

Permit

Environmental Protection Act 1994

Environmental authority EPML00950913

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

Environmental authority number: EPML00950913

Environmental authority takes effect on 11 May 2017

The anniversary date of this environmental authority (EA) remains 14 August. An annual return and the payment of the annual fee will be due each year on this day.

Environmental authority holder(s)

Name(s)	Registered address
Wilson Minerals Pty Limited	Suite 1111 340 Scottsdale Drive ROBINA QLD 4226

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Mining – ML other 21, Site Specific	ML5248

Additional information for applicants

Environmentally relevant activities

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

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

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

Contaminated land

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

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

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

Take effect

Resource projects

Please note that, in accordance with section 200 of the EP Act, if the EA is for a resource activity, the EA will not take effect until the relevant tenure is granted to the applicant.

Teale Gibbs

Signature

11/05/2017

Date

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

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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)

Other permits required

This permit only provides an approval under the *Environmental Protection Act 1994*. In order to lawfully operate you may also require permits / approvals from your local government authority and other State Government agencies prior to commencing any activity at the site. For example, this may include permits / approvals with your local Council (for planning approval), the Department of Transport and Main Roads (to access state controlled roads), the Department of Natural Resources and Mines (to clear vegetation), and the Department of Agriculture Forestry and Fisheries (to clear marine plants or to obtain a quarry material allocation).

Conditions of environmental authority

The conditions of approval for this environmental authority are standard conditions contained within the documents entitled:

- Eligibility criteria and standard conditions for mining lease activities (ESR/2016/2241)

Location: ML5248

Croydon, QLD

Relevant activity/ies: Mining - ML other - 21, Site Specific

This **Environmental Authority** incorporates the following schedules:

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

Schedule A – General Conditions

Maintenance of Measures, Plant and Equipment

- (A1-1) The **environmental authority holder** must:
- (a) install all **measures**, plant and equipment necessary to ensure compliance with the conditions of this environmental authority and the general environmental duty;
 - (b) maintain such **measures**, plant and equipment in a proper condition;
 - (c) operate such **measures**, plant and equipment in a proper manner; and
 - (d) ensure that 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.
- (A1-2) No change, replacement or alteration of any plant or equipment is permitted if the change, replacement or alteration increases, or is likely to substantially increase, the risk of environmental harm caused by the mining activities.

Activity

- (A2-1) 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.
- (A2-2) In carrying out the mining **activity**, reasonable and practicable **measures** must be taken to prevent or minimise the likelihood of environmental harm being caused.
- (A2-3) All **land** subject to mining activities must be rehabilitated to a **non-polluting, stable and self-sustaining** landform.
- (A2-4) Any management or monitoring plans, systems or programs required to be developed and implemented by a condition of this environmental authority must be reviewed for effectiveness in minimising the likelihood of environmental harm as often as necessary but at least every two years and amended promptly if required.
- (A2-5) The **environmental authority holder** must record, compile, evaluate and keep all monitoring results, records and documents for a period of at least 5 years required by this environmental authority, and any complaints received about the mining **activity**, and produce copies, or make available for inspection all or any of these records upon request by the **administering authority**.

Risk Management

- (A3-1) The **environmental authority holder** must conduct a risk assessment for mining activities which conforms to the Australian Standard for Risk Management (AS/NZ 4360:2004) by 31 July 2009.
- (A3-2) The **environmental authority holder** must not implement risk control **measures** that contravenes or prevents the implementation of any condition of this environmental authority.
- (A3-3) An emergency response/contingency plan must be developed and implemented within the current plan of operations to manage the high risk categories identified in the risk assessment.

Notification

- (A4-1) The **environmental authority holder** must notify the **administering authority** by telephone or facsimile immediately after becoming aware of any emergency or incident resulting in, or having the potential to cause, environmental harm or any breach of condition of this environmental authority concerning **releases of contaminants to the environment**.

- (A4-2) The notification in condition (A4-1) must include the following:
- (a) the environmental authority number and name of 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 any substances involved in the incident;
 - (g) a description of the nature and effects of the incident including environmental harm caused, threatened, or suspected to be caused by the incident
 - (h) any sampling conducted or proposed, relevant to the emergency or incident; and
 - (i) immediate actions taken to prevent any further release and mitigate any environmental harm caused by the release.
- (A4-3) 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 all samples taken and analysed (if available, if not yet available nominate a timeframe);
 - (b) outcomes of actions taken at the time to prevent or minimise environmental harm; and
 - (c) proposed actions to prevent a recurrence of the emergency or incidence.
- (A4-4) As soon as practicable, but not more than six (6) weeks following the conduct of any environmental monitoring performed in relation to the 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, written advice must be provided of the results of any such monitoring performed to the **administering authority**.

Complaints

- (A5-1) All records must be kept of all environmental complaints received about the mining activities including the following details:
- (a) name, address and contact number for complainant (if not available record - not identified);
 - (b) time and date of complaint;
 - (c) reasons for the complaint;
 - (d) investigations undertaken;
 - (e) conclusions formed;
 - (f) actions taken to resolve complaint;
 - (g) any abatement **measures** implemented; and
 - (h) person responsible for resolving the complaint.
- This information must be made available for inspection by the **administering authority** on request.
- (A5-2) When requested by the **administering authority**, the **environmental authority holder** must undertake relevant specified monitoring within a reasonable and practicable timeframe nominated by the **administering authority** 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.

Third Party Auditing

- (A6-1) Compliance with the conditions of this environmental authority must be audited by a **suitably qualified** third party auditor, nominated by the **environmental authority holder** and accepted by the **administering authority** once every two years.
- (A6-2) The third party auditor must submit a final version of the auditor's report to the **administering authority** within twenty-eight (28) days of completing the audit.
- (A6-3) The third party auditor must certify the independent findings of the audit in the report.
- (A6-4) The financial cost of the third party audit is the responsibility of the holder of this environmental authority.

Financial Assurance

- (A7-1) Prior to the commencement of mining activities under this environmental authority, the **environmental authority holder** must provide a financial assurance of an amount and in a form determined in accordance with the Queensland Environmental Protection Agency's Guideline *Financial assurance for mining activities*, as approved and requested by the **administering authority**.
- (A7-2) The financial assurance must remain in force until the **administering authority** notifies the **environmental authority holder** that it is satisfied that no claim on the assurance will be required.

Community

- (A8-1) The holder of this environmental authority must establish, promote and maintain easily accessible lines of communication between residents and land owners to the satisfaction of the **administering authority** and provide evidence of this on an annual basis.

Cultural Heritage

- (A9-1) The holder of the environmental authority must develop and implement a Cultural Heritage Management Program covering European cultural heritage for all mining leases.
- (A9-2) The Cultural Heritage Management Program must be included in the Plan of Operations.

END OF CONDITIONS FOR SCHEDULE A

SCHEDULE B - AIR

- (B1-1) The release of dust or any other airborne contaminant resulting from the mining activities must not cause environmental harm at any **sensitive place** or **commercial place**.
- (B1-2) In the event of a complaint, the **environmental authority holder** must ensure that dust generated by the mining activities does not cause any of the following criteria at any **sensitive place** or **commercial place** to be exceeded:
- (a) dust deposition of 120 milligrams per square metre per day, averaged over one month, when monitored in accordance with the most recent version of Australian Standard AS 3580.10.1 Methods for sampling and analysis of ambient air - Determination of particulate matter - Deposited matter - Gravimetric method;
 - (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 Environmental Protection Agency's Air Quality Sampling Manual.
- (B1-3) If monitoring indicates limits in condition (B1-2) have been exceeded and is attributable to the licensed **activity**, the **environmental authority holder** must implement dust abatement **measures** so that emissions of dust generated by the mining activities cease to exceed limits in condition (B1-2).

END OF CONDITIONS FOR SCHEDULE B

SCHEDULE C – LAND

(C1-1) Land disturbed by mining activities must be rehabilitated in accordance with Schedule C – Table 1

Schedule C – Table 1 (Mining activities and rehabilitation objectives)

Landform (refer Schedule H – Map 1)	Surface area (ha)	Rehabilitation Objectives		
		Post-mine land description	Land classification ¹	Analogue site identification
Golden Butterfly North Pit	1.6	Non-beneficial land use	Class VIII	Sites to be rehabilitated to a standard nominated in the rehabilitation program developed in accordance with Condition C2-1 based on analogue sites
Golden Butterfly Pit	5.1	Non-beneficial land use	Class VIII	
Lady Isabella Pit	1.7	Non-beneficial land use	Class VIII	
Content Pit	2.1	Non-beneficial land use	Class VIII	
Content Dump	6.3	L.I.G. ² / disturbed native habitat	Class VI or better	
Golden Butterfly Dump	15.2	L.I.G. ² / disturbed native habitat	Class VI or better	
Content Hardstand	2.0	L.I.G. / disturbed native habitat	Class VI or better	
Golden Butterfly Hardstand	0.5	L.I.G. ² / disturbed native habitat	Class VI or better	
Sediment Dams	1.5	L.I.G. ² / disturbed native habitat	Class VI or better	
Roads / Tracks	3.5	L.I.G. ² / disturbed native habitat	Class VI or better	

¹ Technical guidelines for the Environmental Management of Exploration and Mining in Queensland (DME), 1995.

² L.I.G. (Low Intensity Grazing) defined by criteria listed in Land Use Acceptance criteria

(C1-2) Drain the surface of the Content Waste Rock Dump to Content Pit, fill low-lying areas on the Content Waste Rock Dump and import additional growth medium to the Content Waste Rock Dump.

(C1-3) All waste rock dump slopes must be covered with a regrowth medium to support vegetation regrowth and limit erosion.

Post Mine Land Use Plan

(C2-1) A Post Mine Land Use Plan for the **licensed place** must be developed and implemented for a nominal period of:

- (a) at least thirty (30) years following the cessation of mining activities on the **licensed place**; or
- (b) a shorter period if the **licensed place** 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 18 months prior to cessation of mining activities on the **licensed place**.

- (C2-2) The Post Mine Land Use Plan must be included in the Plan of Operations and updated with each subsequent Plan of Operations, describing how the **rehabilitation** objectives in Schedule C – Table 1 will be achieved. The Post Mine Land Use Plan must include:
- (a) schematic representation of final land form inclusive of drainage features; and
 - (b) slope designs; and
 - (c) cover design including a report on the effectiveness of existing cover systems; and
 - (d) drainage design; and
 - (e) erosion controls on reformed **land**; and
 - (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; and
 - (h) proposed revegetation methods inclusive of plant species selection, re-profiling, resspreading soil, soil ameliorants/amendments, surface preparation and method of propagation; and
 - (i) materials balance including available top soil and low permeability encapsulation media for capping; and
 - (j) research program and associated milestones.
 - (k) geotechnical, geochemical and hydrological studies;
 - (l) chemical, physical and biological properties of soil and water;
 - (m) measurable completion criteria for each **rehabilitation** indicator that enables determination of **rehabilitation** success for each disturbance type; and
 - (n) **rehabilitation** monitoring program, including the monitoring of:
 - i. surface **water quality**;
 - ii. groundwater quality;
 - iii. erosion rates;
 - iv. integrity and effectiveness of final cover of final cover systems; and
 - v. health and resilience of vegetative cover
 - (o) grazing management plan, and;.
 - (p) Operation and maintenance of:
 - i. the surface water management system;
 - ii. groundwater monitoring network;
 - iii. final cover systems; and
 - iv. vegetative cover

Rehabilitation Monitoring Program

- (C3-1) 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**.

- (C3-2) The Rehabilitation Monitoring Program must be developed by 1 October 2008 and be implemented by a person nominated by the **environmental authority holder** possessing appropriate qualifications and experience in the field of **rehabilitation** management.
- (C3-3) Verification of **rehabilitation** success is to be determined by comparison with the criteria documented in the Post Mine Land Use Plan required under Condition C2-1.

Infrastructure

- (C4-1) All **infrastructure**, mining equipment and plant erected and/or used for the mining activities must be removed from the **licensed place** prior to surrender, except where agreed in writing by the **administering authority**, landowner and the Minister administering the *Mineral Resources Act 1989*.

Residual Voids

- (C5-1) Residual voids, or the contents of residual voids, must not cause any environmental harm other than the environmental harm caused within the footprint of the residual void itself.

Chemicals and Flammable or Combustible Liquids

- (C6-1) All explosives, hazardous **chemicals**, corrosive substances, toxic substances, gases and dangerous goods must be stored and handled in accordance with the relevant Australian Standard.
- (C6-2) Flammable and combustible liquids, including petroleum products and associated piping and **infrastructure**, must be stored and handled in accordance with the latest edition of Australian Standard 1940 – *The Storage and Handling of Flammable and Combustible Liquids*.
- (C6-3) Any **chemicals** and flammable or combustible liquids stored on the **licensed place** 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) drum storages must be bunded so that the capacity and construction of the bund is sufficient to contain at least 25% of the maximum design storage volume within the bund.
- (C6-4) All containment systems for **chemicals** and flammable or combustible liquids must be designed to minimise rainfall collection within the system.

Contaminated Land

- (C7-1) 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.

END OF CONDITIONS FOR SCHEDULE C

SCHEDULE D – WASTE

General Waste Disposal

- (D1-1) 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.

Off Site Movement of Regulated Wastes

- (D2-1) 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; and
 - (ii) name of the regulated waste transporters 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.

Notification of Improper Disposal of Regulated Waste

- (D3-1) 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.
- (D3-2) Regulated waste generated by maintenance of plant and equipment and absorbent materials used to clean up spills must only be disposed of at a facility whose operator is permitted to accept such waste in accordance with the requirements of the *Environmental Protection Act 1994*.

END OF CONDITIONS FOR SCHEDULE D

SCHEDULE E – NOISE AND VIBRATION

- (E1-1) Noise from the mining **activity** must not cause environmental harm at any **sensitive place** or **commercial place**.
- (E1-2) In the event of a complaint made to the **administering authority** (which is neither frivolous or vexatious) about noise generated in carrying out the licensed **activity**, and the noise is considered by the **administering authority** to be an unreasonable noise, the holder of this Environmental Authority must take action to ensure that it is no longer an unreasonable noise.

END OF CONDITIONS FOR SCHEDULE E

SCHEDULE F – WATER

General

- (F1-1) Contaminants that will, or have the potential to cause environmental harm, must not be released directly or indirectly to any water except as permitted under the conditions of this EA.
- (F1-2) The release of contaminants directly or indirectly to **waters** must not:
- (a) produce any visible discolouration of **receiving waters**; or
 - (b) produce any slick or other visible or odorous evidence of oil, grease or petrochemicals nor contain visible floating oil, grease, scum, litter or other objectionable matter.
- (F1-3) 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;
 - (d) carried out on **representative** samples; and,
 - (e) laboratory testing must be undertaken using a laboratory accredited (e.g. **NATA**) for the method of analysis being used.
- (F1-4) The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the **administering authority** in the specified format when requested:
- (a) the date on which the sample was taken;
 - (b) the time at which the sample was taken;
 - (c) the monitoring point at which the sample was taken;
 - (d) the measured or estimated daily quantity of the contaminants released from all release points;
 - (e) the release flow rate at the time of sampling for each release point;
 - (f) the results of all monitoring and details of any exceedances with the conditions of this environmental authority; and
 - (g) water quality monitoring data must be provided to the **administering authority** in the specified electronic format upon request.

Contaminant Release to Waters

- (F2-1) The release of contaminants to **waters** must only occur from the release points specified in Schedule F - Table 1 (Contaminant Release Points) and depicted in Schedule H - Map 3 (Location of Monitoring sites on Belmore Creek).

Schedule F - Table 1 (Contaminant Release Points)

Release Point	Easting (GDA94 – Zone 54)	Northing (GDA94 – Zone 54)	Receiving Waters Description
Content Pit (Base of ramp)	628958.5806	7990231.848	Belmore Creek
Lady Isabella Pit (Base of ramp)	629368.5292	7989840.693	Belmore Creek

- (F2-2) The release of contaminants to **waters** from the release points must be monitored at the locations specified in Schedule F - Table 1 (Contaminant Release Points) for each quality characteristic and at the monitoring frequency specified in Schedule F - Table 2 (Contaminant Release Limits).

Schedule F - Table 2 (Contaminant Release Limits)

Parameter	Unit	Contaminant Limit ¹	Monitoring ³ Frequency
pH	pH	5.0 (minimum) 9.0 (maximum)	Event based sampling ⁴ of discharge: One sample must be taken within 24 hours of a discharge event ⁵ commencing; a second sample must be taken between 24 and 48 hours after the discharge event ⁵ commences. Where a discharge event ⁵ has a duration of 48 hours or greater, samples must be taken daily for one week, and once a week thereafter until discharge ceases.
Electrical Conductivity	µS/cm	5970 ²	
Sulphate	mg/l	1000 ²	
Fluoride	mg/l	2 ²	
Aluminium	mg/l	0.055 ^{6, 7} x Dilution Factor ⁸	
Arsenic	mg/l	0.013 ^{6, 7} x Dilution Factor ⁸	
Cadmium	mg/l	0.0002 ^{6, 7} x Dilution Factor ⁸	
Cobalt	mg/l	0.0014 ^{6, 7} x Dilution Factor ⁸	
Copper	mg/l	0.0014 ^{6, 7} x Dilution Factor ⁸	
Nickel	mg/l	0.011 ^{6, 7} x Dilution Factor ⁸	
Zinc	mg/l	0.008 ^{6, 7} x Dilution Factor ⁸	
Hardness		Interpretation purposes	

¹ Contaminant limits apply for metal/metalloids if total (unfiltered) results exceed limits.

² Contaminant limit based on ANZECC (2000) stock water quality guidelines.

³ Monitoring during discharge event will only be conducted where safe access can be gained.

⁴ Grab sampling is the preferred method for sampling collection, however the use of remote sampling techniques such as automated methods is acceptable.

⁵ Discharge event is a release of water from a release point as specified in Schedule F – Table 1 (Contaminant Release Points).

⁶ Default trigger values – from ANZECC (2000) trigger levels for aquatic ecosystems indicative of slightly disturbed tropical Australian upland river ecosystems.

⁷ These contaminants can be hardness adjusted.

⁸ Dilution Factor is calculated as the volume of the water going down Belmore Creek and the volume of respective mine affected water at the time of release.

- (F2-3) The release of contaminants to **waters** must not exceed the contaminant release limits stated in Schedule F - Table 2 (Contaminant Release Limits) for each quality characteristic.

Stream Flow Monitoring

- (F3-1) The holder of this environmental authority must install, operate and maintain a stream flow gauging station to determine and record stream flows at the locations upstream of each release point as specified in Schedule F - Table 1 (Contaminant Release Points) for any receiving water into which a release occurs.
- (F3-2) At the time of release the water flow volume in the respective receiving water must be at least twenty (20) times the volume at which respective **mine affected waters** are released.

Receiving Environment Monitoring and Contaminant Trigger Levels

(F4-1) **Receiving waters** must be monitored at the locations and frequencies defined in Schedule F - Table 3 (Receiving Water Monitoring Locations and Frequency), Schedule H - Map 2 (Surface Water, Sediment and Groundwater Monitoring Sites) and Map 3 (Location of Monitoring Sites on Belmore Creek) and comply with the trigger and contaminant limits defined in Schedule F - Table 4 (Receiving Water Trigger and Contaminant Limits).

Schedule F - Table 3 (Receiving Surface Water Monitoring Locations and Frequency)

Monitoring point	Easting (GDA 94)	Northing (GDA 94)	Monitoring frequency ²
SW1 Lower Slaughteryard Creek	630350	7986405	<u>Routine sampling³</u> : One sample must be taken during wet season (January ~ March) and one sample must be taken during dry season (July ~ September)
SW2 Slaughteryard West Tributary at the ML boundary	630197	7987640	
SW3 Slaughteryard Creek upstream of the Golden Butterfly WRD	631080	7988157	
SW6 Belmore Creek borrow pit/stock dam	627908	7989454	<u>Event based sampling³ of discharge</u> : One sample must be taken within 24 hours of a discharge event ⁴ commencing; a second sample must be taken between 24 and 48 hours after the discharge event ⁴ commences.
BCDS Belmore Creek Downstream	626736.519	7989973.135	
Reference Sites¹			
SW3b Reference point for Slaughteryard Creek	613208	7988220	Where a discharge event ⁴ has a duration of 48 hours or greater, samples must be taken daily for one week, and once a week thereafter until discharge ceases.
BCUS Reference point for Belmore Creek	627895.251	7990122.388	

¹ Reference sites must:

- a. be from the same biogeographic and climatic region; and
- b. have similar geology, soil types and topography; and
- c. contain a range of habitats similar to those at the test sites;
- d. have a similar flow regime; and
- e. not be so close to the downstream sites that any disturbance at the downstream site also results in a change at the reference site

² Monitoring during discharge event will only be conducted where safe access can be gained.

³ Grab sampling is the preferred method for sampling collection, however the use of remote sampling techniques such as automated methods is acceptable.

⁴ Discharge event is a release of water from a release point as specified in Schedule F – Table 1 (Contaminant Release Points).

Schedule F - Table 4 (Receiving Water Trigger and Contaminant Limits)

Parameter	Unit	Contaminant Trigger Level ¹	Contaminant Limit ²
pH	pH	20 th percentile ³ of reference ⁴ or 6.0 ⁵ whichever is lower. 80 th percentile ³ of reference ⁴ or 7.5 ⁵ whichever is higher	5.0 (minimum) or 5 th percentile ³ of reference ⁴ , whichever is highest, 9.0 (maximum) or 95 th percentile ³ of reference ⁴ , whichever is lowest
Electrical Conductivity	µS/cm	80 th percentile ³ of reference ⁴ or 250 ⁵ , whichever is higher	5970 ² or 95 th percentile ³ of reference ⁴ , whichever is lowest
Turbidity	NTU	80 th percentile ³ of reference ⁴ or 15 ⁵ , whichever is higher	N/A
Sulphate	mg/l	80 th percentile ³ of the reference ⁴	1000 ² or 95 th percentile ³ of reference ⁴ , whichever is lowest
Fluoride	mg/l	80 th percentile ³ of the reference ⁴	2 ² or 95 th percentile ³ of reference ⁴ , whichever is lowest
Aluminium	mg/l	80 th percentile ³ of reference ⁴ or 0.055 ⁵ , whichever is higher	5 ² or 95 th percentile ³ of reference ⁴ , whichever is lowest
Arsenic	mg/l	80 th percentile ³ of reference ⁴ or 0.013 ⁵ , whichever is higher	0.5 ² or 95 th percentile ³ of reference ⁴ , whichever is lowest
Cadmium	mg/l	80 th percentile ³ of reference ⁴ or 0.0002 ⁵ , whichever is higher	0.01 ² or 95 th percentile ³ of reference ⁴ , whichever is lowest
Cobalt	mg/l	80 th percentile ³ of reference ⁴ or 0.0014 ⁶ , whichever is higher	1 ² or 95 th percentile ³ of reference ⁴ , whichever is lowest
Copper	mg/l	80 th percentile ³ of reference ⁴ or 0.0014 ⁵ , whichever is higher	1 ² or 95 th percentile ³ of reference ⁴ , whichever is lowest
Nickel	mg/l	80 th percentile ³ of reference ⁴ or 0.011 ⁵ , whichever is higher	1 ² or 95 th percentile ³ of reference ⁴ , whichever is lowest
Zinc	mg/l	80 th percentile ³ of reference ⁴ or 0.008 ⁵ , whichever is higher	20 ² or 95 th percentile ³ of reference ⁴ , whichever is lowest

¹ All metals and metalloids must be measured as total (unfiltered) and dissolved (filtered). Trigger levels for metal/metalloids apply if dissolved results exceed trigger. Contaminant limits apply for metal/metalloids if total results exceed limits.

² Contaminant limit based on ANZECC (2000) stock water quality guidelines;

³ 20th, 80th and 95th percentiles are calculated using ANZECC (2000) methodology (section 7.4.4.1); where 80th percentile of reference is exceeded and the reference site also exceeds the value during the same event, the value of the reference site during the same event applies as the receiving water trigger level.

⁴ Reference sites are defined in Schedule F – Table 3.

⁵ Default trigger values – from ANZECC (2000) trigger levels for aquatic ecosystems indicative of slightly disturbed tropical Australian upland river ecosystems.

⁶ Interim (low reliability) value from ANZECC (2000) section 8.3.7.1

(F4-2) If quality characteristics of the receiving water at the downstream monitoring points identified in Schedule F - Table 3 exceed any of the trigger levels specified in Schedule F - Table 4 the holder of this environmental authority must compare the downstream results to the reference site results in the **receiving waters** and:

- (a) where the downstream result is the same or a lower value than the reference site value for the quality characteristic during the same sampling event then no action is to be taken; or
- (b) where the downstream results exceed the reference site complete an investigation in accordance with the ANZECC & ARMCANZ 2000 methodology, into the potential for environmental harm and provide a written report to the **administering authority** within three months, outlining:
 - i. details of the investigations carried out
 - ii. details of the environmental impacts observed; and
 - iii. actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with (F4-2)(b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic during the reporting period.

(F4-3) The release of contaminants to **waters** must not exceed the contaminant release limits stated in Schedule F - Table 4 (Receiving Water Trigger and Contaminant Limits) for each quality characteristic.

Stream Sediment Contaminant Levels

- (F5-1) Sediment quality of **receiving waters** and reference **waters** must be monitored at the monitoring locations and frequency defined in Schedule F - Table 5 (Receiving Water Monitoring Locations) and identified on Schedule H - Map 2 (Surface Water, Sediment and Groundwater Monitoring Sites) and Map 3 (Location of Monitoring Sites on Belmore Creek) for the parameters defined in Schedule F - Table 6 (Stream Sediment Trigger and Contaminant Levels).

Schedule F – Table 5 (Receiving Stream Sediment Location and Frequencies)

Monitoring point	Easting MGA (GDA 94)	Northing MGA (GDA 94)	Monitoring frequency
SW1 Lower Slaughteryard Creek	630350	7986405	Twice yearly in wet season (January ~ March) & dry season (July ~ September)
SW2 Slaughteryard West Tributary at the ML boundary	630197	7987640	
SW3 Slaughteryard Creek upstream of the Golden Butterfly WRD	631080	7988157	
SW6 Belmore Creek borrow pit/stock dam	627908	7989454	
BCDS Belmore Creek Downstream	626736.519	7989973.135	
Reference Sites ¹			
SW3b Reference point for Slaughteryard Creek	613208	7988220	Twice yearly in wet season (January ~ March) & dry season (July ~ September)
BCUS Reference point for Belmore Creek	TBD	TBD	

1. Reference sites must:

- be from the same biogeographic 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 downstream sites that any disturbance at the downstream site also results in a change at the reference site

Schedule F - Table 6 (Stream Sediment Trigger and Contaminant Levels)

Parameter	Unit	Trigger Level	Contaminant Limit
Aluminium	mg/kg	Reference value ¹	3 times the reference value ¹
Arsenic	mg/kg	Reference value ¹ or 20 ² , whichever is higher.	70 ³ or 3 times the reference value ¹ , whichever is higher
Boron	mg/kg	Reference value ¹	3 times the reference value ¹
Cadmium	mg/kg	Reference value ¹ or 1.5 ³ , whichever is higher.	10 ³ or 3 times the reference value ¹ , whichever is higher
Chromium	mg/kg	Reference value ¹ or 80 ² , whichever is higher.	370 ³ or 3 times the reference value ¹ , whichever is higher
Cobalt	mg/kg	Reference ¹	3 times the reference value ¹
Copper	mg/kg	Reference ¹ or 65 ² , whichever is higher.	270 ³ or 3 times the reference value ¹ , whichever is higher
Mercury	mg/kg	Reference value ¹ or 0.15 ² whichever is higher.	1 ³ or 3 times the reference value ¹ , whichever is higher
Nickel	mg/kg	Reference value ¹ or 21 ² , whichever is higher.	52 ³ or 3 times the reference value ¹ , whichever is higher.
Selenium	mg/kg	Reference value ¹	3 times the reference value ¹
Zinc	mg/kg	Reference value ¹ or 200 ² or, whichever is higher.	410 ³ or 3 times the reference value ¹ , whichever is higher

¹ Reference sites are defined in Schedule F - Table 3.

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

- (F5-2) If the bed of the receiving water exceed any of the trigger levels specified in Schedule C - Table 6 (Stream Sediment Trigger and Contaminant Levels), the holder of this environmental authority must compare the results of the downstream site to the data from reference monitoring sites and:
- (a) if the level of contaminants at the downstream site does not exceed the reference monitoring site data, then no action is to be taken; or
 - (b) if the level of contaminants at the downstream site is greater than the reference monitoring site data, complete an investigation in accordance with the ANZECC & ARMCANZ 2000 methodology, into the potential for environmental harm and provide a written report to the **administering authority** within three (3) months, outlining:
 - i. details of the investigations carried out;
 - ii. details of the environmental impacts observed; and
 - iii. actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with F5-2(b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic within the three month investigation period.

- (F5-3) Releases of contaminants must not result in an exceedance of sediment contaminant limits stated in Schedule F - Table 6 (Stream Sediment Trigger and Contaminant Levels).
- (F5-4) All stream sediment sampling must be undertaken in accordance with the most recent version of Australian Standard AS 5667.12 Guidance on Sampling of Bottom Sediments of 1998.

Onsite Water Storages

- (F6-1) Water storages stated in Schedule F - Table 7 (Water Storage Monitoring) must be monitored for the water quality characteristics specified in Schedule F - Table 8 (Onsite Water Storage Contaminant Limits).

Schedule F – Table 7 (Water Storage Monitoring)

Water Storage Description	Easting (GDA94)	Northing (GDA94)	Frequency of Monitoring
Golden Butterfly Pit	631140	7987525	Twice yearly in wet season (January ~ March) & dry season (July ~ September)
Golden Butterfly North Pit	630545	7987921	
Lady Isabella Pit	629473	7990023	
Content Pit	629048	7990435	
SW3a Golden Butterfly WRD	630913	7988253	
SW4 Stock water dam	631049	7987892	
SW5 Sediment dam at lease boundary	628691	7990012	

Schedule F - Table 8 (Onsite Water Storage Contaminant Limits)

Quality Characteristic	Test Value	Contaminant Limit ¹
pH (pH unit)	Range	Greater than 4, Less than 9 ³
EC (µS/cm)	Maximum	5970 ¹
Turbidity (TDS)	Maximum	4000 ¹
Sulphate (mg/L)	Maximum	1000 ¹
Fluoride (mg/L)	Maximum	2 ¹
Aluminium (mg/L) ²	Maximum	5 ¹
Arsenic (mg/L) ²	Maximum	0.5 ¹
Boron (mg/L) ²	Maximum	5 ¹
Cadmium (mg/L) ²	Maximum	0.01 ¹
Chromium (mg/L) ²	Maximum	1 ¹
Cobalt (mg/L) ²	Maximum	1 ¹
Copper (mg/L) ²	Maximum	1 ¹
Mercury (mg/L) ²	Maximum	0.002 ¹
Nickel (mg/L) ²	Maximum	1 ¹
Selenium (mg/L) ²	Maximum	0.02 ¹
Zinc (mg/L) ²	Maximum	20 ¹

Notes:

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

²Total measurements (unfiltered) must be taken and analysed.

³Page 4.2-15 of ANZECC & ARMICANZ (2000) "Soil and animal health will not generally be affected by water with pH in the range of 4-9".

- (F6-2) In the event that **waters** defined in Schedule F – Table 7 exceed the contaminant limits defined in Schedule F – Table 8, the holder of the environmental authority must implement **measures** to prevent access to **waters** by all livestock and minimise access by native fauna.

Groundwater

(F7-1) Groundwaters must be monitored at the locations and frequencies defined in Schedule F – Table 9 & Schedule H – Map 2 for parameters identified in Schedule F – Table 10:

Schedule F – Table 9 (Groundwater monitoring locations and frequency)

Monitoring Point	Easting (GDA94)	Northing (GDA94)	Surface RL ¹ (m)	Monitoring Frequency
BH1 west of Golden Butterfly Pit	631270	7987673	119	Annually during the dry season
BH2 east of Golden Butterfly Pit	630985	7987444	110	Annually during the dry season
BH3 east of Golden Butterfly Waste Rock Dump	630998	7987934	115	Annually during the dry season
BH5 east of Golden Butterfly Waste Rock Dump	630987	7988051	116	Annually during the dry season
BH7 east of Golden Butterfly Waste Rock Dump	631000	7988150	117	Annually during the dry season
BH8 (east of Golden Butterfly Waste Rock Dump)	630591	7988061	123	Annually during the dry season
BH9 east of Golden Butterfly Waste Rock Dump	630647	7987997	122	Annually during the dry season
BH10 west of Content Waste Rock Dump	628746	7989851	103	Annually during the dry season
BH11 west of Content Waste Rock Dump	628868	7990005	104	Annually during the dry season
BH12 west of Content Waste Rock Dump at lease boundary	628633	7989962	102	Annually during the dry season
GBMB1 Slaughteryard Creek	630894	7987274	110	Annually during the dry season
GBMB3 Slaughteryard Creek	630685	7987087	113	Annually during the dry season
GBMB6 Slaughteryard Creek	630257	7986656	111	Annually during the dry season
SY1 Slaughteryard Creek	630226	7986408	107	Annually during the dry season

¹ RL measurement to be taken from top of bore casing.

(F7-2) If groundwaters from compliance bores identified in Schedule F – Table 9 exceed any of the trigger levels stated in Schedule F – Table 10, the **environmental authority holder** must complete an investigation in accordance with the ANZECC (2000) methodology, into the potential for environmental harm, and provide a written report to the **administering authority** within 3 months of the date of the original exceedence, outlining:

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

Note: a period of greater than 3 months may be approved if authorised by the administering authority.

Schedule F – Table 10 (Groundwater trigger levels)

Parameter	Unit	1.1.1.1 Trigger Levels	Limit Type
pH	pH unit	20 th percentile ^{1,5} of reference ⁴ or 6.0 ³ , whichever is lower. 80 th percentile ^{1,5} of reference ⁴ or 7.5 ³ , whichever is higher.	Median ⁶
EC	µS/cm	80 th percentile ^{1,5} of reference ⁴ or 250 ³ , whichever is higher.	Median ⁶
Sulphate	mg/L	80 th percentile ^{1,5} of reference ⁴	Median ⁶
Fluoride	µg/L	80 th percentile ^{1,5} of reference ⁴	Median ⁶
Aluminium	µg/L	80 th percentile ^{2,5} of reference ⁴ or 55 ³ , whichever is higher	Median ^{6, 7} or 95 th percentile ^{5,6,7}
Arsenic	µg/L	80 th percentile ^{2,5} of reference ⁴ or 13 ^{3,9} , whichever is higher.	Median ^{6, 7} or 95 th percentile ^{5,6,7}
Cadmium	µg/L	80 th percentile ^{2,5} of reference ⁴ or 0.2 ³ , whichever is higher.	Median ^{6, 7} or 95 th percentile ^{5,6,7}
Cobalt	µg/L	80 th percentile ^{2,5} of reference ⁴ or 1.4 ⁸ , whichever is higher.	Median ^{6, 7} or 95 th percentile ^{5,6,7}
Copper	µg/L	80 th percentile ^{2,5} of reference ⁴ or 1.4 ³ , whichever is higher.	Median ^{6, 7} or 95 th percentile ^{5,6,7}
Nickel	µg/L	80 th percentile ^{2,5} of reference ⁴ or 11 ³ , whichever is higher.	Median ^{6, 7} or 95 th percentile ^{5,6,7}
Zinc	µg/L	80 th percentile ^{2,5} of reference ⁴ or 8.0 ³ , whichever is higher.	Median ^{6, 7} or 95 th percentile ^{5,6,7}

¹ For stressors, trigger values are based on the 20th or 80th percentile of at least 18 and not more than 24 consecutive reference site samples⁴, derived using the EPA (2006) methodology (section 3.4.3.1).

Where insufficient data is available, an interim trigger value can be derived from ≥ 8 but ≤ 17 consecutive reference site samples⁴, derived using EPA (2006) methodology (section 3.4.3.1).

² For toxicants, trigger values are based on the 80th percentile of at least 10 and no more than 24 consecutive reference site samples⁴, derived using the EPA (2006) methodology (Table D1, and section 3.4.3.1).

³ Default trigger values – from ANZECC (2000) trigger levels for aquatic ecosystems indicative of slightly disturbed tropical Australian upland river ecosystems.

⁴ Reference sites are defined in Schedule F – Table 9.

⁵ 20th, 80th and 95th percentiles are calculated using ANZECC (2000) methodology (section 7.4.4.1).

⁶ The median and 95th percentile must be determined on the most recent three (3) consecutive routine monitoring samples. Comparison against trigger and contaminant limits should be made to maximum test values collected during discharge and flow events.

⁷ The median limit type is used if the 80th percentile trigger level is used, or if the default trigger level is used when there are <24 reference site values used to calculate the 80th percentile. The 95th percentile limit type is used if the default trigger level is used when there are 24 reference site values used to calculate the 80th percentile.

⁸ Interim (low reliability) value from ANZECC (2000) section 8.3.7.1.

⁹ If arsenic (soluble) exceeds 13 µg/L then speciation to As(III) and As(V) must be conducted. The As(III) and As(V) levels must not exceed the 80th percentile of reference site samples⁴ or the respective default trigger level: As(III) – 24 µg/L; As(V) – 13 µg/L.

Analysis for soluble metal concentrations only, not totals.

Note – where there is insufficient reference site data available to establish an 80th percentile trigger value and no default values are available the maximum allowable change in water quality at the receiving water monitoring sites (defined in Schedule F – Table 1) is reference site value for that sampling occasion plus ten percent (10%).

(F7-3) Groundwaters from bores identified in Schedule F – Table 9, must not exceed any of the limits defined in Schedule F – Table 11.

Schedule F – Table 11 (Groundwater contaminant limits)

Parameter	Unit	Test Value	Contaminant Limit
pH	pH unit	Range	Greater than 5, less than 9
EC	µS/cm	Maximum	5970 ¹

Parameter	Unit	Test Value	Contaminant Limit
Turbidity	TDS	Maximum	4000 ¹
Sulphate	mg/L	Maximum	1000 ¹
Fluoride	mg/L	Maximum	2 ¹
Aluminium ²	mg/L	Maximum	5 ¹
Arsenic ²	mg/L	Maximum	0.5 ¹
Cadmium ²	mg/L	Maximum	0.01 ¹
Cobalt ²	mg/L	Maximum	1 ¹
Copper ²	mg/L	Maximum	1 ¹
Nickel ²	mg/L	Maximum	1 ¹
Zinc ²	mg/L	Maximum	20 ¹

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

² Analysis for soluble metal concentrations only, not totals.

- (F7-4) Annual groundwater monitoring reports analysing groundwater chemistry and hydrogeological status of all groundwater bores and groundwater conditions are to be prepared by November each year as an element of the water management strategy review.
- (F7-5) Construct additional monitoring bores BH10, BH11 & BH12 to the west of the Content Waste Rock Dump and BH 8 & BH9 between the Golden Butterfly North Pit and the Golden Butterfly Waste Rock Dump and SY1 on Slaughteryard Creek.
- (F7-6) Before 30 June 2009 conduct additional investigations / monitoring to confirm the conceptual **licensed place** hydro-geological model, including:
- (a) obtaining additional hydro-geological information (e.g. geological information, bore and pit water levels).
 - (b) compile and analyse existing groundwater quality data from the town water supply bores.
 - (c) installing an additional deep monitoring bore (SY1) between the Golden Butterfly Pit and Slaughteryard Creek to supplement the existing monitoring network.
 - (d) surveying of pit lake water levels and erection of water level gauging stages.
 - (e) investigate the state of equilibrium of pit water levels.
 - (f) include the latest information obtained from the additional hydro-geological investigations / monitoring in subsequent amendments to the Croydon Gold Mine EMPlan.
 - (g) conduct a bore census of the area surrounding the **licensed place**.

Stormwater

- (F8-1) An erosion and sediment control plan must be developed and implemented for the activities on the **licensed place** which has been certified by a **suitably qualified** person, Certified Professional in Sediment and Erosion Control (CPESC), or a professional with appropriate experience and / or qualifications accepted by the **Administering authority** and be included in the Plan of Operations.
- (F8-2) 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.

Acid Rock Drainage and Leachate management

- (F9-1) All reasonable and practicable **measures** must be implemented to prevent hazardous **leachate** being directly or indirectly released or likely to be released as a result of the **activity** to any groundwater or water course.

Water Management Strategy

- (F10-1) A water management strategy must be prepared for inclusion in the Plan of Operations. The strategy will include:
- (a) data collation and identify existing data requirements
 - (b) design and detail additional works as required
 - (c) implement / construct additional works
- (F10-2) An annual review of the water management strategy must be submitted by November each year.

Receiving Environment Monitoring Program (REMP)

- (F11-1) The **environmental authority holder** must develop and implement a Receiving Environment Monitoring Program (REMP) to monitor, identify and describe any adverse impacts to surface water **environmental values**, quality and flows due to the authorised mining **activity**. This must include monitoring the effects of the mine on the **receiving environment** periodically (under **natural flow** conditions) and while **mine affected water** is being discharged from the site. For the purposes of the REMP, the **receiving environment** is the **waters** of the Belmore Creek and connected or surrounding waterways within 10 km downstream of the release. The REMP should encompass any sensitive **receiving waters** or **environmental values** downstream of the authorised mining **activity** that will potentially be directly affected by an authorised release of mine affected water.

(F11-2) The REMP must:

- a) Assess the condition or state of **receiving waters**, including upstream conditions, spatially within the REMP area, considering background water quality characteristics based on accurate and reliable monitoring data that takes into consideration temporal variation (e.g. seasonality); and
- b) Be designed to facilitate assessment against water quality objectives for the relevant **environmental values** that need to be protected; and
- c) Include monitoring from background reference sites (e.g. upstream or background) and downstream sites from the release (as a minimum, the locations specified in Schedule F - Table 3); and
- d) Specify the frequency and timing of sampling required in order to reliably assess ambient conditions and to provide sufficient data to derive site specific background reference values in accordance with the *Queensland Water Quality Guidelines* 2006. This should include monitoring during periods of **natural flow** irrespective of mine or other discharges; and
- e) Include monitoring and assessment of all water quality parameters listed in Schedule F - Table 2; and
- f) Include, where appropriate, monitoring of 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*); and
- g) Include, where appropriate, monitoring of macroinvertebrates in accordance with the AusRivas methodology, and
- h) Apply procedures and/or guidelines from ANZECC & ARMCANZ 2000 and other relevant guideline documents; and
- i) Describe sampling and analysis methods and quality assurance and control; and
- j) Incorporate stream flow and hydrological information in the interpretations of water quality and biological data.

(F11-3) A report outlining the findings of the REMP, including all monitoring results and interpretations in accordance with conditions F11-1 and F11-2 must be prepared annually and made available on request to the **administering authority**. This must include an assessment of background reference water quality, the condition of downstream water quality compared against water quality objectives, and the suitability of current discharge limits to protect downstream **environmental values**.

END OF CONDITIONS FOR SCHEDULE F

SCHEDULE G – Definitions

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

Acceptance criteria means the **measures** by which the actions implemented to rehabilitate the land are deemed to be complete (same as completion criteria).

Administering authority means the Department of Environment and Heritage Protection or its successor or predecessors.

Boundary means within 1m of the cadastral **boundary** of the approved place.

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 place used as an office or for business or commercial purposes, other than a place within the boundaries of the operational land.

EC means electrical conductivity.

Environmental authority holder means the holder of this environmental authority.

Environmental value as defined under Chapter 1 of the *Environmental Protection Act 1994*.

General waste means waste other than regulated waste.

Infrastructure means water storage dams, levees,, roads and tracks, buildings and other structures built for the purpose of the mining activity.

Land in the 'land schedule' of this document means land excluding waters and the atmosphere, that is, the term has a different meaning from the term as defined in the *Environmental Protection Act 1994*. For the purposes of

the *Acts Interpretation Act 1954*, it is expressly noted that the term 'land' in this environmental authority relates to physical land and not to interests in land.

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

Leachate means a **liquid** that has passed through or emerged from, or is likely to have passed through or emerged from, a material stored, processed or disposed of at the site that contains soluble, suspended or miscible contaminants likely to have been derived from the said material.

Licensed place means the mining activities carried out at the mining tenements detailed in the Environmentally relevant activity and location details table (page 1) of this environmental authority.

Liquid means any substance that:

1. has an angle of repose of less than five degrees; or
2. becomes free flowing at or below 60 degrees Celsius or when it is transported; or
3. is not generally capable of being picked up by a spade or shovel.

m means metres.

Measures has the broadest interpretation and includes plant, equipment, physical objects, monitoring, procedures, actions, directions and competency.

Mine affected water:

- a) means the following types of water:
 - i) pit water, tailings dam water, processing plant water;
 - ii) water contaminated by a mining activity which would have been an environmentally relevant activity under Schedule 2 of the Environmental Protection Regulation 2008 if it had not formed part of the mining activity;
 - iii) rainfall runoff which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated, excluding rainfall runoff discharging through release points associated with erosion and sediment control structures that have been installed in accordance with the standards and requirements of an Erosion and Sediment Control Plan to manage such runoff, provided that this water has not been mixed with pit water, tailings dam water, processing plant water or workshop water;
 - iv) groundwater which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated;
 - v) groundwater from the mine's dewatering activities;
 - vi) a mix of mine affected water (under any of paragraphs i)-v) and other water.
- b) does not include surface water runoff which, to the extent that it has been in contact with areas disturbed by mining activities that have not yet been completely rehabilitated, has only been in contact with:
 - i) land that has been rehabilitated to a stable landform and either capped or revegetated in accordance with the acceptance criteria set out in the environmental authority but only still awaiting maintenance and monitoring of the rehabilitation over a specified period of time to demonstrate rehabilitation success; or
 - ii) land that has partially been rehabilitated and monitoring demonstrates the relevant part of the landform with which the water has been in contact does not cause environmental harm to waters or groundwater, for example:
 - a. areas that are been capped and have monitoring data demonstrating hazardous material adequately contained with the site;

- b. evidence provided through monitoring that the relevant surface water would have met the water quality parameters for mine affected water release limits in this environmental authority, if those parameters had been applicable to the surface water runoff; or
- iii) both.

NATA means National Association of Testing Authorities.

Natural flow means the flow of water through waters caused by nature.

Non-polluting means having no adverse impacts upon the receiving environment.

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.

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.

Releases of contaminants to the environment means to:

1. deposit, discharge, emit or disturb the contaminant; and
2. cause or allow the contaminant to be deposited, discharged, emitted or disturbed; and
3. fail to prevent the contaminant from being deposited, discharged emitted or disturbed; and
4. allow the contaminant to escape; and
5. fail to prevent the contaminant from escaping.

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.

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

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 dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or
- an educational institution; or
- a medical centre or hospital; or
- a protected area under the Nature Conservation Act 1992, the Marine Parks Act 1992 or a World Heritage Area; or
- a public park or gardens; or
- a place used as a workplace, 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.

Stable means geotechnical stability of the rehabilitated landform where instability related to the excessive settlement and subsidence caused by consolidation / settlement of the wastes deposited, and sliding / slumping instability has ceased.

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

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, roadside gutter, stormwater run-off, and groundwater and any part thereof.

µS/cm means micro siemens per centimetre.

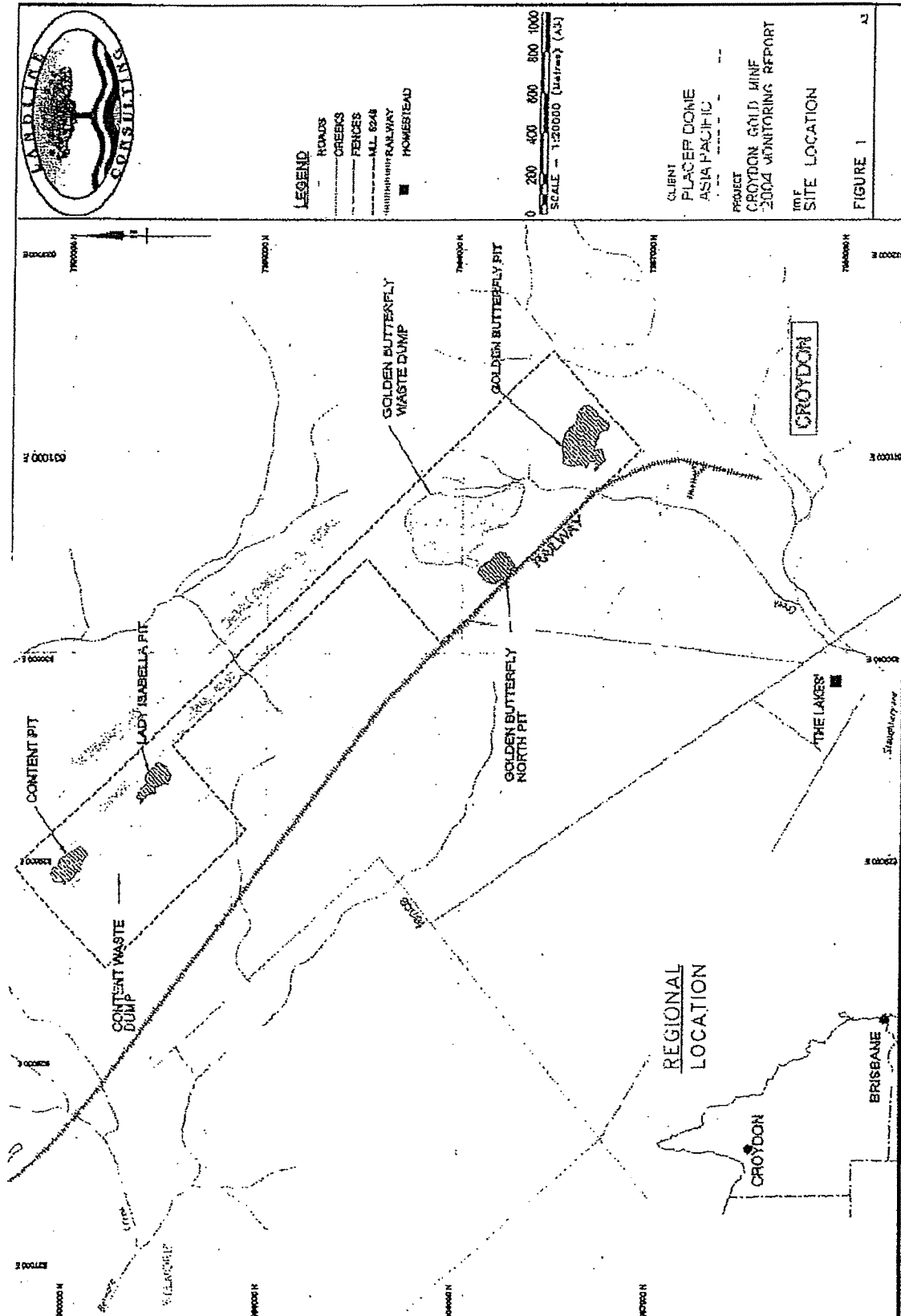
Watercourse has the same meaning given in the *Water Act 2000*.

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

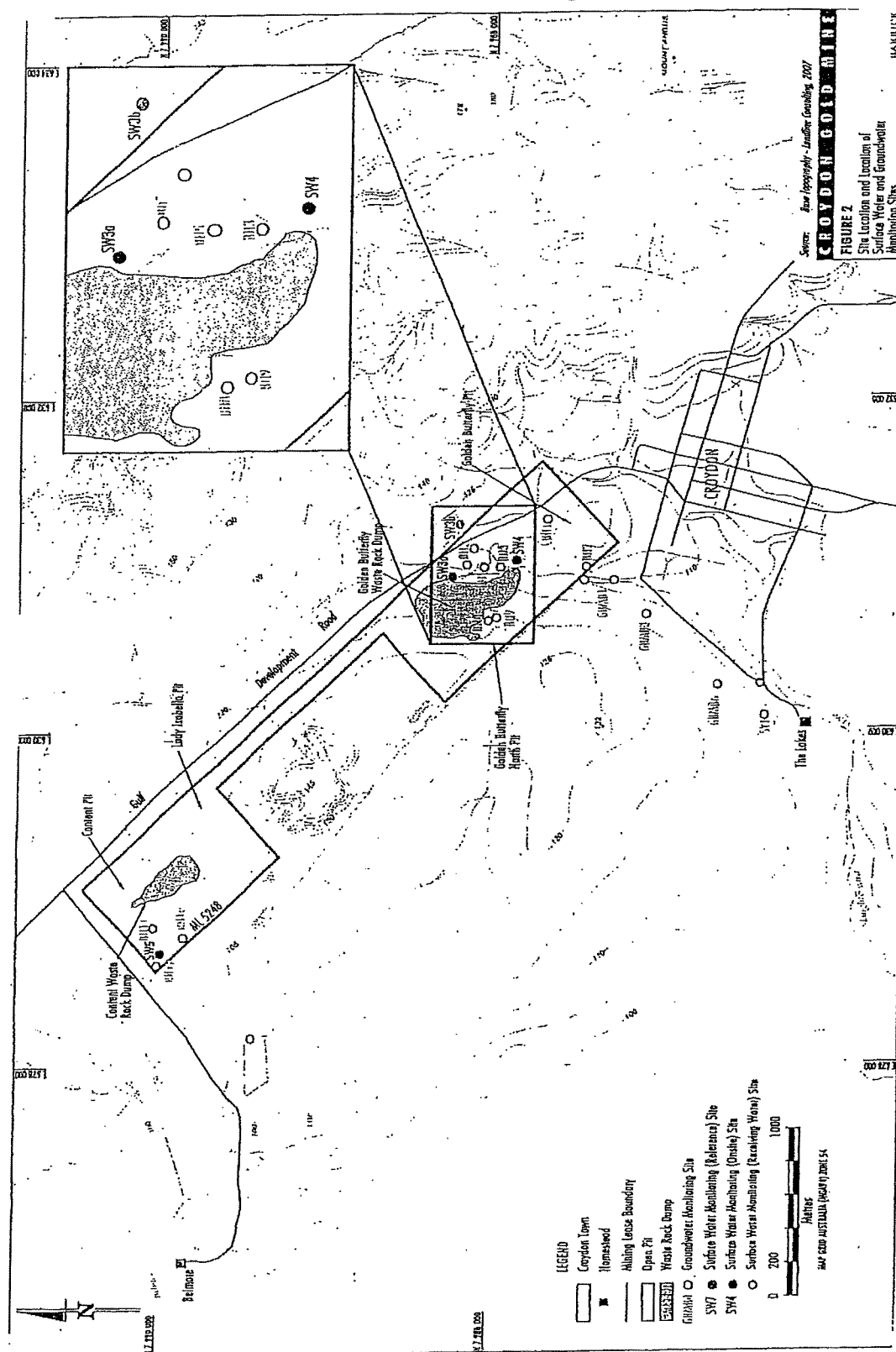
END OF CONDITIONS FOR SCHEDULE G

SCHEDULE H – MAPS

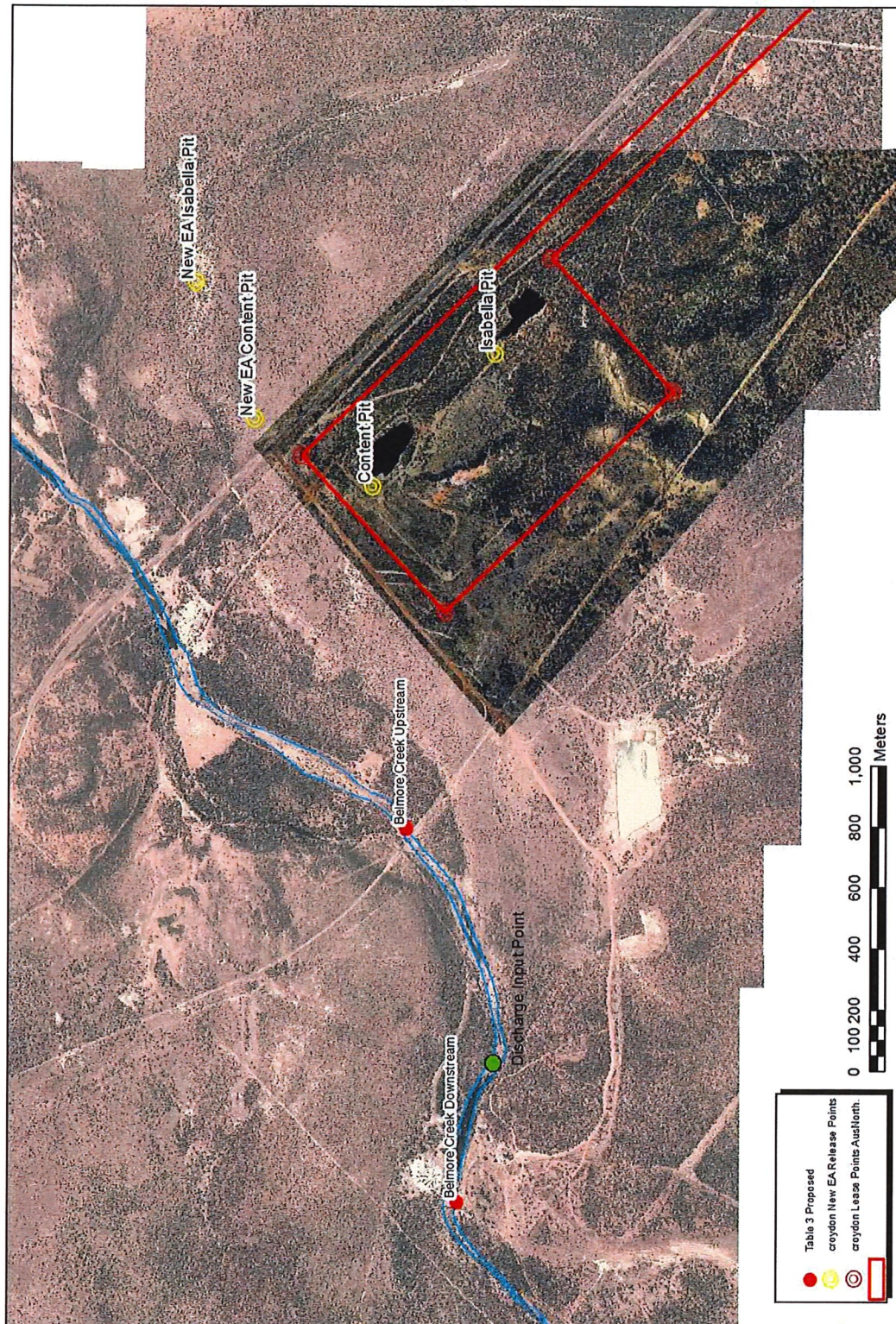
Map 1 – Mine Related Landforms



Map 2 – Surface Water, Sediment and Groundwater Monitoring Sites



Map 3 – Location of Monitoring Sites on Belmore Creek



END OF CONDITIONS FOR SCHEDULE H

END OF PERMIT

