

Permit

Environmental Protection Act 1994

Environmental authority EPML00899813

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

Environmental authority number: EPML00899813

Environmental authority takes effect on 6 May 2022

Environmental authority holder(s)

Name(s)	Registered address
KEMPTON MINERALS PTY LTD	Level 11 50 Market Street MELBOURNE VIC 3000 Australia

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Resource Activity, Schedule 2A, 16: Mining gold ore	ML3409, ML3358, ML3374, ML3540, ML3548, ML3591, ML30192, ML30193, ML30195, ML30196, ML30201, ML30203
Resource Activity, Ancillary 08 - Chemical Storage, 1: Storing a total of 50t or more of chemicals of dangerous goods class 1 or class 2, division 2.3 under subsection (1)(a)	
Resource Activity, Ancillary 08 - Chemical Storage, 3: Storing more than 500 cubic metres of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection (1)(c)	
Resource Activity, Ancillary 31 - Mineral processing, 2: Processing, in a year, the following quantities of mineral products, other than coke, (a) 1000t to 100,000t	
Resource Activity, Ancillary 33 - Crushing, milling, grinding or screening, Crushing, grinding, milling or screening more than 5000t of material in a year	
Resource Activity, Ancillary 56 - Regulated Waste Storage, Receiving and storing regulated waste	

Resource Activity, Ancillary 61 - Waste incineration and thermal treatment, 2: Incinerating or thermally treating, in a year, the following quantity of general waste, (a) less than 5000t	
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Additional information for applicants

Environmentally relevant activities

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

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

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

Contaminated land

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

- (a) the happening of an event involving a hazardous contaminant on the contaminated land (notice must be given within 24 hours); or
- (b) a change in the condition of the contaminated land (notice must be given within 24 hours); or
- (c) a notifiable activity (as defined in Schedule 3) having been carried out, or is being carried out, on the contaminated land (notice must be given within 20 business days)

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

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

Take effect

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

- if the authority is for a prescribed ERA and it states that it takes effect on the day nominated by the holder of the authority in a written notice given to the administering authority – on the nominated day; or
- if the authority states a day or an event for it to take effect – on the stated day or when the stated event happens; or
- otherwise – on the day the authority is issued.

However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the *Planning Act 2016* or an SDA Approval under the *State*

Development and Public Works Organisation Act 1971), this EA will not take effect until the additional authorisation has taken effect.

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

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

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

T Gibbs

Signature

6 May 2022

Date

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

Enquiries:
Mineral Business Centre
PO Box 7230
CAIRNS QLD 4870
Phone: (07) 4222 5334

Obligations under the *Environmental Protection Act 1994*

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

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

Conditions of environmental authority

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 Georgetown Gold Project, dated September 2009. Where there is a discrepancy between the conditions of this environmental authority and the environmental management plan, the conditions of the environmental authority will apply.

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

- Schedule A - General
- Schedule B - Air
- Schedule C - Water
- Schedule D - Noise and Vibration
- Schedule E - Waste
- Schedule F - Land
- Schedule G - Hazardous Dams
- Schedule H - Definitions
- Schedule I - Maps

Location:

Authorised Mining Tenements	Location (Schedule I – Maps)	Title
ML3409	6.5 km SE of Georgetown	Plant Site
ML3540		
ML3591		
ML3548	14 km NNE of Georgetown	Electric Light
ML30203	43 km NNE of Georgetown	Red Dam
ML3374	62.5 km SSE of Georgetown	Jubilee Plunger
ML30192	31.9 km NNW of Georgetown	Philey's
ML30193	32.8 km NNW of Georgetown	Rhyolite
ML30195	22.3 km NNW of Georgetown	Tom's
ML30196	25.9 km NNW of Georgetown	Sir William Alfred
ML30201	34 km NNW of Georgetown	Abe's
ML3358	10.8 km SSW of Georgetown	Try No More
Authorised Third Party Mining Tenements for acceptance of ore only		
ML100030	40km S of Forsayth	Agate Creek

Schedule A – General

Financial Assurance

- (A1-1) The activity must not be carried out until the environmental authority holder has given financial assurance to the administering authority as security for compliance with this environmental authority and any costs or expenses, or likely costs or expenses, mentioned in section 298 of the Act.
- (A1-2) The amount of financial assurance must be reviewed by the holder of this environmental authority when a plan of operations is amended or replaced or the authority is amended.

Maintenance of Measures, Plant and Equipment

- (A2-1) The environmental authority holder must:
- (a) install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority;
 - (b) maintain such measures, plant and equipment in a proper condition; and
 - (c) operate such measures, plant and equipment in a proper manner.
- (A2-2) 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 environmental harm caused by the mining activities.
- (A2-3) All instruments and devices used for the measurement or monitoring of any parameter under any condition of this environmental authority must be calibrated, and appropriately operated and maintained.

Monitoring and Measurements

- (A3-1) Record, compile and keep for a minimum of five years all monitoring results required by this environmental authority and make available these records any time in the form requested by the administering authority.
- (A3-2) Where monitoring is a requirement of this environmental authority, ensure that a competent person(s) conducts all monitoring.
- (A3-3) All analyses and tests required to be conducted under this environmental authority must be carried out by a laboratory that has NATA certification for such analyses and tests, except as otherwise authorised by the administering authority.

Storage and Handling of Flammable and Combustible Liquids

- (A4-1) All explosives, hazardous chemicals, corrosive substances, toxic substances, gases, dangerous goods, flammable and combustible liquids must be stored and handled in accordance with the relevant Australian Standard where such is available.
- (A4-2) Notwithstanding the requirements of any Australian Standard, any liquids stored on site that have the potential to cause environmental harm must be stored in or serviced by an effective containment system that is impervious to the materials stored and managed to prevent the release of liquids to waters or land. Where no relevant Australian Standard is available, the following must be applied:
- (a) storage tanks must be bunded so that the capacity and construction of the bund is sufficient to contain at least 110% of 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) All chemical product drum storages must be bunded so that the capacity of the bund is sufficient to contain at least 100% of the maximum design storage volume within the bund.

(A4-3) All containment systems for chemicals and flammable or combustible liquids must be designed to minimise rainfall collection within the system.

(A4-4) Spillage of any contaminant must be contained and rectified to prevent environmental harm.

Activity

(A5-1) This environmental authority does not authorise environmental harm unless a condition contained within this authority explicitly authorises that harm. Where there is no condition or the environmental authority is silent on a matter, the lack of a condition or silence shall not be construed as authorising harm.

(A5-2) Only oxide material can be extracted and processed.

(A5-3) Ore from the Agate Creek Mine (mining lease 100030) is authorised to be received, stored and processed at the site, provided:

- (a) a geochemical assessment of three (3) ore samples is undertaken every 10,000 tonnes; and
- (b) a risk assessment is undertaken prior to processing, if the characteristics of the ore are substantially different to the characteristics of material authorised for processing under this environmental authority.

(A5-4) The risk assessment undertaken under condition (A5-3), must:

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

(A5-5) Records must be kept of the quantity and tonnage of ore from the Agate Creek Mine (mining lease 100030).

Emergency Response/Contingency

(A6-1) An emergency response/contingency plan must be developed, contained within the current plan of operations and implemented to respond to emergency events and incidents.

(A6-2) The emergency response/contingency plan required under condition A6-1 must address the following matters as a minimum:

- (a) response procedures to be implemented to prevent or minimise the risk of environmental harm arising from incidents;
- (b) response procedures to minimise the extent and duration of environmental harm caused by an incident;
- (c) the practices and procedures to be employed to restore the environment or mitigate any environmental harm caused;
- (d) the resources to be used in response to an incident;
- (e) procedures to investigate the cause of any incidents, including releases, and where necessary, implement remedial actions to reduce the likelihood of recurrence of similar events;
- (f) the provision and availability of documented procedures to staff attending any incident to enable them to effectively respond;
- (g) training of staff that will be called upon to respond to incidents to enable them to effectively respond;

- (h) timely and accurate reporting of the circumstance and nature of incidents to the administering authority in accordance with conditions A7-1 to A7-3;
- (i) procedures for accessing monitoring points during incidents; and
- (j) procedures to notify any person who may be affected by the event within 24 hours, with information to be provided at a minimum:
 - (i) the location of the release;
 - (ii) the date and time of the release;
 - (iii) the estimated quantity and type of any substances (if available concentrations) involved in the incident; and
 - (iv) the potential impacts to environmental values caused by the release.

Notification of Emergencies, Incidents and Exceptions

(A7-1) The authority holder must, as soon as possible (no later than 12 hours) after becoming aware of:

- (a) any emergency or incident which results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with the conditions of this environmental authority; or
- (b) any monitoring result that indicates an exceedance of any environmental authority limit, notify the administering authority of the release by telephone or facsimile.

(A7-2) The notification must include, but not be limited to, the following:

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

(A7-3) Within fourteen (14) days following the initial notification of an emergency or incident, further written advice must be provided to the administering authority, including the following:

- (a) results and interpretation of any samples taken and analysed.
- (b) outcomes of actions taken at the time to prevent or minimise unlawful environmental harm.
- (c) proposed actions to prevent a recurrence of the emergency or incident.

Water Release Events

(A8-1) For any water release event the authority holder must notify the administering authority as soon as possible (no later than 12 hours of having commenced releasing mine affected water to the receiving environment) and provide the following information in writing:

- (a) release commencement date/time;
- (b) expected release cessation date/time;
- (c) release point/s;
- (d) release volume (estimated);
- (e) receiving water/s including the natural flow rate;
- (f) any details (including available data) regarding likely impacts on the receiving water(s); and
- (g) notification of persons who may be affected by the event has occurred/is being undertaken.

Note: Notification to the administering authority must be addressed to the Manager and Project Manager via phone or facsimile.

(A8-2) The authority holder must notify the administering authority as soon as possible (no later within twenty-four (24) hours) of the cessation of a water release and within 28 days provide the following information in writing:

- (a) release cessation date/time;
- (b) the reason for the release;
- (c) the location of the release;
- (d) natural flow volume in receiving water;
- (e) volume of water released;
- (f) all water quality monitoring results;
- (g) any general observations;
- (h) all calculations;
- (i) details regarding the compliance of the release with the conditions of Agency Interest: Water of this environmental authority (i.e. contamination limits, natural flow, discharge volume); and
- (j) any other matters pertinent to the water release event.

Complaints and Community

(A9-1) Records must be kept of all environmental complaints received about the mining activities including the following details:

- (d) name, address and contact number for complainant (if not available record - not identified);
- (e) time and date of complaint;
- (f) reasons for the complaint;
- (g) investigations undertaken;
- (h) conclusions formed;
- (i) actions taken to resolve complaint;
- (j) any abatement measures implemented; and
- (k) person responsible for resolving the complaint.

This information must be made available for inspection by the administering authority on request.

- (A9-2)** When requested by the administering authority, the environmental authority holder must undertake relevant specified monitoring within a period of 4 weeks to investigate any complaint of environmental harm at any sensitive place or commercial place. The results of the investigation (including an analysis and interpretation of the monitoring results) and abatement measures implemented must be provided to the administering authority within fourteen (14) days of completion of the investigation.
- (A9-3)** The holder of this environmental authority must establish, promote and maintain easily accessible lines of communication between residents and land owners to ensure that social impacts are identified and managed.

Cultural Heritage

- (A10-1)** The holder of the environmental authority must develop and implement a Cultural Heritage Management Plan for protection of the scar tree located on the Red Dam mining lease (ML30203) and include it in the plan of operations.
- (A10-2)** In the carrying out of the mining activity the holder of this environmental authority must not adversely impact on the cultural heritage values of any place registered on the Queensland Heritage Register.

Third Party Auditing

- (A11-1)** Compliance with the conditions of this environmental authority must be audited by an appropriately qualified third party auditor, nominated by the environmental authority holder and accepted by the administering authority, within one year of the commencement of the operation, and then at regular intervals not exceeding once every three years.
- (A11-2)** Upon receipt of the third party audit report, the environmental authority holder must submit a copy to the administering authority.
- (A11-3)** The third party auditor must certify the independent findings of the audit in the report.
- (A11-4)** The financial cost of the third party audit is the responsibility of the holder of this environmental authority.
- (A11-5)** The holder of this environmental authority must immediately act upon any recommendations arising from the audit report by:
- (a) investigating any non-compliance issues identified; and
 - (b) as soon as practicable, implementing measures or taking necessary action to ensure compliance with the requirements of this environmental authority.
- (A11-6)** Subject to condition (A11-5), and not more than three (3) months following the submission of the audit report to the administering authority, the holder of this environmental authority must provide a written report to the administering authority addressing the:

- (a) actions taken by the holder to ensure compliance with this environmental authority; and
- (b) actions taken to prevent a recurrence of any non-compliance issues identified.

Risk Management

- (A12-1)** The environmental authority holder must develop and implement a risk management system for mining activities which conforms to the Australian Standard for Risk Management (AS/NZ 4360:2004) or the latest edition of Australian Standard for Risk Management by 31 October 2010.

Transition to New Standards

- (A13-1)** Where a condition requires compliance with a standard published externally to this environmental authority and the standard is amended or changed subsequent to the issues of this environmental authority:
- (a) comply with the amended or changed standard within 2 years, unless a different period is specified in the amended standard or relevant legislation.
 - (b) until compliance with the amended or changed standard can be achieved, continue to remain in compliance with the standard that was current immediately prior to the relevant amendment or change.

Definitions

- (A14-1)** Words and phrases used throughout the environmental authority are defined in Schedule H-Definitions. Where a definition for a term used in the environmental authority is sought and the term is not defined within the environmental authority, the definitions in the *Environmental Protection Act 1994*, its Regulations and Environmental Protection Policies must be used.

Exploration

- (A15-1)** All exploration activities carried out on the mining leases must comply with each of the standard environmental conditions contained in the most recent version of the *Code of Environmental Compliance for exploration and mineral development projects*.

END OF CONDITIONS FOR SCHEDULE A

Schedule B – Air

(B1-1) The release of odour, dust or any other airborne contaminant(s), or light from the mining activity must not cause an environmental nuisance at any sensitive place or commercial place.

Dust Nuisance

(B2-1) When requested by the administering authority, dust and 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 officer) of environmental nuisance at any sensitive place, and the results must be notified within 14 days to the administering authority following completion of monitoring.

(B2-2) 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 (B1-1):

- (a) 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.
- (b) total suspended particulates (TSP) of 130 micrograms per cubic metre expressed as an 24 hour average, when monitored in accordance with any method for measuring TSP recommended in the latest edition of the Environmental Protection Agency's Air Quality Sampling Manual;
- (c) a concentration of particulate matter with an aerodynamic diameter of less than 10 micrometres (PM₁₀) suspended in the atmosphere of 150 micrograms per cubic metre over a 24 hour averaging time, when monitored in accordance with the most recent version of Australian Standard AS 3580.9.6 Determination of suspended particulate matter - PM (sub) 10 high volume sampler with size-selective inlet - Gravimetric method;
- (d) total suspended particulates (TSP) of 200 micrograms per cubic metre expressed as a one hour average, when monitored in accordance with any method for measuring TSP recommended in the latest edition of the administering authority's *Air Quality Sampling Manual*.

(B2-3) If monitoring indicates exceedance of the relevant limits in Condition (B2-2), then the environmental authority holder must:

- (a) address the complaint including the use of appropriate dispute resolution if required; or
- (b) immediately implement dust abatement measures so that emissions of dust from the activity do not result in further environmental nuisance.

(B2-4) Ensure that vehicles (including trains) used for transporting materials to and from the mining tenements, have appropriate load preparation to prevent the spillage and/or loss of particulate matter and/or windblown dust during transport.

Point Source Release of Contaminants to the Atmosphere

(B3-1) Contaminants must not be released to the atmosphere from any diesel powered generator or the gold furnace other than:

- (a) in accordance with the manufacturers specifications; and
- (b) directed vertically upwards, with no impedance.

(B3-2) Combustion efficiency of the one diesel generator used at Electric Light and Red Dam mining leases must comply with the manufacturer's specifications.

END OF CONDITIONS FOR SCHEDULE B

Schedule C – Water

Contaminant Release

- (C1-1) 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.
- (C1-2) The release of contaminants to waters must only occur from the release points specified in Table C1 and depicted in Figure 1 attached to this environmental authority.
- (C1-3) The release of contaminants to waters must not exceed the release limits stated in Table C2 when measured at the release monitoring points specified in Table C1 for each quality characteristic.
- (C1-4) The release of contaminants to waters from the release points must be monitored at the locations and frequency specified in Table C1 for each quality characteristics specified in Table C2.
- (C1-5) If quality characteristics of the release exceed any of the trigger levels specified in Table C2 during a release event, the environmental authority holder 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; and
 - (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 & ARMICANZ 2000 methodology, into the potential for environmental harm and provide a written report to the administering authority within 3 months, outlining:
 - (i) details of the investigations carried out; and
 - (ii) actions taken to prevent environmental harm.
- Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with (C1-5) b (ii) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic within the three month investigation period.*
- (C1-6) If an exceedance in accordance with condition (C1-5) is identified, the holder of the authority must notify the administering authority within 14 days of receiving the result.
- (C1-7) The holder must install, operate and maintain a stream flow gauging station to determine and record stream flows at the locations upstream of each Release Point as specified in Table C3 for any receiving water into which a release occurs.
- (C1-8) Notwithstanding any other condition of this environmental authority, the release of contaminants to waters must only take place during periods of natural flow events specified as minimum flow in Table C3 for the contaminant release point(s) specified in Table C1.
- (C1-9) At the time of release the flow rate in the receiving water must be at least twenty (20) times the rate at which treated waste waters are released.
- (C1-10) The daily quantity of contaminants released from each release point must be measured and recorded at the monitoring points in Table C1.
- (C1-11) Releases to waters must be undertaken so as not to cause erosion of the bed and banks of the receiving waters, or cause a material build-up of sediment in such waters.

Table C1 (Contaminant Release Points, Sources Monitoring Points and Receiving Waters and Monitoring Frequency)

Monitoring Point	Location (GDA94 MGA z54)		Contaminant Source and Location	Receiving Waters Description	Monitoring Frequency
	Easting	Northing			
Release points					
Tailings Dam	764935 764440 764401 764830	7971567 7971543 7971336 7971258	Release from tailings dam.	Ephemeral Unnamed Creek.	Daily during release (the first sample must be taken within two (2) hours of commencement of release).
Receiving Waters - Impacted sites					
PSSW2	762965	7971670	Plant site	Downstream towards the North West.	Upon commencement of release and thereafter weekly during release. Upon commencement of flow of river and weekly thereafter whilst river is flowing.
PSSW3	763776	7971854	Plant site	Flowing north from the process plant.	
PSSW5	765490	7971182	Plant site	Flowing east downstream of the tailings dam.	
PSSW6	764755	7971052	Plant site	Creek draining south east from tailings dam.	
PSSW7	763617	7970971	Plant site	Flowing north towards mining lease.	
PSSW8	765051	7971812	Plant site	Flowing North East from tailings dam.	
PSSW9	765308	7971722	Plant site	Flowing East from tailings dam.	
ELSW2	772273	7988341	Electric light	Downstream of extraction pit.	
RDSW3	787127	8015155	Red Dam	Downstream of extraction pit.	
PSSW4	765069	7971347	Plant site	Flowing east downstream of tailings dam.	
JPSW05	784936	7913590	Jubilee Plunger	Downstream of extraction pit.	

Monitoring Point	Location (GDA94 MGA z54)		Contaminant Source and Location	Receiving Waters Description	Monitoring Frequency
	Easting	Northing			
JPSD1	784315	7914405	Jubilee Plunger	Spillway of ROM sediment dam	
JPSD2	784193	7914135	Jubilee Plunger	Spillway of WRD sediment dam	
Reference sites ¹					
PSSW1-Reference	763113	7971189	Plant Site reference	Upstream of mining activities.	Upon commencement of release and thereafter weekly during release. Upon commencement of flow of river and weekly thereafter whilst river is flowing.
RDSW1-Reference	786261	8015157	Red dam reference	Upstream of mining activities.	
ELSW1-Reference	772080	7988855	Electric light reference	Upstream of mining activities.	
RDSW2-Reference	785965	8014265	Red dam reference	Upstream of mining activities.	
JPSW04-Reference	784205	7913122	Jubilee Plunger reference 1	Upstream of mining activities.	
JPSW09-Reference	784004	7913690	Jubilee Plunger reference 2	Upstream of mining activities.	

- 1 Reference sites must:
- be from the same bio-geographic and climatic region; and
 - have similar geology, soil types and topography; and
 - contain a range of habitats similar to those at the test sites; and
 - have a similar flow regime; and
 - not be so close to the test sites that any disturbance at the test site also results in a change at the reference site

Notes:

- The reference / upstream monitoring point should be within 300m the release point.
- The downstream point should not be greater than 500m from the release point.
- The data from reference monitoring points must not be used where they are affected by releases from other mines.

Table C2 (Contaminant Release and Trigger Limits)

Quality Characteristic	Contaminant Release Limit ⁶ (mg/L unless otherwise specified)	Trigger Levels ⁶ (µg/L unless otherwise specified)
Electrical Conductivity	1000 ² µS/cm	500 ¹ µS/cm
pH (pH Unit)	4.0 ³ (minimum) 9.0 ³ (maximum)	6.0 ⁴ (minimum) 7.5 ⁴ (maximum)
Turbidity (NTU)	Reference value	80 th percentile of reference value
Suspended Solids	50 or reference value, whichever is higher	80 th percentile of reference value
Hardness	For interpretation purposes	
Sulphate (SO ₄ ²⁻)	1000 ³	80 th percentile of reference value
Aluminium	5 ³	55 ⁴
Antimony	Reference value	80 th percentile of reference value
Arsenic	0.5 ³	13 ⁴
Bismuth	Reference value	80 th percentile of reference value
Cadmium	0.01 ³	0.2 ⁴
Cobalt	1 ³	2.8 ⁴
Copper	1 ³	1.4 ⁴
Lead	0.1 ³	3.4 ⁴
Mercury	0.002 ³	0.6 ⁴
Nickel	1 ³	11 ⁴
Selenium	0.02 ³	11 ⁴
Silver	Reference value	0.05 ⁴
Tin	Reference value	3 ⁴
Zinc	20 ³	8 ⁴
Cyanide (Free)	0.5 ⁵	7.0 ⁴
Cyanide (WAD)	For interpretation purposes	

1 Numbers based on table G4 of the Queensland Water Quality Guidelines.

2 Number based on Hart, 2008 Review of the Fitzroy River Water Quality Issues. Water Science Pty Ltd, November 2008

3 Numbers based on ANZECC 2000 Livestock Drinking Water Guidelines.

4 Numbers based on ANZECC 2000 Ecosystems (95%) moderately to slightly disturbed.

5 Number based on Cyanide Management guideline October 2008.

6 All metals and metalloids must be measured as total (unfiltered) and dissolved (filtered). Trigger levels for metal/metalloids apply if dissolved results exceed trigger.

7 The list of quality characteristics required to be monitored as per Table C2 will be reviewed once the results of the monitoring data is gathered, or becomes, available and if its is determined that there is no need to monitor for certain individual quality characteristics these can be removed from Table C2.

8 SMD – slightly moderately disturbed level of protection, guideline refers ANZECC & ARM CANZ (2000).

9 LOR – typical reporting for method stated. ICPMS/CV FIMS – analytical method required to achieve LOR.

Table C3 (Contaminant Release During Flow Events)

Receiving Water Description	Release Point	Gauging Station Description	Location (GDA94 MGA z54)		Minimum Flow in Receiving Water Required for a Release Event	Flow Recording Frequency
			Easting	Northing		
PSSW1-Reference	200m downstream of gauging location.	Located in ephemeral creek upstream of mining operation.	7971189	763113	Depending on individual catchment this minimum flow trigger will be either the release comprising less than 20th /30 th percentiles of the natural flow. The volume of flow can be determined by height of water or flow. The actual flow must be a quantifiable measure. Example: > or = 5 m ³ /sec	Continuous (minimum daily)
RDSW1-Reference	On mining lease.	Located in ephemeral creek upstream of mining operation.	8015157	786261	Depending on individual catchment this minimum flow trigger will be either the release comprising less than 20th /30 th percentiles of the natural flow. The volume of flow can be determined by height of water or flow. The actual flow must be a quantifiable measure. Example: > or = 5 m ³ /sec	Continuous (minimum daily)
ELSW1-Reference	At the base of collection dam.	Located in ephemeral creek upstream of mining operation.	7988855	772080	Depending on individual catchment this minimum flow trigger will be either the release comprising less than 20th /30 th percentiles of the natural flow. The volume of flow can be determined by height of water or flow. The actual flow must be a quantifiable measure. Example: > or = 5 m ³ /sec	Continuous (minimum daily)
RDSW2-Reference	200m south of mining lease boundary.	Located in ephemeral creek upstream of mining operation.	8014617	786865	Depending on individual catchment this minimum flow trigger will be either the release comprising less than 20th /30 th percentiles of the natural flow. The volume of flow can be determined by height of water or flow. The actual flow must be a quantifiable measure. Example: > or = 5 m ³ /sec	Continuous (minimum daily)

Receiving Environment Monitoring and Contaminant Trigger Levels

(C2-1) The quality of the receiving waters must be monitored at the locations and frequency specified in Table C1 for each quality characteristic stated in Table C2.

(C2-2) If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in Table C2 the environmental authority holder must compare the downstream results to the reference results in the receiving waters and:

- (a) if the level of contaminants at the downstream site is the same or a lower value than the reference value for the quality characteristic then no action is to be taken; and
- (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 3 months, outlining:
 - (i) details of the investigations carried out; and
 - (ii) actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with (C2-2)(b)(ii) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic within the three month investigation period.

- (C2-3)** The release of contaminants to waters must not exceed the contaminant release limits stated in Schedule C – Table 2 (Contaminant Release and Trigger Limits) for each quality characteristic.

Stream Sediment Contaminant Levels

- (C3-1)** 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 Table C1 and Schedule I – Map 2 – Surface Water, Groundwater and Sediment Monitoring Sites for the Plant Site (ML3409, ML3540 and ML3591), Map 3 – Surface Water, Groundwater and Sediment Monitoring Sites for Electric Light (ML3548) and Map 4 – Surface Water and Sediment Monitoring Sites for Jubilee Plunger (ML3374) and for the parameters defined in Table C4.
- (C3-2)** If quality characteristics of the release exceed any of the trigger levels specified in Table C4 during a release event, the environmental authority holder 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; and
 - (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 3 months, outlining:
 - (i) details of the investigations carried out; and
 - (ii) actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with (C3-2) b (ii) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic within the three month investigation period.

- (C3-3)** If an exceedance in accordance with condition (C3-2)(b)(ii) is identified, the holder of the authority must notify the administering authority within 14 days of receiving the result.
- (C3-4)** The release of contaminants to water must not result in an exceedance of sediment contaminant limits stated in Table C4 when measured at the monitoring points specified in Table C1 for each quality characteristic.
- (C3-5)** All stream sediment sampling must be undertaken in accordance with AS 5667.12 Guidance on Sampling of Bottom Sediments of 1998.

Table C4 - Stream sediment trigger and contaminant levels

Parameter	Contaminant Limit (mg/kg unless otherwise specified)	Trigger Limit (mg/kg unless otherwise specified)
Antimony	25 ³ or three times the reference value ¹ , whichever is higher	Reference value ¹ or 2 ² , whichever is higher.
Arsenic	70 ³ or three times the reference value ¹ , whichever is higher	Reference value ¹ or 20 ² , whichever is higher.
Bismuth	Three times the reference value ¹	Reference ¹
Cadmium	10 ³ or three times the reference value ² , whichever is higher	Reference value ¹ or 1.5 ³ , whichever is higher.
Cobalt	Three times the reference value ¹	Reference ¹
Copper	270 ³ or three times the reference value ¹ , whichever is higher	Reference ¹ or 65 ² , whichever is higher.
Lead	220 ³ or three times the reference value ¹ , whichever is higher	Reference value ¹ or 50 ² whichever is higher.
Mercury	1 ³ or three times the reference value ¹ , whichever is higher	Reference value ¹ or 0.15 ² whichever is higher.
Nickel	52 ³ or three times the reference value ¹ , whichever is higher.	Reference value ¹ or 21 ² , whichever is higher
Selenium	Three times the reference value ¹	Reference ¹
Tin	Three times the reference value ¹	Reference value ¹
Zinc	410 ³ or three times the reference value ¹ , whichever is higher.	Reference value ¹ or 200 ² , whichever is higher.
Total Cyanide	50 ⁴ or three times the reference value ¹ whichever is higher.	Reference value ¹ or 25 ⁴ whichever is higher.
Particle size distribution on all samples for interpretation purposes		

1 Reference sites are defined in Table 1.

2 ANZECC (2000) Interim Sediment Quality Guidelines – low values based on total sediments.

3 ANZECC (2000) Interim Sediment Quality Guidelines – high values based on total sediments.

4 The 25mg/kg is based on half of GHD, 1993. Guidelines for Assessment and Management of Land Contamination. Dept of Mineral and Energy Draft Technical Guidelines for Environmental Management for Mining in Qld.

5 The 50mg/kg is based on the GHD, 1993. Guidelines for Assessment and Management of Land Contamination. Dept of Mineral and Energy Draft Technical Guidelines for Environmental Management for Mining in Qld.

Receiving Environment Monitoring Program (REMP)

(C4-1) A REMP must be developed and implemented by 20 August 2010 to monitor and record the effects of the release of contaminants on the receiving environment periodically and whilst contaminants are being discharged from the site, with the aims of identifying and describing the extent of any adverse impacts to local environmental values, and monitoring any changes in the receiving water. A copy of the REMP must be provided to the administering authority prior to its implementation and due consideration given to any comments made on the REMP by the administering authority. For the purposes of the REMP, the receiving environment is the waters of the downstream environment and connected waterways within 2km downstream of the release.

(C4-2) The REMP must address (but not necessarily be limited to) the following:

- (a) description of potentially affected receiving waters including key communities and reference water quality and sediment characteristics based on accurate and reliable monitoring data that takes into consideration any temporal variation (e.g. seasonality); and
- (b) description of applicable environmental values and water quality objectives to be achieved (i.e. as scheduled pursuant to the Environmental Protection (Water) Policy); and
- (c) any relevant reports prepared by other governmental or professional research organisations that relate to the receiving environment within which the REMP is proposed; and

- (d) water and sediment quality targets within the receiving environment to be achieved, and clarification of contaminant concentrations or levels indicating adverse environmental impacts during the REMP.
 - (e) monitoring for any potential adverse environmental impacts caused by the release;
 - (f) monitoring of stream flow and hydrology;
 - (g) monitoring of toxicants should consider the indicators specified in Table 3 to assess the extent of the compliance of concentrations with water quality objectives and/or the ANZECC & ARMCANZ 2000 guidelines for slightly to moderately disturbed ecosystems;
 - (h) monitoring of physical chemical parameters as a minimum those specified in Table 2 (in addition to dissolved oxygen saturation and temperature);
 - (i) monitoring biological indicators (for macroinvertebrates in accordance with the administering authorities' monitoring and sampling manual (AusRivas methodology) and metals/metalloids in sediments (in accordance with ANZECC & ARMCANZ 2000, BATLEY and/or the most recent version of AS5667.1 *Guidance on Sampling of Bottom Sediments*) for permanent, semi-permanent water holes and water storages;
 - (j) the locations of monitoring points (including the locations specified in Table 8 which are reference/upstream and downstream impacted sites for each release point);
 - (k) the frequency or scheduling of sampling and analysis sufficient to determine water quality objectives and to derive site specific reference values within 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 discharges;
 - (l) specify sampling and analysis methods and quality assurance and control;
 - (m) any historical datasets to be relied upon;
 - (n) description of the statistical basis on which conclusions are drawn; and
 - (o) any spatial and temporal controls to exclude potential confounding factors.
- (C4-3)** A report outlining the findings of the REMP, including all monitoring results and interpretations in accordance with conditions C4-2 must be prepared and submitted in writing to the administering authority by 1 July 2012. This should include an assessment of reference water quality, any assimilative capacity for those contaminants monitored and the suitability of current discharge limits to protect downstream environment values.

Monitoring of Water Storage Quality

- (C5-1)** Water storages stated in Table C5 must be monitored for the water quality characteristics specified in Table C6 at the monitoring locations and at the monitoring frequency specified in Table C5.
- (C5-2)** In the event that waters storages defined in Table C5 exceed the contaminant limits defined in Table C6, the holder of the environmental authority must implement measures to prevent access to waters by all livestock and minimise access by native fauna.

Table C5 (Water Storage Monitoring)

Water Storage Description	Location (GDA94 MGA z54)		Monitoring Location	Frequency of Monitoring
	Easting	Northing		
Tailings Storage Facility (TSFWS1 to TSFWS4)	764935 764440 764401 764830	7971567 7971543 7971336 7971125	Tailings return pump sampling point.	Quarterly
Red Dam Pit (RDPWS1 to RDPWS4)	786587 786549 786552 785866	8014989 8015020 8015102 8015080	Within the pit.	Quarterly
Electric Light Pit (ELPWS1-ELPWS4)	772219 772417 772370 772164	7988826 7989168 7989195 7988867	Within the pit.	Quarterly
Black Blow Midapa Pit (BBPWS1-BBPWS6)	764911 764974 765028 765027 764971 764917	7971283 7971273 7971300 7971323 7971325 7971313	Within the pit.	Quarterly
Jubilee Plunger Pit	783924 784256 784087 783762	7914635 7914252 7914100 7914544	Within the pit.	Quarterly

Table C6 (Onsite Water Storage Contaminant Limits)

Parameter	Test Value	Contaminant Limit (mg/L unless otherwise specified)
pH (pH unit)	Range	Greater than 5, less than 9 ¹
EC	Maximum	5970 ¹
Aluminium		5 ¹
Antimony		Reference value
Arsenic		0.5 ¹
Bismuth		Reference value
Cadmium		0.01 ¹
Cobalt		1 ¹
Copper		1 ¹
Fluoride		2 ¹
Lead		0.1 ¹
Nickel		1 ¹
Selenium		0.02 ¹
Sulphate		1000 ¹
Zinc		20 ¹
WAD Cyanide		50 ²

¹ Contaminant limit based on ANZECC (2000) stock water quality guidelines.

² Contaminant limit based on the Guideline Cyanide Management May 2008.

Groundwater

(C6-1) Groundwater quality and level must be monitored at the locations and frequencies defined in Table C7 and Schedule I – Maps for parameters identified in Table C8.

- (C6-2)** If quality characteristics of groundwater from compliance bores identified in Table C7 exceed any of the trigger levels stated in Table C8, the environmental authority holder must compare the compliance monitoring bore results to the reference bore results 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; and
 - (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 3 months, outlining:
 - (i) details of the investigations carried out; and
 - (ii) actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with C6-2(b)(ii) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic within the three month investigation period.

- (C6-3)** If an exceedance in accordance with condition C6-2 (b)(ii) is identified, the holder of the authority must notify the administering authority within 14 days of receiving the result.
- (C6-4)** Groundwaters from bores identified in Table C7, must not exceed any of the limits defined in Table C8.
- (C6-5)** Groundwater monitoring bores must be constructed and operated 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*.
- (C6-6)** Annual groundwater monitoring reports analysing groundwater chemistry and hydro-geological status of all groundwater bores and groundwater conditions must be prepared and submitted to the administering authority with each annual return.
- (C6-7)** Groundwater levels must be monitored and ground level fluctuations in excess of 1m per year, not resulting from the pumping of licensed bores the administering authority must be notified within 14 days following completion of monitoring.

Table C7 - Groundwater Monitoring Locations and Frequency

Monitoring Point	Location (GDA94 MGA z54)		Surface RL ¹ (m) or AHD	Monitoring Frequency
	Easting	Northing		
Compliance Bores				
Plant Site Leases				
PSMB1	764148	7971110	326.691	Quarterly
PSMB2	765228	7971273	309.584	
PSMB3	763461	7971672	319.429	
PSMB4	763298	7971539	316.711	
PSMB5	764687	7971667	324.859	
PSMB7	764973	7971528	317.468	
PSMB8	765204	7971521	320.687	
PSMB9	764881	7971197	319.439	
PSMB10	764651	7971201	319.181	
PSMB11	763651	7971551	330.795	
PSMB12	763873	7971394	326.401	
PSMB13	763401	7971468	319.914	
PSMB14	763997	7971467	319.678	
Electric Light				
ELMB1	772455	7989229	324.845	Quarterly
ELMB2	772264	7988601	313.625	
Red Dam				
RDMB1	785974	8015064	301.905	Quarterly
RDMB2	786995	8015060	281.019	
Reference Bores ²				
Plant Site Leases				
PSMB6	764891	7971672	320.127	Quarterly
Electric Light				
ELMB3	772621	7989282	319.982	Quarterly
Red Dam				
RDMB3	786878	8014924	282.621	Quarterly

1 RL must be measured to the nearest 5cm from top of bore casing .

2 Reference sites must:

- (a) be from the same bio-geographic and climatic region; and
- (b) have similar geology, soil types and topography; and
- (c) not be so close to the test sites that any disturbance at the test site also results in a change at the reference site

Table C8 - Groundwater Contaminant and Trigger Limits

Quality Characteristic	Contaminant Release Limit ⁶ (mg/L unless otherwise specified)	Trigger Levels ⁶ (µg/L unless otherwise specified)
Electrical Conductivity	1000 ² (µS/cm)	500 ¹ (µS/cm)
pH (pH Unit)	4.0 ³ (minimum) 9.0 ³ (maximum)	6.0 ⁴ (minimum) 7.5 ⁴ (maximum)
Level and chloride	For interpretation purposes	
Sulphate (SO ₄ ²⁻)	1000 ³	80 th percentile of the reference
Aluminium	5 ³	55 ⁴
Antimony	Reference value	80 th percentile of reference value
Arsenic	0.5 ³	13 ⁴
Bismuth	Reference value	80 th percentile of reference value
Cadmium	0.01 ³	0.2 ⁴
Cobalt	1 ³	2.8 ⁴
Copper	1 ³	1.4 ⁴
Lead	0.1 ³	3.4 ⁴
Mercury	0.002 ³	0.6 ⁴
Nickel	1 ³	11 ⁴
Selenium	0.02 ³	11 ⁴
Silver	Reference value	0.05 ⁴
Tin	Reference value	3 ⁴
Zinc	20 ³	8 ⁴
Cyanide (Free)	0.5 ⁵	7.0 ⁴
Cyanide (WAD)	For interpretation purposes	

1 Numbers based on table G.4 of the Queensland Water Quality Guidelines.

2 Number based on Hart, 2008 Review of the Fitzroy River Water Quality Issues. Water Science Pty Ltd, November 2008.

3 Numbers based on ANZECC 2000 Livestock Drinking Water Guidelines.

4 Numbers based on ANZECC 2000 Ecosystems (95%) moderately to slightly disturbed.

5 Number based on Cyanide Management guideline May 2008.

6 All metals and metalloids must be measured as total (unfiltered) and dissolved (filtered). Trigger levels for metal/metalloids apply if dissolved results exceed trigger.

7 The list of quality characteristics required to be monitored as per Table C2 will be reviewed once the results of the monitoring data is gathered, or becomes, available and if it is determined that there is no need to monitor for certain individual quality characteristics these can be removed from Table C2.

8 SMD – slightly moderately disturbed level of protection, guideline refers ANZECC & ARMCANZ (2000).

Water General

(C7-1) All determinations of water quality must be:

- (a) performed by a person or body possessing appropriate experience and qualifications to perform the required measurements;
- (b) made in accordance with methods prescribed in the latest edition of the administering authority's *monitoring and sampling manual*;
- (c) collected from the monitoring locations identified within this environmental authority, within 2 hours of each other (reference/downstream) where possible; and
- (d) carried out on representative samples.
- (e) laboratory testing must be undertaken using a laboratory accredited (e.g. NATA) for the method of analysis being used.

Water Monitoring Reporting

- (C8-1)** The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the administering authority in the specified format when requested:
- (a) the date on which the sample was taken;
 - (b) the time at which the sample was taken;
 - (c) the monitoring point at which the sample was taken;
 - (d) the measured or estimated daily quantity of the contaminants released from all release points;
 - (e) the release flow rate at the time of sampling for each release point;
 - (f) the results of all monitoring and details of any exceedences with the conditions of this environmental authority; and
 - (g) water quality monitoring data must be provided to the administering authority in the specified electronic format upon request.
- (C8-2)** The release of contaminants directly or indirectly to waters:
- (a) must not produce any visible discolouration of receiving waters; or
 - (b) must not produce any slick or other visible or odorous evidence of oil, grease or petrochemicals nor contain visible floating oil, grease, scum, litter or other objectionable matter.

Water Management Plan

- (C9-1)** A Water Management Plan must be developed and implemented by 1 September 2010 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.
- (C9-2)** The Water Management Plan must be developed in accordance with administering authority *Guideline for Preparing a Water Management Plan 2009* or any updates that become available from time to time and must include at least the following components:
- (a) contaminant source study;
 - (b) site water balance and model;
 - (c) water management system;
 - (d) saline and metalliferous drainage prevention and management measures;
 - (e) acid rock drainage prevention and management measures (if applicable);
 - (f) emergency and contingency planning; and
 - (g) monitoring and review.
- (C9-3)** Each year the holder of the environmental authority must undertake a review of the Water Management Plan prior to the wet season (and no later than 1 November) and a further review following the wet season (i.e. by 1 May the following 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.
- (C9-4)** A copy of the Water Management Plan and/or a review of the Water Management Plan must be provided to the administering authority on request.

Saline, Acid Rock and Metalliferous Drainage

- (C10-1)** The holder of this environmental authority must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of saline, acid rock and/or metalliferous drainage.

Stormwater, Sediment and Erosion Controls

- (C11-1)** An Erosion and Sediment Control Plan must be developed by an appropriately qualified person and implemented for all stages of the mining activities on the site to prevent or minimise erosion and the release of sediment to receiving waters and the contamination of storm water.
- (C11-2)** The Erosion and Sediment Control Plan must be included in the plan of operations, and provides for at least the following storm water management functions:
- (a) prevent or minimise the contamination of stormwater;
 - (b) diverting uncontaminated stormwater run-off around areas disturbed by mining activities or where contaminants or wastes are stored or handled;
 - (c) contaminated stormwater runoff, 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) using alternate materials and or processes (such as dry absorbents) to clean up spills that will minimise the generation of contaminated waters;
 - (f) erosion and sediment control structures are placed to minimise erosion of disturbed areas and prevent the contamination of any waters;
 - (g) 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
 - (h) training of staff that will be responsible for maintenance and operations of sediment and erosion control structures.
- (C11-3)** Erosion protection measures and sediment control measures must be implemented and maintained to minimise erosion and the release of sediment and contamination of storm water.
- (C11-4)** The maintenance and cleaning of any vehicles, plant or equipment must not be carried out in areas from which contaminants can be released into any receiving waters.
- (C11-5)** Any spillage of wastes, contaminants or other materials must be cleaned up as quickly as practicable to minimise the release of wastes, contaminants or materials to any stormwater drainage system or receiving waters.

Sewage Treatment

- (C12-1)** Any release from the sewage treatment system must not result in environmental harm.

END OF CONDITIONS FOR SCHEDULE C

Schedule D – Noise and Vibration

Noise

- (D1-1)** Ensure that noise generated by the mining activities does not cause the criteria in Table D1 – Noise limits to be exceeded.
- (D1-2)** When requested by the administering authority, noise monitoring and recording must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint of environmental nuisance at any sensitive place or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring.
- (D1-3)** Noise monitoring and recording must include the following descriptor characteristics and matters:
- (a) LAN,T (where N equals the statistical levels of 1, 10 and 90 percentiles and T = 15 mins);
 - (b) background noise LA90,T;
 - (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 LpLIN,T;
 - (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; and
- (D1-4)** The method of measurement and reporting of noise levels must comply with the latest edition of the administering authority's *Noise Measurement Manual* or the most recent version of AS1055 Acoustics – description and measurement of environmental noise.

Table D1 Noise Limits

Noise Level dB(A) measured as:	Sensitive Place					
	Monday to Saturday			Sundays and Public Holidays		
	7am to 6pm	6pm to 10pm	10pm to 7am	9am to 6pm	6pm to 10pm	10pm to 9am
L _{A10} , adj, 10 mins	BG+5	BG+5	BG+3	BG+5	BG+5	BG+0
L _{A1} , adj, 10 mins	BG+10	BG+10	BG+5	BG+10	BG+10	BG+5

Air Blast and Ground Vibration

- (D2-1)** Ensure that blasting does not cause the limits for peak particle velocity and air blast overpressure in Table D2 – Blasting noise limits to be exceeded.

Table D2 Air Blast Overpressure Level Blasting Noise Limits

Blasting Noise Limits	Sensitive or Commercial Place
Airblast overpressure level	115 dB (Linear) Peak for nine (9) out of ten (10) consecutive blasts initiated and not greater than 120 dB (Linear) Peak at any time
Ground vibration peak particle velocity	5mm/second peak particle velocity for nine (9) out of ten (10) consecutive blasts and not greater than 10 mm/second peak particle velocity at any time
Low frequency noise	At or below 200 Hz measured on the linear weighting scale indoor sound pressure level of 50 dB (Linear), or an outdoor sound pressure level of 55 dB (Linear)

- (D2-2) The ground vibration transducer (or array) must be attached to a buried block so as to ensure good coupling with the ground. The mass shall be buried so that its upper most surface is at the same level as the ground surface.
- (D2-3) The ground vibration transducer (or array) must be placed at the same point at which the air blast is monitored.
- (D2-4) When requested by the administering authority, air blast and vibration monitoring and recording must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint of environmental nuisance at any sensitive place or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring.
- (D2-5) The method of measurement and reporting of vibration levels must comply with the latest edition of the administering authority's *Noise and vibration from blasting guideline*.

END OF CONDITIONS FOR SCHEDULE D

Schedule E – Waste

Fire Prevention

(E1-1) The holder of this environmental authority must not:

- (a) burn waste or allow waste to be burnt at the licensed place covered by this environmental authority other than cyanide transport and handling package material; or
- (b) remove waste from the licensed place covered by this environmental authority and burn such waste elsewhere except in accordance with the requirements of the *Environmental Protection Act 1994*.

(E1-2) Tyres stored awaiting disposal or transport for take-back and recycling or waste-to-energy options must be stockpiled in stable stacks in volumes less than 500 equivalent passenger-tyre units (EPU), less than 3m in height and 200 sq m in area and at least 10m from any other tyre storage area or combustible or flammable material, including vegetation.

(E1-3) All reasonable and practicable fire prevention measures must be implemented, including removal of grass and other materials within a 10m radius of any tyre storage area.

Off Site Movement of Regulated Wastes

(E2-1) 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 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 transporter that removed the waste; and
 - (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.

(E2-2) Regulated waste awaiting removal may be temporarily stored on site.

(E2-3) Each container of regulated waste stored awaiting movement off-site must be clearly marked to identify the contents.

Notification of Improper Disposal of Regulated Waste

(E3-1) 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.

(E3-2) Regulated waste generated by maintenance of plant and equipment and absorbent materials used to clean up spills must only be disposed off at a facility whose operator is permitted to accept such waste in accordance with the requirements of the *Environmental Protection Act 1994*.

Other Wastes

- (E4-1) The only wastes that may be disposed of on site are those authorised under this environmental authority.

General Waste Disposal

- (E5-1) All waste (other than mined waste rock and tailings or their derivatives) produced as part of the mining operation must be transported to the Georgetown licensed waste disposal facility and disposed of correctly at a minimum on a weekly basis.
- (E5-2) The environmental authority holder shall not cause, allow or permit any waste generated outside the mine to be received at the mine for storage, treatment, processing or disposal.

Tailings Management

- (E6-1) Construction of the tailings storage facility must be in accordance with the following:
- (a) the design criteria set out under Schedule G and Water Management Plan of the tailings dam; and
 - (b) all investigation and exploration drill holes in the area of the tailings storage facility must be backfilled with concrete to the total depth of the hole.
- (E6-2) The reclamation of tailings from the tailings storage facility for processing on site must be:
- (a) located in the area identified in Schedule I - Map 9 (Dry Stack Tailings Project Layout); and
 - (b) not exceed an area of 18 hectares.
- (E6-3) Tailings disposal must be in accordance with the following:
- (a) all tailings material must be progressively characterised during disposal for net acid producing potential (NAPP) and the following contaminants: arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, nickel, tin, zinc and fluoride;
 - (b) tailings characterisation must be undertaken at a minimum rate of 8 regularly spaced samples per 100,000 tonnes of tailings material discharged;
 - (c) records must be kept of the tailings disposal to indicate locations and characteristics of tailings stored within the tailings storage facility;
 - (d) where the net acid producing potential of tailings material has not been conclusively determined geochemical kinetic testing must be conducted to indicate oxidation rates, potential reaction products and effectiveness of control strategies; and
 - (e) maximum duration of surface exposure of potentially acid producing tailings to oxidising conditions is one (1) month.
- (E6-4) The tailings dam liquor must be sampled for total and WAD cyanide fortnightly.
- (E6-5) WAD cyanide concentrations in the tailings surface liquor must not exceed 50mg/l.
- (E6-6) The environmental authority holder must immediately commence cyanide destruction if total cyanide concentrations in the tailings surface liquor exceed 10mg/l.
- (E6-7) A cyanide balance must be prepared and updated monthly to ensure that cyanide treatment and recovery is maximised.

Waste Rock Management

- (E7-1) The holder of the environmental authority must develop and include in the plan of operations a waste rock management plan, together with the certification of an appropriately qualified person that the plan

is compliant with the conditions in this environmental authority and in accordance with best practice environmental management. The waste rock management plan must incorporate the following items;

- (a) effective characterisation of the waste rock and spoil to predict under the proposed placement and disposal strategy the quality of runoff and seepage generated concerning potentially environmentally significant effects including salinity, acidity, seepage, leachate, alkalinity and dissolved metals, metalloids and non-metallic inorganic substances;
- (b) a program of progressive sampling and characterisation to identify dispersive and non-dispersive spoil and the salinity, acid and alkali producing potential and metal concentrations of waste rock;
- (c) 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 potential generation of acid mine drainage;
- (d) where relevant, a sampling program to verify encapsulation and/or placement of potentially acid forming and acid forming waste rock;
- (e) how often the performance of the plan will be assessed;
- (f) the indicators or other criteria on which the performance of the plan will be assessed;
- (g) a rehabilitation strategy that must be in accordance with the administering authority's *Guideline for Rehabilitation Requirements for Mining Projects* to ensure waste rock dumps are safe, non polluting, self sustaining and geotechnical and geochemical stable; and
- (h) 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.

(E7-2) Research undertaken in accordance with condition number (E7-1) must be finalised at least 36 months prior to mine closure.

Waste Rock

(E8-1) Waste rock dumps must be constructed to prevent any water other than incidental rainfall from entering the waste rock dump.

(E8-2) Any seepage from waste rock dumps on ML3409, ML3540, ML3591, ML3548 and ML30203 must be effectively intercepted and treated at the licensed place.

(E8-3) All seepage from waste rock dumps located on ML3374 must be captured and discharged to the open pit.

(E8-4) No ore or waste rock characterised as having acid forming potential can be mined or disposed of as part of the mining activity.

END OF CONDITIONS FOR SCHEDULE E

Schedule F – Land

Rehabilitation Landform Criteria

(F1-1) All areas significantly disturbed by mining activities must be rehabilitated to a stable landform with a self-sustaining vegetation cover in accordance with Schedule F – Table F1 and F2.

Table F1 (Final Land Use and Rehabilitation Approval Schedule)

Item	Pits	Pits (previously rehabilitated)	Waste Dumps	TSF	Infrastructure and ROM	Roads & tracks	Raw water pond
Tenure ID	ML3548 ML30203 ML3409 ML3374	ML3540 ML3591	ML 3548, ML30203 ML3374	ML3540	ML3540 ML3374	ML3548 ML30203 ML3409 ML3374 ML3358 ML3591 ML3409 ML30192 ML30193 ML30195 ML30196 ML30201	ML3540
Projective surface area (ha)	7	33	9.5	9	6	10	1
Post mine land use	Void	Grazing/Native Bushland	Grazing/Native Bushland	Grazing/ Native Bushland	Grazing/ Native Bushland	Grazing/ Native Bushland	Grazing and stock watering
Post mine land classification	VIII	No more than 10% of all disturbed land is class VII	No more than 30% of all disturbed land is class VII	No more than 10% of all disturbed land is class VII	No more than 10% of all disturbed land is class VII	No more than 30% of all disturbed land is class VII	VII
Cover (%)	N/A	60	60	60	60	60	N/A
Species	N/A	Native shrubs, tree and groundcover species	Native shrubs, tree and groundcover species	Native shrubs, tree and groundcover species	Native shrubs, tree and groundcover species	Native shrubs, tree and groundcover species	N/A

Table F2 (Landform Design)

Disturbance Type	Slope Range (%)	Projective Surface Area (ha)
Residual void Black Blow	N/A	1
Residual void Electric Light		1.4
Residual void Red Dam		2.6
Residual void Jubilee Plunger		2
Waste Dump Electric Light – upper surface	<2	0.4
Waste Dump Electric Light – batters	20	0.1
Waste Dumps Red Dam – upper surface	<2	2
Waste Dumps Red Dam – batters	20	0.5
Waste Dump Jubilee Plunger	20	6.5
Previously back-filled pits and TSF - rehabilitated	<5	33
TSF - upper surface	<2	7.5
TSF – batters	30-35	1.5
Infrastructure, ROM	1 to 7	6
Raw water pond	N/A	1
Internal roads and pipelines	Natural slopes	10

(F1-2) Progressive rehabilitation must commence when operational areas become available in accordance with the plan of operations.

(F1-3) Rehabilitated areas must be managed to minimise the proliferation of species not consistent with rehabilitation objectives.

(F1-4) All land subject to mining activities must be rehabilitated to:

- (a) a stable landform and with a self-sustaining vegetation cover and species that are similar to adjoining undisturbed areas;
- (b) a safe landform, which is non-polluting, geo-chemically and geo-technically stable.
- (c) ensure that all land is reinstated to the pre-disturbed land use and suitability class (excluding open pits);
- (d) ensure that the maintenance requirements for rehabilitated land is no greater than that required for the land prior to its disturbance by mining activities; and
- (e) ensure that the water quality of any residual void or water bodies constructed by mining activities meets criteria for subsequent uses and does not have potential to cause environmental harm.

(F1-5) Maintenance of rehabilitated areas must take place to ensure and demonstrate:

- (a) stability of landforms;
- (b) erosion control measures remain effective;
- (c) stormwater runoff and seepage from rehabilitated areas does not negatively affect the environmental values of any waters;
- (d) plants show healthy growth and recruitment is occurring; and
- (e) rehabilitated areas are free of any declared pest plants.

(F1-6) Rehabilitation can be considered successful when:

- (a) the site can be managed for its designated land-use (e.g. similar to that of surrounding undisturbed areas);
- (b) no greater management input than for other land in the area being used for a similar purpose is required and there is evidence that the rehabilitation has been successful for at least three (3) years;
- (c) the rehabilitation is carried out in accordance with the goals, objectives indicators and completion criteria as specified in Schedule F – Table F1 and F2 and in the Post Mine Land Use Plan; and
- (d) written agreement is obtained from the landowner/holder and administering authority.

(F1-7) Topsoil and subsoils must be stripped and stockpiled ahead of mining to a depth determined from soil surveys to ensure that useable soil resources are preserved for rehabilitation.

(F1-8) When topsoil is stored in stockpiles it should be in a manner that ensures stability. Measures must include:

- (a) vegetating stockpiles;
- (b) minimising the height of stockpiles; and
- (c) re-using stockpiles as soon as possible.

Post Mine Land Use Plan

(F2-1) The Post Mine Land Use Plan must be included in the plan of operations by 1 March 2011 and updated with each subsequent plan of operations, describing how the rehabilitation objectives in Schedule F – Table F1 and landform design criteria in Schedule F – Table F2 will be achieved. The Post Mine Land Use Plan must include:

- (a) schematic representation of final land form inclusive of drainage features;
- (b) slope designs;

- (c) cover design;
- (d) drainage design;
- (e) erosion controls proposed on reformed land;
- (f) description of experimental design for monitoring of analogue and rehabilitated areas inclusive of statistical design; and
- (g) proposed revegetation criteria including:
 - (i) species diversity, abundance and composition;
 - (ii) projective cover;
 - (iii) dry matter production; and
 - (iv) stocking rates to ensure self-sustaining vegetation is maintained.
- (h) proposed revegetation methods inclusive of plant species selection, re-profiling, respreading soil, soil ameliorants/amendments, surface preparation and method of propagation;
- (i) materials balance including available top soil and low permeability capping material;
- (j) research program and associated milestones;
- (k) geotechnical, geochemical and hydrological studies;
- (l) chemical, physical and biological properties of soil and water;
- (m) clear objectives and success criteria for the each land unit including establishment in accordance with outcomes stipulated in the administering authority's *Guideline for Rehabilitation Requirements for Mining Projects*;
- (n) measurable completion criteria for each rehabilitation indicator (for each land unit) that enables determination of rehabilitation success for each disturbance type (or land unit); and
- (o) rehabilitation monitoring program.

Rehabilitation Monitoring Program

- (F3-1)** The holder of the environmental authority must conduct a Rehabilitation Monitoring Program on at least a yearly basis, which must include sufficient spatial and temporal replication to enable scientifically justifiable conclusions as established under the rehabilitation program or other methodology to the satisfaction of the administering authority.
- (F3-2)** The rehabilitation monitoring program must be developed by 31 December 2010 and be implemented by a person nominated by the environmental authority holder possessing appropriate qualifications and experience in the field of mine site rehabilitation.

Pest Management

- (F4-1)** In carrying out the mining activity(ies) the holder of this environmental authority must develop and implement an effective pest management program that includes but is not limited to the following:
 - (a) identification of pest species and infestation areas;
 - (b) prevents and/or minimises the introduction and/or spread of pests;
 - (c) control and management of pest outbreaks as a result of mining activities including measures to ensure that all vehicle movements are controlled to prevent the spread of declared weeds; and
 - (d) strategies to prevent introduction of declared weeds to the mine site and surrounding areas.
- (F4-2)** A copy of the pest management program must be made available to the administering authority on request.

Infrastructure

- (F5-1) All infrastructure, mining equipment and processing plant constructed by or for the environmental authority holder during the mining activities including water storage structures, must be removed from the site prior to mining lease surrender, except where agreed to in writing by the post mining landholder and the Minister administering the *Mineral Resource Act 1989*.

Contaminated Land

- (F6-1) Upon decommissioning the environmental authority holder must undertake a contaminated land assessment / investigation of the licensed place in accordance with the administering authority's *Guidelines for the Assessment & Management of Contaminated Land in Queensland*.
- (F6-2) The Run of Mine (ROM) pad at ML3374 (Jubilee Plunger) must be decontaminated and not used for the storage of mined material after 1 December 2011.

Residual Void Outcome

- (F7-1) Residual voids must not cause any serious environmental harm to land, surface waters or any recognised groundwater aquifer, other than the environmental harm constituted by the existence of the residual void itself, and subject to any other condition within this environmental authority.
- (F7-2) Mining voids must be managed during the operation and decommissioning phases to maximise the potential post mine beneficial uses, by consideration of the following:
- (a) limiting sulphide exposures in void walls;
 - (b) capping of sulphide exposures in void base;
 - (c) limiting period of exposure of sulphides in void walls and base to oxidising conditions;
 - (d) managing catchment into the void; and
 - (e) geo-technical stability of final void.
- (F7-3) Decommissioning strategies for the final voids must be provided in the plan of operations including the following information:
- (a) final potential wall and base rock exposure quality in terms of acid producing potential and levels of environmentally relevant salts and metals;
 - (b) expected periods of exposure for wall and base rock with acid producing potential;
 - (c) management options for maximising final void water quality; and
 - (d) assessment of potential final void water quality.
- (F7-4) Decommissioning strategies for the final voids must be updated with each update of the plan of operations.

Post Closure Management Plan

- (F8-1) A Post Closure Management Plan for the site must be developed and implemented for a nominal period of:
- (a) at least thirty (30) years following final ore processing on site; or
 - (b) a shorter period if the site is proven to be geo-technically and geo-chemically stable and it can be demonstrated to the satisfaction of the administering authority that no release of contaminants from the site will result in environmental harm and be prepared at least 6 months prior to final ore processing onsite.
- (F8-2) The Post Closure Management Plan must include the following elements:

- (a) operation and maintenance of:
 - (i) wastewater collection and reticulation systems;
 - (ii) wastewater treatment systems;
 - (iii) the groundwater monitoring network;
 - (iv) final cover systems; and
 - (v) vegetative cover.
- (b) monitoring of:
 - (i) surface water quality;
 - (ii) groundwater quality;
 - (iii) seepage rates;
 - (iv) erosion rates;
 - (v) the integrity and effectiveness of final cover systems; and
 - (vi) the health and resilience of vegetative cover.

END OF CONDITIONS FOR SCHEDULE F

Schedule G – Dams

All Dams – Location and Limits

(G1-1) Any dam constructed or operated within the operational land must be located within the control points defined in Schedule G - Table G1, below.

Table G1 (Location of All Dams)

Name of Dam	Easting (GDA 94)	Northern (GDA 94)
Tailings Storage Facility (High Hazard Dam)	764935	7971567
	764440	7971543
	764401	7971336
	764830	7971125
Red Dam Pit	785887	8014989
	786549	8015020
	786552	8015102
	785866	8015080
Electric Light Pit	772290	7989214
	772340	7989197
	772215	7988831
	772154	7988860
Black Blow Midapa Pit	764911	7971283
	764974	7971273
	765028	7971300
	765027	7971323
	764971	7971325
	764917	7971313

Note (4): A minimum of 3 control points is required to constrain the location of all activities associated with the dam. Additional infrastructure which forms part of any dam 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.

(G1-2) The construction or operation of any dam within the operational land must comply with Schedule G - Table G2, below.

Table G2 (Basic Details of All Dams)

Name of Dam	Maximum Surface Area (Ha)	Maximum Volume (m ³)	Maximum Depth (m ²)	Purpose of dam (3)
Tailings Storage Facility (High Hazard Dam)	9	320,000	8	Tailings Storage
Red Dam Pit	2.6	1,200,000	20	Excavated mining void
Electric Light Pit	1.1	576,000	18	Excavated mining void
Black Blow Midapa Pit	0.44	7,000	10	Excavated mining void

Note (1): The name of the dam should refer to the name used in the design plan e.g. process residue facility or decant dam, etc.

Note (2): Where a dam does not incorporate a void, the height of the dam is the difference between the lowest point of the external toe of the dam and the highest point of the dam.

Note (3): Where a dam does incorporate a void, the height of the dam is the difference between the deepest point in the void and the highest point of the dam e.g. where dams are formed partially or fully formed by either excavating below the land surface or backfilling an existing void.

Note (4): Purpose of the dam should outline the designed function, e.g. "the permanent containment of tailings resulting from the extraction of nickel, cobalt and other metals at the XYZ Refinery".

Standards and Criteria for All Dams

- (G2-1) All high hazard dams containing hazardous waste must comply with the *Code of Environmental Compliance for High Hazard Dams Containing Hazardous Waste*.
- (G2-2) All low hazard dams containing hazardous waste must comply with the criteria outlined in Appendix B of the *Code of Environmental Compliance for Mining Lease Projects*.

Regulated Dams – Design, Certification and Construction

- (G3-1) Prior to commencing construction of a regulated dam, the holder of the environmental authority must submit to the administering authority for acceptance a design plan that has been certified by a suitably qualified and experienced person, as compliant in all respects with this environmental authority, and in accordance with accepted engineering standards.
- (G3-2) Prior to commencing construction of a regulated dam, the holder of the environmental authority must submit to the administering authority for acceptance, an operations plan covering the use of all regulated dams on the operational land.
- (G3-3) Construction or modification of regulated dams shall be done only in accordance with an accepted design plan.
- (G3-4) When construction or modification of a regulated dam is complete, the holder of this environmental authority must submit to the administering authority a set of 'as constructed' drawings, and a certification by a suitably qualified and experienced person that either:
- (a) the construction is substantially as per the accepted design plan; or
 - (b) the suitably qualified and experienced person certifies that the as constructed plan is compliant in all respects with this environmental authority, and in accordance with accepted engineering standards.

High Hazard Dams – Hydraulic Requirements

- (G4-1) The design storage allowance on 1st November of each year for any regulated dam constructed or operated within the operational land must comply with Schedule G - Table G3, below.
- (G4-2) The design storage allowance for dams specified in Table G3 are a minimum design storage requirement and any releases from any dams must meet the requirements set out under the water schedule.

Table G3 (Storage Design¹ Criteria for High Hazard Dams)

Name of Regulated Dam	Design Storage Allowance ² Critical Wet Period	Spillway Capacity Critical Design Storm ³	Mandatory ⁴ Reporting Level
Tailings Storage Facility (High Hazard Dam)	1 in 100 AEP, 3 month wet season plus other inputs for the 3 month wet season	1 in 1000 AEP	1 in 100 AEP

- 1 Calculations are to be carried out in accordance with the *Site Water Management Guideline in the Technical Guidelines for Environmental Management of Exploration and Mining in Queensland* (DME 1995).
- 2 The design storage allowance on 1st November of each year for any regulated dam constructed within the operational land must be sufficient to contain the run-off from the critical wet period - plus the volume of any other inputs to the storage facility during that critical wet period, as part of operations. Such inputs could be tailings, contaminated site waters, process waters, and any other materials.
- 3 The critical storm has a duration that produces the peak discharge for the catchment.
- 4 The level below spillway crest that can accommodate runoff from a 72 hour storm at the specified AEP, or the wave allowance at the specified AEP - whichever level is lower.

NOTE: AEP means Annual Exceedance Probability – being the probability that at least one event as specified will occur in a particular year.

- (G4-3) The spillway for any regulated dam, constructed or operated within the operational land must be designed and maintained to withstand the peak flow from the spillway capacity critical design storm defined in Schedule G - Table G3.
- (G4-4) The holder of the environmental authority must mark the mandatory reporting level defined in Schedule G - Table G3 on the spillway of all regulated dams within the operational land.
- (G4-5) The holder of the environmental authority must notify the administering authority when the water level of any high hazard dams, reaches the mandatory reporting level defined in Schedule G - Table G3.
- (G4-6) A water management strategy for the licensed place will be prepared for and included in the plan of operations. The strategy must include:
- (a) data collation and identify existing data requirements;
 - (b) the approach to water management in the context of the project development schedule;
 - (c) a water balance/water quality model to optimize the overall system and individual components;
 - (d) design and detail additional works as required; and
 - (e) implement/construct additional works according to a documented schedule.
- (G4-7) Annual review of the water management strategy must be submitted by the end October of each year.

Regulated Dams - Inspection

- (G5-1) Regulated dams shall be inspected by a suitably qualified and experienced person on or about 1 September, but definitely before 1 November each year.
- (G5-2) Regulated dams shall also be inspected by a suitably qualified and experienced person, if at any time unusual conditions are observed by the holder of this environmental authority, or their agent.
- (G5-3) The inspection shall include a review of the hazard assessment of all dams in Table 1 of Schedule G of this environmental authority.
- (G5-4) For each inspection, the suitably qualified and experienced person shall assess the condition of each regulated dam and its foundations, determine the hydraulic adequacy of the regulated dam and assess the adequacy of the works with respect to dam safety.
- (G5-5) For each inspection, two copies of a report by the suitably qualified and experienced person, including any recommendations as to measures to be taken to ensure the integrity of each regulated dam, shall be furnished to the administering authority within 28 days of the inspection.

Decommissioning of the Tailings Storage Facility and Other Dams – Objective

- (G6-1) The environmental authority holder must, prior to surrender of the mining leases on which the tailings storage facility is located, implement either:
- (a) a plan for de-commissioning the dams such that, amongst other things, water will no longer be stored in the dams, the dams and their contents will be structurally stable and resistant to erosion and any seepage or other emissions will not cause environmental harm; or
 - (b) a site management plan for the continued operation and maintenance of the dams.

Decommissioning of the Tailings Storage Facility and Other Dams – Documentation and Compliance

- (G7-1) Decommissioning activities for dams must be documented. Where the detailed documentation is not already contained in the design plan for the dam, the detailed documentation is considered to be an amendment to the design plan and must be submitted as an amendment to the design plan required by the *Code of Environmental Compliance for High Hazard Dams Containing Hazardous Waste*.

End of Life of Dam Criteria – Transfer to Contaminated Land

- (G8-1)** Dams containing hazardous waste must not be abandoned, and must be dealt with in accordance with the conditions of this environmental authority.

Commencement of Mining Activities

- (G9-1)** Prior to the commencement of any metallurgical extraction on ML3409, ML3540 and ML3591, the tailings storage facility identified in Schedule G Table G1 must be fully lined or alternatively, enough information be supplied to the administering authority in order for it to make a decision regarding the migration of TSF liquor along known fault zones located underneath the base of the structure.

Note: Metallurgical extraction is defined as: any treatment of gold bearing ores by chemical or physical processes that destroys the crystallographic bond in order to recover the sought after element or compound.

- (G9-2)** In accordance with condition (G9-1) the administering authority will review information supplied by the environmental authority holder and give approval for any metallurgical extraction to commence only once it is satisfied TSF liquor will not migrate along fault zones to the west of the operation.

END OF CONDITIONS FOR SCHEDULE G

Schedule H – 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 activities. Acceptance criteria may include information regarding:

- (a) vegetation establishment, survival and succession;
- (b) vegetation productivity, sustained growth and structure development;
- (c) fauna colonisation and habitat development;
- (d) ecosystem processes such as soil development and nutrient cycling, and the recolonisation of specific fauna groups such as collembola, mites and termites which are involved in these processes;
- (e) microbiological studies including recolonisation by mycorrhizal fungi, microbial biomass and respiration;
- (f) effects of various establishment treatments such as deep ripping, topsoil handling, seeding and fertiliser application on vegetation growth and development;
- (g) resilience of vegetation to disease, insect attack, drought and fire;
- (h) vegetation water use and effects on ground water levels and catchment yields.

“acid rock drainage” means any low pH waters, contaminated as a result of the mining activities.

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

“Annual Exceedance Probability” or **“AEP”** means 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.

“authority” means environmental authority (mining activities) 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.

“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.

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

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

“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 containment or proposed containment whether permanent or temporary, which is designed to contain, divert or control flowable substances. However this does not include a fabricated or manufactured tank or container designed to a recognised standard.

“design plan” in the context of a dam design is the documentation required under the Code of Environmental Compliance for High Hazard Dams Containing Hazardous Waste to describe the physical dimensions of the dam, the materials and standards to be used for construction of the dam, the procedures and criteria to be used for operating the dam and the decommissioning and rehabilitation objectives in terms procedures, works and outcomes at the end of dam life. The documents can include design and investigation reports, drawings, specifications and certifications.

“EC” means electrical conductivity.

“environmental authority holder” means the holder of this environmental authority.

“flowable substance” means matter or mixture of materials which can be forced to or otherwise flow under any conditions possible in a situation. It includes water, other liquids or a mixture that includes water or any other liquid or suspended solids.

“geochemical assessment” means establishing all elements present in the ore material and their likelihood to produce acid, saline or neutral mine drainage.

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

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

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

“land capability” has the meaning as defined in the DME 1995 Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland.

“land suitability” has the meaning as defined in the DME 1995 Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland.

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

“mandatory reporting level” means the volume below the spillway crest, equivalent to the lower of the AEP, 72 hour storm or the AEP wave allowance (AEP is the annual exceedance probability).

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

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

“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;
- (l) but does not include—
- (m) living matter;
- (n) petroleum within the meaning of the Petroleum Act 1923;
- (o) 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; or
- (p) water.

“ML” means megalitres.

“mL” means millilitres.

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

“no-release works” means sewage treatment works from which neither solid nor liquid contaminants are released to the environment, whether from inside or outside the works.

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

“oxide ore” means fully oxidised rock which has no acid forming potential.

“ore or waste rock characterised as having acid forming potential” means any rock with either a Net Acid Producing Potential of greater than 5 kg of H₂SO₄/tonne or a Net Acid Generation oxidation pH of less than 4.5 (pH unit).

“peak particle velocity (ppv)” means a measure of ground vibration magnitude which is the maximum rate of change of ground displacement with time, usually measured in millimetres/second (mms⁻¹).

“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.

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

“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.

“rehabilitation” means 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.

“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.

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

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

“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;
- (b) a motel, hotel or hostel;
- (c) an educational institution;
- (d) a medical centre or hospital;
- (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 & topsoil)
- (c) areas where land use suitability or capability has been diminished;
- (d) areas within a watercourse, waterway, wetland or lake where mining activities occur;
- (e) areas submerged by tailings or hazardous contaminant storage and dam walls in all cases;
- (f) areas under temporary infrastructure. Temporary infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dams, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be removed after mining activities have ceased; or
- (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 EPA, areas previously significantly disturbed which have not achieved the rehabilitation objective(s) due to circumstances beyond the control of the mine operator (such as climatic conditions);
- (d) areas under permanent infrastructure. Permanent infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dams, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be left by agreement with the landowner. The agreement to leave permanent infrastructure must be recorded in the Landowner Agreement and lodged with the EPA;
- (e) disturbances that pre-existed the grant of the tenure unless those areas are disturbed during the term of the tenure.

“spillway” means a passage or outlet from the dam through which surplus water flows.

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

“suitably qualified and experienced person” means a person who is a Registered Professional Engineer of Queensland under the provisions of the *Professional Engineers Act 1988* or a Corporate Member of the Institution of Engineers Australia or holds equivalent professional qualifications and has the following:

- (a) knowledge of engineering principles related to the structures, geomechanics, hydrology, hydraulics, chemistry and environmental impact of dams; and
- (b) at least a total of five years of suitable experience and demonstrated expertise in at least four of the following areas:
 - (i) investigation, design or construction of dams;
 - (ii) operation and maintenance of dams;
 - (iii) geomechanics with particular emphasis stability, geology and geochemistry;
 - (iv) hydrology with particular reference to flooding, estimation of extreme storms, water management or

meteorology;

- (v) hydraulics with particular reference to sediment transport and deposition, erosion control, beach processes;
- (vi) hydrogeology with particular reference to seepage, groundwater,
- (vii) solute transport processes and monitoring thereof; or
- (viii) dam safety.

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

“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.

“saline mine drainage” means the movement of waters contaminated with salt(s) as a result of the mining activity.

“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.

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

“water release event” means release of any waters that are or may be contaminated by the mining activity.

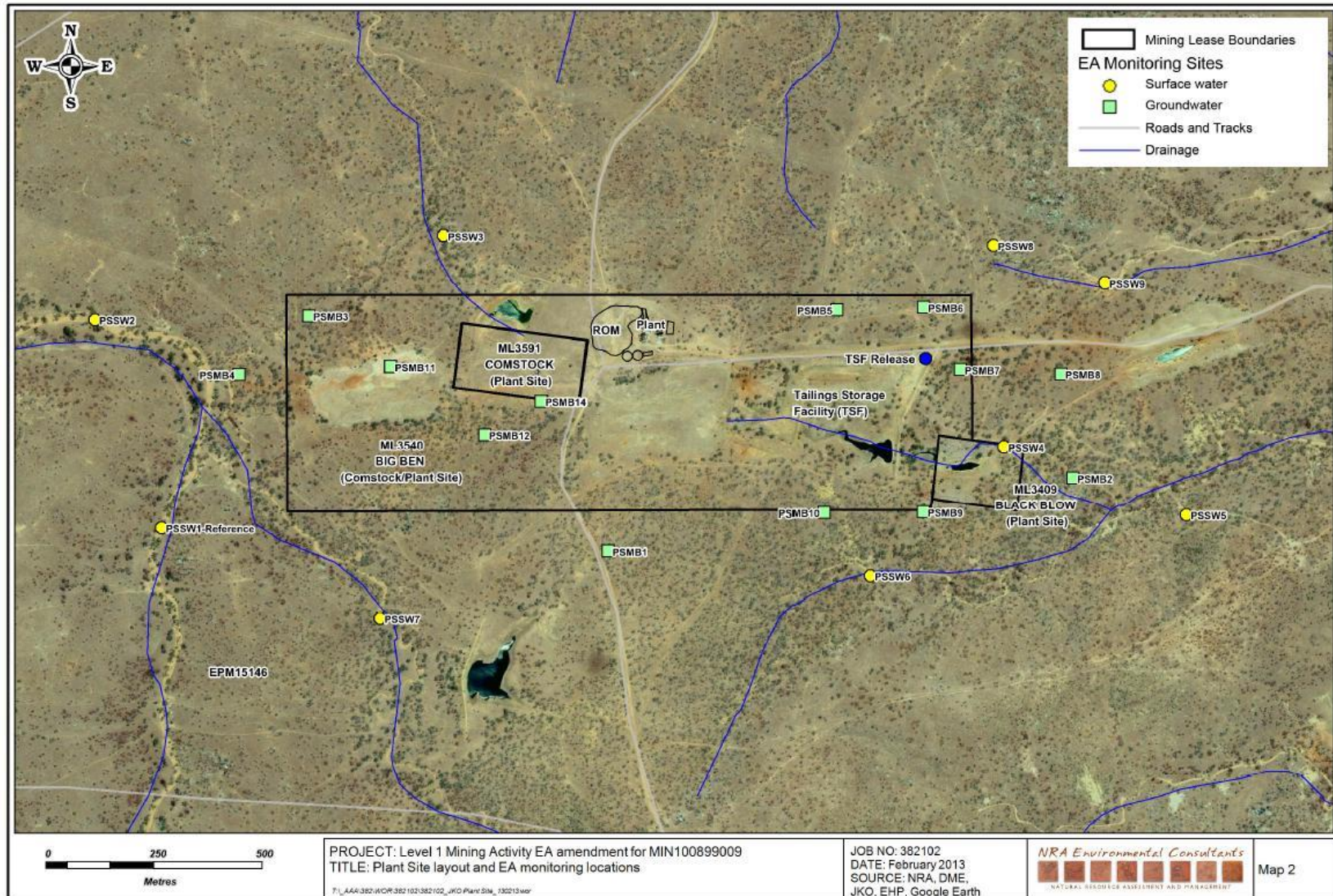
END OF SCHEDULE H

Schedule I - Maps

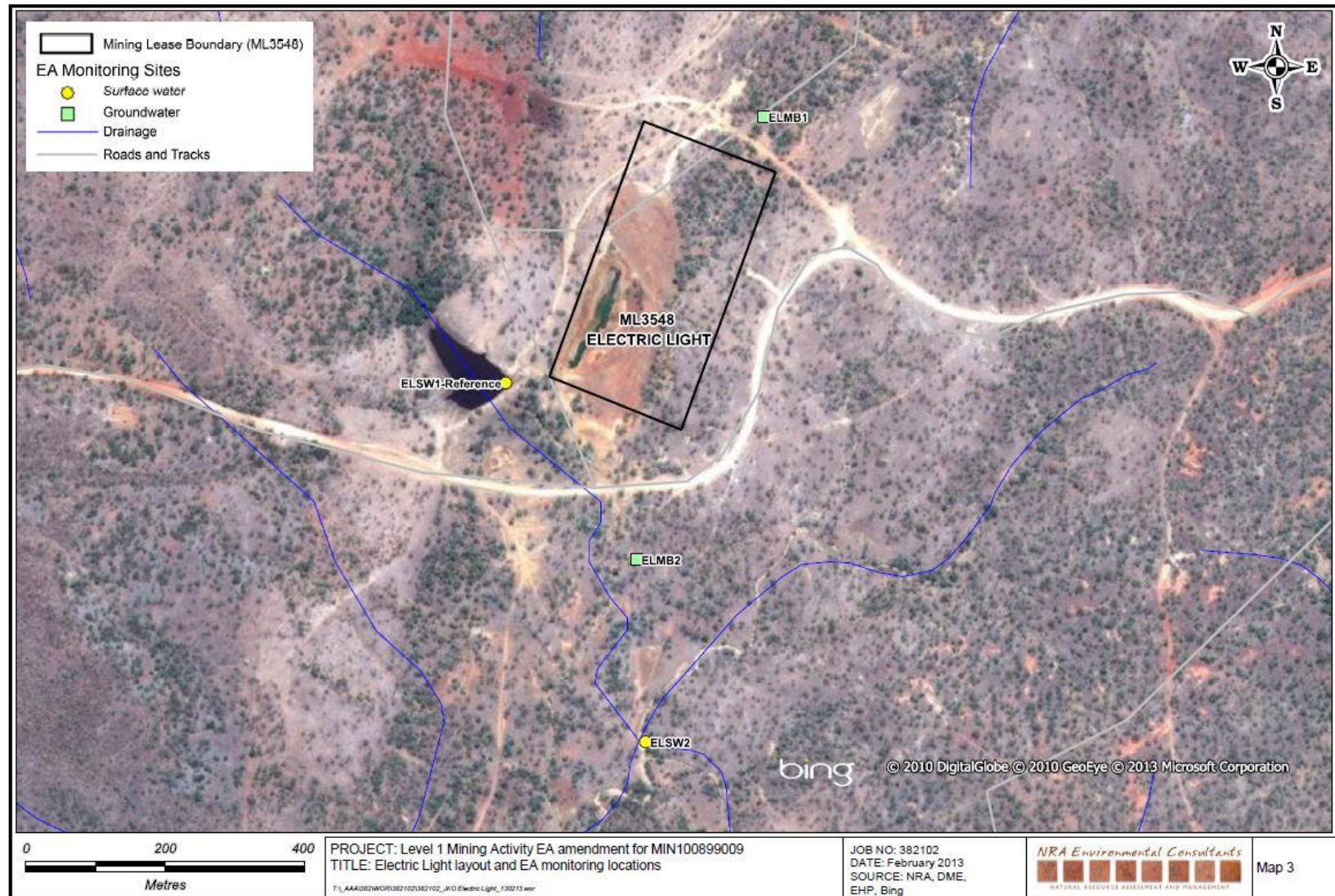
Map 1 – Location Map



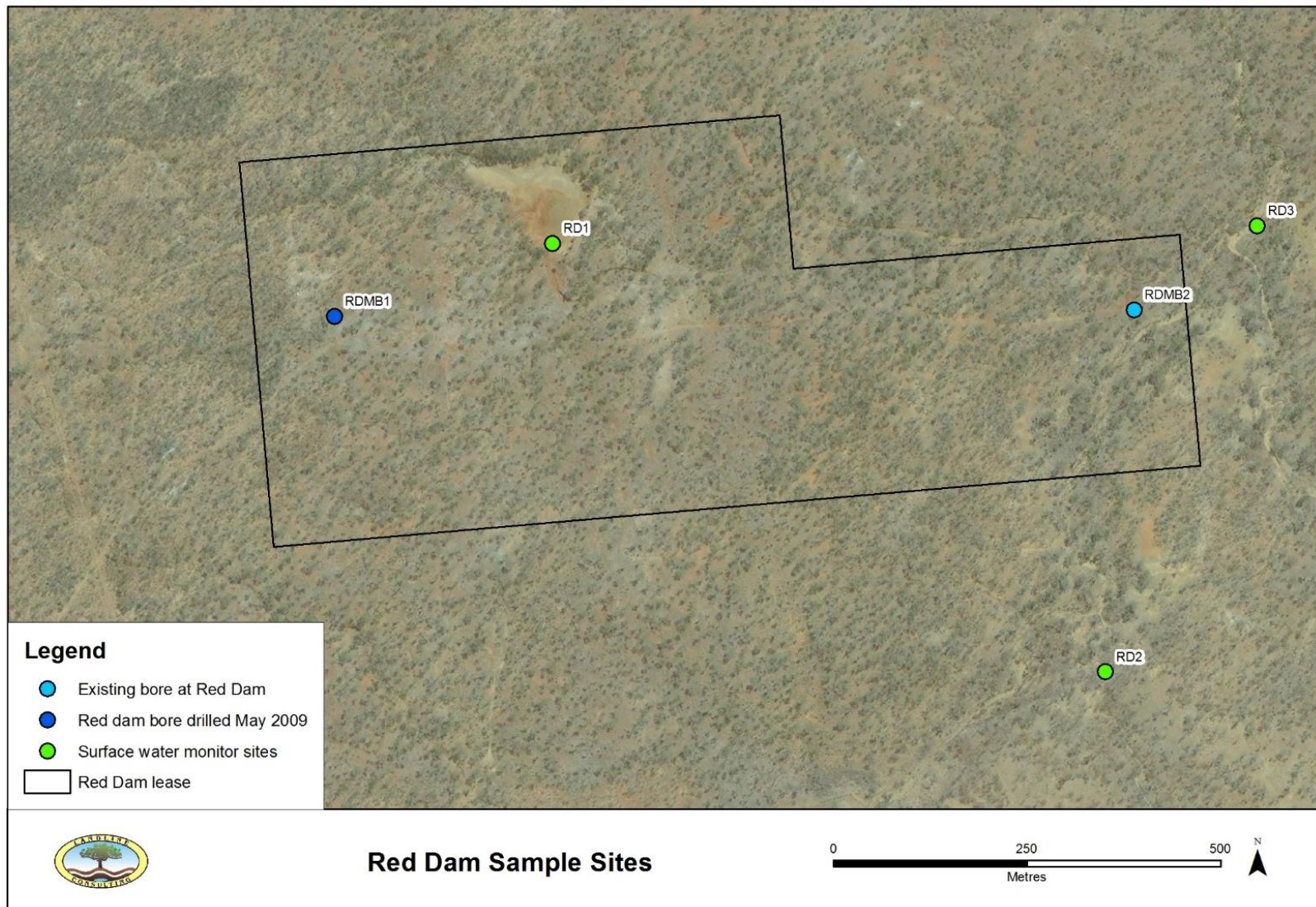
Map 2 – Surface Water, Groundwater and Sediment Monitoring Sites for the Plant Site (ML3409, ML3540 and ML3591)



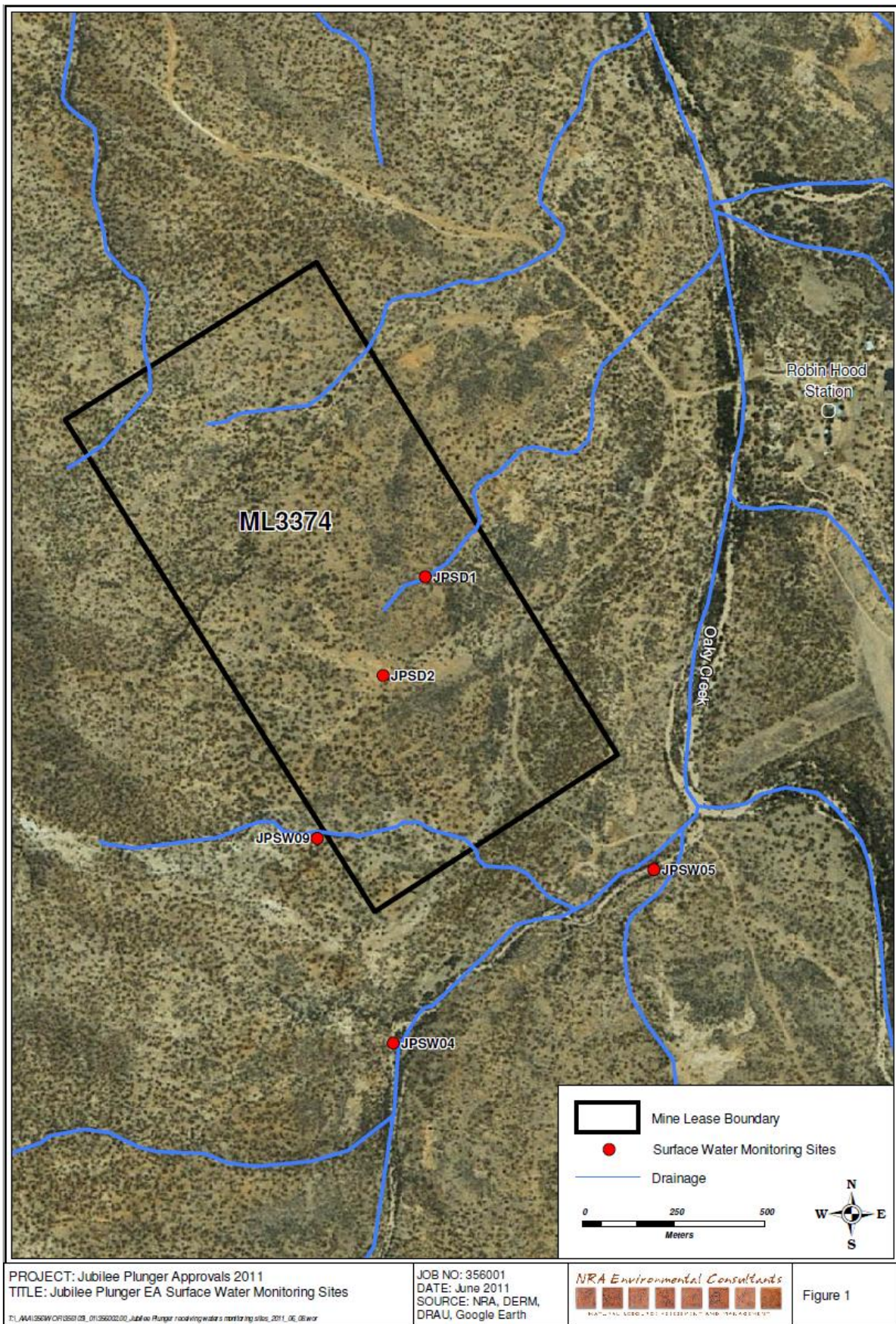
Map 3 – Surface Water, Groundwater and Sediment Monitoring Sites for Electric Light (ML3548)



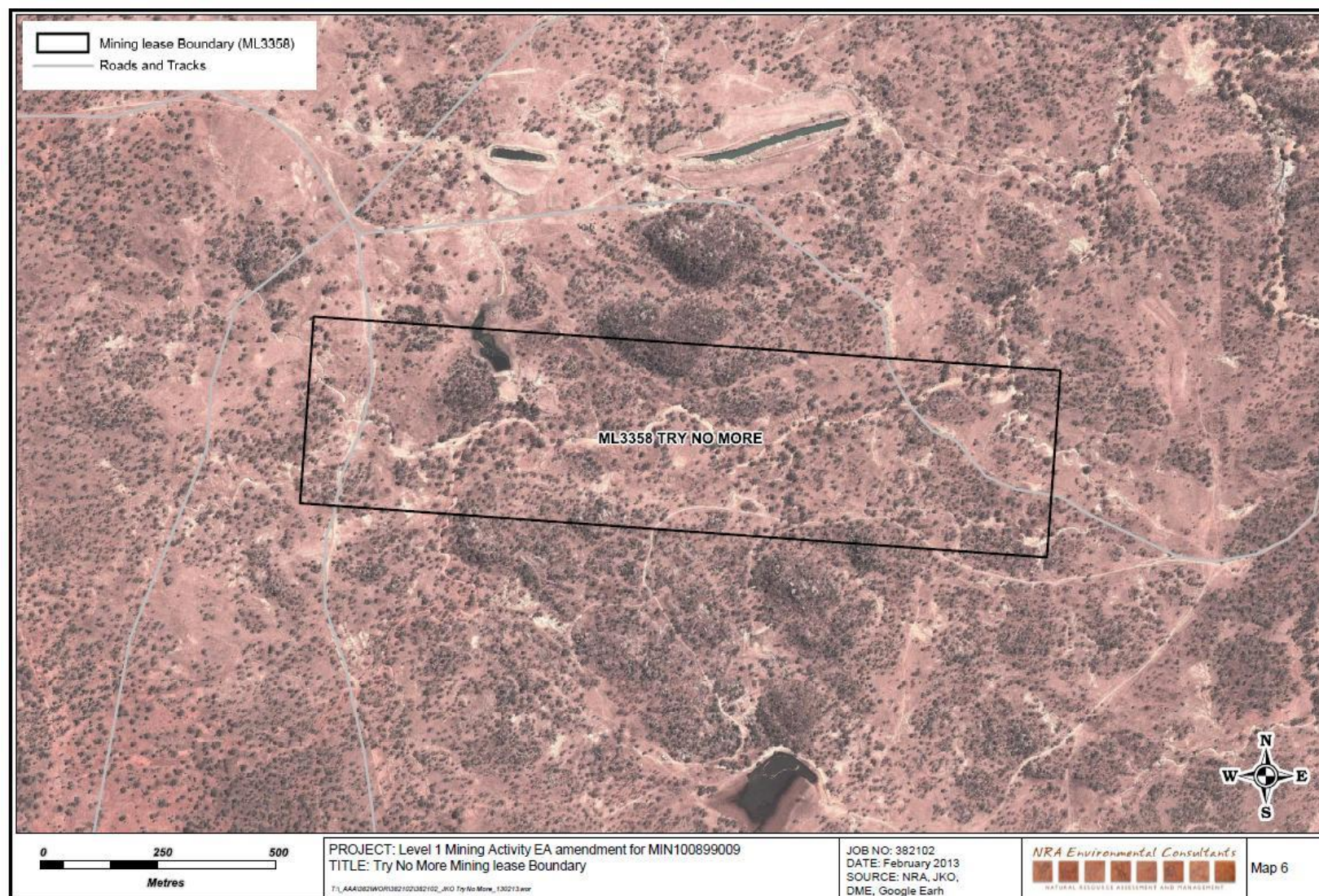
Map 4 – Surface Water and Sediment Monitoring Sites for Red Dam (ML30203)



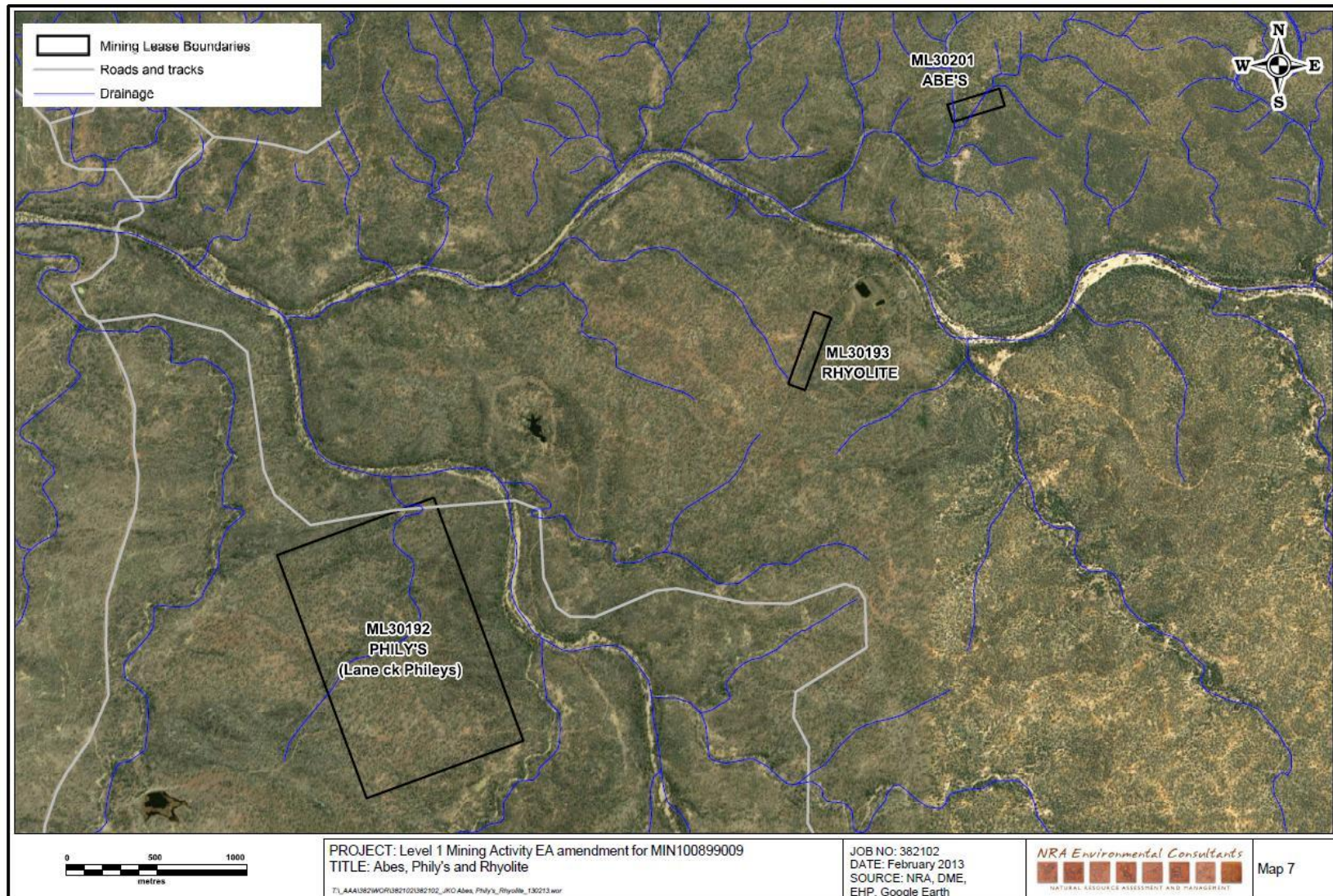
Map 5 – Surface Water and Sediment Monitoring Sites for Jubilee Plunger (ML3374)



Map 6 – Try No More (ML3358)



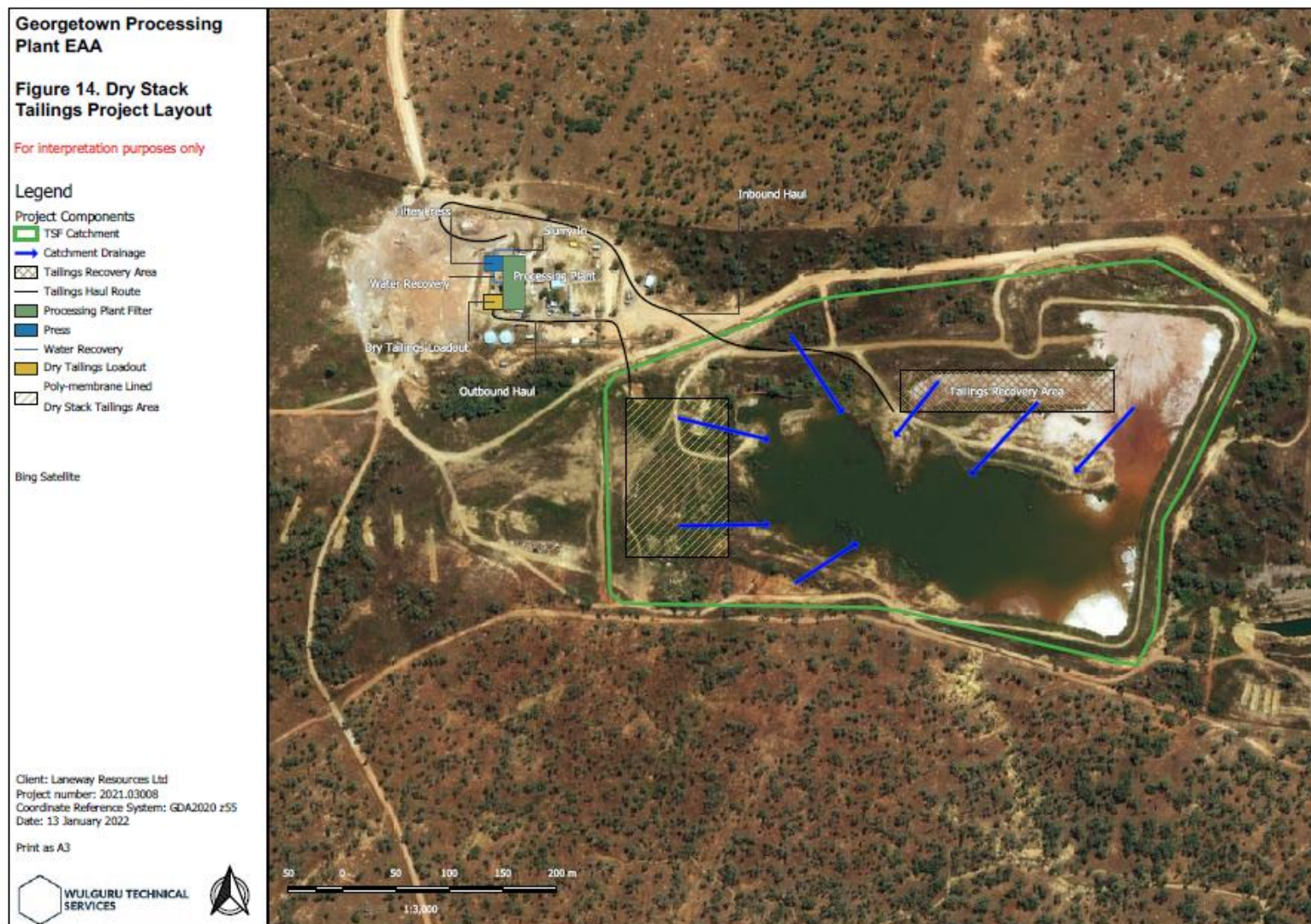
Map 7 – Phily's (ML30192), Rhyolite (ML30193) and Abe's (ML30201)



Map 8 – Tom's (ML30195), Sir William Alfred (ML30196) and Silver Queen (ML30197)



Map 9 - Dry Stack Tailings Project Layout



END OF SCHEDULE I

END OF ENVIRONMENTAL AUTHORITY