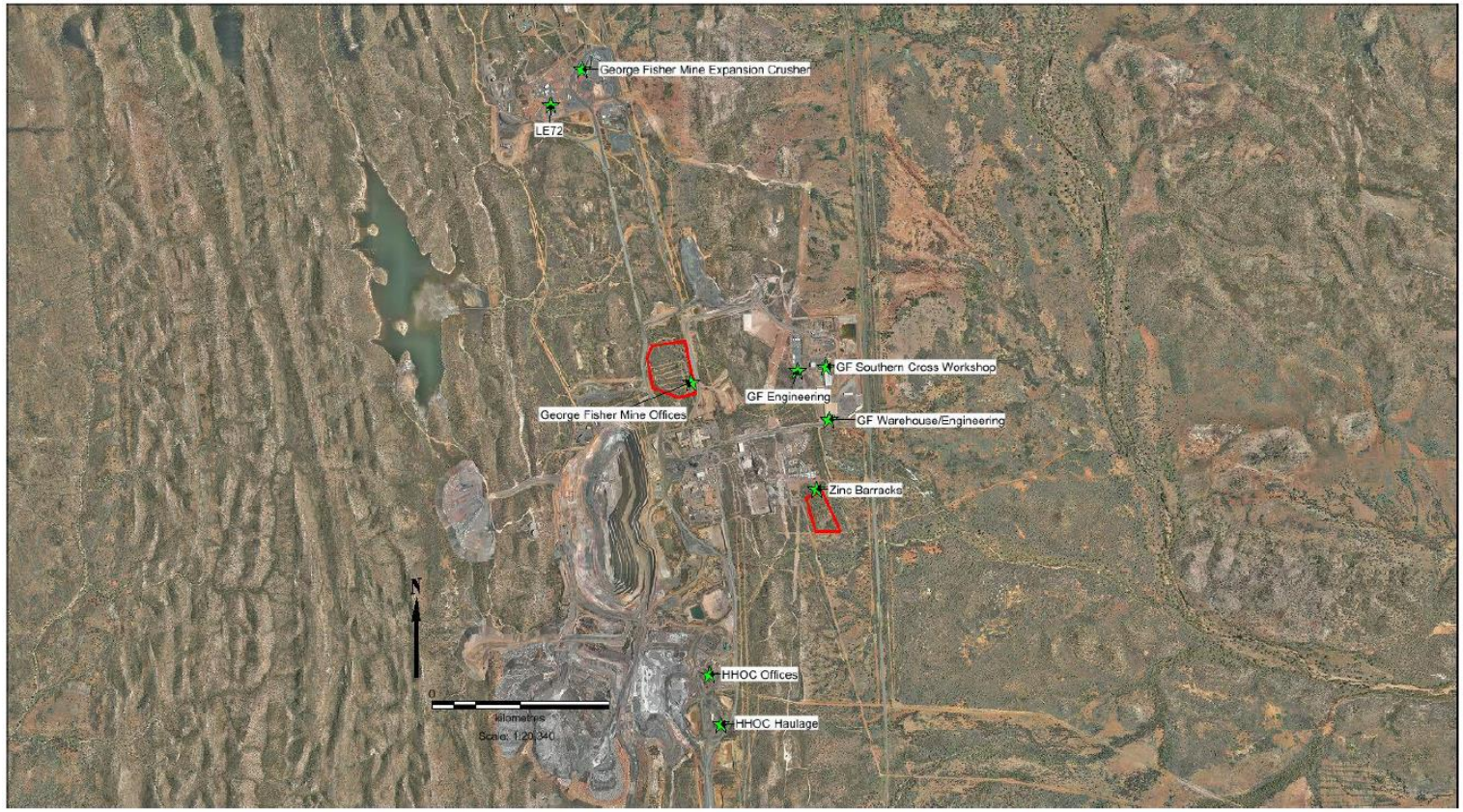


Schedule K – Figure 19c (Groundwater Zone of Influence)

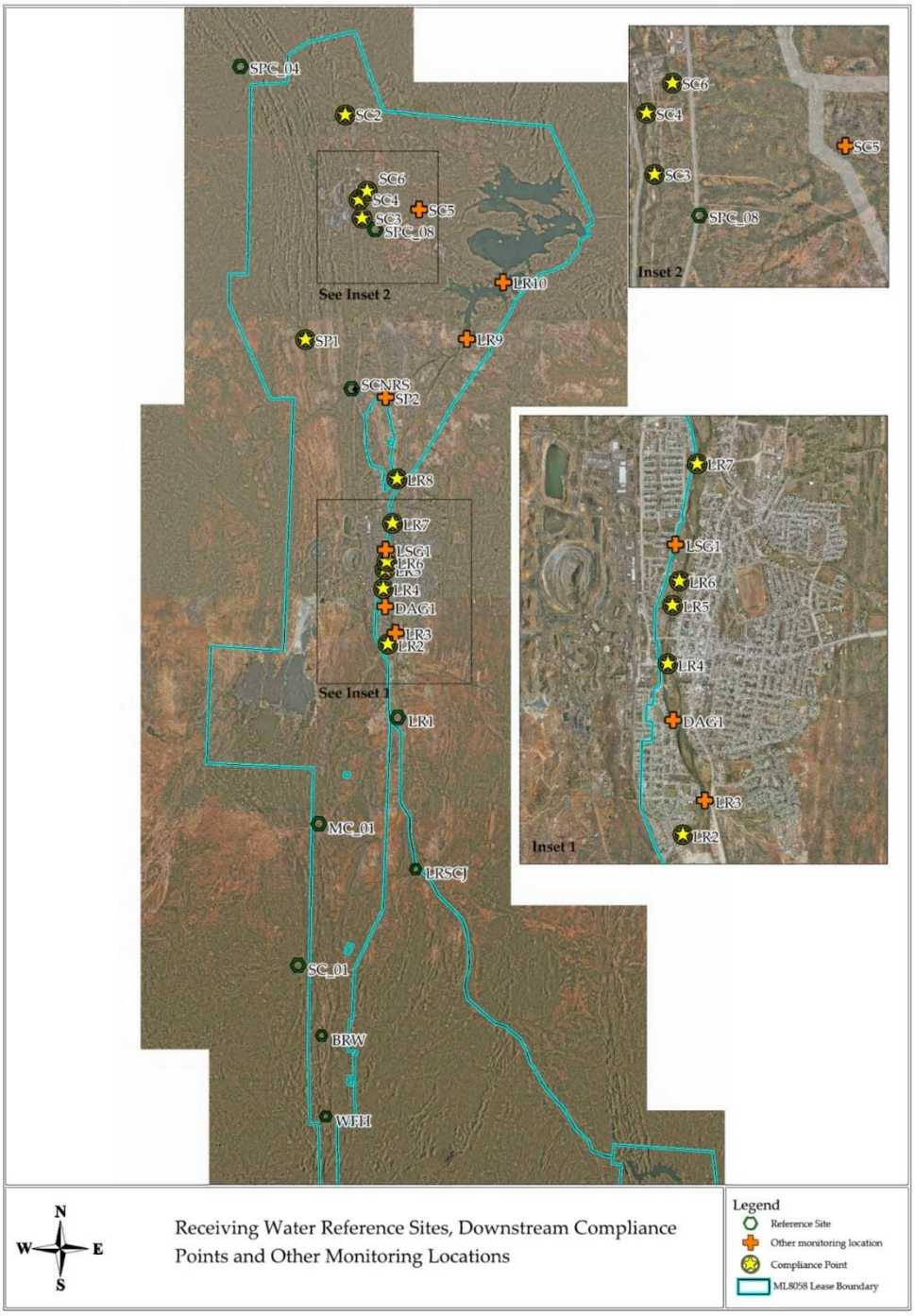
To be provided in accordance with Condition H33.

Schedule K – Figure 20 (Sewage Effluent Release Points – Mount Isa Area)

Schedule K – Figure 21 (Sewage Effluent Release Points – George Fisher Mine Area)

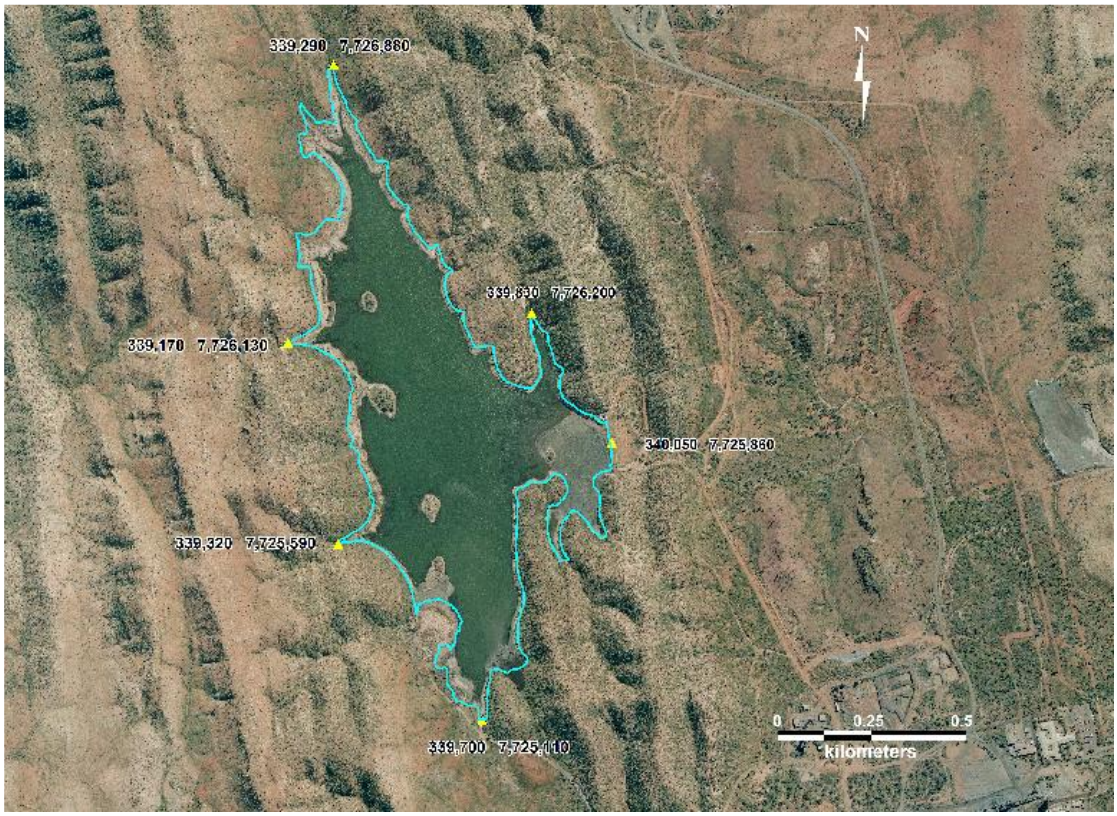


Schedule K – Figure 22 (Receiving Water Reference Sites, Downstream Compliance Monitoring Points and Other Monitoring Points)



Schedule K – Figure 23 (Mount Isa Mines Tailings Dam)

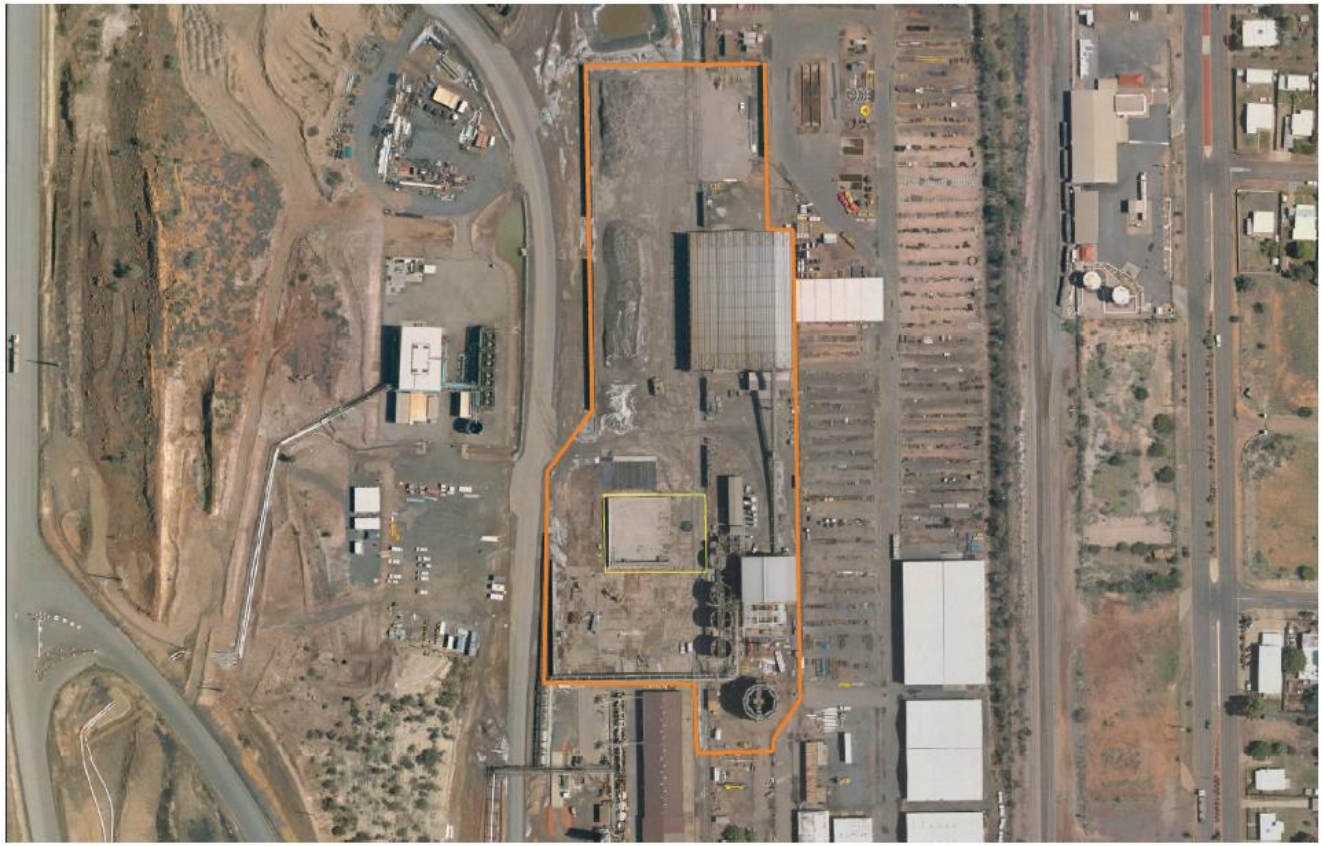
Schedule K – Figure 24 (GF Tailings Dam)



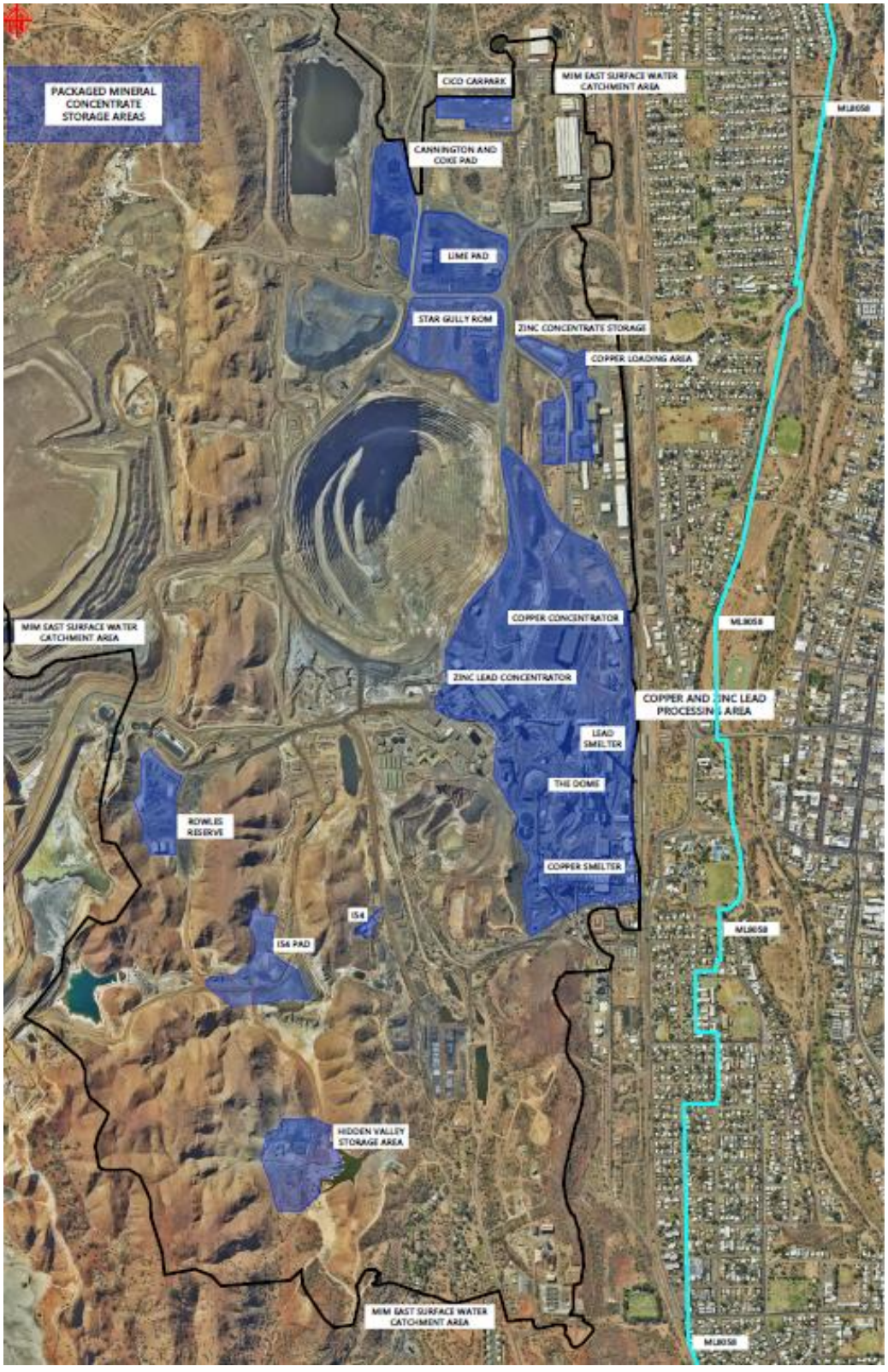
Schedule K – Figure 25a (Seepage Bore Monitoring Network – Mount Isa Area)

Schedule K – Figure 25b (Seepage Bore Monitoring Network – George Fisher Area)

Schedule K – Figure 26 (Location of the designated enclosed concentrate storage facility).



Schedule K – Figure 27 (Designated Packaged Mineral Concentrate Areas)



END OF SCHEDULE K

Appendix 1 – List of Authorised Dams

Appendix 1 - Table 1 (Regulated Dams in Mount Isa East Containment Area)

Name of Regulated Dam	Coordinates (GDA94 MGA Zone 54)		Terminal Dam	Consequence Category Assessment	Max Surface Area (ha)	Maximum volume (ML)	MRL (relating to ESS) (ML)	MRL (physical marker) (ML)	Spillway Capacity AEP
	Easting	Northing							
Clean In Clean Out Pond	341520	7710218	Yes	Significant	2.25	15.6	11.45 AND pumps not operational	8.10 AND pumps not operational	0.01 (1:100)
	341827	7710107							
	341645	7710097							
	341637	7710097							
DAG Weir	342114	7707004	Yes	Significant	0.13	4.4	152.28 AND pumps not operational	1.24 AND pumps not operational	0.001 (1:1,000)
	342182	7707018							
	342186	7707000							
	342131	7706992							
Hidden Valley Dam	340908	7706167	No	Significant	5	90	N/A	N/A	0.002 (1:500)
	340891	7705764							
	341071	7706026							

Name of Regulated Dam	Coordinates (GDA94 MGA Zone 54)		Terminal Dam	Consequence Category Assessment	Max Surface Area (ha)	Maximum volume (ML)	MRL (relating to ESS) (ML)	MRL (physical marker) (ML)	Spillway Capacity AEP
	Easting	Northing							
	341068	7706048							
Superpit Wall	342196	7708151	Yes	High	1.3	10	42.71 AND pumps not operational	4.84 AND pumps not operational	0.001 (1:1,000)
	342202	7708001							
	342204	7707747							
	342178	7707573							
Lower Star Gully Pond	342059	7709278	Yes	Significant	2.3	66.1	1.21 AND pumps not operational	39.07 AND pumps not operational	0.001 (1:1,000)
	342194	7709324							
	342207	7709278							
	342178	7709235							
Old Workshops Pit	342176	7707327	Yes	Significant	0.001	0.02	0.018 AND pumps not operational	0.01 AND pumps not operational	0.001 (1:1,000)
	342179	7707327							
	342179	7707321							
	342176	7707321							

Name of Regulated Dam	Coordinates (GDA94 MGA Zone 54)		Terminal Dam	Consequence Category Assessment	Max Surface Area (ha)	Maximum volume (ML)	MRL (relating to ESS) (ML)	MRL (physical marker) (ML)	Spillway Capacity AEP
	Easting	Northing							
Railway Pond	342216	7708262	Yes	Significant	0.09	1.01	13.61 AND pumps not operational	0.40 AND pumps not operational	0.001 (1:1,000)
	342232	7708261							
	342220	7708206							
	342212	7708216							
Vulcaniser Pit	342174	7707537	No	High	0.02	0.32	N/A	N/A	0.001 (1:1,000)
	342182	7707537							
	342181	7707522							
	342174	7707522							
Workshop Wall	342175	7707450	No	Significant	0.15	0	N/A	N/A	N/A
	342180	7707450							
	342179	7707386							
	342177	7707309							
X41 South Dam	341818	7705354	Yes	Significant	2.0	6.3	14.31	5.13	0.01 (1:100)
	341967	7705354							

Name of Regulated Dam	Coordinates (GDA94 MGA Zone 54)		Terminal Dam	Consequence Category Assessment	Max Surface Area (ha)	Maximum volume (ML)	MRL (relating to ESS) (ML)	MRL (physical marker) (ML)	Spillway Capacity AEP
	Easting	Northing							
	341967	7705246					AND pumps not operational	AND pumps not operational	
	341818	7705246							

Appendix 1 - Table 2 (Regulated Dams in GFM/ HHOC Containment Area)

Name of Regulated Dam	Coordinates (GDA94 MGA Zone 54)		Terminal Dam	Consequence Category Assessment	Max Surface Area (ha)	Maximum volume (ML)	MRL (relating to ESS)	MRL (physical marker)	Spillway Capacity AEP
	Easting	Northing							
BLOB Sediment Dam	340060	7726705	Yes	Significant	1.2	17.4	10.01 AND pumps not operational	15.46 AND pumps not operational	0.01 (1:100)
	340226	7726705							
	340226	7726597							
	340060	7726597							
GF Tailings Dam	Refer to Schedule K – Figure 24	Refer to Schedule K – Figure 24	No	High	56.1	2,662	N/A	N/A	0.00001 (1:100,000)
Sediment Dam 3	341120	7724492	Yes	Significant	5.6	276	52.78 AND pumps not operational	270.70 AND pumps not operational	N/A
	341443	7724492							
	341443	7724042							
	341120	7724042							
Sediment Dam 6	341335	7723621	Yes	High	0.45	11.5	9.31 AND pumps not operational	5.48 AND pumps not operational	N/A
	341422	7723601							
	341400	7723549							
	341347	7723638							
Sediment Dam 9	340023	7727234	Yes	Significant	0.55	13.5	10.8 AND pumps not operational	9.81 AND pumps not operational	N/A
	340076	7727253							
	340083	7727249							
	340039	7727184							
Sediment Dam 12	341361	7725548	Yes	Significant	3.12	61.6	N/A	N/A	0.01 (1:100)
	341491	7725242							

Name of Regulated Dam	Coordinates (GDA94 MGA Zone 54)		Terminal Dam	Consequence Category Assessment	Max Surface Area (ha)	Maximum volume (ML)	MRL (relating to ESS)	MRL (physical marker)	Spillway Capacity AEP
	Easting	Northing							
	341249	7725140							
	341120	7725445							
Sediment Dam 15	341181	7725806	Yes	Significant	0.27	8.25	6.49 AND pumps not operational	1.88 AND pumps not operational	0.01 (1:100)
	341216	7725827							
	341241	7725779							
	341196	7725760							
Sediment Dam 201	340407	7727643	Yes	Significant	4.8	120	51.3 AND pumps not operational	99.09 AND pumps not operational	0.01 (1:100)
	340582	7727720							
	340667	7727469							
	340503	7727401							

Appendix 1 - Table 3 (Regulated Dams in TSF Containment Area)

Name of Regulated Dam	Coordinates (GDA94 MGA Zone 54)		Terminal Dam	Consequence Category Assessment	Max Surface Area (ha)	Maximum volume (ML unless otherwise specified)	MRL (relating to ESS)	MRL (physical marker)	Spillway Capacity AEP
	Easting	Northing							
Tailings Dam 5 (TD5)	Refer to Schedule K – Figure 23	Refer to Schedule K – Figure 23	Yes	Significant	55.5	3,778	3,280	3,280	0.001 (1:1,000)
Tailings Dam 7 (TD7)			No	Significant	29.7	126	401.15m AHD 3,480.47m RL MIM	401.15m AHD 3,480.47m RL MIM	0.00001 (1:100,000)
Kennedy Dam			No	Significant					
Tailings Dam 8 (TD8)			Yes	High	873	24.6GL			
Tailings Dam 8 Saddle Dam			Yes	Significant					
Tailings Dam 8 West Wall			Yes	High					
TD 8 East Seepage Pond	340282	7702637	Yes	Significant	0.37	4.2	3.03 AND pumps not operational	3.86 AND pumps not operational	0.001 (1:1,000)
	340301	7702594							
	340209	7702550							
	340191	7702599							
TD 5 West Seepage Pond	338804	7707600	Yes	Significant	0.68	4.2	3.78 AND pumps not operational	3.64 AND pumps not operational	0.01 (1:100)
	338827	7707462							
	338661	7707569							
	338730	7707480							

Appendix 2 (Authorised Mining Activities)

Mine Domain	Mine Feature Name	Maximum Disturbed Area (Ha)	Tenure Type and Number
Dams	All dams which form part of the containment systems	2895	ML8058
Waste Rock	BSOC waste rock dump (including Mount Isa Mines Landfill)	272	
	HHOC waste rock dump	136	
	BROC waste rock dump (including stockpile areas)	85	
Pits (residual voids)	BSOC	101	
	HHOC	41	
	BROC	40	
	KSOC	34	
Underground Mining	X41	N/A	
	Enterprise	N/A	
	George Fisher	N/A	
Bulk Products/Materials[1]	Slag Piles	39	
	Processing Materials	90	
Infrastructure	Isa Infrastructure[2]	158	
	George Fisher / HHOC Infrastructure	72	
Other	Exploration	20	
	Miscellaneous[3]	2,063	
Standard Mining Leases – other mining leases for mineral extraction such as lime/limestone other minerals.	Limestone Leases Pits/Roads	As per Plan of Operations	ML2484 ML2485 ML2725 ML2726 ML2727 ML5414 ML5424 ML5432 ML5434 ML5576
Greenwood Mine – mineral extraction of lime/limestone.	Greenwoods Mining Leases Pits/Roads	60	ML2721 ML2722 ML2723 ML2724

[1] Includes smelter fluxes, ore ROM pads, smelter reverts, tailings stockpiles for pastefill. Excludes temporary stockpile areas/bays at the smelters.
[2] All mining infrastructure including concentrators, smelters and services (workshops offices, Xstrata Power Station, Mines Power Station, vents, mine shafts, Albion Circuit and Isa Mill 2). ISA infrastructure excludes water infrastructure including Lake Moondarra and Rifle Creek pipelines.
[3] Miscellaneous: Includes services, monitoring locations (bores, samplers etc), roads/tracks, borrow pits, pipelines, temporary storage areas, silica mining, historic mining/voids, fly ash.

END OF ENVIRONMENTAL AUTHORITY