ENVIRONMENTAL PROTECTION ACT 1994

Queensland Government

Northern Region - Cairns Office
5B Sheridan Street CAIRNS QLD 4870
Telephone: (07) 4222 5334 Fax: (07) 4222 5070
ABN 46 640 294 485

Environmental Authority MIN100952109 (mining activities)

This environmental authority is granted under the Environmental Protection Act 1994 and includes conditions to minimise environmental harm caused, or likely to be caused, by the authorised mining activities. An environmental authority (mining activities) may be for mining activities authorised (under the Mineral Resources Act 1989) to occur under one of the following mining tenements: a prospecting permit; mining claim; exploration permit; mineral development licence; or mining lease. In general, a mining activity means: prospecting, exploring, mining; or processing minerals; remediation; rehabilitation; and includes facilitation and supporting activities and any action taken to prevent environmental harm.

Under the provisions of the *Environmental Protection Act 1994* this environmental authority is issued to:

Legend International Holdings Inc
Level 8
580 St Kilda Rd
MELBOURNE Victoria 3004

with respect to carrying out a Level 1 mining project including the environmentally relevant activities (ERA) stated in Table 1 and 2 of this environmental authority, with the highest aggregate environmental score (AES) being ERA 31(2)(b) Mineral Processing – processing in a year, a total of 100,000t or more of mineral products, as prescribed in Schedule 2 and Schedule 6 of the *Environmental Protection Regulation 2008* as part of the following mining project:

Type of Environmental Authority (mining activities)	Authorised Mining Tenements	Location
Mining lease	ML90197; ML90221; ML90222; ML90223; ML90224; ML90225; ML90226; ML90227	Approximately 120 kilometers north-west of Mt Isa.

This environmental authority is subject to the conditions set out in the attached schedules. The conditions of this environmental authority should be read in conjunction with the Environmental Management Plan for the Paradise South Project, dated August 2012. Where there is any discrepancy between the conditions of this environmental authority and the application documents, the conditions of the environmental authority will apply.

The anniversary date of this environmental authority is **3 December 2015.**

This environmental authority takes effect from **3 December 2015.**

Signed

3/12/2015
Date

Ingrid Fomiatti Minnesma
Delegate of Administering Authority
Environmental Protection Act 1994

Table 1 (Level 1 Mining Project Authorised Under This Environmental Authority)

Item	ERA Description (refer to Schedule 6, *Environmental Protection Regulation 2008*)	Aggregate Environmental Score
12	A level 1 mining project, other than a level 1 mining project mentioned in items 1 to 11 of Schedule 6	136

Table 2 (Environmentally Relevant Activities that were considered as part of the assessment of this Environmental Authority)

ERA Number	ERA Description (refer to Schedule 2, *Environmental Protection Regulation 2008*)	Aggregate Environmental Score
8(3)(a)	Chemical storage - storing the following total quantity of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection (1)(c)— (a) $10m^3$ to $500m^3$	no score
8(4)	Chemical storage 200t or more of chemicals that are solids or gases, in containers of at least $10m^3$, other than chemicals mentioned in item 1 to 3	31
8(5)	Chemical storage $200m^3$ or more of chemicals that are liquids, in containers of at least $10m^3$, other than chemicals mentioned in items 1 to 3.	31
15	Fuel Burning - using fuel burning equipment that is capable of burning at least 500kg of fuel in an hour	35
16(2)(d)	Extractive and screening activities – extracting, other than by dredging, in a year, more than 1,000,000 tonnes of material	57
16(3)(c)	Extractive and screening activities – screening more than 1,000,000 tonnes of material	47
17	Abrasive blasting – cleaning equipment or structures using a stream of abrasives in either a wet or dry pressure stream	16
18(a)	Boilermaking or engineering –boilermaking, assembling, building or manufacturing 200 to 10,000t of metal product	0
21	Motor vehicle workshop operation	7
31(2)(b)	Mineral processing; >100,000t/yr	280
33	Crushing, milling, grinding or screening material: >5,000t/yr	0
43	Concrete batching: 200t/yr or more	30
50(1)(a)	Stockpiling 50,000t or more of minerals or loading or unloading 100 t/day or more of minerals within 5km of HAT or 1km of watercourse	73
56(1)	receiving and storing 5t or more or 500 or more equivalent passenger units, of tyres or parts of tyres	9
56(2)	Receiving and storing regulated waste other than tyres	21
57(1)	Regulated waste transport – transporting tyres	0
57(2)	Regulated waste transport (other than tyres) in 1-5 vehicles	7
60(2)(a)	Waste disposal facility (any combination of general waste and no more than 10% limited regulated waste): 50-2,000t/yr	13
63(2(b)(i)	Sewage treatment: >100-1,500EP with treated effluent discharged to an infiltration trench or irrigation scheme	27
63(2)(b)(ii)	Sewage treatment: >100-1,500EP with treated effluent discharged other	53

	than as in ERA 60(2)(b)(i)	
64(3)	Raw water treatment: >10ML/day	26

This **environmental authority** incorporates the following schedules:

Schedule		Issue	Page
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Schedule A – General

Activity

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

A2 The authorised mine domains and identified areas associated with each domain are shown in Schedule A – Table 1 (Authorised Mining Activities) and Schedule J - Figure 1 Infrastructure Layout - Mine Area. The domains must not exceed the maximum disturbance areas listed in Schedule A – Table 1 (Authorised Mining Activities). Mining activities which will result in land becoming significantly disturbed must only occur within the mine domains identified Schedule A – Table 1 (Authorised Mining Activities).

Schedule A – Table 1 (Authorised Mining Activities)

Mine Domain	Mine Feature Name	Location		Maximum Disturbance Area (hectares)
		Easting (GDA94 – Zone 54)	Northing (GDA94 – Zone 54)	
Mining Areas	Northern Pit	300002	7816103	405
		300596	7816394	
		300649	7816633	
		302007	7816648	
		302009	7815991	
		302730	7815993	
		302737	7814326	
		301124	7814320	
		299997	7815278	
	Central Pit	301058	7813381	703
		300433	7811678	
		300482	7810199	
		298979	7810199	
		298979	7812126	
		297973	7812769	
		298858	7815296	
		299997	7815278	
		297973	7812769	
	Southern Pit	298979	7812126	139
		298979	7810199	
		298906	7809399	
		297051	7810108	
Tailings	Tailings Storage Facility with Decant Water Dam and pipelines	301058	7813381	149
		302512	7813399	
		302712	7812732	
		302646	7811841	
		301918	7811460	
Raw Water	Water Supply Dam and Pipeline	301058	7813381	222
		301918	7811460	
		302164	7811004	
		301096	7809702	
		301112	7808011	

Mine Domain	Mine Feature Name	Location		Maximum Disturbance Area (hectares)
		Easting (GDA94 – Zone 54)	Northing (GDA94 – Zone 54)	
		299886	7808109	
		298900	7809400	
		297050	7810100	
Waste	Waste Rock Dump (Northern)	298850	7815300	138
		300000	7815300	
		301177	7815300	
		301177	7813381	
		301055	7813381	
		299904	7813381	
	Waste Rock Dump (Southern)	297050	7810100	76
		297972	7812764	
		300671	7812319	
		300450	7811700	
		300500	7809600	
		298979	7810199	
Processing	Beneficiation Plant & ROM Pad	302764	7813407	96
		299958	7813381	
		300019	7814816	
		302764	7814816	
Accommodation	Accommodation Village and sewage treatment plant	301789	7814816	15
		303963	7815042	
		303680	7813417	
		301819	7813396	
Water Management	Production Dam	301977	7813398	41
		300130	7813343	
		300151	7815002	
		301959	7814979	
	Environmental Dam	299461	7813749	38
		300809	7812710	
		301050	7811700	
		301076	7810597	
		298732	7811477	
Exploration	Drill Pads and access tracks	297834	7812365	730
		300455	7811489	
		300500	7809600	
		298900	7809400	
		297050	7810100	

A3 Access to the licensed place via land authorised for that purpose by the *Mineral Resources Act 1989* is subject to the conditions of this environmental authority.

Maintenance of Measures, Plant and Equipment

A4 The holder of this environmental authority 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; and
(c) operate such measures, plant and equipment in a proper and efficient manner.

A5 No change, replacement or alteration of any plant or equipment is permitted if the change, replacement or alteration increases, or is likely to increase, the risk of unlawful environmental harm.

Monitoring and Reporting

A6 Except where specified otherwise in another condition of this authority, all monitoring records or reports required by this environmental authority must be kept for a period of not less than five (5) years.

A7 Upon request from the administering authority, copies of monitoring records and reports must be made available and/or provided to the administering authority's nominated office within ten (10) business days or by an alternative timeframe agreed between the administering authority and the holder.

A8 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, and amended promptly if required, unless a particular review date and amendment program is specified in the plan, system or program. The review must be documented and completed by an appropriately qualified person.

A9 All monitoring referred to in this environmental authority must be undertaken by an appropriately qualified person using monitoring equipment that is accurately calibrated and maintained in accordance with the manufacturer's specifications.

A10 All analyses and tests required to be conducted under this environmental authority must be carried out by a laboratory that has NATA accreditation for such analyses and tests, except as otherwise authorised by the administering authority.

A11 The holder of this environmental authority must make reasonable efforts to provide safe and all-weather access to all monitoring locations required under this environmental authority. This must include providing the necessary site infrastructure required to gain safe all-weather access to monitoring locations during reasonably foreseeable events. The holder of this environmental authority must also develop and implement contingency plans to facilitate sampling during extreme events where provision of site infrastructure is not practical.

Financial Assurance

A12 Provide to the administering authority financial assurance for the amount and in the form acceptable to the administering authority in accordance with the most recent edition of the administering authority's guideline for calculating financial assurance for mining projects, before the proposed mining activities can commence or be varied.

A13 The amount of financial assurance may be reviewed by the administering authority at any time including when the plan of operations is amended or replaced, the environmental authority is amended, or new information is obtained from an audit or other sources.

A14 The financial assurance must remain in force until the administering authority is satisfied that no claim on the financial assurance will be made.

A15 Financial assurance must be lodged in accordance with condition A13 and A14 within twenty (20) business days from the date on the letter of advice issued to the environmental authority holder identifying that additional financial assurance is required.

Risk Management

A16 The holder of this environmental authority must develop and implement a risk management system for mining activities which reflects the content requirement of the Standard for Risk Management (ISO31000:2009), or the latest edition of an Australian Standard for risk management, to the extent relevant to environmental management, prior to commencement of mining activities.

Emergency Response / Contingency

A17 Prior to commencement of mining activities, the holder of this environmental authority must develop and implement an emergency response/contingency plan to respond to any emergency event or incident.

A18 The emergency response/contingency plan required under condition A17 must address the following matters as a minimum:

(c) response procedures to be implemented to prevent or minimise the risk of environmental harm arising from any emergency event or incident;

(d) response procedures to minimise the extent and duration of environmental harm caused by any emergency event or incident;

(e) the practices and procedures to be employed to restore the environment or mitigate any environmental harm caused by any emergency event or incident;

(f) the resources to be used in response to any emergency event or incident;

(g) procedures to investigate the cause of any emergency event or incident and where necessary, implement remedial actions to reduce the likelihood of recurrence of similar emergency event or incident;

(h) the provision and availability of documented procedures to staff attending any emergency event or incident to enable them to effectively respond;

(i) training of staff that will be called upon to respond to any emergency event or incident to enable them to effectively respond;

(j) timely and accurate reporting of the circumstance and nature of any emergency event or incident to the administering authority in accordance with conditions of this environmental authority;

(k) procedures for accessing monitoring points during any emergency event or incident; and

(l) procedures to notify any potentially impacted stakeholder who may be affected by the emergency event or incident.

Notification of Incidents, Exceedances and Releases

A19 The holder of this environmental authority must notify the administering authority by telephone and email as soon as practicable but within twenty-four (24) hours, after becoming aware of any incident, exceedance or release of contaminants not in accordance, or reasonably expected to be not in accordance with the conditions of this environmental authority.

A20 The notification in condition A19 must include, but not be limited to, the following:

(a) the environmental authority number and name of the holder of this environmental authority;

(b) the name and telephone number of the designated contact person;

(c) the location of the incident, exceedance or release;

(d) the date and time of the incident, exceedance or release;

(e) the time the holder of this environmental authority became aware of the incident, release or exceedance;

(f) where known:

(i) the estimated quantity and type of substances involved in the incident, exceedance or release;

(ii) the actual or potential cause of the incident, release or exceedance; and

(iii) a description of the nature and effects of the incident, exceedance or release including environmental risks and any risks to public health or livestock.

(g) any sampling conducted or proposed, relevant to the incident, exceedance or release;

(h) immediate actions taken to prevent or mitigate any further environmental harm caused by the incident, exceedance or release; and

(i) what notification of stakeholders who may be affected by the incident, exceedance or release has occurred and/or is being undertaken.

A21 The holder of this environmental authority must notify the occupiers or registered owners of affected land and any other potentially impacted stakeholder as soon as reasonably practicable after becoming aware of any incident, exceedance or release that has the potential to impact on environmental values or breaches any condition of this environmental authority concerning releases of contaminants to the environment

A22 The notification in condition A21 must include the following:

(a) the location of the incident, exceedance or release;

(b) the date and time of the incident, exceedance or release;

(c) the estimated quantity and type of any substances involved in the incident, exceedance or release;

(d) the potential impacts to environmental values caused by the incident, exceedance or release; and

(e) where there is potential impact on livestock or human health, precautionary measures that will be taken.

A23 Within ten (10) business days following the initial notification of an incident, exceedance or release, 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 by an appropriately qualified person of any samples taken and analysed;

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

(c) outcomes of actions to prevent a recurrence of the incident, exceedance or release.

Complaints

A24 The holder of this environmental authority must record all environmental complaints received about the mining activity 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

A25 When requested by the administering authority, the holder of this environmental authority must undertake relevant specified monitoring within the 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 by an appropriately qualified person) and abatement measures implemented must be provided to the administering authority within ten (10) business days of completion of the investigation or no later than ten (10) business days after the end of the timeframe nominated by the administering authority to undertake the investigation.

Light

A26 In the event of a complaint about light emissions from any mining activity that, in the opinion of an authorised officer is causing an environmental nuisance at a sensitive place, the administering authority may request the holder of this environmental authority to take appropriate action to mitigate the nuisance and take appropriate action (e.g. by screening or directing the light away from the sensitive place) within a time set by the administering authority.

Community

A27 The holder of this environmental authority must establish, promote and maintain easily accessible lines of communication between residents, stakeholders (including the Kalkadoon People) and land owners, reasonably expected to be affected by the mining activity to ensure that environmental impacts and social and cultural heritage impacts are identified and managed. This must include but not be limited to the following:

(a) regular meetings with all residents, stakeholders and land owners, at intervals of not more than six (6) months; and

(b) the establishment of a consultative committee with representation open for all residents, stakeholders and land owners, that meets at regular intervals as determined by the committee.

Third Party Auditing

A28 Compliance with the conditions of this environmental authority must be audited by a suitably qualified third party auditor, nominated by the holder of this environmental authority and accepted by the administering authority within one year of the commencement of mining activities and then at regular intervals not exceeding every second year.

A29 The third party auditor must certify the independent findings of the audit in the report.

A30 The financial cost of the third party audit is the responsibility of the holder of this environmental authority.

A31 The holder of this environmental authority must immediately act upon any recommendations arising from the audit by:

(a) investigating any non-compliance issues identified; and

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

A32 Within two (2) months of completing the audit, the holder of this environmental authority must provide a copy of the audit report and a written report to the administering authority addressing the:

(a) actions taken to ensure compliance with this environmental authority; and

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

Exploration

A33 All exploration activities carried out at the licensed place must comply with each of the Standard Environmental Conditions contained in the most recent version of the *Code of Environmental Compliance for exploration and mineral development projects*.

A34 Disturbance due to exploration activities in areas not scheduled to be mined within twelve (12) months must be rehabilitated in accordance with the provisions detailed in the administering authority's *Code of Environmental Compliance for Exploration and Mineral Development Projects*.

A35 Where a condition of this environmental authority refers to a matter addressed in the *Code of Environmental Compliance for Exploration and Mineral Development Projects,* the condition of this environmental authority prevails.

Abrasive Blasting

A36 All abrasive blasting and metal surface coating must be carried out inside buildings to contain spent blasting media and other material within the building.

A37 Where abrasive blasting cannot be carried out inside buildings due to large equipment, open air abrasive blasting and metal surface coating activities must be carried out using temporary shrouding, screens, sheeting or other methods to prevent the release of contaminants that may cause environmental harm.

Transition to New Standards

A38 Where a condition of this environmental authority requires compliance with a standard, guideline or relevant legislation published externally to this environmental authority and the standard, guideline or relevant legislation is amended or changed subsequent to the issues of this environmental authority the holder of this environmental authority, unless otherwise agreed to by the administrating authority, must:

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

(b) continue to remain in compliance with the previous standard, guideline or relevant legislation until compliance with the amended or changed standard or guideline is achieved.

Regard for Comment

A39 Where comments are provided by the administering authority with respect to any plans, systems or programs required to be developed by a condition of this environmental authority then the holder of this environmental authority must have due regard to these comments.

END OF CONDITIONS FOR SCHEDULE A

Schedule B – Air

General

B1 Unless authorised by this environmental authority, the release of noxious or offensive odour, dust or any other airborne contaminant resulting from the mining activity must not cause environmental harm.

Bulk Material Handling Management

B2 The holder of this environmental authority must ensure that vehicles used for transporting bulk materials on or from the licensed place, have appropriate load preparation to prevent the spillage and/or loss of particulate matter and/or windblown dust during transport.

Air Quality – Particulate Matter

B3 Subject to conditions B4 and B5, the release of particulate matter resulting from the mining activity must not cause an environmental nuisance at any sensitive or commercial place.

B4 When requested by the administering authority, dust deposition and suspended particulate monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised person) of environmental nuisance at any sensitive or commercial place, and the results must be notified within fourteen (14) days to the administering authority following completion of monitoring.

B5 If the environmental authority holder can provide evidence through monitoring that the following limits are not being exceeded, then the holder is not in breach of B1:

(a) Suspended particulate matter:

(i) a concentration of particulate matter with an aerodynamic diameter of less than 10 micrometres (PM_{10}) suspended in the atmosphere of 50 micrograms per cubic metre over a 24 hour averaging time monitored in accordance with:

(a) the most recent version of Australian Standard AS3580.9.6 *Determination of suspended particulate matter – PM(sub) 10(/sub) high volume sampler with size-selective inlet – Gravimetric method*; or

(b) an alternate method of monitoring PM_{10} which complies with the performance specifications detailed in another Australian Standard for PM_{10} and agreed to in writing by the administering authority.

(ii) a concentration of particulate matter suspended in the atmosphere of 90 micrograms per cubic metre over a one (1) year averaging time, when monitored in accordance with the most recent version of AS/NZS3580.9.3:2003 *Determination of suspended particulate matter – Total suspended particulate matter (TSP) – High volume sampler gravimetric method;*

(iii) a concentration of fluoride suspended in the atmosphere of 2.9 micrograms per cubic metre over a twenty-four (24) hour averaging time, when monitored in accordance with the most recent version of AS/NZS3580.9.3:2003 *Determination of suspended particulate matter – Total suspended particulate matter (TSP) – High volume sampler gravimetric method;*

(b) Dust deposition

(i) Dust deposition of 120 milligrams per square metre per day, averaged over one month, when monitored in accordance with AS 3580.10.1 *Methods for sampling and analysis of ambient air - Determination of particulates - Deposited matter - Gravimetric method of 1991*

Note: Limits based on Schedule 1 of the Environmental Protection (Air) Policy 2008.

B6 If monitoring indicates the maximum concentrations in condition B5 have been exceeded at a sensitive place or commercial place as a result of the mining activity, then the holder of this environmental authority must immediately implement dust abatement measures to ensure that dust emissions generated by the mining activity no longer exceed the levels specified in condition B5.

B7 In the event of monitoring results showing an exceedance of any of the maximum concentrations in condition B5 at a sensitive place or commercial place, the holder of this environmental authority must:

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

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

(c) if the investigation shows that the exceedance is attributable to the mining activity provide a written report to the administering authority within one (1) month of the date of the monitoring results showing an exceedance, outlining:

(i) details of the investigations carried out;

(ii) details of the environmental impacts observed; and

(iii) actions taken to prevent environmental harm.

Air Quality Monitoring Requirements

B8 Samples taken for air quality monitoring specified in this environmental authority must be collected and analysed in accordance with the requirements of the administering authority's latest edition of the *Air Quality Sampling Manual*, or more recent editions or supplements to that document as are published by the administering authority, unless otherwise agreed by the administering authority in writing.

Point Source Releases to Air

B9 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 J - Figure 2 (Authorised Point Source Air Emissions) and must be monitored at the frequencies and for the contaminants specified in Schedule B - Table 1 (Point Source Air Emissions).

B10 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	Minimum release height (m)	Minimum exit velocity (m/s)	Contaminant parameter	Maximum contaminant concentration[2, 3]	Frequency of monitoring
Fabric Filter Dust Collector (FFDC) Stack	12	3.3	Total particulate matter	50 mg/Nm^3	Once every six months
			Fluoride particulate matter	5 mg/Nm^3	
			Total heavy metals[1]	5 mg/Nm^3	

1. The above total heavy metals limit is for the total of the lead, zinc, cadmium, chromium, arsenic, nickel, vanadium, antimony and beryllium and their respective compounds.
2. All determinations of point source emissions to air are from isokinetic samples results.
3. All determinations of point source emissions to air are corrected to Standard Temperature & Pressure (273K, 101.3KPa).

B11 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.

Fabric Filter Dust Collector (FFDC)

B12 All contaminants arising from the operation of the beneficiation plant's rotary screen, -feeding port and belt receiving points must be treated in a Fabric Filter Dust Collector prior to release to the atmosphere at release point identified in Schedule J - Figure 2 (Authorised Point Source Air Emissions).

B13 A device (e.g. differential pressure sensor) which is capable of detecting filter medium breakthrough must be installed in the outlet of the Fabric Filter Dust Collector.

B14 An alarm system must warn the operator of the plant of the possibility that filter medium breakthrough has occurred.

B15 Replacement bags for all Fabric Filter Dust Collectors must be held on site at all times.

B26 All collected material removed from a fabric filter dust collector must be must be recycled, or removed and disposed of to a facility that can lawfully accept such wastes.

B17 The Fabric Filter Dust Collectors must have the particulate collection efficiency of not less than 98 per cent.

House-keeping Procedure

B18 A whole of site housekeeping procedure must be developed and implemented which must include, but not be limited to:

(a) the completion of periodic inspections of the licensed place including all structures, plant, equipment and trafficked surfaces to identify and remove exposed mineral concentrate that may be mobilised by wind, water or equipment movement; and

(b) an ongoing cleaning and maintenance schedule to minimise any potential release of mineral concentrate and to ensure there is no build-up of mineral concentrates over time in areas where it may be mobilised.

Weather Station

B19 The holder of this environmental authority must establish and maintain a permanent meteorological station to continuously measure and record wind speed, wind direction, temperature and daily rainfall volume.

B20 The permanent meteorological station must be installed in accordance with the latest edition of the Bureau of Meteorology guideline *Observation Specifications No.2013.1 – Guidelines for the positioning and exposure of meteorological instruments and observing facilities.*

B21 The holder of this environmental authority must record, compile, evaluate and keep all monitoring records obtained from the permanent automatic meteorological station.

END OF CONDITIONS FOR SCHEDULE B

Schedule C – Land

General

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

C2 Any spillage of wastes, contaminants or other materials must be cleaned up promptly. Such spillages must be cleaned up using dry methods that minimise the impact of the release of wastes, contaminants or materials to land.

Topsoil

C3 Topsoil and subsoils must be stripped and stockpiled ahead of the areas proposed to be disturbed for the mining activity to a depth determined from soil surveys to ensure that useable soil resources are preserved for rehabilitation.

C4 Topsoil and subsoil stockpiles must be managed to ensure stability and minimise the release of contaminants. Measures must include:

(a) Vegetating stockpiles;

(b) Minimising the height of stockpiles; and

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

C5 A topsoil and subsoil inventory which identifies the soil requirements for the mining activity and availability of suitable soil on the licensed place must be detailed in the plan of operations.

Disturbance to Land

C6 When carrying out the mining activity the holder of this environmental authority must:

(a) avoid, minimise or mitigate (in order of preference) any impacts on areas of sensitive vegetation or other areas of ecological value;

(b) minimise the risk of injury, harm, or entrapment to wildlife and stock;

(c) minimise disturbance to land that may otherwise result in land degradation;

(d) prior to carrying out any disturbance activities, make all relevant staff, contractors or agents carrying out those activities, aware of the location of any Category A, B or C Environmentally Sensitive Area (ESA) and the relevant requirements of this environmental authority;

(e) if significant disturbance to land is unavoidable, the holder of this environmental authority must clear vegetation in a way which minimises fragmentation; and

(f) manage cleared vegetation so that it is stockpiled in a manner that facilitates salvage and respreading and does not impede vehicle, stock or wildlife movements.

C7 In the event of identification of rare or threatened species on the licensed place, a diagrammatic representation of the species occurrence relative to the mining activity together with a management and monitoring strategy for species conservation must be prepared to the satisfaction of the administering authority and submitted with the plan of operations.

Rehabilitation Objectives

C8 Land disturbed by mining must be rehabilitated in accordance with Schedule C – Table 1 (Paradise South Project Rehabilitation Requirements) and the objectives of the Post Mine Land Use Plan required under condition C13.

C9 Rehabilitation must commence progressively as soon as areas become available and in accordance with the plan of operations.

C10 Within six (6) months of the commencement of tailings disposal in the tailings storage facility, the holder of this environmental authority must commence trials to establish suitable capping systems for infrastructure on the licensed place including but not limited to the tailings storage facility and all waste rock dumps.

C11 Three (3) years after the commencement of tailings disposal in the tailings storage facility and once every two (2) years thereafter, the holder of this environmental authority must submit a report to the administering authority detailing the success and findings from the capping system trials.

C12 Five (5) years after the commencement of tailings disposal in the tailings storage facility the holder of this environmental authority must submit to the administering authority a report nominating the most appropriate capping system for the tailings storage facility based on the results from trials required by condition C11.

Post Mine Land Use Plan

C13 Within one year of commencing mining activities, the holder of this environmental authority must develop, implement and submit to the administering authority a Post Mine Land Use Plan (PMLUP) and update and resubmit the plan with each subsequent Plan of Operations. The PMLUP must be developed by an appropriately qualified person and include:

(a) schematic representation of final land form inclusive of drainage features;

(b) slope designs;

(c) cover design (not limited to store and release covers);

(d) drainage design;

(e) erosion controls;

(f) description of experimental design for monitoring of analogue and rehabilitated areas inclusive of statistical design;

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

(h) materials balance including available top soil, and low permeability capping material;

(i) geotechnical, geochemical and hydrological studies;

(j) chemical, physical and biological properties of soil and water; and

(k) a rehabilitation monitoring program as required by condition C15.

Rehabilitation Monitoring Program

C14 A rehabilitation monitoring program must be developed and be implemented on commencement of rehabilitation identified in Schedule C – Table 1 (Paradise South Project Rehabilitation Requirements) by an appropriately qualified person.

C15 The holder of this environmental authority must conduct rehabilitation monitoring in accordance with the program developed in condition C14 at least once a year including sufficient spatial and temporal replication to enable scientifically justifiable conclusions to be made, as established in the rehabilitation monitoring program.

C16 Verification of rehabilitation success is to be carried for each domain. Monitoring must be carried out for each domain at a minimum sampling intensity of 1:15,000 and must include sufficient replication to enable statistical analysis of results at an acceptable power.

Schedule C – Table 1 (Paradise South Project Rehabilitation Requirements)

Mine Domain	Mine Feature	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
Processing area	ROM Pad	Safe to humans and wildlife, non-polluting, stable, able to sustain the agreed post mining landuse	Class 3 – 4 Low Intensity Grazing / Native Habitat	TBA[1]	TBA[1]
	Processing Plant and Conveyor Area				
	Temporary Coarse Reject Stockpile				
Waste	Out of Pit Waste Rock Dumps	Safe to humans and wildlife, non-polluting, stable, able to sustain the agreed post mining landuse	Class 3 – 4 Low Intensity Grazing / Native Habitat	TBA[1]	TBA[1]
	In-pit Waste Rock Dumps				
Ancillary Infrastructure	Transmission Line	Safe to humans and wildlife, non-polluting, stable, able to sustain the agreed post mining landuse	Class 3 – 4 Low Intensity Grazing / Native Habitat and beneficial reuse	TBA[1]	TBA[1]
	Slurry Pipeline				
Accommodation village	Accommodation village	Safe to humans and wildlife, non-polluting, stable, able to sustain the agreed post mining landuse	Class 3 – 4 Low Intensity Grazing / Native Habitat	TBA[1]	TBA[1]
Start-up Tailings Storage Facility	Tailings Storage Facility	Safe to humans and wildlife, non-polluting, stable, able to sustain the agreed post mining landuse	Class 3 – 4 Low Intensity Grazing / Native Habitat	TBA[1]	TBA[1]
	Decant Water Dam		Class 3 – 4 Low Intensity Grazing / Native Habitat	TBA[1]	TBA[1]
Final Voids	Final Voids	Safe to humans and wildlife, non-polluting, stable, able to sustain the agreed post mining landuse	Class 3 – 5 Low Intensity Grazing / Native Habitat	TBA[1]	TBA[1]
Haul Roads	Haul Roads	Safe to humans and wildlife, non-polluting, stable, able to sustain the agreed post mining landuse	Class 3 – 4 Low Intensity Grazing / Native Habitat	TBA[1]	TBA[1]
Creek Diversions	Creek Diversions	Safe to humans and wildlife, non-polluting, stable, able	Class 3 – 4 Low Intensity Grazing / Native Habitat	TBA[1]	TBA[1]

Mine Domain	Mine Feature	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
		to sustain the agreed post mining landuse			
Water Dams	Production Water Dam	Safe to humans and wildlife, non-polluting, stable, able to sustain the agreed post mining landuse	Class 3 – 4 Low Intensity Grazing / Native Habitat	TBA[1]	TBA[1]
	Environmental Dam	Safe to humans and wildlife, non-polluting, stable, able to sustain the agreed post mining landuse	Class 3 – 4 Low Intensity Grazing / Native Habitat	TBA[1]	TBA[1]
	Battle Creek water Supply Dam	Safe to humans and wildlife, non-polluting, stable, able to sustain the agreed post mining landuse	Class 3 – 4 Low Intensity Grazing / Native Habitat	TBA[1]	TBA[1]

1. Post mine land use, rehabilitation indicators and completion criteria are to be nominated in accordance with condition C13.

Post Closure Management Plan

C17 A Post Closure Management Plan for the licensed place must be lodged prior to commencement of mining activities and implemented for a period of:

(a) at least thirty (30) years following cessation of the mining activity (excluding rehabilitation) on the licensed place; or

(b) a shorter period if:

(i) the licensed place is proven to be geo-technically and geo-chemically stable; and

(ii) it can be demonstrated to the satisfaction of the administering authority that no release of contaminants from the licensed place will result in environmental harm.

C18 The Post Closure Management Plan must include the following elements:

(a) operation and maintenance of:

(i) contaminated water collection and reticulation systems;

(ii) contaminated water treatment systems;

(iii) the groundwater monitoring network;

(iv) final cover systems; and

(v) vegetative cover.

(b) monitoring of:

(i) surface water;

(ii) groundwater;

(iii) seepage rates;

(iv) erosion rates;

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

(vi) the health and resilience of vegetative cover.

Infrastructure

C19 All buildings, structures, mining equipment and plant erected and/or used for the mining activity must be removed from the licensed place prior to surrender, except where agreed to in writing by the administering authority and the landowner.

Chemicals and Flammable or Combustible Liquids

C20 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.

C21 Notwithstanding the requirements of any applicable Australian Standard, any liquids stored on licensed place that have the potential to cause environmental harm must be stored and serviced by an effective containment system that is impervious to the materials stored and managed to prevent the release of liquids to waters or land.

C22 Where no relevant Australian Standard is available, the following must be applied:

(a) storage tanks must be bunded such that the capacity and construction of the bund is sufficient to contain at least 110% of a single storage tank or 100% of the largest storage tank plus 10% of the second largest storage tank in multiple storage areas; and

(b) drum storages must be bunded such that the capacity and construction of the bund is sufficient to contain at least 25% of the maximum design storage volume within the bund.

C23 All containment systems must be designed to minimise rainfall collection within the system.

Contaminated Land

C24 Prior to making an application for surrender or approval for progressive rehabilitation the holder of this environmental authority must undertake a contaminated land assessment / investigation of the relevant areas of the licensed place in accordance with the administering authority's *Guideline for the Assessment and Management of Contaminated Land in Queensland.*

Biodiversity Offsets

C25 The holder of this environmental authority must provide an offset for impacts on state significant biodiversity values in accordance with the *Queensland Biodiversity Offset Policy.*

C26 A Biodiversity Offset Strategy must be developed and submitted to the administering authority prior to carrying out mining activities specified in the Environmental Management Plan titled *"Paradise South Environmental Management Plan"* dated August 2012. The biodiversity offset strategy must include, at a minimum:

(a) demonstration that the activity has avoided, then minimised impacts to state significant biodiversity values;

(b) where there will be impacts to State significant biodiversity values, a detailed description of the values which will be impacted, and the extent of that impact;

(c) mapping that details the surveyed locations of any state significant biodiversity values at the licensed place;

(d) results of a flora and fauna assessment of the affected area to determine if the operations will directly impact on any state significant biodiversity values detailed in Appendix 1 of the *Queensland Biodiversity Offset Policy;*

(e) the proposed offset delivery mechanism;

(f) where an offset transfer is proposed, evidence that an offset can be located within the landscape; and

(g) an ecological equivalence assessment where required by the *Queensland Biodiversity Offset Policy.*

C27 Impacts on state significant biodiversity values must not occur until the holder of this environmental authority has provided a legally secured direct land based offset, or entered into a Deed of Agreement with the administering authority for an offset transfer, or provided an offset payment, consistent with the Queensland Biodiversity Offset Policy.

END OF CONDITIONS FOR SCHEDULE C

Schedule D – Regulated Structures

Assessment of Hazard Category

D1 The hazard category of any structure must be assessed by a suitably qualified and experienced person:

(a) in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*; and

(b) in any of the following situations:

(i) prior to the design and construction of the regulated structure; or

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

D2 A hazard assessment report and certification must be prepared for any regulated structure assessed and the report may include a hazard assessment for more than one regulated structure.

D3 The holder of this environmental authority must, on receipt of a hazard assessment report and certification, provide to the administering authority one paper copy and one electronic copy of the hazard assessment report and certification.

D4 Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*.

D5 The holder of this environmental authority must take reasonable and practical measures so that each regulated structure associated with the mining activity is designed, constructed, operated and maintained in accordance with accepted engineering standards and is fit for the purpose for which it is intended.

D6 The onus remains at all times on the holder of this environmental authority to determine whether any of the dams on the licensed place are regulated structures, as defined herein, and if so to immediately comply with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*.

Note: A change of status of a dam might occur due to natural incremental increases in storage capacity, the nature of the material stored, or to changed conditions of use of the storage or of downstream activities (whether related to on-site operations or to the downstream environment) – resulting in an increased risk beyond low hazard, as assessed against the criteria in Table 3 (Contaminant concentrations and minimum dam volumes) in the Manual for Assessing Hazard Categories and Hydraulic Performance of Dams.

Design and Construction of a Regulated Structure

D7 All regulated structures must be designed by, and constructed under the supervision of, a suitably qualified and experienced person in accordance with the requirements of the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams.*

Note: Certification of design and construction may be undertaken by different persons. Construction of a regulated structure includes modification of an existing regulated structure.

D8 Construction of a regulated structure is prohibited unless the holder of this environmental authority has:

(a) submitted a hazard category assessment report and certification to the administering authority;

(b) commissioned a suitably qualified and experienced person to prepare a design plan for the regulated structure; and

(c) received the certification from a suitably qualified and experienced person for the design plan and the associated operating procedures in compliance with the relevant conditions of this environmental authority.

D9 Certification must be provided by the suitably qualified and experienced person who oversees the preparation of the design plan, in the form set out in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*.

D10 Regulated structures must:

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

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

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

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

D11 The design plan for a regulated structure must include, but is not limited to:

(a) certification that the design plan;

(i) is in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams,* including subsidiary certifications if necessary; and

(ii) addresses the requirements in condition D11 (b) to (h).

(b) a design report which provides:

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

(ii) a statement of:

a) the applicable standards including engineering criteria, industry guidelines, relevant legislation and regulatory documents, relied upon in preparing the design plan;

b) 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;

c) the hazard category of the regulated structure; and

d) setting out the reasoning of the suitably qualified and experienced person who has certified the design plan, as to how the design plan provides the necessary required performance.

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

(iv) detailed criteria for the design, operation, maintenance and decommissioning of the regulated structure, including any assumptions; and

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

(c) drawings showing the lines and dimensions, and locations of built regulated structures and land forms associated with the regulated structure;

(d) consideration of the interaction of the pit design with the regulated structure design;

(e) an operational plan that includes:

(i) normal operating procedures and rules (including clear documentation and definition of process inputs in the Design Storage Allowance (DSA); and

(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 regulated structure.

(f) a plan for the decommissioning and rehabilitation of the regulated structure at the end of its operational life;

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

(h) any other matter required by the suitably qualified and experienced person.

D12 Certification by the suitably qualified and experienced person who supervises the construction must be submitted to the administering authority on the completion of construction of the regulated structure, and state that:

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

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

D13 Where a regulated structure is to be managed as part of an integrated containment system and the DSA volume is to be shared across the integrated containment system, the design and operating rules for the system as a whole must be documented in a system design plan that is certified by a suitably qualified and experienced person.

D14 The system design plan must contain:

(a) the design plans;

(b) the 'as constructed' plans;

(c) the operational rules for each individual regulated structure that forms part of the integrated system;

(d) the standards of serviceability and accessibility of water transfer equipment or regulated structures; and

(e) the operational rules for the system as a whole.

Operation of a Regulated Structure

D15 Operation of a regulated structure is prohibited unless:

(a) the holder of this environmental authority has submitted to the administering authority:

(i) one paper copy and one electronic copy of the design plan and certification of the design plan in accordance with condition D11;

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

(iii) certification of those 'as constructed drawings and specifications' in accordance with condition D12; and

(iv) where the regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, a copy of the certified system design plan in accordance with condition D13.

(b) the requirements of this environmental authority relating to the construction of the regulated structure have been met; and

(c) relevant details for the regulated structure have been included in Schedule D - Table 1 (Location of Regulated Structures) and Schedule D - Table 2 (Basic Details of Regulated Structures) of this environmental authority.

Schedule D — Table 1 (Location of Regulated Structures)

Column 1	Column 2	Column 3	Column 4
Name of Regulated Structure	**Easting[1] (GDA94 – Zone 54)**	**Northing[1] (GDA94 – Zone 54)**	**Mining Lease**
Decant Water Dam	301058	7813381	ML90221
	302512	7813399	
	302712	7812732	
	302646	7811841	
	301918	7811460	
Production water Dam	301977	7813398	ML90197
	300130	7813343	
	300151	7815002	
	301959	7814979	
Environmental Dam	299461	7813749	ML90197; ML90222
	300809	7812710	
	301050	7811700	
	301076	7810597	
	298732	7811477	

1. A minimum of three (3) control points are required to constrain the location of all activities associated with the regulated structure. Additional infrastructure which forms part of any regulated structure (which is not required to be located within the control points) may include appurtenant works consisting of tailings discharge pipelines, seepage collection systems, runoff diversion bunds, containment systems, pressure relief wells, decant and recycle water systems.

Schedule D — Table 2 (Basic Details of Regulated Structures)

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Name of Regulated Structure	**Hazard Category**	**Surface Area at Spillway (ha)**	**Maximum Volume at Spillway (Mm^3)**	**Maximum Depth at Spillway (m)**	**Spillway Level (mAHD)**	**Use**
Decant Water Dam	Significant	31.39	1.7	9.0	299.5	Storage of tailings decant for reuse at processing plant
Production Water Dam	Significant	TBA[1]	TBA[1]	TBA[1]	TBA[1]	Holding storage for mine affected water for reuse at processing plant
Environmental Dam	Significant	TBA[1]	TBA[1]	TBA[1]	TBA[1]	Storage of mine affected water

1. The dimensions of the Production and Environmental Dams will be provided in the Plan of Operations.

D16 Each regulated structure must be maintained and operated in a manner that is consistent with the current design plan, the current operational plan, and the associated certified 'as constructed' drawings for the duration of its operational life until decommissioned and rehabilitated.

D17 The holder of this environmental authority must take reasonable and practicable control measures to prevent harm to persons, livestock or wildlife through the construction and operation of a regulated structure. Reasonable and practicable measures may include, but are not limited to:

(a) the secure use of fencing, bunding or screening; and

(b) escape arrangements for trapped livestock and fauna.

Mandatory Reporting Level

D18 The mandatory reporting level (MRL) must be marked on a regulated structure in such a way that during routine inspections of that regulated structure, it is clearly observable.

D19 The holder of this environmental authority must, as soon as practical and within forty-eight (48) hours of becoming aware, notify the administering authority when the level of the contents of a regulated structure reaches the MRL.

D20 The holder of this environmental authority must, immediately on becoming aware that the MRL has been reached, act to prevent the occurrence of any unauthorised discharge from the regulated structure.

Annual Inspection Report

D21 Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.

D22 At each annual inspection, the condition and adequacy of all components of the regulated structure must be assessed:

(a) against the most recent hazard assessment report and design plan (or system design plan);

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

(c) against recognised regulated structure safety deficiency indicators;

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

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

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

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

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

D23 A suitably qualified and experienced person must prepare an annual inspection report containing details of the assessment and include recommended actions to ensure the integrity of the regulated structure.

D24 The suitably qualified and experienced person who prepared the annual inspection report must certify the report in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*.

D25 The holder of this environmental authority must:

(a) upon receipt of the annual inspection report, consider the report and its recommendations and take action to ensure that the regulated structure will safely perform its intended function; and

(b) within twenty (20) business days of receipt of the annual inspection report, notify the administering authority in writing, of the recommendations of the inspection report and the actions being taken to ensure the integrity of each regulated structure.

D26 A copy of the annual inspection report must be provided to the administering authority upon request within ten (10) business days.

Design Storage Allowance

D27 On 1 November of each year, storage capacity must be available in each regulated structure (or network of linked containment systems with a shared DSA volume), to meet the DSA volume for the regulated structure (or network of linked containment systems).

D28 The holder of this environmental authority must, as soon as possible and within forty-eight (48) hours of becoming aware that the regulated structure (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, notify the administering authority.

D29 The holder of this environmental authority must, immediately on becoming aware that a regulated structure (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, act to prevent the occurrence of any unauthorised discharge from the regulated structure or linked containment systems.

Performance Review

D30 The holder of this environmental authority must assess the performance of each regulated structure or linked containment system over the preceding November to May period based on actual observations of the available storage in each regulated structure or linked containment system taken prior to 1 July of each year.

D31 The holder of this environmental authority must take action to modify its water management or linked containment system so as to ensure that the regulated structure or linked containment system will perform in accordance with the requirements of this environmental authority, for the subsequent November to May period.

Transfer Arrangements

D32 The holder of this environmental authority must provide a copy of any reports, documentation and certifications prepared under this environmental authority, including but not limited to any Register of Regulated Structures, hazard assessment, design plan and other supporting documentation, to a new holder of this environmental authority and the administering authority on transfer of this environmental authority.

Decommissioning and Rehabilitation

D33 Prior to the cessation of the mining activity, each regulated structure must be decommissioned such that:

(a) ongoing environmental harm is minimised by the regulated structure by:
  (i) becoming a safe site for humans and animals at the completion of rehabilitation;
  (ii) becoming a stable landform, that no longer contains flowable substances and minimises erosion impacts;
  (iii) not allowing for acid mine drainage; and
  (iv) being approved or authorised under relevant legislation for a beneficial use; or
  (v) being a void authorised by the administering authority to remain after decommissioning.

(b) the regulated structure is compliant with all other relevant rehabilitation requirements of this environmental authority.

Regulated Structures Location and Performance

D34 Each regulated structure named in Column 1, of Schedule D – Table 1 (Location of Regulated Structures) must be wholly located within the control points noted in columns 2 and 3 of Schedule D - Table 1 (Location of Regulated Structures).

D35 Each regulated structure named in column 1 of Schedule D — Table 2 (Basic Details of Regulated Structures), must be consistent with the details noted in columns 2 through to and including column 7 of Schedule D — Table 2 (Basic Details of Regulated Structures).

D36 Each regulated structure named in column 1 of Schedule D – Table 1 (Location of Regulated Structures), must meet the hydraulic performance criteria noted in columns 2 through to and including column 4 of Schedule D – Table 3 (Hydraulic Performance of Regulated Structures).

Schedule D — Table 3 (Hydraulic Performance of Regulated Structures)

Column 1	Column 2	Column 3	Column 4
Name of Regulated Structure	**Spillway Capacity AEP**	**Design Storage Allowance AEP**	**Mandatory Reporting Level AEP**
Decant Water Dam	10,000 Year ARI	100 year ARI 2 month wet season	100 year ARI 72 hours rainfall duration
Production Water Dam	2,000 Year ARI	100 year ARI 2 month wet season	100 year ARI 72 hours rainfall duration
Environmental Dam	2,000 Year ARI	100 year ARI 2 month wet season	100 year ARI 72 hours rainfall duration

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Tailings Disposal

D37 Upon disposal of tailings into the tailings storage facility, the holder of this environmental authority must inspect the tailings storage facility weekly to identify and register any fauna mortalities. This information will be made available to the administering authority upon request within and forty eight (48) hours of the discovery of any fauna mortalities. Details of mortalities will include but not be limited to:

(a) animal species of the discovery of any fauna mortality;
(b) number of animals;
(c) location; and
(d) likely cause of death.

D38 If in the opinion of the administering authority, the mortality rate referred to in condition D37 is unacceptable, the holder of this environmental authority will be required to develop and implement an action plan to reduce the mortality rate and provide the action plan to the administering authority within one (1) month of the plan being required.

END OF CONDITIONS FOR SCHEDULE D

Schedule E – Waste Management

Waste Management Program

E1 A waste management program must be developed, implemented and maintained for the mining activity at the licensed place. The waste management program must be submitted to the administering authority prior to commencement of mining activities and be included in each subsequent Plan of Operations. The program must include:

(a) a description of the mining activity that may generate waste;

(b) waste management control strategies including;

(i) recording of the types and amounts of wastes generated by the mining activity;

(ii) segregation of the wastes;

(iii) storage of the wastes;

(iv) transport of the wastes; and

(v) monitoring and reporting matters concerning the waste.

(c) the hazard characteristics of the wastes generated including disposal procedures for regulated 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, including a description of the types and amounts of waste that will be dealt with under each of the waste management practices in the waste and resource management hierarchy (i.e. avoidance, reuse, recycling, energy recovery, disposal);

(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 that may impact on waste management;

(h) details of any accredited management system employed, or planned to be employed, to deal with the waste;

(i) how often the performance of the waste management practices will be assessed;

(j) the indicators or other criteria on which the performance of the waste management practices will be assessed; and

(k) staff training and induction to the waste management program.

Waste Disposal

E2 All regulated waste (other than waste authorized in condition E3) must be removed from the licensed place to a facility that is lawfully able to accept the waste.

E3 The only waste that can be disposed of on the licensed place is waste generated on the licensed place and is limited to:

(a) waste rock;

(b) tailings;

(c) tyres; and

(d) general waste.

E4 General waste must only be disposed of into the waste disposal trench facility on ML 90197 and identified in Schedule J - Figure 3 (Waste Disposal Trench Facility).

E5 General waste deposited in the active waste disposal trench must be compacted and covered with a layer of inert material following placement of the waste into the trench.

E6 Litter control methods must be implemented at the waste disposal trench to ensure wind-blown litter is not released from the waste disposal trench.

E7 The waste disposal trench must be constructed and operated to ensure leachate is not generated including a system of diversion drains or embankments to divert stormwater away from any area where contact with wastes or contaminants may occur.

E8 A record of the location of trenches used for waste disposal must be maintained.

E9 Waste must not be burnt.

Regulated Waste

E10 Regulated waste, other than that authorised to be disposed of at the licensed place under this environmental authority, must only be removed and transported from the licensed place by a person who holds a current authority to transport such wastes to a facility that is lawfully able to accept the waste.

E11 Where regulated waste is removed from the licensed place (other than by a release 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; and

(b) records are kept of the following:

(i) the date, quantity and type of waste removed
(ii) name of the regulated waste transporters 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 environmental authority condition.

E12 Regulated waste generated by the mining activity can be temporarily stored at the licensed place prior to removal provided it is for a period no longer than six (6) months and it is stored in a manner to minimise risk of fire or contamination of land or waters.

E13 Each container of regulated waste stored awaiting movement from the licensed place must be clearly marked to identify the contents.

E14 If the holder of this environmental authority becomes aware that a person has removed regulated waste from the licensed place and disposed of the regulated waste in a manner which is not authorised by this environmental authority or improper or unlawful, then the holder of this environmental authority must, as soon as practicable, notify the administering authority of all relevant facts, matters and circumstances known concerning the disposal.

Tyre Storage and Disposal

E15 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 200m^2 in area and at least ten (10) metres from any other tyre storage area.

E16 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.

E17 Subject to demonstrating to the administering authority that no other use higher in the waste management hierarchy can be practicably implemented, waste tyres generated from mining activities may be disposed of on site in non-acid forming waste rock dumps.

Tailings Disposal

E18 Tailings must be managed in accordance with procedures contained within the current Plan of Operations. These procedures must include provisions for:

(a) containment of tailings in accordance with the approved design plan(s);

(b) the management of seepage and leachates both during operation and post closure;

(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 that must include:

(i) progressive characterisation of all tailings material during disposal for net acid producing potential (NAPP) and the following contaminants: lead, phosphorous, fluoride, cadmium, copper and aluminium.

(ii) tailings characterisation must be undertaken at a minimum rate of eight (8) regularly spaced samples per 100,000 tonnes of tailings material discharged. This frequency must be reviewed after a period of one (1) year; and

(iii) geochemical kinetic testing where the acid producing potential of tailings material has not been conclusively determined to indicate oxidation rates, potential reaction products and effectiveness of control strategies.

(e) management of tailings in order to minimise the potential for environmental harm.

Waste Rock

E19 Non acid forming waste rock may be used in rehabilitation or the construction of temporary or permanent structures within the operational areas if it is characterised as un-reactive (including material that does not cause acid, neutral or saline mine drainage).

E20 The holder of this environmental authority must develop, implement and submit to the administering authority a waste rock management plan with the initial plan of operations and update and resubmit the plan with each subsequent plan of operations.

E21 Waste rock disposal must not occur on the licensed place unless the holder of this environmental authority has submitted to the administering authority a waste rock management plan. The waste rock management plan must be certified by an appropriately qualified person, to ensure the plan has addressed the requirements of this environmental authority in accordance with best practice environmental management.

E22 The waste rock management plan must include:

(a) a detailed design of the waste rock dumps;

(b) 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;

(c) a program of 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 phosphorous, fluoride and selenium;

(d) where the acid rock drainage potential / neutral mine drainage potential of waste rock material has not been conclusively determined, geochemical kinetic testing must be conducted to indicate oxidation rates, potential reaction products and effectiveness of control strategies;

(e) records must be maintained of all waste rock characterisation and disposal including contingency planning for the management of acid rock / neutral mine drainage;

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

(g) a materials balance and disposal plan demonstrating how waste rock that has a potential to generate neutral and/or saline mine drainage will be selectively placed and managed to minimise the generation of neutral and/or saline mine drainage;

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

(i) a rehabilitation strategy which meets the rehabilitation objectives specified in Schedule E of this environmental authority; and

(j) monitoring or rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of the placed materials, including the prevention and management of acid mine drainage, erosion minimisation and establishment of vegetation cover.

E23 The waste rock dumps must be designed, constructed and operated to minimise the infiltration of incidental rainfall into the waste rock dump.

E24 Any seepage from the waste rock dump must be captured and directed to an appropriately engineered and maintained storage authorised to receive seepage in accordance with Schedule D – Regulated Structures of this environmental authority.

Waste Rock Drainage Management

E25 Subject to the release limits defined in Schedule G - Water of this environmental authority, all reasonable and practicable measures must be implemented to prevent contaminated water being directly or indirectly released or likely to be released as a result of the mining activity to any waters.

END OF CONDITIONS FOR SCHEDULE E

Schedule F – Noise and Vibration

General

F1 Noise or vibration from the mining activity must not cause environmental harm at any sensitive place or commercial place.

F2 In the event of a complaint made to the administering authority (considered in the opinion of an authorised officer to be neither frivolous or vexatious nor based on mistaken belief) about noise or vibration generated in carrying out the mining activity and the noise or vibration is considered by the administering authority to be unreasonable, the holder of this environmental authority must take action to ensure that it is no longer an unreasonable noise or vibration.

F3 When requested by the administering authority, noise monitoring and recording must be undertaken within a reasonable 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 ten (10) business days to the administering authority following completion of monitoring.

F4 The noise monitoring and recording required in condition F3 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 = 15 mins);

(b) Background noise L_{A90};

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

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

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

(f) Location, date and time of monitoring;

(g) If the complaint concerns low frequency noise, Max $Lp_{LIN,T}$; and

(h) If the complaint concerns low frequency noise, one third octave band measurements in dB(LIN) for centre frequencies in the 10 – 200 Hz range.

F6 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

F7 Vibration from the mining activity must not cause an environmental nuisance, at any sensitive place or commercial place.

F8 When requested by the administering authority, vibration monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive place, and the results must be notified within ten (10) business days to the administering authority following completion of monitoring.

F9 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*.

END OF CONDITIONS FOR SCHEDULE F

Schedule G - Water

General

G1 Contaminants that will, or have the potential to cause environmental harm, must not be released directly or indirectly to any waters except as permitted under the conditions of this environmental authority.

G2 The release of contaminants directly or indirectly to waters must not:

(a) produce any visible discolouration of receiving waters; or

(b) produce any slick or other visible or odorous evidence of oil, grease or petrochemicals nor contain visible floating oil, grease, scum, litter or other objectionable matter.

G3 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.

Machinery maintenance, cleaning and spillages

G4 The maintenance and cleaning of vehicles and any other equipment or plant must not be carried out in areas from which contaminants can be released into any waters, roadside gutter or stormwater drainage system.

G5 Any spillage of wastes, contaminants or other materials with the potential to result in environmental harm must be cleaned up as quickly as practicable to minimise the potential for release to any stormwater drainage system or receiving waters.

Water Quality Sampling & Analysis Protocols

G6 All determinations of water quality/sample analysis required under a condition of this environmental authority must be:

(a) performed by an appropriately qualified person;

(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) collected from the monitoring locations identified within this environmental authority, within two (2) hours of each other where possible;

(d) carried out on representative samples; and

(e) for laboratory determinations, carried out in a laboratory accredited (e.g. NATA) for the method of analysis being used except as otherwise authorised by the administering authority.

G7 The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the administering authority in the specified format when requested:

(a) the date and time when the sample was taken;

(b) the monitoring point where the sample was taken;

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

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

(e) the results of all monitoring and details of any exceedances of the conditions of this environmental authority.

Stream Flow Monitoring

G8 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 G - Table 1 (Stream Flow Monitoring). For the purpose of Schedule G, flow events are determined by data recorded at the relevant gauging stations specified in Schedule G – Table 1 (Stream Flow Monitoring).

Schedule G - Table 1 (Stream Flow Monitoring)

Gauging station name	Gauging Station Location		Flow recording frequency
	Easting (GDA94 – Zone 54)	Northing (GDA94 – Zone 54)	
Battle Creek – above dam (GS1)	299277	7806993	Daily
Battle Creek spillway (GS2)	301840	7811290	Daily
Hilary Creek (GS3)	302038	7816868	Daily

Battle Creek Dam Water Release

G9 Natural inflows to Battle Creek Dam are determined by areally adjusting streamflows measured at gauging station GS1. Natural inflows to Battle Creek Dam are released to maintain storage volume of downstream waterholes. Release of waters from Battle Creek Dam, at release point WRP1, identified in Schedule G - Table 2 (Battle Creek Dam Controlled Discharge Point), and at a flow rate commensurate with inflow measured at GS1, must occur within 24 hours:

(a) for inflows to Battle Creek Dam ≤ 2 ML per day, a water volume equivalent to inflow volume must be released from Battle Creek Dam; and

(b) for inflows to Battle Creek Dam > 2 ML per day, 2 ML per day must be released from Battle Creek Dam.

Schedule G - Table 2 (Battle Creek Dam Controlled Discharge Point)

Release Point	Location		Contaminant Source, Location and Description of Release Point	Receiving Waters Description	Relevant Gauging Station
	Easting (GDA94 – Zone 54)	Northing (GDA94 – Zone 54)			
Battle Creek Dam Controlled Discharge Point (WRP1)	301840	7811290	Battle Creek catchment – Sampling point on pipe, where pipe enters Battle Creek	Battle Creek	GS1

G10 Any failure to meet the downstream release from Battle Creek Dam as specified in conditions G8 and G9, must be notified to the administering authority within 24 hours and the EA holder must give the administering authority a plan to return to compliance at the earliest opportunity.

G11 Mine-affected waters must not be released to Battle Creek Dam or its catchment.

Mine-affected Water Release

G12 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 G - Table 4 (Mine-affected Water Release During Flow Events) for the release point(s) specified in Schedule G - Table 3 (Mine-affected Water Release Points).

G13 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 Schedule G - Table 5 (Water Quality Release Limits for Controlled Releases) when measured at the release point(s) specified in Schedule G - Table 3 (Mine-affected Water Release Points).

Schedule G - Table 3 (Mine-affected Water Release Points)

Release Point	Location		Contaminant Source, Location and Description of Release Point	Receiving Waters Description	Relevant Gauging Station
	Easting (GDA94 – Zone 54)	Northing (GDA94 – Zone 54)			
RP1 (Process Water Dam)	301370	7814120	Site wide mine affected water. Production Water Dam Spillway	Hilary Creek tributary	GS3
RP2 (Decant Water Dam)	302120	7811600	Start-up Tailings Storage Facility. Decant Water Dam Spillway	Battle Creek	GS2 + WRP1

Schedule G - Table 4 (Mine-affected Water Release During Flow Events)

Receiving water description	Release point	Flow event[1]		Maximum release rate for all combined release points (for all combined RP flows)
Battle Creek	RP2	Low flow	• Equates to a ≤ 2 ML per day flow event released from Battle Creek Dam measured at WRP1	• Maximum total release volume is 2 ML per day. • Release may also occur for up to 4 weeks after the natural low flow measured at GS1 event ceases
		Medium flow	• Equates to a 2 ML flow event released from Battle Creek Dam measured at WRP1	• Maximum release rate is 20% of river flow measured at WRP1
		High Flow	• Equates to Battle Creek Dam spillway overflow event	• Maximum release rate is 10% of combined flow measured at WRP1 and GS2
Hilary Creek	RP1	Low flow	• Minimum river flow TBA[1] m^3/s, for a period of four days after flow events that exceed TBA m^3/s measured at GS3.	• Maximum total release is equivalent to minimum river flow. • Release may also occur for up to 4 weeks after the natural low flow measured at GS3 event ceases
		Medium flow	• Minimum river flow TBA[1] m^3/s for a period of four days after flow events that exceed TBA m^3/s measured at GS3.	• Maximum release rate is 20% of river flow measured at GS3
		High Flow	• Minimum river flow TBA[1] m^3/s, for a period of four days after flow events that exceed TBA m^3/s measured at GS3.	• Maximum release rate is 10% of river flow measured at GS3

1. Stream flow rates equating to low, medium and high flow in Hilary Creek to be provided prior to commencement of mining activities.

Schedule G - Table 5 (Water Quality Release Limits for Controlled Releases)

Quality Characteristic[1,2]	Release limit			Source
	Low Flow[7,8]	Medium Flow[7]	High Flow[7]	
Physicochemical				
Dissolved Oxygen (% Sat)	90 - 120	90 - 120	90 - 120	ANZECC & ARMCANZ (2000) (SMD Ecosystems)
pH (pH units)	6 - 8	6 - 8	6 – 8.5	
Electrical Conductivity (µS/cm)	140	700	1400	Calculated local WQO
Total Suspended Solids (mg/L)	180	905	1810	Calculated local WQO
Turbidity (NTU)	230	1140	2280	Calculated local WQO
Hardness as $CaCO_3$ (mg/L)	For interpretation purposes			
Total Alkalinity as $CaCO_3$ (mg/L)	For interpretation purposes			
Nutrients				
Total Phosphorous as P (mg/L)	0.6	3	6	Calculated local WQO
Filterable Reactive Phosphorous as P (mg/L)	0.2	1	2	Calculated local WQO
Total Nitrogen as N (mg/L)	0.9	4.5	9	Calculated local WQO
Oxide of Nitrogen as N (mg/L)	0.19	0.95	1.9	Calculated local WQO
Total Ammonia as N (mg/L)	0.9	0.9	0.9	ANZECC & ARMCANZ (2000) (SMD Ecosystems[3])
Major ions and elements				
Calcium (mg/L)	For interpretation purposes			
Magnesium (mg/L)	For interpretation purposes			
Potassium (mg/L)	For interpretation purposes			
Sodium (mg/L)	For interpretation purposes			
Chloride (mg/L)	For interpretation purposes			
Sulfate (mg/L)	8.8	44	88	Calculated local WQO
Fluoride (mg/L)	2	20	200	ANZECC & ARMCANZ (2000) Livestock
Metals and metalloids				
Aluminium (µg/L)	590	2950	5900	Calculated local WQO
Arsenic[5] (µg/L)	13	65	130	ANZECC & ARMCANZ (2000) (SMD Ecosystems[3])
Boron (µg/L)	370	1850	3700	ANZECC & ARMCANZ (2000) (SMD Ecosystems[3])
Beryllium (µg/L)	0.13	0.65	1.3	ANZECC & ARMCANZ (2000) (SMD Ecosystems[3])
Cadmium (µg/L)	0.2	1	2	ANZECC & ARMCANZ (2000) (SMD Ecosystems[3])
Cobalt (µg/L)	90	450	900	ANZECC & ARMCANZ (2000) (SMD Ecosystems[3])
Chromium[6] (µg/L)	1	5	10	ANZECC & ARMCANZ (2000) (SMD Ecosystems[3])
Copper (µg/L)	10	50	100	Calculated local WQO
Iron (µg/L)	440	2200	4400	Calculated local WQO
Manganese (µg/L)	1900	1900	1900	ANZECC & ARMCANZ

Quality Characteristic[1,2]	Release limit			Source
				(2000) (SMD Ecosystems[3])
Mercury (µg/L)	0.1	0.5	1	Based on LOR[4] for ICP-MS
Molybdenum (µg/L)	34	170	340	ANZECC & ARMCANZ (2000) (SMD Ecosystems[3])
Nickel (µg/L)	11	55	110	ANZECC & ARMCANZ (2000) (SMD Ecosystems[3])
Lead (µg/L)	3.4	17	34	ANZECC & ARMCANZ (2000) (SMD Ecosystems[3])
Selenium (µg/L)	10	50	100	Based on LOR[4] for ICP-MS
Uranium (µg/L)	1	5	10	Based on LOR[4] for ICP-MS
Silver (µg/L)	1	5	10	Based on LOR[4] for ICP-MS
Vanadium (µg/L)	10	50	100	Based on LOR[4] for ICP-MS
Zinc (µg/L)	8	40	80	ANZECC & ARMCANZ (2000) (SMD Ecosystems[3])
Sewage Effluent Water Quality Parameters[9]				
5 Day Biochemical Oxygen Demand (mg/L)	release not authorised	release not authorised	20	
Faecal coliforms (cfu/100 mL)	release not authorised	release not authorised	1000	

Note:

1. All metals and metalloids must be measured as total (unfiltered) and dissolved (filtered). Trigger levels for metal/metalloids apply if dissolved results exceed trigger.
2. The quality characteristics required to be monitored as per Table 5 can be reviewed once the results of two years monitoring data is available, or if sufficient data is available to adequately demonstrate negligible environmental risk.
3. SMD—slightly moderately disturbed level of protection, guideline refers ANZECC & ARMCANZ (2000).
4. LOR—typical reporting for method stated. ICP-MS/CV FIMS—analytical method required to achieve LOR.
5. 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.
6. 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.
7. Low flow, medium flow and high flow as specified in the flow event column of Schedule G - Table 4 (Mine-affected Water Release During Flow Events)
8. The values specified in this column are either the water quality objectives for the receiving waters or default ANZECC & ARMCANZ (2000) slightly to moderately disturbed environments water quality guidelines.
9. Sewage effluent water quality parameters to be measured when an effluent release to waters event occurs in accordance with Condition H11.
10. Sewage effluent release to waters in accordance with Condition H11 is authorised at the time of high flows in Battle Creek or Hilary Creek as defined in the flow event column of Schedule G - Table 4 (Mine-affected Water Release During Flow Events).

Release Monitoring

G14 The daily volume of water released from each release point specified in and Schedule G - Table 3 (Mine-affected Water Release Points) must be measured and recorded.

G15 Where there is a release to waters at the release points specified in Schedule G - Table 3 (Mine-affected Water Release Points), waters must be monitored for each quality characteristic specified in Schedule G - Table 5 (Water Quality Release Limits for Controlled Releases). For any release, waters must be monitored if it is safe to do so:

(a) promptly and within twenty-four (24) hours of the commencement of release;

(b) daily during release for seven (7) days;

(c) weekly thereafter for one (1) month; and

(d) monthly for the remainder of the wet season.

Annual Review of Release Limits

G16 By 1 June each year following commencement of mining activities the holder of this environmental authority must provide the administering authority an update of monitoring data and associated contaminant limits specified in Schedule G of this environmental authority, incorporating monitoring data obtained during the previous twelve (12) months.

Notification of Release Event

G17 The holder of this environmental authority must notify the administering authority of a release event (no later than twelve (12) hours after having commenced releasing water from release points specified in Schedule G - Table 3 (Mine-affected Water Release Points) to the receiving environment. Notification must include the submission of written verification to the administering authority of the following information:

(a) release commencement date/time;

(b) expected release cessation date/time;

(c) release point(s);

(d) release volume;

(e) receiving water(s) including the natural flow rate; and

(f) any details (including available data) regarding likely impacts on the receiving water(s).

G18 The holder of this environmental authority must notify the administering authority within twenty-four (24) hours after cessation of a release as notified under condition G17 and within twenty (20) business days provide the following information in writing:

(a) release cessation date/time;

(b) natural flow volume in receiving water;

(c) volume of water released;

(d) details regarding the compliance of the release with the conditions of Schedule G in this environmental authority (i.e. contaminant limits, natural flows, discharge volume);

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

(f) any other matters pertinent to the release.

Receiving Waters Monitoring

G19 For a release of mine-affected water, the holder of this environmental authority must monitor the quality characteristics of the water relevant to the release in accordance with Schedule G – Table 5 (Water Quality Release Limits for Controlled Releases) at each monitoring point specified in Schedule G - Table 3 (Mine-affected Water Release Points) for the relevant release point.

G20 If quality characteristics of the release exceed any of the release limits specified in Schedule G - Table 5 (Release Limits for Controlled Releases) during a release of mine-affected water (RP1, RP2), the environmental authority holder must compare the downstream results at monitoring points specified in Schedule G - Table 6 (Reference monitoring and downstream monitoring points), to the Water Quality Objectives (Low Flow) specified in Schedule G - Table 5 (Water Quality Release Limits for Controlled Releases) and:

(a) where the Water Quality Objectives (Low Flow) specified in Schedule G - Table 5 (Water Quality Release Limits for Controlled Releases are not exceeded then no action is to be taken; or

(b) where the downstream results exceed the Water Quality Objectives (Low Flow) specified in Schedule G - Table 5 (Water Quality Release Limits for Controlled Releases) for any quality

characteristic, compare the results of the downstream site to the data from background monitoring sites and;

(i) if the downstream result is less than the background monitoring site data, then no action is to be taken;

(ii) if the result is greater than the background monitoring site data, complete an investigation into the potential for environmental harm and provide a written report to the administering authority within 3 months, outlining:
   i. details of the investigations carried out; and
   ii. actions taken to prevent environmental harm.

Schedule G - Table 6 (Reference monitoring and downstream monitoring points)

Monitoring point	Release point	Monitoring point location description	Location	
			Easting (GDA94 – Zone 54)	Northing (GDA94 – Zone 54)
Reference sites				
PS6	RP2	Battle Creek -- 5.3 km upstream of Battle Creek Dam spillway	297703	7809786
GS3	RP1	Hilary Creek – approximately 2.5 km upstream of confluence with Hilary Creek tributary	302038	7816868
Downstream Monitoring Points				
PS6a	RP2	Battle Creek – approximately 0.5 km downstream of RP2	302742	7811669
PS6b	RP1	Hilary Creek or Hilary Creek tributary – 500 m downstream of RP1	303131	7815073

Onsite Water Storages

G21 Water storages stated in Schedule G - Table 7 (Onsite Water Storage Monitoring Locations and Frequency) of this environmental authority must be monitored on a regular basis, but at least quarterly for the water quality characteristics specified in Schedule G - Table 8 (Onsite Water Storage Limits).

G22 In the event that water in storages defined in in Schedule G - Table 7 (Onsite Water Storage Monitoring Locations and Frequency) exceed the contaminant limits defined in Schedule G – Table 8 (Onsite Water Storage Limits), the holder of this environmental authority must implement measures to prevent access to waters by livestock and minimise access by native fauna.

Schedule G - Table 7 (Onsite Water Storage Monitoring Locations and Frequency)

Water Storage Description	Location		Monitoring Location	Frequency of Monitoring
	Easting (GDA94 – Zone 54)	Northing (GDA94 – Zone 54)		
Decant Water Dam	302120	7811600	Spillway	Quarterly
Production Water Dam	301370	7814120		
Environmental Dam	300520	7811870		

Schedule G - Table 8 (Onsite Water Storage Limits)

Quality Characteristic	Test Value	Stock Exclusion Limit[3]
pH (pH unit)	Range	Less than 4, greater than 9[2]
EC (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]
Fluoride (mg/L)	Maximum	2[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.

Water reuse

G23 With the written agreement of the receiving party, mine-affected water may be piped or trucked or transferred by some other means that does not contravene the conditions of this environmental authority and deposited into artificial water storage structures for the purpose of supplying water to Paradise North Mine, D Tree Mine, Lady Annie Mine and Lady Loretta Mine, or used directly at properties owned by the environmental authority holder, or a third party for the purpose of:

(i) supplying stock water, subject to compliance with the quality release limits specified in Schedule G - Table 8 (Onsite Water Storage Limits);
(ii) supplying irrigation water, subject to compliance with quality release limits for irrigation in ANZECC & ARMCANZ (2000); or
(iii) supplying water for construction and/or road maintenance in accordance with the conditions of this environmental authority.

G24 If the responsibility for mine affected water is given or transferred to another person in accordance with conditions G23:

(i) the responsibility for the mine-affected water must only be given or transferred in accordance with a written agreement (the third party agreement); and
(ii) the third party agreement must include a commitment from the person utilising the mine-affected water to use it in such a way as to prevent environmental harm.

Stream Sediment

G25 Sediment quality of receiving waters and reference waters must be monitored twice a year (once at the end of the wet season and once at the end of the dry season) at the monitoring locations defined in Schedule G - Table 6 (Reference monitoring and downstream monitoring points) and identified on Schedule J – Figure 5 (Stream Monitoring Locations) and for the parameters defined in Schedule G – Table 9 (Stream Sediment Trigger Levels and Contaminant Limits).

Schedule G – Table 9 (Stream Sediment Trigger Levels and Contaminant Limits)

Parameter[1]	Trigger Level	Contaminant Limit
Aluminium	Reference[2]	3 times the reference[2]
Antimony	Reference[2]	3 times the reference[2]
Arsenic[5] (mg/kg)	20[3] or reference[2], whichever is higher.	70[4] or 3 times the reference[2], whichever is higher
Barium	Reference[2]	3 times the reference[2]
Cadmium (mg/kg)	1.5[3] or reference[2], whichever is higher.	10[4] or 3 times the reference[2], whichever is higher
Chromium	80[3] or reference[2], whichever is higher.	370[4] or 3 times the reference[2]
Copper (mg/kg)	65[3] or reference[2], whichever is higher.	270[4] or 3 times the reference[2], whichever is higher
Iron	Reference[2]	3 times the reference[2]
Lead (mg/kg)	50[3] or reference[2], whichever is higher.	220[4] or 3 times the reference[2], whichever is higher
Mercury	0.15[3] or reference[2], whichever is higher.	1[4] or 3 times the reference[2]
Manganese	Reference[2]	3 times the reference[2]
Nickel (mg/kg)	21[3] or reference[2], whichever is higher.	52[4] or 3 times the reference[2], whichever is higher.
Selenium	Reference[2]	3 times the reference[2]
Silver (mg/kg)	1[3] or reference[2], whichever is higher.	3.7[4] or 3 times the reference[2], whichever is higher
Zinc (mg/kg)	200[3] or reference[2], whichever is higher.	410[4] or 3 times the reference[2] whichever is higher
Vanadium	Reference[2]	3 times the reference[2]
Calcium (mg/kg)	Reference[2]	3 times the reference[2,3]
Magnesium (mg/kg)	Reference[2]	3 times the reference[2,3]
Particle size distribution	For interpretation purposes	

1. All samples must be sieved to the sand fraction (63 – 2000µm) prior to analysis.
2. Reference sites as specified in Schedule G - Table 6 (Reference monitoring and downstream monitoring points).
3. ANZECC & ARMCANZ (2000) Interim Sediment Quality Guidelines – low values based on total sediments.
4. ANZECC & ARMCANZ (2000) Interim Sediment Quality Guidelines – high values based on total sediments.

5. Speciated arsenic analysis for As (III) and As (V) are only required if the 13 µg/L as As (total species) trigger value is exceeded - note that the sample bottle requirements for As (total species) and As (speciated) may differ.

G26 Releases of contaminants must not result in an exceedance of sediment contaminant limits stated in Schedule G – Table 9 (Stream Sediment Trigger Levels and Contaminant Limits).

G27 If quality characteristics of the sediments exceed any of the trigger levels specified in Schedule G – Table 9 (Stream Sediment Trigger Levels and Contaminant Limits), the holder of this environmental authority must compare the results of the downstream site to the data from reference monitoring sites and:

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

(b) if the level of contaminants at the downstream site is greater than the reference monitoring site data, complete an investigation in accordance with the ANZECC & ARMCANZ (2000) methodology, into the potential for environmental harm and provide a written report to the administering authority within three (3) months, outlining:

(i) details of the investigations carried out;

(ii) details of the environmental impacts observed; and

(iii) actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with clause (b) of this condition, then no further reporting is required for subsequent trigger events for that quality characteristic within the three (3) month investigation period.

G28 All stream sediment sampling must be undertaken in accordance with the most recent version of Australian Standard AS 5667.12 *Guidance on Sampling of Bottom Sediments*.

Receiving Environment Monitoring Program

G29 A Receiving Environment Monitoring Program (REMP) as presented in the Paradise South Environmental Management Plan dated August 2012 must be implemented prior to commencement of mining activities.

G30 The REMP will monitor and record the effects of the release of contaminants on the receiving environment periodically and whilst contaminants are being released from the licensed place. The aim of the REMP is to monitor any changes in the receiving water (including groundwater) and identify water quality indicators that may be indicative of increased risk to local environmental values. A copy of the REMP and any update or variation of the REMP must be provided to the administering authority prior to its implementation.

Note: For the purposes of the REMP, the receiving environment is the waters of Battle Creek, Hilary Creek and connected waterways within 5 kilometres downstream of the mine and the release points specified in Schedule G - Table 3 (Mine-affected Water Release Points).

G31 The REMP must address (but not necessarily be limited to) the following:

(a) description of potentially affected receiving waters including key communities and background water quality characteristics based on accurate and reliable monitoring data that takes into consideration any temporal variation (e.g. seasonality);

(b) description of applicable environmental values and water quality objectives to be achieved (i.e. as scheduled pursuant to the *Environmental Protection (Water) Policy 2009*);

(c) any relevant reports prepared by other governmental or professional research organisations that relate to the receiving environment to which the REMP applies;

(d) water quality and sediment quality targets within the receiving environment to be achieved, and clarification of contaminant concentrations or level indicating adverse environmental impacts during the REMP;

(e) monitoring for any potential adverse environmental impacts caused by a release;

(f) monitoring for any potential adverse environmental impacts caused by direct and indirect release of contaminants from the tailings storage facility to surface waters, including:

  (i) monitoring of surface water quality at potentially impacted locations downstream and/or down gradient of the tailings storage facility;

  (ii) monitoring of stream sediment quality at least twice a year (once at the end of the wet season and once at the end of the dry season) downstream of the tailings storage facility;

  (iii) monitoring of stream flows downstream of the tailings storage facility;

  (iv) determination of an appropriate monitoring frequency for surface waters downstream of the tailings storage facility that provides representative results and allows for early detection of any contaminant releases;

  (v) development of appropriate water quality and stream sediment reference data set which complies with ANZECC & ARMCANZ (2000) methodology;

(g) monitoring to determine site specific stream sediment quality reference data for the parameters specified in Schedule G – Table 9 (Stream Sediment Trigger Levels and Contaminant Limits);

(h) monitoring of stream flow and hydrology;

(i) monitoring of toxicants should consider the indicators specified in Schedule G - Table 5 (Water Quality Release Limits for Controlled Releases) to assess the extent of the compliance of concentrations with Water Quality Objectives and the ANZECC & ARMCANZ (2000) guidelines for slightly to moderately disturbed ecosystems;

(j) monitoring as a minimum the parameters specified in Schedule G - Table 5 (Water Quality Release Limits for Controlled Releases) (in addition to dissolved oxygen saturation and temperature);

(k) monitoring of the impact of the mass load of nutrients in the receiving environment as a result of release from the STP Dam;

(l) monitoring in permanent and semi-permanent water bodies will be conducted for:

  (i) water quality, in accordance with the latest edition of the administering authority's *Monitoring and Sampling Manual;*

  (ii) metals/metalloids in sediments, in accordance with ANZECC & ARMCANZ (2000), *Handbook for Sediment Quality Assessment* (CSIRO, 2005) and/or the most recent version of AS5667.12 *Guidance on Sampling of Bottom Sediments*), and

  (iii) biological indicators in accordance with the latest edition of the administering authority's *Monitoring and Sampling Manual* and for macroinvertebrates, in accordance with the *Queensland Australian River Assessment System (AusRivAS) Sampling and Processing Manual* (DNRM & EA, 2001) ;

(m) monitoring in on-site water storages as per condition G31 (l) (i) and (ii) above;

(n) the locations of monitoring points (including the locations of reference/upstream and downstream potentially impacted sites for each release point). Reference sites must comply with the following criteria:

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

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

  (iii) contain a range of habitats similar to those at the potentially impacted sites;

  (iv) have a similar flow regime; and

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

(o) the frequency or scheduling of sampling and analysis that is sufficient to determine water quality objectives and to derive site specific reference values within two (2) years (depending on wet season flows) in accordance with the *Queensland Water Quality Guidelines.* For ephemeral streams, this should include periods of flow irrespective of mine or other release;

(p) specify sampling and analysis methods and quality assurance and control;

(q) any historical datasets to be relied upon;

(r) description of the statistical basis on which conclusions are drawn, and

(s) any spatial and temporal controls to exclude potential confounding factors.

G32 A report outlining the findings of the REMP, including all monitoring results and interpretations in accordance with condition G31 must be prepared and submitted in writing to the administering authority within one year following the commencement of mining activities, thereafter once every twelve (12) months. The report must include an assessment of baseline water quality, any assimilative capacity in the receiving environment for those contaminants monitored, the suitability of current release limits and recommendation for additional compliance monitoring points to protect downstream environment values.

Water Management Plan

G33 A water management plan must be developed and implemented before prior to commencement of mining activities that provides for the proper and effective management of the actual and potential environmental impacts resulting from the mining activity and to ensure compliance with the conditions of this environmental authority.

G34 The water management plan must be developed in accordance with the most recent edition of the administering authority's guideline *Preparation of Water Management Plans for Mining Activities* and must include at least the following components:

(a) contaminant source study;
(b) site water balance and model;
(c) water management system;
(d) saline drainage prevention and management measures;
(e) acid rock drainage prevention and management measures;
(f) emergency and contingency planning; and
(g) monitoring and review.

G35 The holder of this environmental authority must undertake a review of the water management plan before 1 November each year to ensure that proper and effective measures, practices or procedures are in place so that the mine is operated in accordance with the conditions of this environmental authority and that environmental harm is prevented or minimised.

G36 The water balance and model in Condition G34 must be run for a simulation period for the following:

(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;
(d) with documentation of inputs and outputs from each run being stored and retrievable for a minimum period of one (1) year;
(e) performance in response to rainfall must be undertaken by an appropriately qualified person, and
(f) assessments using the operational simulation water balance model must use a minimum of 100 years of historical rainfall data.

Saline, Acid and Metalliferous Drainage

G37 The holder of this environmental authority must ensure proper and effective measures are taken to avoid or otherwise minimise the generation or release of saline, acid or metalliferous mine drainage as a result of the mining activity.

Erosion and Sediment Control

G38 Prior to commencement of mining activities, an Erosion and Sediment Control Plan must be developed by an appropriately qualified person and implemented for all stages of the mining activity on the licensed place to prevent or minimise erosion and the release of sediment to receiving waters and contamination of storm water.

G39 The erosion and sediment control plan must provide for at least the following functions:

(a) prevent or minimise the contamination of receiving waters and stormwater;

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

(c) contaminated stormwater runoff, incident rainfall and leachate is collected; and 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 waters;

(f) procedures to ensure that erosion and sediment control structures are maintained and adequate storage is available in sediment dams in accordance with design criteria; and

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

Groundwater

G40 Groundwater quality and level must be monitored at the locations and frequencies defined in Schedule G – Table 10 (Groundwater Monitoring Locations) and Schedule J – Figure 6 (Groundwater Bore Monitoring Locations), at the frequency listed in Schedule G – Table 11 Groundwater Monitoring Frequency) for quality characteristics identified in Schedule G – Table 12 (Groundwater Contaminant Trigger Levels) and Schedule G – Table 12 (Groundwater Contaminant Limits).

Schedule G – Table 10 (Groundwater Monitoring Locations)

Monitoring Point	Location		Surface RL
	Easting (GDA94 – Zone 54)	Easting (GDA94 – Zone 54)	(m)
Reference Bores			
LAECU05 (PPL_LAE1)	297376	7809678	TBA[1]
LAE09	299405	7816805	328.3
CH Bore	303864	7812485	TBA[1]
Compliance Bores			
LAE06	299024	7814063	317.9
LAE11	298706	7811389	307.2
LAECU03 (PPL_LAE3)	297895	7810830	TBA[1]
PB2 (PPL_LAE2)	298230	7812158	315.9
PB3	298760	7813357	319.9
TS01	300090	7810695	302.9
TS02	299515	7810715	315.1
MB1[2]	301005	7814605	TBA[1]
MB2[2]	302350	7815730	TBA[1]

Monitoring Point	Location		Surface RL
	Easting (GDA94 – Zone 54)	Easting (GDA94 – Zone 54)	(m)
MB3[2]	302500	7811625	TBA[1]
MB4[2]	302200	7813660	TBA[1]
MB5[2]	302025	7811240	TBA[1]
Seepage Detection Bores (Tailings Storage Facility and Processing Plant)	TBA[1]	TBA[1]	TBA[1]
Seepage Detection Bores (Tailings Storage Facility and Processing Plant)	TBA[1]	TBA[1]	TBA[1]
Seepage Detection Bores (Tailings Storage Facility and Processing Plant)	TBA[1]	TBA[1]	TBA[1]
Seepage Detection Bores (Tailings Storage Facility and Processing Plant)	TBA[1]	TBA[1]	TBA[1]

1. Locations of monitoring bores to be provided prior to commencement of mining activities
2. Bore to be constructed.

Schedule G – Table 11 (Groundwater Monitoring Frequency)

Type of Monitoring	Frequency
Groundwater levels in first two years of operation	Monthly
Groundwater levels from year three of operation onwards	Two Monthly
Water quality	Quarterly
Stygofauna survey (to be reviewed after first two years of operation)	Six Monthly

Schedule G – Table 12 (Groundwater Trigger Levels and Contaminant Limits)

Quality Characteristic[1]	Trigger Level[2]	Contaminant Limit
Water level (mbgl) and RL (m AHD)[3]	For interpretation purposes	
Physicochemical		
pH (pH units)	6.5 – 8.5	
Electrical Conductivity (µS/cm)	140	5970[4]
Hardness as $CaCO_3$ (mg/L)	For interpretation purposes	
Total Alkalinity as $CaCO_3$ (mg/L)	For interpretation purposes	
Nutrients		
Total Phosphorous as P (mg/L)	0.6	
Filterable Reactive Phosphorous as P (mg/L)	0.2	
Total Nitrogen as N (mg/L)	0.9	
Oxide of Nitrogen as N (mg/L)	0.19	
Total Ammonia as N (mg/L)	0.04	0.5[6]
Major ions and elements		
Calcium (mg/L)	For interpretation purposes	
Magnesium (mg/L)	For interpretation purposes	
Potassium (mg/L)	For interpretation purposes	

Sodium (mg/L)	For interpretation purposes	
Chloride (mg/L)	For interpretation purposes	
Sulfate (mg/L)	8.8	500[4]
Fluoride (mg/L)	1.5[4]	1.5[4]
Metals and metalloids		
Aluminium (µg/L)	590	200[6,7]
Arsenic[5] (µg/L)	7[5,8]	10[3,8]
Boron (µg/L)	370	4000[4,7]
Beryllium (µg/L)	0.13	60[4,7]
Cadmium (µg/L)	0.2	2[4,7]
Cobalt (µg/L)	90	1000[4,5]
Chromium[5] (µg/L)	1	50[4] (as Cr(VI))
Copper (µg/L)	10	1000[5,7]
Iron (µg/L)	300[6,7]	300[6,7]
Manganese (µg/L)	500[6,7]	500[6,7]
Mercury (µg/L)	0.1	1[4,7]
Nickel (µg/L)	11	20[4,7]
Lead (µg/L)	3.4	10[4,7]
Selenium (µg/L)	10	10[4,7]
Uranium (µg/L)	1	17[4,7]
Silver (µg/L)	1	100[4,7]
Vanadium (µg/L)	10	100[4,7]
Zinc (µg/L)	8	3000[6,7]

1. All metals and metalloids must be measured as total (unfiltered) and dissolved (filtered). Trigger levels for metal/metalloids apply if dissolved results exceed trigger.
2. Trigger Levels are based on site specific surface water Water Quality Objectives, unless otherwise identified. Where sufficient site specific data is available, the 80th percentile of ground water reference data may be applicable as the Trigger Level. 80th percentile is determined from collection of samples from reference sites as specified in Schedule G – Table 10 (Groundwater Monitoring Locations) and calculated using ANZECC & ARMCANZ (2000) methodology.
3. RL must be measured to the nearest 5cm from the top of the bore casing.
4. Contaminant Limit for protection of human health, based on Australian Drinking Water Guidelines
5. Contaminant Limit for protection of grazing stock drinking water, based on ANZECC & ARMCANZ (2000) livestock water quality guidelines.
6. Contaminant Limit for protection of human health, based on Australian Drinking Water Guidelines (aesthetic characteristics).
7. Guideline refers to total metals.
8. Speciated arsenic analysis for As (III) and As (V) are only required if the 13 µg/L as As (total species) trigger value is exceeded - note that the sample bottle requirements for As (total species) and As (speciated) may differ.

G41 Prior to commencement of mining activities the holder of this environmental authority must prepare and implement a groundwater monitoring program to the administering authority that must include at least the following components:

(a) groundwater monitoring bore locations;

(b) justification for the location of the proposed groundwater monitoring locations, including, but not limited to;

(i) sufficient background/reference monitoring sites, that are unaffected by the mining activity authorised under this environmental authority to allow scientifically justifiable conclusions on the level of impact from the mining activity;

(ii) base flow assessment of all watercourses affected by the mining activity; and

(iii) sufficient number of monitoring bores to enable early detection of any groundwater contamination.

(c) monitoring of both shallow and deep groundwater and includes an adequate number of monitoring bores which provides sufficient spatial coverage to enable scientifically justifiable conclusions in relation to potential environmental impacts from the mining activity;

(d) provision for development of baseline groundwater quality, groundwater flow direction and rate and hydraulic conductivity. In addition, consideration must be given to how these parameters may change during the life of the mining project.

(e) characterisation of the potential impacts to the local groundwater system arising from the mining activity;

(f) representative groundwater samples for the aquifers being sampled;

(g) bore construction details;

(h) findings from any resistivity studies undertaken at the licensed place; and

(i) a Stygofauna Management Plan in accordance with the Stygofauna Management Plan provided in the Paradise South Environmental Management Plan.

G42 The groundwater monitoring program specified in condition G41 must be independently certified by an appropriately qualified person.

G43 The groundwater monitoring plan must be reviewed at least once a year before 1 October to ensure that proper and effective measures, practices or procedures are in place so that the mine is operated in accordance with the conditions of this environmental authority and that environmental harm is prevented or minimised.

G44 The holder of this environmental authority must complete an annual groundwater monitoring report, subsequent to commencement of mining activities. The report should be presented together with the surface water quality REMP report. The report must be prepared by an appropriately qualified person and must address the following requirements as a minimum:

(a) analyses of groundwater chemistry and hydrogeological data for all groundwater monitoring bores required in condition G41;

(b) identify exceedance of any contaminant trigger levels or limits listed in Schedule G – Table 12 (Groundwater Trigger Levels and Contaminant Limits).

(c) discuss effectiveness of the current groundwater monitoring regime and any improvements that could be made to ensure early detection of impacts to groundwater;

(d) detail proposed actions and timeframes to undertake further investigation of potential environmental impacts for any exceedance identified;

(e) detail proposed mitigation measures for any detected impact to groundwater resulting from the mining activity;

(f) changes in groundwater levels plotted as a function of time to identify seasonal patterns and possible draw-down effects;

(g) groundwater elevation contours and flow direction; and

(h) interpretation and discussion of exceedance of any contaminant trigger levels or limits listed in Schedule G – Table 12 (Groundwater Trigger Levels and Contaminant Limits) and the implications for compliance with this environmental authority.

G45 If quality characteristics of groundwater from compliance bores identified in Schedule G – Table 10 (Groundwater Monitoring Locations) exceed any of the trigger levels stated Schedule G – Table 12 (Groundwater Trigger Levels and Contaminant Limits), the holder of this environmental authority must compare the compliance monitoring bore results to the reference bore results and:

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

(b) if the level of contaminants at the compliance monitoring bore is greater than the reference bore results, complete an investigation in accordance with the ANZECC & ARMCANZ (2000), into the potential for environmental harm and provide a written report to the administering authority within three (3) months, outlining:

  (i) details of the investigations carried out;

  (ii) details of environmental impacts observed; and

  (iii) actions taken to prevent environmental harm.

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

G46 Results of monitoring of groundwater from compliance bores identified in Schedule G – Table 10 (Groundwater Monitoring Locations), must not exceed any of the contaminant limits defined in Schedule G – Table 12 (Groundwater Trigger Levels and Contaminant Limits).

Monitoring Bore Construction, Maintenance and Decommissioning

G47 Groundwater monitoring bores must be constructed, maintained and decommissioned in accordance with methods prescribed in the latest edition of the Agriculture and Resource Management Council of Australia and New Zealand manual titled *Minimum Construction Requirements for Water Bores in Australia.*

G48 Oil-based drilling fluids, oil-based additives, synthetic based drilling fluids or synthetic based additives must not be used in the construction of groundwater monitoring bores.

G49 Current Material Safety Data Sheets for all substances used for the drilling of groundwater monitoring bores must be made available to the administering authority promptly upon request.

G50 Remedial measures must be taken immediately if the holder of this environmental authority becomes aware that either monitoring bore construction, maintenance or decommissioning have resulted in a change in groundwater quality, groundwater levels or have caused the interconnection of aquifers.

END OF CONDITIONS FOR SCHEDULE G

Schedule H – Sewage Treatment

Sewage Treatment – Effluent Release to land

H1 Treated sewage effluent may only be released to land within the nominated irrigation area identified in Sewage Treatment Management Plan submitted in the initial Plan of Operations in accordance with the contaminant release limits stated in Schedule H - Table 1 (Sewage Effluent Contaminant land Release Limits) and the conditions of this environmental authority.

H2 All sewage effluent released to land must be monitored at the frequency and for the parameters specified in Schedule H – Table 1 (Sewage Effluent Contaminant Land Release Limits).

Schedule H – Table 1 (Sewage Effluent Contaminant Land Release Limits)

Quality Characteristic	Release Limit	Limit Type	Frequency
5 Day Biochemical Oxygen Demand (mg/l)	20	Maximum	Weekly for continuous irrigation Monthly for batch irrigation
Total Suspended Soilds (mg/l)	30	Maximum	
Nitrogen (mg/l)	30 10 5	Maximum 50th percentile short term 50th percentile long term	
Phosphorus (mg/l)	15 8 5	Maximum 50th percentile short term 50th percentile long term	
pH	6.0 – 8.5	Range	
E. coli (Organisms/100ml)	200	Maximum	Fortnightly
Faecal Coliforms (CFU/100ml)	1000	Maximum	

H3 Treated sewage effluent must only be dispersed in accordance with the following outcomes:

(a) efficient application of effluent utilising best practice methods;

(b) control of sodicity in the soil;

(c) minimal degradation of soil structure;

(d) control of the build up of nutrients and heavy metals in the soil and subsoil from effluent and other sources;

(e) prevention of:

(i) subterranean flows of effluent to waters;

(ii) impacts on the groundwater resource through infiltration;

(i) run-off of effluent or seepage from disposal areas by limitation of application rates and the use of structures such as bunds and catch dams;

(iii) surface ponding;

(iv) spray drift or overspray from effluent disposal areas;

(v) damage to native vegetation;

(f) provide prominent signage, in areas irrigated with effluent and which are accessible to the employees and general public, advising that effluent should not be consumed or used;

(g) maximise health and safety protection in relation to effluent handling and irrigation; and

(h) irrigation areas are adequately identified.

Note: The rate of effluent irrigation will be dependent on the soil water / nutrient capacity and net available annual average solar evaporation and evapotranspiration rates for the region.

H4 Sewage effluent released to land must not cause spray drift or over spray to any sensitive place.

H5 When circumstances prevent the irrigation or beneficial reuse of treated sewage effluent such as during or following rain events, waters must be directed to a wet weather storage (with storage capacity 2 days) or alternative measures must be taken to store or lawfully dispose of effluent.

H6 The daily volume of effluent release to land must be measured and records kept of the volumes of effluent released.

H7 The release of contaminants must not exceed the release limits stated in Schedule H – Table 1 (Sewage Effluent Contaminant Land Release Limits) for each quality characteristic.

Sewage Treatment Management Plan

H8 A Sewage Treatment Management Plan must be developed and submitted to the administering authority in the initial Plan of Operations that provides for the proper and effective management of actual and potential environmental impacts resulting from the operation of sewage treatment plants and to ensure compliance with the conditions of the environmental authority.

H9 The Sewage Treatment Management Plan must include but no be limited to:

(a) topographical map of suitable scale clearly showing the licensed place and surrounding land likely to be affected by the sewage treatment plants along with the location of any sensitive receptors;

(b) a site plan including the Q100 flood level in conjunction with licensed place boundaries and infrastructure, buffer zones and irrigation areas;

(c) determination of the effluent irrigation area which ensures irrigation is carried out in accordance with condition H3;

(d) detail any potential impact on groundwater and surface water from the discharge of effluent;

(e) strategies for managing and minimising the impact on surface water and groundwater;

(f) modelling to determine the irrigation frequency, application rate and minimum irrigation area to minimise environmental harm; and

(g) proposed surface and groundwater monitoring to identify any impacts from the irrigation of treated effluent.

Alarms

H10 Sewage treatment infrastructure must be fitted with stand-by pumps and pump-failure alarms as well as high level alarms to warn of imminent overflow. All alarms must be able to operate via telemetry and without mains power.

Sewage Treatment – Effluent Release to Waters

H11 Where alternative irrigation or storage methods are not feasible due to an extended wet weather event, treated sewage effluent may be released to waters via RP2, in accordance with release limits specified in Schedule G - Table 5 (Water Quality Release Limits for Controlled Releases).

END OF CONDITIONS FOR SCHEDULE H

Schedule I – Definitions

Words and phrases used throughout this environmental authority are defined below. 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.

Word Definitions

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

(a) vegetation establishment, survival and succession;

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

(c) fauna colonisation and habitat development;

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

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

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

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

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

"acid mine drainage (AMD)" means any contaminated release emanating from a mining operation formed through a series of chemical and biological reaction, when geological strata is disturbed and exposed to oxygen and moisture as a result of the mining activity.

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

"administering authority" means the chief executive of the agency administering the *Environmental Protection Act 1994.*

"affected land" means land on which an event has caused or threatens serious or material environmental harm.

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

"ANZECC 2000" means Australian and New Zealand Environment Conservation Council Marine and Freshwater Quality Guidelines.

"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.

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

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

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

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

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

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

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

(b) any land used for those operations.

"environmental authority" means environmental authority under the *Environmental Protection Act 1994*.

"background" means the average of samples taken prior to the commencement of mining from the same waterway that the current sample has been taken.

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

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

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

"bunded" means within bunding consistent with Australian Standard 1940.

"certification", "certifying" or **"certified"** by a suitably qualified and experienced person in relation to a design plan or an annual report regarding dams/structures, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit at any time:

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

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

c) 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

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

"chemical" means:

(a) an agricultural chemical product or veterinary chemical product within the meaning of the *Agricultural and Veterinary Chemicals Code Act 1994* (Commonwealth); or

(b) a dangerous good under the Australian Code for the Transport of Dangerous Goods by Road and Rail approved by the Australian Transport Council; or

(c) a lead hazardous substance within the meaning of the *Workplace Health and Safety Regulation 1997*;

(d) a drug or poison in the Standard for the Uniform Scheduling of Drugs and Poisons prepared by the Australian Health Ministers' Advisory Council and published by the Commonwealth; or

(e) any substance used as, or intended for use as:

  (i) a pesticide, insecticide, fungicide, herbicide, rodenticide, nematocide, miticide, fumigant or related product; or

  (ii) a surface active agent, including, for example, soap or related detergent; or

  (iii) a paint solvent, pigment, dye, printing ink, industrial polish, adhesive, sealant, food additive, bleach, sanitiser, disinfectant, or biocide; or

  (iv) a fertiliser for agricultural, horticultural or garden use; or

  (v) a substance used for, or intended for use for mineral processing or treatment of metal, pulp and paper, textile, timber, water or wastewater; or

  (vi) manufacture of plastic or synthetic rubber.

"climatic season" means summer (1 December to 29 February), autumn (1 March to 31 May), winter (1 June to 31 August) and spring (1 September to 30 November).

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

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

"contaminant" A contaminant can be a gas, liquid or solid; or an odour; or an organism (whether alive or dead), including a virus; or energy, including noise, heat, radioactivity and electromagnetic radiation; or a combination of contaminants

"contaminated" means the substance has come into contact with a contaminant.

"control measure" means any action or activity that can be used to prevent or eliminate a hazard or reduce it to an acceptable level.

"dam" means a land-based structure or a void that contains, diverts or controls flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works. A dam does *not* mean a fabricated or manufactured tank or container, designed and constructed to an Australian Standard that deals with strength and structural integrity of that tank or container.

"dam crest volume" means the volume of material (liquids and/or solids) that could be within the walls of a dam/structure at any time when the upper level of that material is at the crest level of that dam/structure. That is, the instantaneous maximum volume within the walls, without regard to flows entering or leaving (eg via spillway).

"design plan" is 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 planned decommissioning and rehabilitation outcomes; so as to address all hazard scenarios that would be identified by a properly conducted hazard assessment for the structure. Documentation must be such that a 'suitable qualified and experienced person' could conduct an independent review without seeking further information from the designer.

"Design Storage Allowance" or **"DSA"** means an available volume, estimated in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*, that must be provided in a dam/structure as at 1 November each year in order to prevent a discharge from that dam/structure to an annual exceedance probability (AEP) specified in that Manual.

"EC" means electrical conductivity.

"effluent" treated waste water released from sewage treatment plants.

"emergency action plan" means documentation forming part of the operational plan held by the holder of this environmental authority or a nominated responsible officer, that identifies emergency conditions that sets out procedures and actions that will be followed and taken by the dam/structure owner and operating personnel in the event of an emergency. The actions are to minimise the risk and consequences of failure, and ensure timely warning to downstream communities and the implementation of protection measures. The plan must require dam/structure owners to annually update contact details that are part of the plan, and to comprehensively review the plan at least every five years.

"environmentally relevant activity (ERA)" means an environmentally relevant activity as defined under Section 18 of the *Environmental Protection Act 1994* and listed under Schedule 2 of the *Environmental Protection Regulation 2008*.

"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.

"flow event" means a surface water flow in a drainage feature or watercourse that occurs as a result of rainfall.

"hazard" in relation to a dam/structure as defined, means the potential for environmental harm resulting from the collapse or failure of the dam/structure to perform its primary purpose of containing, diverting or controlling flowable substances.

"hazard category" means a category, either low, significant or high, into which a dam/structure is assessed as a result of the application of tables and other criteria in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*.

"hazardous waste" means a substance, whether liquid, solid or gaseous that, if improperly treated, stored, disposed of or otherwise managed, is likely to cause environmental harm.

"holder of this environmental authority" means any person who is the holder of, or is acting under, that environmental authority.

"hydraulic performance" means the capacity of a regulated dam/structure to contain or safely pass flowable substances based on a probability (AEP) of performance failure specified for the relevant hazard category in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*.

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

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

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

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

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

"licensed place" means the mining activities carried out at the mining tenements detailed in Table 3 (page 3) of this environmental authority.

"m" means metres.

"Mandatory Reporting Level" or **"MRL"** means a warning and reporting level determined in accordance with the criteria in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams* published by the administering authority.

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

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

"mg/L" means milligrams per litre.

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

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

(b) foundry sand;

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

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

(e) marble;

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

(g) peat;

(h) salt including brine;

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

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

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

but does not include—

(l) living matter;

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

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

(o) water.

"ML" means megalitres.

"mL" means millilitres.

"modification" or **"modifying"**(see definition of "construction")

"NATA" means National Association of Testing Authorities, Australia.

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

"non polluting" means having no adverse impacts upon the receiving environment.

"noxious" means harmful or injurious to health or physical well being.

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

"operational plan" for a dam/structure means a document that amongst other things sets out procedures and criteria to be used for operating a dam/structure during a particular time period. The operational plan as defined herein may form part of a plan of operations or plan otherwise required in legislation.

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

"process water" means water used or produced during the mineral development activities.

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

"protected area" means – a protected area under the *Nature Conservation Act 1992*; or

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

(b) a World Heritage Area.

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

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

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

"regulated structure" means any regulated dam or levee.

"regulated waste" means non-domestic waste mentioned in schedule 7 of the *Environmental Protection Regulation 1998* (whether or not it has been treated or immobilised), and includes:

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

(b) anything that has contained the waste.

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

"release event" means a surface water discharge from water storages or contaminated areas on the licensed place.

"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 activity.

"RL" means reduced level, relative to mean sea level as distinct from depths to water.

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

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

"sensitive place" means;

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

(b) a motel, hotel or hostel; or

(c) an educational institution; or

(d) a medical centre or hospital; or

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

(f) a public park or gardens.

"significant disturbance" – includes land;

(a) if it is contaminated land; or

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

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

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

Some examples of disturbed land include:

(a) areas where soil has been compacted, removed, covered, exposed or stockpiled;

(b) areas where vegetation has been removed or destroyed to an extent where the land has been made susceptible to erosion; (vegetation and topsoil)

(c) areas where land use suitability or capability has been diminished;

(d) areas within a watercourse, waterway, wetland or lake where the mining activity occur;

(e) areas submerged by tailings or hazardous contaminant storage and dam/structure walls in all cases;

(f) areas under temporary infrastructure. Temporary infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dam/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be removed after the mining activity have ceased; or

(g) areas where land has been contaminated and a suitability statement has not been issued.

However, the following areas are not included:

(a) areas off lease (e.g. roads or tracks which provide access to the mining lease);

(b) areas previously significantly disturbed which have achieved the rehabilitation outcomes;

(c) by agreement with the administering authority, areas previously significantly disturbed which have not achieved the rehabilitation objective(s) due to circumstances beyond the control of the mine operator (such as climatic conditions);

(d) areas under permanent infrastructure. Permanent infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dam/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be left by agreement with the landowner. The agreement to leave permanent infrastructure must be recorded in the Landowner Agreement and lodged with the administering authority;

(e) disturbances that pre-existed the grant of the tenure unless those areas are disturbed during the term of the tenure.

"subsoil", or substrata, is the layer of soil under the topsoil on the surface of the ground. The subsoil may include substances such as sand, silt and/or clay that has only been partially broken down by air, sunlight, water and wind, to produce true soil.

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

"structure" means dam or levee.

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

(a) for regulated dam/structures, an RPEQ who is a civil engineer with the required

  (i) qualifications in dam/structure safety and dam/structure design.

(b) for regulated levees, an RPEQ who is a civil engineer with the required

  (i) qualifications in the design of flood protection embankments.

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

"system design plan" means a plan that manages an integrated containment system that shares the required DSA volume across the integrated containment system.

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

"µS/cm" means micro siemens per centimetre.

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

"waste water" means used water from the mining activity, process water or contaminated storm water.

"watercourse" means a river, creek or stream in which water flows permanently or intermittently in a visibly defined channel (natural, artificial or artificially improved) with:

(a) continuous bed and banks;

(b) an extended period of flow for some months after rain ceases, and

(c) an adequacy of flow that sustains basic ecological processes and maintains biodiversity.

"water quality" means the chemical, physical and biological condition of water.

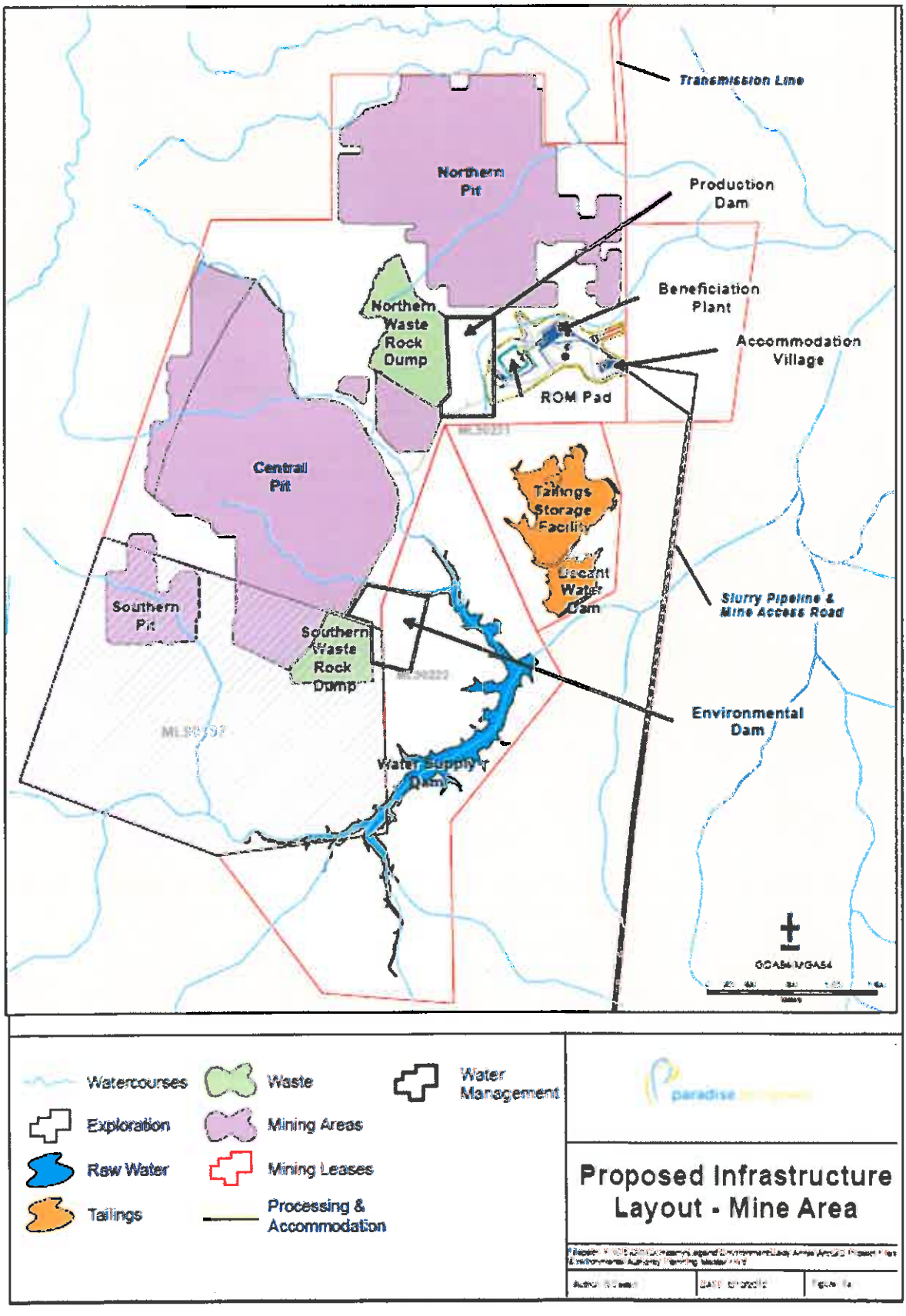
"waters" includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water natural or artificial watercourse, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, and groundwater and any part thereof.

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

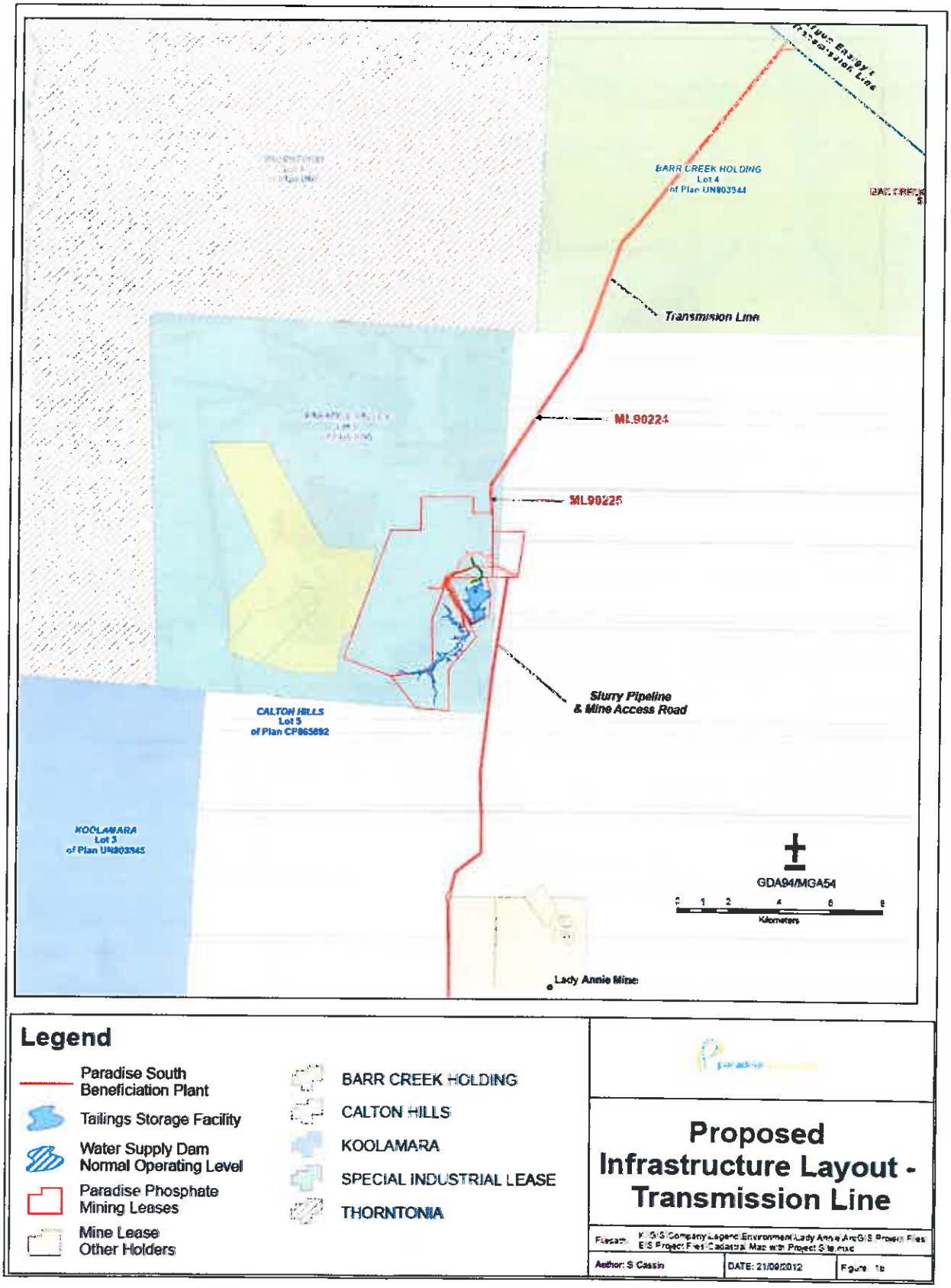
END OF DEFINITIONS FOR SCHEDULE I

Schedule J – Maps and Plans

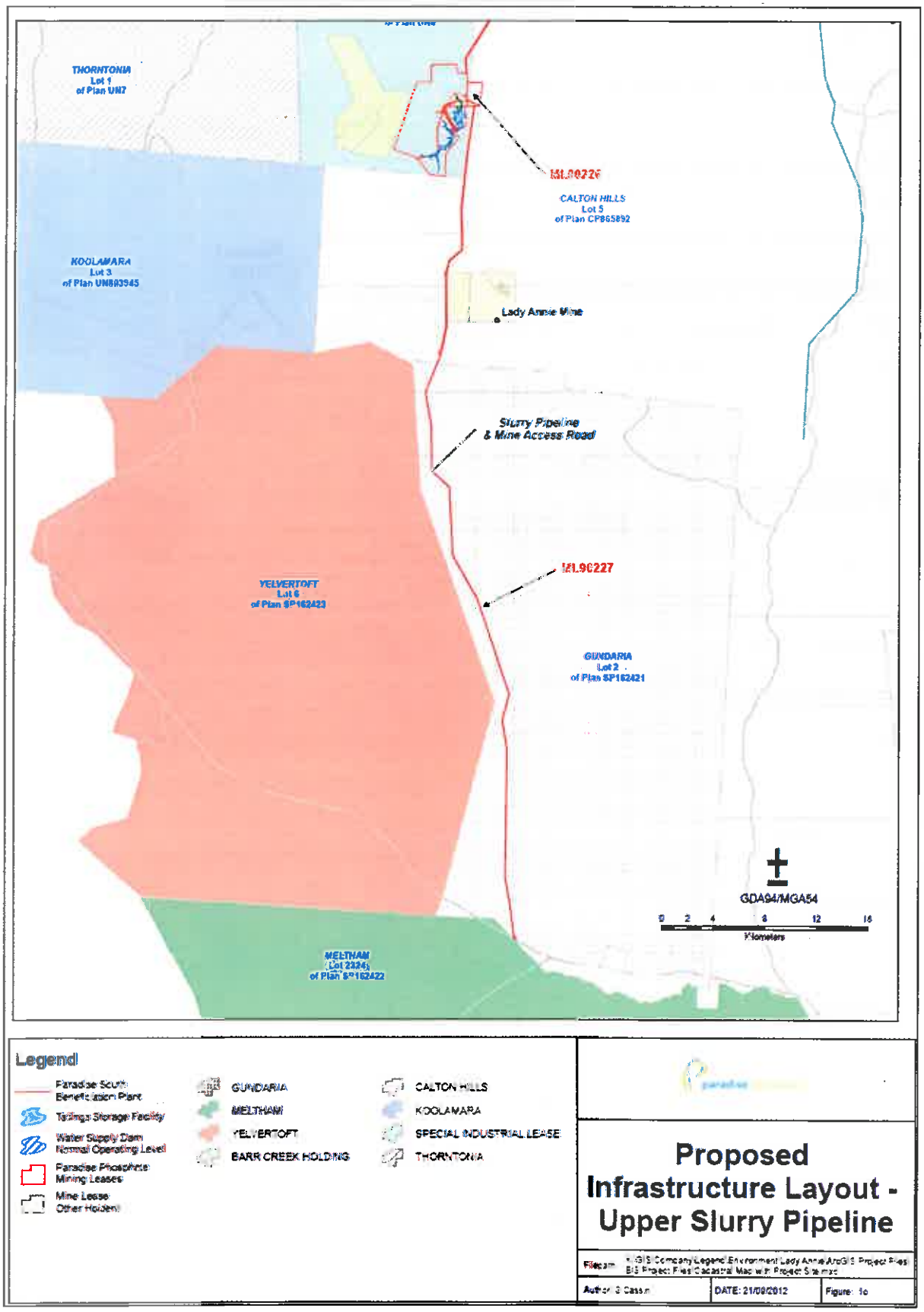
Schedule J – Figure 1a (Project Infrastructure Layout – Mine Area)



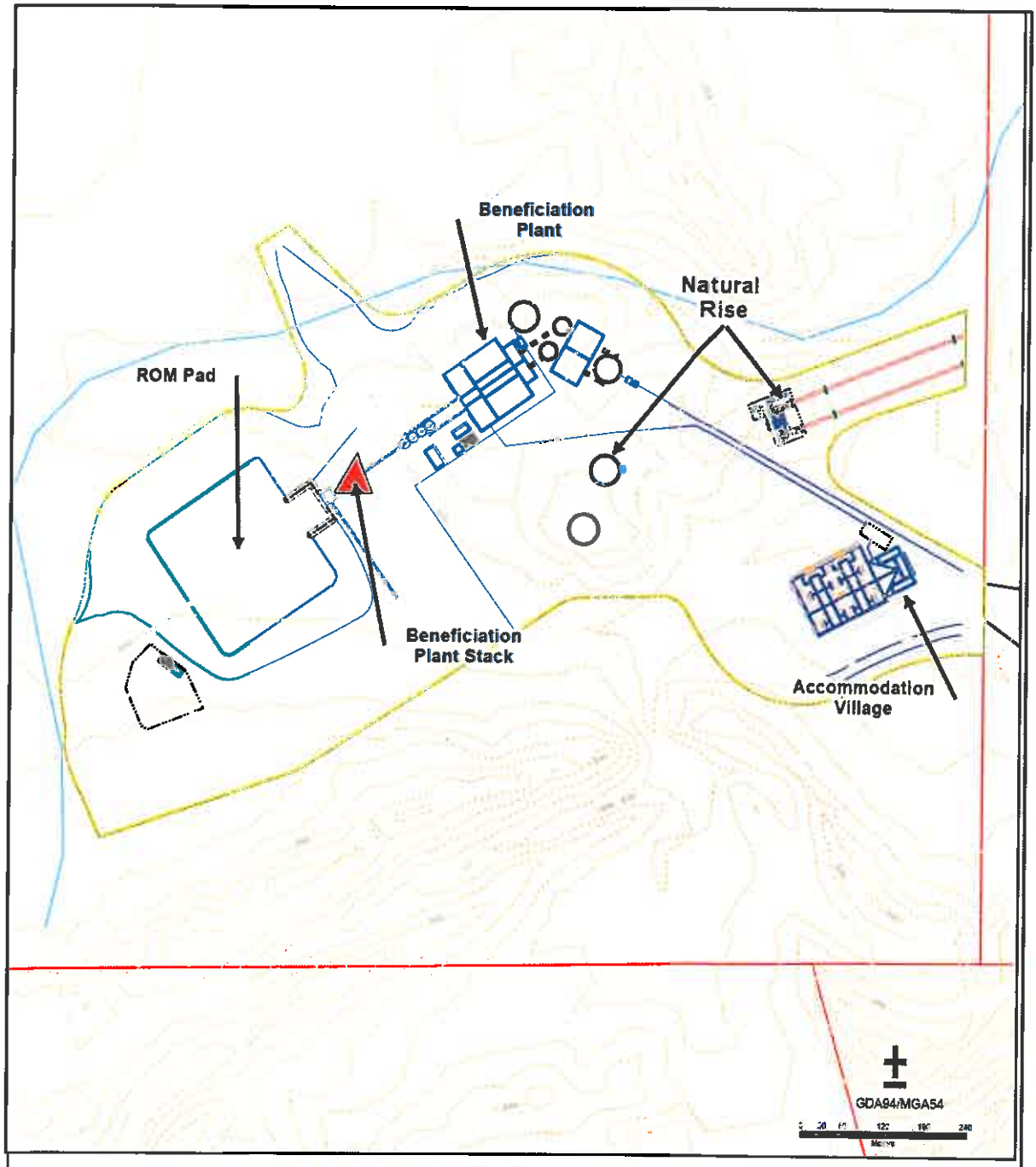
Schedule J – Figure 1b (Project Infrastructure Layout – Transmission Line)



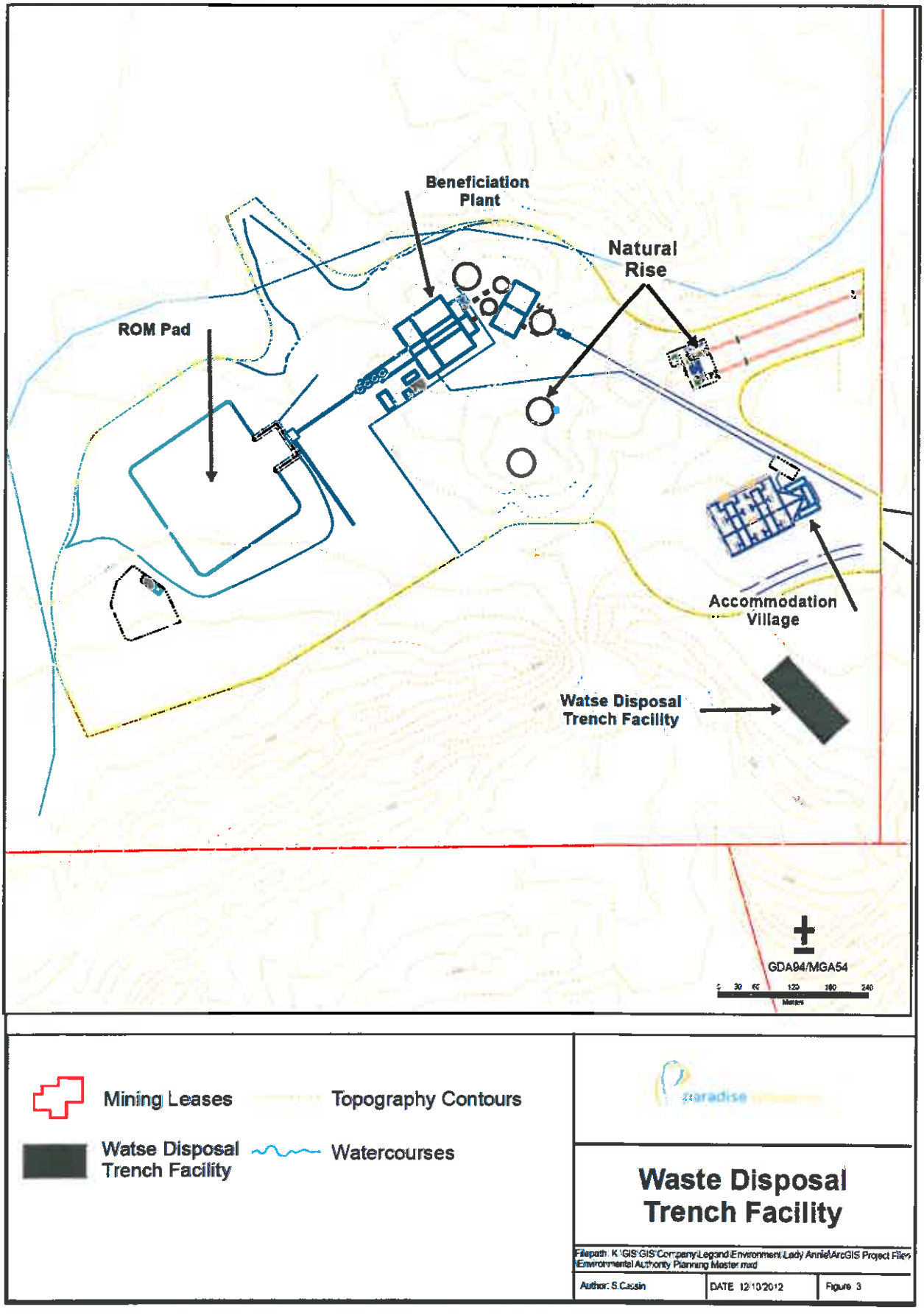
Schedule J – Figure 1c (Project Infrastructure Layout – Upper Slurry Pipeline)



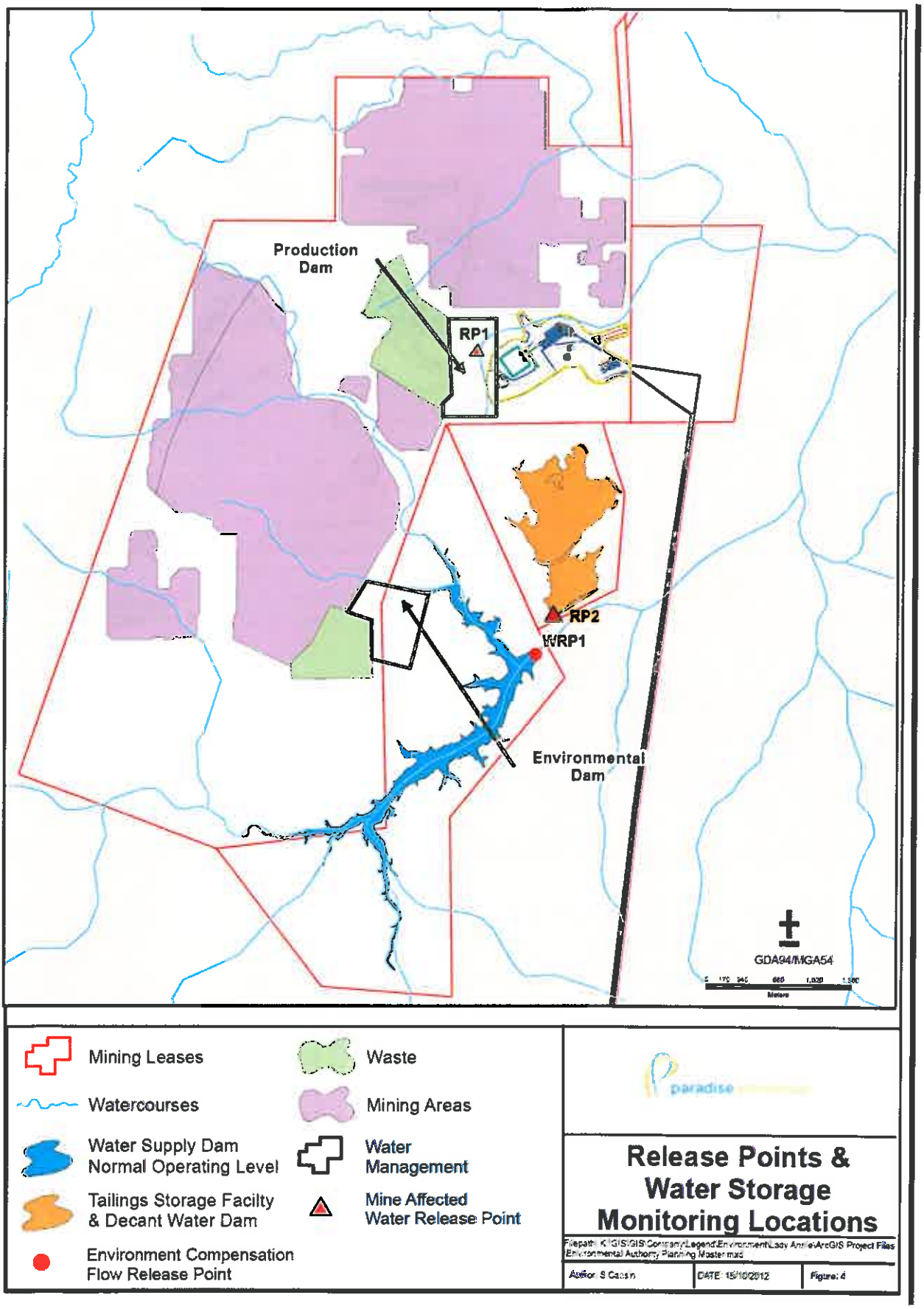
Schedule J – Figure 2 (Authorise Point Source Air Emissions)



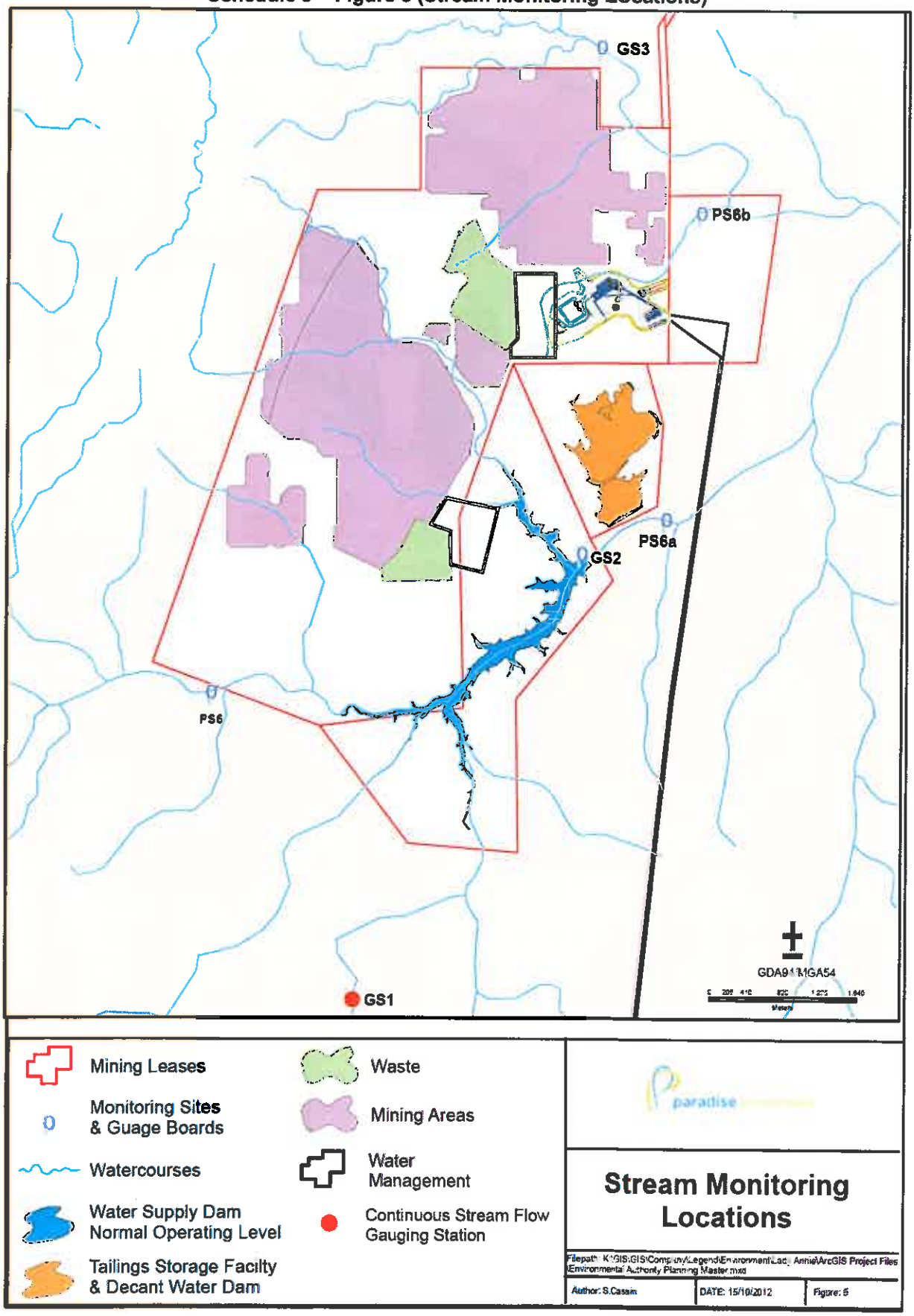
Schedule J – Figure 3 (Waste Disposal Trench Facility)



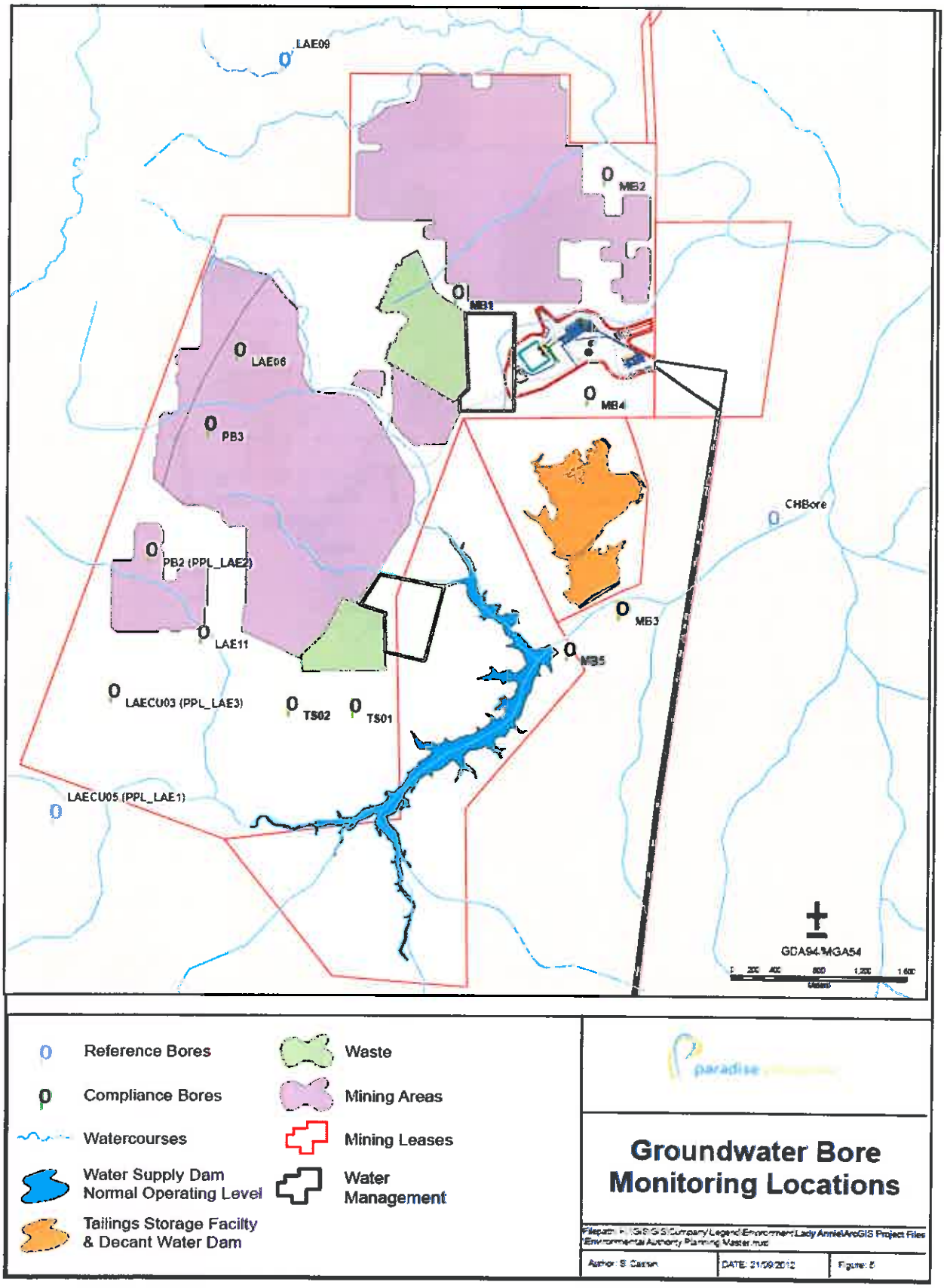
Schedule J – Figure 4 (Release Points and Water Storage Monitoring Locations)



Schedule J – Figure 5 (Stream Monitoring Locations)



Schedule J – Figure 6 (Groundwater Bore Monitoring Locations)



END OF FIGURES FOR SCHEDULE J

END OF ENVIRONMENTAL AUTHORITY