

Department of Environment and Heritage Protection

Permit¹

Environmental Protection Act 1994

Environmental authority

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

Permit¹ number: EPML00562613

Environmental authority takes effect on 27 July 2017.

The anniversary date of this environmental authority is 7 September. An annual return and annual fee will be due each year on this date.

Environmental authority holder(s)

Name	Registered address
Alcan South Pacific Pty Ltd	123 Albert Street BRISBANE QLD 4000

Environmentally relevant activity and location details

Environmentally relevant activity(ies)	Location(s)
Mining Activities - Bauxite	ML7031

Additional information for applicants

Environmentally relevant activities

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

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

¹ Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation



It is a requirement of the EP Act that if an owner or occupier of land becomes aware a notifiable activity (as defined in Schedule 3 and Schedule 4) is being carried out on the land, or that the land has been, or is being, contaminated by a hazardous contaminant, the owner or occupier must, within 22 business days after becoming so aware, give written notice to the chief executive.



Signature



Date

Jacob Toe
Department of Environment and Heritage Protection
Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:
PO Box 7230
CAIRNS QLD 4870
Phone: (07) 4222 5334
Fax: (07) 4222 5070

Obligations under the *Environmental Protection Act 1994*

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

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

Conditions of environmental authority

Environmental Authority is subject to the conditions set out in the attached schedules. The conditions of this Environmental Authority should be read in conjunction with the Environmental Management Plan titled "Alcan South Pacific Pty Ltd - Ely Bauxite Mine" dated May 2011. The mining tenement and mining activities are those authorised under the Alcan Queensland Pty Ltd Agreement Act 1965. Where there is a discrepancy between the conditions of the Environmental Authority and the Environmental Management Plan the conditions of the Environmental Authority will apply. Where a condition in this environmental authority does not directly apply to a specific activity as identified in the relevant schedule, the condition is taken to apply to all mining activities.

Location: ML7031, Weipa

Relevant activity/ies:

Mining – Mining Lease – Mining Bauxite – Site Specific

Environmental Protection Regulation 2008 Schedule 2A – Item 11 – Mining Bauxite

Aggregate Environmental Score - 97

The environmentally relevant activity(ies) conducted at the location as described above must be conducted in accordance with the following site specific conditions of approval.

SCHEDULE A – GENERAL

Mining Activities

- (A1) This environmental authority authorises environmental harm caused by the carrying out of mining activities by the holder of this environmental authority, provided the mining activities are carried out in accordance with the conditions herein. Where a condition in this environmental authority refers to environmental harm, the condition is taken to authorise the environmental harm occurring in compliance with the condition. Where there is no condition or this environmental authority is silent on a matter, the lack of a condition or silence shall not be construed as authorising environmental harm.
- (A2) The activities authorised to be carried out under this environmental authority are the mining activities defined within Table A1 – Authorised Mining Activities and identified in Schedule K Plan 1 - Ely General Area Plan.

Table A1 – Authorised Activities

Mine Domain	Mine Feature	Tenure	Maximum Surface Area of Disturbance (ha)	Map Reference (GDA94)	
				Northing	Easting
Extraction Areas	Mining Areas	ML7031	139,000	N/A	N/A
Water Storage	Ely Dam		157	8631611	595947
				8631773	596991
				8630675	598042
				8630680	596411
Transport Corridors	Haul roads / access tracks	Defined in Plan of Operations	N/A	N/A	

Maintenance of Measures, Plant and Equipment

- (A3) The holder of this environmental authority must:
- (a) install measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority;
 - (b) maintain such measures, plant and equipment in a proper condition; and
 - (c) operate such measures, plant and equipment in a proper manner.
- (A4) No change, replacement or alteration of any plant or equipment is permitted if the change, replacement or alteration increases or is likely to increase the risk of environmental harm caused by the mining activities.

Monitoring and Reporting

- (A5) 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 each time a Plan of Operations is prepared or amended, or otherwise in accordance with the relevant timeframe as specified in this environmental authority and amended as promptly as necessary to meet that objective.
- (A6) The holder of this environmental authority must record, compile, evaluate and keep for a period of five (5) years all monitoring results, records and documents required by this environmental authority and any complaints received about the mining activities and make available for inspection all or any of these records upon request by the administering authority.
- (A7) All monitoring referred to in this environmental authority shall be undertaken by a suitable competent person using monitoring equipment that is accurately calibrated and maintained in good working order and condition.

- (A8) All analyses and tests required to be conducted under this environmental authority must be carried out by a laboratory that has NATA certification for such analyses and tests, except as otherwise authorised by the administering authority.

Financial Assurance

- (A9) The environmental authority holder must provide to the administering authority a financial assurance of an amount and in a form acceptable to the administering authority in accordance with the most recent addition of the administering authority's Guideline –*Financial Assurance under the Environmental Protection Act 1994*. The financial assurance must remain in force until the administering authority is satisfied no claim on the financial assurance will be required.

Risk Management

- (A10) The holder of this environmental authority must develop and implement a risk management system for mining activities by 7 September 2013 which conforms to the Standard for Risk Management (AS/NZS ISO 31000:2009) or the latest edition of the Australian Standard for Risk Management.

Emergency Response/Contingency

- (A11) An emergency response/contingency plan must be developed and implemented by 7 September 2013 to respond to emergency events and incidents.
- (A12) The emergency response/contingency plan must be developed in accordance with the most recent version of ISO14001 standard and must include but not be limited to the following matters:
- (a) response procedures which aim to minimise the extent and duration of environmental harm;
 - (b) procedures to investigate the cause of an emergency event or incident and remedial actions to be taken to prevent a recurrence;
 - (c) timely and accurate reporting of the circumstance and nature of an emergency event or incident to the administering authority;
 - (d) procedures for accessing monitoring points during an emergency event or incident; and
 - (e) procedures to notify any person who may be affected by the emergency event or incident within twenty-four (24) hours, with the following information to be provided at a minimum:
 - i) the location of the emergency event or incident;
 - ii) the date and time of the emergency event or incident;
 - iii) the estimated quantity and type of any substances (if in available concentrations) involved in the emergency event or incident; and
 - iv) the potential impacts to environmental values, livestock and public health caused by the emergency event or incident.

Notification of Emergencies, Incidents and Exceedances

- (A13) The holder of this environmental authority must notify the administering authority by telephone, email or facsimile as soon as reasonably possible (but no later than twenty-four (24) hours after becoming aware of:
- (a) any emergency event or incident which results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with the conditions of this environmental authority; or
 - (b) any monitoring result that indicates an exceedance of any environmental authority limit.
- (A14) The notification must include but not be limited to the following:
- (a) the environmental authority number and name of the holder;
 - (b) the name and telephone number of the designated contact person;
 - (c) the location of the emergency event, incident or exceedance;
 - (d) the date and time of the emergency event, incident or exceedance;

- (e) the time the holder of this environmental authority became aware of the emergency event, incident or exceedance;
 - (f) the estimated quantity and type of substances involved in the emergency event, incident or exceedance, if known;
 - (g) the cause of the emergency event, incident or exceedance if known;
 - (h) a description of the nature and effects of the emergency event, incident or exceedance including risks to the environment, public health or livestock, if known;
 - (i) immediate actions taken to prevent or mitigate any further environmental harm caused by the emergency event, incident or exceedance; and
 - (j) details of any notification of persons who may be affected by the emergency event, incident or exceedance.
- (A15) Within fourteen (14) days or as otherwise agreed following the initial notification of an emergency event, incident or exceedance, further written advice must be provided to the administering authority including the following:
- (a) results and interpretation by a suitable competent person of any samples taken and analysed;
 - (b) outcomes of actions taken at the time to prevent or minimise unlawful environmental harm; and
 - (c) proposed actions to prevent a recurrence of the emergency event, incident or exceedance.

Transition to New Standards

- (A16) Where a condition requires compliance with a standard or guideline relevant legislation published externally to this environmental authority and the standard or guideline relevant legislation is amended or changed subsequent to issue of this environmental authority, the holder of this environmental authority must, unless otherwise agreed to by the administering authority:
- (a) comply with the amended or changed standard or guideline relevant legislation within two (2) years of the amendment or change being made, unless a different period is specified in the amended or changed standard or guideline relevant legislation; and
 - (b) until compliance with the amended or changed standard or relevant legislation can be achieved, continue to remain in compliance with the standard or guideline relevant legislation that was current immediately prior to the relevant amendment or change.

Complaints

- (A17) Records must be kept of all environmental complaints received about the mining activities including but not limited to the following details:
- (a) name, address and contact number for complainant;
 - (b) time and date of complaint;
 - (c) reasons for the complaint;
 - (d) investigations undertaken;
 - (e) conclusions formed;
 - (f) actions taken to resolve the complaint;
 - (g) any abatement measures implemented; and
 - (h) person responsible for resolving the complaint.
- (A18) When requested by the administering authority, the holder of this environmental authority must undertake relevant specified monitoring within a timeframe agreed to by the administering authority to investigate any complaint of environmental harm considered in the opinion of an authorised officer not to be vexatious or frivolous. 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.

Community

- (A19) The holder of this environmental authority must establish, promote and maintain easily accessible lines of communication between residents, stakeholders and land owners to ensure that community impacts are identified and managed.

Third Party Auditing

- (A20) Compliance with the conditions of this environmental authority must be audited by a suitably qualified third party auditor nominated by the holder of this environmental authority and accepted by the administering authority:

- (a) by 7 September 2013; and
- (b) then at regular intervals not exceeding once every three (3) years.

- (A21) The holder of this environmental authority must promptly respond to any findings arising from the audit and implement measures or take necessary action to ensure compliance with the conditions of this environmental authority.

Regard for Comment

- (A22) Where comments are provided by the administering authority with respect to any plans, systems or programs required to be developed by a condition of this environmental authority, the holder of this environmental authority must have due regard for these comments.

END OF CONDITIONS FOR SCHEDULE A

529

SCHEDULE B - AIR

General

- (B1) The release of dust, noxious or offensive odour or any other airborne contaminant resulting from the mining activities must not cause environmental harm at any sensitive place or commercial place.
- (B2) The holder of this environmental authority must ensure that vehicles (including trains) used for transporting bauxite ore and/or bulk materials from the licensed place, leave the licensed place with appropriate load preparation to minimise the spillage and/or loss of particulate matter and/or windblown dust during transport.

Ambient Air Quality

- (B3) In the event of a complaint made to the administering authority (which in the opinion of an authorised officer is considered neither frivolous nor vexatious) about airborne contaminants generated in carrying out the mining activity, dust and particulate matter must not exceed any of the limits identified in Table B1 – Ambient Air Quality Limits when measured at any sensitive or commercial place:

Table B1 – Ambient Air Quality Limits

Contaminant	Limit ¹	Methodology
Dust deposition	120 milligrams per square metre per day, averaged over one (1) month	Monitored in accordance with the most recent version of Australian Standard AS3580.10.1 <i>Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter – Gravimetric method</i>
Particulate matter with an aerodynamic diameter of less than 10 micrometres (PM ₁₀) suspended in the atmosphere	50 micrograms per cubic metre, averaged over twenty-four (24) hours	Monitored in accordance with the most recent version of the relevant Australian Standard for measuring 10 micrometres (PM ₁₀) suspended Note: Five (5) days of exceedances allowed each year including natural causes
Particulate matter (TSP) suspended in the atmosphere	90 micrograms per cubic metre, averaged over one (1) year	Monitored in accordance with any method for measuring TSP as recommended in the most recent version of the relevant Australian Standard for measuring TSP

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

- (B4) If monitoring indicates the limits for airborne contaminants specified in Condition (B3) have been exceeded, the holder of this environmental authority must compare the results of the impacted location to that of a reference monitoring location agreed to by the administering authority. If the level of airborne contaminants at the impacted location does not exceed the reference monitoring location, then no action is to be taken and the contaminants will be regarded as not having been generated in the carrying out of the mining activity.
- (B5) If monitoring indicates the limits for airborne contaminants specified in Condition (B3) have been exceeded and that the contaminants are regarded as having been generated in the carrying out of the mining activity, the holder of this environmental authority must promptly implement dust abatement measures so that emissions of airborne contaminants generated in the carrying out of the mining activity cease to exceed the limits in Condition (B3).

Light

- (B6) In the event of a complaint about light emissions from any mining activity that, after an investigation is in the opinion of an authorised person causing a nuisance at a sensitive place, the administering authority may request the holder of this environmental authority to take appropriate action to mitigate the nuisance and the holder must take appropriate action (e.g. by screening or directing the light away from the sensitive place) within a time set by the administering authority.

Meteorological Monitoring

- (B7) Under circumstances where relevant wind, temperature and rainfall data cannot be provided to the holder of this environmental authority from the Weipa Meteorological Station operated by the Bureau of Meteorology, the holder must promptly deploy a portable automatic meteorological station to continuously measure and record wind speed and direction, temperature and rainfall data when and where these data measurements are required.
- (B8) The portable automatic meteorological station referred to in Condition (B7) must be installed in accordance with the latest edition of the Bureau of Meteorology - Observation Specification No.2013.1 - *Guidelines for the siting and exposure of meteorological instruments and observing facilities*.
- (B9) The holder of this environmental authority must record, compile, evaluate and keep all monitoring records obtained from the portable automatic meteorological station.

END OF CONDITIONS FOR SCHEDULE B

SCHEDULE C – LAND & REHABILITATION

General

- (C1) Contaminants that will or may cause environmental harm must not be directly or indirectly released to land except as permitted under this environmental authority.
- (C2) Any spillage of wastes, contaminants or other materials must be promptly cleaned up. Such spillages must be cleaned up using methods that minimise the release of wastes, contaminants or materials to any stormwater drainage system, roadside gutter or waters.

Disturbance to Land

- (C3) When carrying out mining activities the holder of this environmental authority must:
 - (a) avoid, minimise or mitigate (in order of preference) any impacts on areas of sensitive vegetation or other areas of ecological value;
 - (b) minimise the risk of injury, harm, or entrapment to wildlife and stock;
 - (c) minimise disturbance to land that may otherwise result in land degradation;
 - (d) ensure that for land that is to be significantly disturbed by mining activities the topsoil layer is removed and handled in a manner that will minimise degradation of its biological, chemical and physical properties and is used for rehabilitation purposes (in accordance with Condition C13 & C14);
 - (e) prior to carrying out any disturbance activities, make all relevant staff, contractors or agents carrying out those activities aware of the location of any Category A, B or C Environmentally Sensitive Area (ESA) and the relevant requirements of this environmental authority;
 - (f) if significant disturbance to land is unavoidable, clear vegetation in a way which minimises fragmentation; and
 - (g) manage cleared vegetation so that it is stockpiled in a manner that facilitates salvage, resprouting or burning and does not impede vehicle, stock or wildlife movements.

Note: This environmental authority does not authorise the taking of protected animals or the tampering with an animal breeding place that is being used by a protected animal to incubate or rear the animal's offspring.

- (C4) The holder of this environmental authority may burn vegetation cleared in the course of carrying out extraction activities provided the activity does not cause environmental harm at any sensitive place or commercial place.
- (C5) The holder of this environmental authority must ensure that mining activities are not conducted:
 - (a) in or within 200 metres of any listed Category A, B or C ESA;
 - (b) within 50 metres of any high bank of a watercourse with stream order 1 or 2;
 - (c) within 100 metres of any high bank of a watercourse with stream order 3 or 4;
 - (d) within 200 metres of any high bank of a watercourse with stream order 5 and above;
 - (e) within 100 metres of any natural wetland; and
 - (f) within 200 metres of any natural significant wetland.

Note: Activities which are ancillary to extraction activities such as haul and access roads, conveyors, bridges, loading ramps, pumps and pipelines may encroach upon buffer areas (all reasonable measures will be undertaken to minimise such disturbances) and these will be detailed in the Plan of Operations.

Land Use Management Plan

- (C6) The holder of this environmental authority must develop and implement a Land Use Management Plan (LUMP) for land within ML7031. This LUMP will be submitted to the administering authority by 30 November 2013. The LUMP must include:
- (a) plans and procedures for managing vegetation including buffer systems, pre-clearing surveys for any Category A, B or C ESA's and the presence of species classed as endangered, vulnerable or near threatened under the *Nature Conservation Act 1992*;
 - (b) plans and procedures for the preparation and burning of vegetation cleared in the course of carrying out mining activities;
 - (c) plans and procedures for obtaining base line soils information covering the identification of soil units within areas to be disturbed by mining activities as nominated in the Plan of Operations at a scale of 1:100,000, in accordance with the "*Guidelines for Surveying Soil and Land Resources, 2nd Edition*" (McKenzie et al. 2008) or "*Australian Soil and Land Survey Handbook, 3rd Edition*" (National Committee on Soil and Terrain 2009) or "*The Australian Soil Classification*" (Isbell 2002) or similar recent guidelines;
 - (d) plans and procedures for managing acid sulphate soils so that when disturbance as a result of mining activities occurs in areas with acid sulphate soils (or potential acid sulphate soils), the holder of this environmental authority must develop and implement an acid sulphate soil management plan prepared in accordance with the "*State Planning Policy 2/02 Guideline Planning and Managing Development Involving Acid Sulphate Soils*" and the administering authority's "*Queensland Acid Sulphate Soil Technical Manual*" (Version 2.2 September 2004) or more recent editions or supplements to these documents when these become available. The holder of this environmental authority must treat and manage acid sulphate soils in accordance with the latest edition of the administering authority's Guideline - *Instructions for the Treatment and Management of Acid Sulphate Soils*;
 - (e) plans and procedures for the carrying out of mining activities to prevent or minimise harm or the potential risk of causing harm to native fauna. The fauna management procedures must include training and awareness of staff and contractors or access to suitably qualified contractors trained in fauna handling, to ensure that any planned fauna handling is undertaken by a suitably qualified person; and
 - (f) plans and procedures for an effective pest management program that includes but is not limited to the following:
 - i. identification of pest species and infestation areas;
 - ii. measures required to prevent and/or minimise the introduction and/or spread of pest species; and
 - iii. control and management of pest outbreaks as a result of mining activities.
- (C7) Prior to conducting mining activities that involve significant disturbance to land, an assessment must be undertaken in accordance with the LUMP to determine the type and ecological value of any vegetation in such areas where the activity is proposed to take place.
- (C8) The assessment required by Condition (C7) must be undertaken by a suitably qualified person and include the carrying out of field validation surveys, observations and mapping of any Category A, B or C ESA's and the presence of species classed as endangered, vulnerable or near threatened under the *Nature Conservation Act 1992*, in accordance with the LUMP.

Rehabilitation Goals and Objectives

- (C9) Land disturbed by mining activities as identified in Schedule K Plan 1 - Ely General Area Plan, must be rehabilitated in accordance with Table C1 – Rehabilitation Requirements and the objectives of the Rehabilitation Management Plan required under Condition (C15).

Table C1 - Rehabilitation Requirements

Mine Domain	Mine Feature Name	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
TBD ¹	TBD ¹	All land subject to mining activities must be rehabilitated to meet the requirements of the administering authorities Guideline - <i>Rehabilitation requirements for Mining Projects</i> and will be defined in the Rehabilitation Management Plan	TBD ¹	TBD ¹	TBD ¹

¹ Post mine land use, rehabilitation indicators and completion criteria are to be nominated in accordance with Condition (C15).

- (C10) Areas that are available for rehabilitation must be identified in the current Plan of Operations.
- (C11) Rehabilitation must commence progressively as areas become available in accordance with the Plan of Operations.
- (C12) Rehabilitation can be considered successful when:
 - (a) the site can be managed for its designated land-use (e.g. similar to that of surrounding undisturbed areas);
 - (b) the level of ongoing management required is no greater than for other land in the area being used for a similar purpose and there is evidence that rehabilitation has been successful;
 - (c) the rehabilitation is carried out in accordance with the goals, objectives, indicators and completion criteria as specified in Table C1 – Rehabilitation Requirements; and
 - (d) written agreement is obtained from the landowner/holder and administering authority.

Topsoil

- (C13) Topsoil and subsoils must be stripped separately and replaced directly in an area awaiting rehabilitation or else be stockpiled and subsequently used in rehabilitation.
- (C14) Topsoil must be managed in accordance with the Rehabilitation Management Plan and stockpiled in a manner that ensures stability. Measures must include:
 - (a) vegetating topsoil stockpiled during the months 1 November to 1 May;
 - (b) optimising the height and footprint of stockpiles; and
 - (c) re-using stockpiles as soon as possible.

Rehabilitation Management Plan

- (C15) The holder of this environmental authority must develop, implement and submit to the administering authority a Rehabilitation Management Plan by 7 September 2015 and must include:
 - (a) schematic representation of final land form inclusive of drainage features;
 - (b) slope and cover designs;
 - (c) drainage design;
 - (d) erosion controls proposed on reformed land;
 - (e) revegetation methods inclusive of plant species selection, re-profiling, soil handling (including stockpiling), soil ameliorants/amendments, surface preparation and method of propagation;
 - (f) materials balance including available topsoil and low permeability capping material;

- (g) geotechnical, geochemical and hydrological studies;
- (h) chemical, physical and biological properties of soil and water;
- (i) agreed post mining land and/or infrastructure use with the landowner/holder and the administering authority;
- (j) rehabilitation goals, rehabilitation objectives, indicators and measurable completion criteria for each agreed post mining land use within each domain that enables determination of rehabilitation success;
- (k) description of experimental design for monitoring of reference and rehabilitated areas inclusive of statistical design;
- (l) a rehabilitation monitoring program based on a statistically sound, mutually agreed to sampling design;
- (m) research program and associated milestones; and
- (n) programs for maintenance of rehabilitation as required to achieve the nominated rehabilitation objective.

Infrastructure

- (C16) 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 to in writing by the administering authority and the landowner/holder.

Post Closure Management Plan

- (C17) A Post Closure Management Plan must be prepared at least three (3) years prior to final ore extraction on the licensed place and implemented for a nominal period of:
- (a) at least thirty (30) years following final ore extraction 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 licensed place will result in environmental harm.
- (C18) The Post Closure Management Plan must include, where necessary, the following elements:
- (a) operation and maintenance of:
 - (i) wastewater collection, treatment and reticulation systems;
 - (ii) groundwater monitoring network;
 - (iii) final cover systems; and
 - (iv) vegetative cover.
 - (b) monitoring of:
 - (i) surface water quality;
 - (ii) groundwater quality;
 - (iii) erosion rates;
 - (iv) the integrity and effectiveness of final cover systems; and
 - (v) the health and resilience of vegetative cover.

Storage and Handling of Hazardous Materials

- (C19) All explosives, hazardous chemicals, corrosive substances, toxic substances, gases, dangerous goods, flammable and combustible liquids must be stored and handled in accordance with the

relevant Australian Standard where such is available. Where no relevant Australian Standard exists, these materials must be stored within an effective on-site containment system.

- (C20) Notwithstanding the requirements of any Australian Standard, any hazardous materials 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) all transportable chemical containers must be stored within a bund, where the capacity of the bund is sufficient to contain 125% of the largest storage container.
- (C21) All containment systems for chemicals and flammable or combustible liquids must be designed to minimise rainfall collection within the system.
- (C22) The holder of this environmental authority must minimise the potential for contamination of land and waters by diverting stormwater around contaminated areas and facilities used for the storage of explosives, hazardous chemicals, corrosive substances, toxic substances, gases, dangerous goods, flammable and combustible liquids.
- (C23) Spillage of any contaminant must be contained and land remediated to prevent environmental harm.

Contaminated Land

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

END OF CONDITIONS FOR SCHEDULE C

SCHEDULE D – GENERAL AND REGULATED WASTE MANAGEMENT

Waste Disposal

- (D1) All general and regulated waste must be removed from the licensed place to a facility that is lawfully able to accept the waste under the *Environmental Protection Act 1994*.

Note: Mine waste including green waste, sewage sludge and waste bauxite may be disposed of on the licensed place.

- (D2) General and regulated waste generated in the mining activity can be temporarily stored on the licensed place awaiting removal provided it is stored to ensure there is minimal risk of causing fire or contamination to land or waters.

Waste Management Program

- (D3) Within twelve (12) months from the date of issue of this environmental authority a waste management program in accordance with Part 5 of the *Environmental Protection (Waste Management) Policy 2008* must be developed, implemented and maintained for all mining activities on the licensed place. The waste management program must include:
- (a) a description of the mining activities that may generate waste;
 - (b) the types and amounts of wastes generated by the mining activities;
 - (c) a program for reusing, recycling or disposing of all wastes;
 - (d) how the waste will be dealt with in accordance with the waste management hierarchy, including a description of the types and amounts of waste that will be dealt with under each of the waste management practices in the waste management hierarchy (i.e. avoidance, reuse, recycling, energy recovery, disposal);
 - (e) how the waste will be stored, handled and transferred in a proper and effective manner;
 - (f) procedures for identifying and implementing opportunities to minimise the amount of waste generated, promote efficiency in the use of resources and improve the waste management practices employed;
 - (g) procedures for dealing with accidents, spills, and other incidents that may impact on waste management;
 - (h) details of any accredited management system employed, or planned to be employed, to deal with the waste;
 - (i) how often the performance of the waste management practices will be assessed;
 - (j) the indicators or other criteria on which the performance of the waste management practices will be assessed; and
 - (k) staff training and induction to the waste management program.

Regulated Waste

- (D4) Regulated waste must be removed and transported from the licensed place by a person who holds a current authority to transport such wastes to a facility that is lawfully able to accept the waste under the *Environmental Protection Act 1994*.
- (D5) Each container of regulated waste stored awaiting movement off-site must be clearly marked to identify the contents.

END OF CONDITIONS FOR SCHEDULE D

SCHEDULE E – NOISE

General

- (E1) Noise from the mining activities must not cause environmental harm at any sensitive place or commercial place.
- (E2) In the event of a complaint made to the administering authority (considered in the opinion of an authorised officer to be neither frivolous or vexatious) about noise generated in carrying out the mining 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.

Noise Monitoring

- (E3) Ensure that noise generated by the mining activities does not cause the limits of goals in Table E1 – Noise Limits to be exceeded.

Table E1 - Noise Limits

Noise Level dB(A) measured as:	Monday to Saturday			Sundays and Public Holidays		
	7am to 6pm	6pm to 10pm	10pm to 7am	9am to 6pm	6pm to 10pm	10pm to 9am
L_{Aeq} , adj, 1 hour	45	45	43	45	45	43
L_{A1} , adj, 1 hour	50	50	45	50	50	45

- (E4) When requested by the administering authority, noise monitoring and recording must be undertaken within a timeframe nominated by the administering authority to investigate any complaint of environmental nuisance (considered in the opinion of an authorised officer to be neither frivolous or vexatious) at any sensitive place or commercial place and the results must be provided to the administering authority within fourteen (14) days following completion of monitoring.
- (E5) Noise monitoring and recording must include the following descriptor characteristics and matters:
- L_{Aeq} , and L_{A1} (where N equals the statistical levels of 1, 10 and 90 and T = 60 mins);
 - background noise L_{A90} ;
 - the level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to statistical levels;
 - atmospheric conditions including temperature, relative humidity and wind speed and directions;
 - effects due to any extraneous factors such as traffic noise;
 - location, date and time of monitoring;
 - if the complaint concerns low frequency noise, $Max L_{pLIN,T}$; and
 - if the complaint concerns low frequency noise, one third octave band measurements in dB(LIN) for centre frequencies in the 10 – 200 Hz range.
- (E6) The method of measurement and reporting of noise levels must comply with the most recent edition of the administering authority's Noise Measurement Manual or the most recent version of AS1055 *Acoustics – Description and measurement of environmental noise*.

END OF CONDITIONS FOR SCHEDULE E

SCHEDULE F – WATER

General

- (F1) Contaminants that will or have the potential to cause environmental harm must not be released directly or indirectly to any waters except as permitted under the conditions of this environmental authority.
- (F2) The maintenance and cleaning of vehicles and any other equipment or plant must be carried out in areas and in a manner which minimises the potential for environmental harm.
- (F3) All determinations of water quality must be:
- (a) made in accordance with methods prescribed in the latest edition of the administering authorities *Water Quality Sampling Manual*; and
 - (b) carried out on representative samples.
- (F4) The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the administering authority in the specified format when requested:
- (a) the date and time upon which the sample was taken;
 - (b) the monitoring point at which the sample was taken;
 - (c) the measured or estimated daily quantity of the contaminants released from the release points identified in Table F1 – Release Points (point source release);
 - (d) the release flow rate at the time of sampling for each release point identified in Table F1 – Release Points (point source release);
 - (e) the results of all monitoring and details of any exceedances with the conditions of this environmental authority; and
 - (f) water quality monitoring data provided electronically in the specified format.

Contaminant Release to Waters

- (F5) The release of contaminants to waters from mining activities must only occur:
- (a) at the release points specified in Table F1 – Release Points (point source release); and
 - (b) from extraction areas specified in Table F2 – Release from Extraction Areas
- (F6) The release of contaminants to waters from the release points and extraction areas must be monitored at the release points listed in Table F1 – Release Points (point source release) and Table F2 – Release from Extraction Areas and at a frequency specified in Condition (F7).

Table F1 - Release Points (point source release)

Release Point	Description of Water Releases	Contaminant Source	Description of Receiving Waters	Release Monitoring Location	
				Northing (GDA94)	Easting (GDA94)
Ely Dam spillway	Stormwater	Ely mining areas	Kwambakachini (Ely) Creek	8631180	595985

Table F2 – Receiving Waters for Release from Extraction Areas

Monitoring Location	Description of Water Releases	Contaminant Source	Description of Receiving Waters	Co-ordinates (GDA94 MGAz54)	
				Monitoring Location	
				Northing (GDA94)	Easting (GDA94)
Downstream Sites					
Defined in Plan of Operations in accordance with the REMP	Release of contaminated stormwater via sediment dams	Extraction areas	Streams, creeks, rivers and coastal environment in and adjacent to ML7031	As described in the current Plan of Operations in accordance with the REMP	As described in the current Plan of Operations in accordance with the REMP
Reference Sites					
Defined in Plan of Operations in accordance with the REMP	Release of stormwater uncontaminated by mining activities	NA	Streams, creeks, rivers and coastal environment in and adjacent to ML7031	As described in the current Plan of Operations in accordance with the REMP	As described in the current Plan of Operations in accordance with the REMP

- (F7) The release of contaminants to waters from the release points specified in Table F1 – Release Points (point source release) must be monitored for each quality characteristic specified in Table F3 – Release Water Contaminant Limits. For any release, waters must be monitored if it is safe to do so:
- (a) promptly and within twenty-four (24) hours of the commencement of release;
 - (b) daily during release for seven (7) days;
 - (c) weekly thereafter for one (1) month; and
 - (d) monthly for the remainder of the wet season.

Table F3 - Release Water Contaminant Limits

Quality Characteristic	Contaminant Limit
Suspended Solids (mg/L)	70 ¹
Dissolved Aluminium (µg/L)	320 ²

5m+

pH/EC/DO	For interpretation purposes
----------	-----------------------------

1. 99th percentile of three wet seasons of North of Embley Release Point data; excluding high suspended solids data from King Canal Sediment Dam
2. 99th percentile of three wet seasons of North of Embley Release point data; excluding data from King Canal and Lorim Point Polishing Pond.

- (F8) The release of contaminants directly or indirectly to waters must not:
- (a) produce any slick or other visible or odorous evidence of oil, grease or petrochemicals; nor
 - (b) contain visible floating oil or grease.
- (F9) Releases to waters from the mining activities must be undertaken so as not to cause erosion of the bed and banks of the receiving waters or cause a build up of sediment in such waters.
- (F10) The release of contaminants to waters from point sources as defined in Table F1 – Release Points (point source release) must not exceed the contaminant limits for each quality characteristic stated in Table F3 – Release Water Contaminant Limits when measured at the monitoring points specified in Table F1 – Release Points (point source release).
- (F11) The authorised mining activities must not cause an exceedance of any limit for any characteristics as specified in Table F4 (Receiving Water Trigger Levels Wet Season December - April).
If a release of contaminants to waters from extraction areas specified in Table H2 – Release from Extraction Areas exceed any limit for any quality characteristic as specified in Table F4 (Receiving Water Trigger Levels Wet Season December - April), the holder of this environmental authority must investigate in accordance with F12.
- (F12) If the wet season (December – April) median of the quality characteristics of the receiving water monitored at the downstream monitoring locations defined in specified in Table F4 (Receiving Water Trigger Levels) during a release event, the holder of this environmental authority must compare the results of the release point monitoring location to the data from the reference monitoring location and:
- (a) if the level of contaminants at the downstream monitoring location does not exceed the reference monitoring location data, then no action is to be taken; or
 - (b) if the level of contaminants at the downstream monitoring location is greater than the reference monitoring location 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; and
 - (ii) actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated in accordance with F12(b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic within the three month investigation period.

Table F4 – Receiving Water Trigger Levels (Wet Season – December to April)

Quality Characteristic	Trigger Levels (µg/L for toxicants) – freshwater ⁸	Trigger Levels (µg/L for toxicants) – estuarine waters ⁹	Limit Type
pH (pH unit)	5.0 ² (minimum) 8.0 ³ (maximum)	7.0 ⁶ (minimum) 8.5 ⁶ (maximum)	Median measured over the wet season
EC (µS/cm)	For interpretation		
Dissolved Oxygen (mg/L)	For interpretation		
Temperature	For interpretation		
Sulphate (SO ₄ ²⁻) (mg/L)	80 th percentile ^{1,2,5,7} of reference ⁴	N/A	Median measured over the wet season
Turbidity (NTU)	21	37	Median measured over the wet season
Suspended Solids (Mg/L)	N/	N/A	Median measured over the wet season
Aluminium (Dissolved)	90	104	Median measured over the wet season
Iron	300 ³	80 th percentile ^{1,2,5} of reference ⁴	Median measured over the wet season
Zinc	8.0 ³	15 ⁶	Median measured over the wet season

- ¹ An interim trigger level can be derived from ≥ 8 but ≤ 17 consecutive reference site samples, derived using administering authorities (2009) methodology (section 4.4.3.1).
- ² Trigger levels are based on the 20th and/or 80th percentile of at least 10 and no more than 24 most recent consecutive reference site samples, derived using the administering authorities (2009) methodology (Table D1, and section 3.4.3.1).
- ³ Default trigger levels from ANZECC (2000) trigger levels for aquatic ecosystems indicative of slightly to moderately disturbed tropical Australian lowland freshwater river ecosystems.
- ⁴ Reference sites are to be determined in accordance with Condition (F15-j).
- ⁵ 5th, 20th, 80th and 95th percentiles must be calculated using ANZECC (2000) methodology (section 7.4.4.1) based on data from samples obtained between 1 November and 1 May.
- ⁶ Default trigger levels from ANZECC (2000) trigger levels for aquatic ecosystems indicative of slightly disturbed tropical Australian estuarine ecosystems.
- ⁷ TBD based on Receiving Environment Monitoring Program.
- ⁸ For the definition of freshwater see section B.2.2 of the Queensland Water Quality Guidelines.
- ⁹ For the definition of estuarine waters see section B.2.3 of the Queensland Water Quality Guidelines.
- Note: All metals and metalloids must be measured as total (unfiltered) and dissolved (filtered). Trigger levels for metal/metalloids apply if dissolved results exceed trigger.

Receiving Environment Monitoring Program

- (F13) A Receiving Environment Monitoring Program (REMP) must be developed and implemented to monitor and record the effects of the release of contaminants on the receiving environment periodically and whilst contaminants are being released from the licensed place with the aim of identifying and describing the extent of any adverse impacts on local environmental values and to monitor any changes in the receiving water (including groundwater). A copy of the REMF and any update or variation of the REMF following adoption of a new Plan of Operations must be provided to

the administering authority prior to its implementation and due consideration given to any comments made on the REMP by the administering authority.

For the purposes of the REMP, the receiving environment is the waters and connected waterways (including groundwater) downstream of any release associated with the following:

- (a) release points specified in Table F1 – Release Points (point source release); and
- (b) extraction areas specified in Table F2 – Release from Extraction Areas;

(F14) The REMP must address (but not necessarily be limited to) the following:

- (a) description of potentially affected receiving groundwaters and surface waters including key communities and reference water quality and sediment characteristics based on accurate and reliable monitoring data that takes into consideration any temporal variation (e.g. seasonality);
- (b) description of applicable environmental values and water quality objectives to be achieved (i.e. as scheduled pursuant to the Environmental Protection (Water) Policy 2009);
- (c) any relevant reports prepared by other governmental or professional research organisations that relate to the receiving environment to which the REMP applies;
- (d) water and sediment quality targets within the receiving environment to be achieved and clarification of contaminant concentrations or levels indicating adverse environmental impacts during the period upon which the REMP applies;
- (e) monitoring for any potential adverse environmental impacts caused by a release;
- (f) monitoring of toxicants that must consider the indicators specified in Table F3 - Release Water Contaminant Limits to assess the extent of the compliance of concentrations with water quality objectives and/or the ANZECC & ARMCANZ (2000) Guidelines for slightly to moderately disturbed ecosystems;
- (g) monitoring of physical and chemical parameters including as a minimum those specified in Table F3 - Release Water Contaminant Limits. The list of quality characteristics required to be monitored as per Table F3 - Release Water and Contaminant Limits will be reviewed once the results of the monitoring data becomes available. If it is determined that there is no need to monitor for certain individual quality characteristics then these can be removed from Table F3 - Release Water Trigger Levels and Contaminant Limits;
- (h) monitoring metals/metalloids in sediments (in accordance with ANZECC & ARMCANZ (2000), BATLEY and/or the most recent version of AS5667.1 Guidance on Sampling of Bottom Sediments) for permanent, semi-permanent water holes and water storages;
- (i) the locations of monitoring points (including the locations of reference/upstream and downstream potentially impacted sites for each release point). Reference sites must be as representative as possible of the following criteria to the extent reasonably practical:
 - (i) be from the same bio-geographic and climatic region;
 - (ii) have similar geology, soil types and topography;
 - (iii) contain a range of habitats similar to those at the potentially impacted sites;
 - (iv) have a similar flow regime; and
 - (v) not be so close to the potentially impacted sites that any disturbance at the potentially impacted sites also results in a change at the reference site; and,
- (j) frequency or scheduling of sampling and analysis that is sufficient to determine water quality objectives and to derive site specific reference values within two (2) years (depending on wet season flows) in accordance with the *Queensland Water Quality Guidelines*. For ephemeral streams, this should include periods of flow irrespective of mine or other discharges;
- (k) specify sampling and analysis methods, quality assurance and control;
- (l) any historical datasets to be relied upon;
- (m) description of the statistical basis on which conclusions are drawn;
- (n) any spatial and temporal controls to exclude potential confounding factors; and

- (o) inclusion of additional monitoring points at least twelve (12) months prior to potential impact on areas at the licensed place as set out in the Plan of Operations.

- (F15) A report outlining the findings of the REMP including all monitoring results and interpretations in accordance with Condition (F14) must be prepared and submitted in writing to the administering authority by 7 September 2015. This should include an assessment of reference water quality, any assimilative capacity for those contaminants monitored and the suitability of current release limits to protect downstream environmental values and include recommendations to set appropriate contaminant limits for the purpose of Condition (F10).

Note: The findings of the REMP may be used to amend the environmental authority under agreement with the administering authority.

Groundwater

- (F16) Groundwater level and quality must be monitored if it is safe to do so at the locations and frequencies defined in Table F5 - Groundwater Monitoring Locations, Quality Characteristics and Frequency.

Table F5 – Groundwater Monitoring Locations, Quality Characteristics and Frequency

Monitoring Point	Northing (GDA94)	Easting (GDA94)	Contaminant Source	Description of Receiving Waters	Quality Characteristic	Monitoring Frequency
TBD ² (upgradient of mining areas)	TBD ²	TBD ²	Extraction areas	Waters in and adjacent to ML7031	Surface RL ¹ (m) pH, Electrical Conductivity, Aluminium, Copper, Iron, Lead, Zinc	Quarterly
TBD ² (within mining areas)	TBD ²	TBD ²				
TBD ² (downgradient of mining areas)	TBD ²	TBD ²				

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

² To be determined based on Receiving Environment Monitoring Program developed in accordance with Condition (F14).

- (F17) Groundwater monitoring bores installed after 7 September 2012 and must be constructed and operated in accordance with methods prescribed in the latest edition of the manual titled *Minimum Construction Requirements for Water Bores in Australia*.
- (F18) Annual groundwater monitoring reports analysing groundwater level and water quality must be prepared and submitted to the administering authority on request.

Note: The holder of this environmental authority may request, as a part of the report prepared under Condition (F21) that the administering authority reduce the frequency of monitoring or vary the water quality characteristics to be monitored.

Stormwater, Sediment and Erosion Controls

- (F19) An Erosion and Sediment Control Plan must be developed by an appropriately qualified person by 7 March 2014 and implemented for all stages of mining activities on the licensed place to prevent or minimise erosion and the release of sediment to receiving waters and the contamination of stormwater.
- (F20) The Erosion and Sediment Control Plan must be made available to the administering authority upon request and provide for at least the following stormwater management functions:

- (a) prevent or minimise the contamination of stormwater;
 - (b) diverting uncontaminated stormwater run-off around areas disturbed by mining activities or where contaminants or wastes are stored or handled;
 - (c) contaminated stormwater runoff, incident rainfall and leachate is collected; and treated, reused, or released in accordance with the conditions of this environmental authority;
 - (d) roofing where practicable or minimising the size of areas where contaminants or wastes are stored or handled;
 - (e) using alternate materials and or processes (such as dry absorbents) to clean up spills that will minimise the generation of contaminated waters;
 - (f) erosion and sediment control structures are placed to minimise erosion of disturbed areas and prevent the contamination of any waters;
 - (g) procedures to ensure that erosion and sediment control structures are maintained and adequate storage is available in sediment dams in accordance with design criteria; and
 - (h) training of staff that will be responsible for maintenance and operations of erosion and sediment control structures.
- (F21) Erosion protection and sediment control measures must be implemented and maintained to minimise erosion and the release of sediment and contamination of stormwater as described in the Erosion and Sediment Control Plan.
- (F22) Any spillage of wastes, contaminants or other materials must be cleaned up as quickly as practicable to minimise the release of wastes, contaminants or materials to any stormwater drainage system or receiving waters.
- (F23) Sediment dams constructed after the date of issue of this environmental authority as part of erosion and sediment control measures that treat releases of water from extraction areas to surface waters or to a place that is reasonably expected to reach surface water are to be built at a minimum with a volume equivalent to a 1 in 10 year Annual Exceedance Probability (AEP) 24-hour storm event and must be maintained above the maximum sediment deposition levels.

Water Management Plan

- (F24) A Water Management Plan must be developed and implemented by 7 September 2013 that provides for the proper and effective management of the actual and potential environmental impacts resulting from the mining activity and to ensure compliance with the conditions of this environmental authority.
- (F25) The Water Management Plan must be developed in accordance with the latest version of the administering authority's Guideline - *Preparation of Water Management Plans for Mining Activities* and must include at least the following components:
- (a) contaminant source study;
 - (b) site water balance and model;
 - (c) a description of the water management system and its components;
 - (d) saline drainage prevention and management measures;
 - (e) emergency and contingency planning; and
 - (f) monitoring and review.
- (F26) Each year the holder of this environmental authority must undertake a review of the Water Management Plan no later than 1 November to ensure that proper and effective *measures, practices or procedures are in place so that the mine is* operated in accordance with the conditions of this environmental authority and that environmental harm is prevented or minimised.
- (F27) A copy of the Water Management Plan and/or a copy of the final review document of the Water Management Plan must be provided to the administering authority on request.

END OF CONDITIONS FOR SCHEDULE F

SCHEDULE G – DEFINITIONS/ACRONYMS

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

Interpretation - Word definitions/acronyms

"administering authority" means the Department of Environment and Heritage Protection or its successor.

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

"Annual Exceedance Probability (AEP)" means the probability that a given rainfall total accumulated over a given duration will be exceeded in any one year.

"ANZECC" means the Australian and New Zealand Environment Conservation Council

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

"ARMCANZ" means Agriculture and Resource Management Council of Australia and New Zealand

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

- (a) exactly what has been assessed and the precise nature of that assessment;
- (b) the relevant legislative, regulatory and technical criteria on which the assessment has been based;
- (c) the relevant data and facts on which the assessment has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and
- (d) the reasoning on which the assessment has been based using the relevant data and facts, and the relevant criteria.

"background noise" means the existing acoustic environment including both near and far noise sources under normal mining operations.

"animal breeding place" means a bower, burrow, cave, hollow, nest or other thing that is commonly used by the animal to incubate or rear the animal's offspring.

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

- (a) exactly what is being certified and the precise nature of that certification.
- (b) the relevant legislative, regulatory and technical criteria on which the certification has been based;
- (c) the relevant data and facts on which the certification has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and
- (d) the reasoning on which the certification has been based using the relevant data and facts, and the relevant criteria.

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

"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.

"completion criteria" means the measures by which the actions implemented to rehabilitate the land are deemed to be complete. The completion criteria indicate the success of the decommissioning and rehabilitation outcomes or remediation of areas which have been significantly disturbed by the mining activities. Completion criteria may include information regarding:

- stability of final land forms in terms of settlement, erosion, weathering, pondage and drainage;
- control of geochemical and contaminant transport processes;

- quality of runoff waters and potential impact on receiving environment;
- 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 re-colonisation 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.

"dam" means a land-based structure or a void that is designed to contain, divert or control flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works. However; a dam does *not* mean a fabricated or manufactured tank or container designed to a recognised standard, *nor* does a dam mean a land-based structure where that structure is designed to an Australian Standard. In case there is any doubt, a levee (dyke or bund) is a dam, but (for example) a bund designed for spill containment to AS1940 is *not* a dam.

"dB" means decibel. The unit used to measure sound level.

"domain" means a parcel of land for which the same rehabilitation goal, rehabilitation objective, indicators and measurable completion criteria for each agreed post mining land use can be defined

"decommissioned" means plant, infrastructure or equipment that has been removed or retired from active service

"environmental authority" means an environmental authority granted in relation to an environmentally relevant activity under the *Environmental Protection Act 1994*.

"environmentally sensitive areas (ESA)" means areas as described in the codes of compliance for tenures relating to Chapter 5 and Chapter 5A (*Environmental Protection Regulation 2008*) activities, towns and roads.

"extraction areas" include any areas of ML7031 disturbed by mining activities associated with the extraction of bauxite or that facilitate the extraction of bauxite including but not limited to pits, haul roads, access tracks, pipelines and conveyors.

"green waste" means waste vegetative matter generated as a result of clearing vegetation prior to topsoil and bauxite removal.

"high bank" of a watercourse is the level to which water rises during normal season peak flows and may include a flood plain area.

"levee", "dyke" or "bund" means a long embankment that is designed only to provide for the containment and diversion of stormwater or flood flows from a contributing catchment, or containment and diversion of flowable materials resulting from releases from other works, during the progress of those stormwater or flood flows or those releases; and does not store any significant volume of water or flowable substances at any other times.

" $L_{A90,T}$ " is the A-weighted sound pressure level exceeded 90% of the sample duration T .

"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.

"long term 50th percentile" means that not more than twenty-six (26) of the measured values of the quality characteristic are to exceed the stated release limit for any fifty-two (52) consecutive samples where:

- the consecutive samples are taken over a one (1) year period;
- the consecutive samples are taken at approximately equal periods; and
- the time interval between the taking of each consecutive sample is not less than three (3) days or greater than eleven (11) days.

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

"mine waste" means waste material generated in the process of bauxite extraction.

"mining activities" means an activity in accordance with section 147 of the Environmental Protection Act 1994.

Note: Mining activities authorised on ML7031 under the Mineral Resources Act 1989 are those authorised under the *Alcan Queensland Pty Ltd Agreement Act 1965*.

"mining related infrastructure" The facilities, structures and installations needed for mining including but not limited to mining transportation networks, processing plant, communications systems and tailings storage facilities.

"NATA" means National Association of Testing Authorities.

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

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

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

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

"permeability" means a measure of the rate at which a fluid will pass through a medium. The coefficient of permeability of a given fluid is an expression of the rate of flow through unit area and thickness under unit differential pressure at a given temperature. Synonymous with hydraulic conductivity when the fluid is water.

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

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

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

"rehabilitation" the process of reshaping and revegetating land to restore it to a stable landform and in accordance with the completion 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.

"self sustaining" means an area of land which has been rehabilitated and has maintained the required completion 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.

"short term 50th percentile" means not more than five (5) of the measured values of the quality characteristic are to exceed the stated release limit for any ten (10) consecutive samples for a release/monitoring point at any time during operation.

"significant wetlands" are those designated under the Ramsar Convention as containing representative, rare or unique wetlands, or wetlands that are important for conserving biological diversity. They are listed on the List of Wetlands of International Importance because of their ecological, botanical, zoological, limnological or hydrological importance.

"spillway" means a weir, channel, conduit, tunnel, gate or other structure designed to permit discharges from the dam, normally under flood conditions or in anticipation of flood conditions.

"stable" in relation to land, means land form dimensions are and will remain within tolerable limits now and in the foreseeable future. Issues to be properly considered in regard to whether or not the landform is stable include geotechnical stability, settlement and consolidation allowances, bearing capacity (trafficability), erosion resistance and geochemical stability with respect to seepage, leachate and related contaminant generation.

"stream order" denotes a stream classification system where a watercourse is given a classification according to the number of additional tributaries associated with the watercourse.

"suitably qualified and experienced person" in relation to dams means a person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the Professional Engineers Act 1988, OR registered as a National Professional Engineer (NPER) with the Institution of Engineers Australia, OR holds equivalent professional qualifications to the satisfaction of the administering authority for the Act; AND the administering authority for the Act is satisfied that person has knowledge, suitable experience and demonstrated expertise in relevant fields, as set out below:

- (a) knowledge of engineering principles related to the structures, geomechanics, hydrology, hydraulics, chemistry and environmental impact of dams; and
- (b) a total of five years of suitable experience and demonstrated expertise in the geomechanics of dams with particular emphasis on stability, geology and geochemistry, and
- (c) a total of five years of suitable experience and demonstrated expertise each, in three of the following categories:
 - investigation and design of dams.
 - Construction, operation and maintenance of dams.
 - hydrology with particular reference to flooding, estimation of extreme storms, water management or meteorology.
 - hydraulics with particular reference to sediment transport and deposition, erosion control, beach processes.
 - hydrogeology with particular reference to seepage, groundwater.
 - solute transport processes and monitoring thereof.
 - dam safety.

"tolerable limits" means a range of parameters regarded as being sufficient to meet the objective of protecting relevant environmental values. For example, a range of settlement for a tailings capping, rather than a single value, could still meet the objective of draining the cap quickly, preventing pondage and limiting infiltration and percolation.

"TPH" means total petroleum hydrocarbon.

" $\mu\text{S/cm}$ " means micro Siemens per centimetre.

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

"waste bauxite" means the portion of the bauxite profile that has limited economic value.

"waters" means all or any part of a river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water in natural or artificial watercourses, bed and banks of a watercourse, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and groundwater.

"water release event" means release of any waters that are or maybe contaminated by the mining activity.

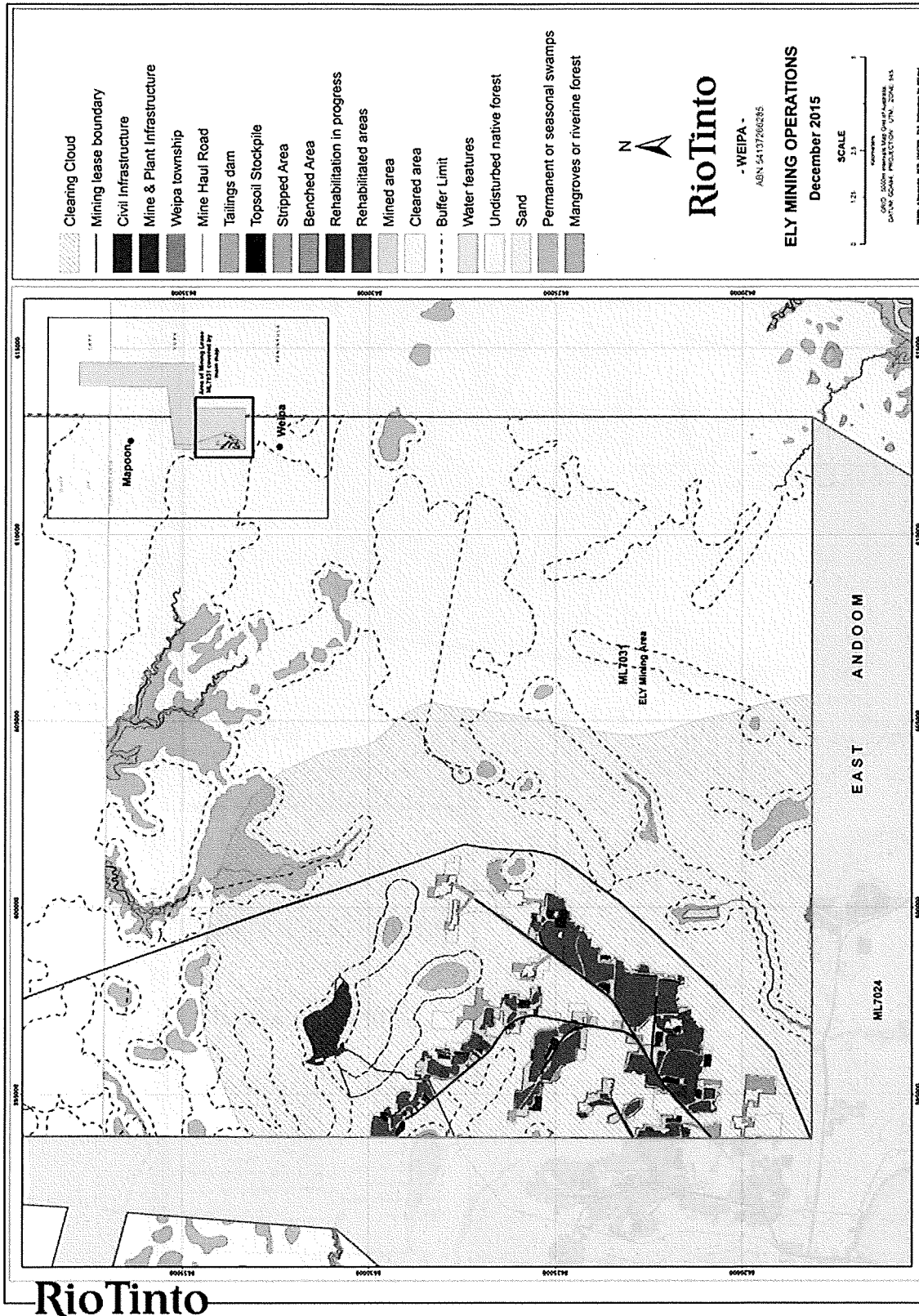
“wetlands” are areas of permanent or periodic/intermittent inundation, with water that is static or flowing fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed 6 metres. To be classified as a wetland, the area must have one or more of the following attributes:

- a) at least periodically, the land supports plants or animals that are adapted to and dependent on living in wet conditions for at least part of their life cycle, or
- b) the substratum is predominantly undrained soils that are saturated, flooded or ponded long enough to develop anaerobic conditions in the upper layers, or
- c) the substratum is not soil and is saturated with water, or covered by water at some time.

END OF DEFINITIONS FOR SCHEDULE G

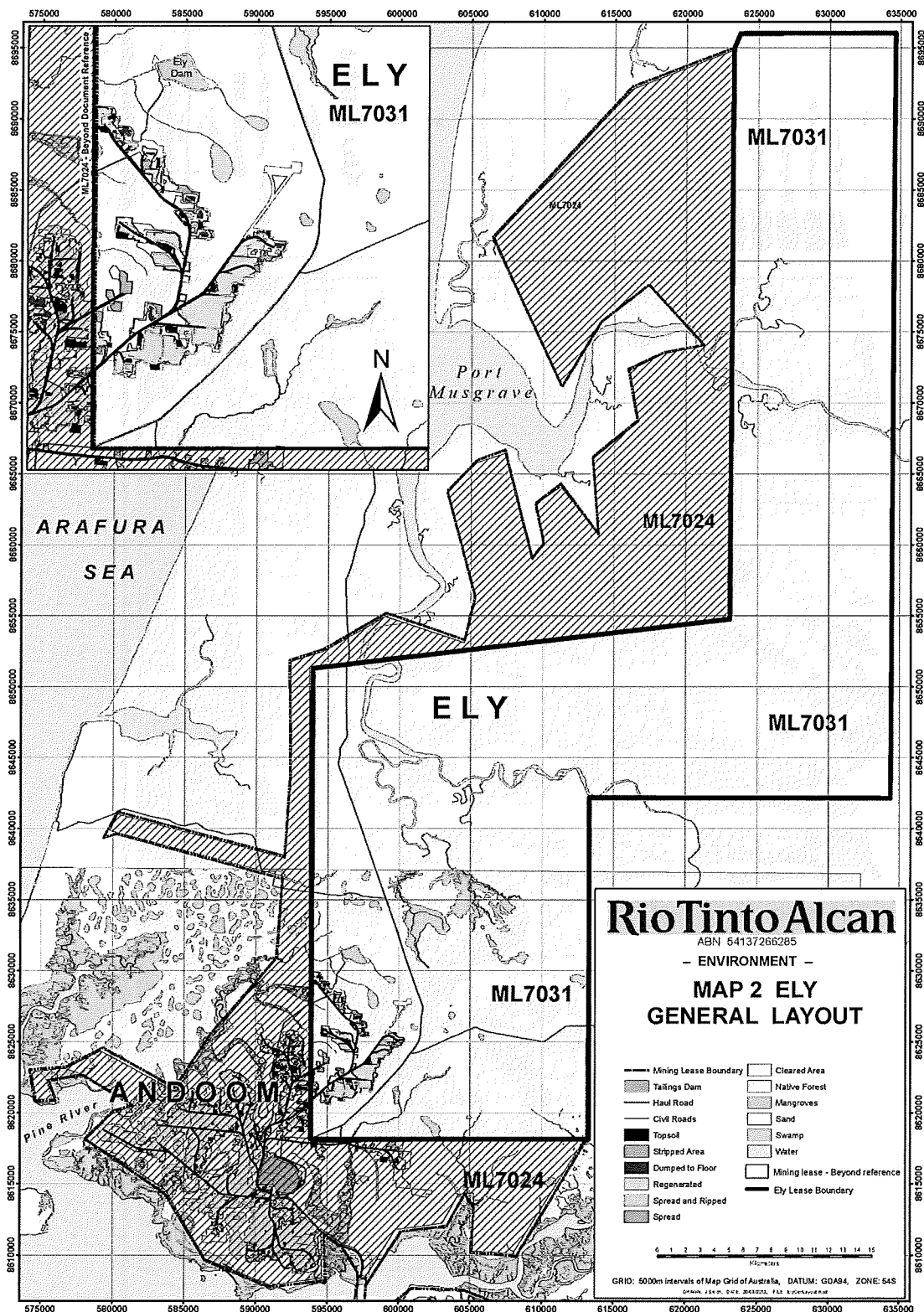
SCHEDULE H – PLANS

Plan 1 – Ely General Area Plan



5m

Plan 2 - Ely Operational Areas



5m

END OF SCHEDULE H

END OF ENVIRONMENTAL AUTHORITY

