



Department of  
Environment and  
Heritage Protection

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

# ENVIRONMENTAL PROTECTION ACT 1994

## Environmental Authority MIN102968011 (mining activities)

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

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

White Range Mines Pty Ltd  
Level 11, 32 Martin Place  
SYDNEY NSW 2000

| Type of Environmental Authority<br>(mining activities) | Authorised<br>Mining<br>Tenements | Location                                        |
|--------------------------------------------------------|-----------------------------------|-------------------------------------------------|
| Mining Lease                                           | ML2519                            | Vulcan - 40km south of Cloncurry                |
|                                                        | ML90082                           | Mt McCabe - 40km south of Cloncurry             |
|                                                        | ML90081                           | Hampden/Kuridala - 70km south-west of Cloncurry |
|                                                        | ML90134                           | Greenmount - 35 km due south of Cloncurry       |
|                                                        | ML90161                           | Phil's Find - 35 km due south of Cloncurry      |

This environmental authority is subject to the conditions set out in the attached schedules.

The anniversary date of this environmental authority is **23 December**.

This environmental authority takes effect from **21 January 2013**.

Signed

Date

**Hamish Butler**  
Delegate of Administering Authority  
*Environmental Protection Act 1994*

**Table 1 (Environmentally relevant activities authorised under this environmental authority)**

| ERA number  | ERA description (refer to Schedule 2, <i>Environmental Protection Regulation 2008</i> )                                                                                           | Aggregate environmental score |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| 8(3)(b)     | Chemical storage - storing the following total quantity of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 – more than 500m <sup>3</sup> | 85                            |
| 15          | Fuel burning – using fuel burning equipment that is capable of burning at least 500kg of fuel in an hour                                                                          | 35                            |
| 30(d)       | Metal Smelting and Refining – processing, in a year, more than 10000t of metals or metalloids                                                                                     | 316                           |
| 31(2)(b)    | Mineral processing – processing, in a year, the following quantities of mineral products, other than coke – more than 100000t                                                     | 280                           |
| 56(2)       | Regulated waste storage – receiving and storing regulated waste other than tyres                                                                                                  | 21                            |
| 60(1)(d)    | Waste disposal – operating a facility for disposing of, in a year, the following quantity of waste – more than 20000t                                                             | 110                           |
| 60(2)(a)    | Waste disposal – operating a facility for disposing of, in a year, the following quantity of general waste – 50t to 2000t                                                         | 13                            |
| 63(2)(a) ii | Sewage treatment - operating sewage treatment works, other than no-release works, with a total daily peak design capacity of - 21 to 100 EP - otherwise                           | 27                            |
| ERA number  | ERA description (refer to Schedule 6, <i>Environmental Protection Regulation 2008</i> )                                                                                           | Aggregate environmental score |
| 9           | Level 1 mining project – mining copper ore                                                                                                                                        | 217                           |

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 - Community
- Schedule H - Definitions
- Schedule I - Maps / Plans

## **Schedule A - General**

### **Financial assurance**

- (A1-1) Provide a financial assurance in the amount and form required by the administering authority prior to the commencement of activities proposed under this environmental authority.

*NOTE: The calculation of financial assurance for condition (A1-1) must be in accordance with Guideline 17 and may include a performance discount. The amount is defined as the maximum total rehabilitation cost for complete rehabilitation of all disturbed areas, which may vary on an annual basis due to progressive rehabilitation. The amount required for the financial assurance must be the highest Total Rehabilitation Cost calculated for any year of the Plan of Operations and calculated using the formula: (Financial Assurance = Highest Total Annual Rehabilitation Cost x Percentage Required).*

- (A1-2) The financial assurance is to remain in force until the administering authority is satisfied that no claim on the assurance is likely.

*NOTE: Where progressive rehabilitation is completed and acceptable to the administering authority, progressive reductions to the amount of financial assurance will be applicable where rehabilitation has been completed in accordance with the acceptance criteria defined within this environmental authority.*

### **Maintenance of measures, plant and equipment**

- (A2-1) The environmental authority holder must ensure:
- that all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority are installed;
  - that such measures, plant and equipment are maintained in a proper condition; and
  - that such measures, plant and equipment are operated in a proper manner.

### **Monitoring**

- (A3-1) Record, compile and keep for a minimum of five years all monitoring results required by this environmental authority and make available for inspection all or any of these records upon request by the administering authority.
- (A3-2) Where monitoring is a requirement of this environmental authority, ensure that a competent person(s) conducts all monitoring.

### Storage and handling of flammable, combustible and corrosive liquids

- (A4-1) Spillage of all flammable and combustible liquids must be contained within an on-site containment system and controlled in a manner that prevents environmental harm (other than trivial harm) and maintained in accordance with the most recent edition of AS 1940 - Storage and Handling of Flammable and Combustible Liquids.
- (A4-2) The on-site storage of corrosive liquids must be in accordance with the most recent addition of AS 3780 - Storage and Handling of Corrosive Substances 1994.

### Definitions

- (A5-1) Words and phrases used throughout this environmental authority are defined in Schedule H - Definitions. Where a definition for a term used in this environmental authority is sought and the term is not defined within this environmental authority, the definitions in the *Environmental Protection Act 1994*, its Regulations and Environmental Protection Policies must be used.

### Exploration

- (A6-1) 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. To the extent that any Standard Environmental Condition is inconsistent with a provision of this authority, the provision of this authority will prevail.

END CONDITIONS FOR SCHEDULE A

## Schedule B - Air

### Dust nuisance

- (B1-1) Subject to Conditions (B1-2) and (B1-3) the release of dust or particulate matter or both resulting from the mining activity must not cause an environmental nuisance, at any sensitive or commercial place.
- (B1-2) 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 or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring.
- (B1-3) 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.
- (B1-4) If monitoring indicates exceedence of the relevant limits in Condition (B1-3), 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.

### Odour nuisance

- (B2-1) Subject to condition (B2-2), the release of noxious or offensive odour(s) or any other noxious or offensive airborne contaminant(s) resulting from the mining activity must not cause an environmental nuisance at any sensitive or commercial place.
- (B2-2) When requested by the administering authority, odour 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 or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring.
- (B2-3) If monitoring indicates Condition (B2-1) is not being met then the environmental authority holder must:
- a) address the complaint including the use of appropriate dispute resolution if required; or
  - b) immediately implement odour abatement measures so that emissions of odour from the activity do not result in further environmental nuisance.

END CONDITIONS FOR SCHEDULE B

## Schedule C - Water

### Release to waters

- (C1-1) Receiving waters affected by the release of process water or storm water contaminated by the mining activities or both must be monitored at the locations and frequencies defined in Schedule C - Table 1 and Schedule I - Maps 1, 2, 3, 4 and 5 and comply with the contaminant limits defined in Schedule C - Table 3.

**Schedule C - Table 1 (Receiving water monitoring locations and frequency)**

| Monitoring point                           | Easting<br>(Zone 54, AMG 84) | Northing<br>(Zone 54, AMG 84) | Monitoring frequency |
|--------------------------------------------|------------------------------|-------------------------------|----------------------|
| Upstream Greenmount - UG1 <sup>1</sup>     | 452 100                      | 7670 033                      | Each Flow event      |
| Downstream Greenmount - DG1                | 452 444                      | 7675 096                      | Each Flow event      |
| Downstream Greenmount - DG2                | 451 036                      | 7675 530                      | Each Flow event      |
| Downstream Greenmount - DG 3               | 452 500                      | 7670 650                      | Each Flow event      |
| Upstream Mt McCabe - UMM1 <sup>2</sup>     | 446 400                      | 7670 400                      | Each Flow event      |
| Downstream Mt McCabe - DMM1                | 446 700                      | 7671 900                      | Each Flow event      |
| Downstream Mt McCabe - DMM2                | 446 600                      | 7669 500                      | Each Flow event      |
| Downstream Mt McCabe - DMM3                | 447 600                      | 7670 000                      | Each Flow event      |
| Upstream Vulcan - UV1 <sup>3</sup>         | 452 760                      | 7672 020                      | Each Flow event      |
| Downstream Vulcan - DV1                    | 452 920                      | 7672 040                      | Each Flow event      |
| Downstream Vulcan - DV 2                   | 452 900                      | 7672 110                      | Each Flow event      |
| Downstream Vulcan - DV3                    | 452 730                      | 7672 230                      | Each Flow event      |
| Upstream Hampden - UH1 <sup>4</sup>        | 449 910                      | 7645 500                      | Each Flow event      |
| Downstream Hampden - DH1                   | 447 360                      | 7644 610                      | Each Flow event      |
| Downstream Phil's Find - DPF1 <sup>5</sup> | 451262                       | 7675935                       | Each Flow event      |
| Downstream Phil's Find - DPF2              | 452332                       | 7675950                       | Each Flow event      |
| Upstream Phil's Find - UPF1                | 452906                       | 7675165                       | Each Flow event      |
| Upstream Phil's Find - UPF2                | 452907                       | 7674855                       | Each Flow event      |
| Upstream Phil's Find - UPF3                | 452377                       | 7674987                       | Each Flow event      |
| Upstream Phil's Find - UPF4                | 451087                       | 7675481                       | Each Flow event      |

NOTE: This does not apply to dams containing hazardous waste

<sup>1</sup> Upstream reference Site for Greenmount ML90134

<sup>2</sup> Upstream reference Site for Mt McCabe ML90082

<sup>3</sup> Upstream reference Site for Vulcan ML2519

<sup>4</sup> Upstream reference Site for Hampden ML 90081

<sup>5</sup> Reference Site for Phil's Find ML90161

- (C1-2) Subject to Condition (C1-1), if the receiving water contaminant trigger levels defined in Schedule C - Table 2 are exceeded then the environmental authority holder must complete an investigation into the potential for environmental harm and notify the administering authority within **3 months** of receiving the analysis results.

**Schedule C - Table 2 (Receiving water contaminant trigger limits)**

| Parameter              | Units | Trigger Level | Trigger Type |
|------------------------|-------|---------------|--------------|
| pH                     | pH    | 6-8           | Range        |
| TDS                    | mg/L  | 2000          | Maximum      |
| Boron                  | mg/L  | 2.5           | Maximum      |
| Sulphate               | mg/L  | 500           | Maximum      |
| Aluminum               | mg/L  | 2.5           | Maximum      |
| Arsenic                | mg/L  | 0.25          | Maximum      |
| Cobalt                 | mg/L  | 0.5           | Maximum      |
| Copper                 | mg/L  | 0.5           | Maximum      |
| Lead                   | mg/L  | 0.05          | Maximum      |
| Manganese <sup>1</sup> | mg/L  | 1.9           | Maximum      |
| Nickel                 | mg/L  | 0.5           | Maximum      |
| Zinc                   | mg/L  | 10            | Maximum      |
| Cadmium                | mg/L  | 0.005         | Maximum      |

Contaminant trigger limits based on 50% of the contaminant limits defined in the ANZECC (2000) Livestock drinking water quality and are analysed as Total metals (unfiltered).

<sup>1</sup> Contaminant trigger limits based on 95 % of aquatic species protection defined in the ANZECC (2000) Aquatic Ecosystems.

**Schedule C - Table 3 (Receiving water contaminant limits)**

| Parameter              | Units | Limit | Trigger Type |
|------------------------|-------|-------|--------------|
| pH                     | pH    | 6-9   | Range        |
| TDS                    | mg/L  | 4000  | Maximum      |
| Boron                  | mg/L  | 5     | Maximum      |
| Sulphate               | mg/L  | 1000  | Maximum      |
| Aluminum               | mg/L  | 5     | Maximum      |
| Arsenic                | mg/L  | 0.5   | Maximum      |
| Cobalt                 | mg/L  | 1     | Maximum      |
| Copper                 | mg/L  | 1     | Maximum      |
| Lead                   | mg/L  | 0.1   | Maximum      |
| Manganese <sup>1</sup> | mg/L  | 3.6   | Maximum      |
| Nickel                 | mg/L  | 1     | Maximum      |
| Zinc                   | mg/L  | 20    | Maximum      |
| Cadmium                | mg/L  | 0.01  | Maximum      |

Contaminant limits based on ANZECC (2000) Livestock drinking water quality and analysed for total metals (unfiltered).

<sup>1</sup> Contaminant limits based on 80 % of aquatic species protection defined in the ANZECC (2000) Aquatic Ecosystems.

- (C1-3) Water storages containing process water and storm water contaminated by mining activities must be monitored at the locations and frequencies defined in Schedule C - Table 4 and Schedule I - Map 6 samples analysed for the parameters defined in Schedule C - Table 5.

**Schedule C - Table 4 (Water Storage Monitoring Locations of Hazardous Dams)**

| Monitoring point | Easting<br>(Zone 54, AMG 84) | Northing<br>(Zone 54, AMG 84) | Monitoring frequency |
|------------------|------------------------------|-------------------------------|----------------------|
| PLS Pond         | 450 830                      | 7672150                       | Annually, March      |
| ILS Pond         | 450 830                      | 7672 220                      | Annually, March      |
| Raffinate Pond   | 450 830                      | 7671 970                      | Annually, March      |
| Stormwater Pond  | 451 070                      | 7671 990                      | Annually, March      |

- (C1-4) In the event that the water quality within any dam containing hazardous waste does not comply with the contaminant limits defined in Schedule C - Table 5, implement measures to prevent access by all livestock and minimise access by fauna to the dam.

**Schedule C - Table 5 (Water Quality Limits for Dams Containing Hazardous Waste)**

| Parameter | Units | Contaminant Limit | Limit Type |
|-----------|-------|-------------------|------------|
| pH        | pH    | 4-9               | Range      |
| TDS       | mg/L  | 5,000             | Maximum    |
| Boron     | mg/L  | 5                 | Maximum    |
| Sulphate  | mg/L  | 1000              | Maximum    |
| Aluminum  | mg/L  | 5                 | Maximum    |
| Arsenic   | mg/L  | 0.5               | Maximum    |
| Cobalt    | mg/L  | 1                 | Maximum    |
| Copper    | mg/L  | 1                 | Maximum    |
| Lead      | mg/L  | 0.1               | Maximum    |
| Nickel    | mg/L  | 1                 | Maximum    |
| Zinc      | mg/L  | 20                | Maximum    |

Contaminant limits based on ANZECC (2000 Livestock drinking water quality and are analysed as total metals (unfiltered).)

- (C1-5) The design storage allowance on **1 November** of each year for any dam containing hazardous waste constructed or operated within the operational land must comply with Schedule C - Table 6.

**Schedule C - Table 6 (Storage design for dams containing hazardous waste)**

| Storage Type                                                                      | Design Storage Allowance <sup>(1)</sup>                                          | Spillway Critical Design Storm <sup>(2)</sup> | Mandatory Reporting Level <sup>(3)</sup> |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------------|
| Combined Process Water Ponds (PLS pond, ILS pond, Raffinate and Storm Water Dams) | 1: 10 Year ARI 2 month wet season plus process inputs for the 2 month wet season | 1: 100 Year ARI                               | 1: 100 year ARI                          |

**NOTE: ARI means average recurrence interval.**

Note <sup>(1)</sup>: The design storage allowance on **1 November** of each year for any dam containing hazardous waste constructed within the operational land must be equivalent to the run-off from a 1 in 10 ARI 2 month wet season plus process inputs for the equivalent wet season. Process inputs refers to hazardous mineral process waste and water, which is being disposed of in the storage facility.

Note <sup>(2)</sup>: The critical design storm has a duration that produces the peak discharge for the catchments.

Note <sup>(3)</sup>: The mandatory reporting level refers to the volume below the spillway crest, either the 1:100 ARI 72 hour storm or the 1:100 ARI wave allowance, whichever is lower.

- (C1-6) The spillway for any dam containing hazardous waste, constructed or operated within the operational land must be designed and maintained to withstand the peak flow from the spillway critical design storm defined in Schedule C - Table 6.
- (C1-7) The holder of the environmental authority must mark the mandatory reporting level defined in Schedule C - Table 6 on the spillway of all dams containing hazardous waste within the operational land.
- (C1-8) The holder of the environmental authority must notify the administering authority when the pondage level of the dam containing hazardous waste, reaches the mandatory reporting level defined in Schedule C - Table 6.

**Stream sediment contaminant levels**

- (C2-1) All reasonable and practicable erosion protection measures and sediment control measures must be implemented and maintained to minimise erosion and the release of sediment.
- (C2-2) The bed of the receiving waters, affected by the release of process water and storm water contaminated by the mining activities must be monitored at the locations and frequencies defined in Schedule C - Table 7 and Schedule I - Maps 1, 2, 3, 4 and 5.

**Schedule C - Table 7 (Receiving stream sediment monitoring locations and frequency)**

| Monitoring point                           | Easting<br>(Zone 54, AMG 84) | Northing<br>(Zone 54, AMG 84) | Monitoring frequency        |
|--------------------------------------------|------------------------------|-------------------------------|-----------------------------|
| Upstream Greenmount - UG1 <sup>1</sup>     | 452 100                      | 7670 033                      | October and April each year |
| Downstream Greenmount - DG1                | 452 444                      | 7675 096                      | October and April each year |
| Downstream Greenmount - DG2                | 451 036                      | 7675 530                      | October and April each year |
| Downstream Greenmount - DG3                | 452 500                      | 7670 650                      | October and April each year |
| Upstream Mt McCabe - UMM1 <sup>2</sup>     | 446 400                      | 7670 400                      | October and April each year |
| Downstream Mt McCabe - DMM1                | 446 700                      | 7671 900                      | October and April each year |
| Downstream Mt McCabe - DMM2                | 446 600                      | 7669 500                      | October and April each year |
| Downstream Mt McCabe - DMM3                | 447 600                      | 7670 000                      | October and April each year |
| Upstream Vulcan - UV1 <sup>3</sup>         | 452 760                      | 7672 020                      | October and April each year |
| Downstream Vulcan - DV1                    | 452 920                      | 7672 040                      | October and April each year |
| Downstream Vulcan - DV2                    | 452 900                      | 7672 110                      | October and April each year |
| Downstream Vulcan - DV3                    | 452 730                      | 7672 230                      | October and April each year |
| Upstream Hampden - UH1 <sup>4</sup>        | 449 910                      | 7645 500                      | October and April each year |
| Downstream Hampden - DH1                   | 447 360                      | 7644 610                      | October and April each year |
| Downstream Phil's Find - DPF1 <sup>5</sup> | 451262                       | 7675935                       | Each Flow Event             |

|                               |        |         |                 |
|-------------------------------|--------|---------|-----------------|
| Downstream Phil's Find – DPF2 | 452332 | 7675950 | Each Flow Event |
| Upstream Phil's Find – UPF1   | 452906 | 7675165 | Each Flow Event |
| Upstream Phil's Find – UPF2   | 452907 | 7674855 | Each Flow Event |
| Upstream Phil's Find – UPF3   | 452377 | 7674987 | Each Flow Event |
| Upstream Phil's Find – UPF4   | 451087 | 7675481 | Each Flow Event |

<sup>1</sup> Reference Site for Greenmount ML90134

<sup>2</sup> Reference Site for Mt McCabe ML90082

<sup>3</sup> Reference Site for Vulcan ML2519

<sup>4</sup> Reference Site for Hampden ML 90081

<sup>5</sup> Reference Site for Phil's Find ML90161

(C2-3) Subject to Condition (C2-2), if the stream sediment contaminant trigger levels defined in Schedule C - Table 8 are exceeded then the environmental authority holder must complete an investigation into the potential for environmental harm and notify the administering authority within 3 months of receiving the analysis results.

**Schedule C - Table 8 (Receiving stream sediment contaminant trigger levels)**

| Parameter | Units        | Contaminant trigger levels                                                                     | Limit Type |
|-----------|--------------|------------------------------------------------------------------------------------------------|------------|
| Arsenic   | mg/kg dry wt | 20 <sup>1</sup> or 2 x reference site <sup>2</sup> x 80% <sup>3</sup><br>whichever is higher   | Maximum    |
| Cadmium   | mg/kg dry wt | 1.5 <sup>1</sup> or 2 x reference site <sup>2</sup> x 80% <sup>3</sup><br>whichever is higher  | Maximum    |
| Chromium  | mg/kg dry wt | 80 <sup>1</sup> or 2 x reference site <sup>2</sup> x 80% <sup>3</sup><br>whichever is higher   | Maximum    |
| Copper    | mg/kg dry wt | 65 <sup>1</sup> or 2 x reference site <sup>2</sup> x 80% <sup>3</sup><br>whichever is higher   | Maximum    |
| Nickel    | mg/kg dry wt | 21 <sup>1</sup> or 2 x reference site <sup>2</sup> x 80% <sup>3</sup><br>whichever is higher   | Maximum    |
| Lead      | mg/kg dry wt | 50 <sup>1</sup> or 2 x reference site <sup>2</sup> x 80% <sup>3</sup><br>whichever is higher   | Maximum    |
| Mercury   | mg/kg dry wt | 0.15 <sup>1</sup> or 2 x reference site <sup>2</sup> x 80% <sup>3</sup><br>whichever is higher | Maximum    |
| Zinc      | mg/kg dry wt | 200 <sup>1</sup> or 2 x reference site <sup>2</sup> x 80% <sup>3</sup><br>whichever is higher  | Maximum    |

<sup>1</sup> ANZECC (2000): ISQG Low trigger values, Sediment Quality Guidelines, Aquatic Ecosystems, Table 3.5.1.

<sup>2</sup> Reference sites locations (as defined in Schedule C - Table 7 Receiving Stream Sediment Monitoring Locations and Frequency).

<sup>3</sup> Reference Site Trigger based on the 2 x background x 80% from 10 samples from each reference site are derived using ANZECC (2000) methodology and are based on the reference sites defined in Schedule C - Table 7.

(C2-4) Subject to Condition (C2-2), stream sediment contaminant limits must not exceed the contaminant limits defined in Schedule C - Table 9.

**Schedule C - Table 9 (Receiving stream sediment contaminant limits)**

| Parameter | Units        | Contaminant limits                                                         | Limit Type |
|-----------|--------------|----------------------------------------------------------------------------|------------|
| Arsenic   | mg/kg dry wt | 70 <sup>1</sup> or 2 x reference site <sup>2</sup><br>whichever is higher  | Maximum    |
| Cadmium   | mg/kg dry wt | 10 <sup>1</sup> or 2 x reference site <sup>2</sup><br>whichever is higher  | Maximum    |
| Chromium  | mg/kg dry wt | 370 <sup>1</sup> or 2 x reference site <sup>2</sup><br>whichever is higher | Maximum    |
| Copper    | mg/kg dry wt | 270 <sup>1</sup> or 2 x reference site <sup>2</sup><br>whichever is higher | Maximum    |
| Nickel    | mg/kg dry wt | 52 <sup>1</sup> or 2 x reference site <sup>2</sup><br>whichever is higher  | Maximum    |
| Lead      | mg/kg dry wt | 220 <sup>1</sup> or 2 x reference site <sup>2</sup><br>whichever is higher | Maximum    |
| Mercury   | mg/kg dry wt | 1 <sup>1</sup> or 2 x reference site <sup>2</sup><br>whichever is higher   | Maximum    |
| Zinc      | mg/kg dry wt | 410 <sup>1</sup> or 2 x reference site <sup>2</sup><br>whichever is higher | Maximum    |

<sup>1</sup> ANZECC (2000): ISQG High trigger values, Sediment Quality Guidelines, Aquatic Ecosystems, Table 3.5.1.

<sup>2</sup> Reference Sites locations are determined from reference site locations (as defined in Schedule C - Table 7 Receiving Stream Sediment Monitoring Locations and Frequency). Reference Site Trigger is based on the 2 x background from 10 samples from each reference site are derived using ANZECC (2000) methodology and are based on the reference sites defined in Schedule C - Table 7.

- (C2-5) All stream sediment sampling must be undertaken in accordance with AS 5667.12 Guidance on Sampling of Bottom Sediments of 1998.

#### Sewage effluent

- (C3-1) All effluent released from the treatment plant must be monitored at the frequency and for the parameters specified in Schedule C - Table 10.

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

| Quality characteristics                                                       | Release limit | Units                        | Limit type | Monitoring frequency |
|-------------------------------------------------------------------------------|---------------|------------------------------|------------|----------------------|
| pH                                                                            | 6.5-8         | pH                           | range      | Quarterly            |
| Faecal Coliforms, based on the average of a minimum of five samples collected | 1000          | Colonies per 100 millilitres | max        | Quarterly            |

- (C3-2) Sewage effluent used for dust suppression or irrigation must not exceed sewage effluent release limits defined in Schedule C - Table 10.
- (C3-3) Sewage effluent used for dust suppression or irrigation must not cause spray drift or over spray to any sensitive or commercial place, and must not be applied at a rate that causes pooling, ponding and/or runoff of any effluent irrigated.
- (C3-4) Sewage effluent from sewage treatment facilities must be reused or evaporated and must not be directly released from the sewage treatment plant to any water way or drainage line.

## Groundwater

- (C4-1) Groundwater affected by the mining activities must be monitored at the locations and frequencies defined in Schedule C - Table 11 and Schedule I – Maps 7 and 8.

**Schedule C - Table 11 (Groundwater monitoring locations and frequency)**

| Monitoring point | Easting (MGA94) | Northing (MGA94) | Monitoring frequency |
|------------------|-----------------|------------------|----------------------|
| MB1*             | 450130          | 7672769          | 3 months             |
| MB2              | 450664          | 7672094          | 3 months             |
| MB3              | 451034          | 7671686          | 3 months             |
| MB4              | 451193          | 7671855          | 3 months             |
| MB5*             | 451884          | 7673805          | 3 months             |
| MB6              | 450924          | 7674866          | 3 months             |
| MB7              | 451404          | 7675028          | 3 months             |
| MB8              | 450740          | 7675084          | 3 months             |
| MB9              | 451064          | 7675460          | 3 months             |

\*Reference Sites for Greenmount ML 90134

*Note: The reference bores must establish the quality of groundwater that has not been affected by any seepage of contaminants to groundwater from the licensed place.*

- (C4-2) Subject to Condition (C4-1), if the groundwater contaminant trigger levels defined in Schedule C - Table 12 are exceeded then the environmental authority holder must complete an investigation into the potential for environmental harm and notify the administering authority within 3 months of receiving the analysis results.

**Schedule C - Table 12 (Groundwater contaminant trigger levels)**

| Parameter  | Units | Contaminant trigger levels                                                                                                |         | Trigger Type |
|------------|-------|---------------------------------------------------------------------------------------------------------------------------|---------|--------------|
|            |       | Minimum                                                                                                                   | Maximum |              |
| pH         | pH    | 20 <sup>th</sup> Percentile <sup>1</sup> of reference sites <sup>2</sup> or 6 <sup>3</sup> , whichever is lower           | 8       | Range        |
| Sulphate   | mg/l  | 80 <sup>th</sup> percentile <sup>1</sup> of reference sites <sup>2</sup>                                                  |         | Maximum      |
| Manganese  | mg/L  | 80 <sup>th</sup> percentile <sup>1</sup> of reference sites <sup>2</sup> or 1900 <sup>3</sup> whichever is higher         |         | Maximum      |
| Chromium   | µg/L  | 80 <sup>th</sup> percentile <sup>1</sup> of reference sites <sup>2</sup> or (CrVI) 1.0 <sup>3</sup> , whichever is higher |         | Maximum      |
| Molybdenum | µg/L  | 80 <sup>th</sup> percentile <sup>1</sup> of reference sites <sup>2</sup>                                                  |         | Maximum      |
| Selenium   | µg/L  | 80 <sup>th</sup> percentile <sup>1</sup> of reference sites <sup>2</sup> or 5 <sup>6</sup> , whichever is higher          |         | Maximum      |
| Aluminum   | µg/L  | 80 <sup>th</sup> percentile <sup>1</sup> of reference sites <sup>2</sup> or 55 <sup>3</sup> , whichever is higher         |         | Maximum      |
| Lead       | µg/L  | 80 <sup>th</sup> percentile <sup>1</sup> of reference sites <sup>2</sup> or 3.4 <sup>3</sup> , whichever is higher        |         | Maximum      |
| Arsenic    | µg/L  | 80 <sup>th</sup> percentile <sup>1</sup> of reference sites <sup>2</sup>                                                  |         | Maximum      |
| Cadmium    | µg/L  | 80 <sup>th</sup> percentile <sup>1</sup> of reference sites <sup>2</sup> or 0.2 <sup>3</sup> , whichever is higher        |         | Maximum      |
| Cobalt     | µg/L  | 80 <sup>th</sup> percentile <sup>1</sup> of reference sites <sup>2</sup>                                                  |         | Maximum      |
| Copper     | µg/L  | 80 <sup>th</sup> percentile <sup>1</sup> of reference sites <sup>2</sup> or 1.4 <sup>3</sup> , whichever is higher        |         | Maximum      |
| Zinc       | µg/L  | 80 <sup>th</sup> percentile <sup>1</sup> of reference sites <sup>2</sup> or 8.0 <sup>3</sup> , whichever is higher        |         | Maximum      |
| Boron      | µg/L  | 80 <sup>th</sup> percentile <sup>1</sup> of reference sites <sup>2</sup> or 370 <sup>3</sup> , whichever is higher        |         | Maximum      |
| Nickel     | µg/L  | 80 <sup>th</sup> percentile <sup>1</sup> of reference sites <sup>2</sup> or 11 <sup>3</sup> , whichever is higher         |         | Maximum      |

<sup>1</sup>Reference Site Triggers based on the 80<sup>th</sup> or 20<sup>th</sup> percentile are derived using ANZECC (2000) methodology and are based on the reference site defined in Schedule C - Table 11. At least 10 samples from each reference site are required to define the 80<sup>th</sup> and 20<sup>th</sup> percentile.

<sup>2</sup> Reference Sites locations as defined in Schedule C - Table 11.

<sup>3</sup> ANZECC (2000) trigger levels for aquatic ecosystems of slightly - moderately disturbed systems - table 3.4.1 level of protection 95% / Table 3.3.4 / 3.3.5 - tropical Australian upland rivers.

**Note:** For each bore the median value from all sampling events during the year may be used as the value to compare against the trigger limit in Schedule C - Table 12.

(C4-3) Subject to Condition (C4-1), groundwater contaminant limits must not exceed the contaminant limits defined in Schedule C - Table 13.

**Schedule C - Table 13 (Groundwater contaminant limits)**

| Parameter              | Units | Minimum | Maximum |
|------------------------|-------|---------|---------|
| pH                     | pH    | 6-9     | Range   |
| TDS                    | mg/L  | 4000    | Maximum |
| Sulphate               | mg/L  | 1000    | Maximum |
| Chromium               | mg/L  | 1       | Maximum |
| Molybdenum             | mg/L  | 0.15    | Maximum |
| Selenium               | mg/L  | 0.02    | Maximum |
| Aluminum               | mg/L  | 5       | Maximum |
| Lead                   | mg/L  | 0.1     | Maximum |
| Arsenic                | mg/L  | 0.5     | Maximum |
| Cadmium                | mg/L  | 0.01    | Maximum |
| Cobalt                 | mg/L  | 1       | Maximum |
| Copper                 | mg/L  | 1       | Maximum |
| Zinc                   | mg/L  | 20      | Maximum |
| Boron                  | mg/L  | 5       | Maximum |
| Nickel                 | mg/L  | 1       | Maximum |
| Manganese <sup>1</sup> | mg/L  | 3.6     | Maximum |

Contaminant limits based on ANZECC (2000) Livestock drinking water quality and are analysed as Total metals (unfiltered)

<sup>1</sup> Contaminant limits based on 80 % of aquatic species protection defined in the ANZECC (2000) Aquatic Ecosystems.

- (C4-4) The method of water sampling required by this environmental authority must comply with that set out in the latest edition of the Administering Authority's Water Quality Sampling Manual.

#### **Voids**

- (C5-1) Water quality in mining voids and final voids must be monitored at the locations and frequencies defined in Schedule C - Table 14 and for the parameters detailed in Schedule C - Table 15.
- (C5-2) In the event that water quality within the mining voids or final voids does not comply with the contaminant limits defined in Schedule C - Table 15, implement measures to prevent access by all livestock and minimise access by fauna to the void.

**Schedule C - Table 14 (Voids Monitoring Locations and Frequency)**

| Monitoring point | Monitoring frequency |
|------------------|----------------------|
| Greenmount Pit   | Annually             |
| Mt McCabe Pit    | Annually             |
| Vulcan pit       | Annually             |
| Hampden Pit      | Annually             |

**Schedule C - Table 15 (Void Water Quality Limits)**

| Parameter              | Units | Limit | Limit Type |
|------------------------|-------|-------|------------|
| pH                     | pH    | 6-9   | Range      |
| TDS                    | mg/L  | 4000  | Maximum    |
| Boron                  | mg/L  | 5     | Maximum    |
| Sulphate               | mg/L  | 1000  | Maximum    |
| Aluminum               | mg/L  | 5     | Maximum    |
| Arsenic                | mg/L  | 0.5   | Maximum    |
| Cobalt                 | mg/L  | 1     | Maximum    |
| Copper                 | mg/L  | 1     | Maximum    |
| Lead                   | mg/L  | 0.1   | Maximum    |
| Manganese <sup>1</sup> | mg/L  | 3.6   | Maximum    |
| Nickel                 | mg/L  | 1     | Maximum    |
| Zinc                   | mg/L  | 20    | Maximum    |

Contaminant limits based on ANZECC (2000) Livestock drinking water quality and are analysed as Total metals (unfiltered) and ANZECC (2000) for Aquatic Ecosystems)

<sup>1</sup> Contaminant limits based on 95 % of aquatic species protection defined in the ANZECC (2000) Aquatic Ecosystems.

#### **Acid Rock Drainage and Leachate Management**

- (C6-1) Subject to the release limits defined in Schedule C 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 watercourse.

END CONDITIONS FOR SCHEDULE C

## **Schedule D - Noise and vibration**

### **Noise nuisance**

- (D1-1) Subject to Conditions (D1-2) and (D1-3) noise from the mining activity must not cause an environmental nuisance, at any sensitive or commercial place.
- (D1-2) When requested by the administering authority, noise 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 or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring.
- (D1-3) The method of measurement and reporting of noise levels must comply with the latest edition of the Administering Authority's Noise Measurement Manual.

### **Vibration nuisance**

- (D2-1) Subject to Conditions (D2-2) and vibration from the mining activity must not cause an environmental nuisance, at any sensitive or commercial place.
- (D2-2) When requested by the administering authority, vibration monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring.

END CONDITIONS FOR SCHEDULE D

## Schedule E - Waste

### Storage of tyres

- (E1-1) Tyres stored awaiting disposal or transport for take-back, recycling, or waste-to-energy options should be stockpiled in volumes less than 3m in height and 200m<sup>2</sup> in area and at least 10m from any other tyre storage area.
- (E1-2) All reasonable and practicable fire prevention measures must be implemented, including removal of grass and other materials within a 10m radius of the scrap tyre storage area.

### Disposal of tyres

- (E2-1) Disposing of scrap tyres resulting from the mining activities in spoil emplacements is acceptable, provided tyres are placed as deep in the spoil as reasonably practicable.
- (E2-2) Scrap tyres resulting from the mining activities disposed within the operational land must not impede saturated aquifers or compromise the stability of the consolidated landform.

### Waste Management

- (E3-1) A Waste Management Plan, in accordance with the *Environmental Protection (Waste Management) Policy 2000*, must be included in the Plan of Operations. The Waste Management Plan must include re-using and recycling where possible, and a program for safe recycling or disposal of all wastes, and a disposal procedure for hazardous wastes.
- (E3-2) Waste must not be burnt or allowed to be burnt on the licensed site unless permitted by an environmental authority.

### Regulated Waste

- (E4-1) All regulated waste received and removed from the site that is over 250kg in weight, must be transported by a person who holds a current authority to transport such waste under the provisions of the *Environmental Protection Act 1994*.
- (E4-2) Except as otherwise provided by the conditions of this authority, all waste removed from the site must be taken to a facility that is lawfully allowed to accept such waste under the provisions of the *Environmental Protection Act 1994*.

END CONDITIONS FOR SCHEDULE E

## Schedule F - Land

### Rehabilitation landform criteria

- (F1-1) The holder of this environmental authority is to provide information on the Reference site identification for each land disturbances in Schedule F - Table 1 (Final Land Use and Rehabilitation Approval Schedule) to the administering authority by **30 June 2004**. 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 1 and 2.
- (F1-2) Progressive rehabilitation must commence when areas become available within the operational land.

**Schedule F - Table 1 (Final Land Use and Rehabilitation Approval Schedule)**

| Disturbance Type                         | Projective Surface Area (ha) | Pre-mine land use or Description       | Post-mine land description | Post mine land classification | Reference site identification (optional)                  |                            |
|------------------------------------------|------------------------------|----------------------------------------|----------------------------|-------------------------------|-----------------------------------------------------------|----------------------------|
| ML90082<br>Mt McCabe                     |                              |                                        |                            |                               | 3 transects. Coordinates interconnects with each transect |                            |
|                                          |                              |                                        |                            |                               | Easting (Zone 54, AMG 84)                                 | Northing (Zone 54, AMG 84) |
| Open Cut Pit                             | 10                           | LIG                                    | Water Storage              | Water Storage                 | N/A                                                       |                            |
| Waste Rock Dump                          | 20                           | LIG                                    | LIG                        | VIII                          | 447242                                                    | 7670 835                   |
| ROM Pad                                  | 0.2                          | LIG                                    | LIG                        | VIII                          | 447242                                                    | 7670 835                   |
| Mt McCabe and Vulcan Existing Site Roads | 3                            | LIG                                    | LIG                        | VIII                          | 447242                                                    | 7670 835                   |
| Fuel & oil Storage Areas                 | 0.01                         | LIG                                    | LIG                        | VIII                          | 447242                                                    | 7670 835                   |
| Workshop/Admin                           | 0.25                         | LIG                                    | LIG                        | VIII                          | 447242                                                    | 7670 835                   |
| ML2519<br>Vulcan                         |                              |                                        |                            |                               |                                                           |                            |
| Open Cut Pit                             | 1                            | LIG                                    | LIG                        | VIII                          | N/A                                                       |                            |
| Waste Rock Dump                          | 2                            | LIG                                    | LIG                        | VIII                          | 452 554                                                   | 7672 1455                  |
| ML90081 Hampden/<br>Kuridala             |                              |                                        |                            |                               |                                                           |                            |
| Open Cut Pit                             | 6.5                          | LIG                                    | Water Storage              | Water Storage                 | N/A                                                       |                            |
| Waste Rock Dump                          | 4.8                          | LIG                                    | LIG                        | VIII                          | 449 314                                                   | 7672 145                   |
| ROM Pad                                  | 0.25                         | LIG                                    | LIG                        | VIII                          | 449 314                                                   | 7672 145                   |
| Existing Site Roads                      | TBD                          | LIG                                    | LIG                        | VIII                          | N/A                                                       |                            |
| ML 90134<br>Greenmount                   |                              |                                        |                            |                               |                                                           |                            |
| Workshop/Admin                           | 1.0                          | LIG                                    | LIG                        | VIII                          | 449 941                                                   | 7675 897                   |
| Residential complex                      | 1.0                          | LIG                                    | LIG                        | VIII                          | 449 941                                                   | 7675 897                   |
| Open Cut Pit                             | 20                           | LIG                                    | LIG                        | VIII                          | N/A                                                       |                            |
| Process Plant                            | 4                            | LIG                                    | LIG                        | VIII                          | 449 941                                                   | 7675 897                   |
| Heap Leach Area                          | 56                           | LIG                                    | LIG                        | VIII                          | 449 941                                                   | 7675 897                   |
| PLS Pond                                 | 0.6                          | LIG                                    | LIG                        | VIII*                         | 449 941                                                   | 7675 897                   |
| ILS Pond                                 | 0.6                          | LIG                                    | LIG                        | VIII*                         | 449 941                                                   | 7675 897                   |
| Raffinate Pond                           | 0.7                          | LIG                                    | LIG                        | VIII*                         | 449 941                                                   | 7675 897                   |
| Stormwater Pond                          | 4.0                          | LIG                                    | LIG                        | VIII*                         | 449 941                                                   | 7675 897                   |
| Fuel and Oil Storage                     | 0.1                          | LIG                                    | LIG                        | VIII                          | 449 941                                                   | 7675 897                   |
| Overland conveyor/Haul road              | 3.0                          | LIG                                    | LIG                        | VIII                          | 449 941                                                   | 7675 897                   |
| Additional Haulage and Access Tracks**   | 2.0                          | LIG                                    | LIG                        | VIII*                         | 449 941                                                   | 7675 897                   |
| Existing Site Roads**                    | 2.0                          | LIG                                    | LIG                        | VIII*                         | 449 941                                                   | 7675 897                   |
| Runoff Diversions                        | 0.5                          | LIG (Retained as permanent diversion+) | LIG                        | VIII                          | 449 941                                                   | 7675 897                   |

|                                  |               |     |                                 |                  |         |          |
|----------------------------------|---------------|-----|---------------------------------|------------------|---------|----------|
| Sulphuric Acid and Reagents Area | 0.1           | LIG | LIG                             | VIII             | 449 941 | 7675 897 |
| Borrow Pits                      | 2.0           | LIG | LIG                             | VIII             | 449 941 | 7675 897 |
| Potential Exploration Areas      | 5.0           | LIG | LIG                             | VIII             | 449 941 | 7675 897 |
| <b>ML90161<br/>Phil's Find</b>   |               |     |                                 |                  |         |          |
| Workshop/Admin                   | 1.0           | LIG | LIG                             | VII              | 447 242 | 7670 835 |
| Fuel and Oil Storage             | 0.01          | LIG | LIG                             | VIII             | 447 242 | 7670 835 |
| Runoff Diversions                | 0.5           | LIG | Retained as permanent diversion | VIII             | 447 242 | 7670 835 |
| Laydown Area                     | 1.2           | LIG | LIG                             | VII              | 447 242 | 7670 835 |
| Access Road                      | 1.0           | LIG | LIG                             | Retained as road | 447 242 | 7670 835 |
| <b>TOTAL</b>                     | <b>164.32</b> |     |                                 |                  |         |          |

- \* LIG - Low Intensity Grazing  
 \*\* - Excludes gazetted unsealed roads  
 \* - Unless landholder requests their retention  
 + - Permanent diversions for final voids  
 TBD - To be determined

- (F1-3) Complete an investigation into the rehabilitation of disturbed areas and submit a report to the administering authority proposing acceptance criteria to meet the outcomes in Schedule F - Table 1 and landform design criteria in Schedule F - Table 2 by **30 June 2005**.

**Schedule F - Table 2 (Landform Design)**

| Disturbance type | Slope range (%) | Projective surface area (ha) |
|------------------|-----------------|------------------------------|
| Waste Rock Dumps | 33%-76%         | 72.8                         |
| Heap Leach Pads  | 33%             | 56                           |
| ROM Areas        | 33%-76%         | 4                            |

#### Residual void outcome

- (F2-1) Residual voids must comply with the following outcome:  
 a) 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.

#### Dams containing hazardous waste

- (F3-1) The construction or operation of any dam containing hazardous waste within the operational land must comply with Schedule F - Table 3.

**Schedule F - Table 3 (Size and purpose of dams containing hazardous waste)**

| Name of dam containing hazardous waste <sup>(1)</sup> | Maximum surface area of dam (ha) | Maximum volume of dam (m <sup>3</sup> ) | Maximum depth of dam (m) <sup>(2)</sup> | Purpose of dam <sup>(3)</sup>                      |
|-------------------------------------------------------|----------------------------------|-----------------------------------------|-----------------------------------------|----------------------------------------------------|
| PLS Pond                                              | 0.6                              | 18,000                                  | 6                                       | Storage of Pregnant Leach Solution                 |
| ILS Pond                                              | 0.6                              | 18,000                                  | 6                                       | Storage of Intermediate Leach Solution             |
| Raffinate Pond                                        | 0.6                              | 18,000                                  | 6                                       | Storage of Raffinate Solution                      |
| Storm water Dam                                       | 4                                | 160,000                                 | 6                                       | Storage of storm water runoff from processing area |

Note <sup>(1)</sup>: The name of the dam containing hazardous waste should refer to the name of the dam e.g. process residue facility and decant dam.

Note <sup>(2)</sup>: For dams, which do not require a dam wall, input the maximum void depth e.g. where dams are formed by excavating below the land surface or backfilling a residual void.

Note <sup>(3)</sup>: Purpose of the dam should outline the designed function, e.g. "the permanent containment of tailings resulting from the extraction of nickel, cobalt and other metals at the XYZ Refinery".

#### Location of Dams

(F4-1) Any dam containing hazardous waste constructed or operated within the operational land must be located within the control points defined in Schedule F - Table 4, Schedule I - Map 6.

**Schedule F - Table 4 (Location of dams containing hazardous waste)**

| Name of dam containing hazardous waste <sup>(1)</sup> | Easting (Zone 54, AMG 84) | Northing (Zone 54, AMG 84) |
|-------------------------------------------------------|---------------------------|----------------------------|
| PLS Pond                                              | 450 769                   | 7672 210                   |
|                                                       | 450 860                   | 7672 201                   |
|                                                       | 450 860                   | 7672 124                   |
| ILS Pond                                              | 450 769                   | 7672 119                   |
|                                                       | 450 860                   | 7672 119                   |
|                                                       | 450 860                   | 7672 036                   |
| Raffinate Pond and Raffinate Pre-setting              | 450 769                   | 7672 038                   |
|                                                       | 450 860                   | 7672 038                   |
|                                                       | 450 860                   | 7672 933                   |
| Stormwater Dam                                        | 450 769                   | 7671 978                   |
|                                                       | 450 860                   | 7671 978                   |
|                                                       | 450 860                   | 7671 764                   |

Note <sup>(1)</sup>: A minimum of 3 control points is required to constrain the location of all activities associated with the dam containing hazardous waste. Additional infrastructure which forms part of any dam containing hazardous waste may include appurtenant works consisting of tailings discharge pipelines, seepage collection systems, runoff diversion bunds, containment systems, pressure relief wells, decant and recycle water systems.

#### Standard and Criteria

(F5-1) The holder of the environmental authority must design, construct and operate all high-hazard dams containing hazardous wastes in accordance with the Code of Environmental Compliance for High Hazard Dams Containing Hazardous Waste.

(F5-2) The holder of the environmental authority must design, construct and operate all low-hazard dams containing hazardous waste and non-hazardous dams in accordance with the criteria outlined in Appendix B of the Code of Environmental for Mining Activities

### Infrastructure

- (F6-1) All infrastructure, 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 in writing by the post mining land owner / holder.

NOTE: This is not applicable where the landowner / holder is also the environmental authority holder.

### Inspection of Dams

- (F7-1) High hazard dams containing hazardous waste shall be inspected by a Registered Professional Engineer Queensland (RPEQ) prior to **1 November** each year or at any time if alarming, unusual or otherwise unsatisfactory conditions are observed.
- (F7-2) For each inspection, the engineer shall assess the condition of the dam and its foundations determine the hydraulic adequacy of the dam and assess the adequacy of the works with respect to dam safety.
- (F7-3) For each inspection, two copies of the engineer's report and any recommendations as to measures to be taken to ensure the integrity of the dam shall be furnished to the administering authority within 28 days of the inspection

### Decommissioning of Dam - Objective

- (F8-1) Dams containing hazardous waste must not be abandoned and must be decommissioned to a situation where water can no longer be stored in the dams. The dams and their contained waste(s) must be stable, where after the dams are no longer dams and they become landforms on the operational land and must comply with the rehabilitation requirements of this environmental authority.

### Decommissioning of Dam - Documentation and Compliance

- (F9-1) Decommissioning activities for dams must be documented in detail in the plan of operations under which the activities are to occur. 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".

### Contaminated lands

- (F10-1) A register and map of all potentially contaminated sites and any remediation details, must be kept on site, updated regularly, and included in each Plan of Operations.
- (F10-2) A Spillage Management Plan and an Emergency Plan for all hazardous materials stored on-site, together with a description of suitable equipment and training must be updated and included with each Plan of Operations.
- (F10-3) Materials Safety Data Sheets must be maintained for all chemicals on the site.

### Waste Rock Characterisation

- (F11 -1) All areas to be mined must undergo a waste rock characterisation survey (where waste rock is to be disposed of on the surface) and a report submitted to the administering authority prior to mining where this survey has not previously been carried out.

END CONDITIONS FOR SCHEDULE F

## **Schedule G - Community**

### **Complaint response**

- (G1-1) All complaints received must be recorded including details of complainant, reasons for the complaint, investigations undertaken, conclusions formed and actions taken. This information must be made available for inspection by the administering authority on request.

END 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:

- vegetation establishment, survival and succession;
- vegetation productivity, sustained growth and structure development;
- fauna colonisation and habitat development;
- 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;
- microbiological studies including recolonisation by mycorrhizal fungi, microbial biomass and respiration;
- effects of various establishment treatments such as deep ripping, topsoil handling, seeding and fertiliser application on vegetation growth and development;
- resilience of vegetation to disease, insect attack, drought and fire;
- vegetation water use and effects on ground water levels and catchment yields.

**“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.

**“appropriately qualified person”** means any person who conforms to the EPA operational policy for an “appropriately qualified person (analyst)” in accordance with Section 490(7) of the *Environmental Protection Act 1994*.

**“ARD”** means acid rock drainage and refers to the low pH, high heavy metal pollutant typical of sulphidic mine wastes, and most commonly associated with the production of ferrous iron and sulphuric acid through the oxidation of sulphide minerals.

**“authority”** means environmental authority (mining activities) under the *Environmental Protection Act 1994*.

**“blasting”** means the use of explosive materials to fracture-

- (a) rock, coal and other minerals for later recovery; or
- (b) structural components or other items to facilitate removal from a site or for reuse.
- (c)

**“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.

**“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.

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

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

**“flowable substance”** means matter or 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.

**“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”** as defined in the DME 1995 Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland.

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

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

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

**“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).

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

- (a) clay if mined for use for its ceramic properties, kaolin and bentonite;
  - (b) foundry sand;
  - (c) hydrocarbons and other substances or matter occurring in association with shale or coal and necessarily mined, extracted, produced or released by or in connection with mining for shale or coal or for the purpose of enhancing the safety of current or future mining operations for coal or the extraction or production of mineral oil therefrom;
  - (d) limestone if mined for use for its chemical properties;
  - (e) marble;
  - (f) mineral oil or gas extracted or produced from shale or coal by in situ processes;
  - (g) peat;
  - (h) salt including brine;
  - (i) shale from which mineral oil may be extracted or produced;
  - (j) silica, including silica sand, if mined for use for its chemical properties;
  - (k) rock mined in block or slab form for building or monumental purposes;
- but does not include—
- (l) living matter;
  - (m) petroleum within the meaning of the *Petroleum Act 1923*;
  - (n) soil, sand, gravel or rock (other than rock mined in block or slab form for building or monumental purposes) to be used or to be supplied for use as such, whether intact or in broken form;
  - (o) water.

**“noxious”** means harmful or injurious to health or physical well being, other than trivial harm.

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

- the mining activities do not or will not cause more than 10 ha of land to be significantly disturbed at any one time;
- the mining activities do not or will not cause more than 5 ha of land to be significantly disturbed at any one time;
  - (a) in a riverine area;
  - (b) because of mine workings;
- the mining activities are not or will not be carried out in, or within 2 km of a category A Environmentally Sensitive Area;
- the mining activities are not or will not be carried out in, or within 1 km of a category B environmentally sensitive area;
- the mining activities do not include a level 1 environmentally relevant activity
- no more than 20 persons are carrying out or will, at any one time, carry out the mining activities;

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

**“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<sup>-1</sup>).

**“protected area”** means - a protected area under the *Nature Conservation Act 1992*; or

- a marine park under the *Marine Parks Act 1992*; or
- 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”** the process of reshaping and revegetating land to restore it to a stable landform and in accordance with the acceptance criteria set out in this environmental authority and, where relevant, includes remediation of contaminated land.

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

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

**“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
- a motel, hotel or hostel; or
- an educational institution; or
- a medical center or hospital; or
- a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 1992* or a World Heritage Area; or
- a public park or gardens.

**“significant disturbance”** - includes land

- (a) if it is contaminated land; or

- (b) it has been disturbed and human intervention is needed to rehabilitate it.
- i. to a state required under the relevant environmental authority; or
  - ii. if the environmental authority does not require the land to be rehabilitated to a particular state - to its state immediately before the disturbance.

Some examples of disturbed land include:

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

However, the following areas are not included:

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

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

**“stable”** means 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 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:

- investigation, design or construction of dams;
- operation and maintenance of dams;
- geomechanics with particular emphasis stability, geology and geochemistry;
- hydrology with particular reference to flooding, estimation of extreme storms, water management or meteorology;
- hydraulics with particular reference to sediment transport and deposition, erosion control, beach processes;
- hydrogeology with particular reference to seepage, groundwater,
- solute transport processes and monitoring thereof; or
- 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.

**“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:

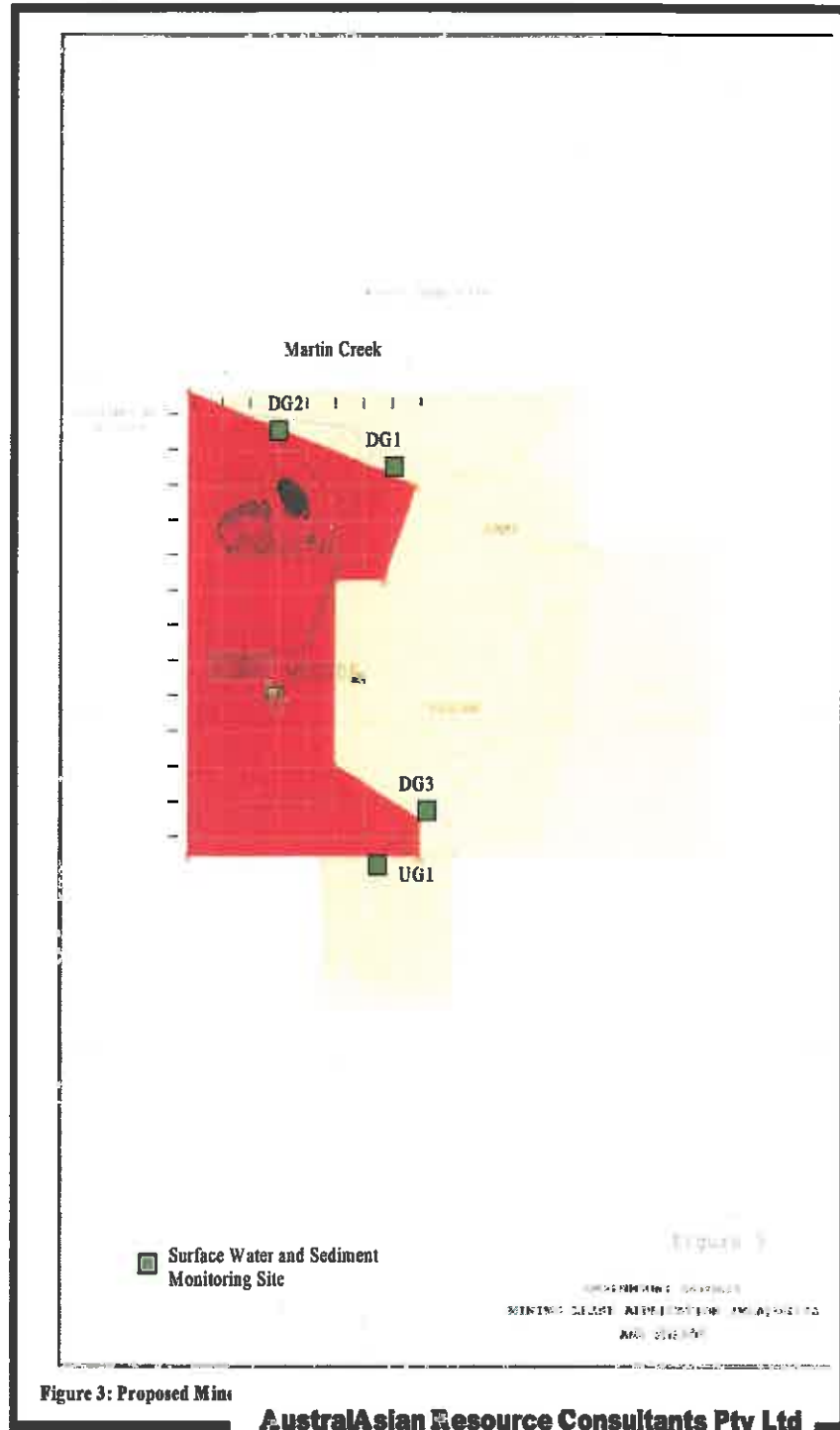
- (a) continuous bed and banks;
- (b) an extended period of flow for some months after rain ceases, and
- (c) an adequacy of flow that sustains basic ecological processes and maintains biodiversity.

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

END CONDITIONS FOR SCHEDULE H

## Schedule I - Maps / Plans

Schedule I - Map 1 Receiving water monitoring locations & Receiving Stream Sediment monitoring locations for Greenmount ML 90134



**Figure 3: Proposed Mine Layout - Greenmount**

Schedule 1 - Map 2 Receiving water monitoring locations & Receiving Stream Sediment monitoring locations for Mt McCabe ML 90082

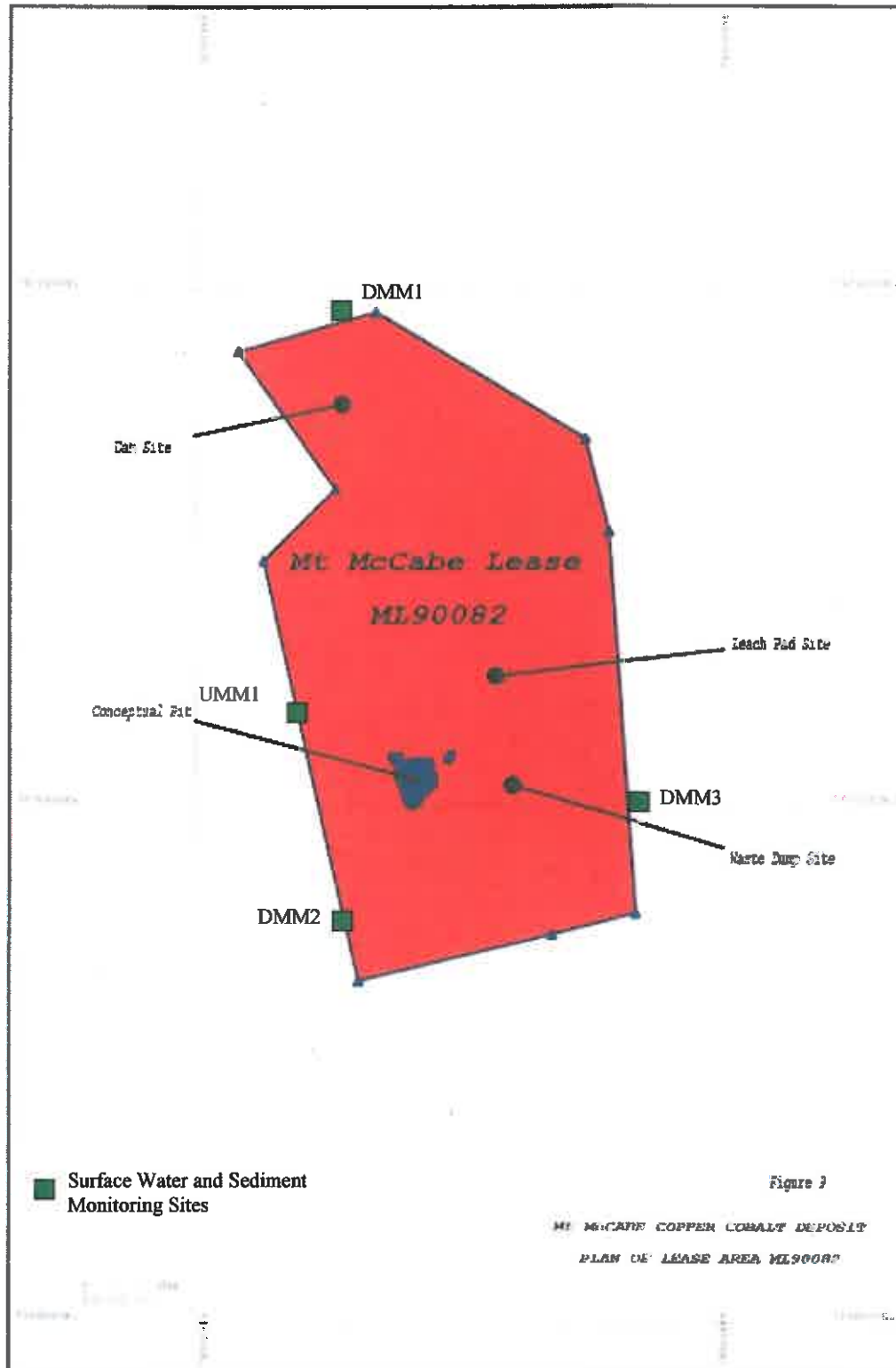


Figure 2: Proposed Mine Layout Mt McCabe

Schedule I - Map 3 Receiving water monitoring locations & Receiving Stream Sediment monitoring locations for Vulcan ML 2519

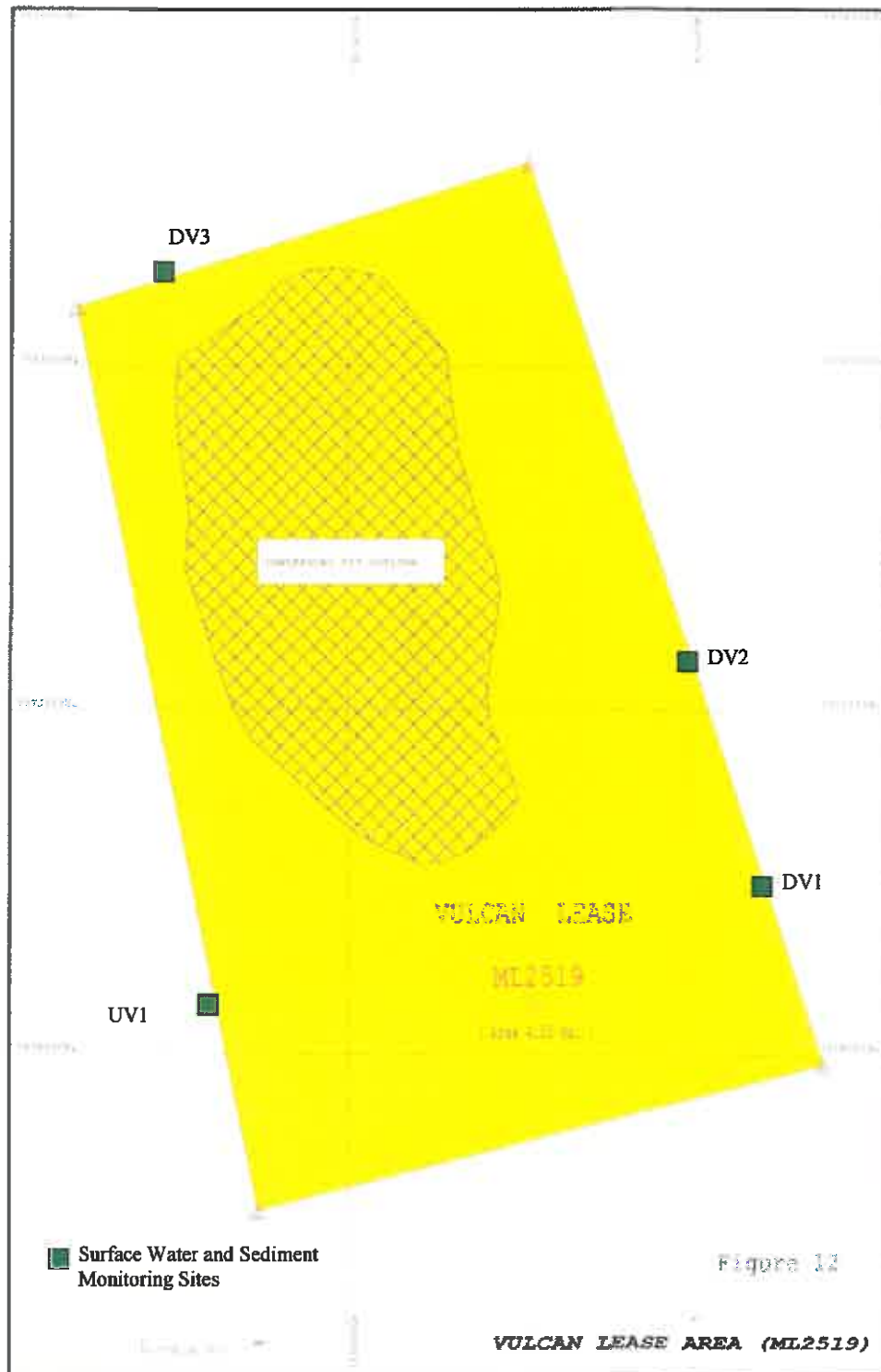


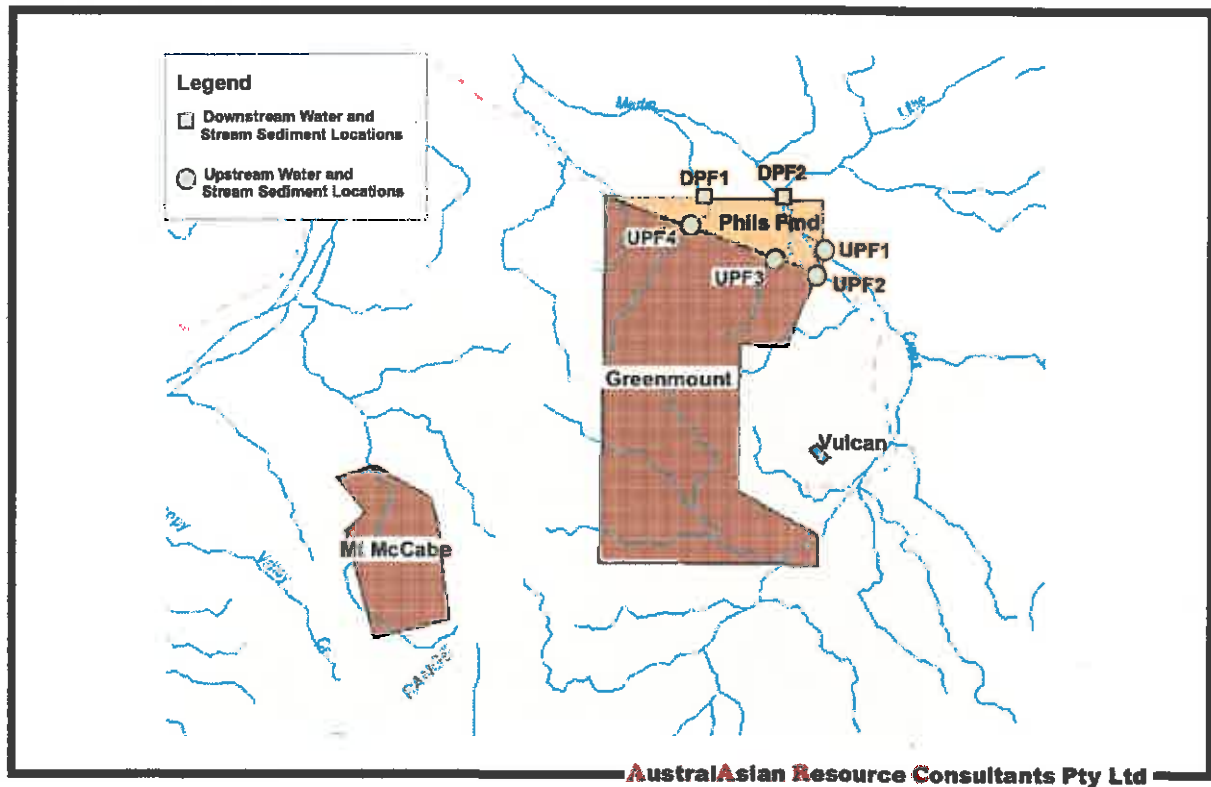
Figure 3: Proposed Mine Layout Vulcan

Schedule I - Map 4 Receiving water monitoring locations & Receiving Stream Sediment monitoring locations for Hampden ML 90081



Figure 4: Proposed Mine Layout Hampden/Kuridala

Schedule I - Map 5 Receiving water monitoring locations & Receiving Stream Sediment monitoring locations for Phil's Find ML 90161



**Figure 3:** Location of Water and Stream Sediment Monitoring Sites

Schedule I - Map 6 Water Storage Monitoring Locations of Hazardous Dams

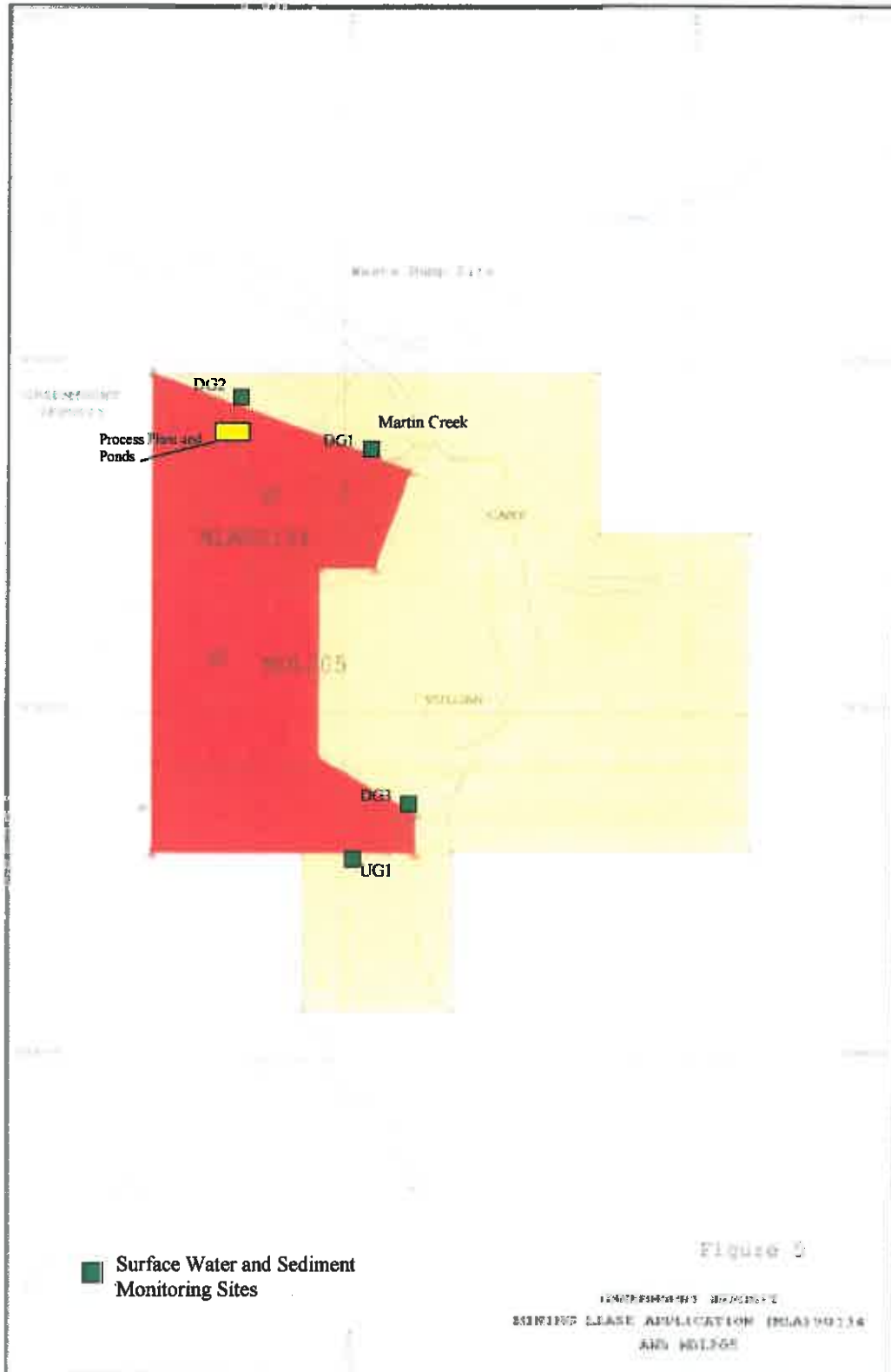
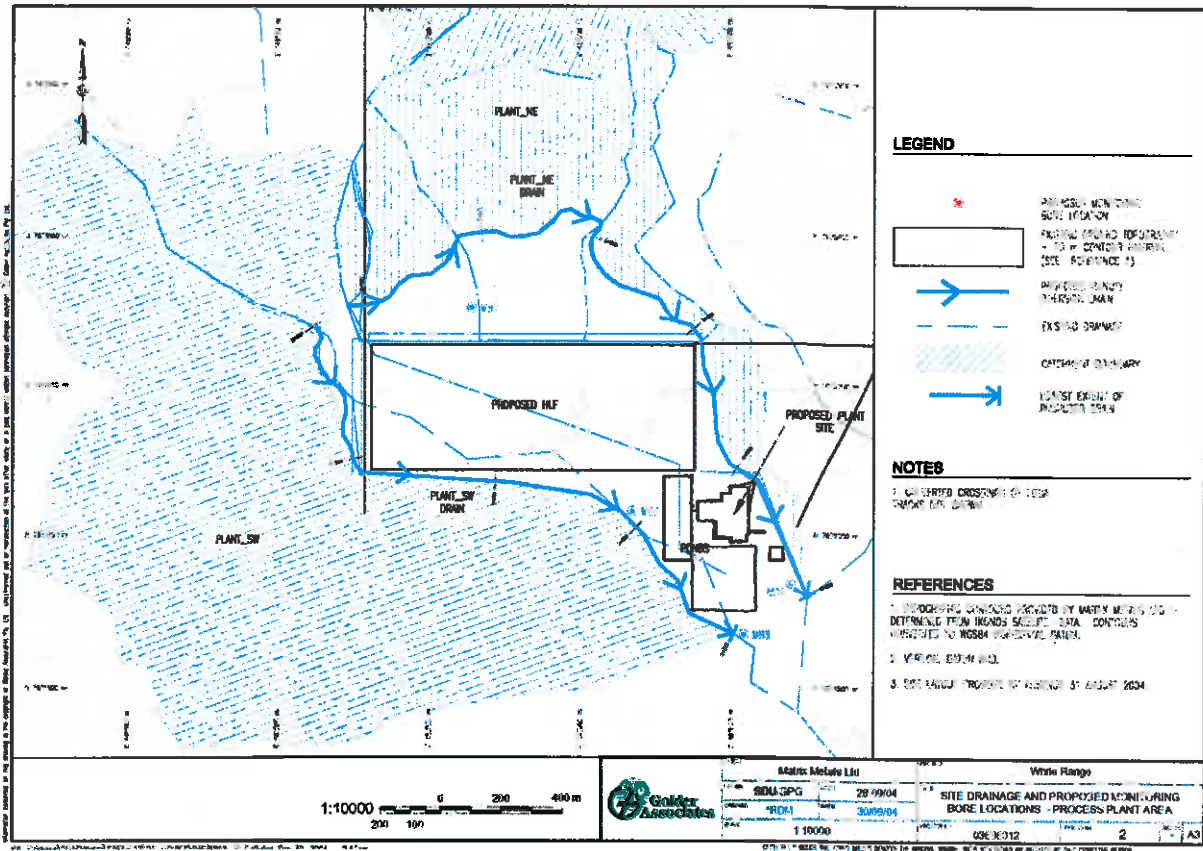
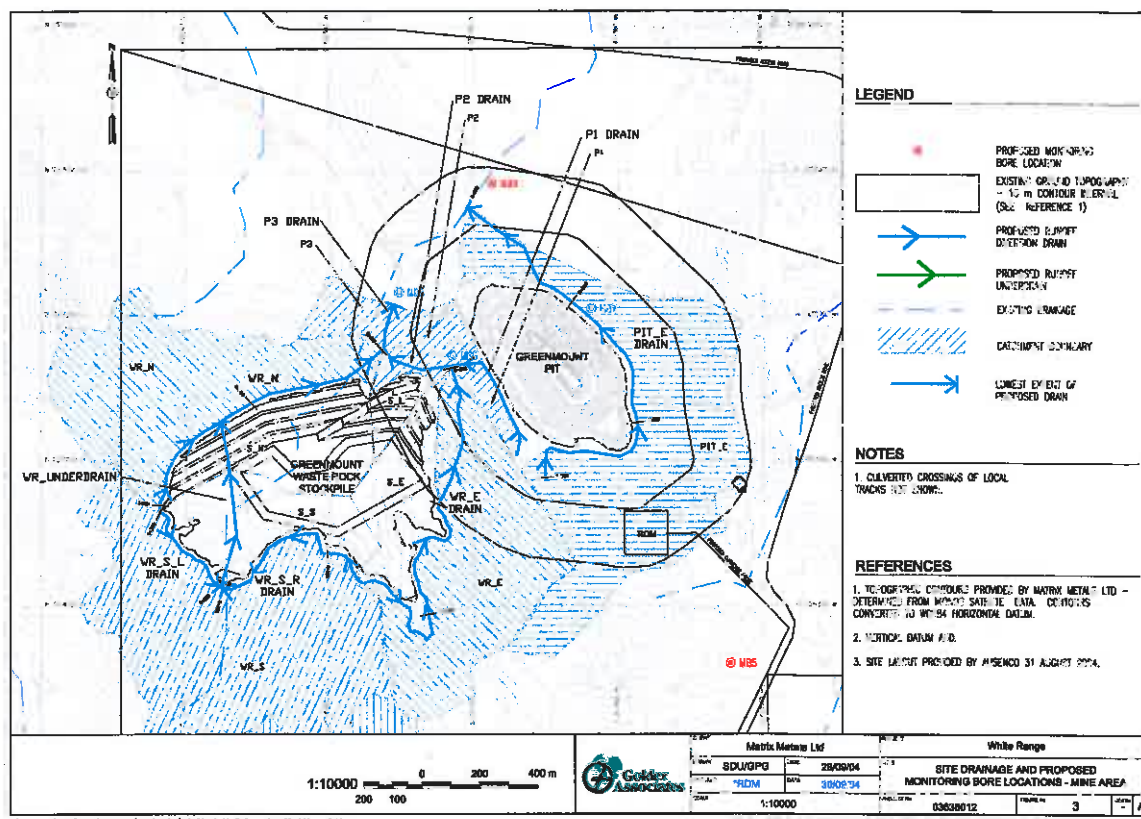


Figure 1: Proposed Mine Layout Greenmount

Schedule 1 - Map 7 Groundwater Monitoring locations



### Schedule I - Map 8 Groundwater Monitoring locations



END CONDITIONS FOR SCHEDULE 1

END OF ENVIRONMENTAL AUTHORITY