Environmental Protection Act 1994

Environmental authority EPML00885513

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

Environmental authority number: EPML00885513

Environmental authority takes effect on 18 February 2022.

Environmental authority holder(s)

Name(s)	Registered address
SOUTHERN CROSS FERTILISERS PTY LTD	Level 8, 28 Freshwater Pl SOUTHBANK VIC 3006 Australia

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Resource Activity, Schedule 2A, 21: A mining activity that is an ineligible ERA, other than a mining activity mentioned in items 9 to 20	ML5556 ML5543 ML5551
Resource Activity, Ancillary 07 – Chemical Manufacturing, 4: Manufacturing, in a year, the following quantities of fertiliser, (b) more than 5,000t	ML5556 ML5543 ML5551
Resource Activity, Ancillary 16 – Extractive and Screening, 3: Screening, in a year, the following quantity of material, (a) 5,000t to 100,000t	ML5556 ML5543 ML5551
Resource Activity, Ancillary 60 – Waste disposal, 2: Operating a facility for disposing of, in a year, the following quantity of waste mentioned in subsection (1)(b), (a) less than 2,000t	ML5556 ML5543 ML5551
Resource Activity, Ancillary 58 – Regulated Waste Treatment, Operating a facility for receiving and treating regulated waste or contaminated soil to render the waste or soil non-hazardous or less hazardous	ML5556 ML5543 ML5551
Resource Activity, Ancillary 63 – Sewage Treatment, 1: Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of, (a) 21 to 100EP, (i) if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme	ML5556 ML5543 ML5551

Environmentally relevant activity/activities	Location(s)
Resource Activity, Ancillary 63 – Sewage Treatment, 1: Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of, (b) more than 100 but not more than 1500EP, (i) if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme	ML5556 ML5543 ML5551
Resource Activity, Ancillary 14 – Electricity Generation, 1: Generating electricity by using gas at a rated capacity of 10MW electrical or more	ML5556 ML5543 ML5551
Resource Activity, Ancillary 56 – Regulated Waste Storage, Receiving and storing regulated waste	ML5556 ML5543 ML5551
Resource Activity, Ancillary 60 – Waste disposal, 1: Operating a facility for disposing of, in a year, the following quantity of waste mentioned in subsection (1)(a), (d) more than 200,000t	ML5556 ML5543 ML5551
Resource Activity, Ancillary 31 – Mineral processing, 2: Processing, in a year, the following quantities of mineral products, other than coke, (b) more than 100,000t	ML5556 ML5543 ML5551
Resource Activity, Ancillary 33 – Crushing, milling, grinding or screening: Crushing, grinding milling or screening more than 5,000t of material in a year	ML5556 ML5543 ML5551

Additional information for applicants

Environmentally relevant activities

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

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

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

Contaminated land

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

- the happening of an event involving a hazardous contaminant on the contaminated land (notice must be given within 24 hours); or

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

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

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

Take effect

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

a) if the authority is for a prescribed ERA and it states that it takes effect on the day nominated by the holder of the authority in a written notice given to the administering authority-on the nominated day; or

b) if the authority states a day or an event for it to take effect-on the stated day or when the stated event happens; or

c) otherwise- one the day the authority is issued.

However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the *Planning Act 2016* or an SDA Approval under the *State Development and Public Works Organisation Act 1971*), this EA will not take effect until the additional authorisation has taken effect.

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

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

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

	18/2/22
Signature	Date

Dean Sharpe
Department of Environment and Science
Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:
Minerals Business Centre
Department of Environment and Science
Phone: 07 4222 5352
Email: ESCairns@des.qld.gov.au

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 serious or material environmental harm may be caused (section 443)

Other permits required

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

Obligations under the *Mining and Quarrying Safety and Health Act 1999*

If you are operating a quarry, other than a sand and gravel quarry where there is no crushing capability, you will be required to comply with the *Mining and Quarrying Safety and Health Act 1999*. For more information on your obligations under this legislation contact Mine Safety and Health at www.dnrm.qld.gov.au, or phone 13 QGOV (13 74 68) or your local Mines Inspectorate Office.

Development Approval

This permit is not a development approval under the *Planning Act 2016*. The conditions of this environmental authority are separate, and in addition to, any conditions that may be on the development approval. If a copy of this environmental authority is attached to a development approval, it is for information only, and may not be current. Please contact the Department of Environment and Science to ensure that you have the most current version of the environmental authority relating to this site.

Legislative Requirements and Conditions of Environmental Authority

Schedule A - General

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

A2 The environmental authority holder must ensure that the activity is carried out in accordance with Table A1 – Authorised Mining Activities and Schedule K, Map K1(A) – Mine Infrastructure Layout, Map K1(B) – Rimmer Hill Exploration Area, and Map K1(C) – Western Shale Deposit Area.

Table A1 – Authorised Mining Activities

Mine Domain	Mine Feature Name	Tenure Type and Number	Map Reference (GDA94, MGA, Zone 54)		Maximum area of disturbance (ha) for mine feature	Maximum area of disturbance (ha) allowing for nested and/or collocated features and/or combined disturbance areas
			Easting	Northing		
Plant Area	Process Plant	ML5543	394190	7580060	45.05	45.05
	Process Water Pond	ML5543	383850	7579900	0.83	0.83
	Stormwater Retention	ML5543	394216	7580099	2.5	2.5
	Slimes Dam	ML5543	394350	7578850	43.56	43.56
	Slimes Interim Storage – North	ML5543	393780	7580330	6.17	6.17
	Slimes Interim Storage – South	ML5543	394750	7578000	28.89	28.89
	Topsoil - Slimes	ML5543	394397	7578325	2.7	2.7
	Rail Loop	ML5543	394740	7578980	1.86	1.86
	Old Landfill	ML5543	394914	7579064	3.14	3.14
Gypsum Disposal Facility	Cells 1 & 2	ML5543	394280	7581130	42.61	42.61
	Cell 3A	ML5543	394180	7581740	17.49	17.49
	Cell 3B	ML5543	394480	7581740	12.14	12.14
	Cell 3C	ML5543	394830	7581580	22	27
	Cell 3C spoils	ML5543	TBD	TBD	2	
	Temporary site office and laydown area (Cell 3C)	ML5543	TBD	TBD	3	
	Cell 3D	ML5543	393620	7582190	33.8	42.5
	Construction access and temp facilities (Cell 3D)	ML5543	393832	7582000	7.2	

	Laydown areas (Cell 3D)	ML5543	393792	7582206	1.5	
	Cell 4A	ML5543	394190	7582270	72.47	72.47
	Cell 4B	ML5543	394030	7582850		
	Cell 5A	ML5543	393172	7582622	65.5	65.5
	Cell 5B	ML5543	393175	7583420	51	67
	Construction access, laydown, and temp facilities (Cell 5B)	ML5543	393315	7583899	8	
	Topsoil Stockpile (Cell 5B)	ML5543	392873	7583817	8	
	Topsoil – East Gypsum, North Pile	ML5543	394500	7582930	5.27	5.27
	Topsoil – East Gypsum, South Pile	ML5543	394800	7582050	5.33	5.33
	Eastern Stormwater Drain	ML5543	394519	7581082	13.98	13.98
	Emergency Dump	ML5543	394130	7580600	4.21	4.21
	Evaporation Pond	ML5543	394410	7580550	3.58	3.58
	Disturbed Area Adjacent to Evaporation Pond	ML5543	394360	7580400	1.8	1.8
Mine Area	Jabiru Pit and Bund Wall	ML5543	394070	7576170	37.5	37.5
	Corella Pit and Bund Wall	ML5543	394070	7576900	61.98	61.98
	Brolga / Magpie Pit and Bund Wall	ML5543	392958	7578210	206.86	206.86
	Eagle Pit	ML5543	391990	7577960	48.8	48.8
	Galah Pit and Bund Wall	ML5543	393565	7579705	93.8	93.8
	Landfill Stage 2	ML5543	393460	7580480	1.4	
	Jabiru Waste Rock Dump	ML5543	393890	7575850	2.64	2.64
	Corella Waste Rock Dump	ML5543	393610	7576280	54	54
	Brolga Waste Rock Dump	ML5543	392610	7578570	50.71	50.71
	Magpie Waste Rock Dump	ML5543	393030	7576960	23.1	82.7
	Eagle Waste Rock Dump	ML5543	391964	7577488	59.6	
	Galah NAC (Not Across Creek) Dump	ML5543	393095	7579742	34.62	34.62
	Bioremediation Area	ML5543	393340	7580544	0.27	
	Landfill Stage 1	ML5543	393510	7580690	1.37	
	DAC (Dump Across Creek) Dump	ML5543	392790	7579610	12.85	12.85
	Low Grade Ore Stockpile	ML5543	393730	7581020	2.39	2.39
	ROM Pad	ML5543	394040	7579550	10.77	10.77
	Topsoil – Corella East	ML5543	394290	7576614	1.32	1.32

	Haul Roads	ML5543	-	-	29.28	29.28
	Minor Tracks[1]	ML5543	-	-	68.35	68.35
	Mehaffey Creek Diversion	ML5543	393460	7576797	6.01	6.01
	Monument Village	ML5551	387770	7592970	30.91	35.3
	Town Yard	ML5551	387504	7592404	TBD	
	Camp Power Station	ML5551	387949	7592395	TBD	
	Sewage Treatment Plant	ML5551	387649	7592411	TBD	
	Sporting Oval Irrigation Area	ML5551	387840	7592690	1.8	
	Golf Course Irrigation Area	ML5551	387590	7592600	1.36	1.36
	New Irrigation Area	ML5551	388540	7592160	11.5	11.5
	Airport	ML5543	388890	7587620	70	70
	Monument to Phosphate Hill Road	ML5543	-	-	15.16	20.47
	Monument to Phosphate Hill Road	ML5551	-	-	1.31	
	Monument to Phosphate Hill Road	ML5556	-	-	4	
	Osborne Road	ML5543	-	-	1.68	1.68
	Duchess Monument Road (unsealed)	ML5543	-	-	4.95	4.95
	Construction Camp	ML5543	TBD	TBD	6	6
Exploration	Exploration/Sampling	ML5543	-	-	Authorised exploration drilling area extents depicted on EA Map K1(A) – Mine Infrastructure Layout, Map K1(B) – Rimmer Hill Exploration Area, and Map K1(C) – Western Shale Deposit Area	
Other	Fence Line	ML5543	-	-	1.7	1.7

1 Authorised disturbance located wholly within the Minor Tracks mine feature includes 62 Test Pits and 62 Core Sample Bore Holes

A3 The Environmental Authority holder must:
a) Install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority;
b) Maintain such measures, plant and equipment in a proper and efficient condition;
c) Operate such measures, plant and equipment in a proper and efficient manner; and,
d) Ensure all instruments and devices used for the measurement or monitoring of any parameter under any condition of this environmental authority are properly calibrated.

A4 **Monitoring**
The Environmental Authority holder must record, compile and keep for a minimum of five (5) 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.

A5 **Financial Assurance**

The activity must not be carried out until the environmental authority holder has given financial assurance to the administering authority as security for compliance with this environmental authority and any costs or expenses, or likely costs or expenses, mentioned in section 298 of the Act.

A6 The amount of financial assurance must be reviewed by the holder of this environmental authority when a plan of operations is amended or replaced, or the authority is amended.

A7 **Risk Management**
The holder of this environmental authority must develop and implement a risk management system for mining activities which mirrors the content requirement of the Standard for Risk Management (IS031000:2009), or the latest edition of an Australian standard for risk management, to the extent relevant to environmental management, by 30 June 2014.

A8 **Notification of Emergencies, Incidents and Exceptions**
The holder of this environmental authority must notify the administering authority by written notification within 24 hours, after becoming aware of any emergency or incident which results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with, the conditions of this environmental authority.

A9 Within 10 business days following the initial notification of an emergency or incident, or receipt of monitoring results, whichever is the latter, further written advice must be provided to the administering authority, including the following:
a) results and interpretation of any samples taken and analysed
b) outcomes of actions taken at the time to prevent or minimise unlawful environmental harm
c) proposed actions to prevent a recurrence of the emergency or incident.

A10 **Complaints**
The holder of this environmental authority must record all environmental complaints received about the mining activities including:
a) name, address and contact number for of the 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
h) person responsible for resolving the complaint

A11 The holder of this environmental authority must, when requested by the administering authority, undertake relevant specified monitoring within a reasonable timeframe nominated or agreed to by the administering authority to investigate any complaint of environmental harm. The results of the investigation (including an analysis and interpretation of the monitoring results) and abatement measures, where implemented, must be provided to the administering authority within 10 business days of completion of the investigation, or no later than 10 business days after the end of the timeframe nominated by the administering authority to undertake the investigation.

A12 **Third Party Auditing**
The holder of this environmental authority must:
a) obtain from an appropriately qualified person a report on compliance with the conditions of this environmental authority

b) obtain further such reports at regular intervals, not exceeding 3 yearly intervals, from the completion of the report referred to above; and
c) provide each report to the administering authority within 90 days of its completion.

A13 **Transition to New Standards**
Where a condition of this environmental authority requires compliance with a standard, policy or guideline published externally to this environmental authority and the standard is amended or changed subsequent to the issue of this environmental authority, the holder of this environmental authority must:
a) comply with the amended or changed standard, policy or guideline within 2 years of the amendment or change being made, unless a different period is specified in the amended standard or relevant legislation, or where the amendment or change relates specifically to regulated structures referred to in Schedule I — Regulated Dams, the time specified in that condition.
b) until compliance with the amended or changed standard, policy or guideline is achieved, continue to remain in compliance with the corresponding provision that was current immediately prior to the relevant amendment or change.

A14 **Exploration**
All exploration activities carried out on the mining leases must comply with each of the Standard Environmental Conditions contained in the department's published *Eligibility criteria and standard conditions for exploration and mineral development projects—Version 2* (ESR/2016/1985, version 2.00). Where there is a discrepancy between the standard conditions and this environmental authority, the conditions of the environmental authority apply.

A15 **Definitions**
Words and phrases used throughout the environmental authority are defined in Schedule J — Definitions. Where a definition for a term used in the environmental authority is sought and the term is not defined within the environmental authority, the definitions in the *Environmental Protection Act 1994*, its Regulations and Environmental Protection Policies must be used.

Schedule B - Air

B1 **General**
The release of 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 bulk materials to and from the mining tenement, enter and leave the site with appropriate load preparation to prevent the spillage and/or loss of particulate matter and/or windblown dust to the receiving environment during transport.

B3 **Point Source Release of Contaminants to the Atmosphere**
Discharges of contaminants to air from the activity, other than dust and particulate matter addressed by condition B5, must be in accordance with Table B1— Release Points and Contaminant Limits.

B4 Conduct a monitoring program of contaminant releases to the atmosphere at the release points, frequency and for the contaminants specified in Table B1— Release Points and Contaminant Limits and which complies with the most recent edition of AS4323.1 Stationary source emissions method 1: Selection of sampling positions, and the most recent edition of the administering authority's air quality sampling manual.

Table B1 – Release Points and Contaminant Limits

Release Point	Minimum release height (metres)	Minimum velocity (m/sec)	Contaminant release	Contaminant Trigger Level[1]	Maximum release limit[1]	Sampling frequency
Power Station - Taurus 60 Gas Turbine x 4	15	20	NO_x as NO_2	NA	17,200 g/hr	Annually
Power Station - Taurus 60 Gas Turbine x 4	15	20	CO	NA	3,500 g/hr	Annually
Phosphoric Acid Plant - Exhaust stack	35	13.1	F (gaseous)	NA	0.05 g/Nm^3	Annually
Granulation Plant - Flue Stack	46.7	16.5	F (gaseous)	NA	0.05 g/Nm^3	Annually
Granulation Plant - Flue Stack	46.7	16.5	Ammonia	NA	0.098 g/Nm^3	Annually
Granulation Plant - Flue Stack	46.7	16.5	Particulates	NA	0.25 g/Nm^3	Annually
Granulation Plant - Flue Stack	46.7	16.5	Sulfur Dioxide	NA	0.025[4] g/Nm^3	Annually
					0.600[5] g/Nm^3	Annually
Sulfur Melter Stack[2]	8	16.6	Sulfur Dioxide	NA	NA	Event based[2]
Sulfuric Acid Plant (SAP) Stack[2, 3]	60	15	Sulfur Dioxide	1.756 g/Nm^3	3.804g/Nm^3	Continuous, hourly sample averages

1 Measured in the stack;
2 In the event that ambient monitoring shows exceedance of a limit defined in Schedule B – Table 3 (Ambient Sulfur Dioxide Limits), the holder of this environmental authority must undertake monitoring on the Sulfur Melter Stack and investigate the cause of the exceedance;
3 Sulfur Dioxide triggers and limits apply except during operational start up, shut down or emergency shutdown periods. All reasonable and practicable measures must be taken to minimise the frequency of start-up and shut downs, and to limit Sulfur dioxide emissions during these periods. Operational start up, shut down or emergency shutdown periods is defined as:

(a) Start-up - refers to the process of taking the SAP from cold and non-operational (e.g., air blower offline, no Sulfur feed to furnace) through to introducing Sulfur feed and stabilising for 4 hours. After 4 hours of continuous Sulfur feed to the furnace the start-up has concluded;
(b) Shutdown - refers to the process of taking the SAP from hot and operational (e.g., air blower online and Sulfur feed on to furnace) through to cold and non-operational. The shutdown has concluded once the plant is cold and air blower offline;
(c) Emergency shutdown - refers to the process of the SAP being taken to a non-operational mode (e.g., air blower offline, no Sulfur feed to furnace) in a rapid manner as a result of an abnormal operating scenario (e.g., power failure, equipment failure, etc.).

4 Maximum release limit during normal fertiliser product manufacturing;
5 Maximum release limit during Sulfur-fortified fertiliser product manufacturing.
NA – Not Applicable
NOTE: Florida Standard applies only to granulation plant flue stack as sampling ports have been installed to this standard, not Australian Standard.

B5 **Dust and Particulate Matter Monitoring**

The holder of this environmental authority must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the dust and particulate matter emissions generated by the mining activities do not cause exceedances of the following levels when measured at any sensitive or commercial place:

(a) Dust deposition of 120 milligrams per square metre per day, averaged over 1 month, when monitored in accordance with the most recent version of Australian Standard AS3580.10.1 Methods for

sampling and analysis of ambient air—Determination of particulate matter—Deposited matter — Gravimetric method.
(b) A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometres (PM10) suspended in the atmosphere of 50 micrograms per cubic metre over a 24-hour averaging time, for no more than 5 exceedances recorded each year, when monitored in accordance with the most recent version of either:

1 Australian Standard AS3580.9.6 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM_{10} high volume sampler with size-selective inlet — Gravimetric method; or

2 Australian Standard AS3580.9.9 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM_{10} low volume sampler—Gravimetric method.

(c) A concentration of particulate matter with an aerodynamic diameter of less than 2.5 micrometres (PM2.5) suspended in the atmosphere of 25 micrograms per cubic metre over a 24-hour averaging time, when monitored in accordance with the most recent version of AS/NZS3580.9.10 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM (sub)2.5(/sub) low volume sampler—Gravimetric method.
(d) A concentration of particulate matter suspended in the atmosphere of 90 micrograms per cubic metre over a 1 year averaging time, when monitored in accordance with the most recent version of AS/NZS3580.9.3:2003 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—Total suspended particulate matter (TSP)—High volume sampler gravimetric method

B6 **Ambient Air Quality - Sulfur Dioxide Monitoring**
The holder of this environmental authority must carry out an ambient air quality monitoring program for Sulfur dioxide at the monitoring locations and at the frequency specified in Table B2 (Sulfur Dioxide Monitoring Locations) and Schedule K – Map K8 (Sulfur Dioxide Monitoring Locations)[1].

Table B2 - Sulfur Dioxide Monitoring Locations

Monitoring Location	Map Reference (GDA94, MGA, Zone 54)		Monitoring Frequency
	Easting	Northing	
TBA[1]	TBA[1]	TBA[1]	Continuous[2]
TBA[1]	TBA[1]	TBA[1]	
TBA[1]	TBA[1]	TBA[1]	
TBA[1]	TBA[1]	TBA[1]	

1 To be advised at least one (1) month prior to commissioning of Sulfuric acid plant. Monitoring locations must be:
(a) Developed by an appropriate qualified person and meet the requirements of the Environmental Protection (Air) Policy 2008;
(b) Sufficient in numbers to monitor impacts on the receiving environment and any sensitive receptors in order to make statistically valid conclusions;
(c) Installed in accordance with the relevant Australian Standards.
2 Monitoring which provides data equal to at least 75 percent of the total possible data required in any period of:
(a) twelve (12) calendar months; and
(b) three (3) calendar months, satisfies this requirement.

B7 Emissions from the site must not cause an exceedance of the maximum Sulfur Dioxide concentrations specified in Table B3 - Ambient Sulfur Dioxide Limits when measured at the monitoring locations defined in Table B2 - Sulfur Dioxide Monitoring Locations.

Table B3 - Ambient Sulfur Dioxide Limits

Averaging Time	Maximum Sulfur Dioxide Concentration ($\mu g/m^3$)

Annual	22
1 day	230
1 hour	570

Schedule C – Waste Management

C1 General waste must only be disposed of into the waste disposal trench facility of ML5543 and identified in Schedule K, Map K7 - Waste Disposal Trench Location.

C2 Unless otherwise permitted by the conditions of this environmental authority or with prior approval from the administering authority and in accordance with a relevant standard operating procedure, waste must not be burnt.

C3 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.

C4 The holder of this environmental authority may burn limited quantities of waste timber pallets for emergency response and fire management training purposes provided the activity does not cause environmental harm at any sensitive place or commercial place.

C5 **Waste Disposal**
Regulated waste, other than that authorised to be disposed of on site under this authority, must only be removed and transported from the site 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*.

C6 The only waste that can be disposed of on site is waste generated on site and is limited to:
a) Waste rock
b) Gypsum
c) Rejects (waste contaminated fertiliser and fertiliser additives, acid contaminated sludge and scales)
d) Slimes
e) General waste including construction and demolition waste, green waste and putrescible and domestic wastes
f) Tyres/Conveyor belt/rubber moulded products
g) Contaminated Plant Consumables (acid-contaminated fiberglass pipes, filter cloths, bricks, cooling tower mist eliminators, Personal protective equipment (PPE), spill neutralisation and clean-up material, anti-scaling agent, mixed bed resins).

C7 The environmental authority holder must seek written approval from the administering authority beforehand to dispose of any regulated waste not currently approved for disposal on site under this authority. The environmental authority holder must provide details to the administering authority of the waste to be disposed including:
a) Name of waste
b) Type of waste
c) Chemical composition of waste
d) Proposed waste destination
e) Volume/Amount of waste
f) Risk assessment of disposing waste onsite
g) Assessment of alternative waste management options.

C8 **Slimes (Tailings) Disposal**
Slimes must be managed in accordance with procedures contained within the current Environmental Management Plan. These procedures must include provisions for:
a) Containment of slimes in accordance with design plan;

b) The management of seepage and leachates both during operation and post closure;
c) The control of fugitive emissions to air;
d) Rehabilitation strategy which meets the rehabilitation objectives specified in Schedule H – Land and Rehabilitation; and
e) Monitoring of rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of slimes, including the prevention and management of acid drainage, erosion minimisation and establishment of vegetation cover.

C9 **Waste Rock Disposal**
A waste rock and spoil disposal plan should be developed and include, where relevant, at least:
a) effective characterisation of the waste rock and spoil to predict under the proposed placement and disposal strategy the quality of runoff and seepage generated concerning potentially environmentally significant effects including salinity, acidity, alkalinity and dissolved metals, metalloids and non-metallic inorganic substances
b) a program of progressive sampling and characterisation to identify dispersive and non-dispersive spoil and the salinity, acid and alkali producing potential and metal concentrations of waste rock
c) a materials balance and disposal plan demonstrating how potentially acid forming and acid forming waste rock will be selectively placed and/or encapsulated to minimise the potential generation of acid mine drainage
d) where relevant, a sampling program to verify encapsulation and/or placement of potentially acid-forming and acid-forming waste rock
e) how often the performance of the plan will be assessed
f) the indicators or other criteria on which the performance of the plan will be assessed
g) rehabilitation strategy

C10 The holder must develop, document and implement procedures and guidelines for the acceptance, handling, storage and processing of regulated waste at the designated Bioremediation Area identified in Schedule K, Map K7 – Waste Disposal Trench.

C11 The bioremediation activity must be undertaken in accordance with written procedures that:
a) ensure that only waste suitable for bioremediation is accepted for storage and processing within the designated Bioremediation Area
b) identify potential risks to the environment from the activity during routine operations, closure and an emergency
c) establish and maintain control measures that minimise the potential for environmental harm
d) ensure that staff are trained in and aware of their obligations under the *Environmental Protection Act 1994*
e) ensure that reviews of environmental performance are undertaken at least annually

C12 An area which provides an impervious barrier to subsoil and groundwater must be used for:
a) receiving, storing, mixing and processing materials associated with the bioremediation activity
b) collecting and storing leachate.

C13 Stormwater runoff from disturbed areas associated with the bioremediation area, generated by (up to and including) a 24 hour storm event with an average recurrence interval of one-in-ten years must be retained on site and can only be released after the event where:
a) beneficial reuse on site is not viable
b) a release is required to maintain the required stormwater retention capacity
c) there are no contaminants present or at concentrations which may cause environmental harm

C14 All reasonable and practicable measures must be taken to exclude vectors and pest species from the bioremediation area to the extent necessary to prevent:

a) environmental nuisance to occupiers of neighbouring premises
b) any danger or risk to the health of any persons.

C15 The holder of this environmental authority must ensure detailed records are maintained of all waste accepted for storage, treatment and processing at the Bioremediation Area, including the date accepted, and the origin, quantity and chemical composition of the waste.

Schedule D – Noise and Vibration

D1 **Noise limits**
The holder of this environmental authority must ensure that noise generated by the mining activities does not cause the criteria in Table D1 – Noise limits to be exceeded at a sensitive place or commercial place.

Table D1 – Noise Limits, Sensitive Place

Noise Level (d(b)A measured as:	Monday to Saturday			Sundays and Public Holidays		
	7am~6pm	6pm~10pm	10pm~7am	9am~6pm	6pm~10pm	10pm~9am
LAeq, adj, 15 mins	CV = 50 AV = 5	CV = 45 AV = 5	CV = 40 AV = 0	CV = 45 AV = 5	CV = 40 AV = 5	CV = 35 AV = 0
LA1, adj, 15 mins	CV = 55 AV = 10	CV = 50 AV = 10	CV = 45 AV = 5	CV = 50 AV = 10	CV = 45 AV = 10	CV = 40 AV = 5

Notes:
a) CV: Critical Value, AV: Adjustment Value
b) To calculate noise limits;
If bg ≤ (CV-AV): Noise limit = bg + AV
If (CV-AV) < bg ≤ CV: Noise limit = CV
If bg > CV: Noise limit = bg+0
c) In the event that measured bg (LA90,adj, 15 mins) is less than 30 dB(A), then 30 dB(A) can be substituted for the measured background level.
d) Bg = background noise level (LA90, adj, 15 mins) measured over 3 – 5 days at the nearest sensitive receptor.
e) If the project is unable to meet the noise limits as calculated above alternative limits may be calculated using the process outlined in the 'Planning for Noise Control' guideline.

D2 **Air Blast Overpressure Nuisance**
The holder of this environmental authority must ensure that blasting does not cause the limits for peak particle velocity and air blast overpressure in Table D2 (Blasting Noise Limits) to be exceeded at a sensitive or commercial place.

Table D2 - Blasting Noise Limits

Blasting noise limits	Sensitive or commercial place limits	
	7am to 6pm	6pm to 7am
Air blast overpressure	115 dB (Linear) Peak for nine (9) out of ten (10) consecutive blasts initiated and not greater than 120 bB (Linear) Peak at any time	No Blasting
Ground vibration peak particle velocity	5mm/second peak particle velocity for nine (9) out of ten (10) consecutive blasts and not greater than 10 mm/second peak particle velocity at any time	No Blasting

D3 **Monitoring and Reporting**
Noise monitoring and recording must include the following descriptor characteristics and matters:

a) LAN,T (where N equals the statistical levels of 1, 10 and 90 and T = 15 mins)
b) background noise LA90
c) the level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to statistical levels
d) atmospheric conditions including temperature, relative humidity and wind speed and directions
e) effects due to any extraneous factors such as traffic noise
f) location, date and time of monitoring
g) if the complaint concerns low frequency noise, Max LpLIN,T and one third octave band measurements in dB(LIN) for centre frequencies in the 10 — 200 Hz range.

Schedule E – Groundwater

E1 **Groundwater**
The holder of this environmental authority must not release contaminants to groundwater.

E2 Groundwater quality and levels must be monitored at the locations and frequencies defined in Table – E1 – Groundwater Monitoring Locations and Frequency and Schedule K, Map K2(A) – Groundwater Monitoring Sites – Gypsum Stacks, Map K2(B) – Groundwater Monitoring Sites – Slimes Dams and Map K2(C) – Groundwater Monitoring Sites – SAP & Wastewater Storage Pond for quality characteristics identified in Table E2 - Groundwater Quality Contaminant Triggers and Limits.

Table E1 - Groundwater Monitoring Locations and Frequency

Monitoring point	Map Reference (GDA94, MGA, Zone 54)		Surface RL (m) (Top of Steel)	Monitoring frequency
	Easting	Northing		
Compliance Bores				
EPMB1	394618	7581185	272.78	Quarterly
EPMB2	394555	7580742	269.93	
EPMB4	394478	7580014	265.52	
GSMB1A	394055	7580565	269.58	
GSMB2A	394077	7581033	270.58	
GSMB4B	393970	7581033	270.89	
GSMB9	394207	7580521	266.63	
GSMB15A	394677	7581509	273.39	
SAPMB01	TBD[1]	TBD[1]	TBD[1]	
SAPMB02	TBD[1]	TBD[1]	TBD[1]	
SAPMB03	TBD[1]	TBD[1]	TBD[1]	
SAPMB04	TBD[1]	TBD[1]	TBD[1]	
WWSPMB01	TBD[1]	TBD[1]	TBD[1]	
WWSPMB02	TBD[1]	TBD[1]	TBD[1]	
WWSPMB03	TBD[1]	TBD[1]	TBD[1]	
WWSPMB04	TBD[1]	TBD[1]	TBD[1]	
Reference Bore				
GW05A	394277	7580069	267.68	Quarterly
Observation Bores[4]				
GSMB7A	394645	7582037	273.13	6 monthly
GSMB11	393879	7582145	272.98	
GSMB12	393713	7582968	274.77	
GSMB13	393963	7583175	276.26	

GSMB14	394468	7582732	274.68	
GSMB17	392851	7582790	274.08	
GSMB28	393268	7582031	272.2	
GSMB29	393609	7581873	273.3	
GSMB30	TBD[3]	TBD[3]	TBD[3]	
GSMB31	TBD[3]	TBD[3]	TBD[3]	
WAS-RB	392619	7583475	TBD[3]	
DPMB1	TBD[2]	TBD[2]	TBD[2]	
DPMB2	TBD[2]	TBD[2]	TBD[2]	
DPMB3	TBD[2]	TBD[2]	TBD[2]	
SDMB01	394289	7578528	262.18	
SDMB02	394955	7577686	260.63	
SDMB03	394834	7578865	261.56	
SDMB04	394826	7578360	261.43	

TBD[1] – To be determined prior to commissioning of Sulfuric Acid Plant and Wastewater Storage Pond;
TBD[2] – To be advised prior to construction of Decant Pond Cell 3C.
TBD[3] – To be advised prior to the operation of Cell 5B.
Note: [4] Contaminant trigger level and contaminant limits are not applicable to 'Observation Bores'.

Table E2 - Groundwater Quality Contaminant Triggers and Limits

Parameter	Unit	Contaminant Trigger Level[1]	Contaminant Limit[1]
pH	pH	6.0[2] (minimum) 7.5[2] (maximum)	5.0 (minimum) 9.0 (maximum)
Electrical Conductivity	µS/cm	1500 or 80th percentile of reference, whichever is higher	5970 or 95th percentile of reference[1], whichever is lower
Chloride	For Interpretation Purposes		
Fluoride	mg/L	80th percentile of reference	2.0[3] or 95th percentile of reference, whichever is lower
Sulphate	mg/L	80th Percentile of reference	1000[3] or 95th percentile of reference[1], whichever is lower
Total Nitrogen	mg/L	0.15[2] or 80th percentile of reference, whichever is higher	95th percentile of reference
Filterable Reactive Phosphorus	mg/L	0.04[5] or 80th percentile of reference, whichever is higher	95th percentile of reference
Total Phosphorus	mg/L	3.12[5] or 80th percentile of reference, whichever is higher	95th percentile of reference
Aluminium	mg/L	0.055[2] or 80th percentile of reference, whichever is higher	5[3] or 95th percentile of reference[1], whichever is lower
Arsenic	mg/L	0.013[2] or 80th percentile of reference, whichever is higher	0.5[3] or 95th percentile of reference[1], whichever is lower
Cadmium	mg/L	0.0015[5] or 80th percentile of reference, whichever is higher	0.01[3] or 95th percentile of reference[1], whichever is lower
Chromium	mg/L	0.008[4] or 80th percentile of reference, whichever is higher	0.5[3] or 95th percentile of reference[1], whichever is lower
Cobalt	mg/L	0.0028[2] or 80th percentile of reference, whichever is higher	1[3] or 95th percentile of reference[1], whichever is lower
Copper	mg/L	0.0126[4] or 80th percentile of reference, whichever is higher	1[3] or 95th percentile of reference[1], whichever is lower
Lead	mg/L	0.06[5] or 80th percentile of reference, whichever is higher	0.1[3] or 95th percentile of reference[1], whichever is lower
Mercury	mg/L	0.0006[2] or 80th percentile of reference, whichever is higher	0.002[3] or 95th percentile of reference[1], whichever is lower
Nickel	mg/L	0.025[5] or 80th percentile of reference, whichever is higher	1[3] or 95th percentile of reference[1], whichever is lower

Selenium	mg/L	0.011[2] or 80th percentile of reference, whichever is higher	0.02[3] or 95th percentile of reference[1], whichever is lower
Uranium	mg/L	0.008 or 80th percentile of reference, whichever is higher	0.2[3] or 95th percentile of reference[1], whichever is lower
Zinc	mg/L	0.072[4] or 80th percentile of reference, whichever is higher	20[3] or 95th percentile of reference[1], whichever is lower
Hardness	Interpretational purposes only		
Alkalinity	Interpretational purposes only		

[1] All metals and metalloids must be measured as total (unfiltered) and dissolved (filtered). Trigger levels for metal/metalloids apply if dissolved results exceed trigger. Contaminant limits apply for metal/metalloids if total results exceed limits.
[2] ANZECC/ARMCANZ (2000) trigger values for aquatic ecosystems indicative of slightly-to-moderately disturbed tropical Australian upland river ecosystems Tables 3.3.4 and Table 3.4.1 and moderate or low reliability trigger values (Section 8.3) if no value available in Table 3.4.1.
[3] Contaminant limits based on ANZECC/ARMCANZ (2000) livestock drinking water guidelines.
[4] Hardness modified trigger value; extremely hard water (400 mg/L as CaCO3); refer to ANZECC/ARMCANZ (2000) Table 3.4.4 for the approximate factors to apply to soft water trigger value in fresh water.
[5] Site specific trigger value (April 2014).
Notes:

** In any given sampling event, where the contaminant limit is exceeded and the reference site also exceeds the contaminant limit, the value of the reference data applies.*
*** The quality characteristics required to be monitored as per Table E2 - Groundwater Quality Contaminant Triggers and Limits can be reviewed once the results of 2 years monitoring data is available, or if sufficient data is available to adequately demonstrate negligible environmental risk.*

E3 If quality characteristics of groundwater from compliance bores identified in Table E1 - Groundwater Monitoring Locations and Frequency exceed any of the trigger levels stated in Table E2 - Groundwater Quality Contaminant Triggers and Limits, the holder of this environmental authority must compare the compliance monitoring bore results to the reference bore results and

(a) If the level of contaminants at the compliance monitoring bores does not exceed the reference bore results, then no action is to be taken; and,
(b) If the level of contaminants at the compliance monitoring bore is greater than the reference bore results, complete an investigation in accordance with the ANZECC and ARMCANZ 2000, into the potential for environmental harm and provide a written report to the administering authority within three (3) months, outlining:
i. Details of the investigations carried out; 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 E3(b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic within the three month investigation period.

E4 Results of monitoring of groundwater from compliance bores identified in Table E1 - Groundwater Monitoring Locations and Frequency, must not exceed any of the contaminant limits stated in Table E2 - Groundwater Quality Contaminant Triggers and Limits.

Schedule F – Water

F1 The release of contaminants to waters must:
(a) only occur during flow events in the receiving waters;
(b) only occur from a release point specified in Table F1 – Contaminant Release Points and identified in Schedule K, Map K3 – Contaminant Release Points; and,
(c) be monitored at the release point and frequency specified in Table F1 – Release Points for each parameter specified in Table F2 – Release Quality Objectives.

Table F1 – Contaminant Release Points

Release Point	Map Reference (GDA94, MGA, Zone 54)		Contaminant Source, Location, and Description of Release Point	Receiving Waters Description	Monitoring Frequency
	Easting	Northing			
Main Stormwater Pond	394216	7580102	Stormwater runoff from the granulation plant and phosphoric acid plant – from the main stormwater pond spillway	Railway Creek	Daily during release (the first sample must be taken within 2 hours of commencement of release if safe to do so)
Beneficiation Pond	394271	7579678	Beneficiation plant, runoff from heavy equipment workshop	Railway Creek	
Ammonia Pond	394219	7580289	Stormwater runoff from the gypsum conveyor (south) and ammonia plant –Ammonia Pond spillway.	Railway Creek	
Gypsum Conveyor Sump	394256	7580494	Stormwater runoff from the gypsum conveyor (north) –Gypsum Conveyor Sump spillway.	Railway Creek	

Table F2 – Release Quality Objectives

Quality Characteristics	Release Quality Objectives[1] (mg/L unless otherwise specified)
pH (pH units)	6.0[2] or 20th percentile of reference site concentration[3], whichever is lower. 7.5[2] or 80th percentile of reference site concentration[3], whichever is higher.
EC (µS/cm)	Dilution Factor[4] x 435 or Dilution Factor[4] x 80th percentile of reference site concentration[3] whichever is higher
Suspended Solids	For interpretational purposes only
Dissolved oxygen	For interpretational purposes only
Sulphate	Dilution Factor[4] x 80th percentile of reference site concentration[3]
Fluoride	Dilution Factor[4] x 80th percentile of reference site concentration[3]
Total Nitrogen	Dilution Factor[4] x 0.15[2] or Dilution Factor[4] x 80th percentile of reference site concentration[3] whichever is higher
Filterable Reactive Phosphorus	Dilution Factor[4] x 0.04[5] or Dilution Factor[4] x 80th percentile of reference site concentration[3] whichever is higher
Total Phosphorus	Dilution Factor[4] x 3.12[5] or Dilution Factor[4] x 80th percentile of reference site concentration[3] whichever is higher
Major cations	For interpretative purposes only
Major anions	
Aluminium	Dilution Factor[4] x 0.055[2]or Dilution Factor[4] x 80th percentile of reference site concentration[3] whichever is higher
Arsenic	Dilution Factor[4] x 0.013[2] or Dilution Factor[4] x 80th percentile of reference site concentration[3] whichever is higher
Cadmium	Dilution Factor[4] x 0.0002[2] or

	Dilution Factor[4] x 80th percentile of reference site concentration[3] whichever is higher
Chromium	Dilution Factor[4] x 0.001[2] or Dilution Factor[4] x 80th percentile of reference site concentration[3] whichever is higher
Cobalt	Dilution Factor[4] x 0.0028[2] or Dilution Factor[4] x 80th percentile of reference site concentration[3] whichever is higher
Copper	Dilution Factor[4] x 0.0014[2] or Dilution Factor[4] x 80th percentile of reference site concentration[3] whichever is higher
Lead	Dilution Factor[4] x 0.0034[2] or Dilution Factor[4] x 80th percentile of reference site concentration[3] whichever is higher
Mercury	Dilution Factor[4] x 0.0006[2] or Dilution Factor[4] x 80th percentile of reference site concentration[3] whichever is higher
Nickel	Dilution Factor[4] x 0.011[2] or Dilution Factor[4] x 80th percentile of reference site concentration[3] whichever is higher
Selenium	Dilution Factor[4] x 0.005[2] or Dilution Factor[4] x 80th percentile of reference site concentration[3] whichever is higher
Uranium	Dilution Factor[4] x 0.0005[2] or Dilution Factor[4] x 80th percentile of reference site concentration[3] whichever is higher
Zinc	Dilution Factor[4] x 0.008[2] or Dilution Factor[4] x 80th percentile of reference site concentration[3] whichever is higher
Alkalinity	For interpretative purposes only
Total Hardness	For interpretative purposes only
Total petroleum hydrocarbons	No detectable film or odour

[1] For release quality objectives (RQO) parameters, all metals and metalloids must be measured and reported as both total (unfiltered) and dissolved (field filtered) levels.

[2] ANZECC/ARMCANZ (2000) values for aquatic ecosystems indicative of slightly-to-moderately disturbed tropical Australian upland river ecosystems Tables 3.3.4 and Table 3.4.1 (high reliability trigger values) and moderate or low reliability trigger values (Section 8.3) if no value available in Table 3.4.1.

[3] Reference site concentration determined from reference points specified in Table F3 – Receiving Water Monitoring Locations and Frequency.

[4] Dilution Factor is the volume ratio of receiving water flow to contaminated water release. The volume of flow in the receiving water (Railway Creek) must be at least 20 times the volume of contaminated waters released as specified in EA condition F2.

[5] Site specific water quality objective (April 2014).

Note: (1) The quality characteristics required to be monitored as per Table F2 – Release Quality Objectives can be reviewed once the results of 2 years monitoring data is available, or if sufficient data is available to adequately demonstrate negligible environmental risk.

F2 At the time of release from the authorised release point specified in Table F1 — Contaminant Release Points the modelled water flow volume in the respective receiving water must be at least twenty (20) times the volume at which respective contaminated waters are released.

F3 The release of contaminants to waters must not exceed the release quality objectives stated in Table F2 – Release Quality Objectives for each quality characteristic.

F4 The holder of this environmental authority must notify the administering authority as soon as practicable of a release event (no later than twenty four (24) of having commenced releasing mine affected water to

the receiving environment). Notification must include the submission of written verification to the administering authority of the following information:
a) release commencement date/time;
b) expected release cessation date/time;
c) release point/s;
d) release volume (estimated);
e) receiving water/s including the natural flow rate; and
f) any details (including available data) regarding likely impacts on the receiving water(s).

F5 The holder of this environmental authority must notify the administering authority as soon as practicable, (nominally within twenty four (24) hours after cessation of a release) of the cessation of a release notified under Condition F4 and within twenty-eight (28) days provide the following information in writing:
a) release cessation date/time;
b) natural flow volume in receiving water;
c) volume of water released;
d) details regarding the compliance of the release with the conditions of Agency Interest: Water of this environmental authority (i.e., contamination limits, natural flow, discharge volume);
e) all in-situ water quality monitoring results; and
f) any other matters pertinent to the water release event.

F6 **Receiving Environment Monitoring and Contaminant Trigger Levels**
The quality of the receiving waters must be monitored at the locations and frequency specified in Table F3 - Receiving Water Monitoring Locations and Frequency and depicted in Schedule K, Map K4 – Surface Water and Sediments Monitoring Locations for each quality characteristic stated in Table F4 - Receiving Water Trigger Levels and Contaminant Limits.

Table F3 – Receiving Water Monitoring Locations and Frequency

Monitoring point	Map Reference (GDA94, MGA, Zone 54)		Monitoring frequency
	Easting	Northing	
Compliance Sites			
KC (Kolar Creek)	394963	7577235	Each stream flow event
KC1 (Kolar Creek 1)	403095	7572067	Each stream flow event
RC (Railway Creek)	394935	7578326	Each stream flow event
Reference Sites[1]			
DHC (Dead Horse Creek)	391718	7579274	Each stream flow event
PHO-9	393988	7583968	Each stream flow event
GC1 (Galah Creek 1)	390778	7586252	Each stream flow event
RCT (Railway Creek Tributary)	395133	7579732	Each stream flow event
Observation Sites[2]			
RC1 (Railway Creek 1)	394076	7580806	Each stream flow event
RC2 (Railway Creek 2)	394467	7580710	Each stream flow event

NOTES:
[1] Reference sites must:
a) be from the same bio-geographic and climatic region;
b) have similar geology, soil types and topography;
c) contain a range of habitats similar to those at the test sites;
d) be of a similar follow regime; and
e) not be so close to the test sites that any disturbances at the test site also results in a change at the reference site.
[2] Observation sites are to assist in characterisation of Railway Creek. Receiving water trigger levels and contaminant limits are not applicable.

Table F4 – Receiving Water Trigger Levels and Contaminant Limits

Quality Characteristic	Unit	Contaminant Trigger Level[1,3]	Contaminant Limit[1,2,3]
pH (pH Unit)	pH	6.0 (minimum) 7.5 (maximum)	5.0 (minimum) or 5th percentile of reference site concentration, whichever is higher. 9.0 (maximum) or 95th percentile of reference site concentration, whichever is lower.
Electrical conductivity	µs/cm	435 or 80th percentile of reference site concentration, whichever is higher	1000 or 95th percentile of reference site concentration, whichever is lower
Sulphate (SO_4^{2-})	mg/L	80th percentile of reference site concentration	1000[5] or 95th percentile of reference site concentration, whichever is lower
Fluoride	mg/L	80th percentile of reference site concentration	2[5] or 95th percentile of reference site concentration, whichever is lower
Total Nitrogen	mg/L	0.15[4] or 80th percentile of reference site concentration, whichever is higher	95th percentile of reference site concentration
Filterable Reactive Phosphorus (FRP)	mg/L	0.04[6] or 80th percentile of reference site concentration, whichever is higher	95th percentile of reference site concentration
Total Phosphorus	mg/L	3.12[6] or 80th percentile of reference site concentration, whichever is higher	95th percentile of reference site concentration
Aluminium (At KC1 and KC2)	mg/L	0.055[4] or 80th percentile of reference site concentration, whichever is higher	19.62[7]
Aluminium (At RC)	mg/L	0.055[4] or 80th percentile of reference site concentration, whichever is higher	5[5] or 95th percentile of reference site concentration, whichever is lower
Arsenic	mg/L	0.013[4] or 80th percentile of reference site concentration, whichever is higher	0.5[5] or 95th percentile of reference site concentration, whichever is lower
Cadmium	mg/L	0.0002[4] or 80th percentile of reference site concentration, whichever is higher	0.01[5] or 95th percentile of reference site concentration, whichever is lower
Chromium	mg/L	0.001[4] or 80th percentile of reference site concentration, whichever is higher	1[5] or 95th percentile of reference site concentration, whichever is lower
Cobalt	mg/L	0.0028[4] or 80th percentile of reference site concentration, whichever is higher	1[5] or 95th percentile of reference site concentration, whichever is lower
Copper	mg/L	0.0014[4] or 80th percentile of reference site concentration, whichever is higher	1[5] or 95th percentile of reference site concentration, whichever is lower
Lead	mg/L	0.0034[4] or 80th percentile of reference site concentration, whichever is higher	0.1[5] or 95th percentile of reference site concentration, whichever is lower
Mercury	mg/L	0.0006[4] or 80th percentile of reference site concentration, whichever is higher	0.002[5] or 95% of reference site concentration, whichever is lower
Nickel	mg/L	0.011[4] or 80th percentile of reference site concentration, whichever is higher	1[5] or 95th percentile of reference site concentration, whichever is lower
Selenium	mg/L	0.011[4] or 80th percentile of reference site concentration, whichever is higher	0.02[5] or 95th percentile of reference site concentration, whichever is lower
Uranium	mg/L	0.008 or 80th percentile of reference site concentration, whichever is higher	0.2[5] or 95th percentile of reference site concentration, whichever is lower
Zinc	mg/L	0.008[4] or 80th percentile of reference site concentration, whichever is higher	20[5] or 95th percentile of reference site concentration, whichever is lower
Total Hardness	Interpretational purposes only		
Suspended Solids	Interpretational purposes only		
Alkalinity	Interpretational purposes only		

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

[2] The alternative contaminant limit '95th percentile of reference' is not applicable where the 95th percentile of reference (Totals) for a Quality Characteristic is determined to be lower than the specified trigger level (Dissolved) for the respective Quality Characteristic.

[3] Reference site concentration determined from reference points specified in Table F3 – Receiving Water Monitoring Locations.

[4] ANZECC/ARMCANZ (2000) values for aquatic ecosystems indicative of slightly-to-moderately disturbed tropical Australian upland river ecosystems Tables 3.3.4 and Table 3.4.1 (high reliability trigger values) and moderate or low reliability trigger values (Section 8.3) if no value available in Table 3.4.1.

[5] Contaminant limits based on ANZECC/ARMCANZ (2000) livestock drinking water guidelines.

[6] Site specific trigger value (April 2014).

[7] Interim site specific limit - based on a C&R Consulting Pty Ltd (2017) report "Phosphate Hill Mine: Methods for determining site specific trigger levels and contaminant limits" (Version: Final).

Notes:

** In any given sampling event, where the contaminant limit is exceeded and the reference site also exceeds the contaminant limit, the value of the reference data applies.*
*** The quality characteristics required to be monitored as per Table F4 – Receiving Water Trigger Levels and Contaminant Limits can be reviewed once the results of 2 years monitoring data is available, or if sufficient data is available to adequately demonstrate negligible environmental risk.*

F7 If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in Table F4 - Receiving Water Trigger Levels and Contaminant Limits the holder of this environmental authority must compare the downstream results to the reference site results in the receiving waters and:

(a) where the downstream result is the same or a lower value than the reference site value for the quality characteristic during the same sampling event then no action is to be taken; or
(b) where the downstream results exceed the reference site, complete an investigation in accordance with the ANZECC & ARMCANZ 2000 methodology, into the potential for environmental harm and provide a written report to the administering authority in the next annual return, 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 F7(b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.

F8 The release of contaminants to surface waters must not result in exceedance of contaminant limits stated in Table F4 – Receiving Water Trigger Levels and Contaminant Limits.

F9 Sediment quality of monitoring locations defined in Table F3 – Receiving Water Monitoring Locations and identified on Schedule K, Map K4 – Monitoring Sites for Surface Water and Sediments must be monitored twice a year (once at the end of the wet season and once at the end of the dry season) for the parameters defined in Table F5 - Stream Sediment Trigger Levels and Contaminant Limits.

Table F5 - Stream Sediment Trigger Levels and Contaminant Limits

Parameter	Unit	Trigger Level	Contaminant Limit
Cobalt	mg/kg	Reference value[1]	3 times the reference value[1]
Copper	mg/kg	65[2] or reference value[1], whichever is higher.	270[3] or 3 times the reference value[1], whichever is higher
Fluoride	mg/kg	Reference value[1]	3 times the reference value[1]
Lead	mg/kg	50[2] or reference value[1], whichever is higher.	220[3] or 3 times the reference value[1], whichever is higher
Manganese	mg/kg	Reference value[1]	3 times the reference value[1]
Nickel	mg/kg	21[2] or reference value[1], whichever is higher.	52[3] or 3 times the reference value[1], whichever is higher.
Phosphorus	mg/kg	Reference value[1]	3 times the reference value[1]
Uranium	mg/kg	Reference value[1]	3 times the reference value[1]

Zinc	mg/kg	200[2] or reference value[1] , whichever is higher	410[3] or 3 times the reference value[1], whichever is higher
Phosphate	mg/kg	Interpretational purposes only	
Nitrogen	mg/kg	Interpretational purposes only	
Particle size distribution		Interpretational purposes only	

[1] Reference sites are defined in Table F3 – Receiving Water Monitoring Locations and Frequency.
[2] ANZECC (2000) Interim Sediment Quality Guidelines – low values based on total sediments
[3] ANZECC (2000) Interim Sediment Quality Guidelines – high values based on total sediments
Notes:

** All analytes excluding Phosphate and Nitrogen must be measured as total (digested) on a <63µm wet sieved sediment fraction. Anions and nutrients must be measured on a deionised water ASLP leachate as dissolved (0.45µm filtered).*
*** The reference value is the 80th percentile of reference site concentration for both Railway Creek system and combined Dead Horse and Galah Creek for Kolar Creek system monitoring.*
**** The quality characteristics required to be monitored as per Table F5 – Stream Sediments Trigger Levels and Contaminant Limits can be reviewed once the results of 2 years monitoring data is available, or if sufficient data is available to adequately demonstrate negligible environmental risk.*

F10 If quality characteristics of the stream sediments exceed any of the trigger levels specified in Table F5 - Stream Sediment Trigger Levels and Contaminant Limits, the holder of this environmental authority must compare the results of the downstream site to the data from reference monitoring sites and:

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

(b) If the level of contaminants at the downstream site is greater than the reference monitoring site data, complete an investigation in accordance with the ANZECC & ARMCANZ 2000 methodology, into the potential for environmental harm and provide a written report to the administering authority with the next annual return, 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 F10(b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic within the investigation period.

F11 Releases of contaminants must not result in an exceedance of sediment contaminant limits stated in Table F5 - Stream Sediment Trigger Levels and Contaminant Levels.

F12 **Aquifer Dewatering Program**

Receiving water affected by the release of groundwater from the aquifer dewatering program must be monitored at the locations and frequencies defined in Table F6 – Aquifer Dewatering Monitoring Locations and Frequency and depicted in Schedule K, Map K5 – Aquifer Dewatering Monitoring Locations for each quality characteristic stated in Table F4 - Receiving Water Trigger Levels and Contaminant Limits.

Table F6 – Aquifer Dewatering Monitoring Locations and Frequency

Monitoring point	Map Reference (GDA94, MGA, Zone 54)		Monitoring frequency
	Easting	Northing	
Kolar Creek Discharge Point	394022	7577935	Weekly (for pH & EC) Monthly (all other parameters)
Lease Boundary at Kolar Creek	394963	7577235	Weekly (for pH & EC) Monthly (all other parameters)

End of flow	Location not static	Location not static	Weekly (for pH & EC) Monthly (all other parameters)

F13 If quality characteristics of receiving water monitored at the locations specified in Table F6 – Aquifer Dewatering Monitoring Locations and Frequency exceed any of the trigger levels specified in Table F4 – Receiving Water Trigger Levels and Contaminant Limits, the holder of this environmental authority must provide a written report to the administering authority within three (3) months of the date of receiving the monitoring results outlining all pertinent details of the investigation carried out including the following:
(a) results and interpretation of samples taken and analysed;
(b) outcomes of actions taken at the time to prevent or minimise unlawful environmental harm; and,
(c) proposed actions to minimise environmental harm.

F14 The release of contaminants to surface waters must not exceed the water quality objectives stated in Table F4 – Receiving Water Trigger Levels and Contaminant Limits when measured at the aquifer dewatering monitoring locations.

F15 The authority holder must develop and implement a dewatering ecological monitoring program (DEMP) to be conducted on a 6 monthly basis, pre and post each wet season. This program must include the following details:
a) biological, chemical and physical parameters that are to be measured (e.g., crustacea, pH and discharge volume);
b) location of sampling points;
c) timing and frequency of sampling;
d) sampling methodology;
e) means of analysis;
f) program of management for outbreaks of feral plants and animals caused by the change in water flow patterns of affected waters;
g) reporting procedures and timeframes; and
h) a program for the continuation of monitoring until the affected area has returned to natural/reference condition.

Note: the purpose of this condition is for the authority holder to undertake physical, biological and chemical surveys of the systems impacted by aquifer dewatering activities, so that the changes to the systems caused by these activities and their cessation can be identified and managed. As part of the program, reference conditions should be defined to provide a target for management actions and to enable a meaningful comparison between pre- and post-dewatering ecological conditions.

F16 A report outlining the findings of the DEMP for each pre and post wet season survey period, including all monitoring results and interpretations, in accordance with condition F15, must be prepared and submitted in writing to the administering authority by 1 July each year.

F17 Where findings of the DEMP indicate that environmental harm is being caused by the discharge of water to Kolar Creek, the environmental authority holder must either:
a) immediately cease the discharge of contaminated water to the receiving environment; and/or,
b) conduct remediation of Kolar Creek to ensure the environmental values of the creek are restored.

F18 Where possible, water from underground aquifers should be released to the receiving environment in times of rainfall.

F19 The release of water from the dewatering program to any surface water environment must cease by the end of 2015.

F20 **Receiving Environment Monitoring Program (REMP)**
A REMP must be developed and implemented within 6 months from the date this Environmental Authority takes effect to monitor and record the effects of the release of contaminants on the receiving environment periodically and whilst contaminants are being discharged from the site, with the aims of identifying and describing the extent of any adverse impacts to local environmental values, and monitoring any changes in the receiving water. A copy of the REMP must be provided to the administering authority prior to its implementation and due consideration given to any comments made on the REMP by the administering authority.
For the purposes of the REMP, the receiving environment is the waters of the downstream environment and connected waterways within 10km downstream of the release.

F21 A REMP design document that addresses the requirement of the REMP must be prepared and made available to the administering authority upon request.

F22 A report outlining the findings of the REMP, including all monitoring results and interpretations must be prepared annually and made available to the administering authority upon request. This must include an assessment of background reference water quality, the condition of downstream water quality compared against water quality objectives and the suitability of current discharge limits to protect downstream environmental values.

F23 **Annual Water Monitoring Reporting**
The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the administering authority in the specified format when requested:
a) The date on which the sample was taken;
b) The time at which the sample was taken;
c) The monitoring point at which the sample was taken;
d) The measured or estimated quantity of mine affected water released from all release points;
e) The release flow rate at the time of sampling for each release point;
f) The results of all monitoring and details of any exceedances of the conditions of this environmental authority;
g) Water quality monitoring data must be provided to the administering authority in the specified electronic format upon request.

F24 **Water Management Plan**
A Water Management Plan must be developed by an appropriately qualified person and implemented.

F25 **Stormwater, Sediment and Erosion Controls**
An Erosion and Sediment Control Plan must be developed by an appropriately qualified person and implemented for all stages of the mining activities on the site to prevent or minimise erosion and the release of sediment to receiving waters and the contamination of storm water.

Schedule G – Sewage Treatment

G1 The only contaminant permitted to be released to land is treated sewage effluent in compliance with the release limits stated in Table G1 - Contaminant Release Limits to Land.

Table G1 – Contaminant Release Limits to Land

Contaminant	Unit	Release limit	Limit type	Frequency
pH	pH units	6.0 - 9.0	Range	Monthly
5 day Biochemical oxygen demand (uninhibited)	mg/L	20	Maximum	Monthly
Total Suspended Solids	mg/L	30	Maximum	Monthly
Nitrogen	mg/L	30	Maximum	Monthly
Phosphorus	mg/L	15	Maximum	Monthly
E coli	Organisms/100ml	1000	Maximum	Monthly

G2 Treated sewage effluent may only be released to land in accordance with the conditions of this approval at the following locations:

(a) within the nominated area(s) identified in Schedule K, Map K6 –Approved Irrigation Areas.
(b) other land for the purpose of dust suppression and/or firefighting.

G3 The application of treated effluent to land must be carried out in a manner such that:
a) vegetation is not damaged
b) there is no surface ponding of effluent
c) there is no run-off of effluent

G4 If areas irrigated with effluent are accessible to employees or the general public, prominent signage must be provided advising that effluent is present, and care should be taken to avoid consuming or otherwise coming into unprotected contact with the effluent.

G5 All sewage effluent released to land must be monitored at the frequency and for the parameters specified in Table G1 - Contaminant Release Limits to Land.

G6 The daily volume of effluent release to land must be measured and records kept of the volumes of effluent released.

G7 When circumstances prevent the irrigation or beneficial reuse of treated sewage effluent such as during or following rain events, waters must be directed to a wet weather storage or alternative measures must be taken to store/lawfully dispose of effluent.

G8 A minimum area of 0.5 ha of land, excluding any necessary buffer zones, must be utilised for the irrigation and/or beneficial reuse of treated sewage effluent.

G9 Sewage tank sludge, pond sludge and residues resulting from periodic maintenance of onsite sewage treatment plants may be accepted to the designated Bioremediation Area in compliance with environmental authority conditions C10 to C15.

Schedule H – Land and Rehabilitation

H1 Land disturbed by mining must be rehabilitated in accordance with Table H1 - Rehabilitation Requirements.

Table H1 – Rehabilitation Requirements

Mine Domain	Mine Feature Names	Rehabilitation Goal	Rehabilitation Objective	Indicators	Completion Criteria
Open Pit	Brolga Pit, Corella Pit, Galah Pit, Jabiru Pit, Magpie Pit, Eagle Pit	Safe	Site safe for human and animals	Engineered structures and signage to preclude humans and animals (e.g., safety bund wall and fencing)	Rehabilitation report: that all safety precautions have been taken in accordance with the relevant legislation.
		Non-polluting	Hazardous and contaminated material adequately managed.	Hazard assessment of material by suitably qualified person.	Rehabilitation report: appropriate hazard assessment and measures undertaken.
		Stable	Minimal probability of wall failure or rock falls that will cause significant environmental harm.	Geotechnical studies of final voids	Rehabilitation report: geotechnical studies to determine whether final landform is stable.
				Risk assessment of final landform	Rehabilitation report: appropriate risk assessment and control measures undertaken.
Waste Rock Dump	Brolga WRD, Corella WRD, Galah WRD, Jabiru WRD, Magpie WRD, Eagle WRD	Safe	Site safe for humans and animals	Safety assessment of final landform by suitably qualified person.	Rehabilitation report: certification structurally sound and safe
		Non-polluting	Hazardous and contaminated material adequately managed.	Engineers assessment of cover or final landform design	Engineer's certification in rehabilitation report that the waste disposal site has been securely covered to minimise release of seepage or contaminants to the receiving environment.
				Rehabilitation monitoring plan in place to monitor downstream surface/ground water	Rehabilitation report: monitoring data demonstrates the cover is functioning in minimising release of seepage or contaminants to the receiving environment.
		Stable	Minimal probability of subsidence or rock falls that	Geotechnical studies of final landforms	Rehabilitation report: geotechnical studies to determine whether final landform is stable.

			will cause significant environmental harm		
			Vegetation cover to minimise erosion	Vegetation assessment	Rehabilitation report: revegetation meets the limits with reference to analogue site or an acceptable standard.
		Self-sustaining	Soil properties that support desired land use	Soil monitoring program in place to ensure remaining soil is able to support post-mining land use	Rehabilitation report: all soil chemical, physical and biological properties are within acceptable limits that ensure soil is able to support post-mining land use.
			Self-sustaining natural vegetation and habitat established	Vegetation assessment	Rehabilitation report: Certification that key species are present, suitable diversity has been achieved and cover/density is adequate. Rehabilitation report: certification that the weed management plan has been successful.
Gypsum Stack	Cell 1/2, Cell 4A/4B, Cell 5A/5B	Safe	Site safe for human and animals	Safety assessment of final landform by Suitably qualified person.	Rehabilitation report: certification structurally sound and safe
		Non-polluting	Hazardous and contaminated material adequately managed	Hazard assessment of material by suitably qualified person.	Rehabilitation report: appropriate hazard assessment and measures undertaken.
				Engineers assessment of cover or final landform design	Engineer's certification in rehabilitation report that the stack has been securely covered to minimise release of contaminants to the receiving environment.
			Runoff and seepage of water quality that is not likely to affect known environmental values	Rehabilitation monitoring plan in place to monitor downstream surface / groundwater	Rehabilitation report: monitoring data meets specified contaminant and trigger levels that ensure environmental values are not being compromised.
		Stable	Minimal probability of subsidence that will cause significant environmental harm	Geotechnical studies of final landforms	Rehabilitation report: Geotechnical studies to determine whether final landform is stable
				Risk assessment of final landform	Rehabilitation report: appropriate risk assessment and control measures have been undertaken.

			Landform achieves appropriate erosion rates	Design and construction of structures to control water flow	Structures are adequately designed and constructed to control water flow and runoff.
			Vegetation cover to minimise erosion	Vegetation assessment	Rehabilitation report: revegetation meets the limits with reference to analogue site or an acceptable standard.
		Self-sustaining	Self-sustaining natural vegetation and habitat established	Vegetation assessment	Rehabilitation report: certification that key species are present, suitable diversity has been achieved and cover/density is adequate. Certification that the weed management plan has been successful.
Infrastructure, Roads & Exploration Areas	ROM Pad, stockpiles and loading areas, workshops, accommodation camp and facilities, STP, fuel storage area, beneficiation, crushing area, acid storage, process plant and associated buildings, power facility, explosives storage, internal access haul roads, tracks, office carpark	Safe	Site safe for humans and animals	Safety assessment of final landform by suitably qualified person	Rehabilitation report: Certification structurally sound and safe.
		Non-polluting	Hazardous and contaminated material adequately managed	Contaminated land assessment	Evidence of remediated landform in a contaminated land assessment report.
			Runoff and seepage of good quality water that is not likely to affect known environmental values	Rehabilitation monitoring plan in place to monitor downstream surface/groundwater	Rehabilitation report: monitoring data meets specified contaminant and trigger levels that ensure environmental values are not being compromised.
		Stable	Landform achieves appropriate erosion rates	Engineers assessment of design and construction of structures to control water flow	Rehabilitation report: Engineer certification that infrastructure sites (both remaining and decommissioned) have the required structures to control water flow and runoff.
			Vegetation cover to minimise erosion	Vegetation assessment	Rehabilitation report: revegetation meets the limits with reference to analogue site or an acceptable standard.
		Self-sustaining	Soil properties that support desired land use	Soil monitoring program in place to ensure remaining soil is able to support post-mining land use.	Rehabilitation report: all soil chemical, physical and biological properties are within acceptable limits that ensure soil is able to support post-mining land use.
			Self-sustaining natural	Vegetation assessment	Rehabilitation report: Certification that key

			vegetation and habitat established		species are present, suitable diversity has been achieved and cover/density is adequate. Rehabilitation report: certification that the weed management plan has been successful.
Dams	Beneficiation pond, main stormwater pond, Slimes Dams, Gypsum Cells	Safe	Site safe for humans and animals	Safety assessment of final landform by suitably qualified person. Safety barriers and signage	Rehabilitation report: Certification structurally sound and safe, all precautions implemented.
		Non-polluting	Dams to remain on closure will not contribute contaminants to the environment.	Rehabilitation monitoring plan in place to monitor water in the dam and downstream surface/groundwater	Rehabilitation report: closure monitoring (water quality) is compliant with established and applicable limits.
		Stable	Minimal probability or subsidence that will cause significant environmental harm	Geotechnical studies of final landforms	Rehabilitation report: geotechnical studies to determine whether final landform is stable.
				Risk assessment of final landform	Rehabilitation report: appropriate risk assessment and control measures have been undertaken.
	Sump and STP irrigation area	Non-polluting	Rehabilitated sump will not contribute contaminants to the environment	Rehabilitation monitoring plan in place to monitor downstream surface/groundwater	Rehabilitation report: monitoring data meets specified contaminant and trigger levels.
		Stable	Vegetation cover to minimise erosion	Vegetation assessment	Rehabilitation report: revegetation meets the limits with reference to analogue site or an acceptable standard.
		Self-sustaining	For sump to be rehabilitated, soil properties that support desired land use	Soil monitoring program in place to ensure remaining soil is able to support post-mining land use	Rehabilitation report: all soil chemical, physical and biological properties are within acceptable limits that ensure soil is able to support post-mining land use.
	Stormwater drains/diversions	Non-polluting	Discharge will be of good quality water that is not likely to affect known environmental values	Rehabilitation monitoring plan in place to monitor downstream surface water	Rehabilitation report: monitoring data meets specified contaminant and trigger levels that ensure environmental values are not being compromised.
		Stable	Minimal	Geotechnical	Rehabilitation report:

			probability or subsidence that will cause significant environmental harm	studies of final landforms	geotechnical studies to determine whether final landform is stable.
		Self-sustaining	Establish safe and stable drains with a low risk of environmental harm	Water quality established by monitoring or modelling validated by monitoring structural report on integrity of structure.	Rehabilitation report: that the structures meet water quality guidelines, Engineers certificate of structure.
			Self-sustaining natural vegetation and habitat established	Vegetation assessment	Rehabilitation report: certification that key species are present, suitable diversity has been achieved and cover/density is adequate. Certification that the weed management plan has been successful.

H2 Rehabilitation must commence progressively in accordance with the plan of operations.

H3 **Contaminated Land**
Before applying for surrender of a mining lease, the holder must (if applicable) provide to the administering authority a site investigation report under the Act, in relation to any part of the mining lease which has been used for notifiable activities or which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use.

H4 Before applying for progressive rehabilitation certification for an area, the holder must (if applicable) provide to the administering authority a site investigation report under the Act, in relation to any part of the area the subject of the application which has been used for notifiable activities or which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use under condition H1.

H5 **Fluoride Management**
The holder of this environmental authority must undertake bi-annual monitoring of fluoride in vegetation in accordance with documented site procedures and the Plan of Operations. An associated monitoring report must be prepared and submitted to the administering authority with the next annual return.

H6 The holder of this environmental authority must conduct a Flora Survey every three years focusing on the impacts of fluoride to the vegetation. A copy of the Flora Survey Report must be submitted to the administering authority with the next annual return.

H7 **Sulfur Management**
Sulfur stored on site must be stored under cover.

H8 Storage, handling and transfer of Sulfur on site must be carried out in a manner which minimises the release of dust and particulate matter, and prevents or minimises the contamination of land and stormwater

H9 **Chemicals and Flammable or Combustible Liquids**
All explosives, hazardous chemicals, corrosive substances, toxic substances, gases, flammable or combustible liquids and dangerous goods must be stored and handled in accordance with the current, relevant Australian Standard where such is applicable.

H10 Notwithstanding the requirements of any Australian Standard, any liquids stored on site that have the potential to cause environmental harm must be stored in or serviced by an effective containment system that is impervious to the materials stored and managed to prevent the release of liquids to waters or land.

H11 Where no relevant Australian Standard is available, the following must be applied:
a) Storage tanks must be bunded so that the capacity and construction of the bund is sufficient to contain at least 110% of a single storage tank or 100% of the largest storage tank plus 10% of the second largest storage tank in multiple storage areas; and
b) Drum storages must be bunded so that the capacity and construction of the bund is sufficient to contain at least 25% of the maximum design storage volume within the bund.

H12 All containment systems must be designed to minimise rainfall collection within the system.

H13 **Biodiversity Offsets**
The holder of this environmental authority must provide an offset for impacts on applicable state significant biodiversity values, in accordance with Queensland Biodiversity Offset Policy. The biodiversity offset must be consistent with the requirements for an offset as identified in the Biodiversity Offset Strategy (as per condition H14) and must be provided:
(a) prior to impacting on state significant biodiversity values; or
(b) where a land based offset is to be provided, within 12 months of the later of either of the following
    i the date of issue of this environmental authority; or
    ii the relevant stage identified in the Biodiversity Offset Strategy submitted under condition H14; or
(c) where an offset payment is to be provided, within 4 months of the later of either of the following
    i the date of issue of this environmental authority; or
    ii the relevant stage identified in the Biodiversity Offset Strategy submitted under conditions H14.

H14 A Biodiversity Offset Strategy must be developed and submitted to the administering authority within either 30 days, or a lesser period agreed to by the administering authority, prior to impacting on the applicable state significant biodiversity values.

H15 **Impacts to Prescribed Environmental Matters**
Significant residual impacts to prescribed environmental matters other than if the impacts were authorised by an existing authority issued before the commencement of the *Environmental Offsets Act 2014*, are not authorised under this environmental authority or the *Environmental Offsets Act 2014*.

H16 Records demonstrating that each impact to a prescribed environmental matter did not, or is not likely to, result in a significant residual impact to that matter must be:
a) completed by an appropriately qualified person; and

b) kept for the life of the environmental authority.

Schedule I – Regulated Dams

I1 **Assessment of Consequence Category**
The consequence category of any structure must be assessed by a suitably qualified and experienced person in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures* (ESR/2016/1933; formerly EM635) at the following times:
a) prior to the design and construction of the structure, if it is not an existing structure; or
b) prior to any change in its purpose or the nature of its stored contents.

I2 A consequence assessment report and certification must be prepared for each structure assessed and the report may include a consequence assessment for more than one structure.

I3 Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the Manual for *Assessing Consequence Categories and Hydraulic Performance of Structures* (ESR/2016/1933; formerly EM635).

I4 **Design and Construction of a Regulated Structure**
Conditions I5 to I9 inclusive do not apply to existing structures.

I5 All regulated structures must be designed by, and constructed under the supervision of, a suitably qualified and experienced person in accordance with the requirements of the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures* (ESR/2016/1933; formerly EM635).

I6 Construction of a regulated structure is prohibited unless:
a) the holder has submitted a consequence category assessment report and certification to the administering authority; and
b) the design, design plan and the associated operating procedures has been certified by a suitably qualified and experienced person in compliance with the relevant condition of this environmental authority.

I7 Certification must be provided by the suitably qualified and experienced person who oversees the preparation of the design plan, in the form set out in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures* (ESR/2016/1933; formerly EM635) and must be recorded in the Register of Regulated Structures.

I8 Regulated structures must:
a) be designed and constructed in accordance with and conform to the requirements of the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures* (ESR/2016/1933; formerly EM635).
b) be designed and constructed with due consideration given to ensuring that the design integrity would not be compromised on account of:
i floodwaters from entering the regulated dam from any watercourse or drainage line; and
ii wall failure due to erosion by floodwaters arising from any watercourse or drainage line.
c) have the floor and sides of the dam designed and constructed to prevent or minimise the passage of the wetting front and any entrained contaminants through either the floor or sides of the dam during the operational life of the dam and for any period of decommissioning and rehabilitation of the dam.

I9 Certification by the suitably qualified and experienced person who supervises the construction must be submitted to the administering authority on the completion of construction of the regulated structure, and state that:

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

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

I10 **Operation of a Regulated Structure**

Operation of a regulated structure, except for an existing structure, is prohibited unless:

a) the holder has submitted to the administering authority:

i. one paper copy and one electronic copy of the design plan and certification of the 'design plan' in accordance with condition I6;

ii. a set of 'as constructed' drawings and specifications;

iii. certification of those 'as constructed drawings and specifications' in accordance with condition I9; and

iv. where the regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, a copy of the certified system design plan; and

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

c) the holder has entered the details required under this authority, into a Register of Regulated Dams; and,

d) there is a current operational plan for the regulated structures.

I11 For existing structures that are regulated structures:

a) where the existing structure that is a regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, the holder must submit to the administering authority within 12 months of the commencement of this condition a copy of the certified system design plan including that structure; and

b) there must be a current operational plan for the existing structures.

I12 Each regulated structure must be maintained and operated, for the duration of its operational life until decommissioned and rehabilitated, in a manner that is consistent with the current operational plan and, if applicable, the current design plan and associated certified 'as constructed' drawings

I13 **Mandatory Reporting Level**

Conditions I14 to I17 inclusive only apply to Regulated Structures which have not been certified as low consequence category for 'failure to contain – overtopping'.

I14 The Mandatory Reporting Level (the MRL) must be marked on a regulated dam in such a way that during routine inspections of that dam, it is clearly observable.

I15 The holder of this environmental authority must, as soon as practical and within forty-eight (48) hours of becoming aware, notify the administering authority when the level of the contents of a regulated dam reaches the MRL.

I16 The holder of this environmental authority must, immediately on becoming aware that the MRL has been reached, act to prevent the occurrence of any unauthorised discharge from the regulated dam.

I17 The holder of this environmental must record any changes to the MRL in the Register of Regulated Structures.

I18 **Design Storage Allowance**
The holder must assess the performance of each regulated dam or linked containment system over the preceding November to May period based on actual observations of the available storage in each regulated dam or linked containment system taken prior to 1 July of each year.

I19 By 1 November of each year, storage capacity must be available in each regulated dam (or network of linked containment systems with a shared DSA volume), to meet the Design Storage Allowance (DSA) volume for the dam (or network of linked containment systems).

I20 The holder of this environmental authority must, as soon as possible and within forty-eight (48) hours of becoming aware that the regulated dam (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, notify the administering authority.

I21 The holder of this environmental authority must, immediately on becoming aware that a regulated dam (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, act to prevent the occurrence of any unauthorised discharge from the regulated dam or linked containment systems.

I22 **Annual Inspection Report**
Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.

I23 At each annual inspection, the condition and adequacy of all components of the regulated structure must be assessed and a suitably qualified and experienced person must prepare an annual inspection report containing details of the assessment and include a recommendations section, with any recommended actions to ensure the integrity of the regulated structure or a positive statement that no recommendations are required.

I24 The suitably qualified and experienced person who prepared the annual inspection report must certify the report in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures* (ESR/2016/1933; formerly EM635).

I25 The holder of this environmental authority must:
(a) within twenty (20) business days of receipt of the annual inspection report, provide to the administering authority:
i the recommendation section of the annual inspection report; and,
ii if applicable, any actions being taken in response to those recommendations; and
(b) If, following receipt of the recommendations and (if applicable) actions, the administering authority requests a full copy of the annual inspection report from the holder, provide this to the administering authority within 10 business days of receipt of the request.

I26 **Transfer Arrangements**
The holder of this environmental authority must provide a copy of any reports, documentation and certifications prepared under this authority, including but not limited to any Register of Regulated

Structures, hazard/consequence assessment, design plan and other supporting documentation, to a new holder and the administering authority on transfer of this authority.

I27 **Decommissioning and Rehabilitation**
Dams must not be abandoned but be either:
a) decommissioned and rehabilitated to achieve compliance with condition H1; or
b) be left in-situ for a beneficial use(s) provided that:
i it no longer contains contaminants that will migrate into the environment; and
ii it contains water of a quality that is demonstrated to be suitable for its intended beneficial use(s); and
iii the administering authority, the holder of the environmental authority and the landholder agree in writing that the dam will be used by the landholder following the cessation of the environmentally relevant activity(ies).

I28 **Register of Regulated Structures**
A Register of Regulated Structures must be established and maintained by the holder for each regulated structure.

I29 The holder must provisionally enter the required information in the Register of Regulated Structures when a design plan for a regulated dam is submitted to the administering authority.

I30 The holder must make a final entry of the required information in the Register of Regulated Structures once compliance with condition I10 and I11 has been achieved.

I31 The holder must ensure that the information contained in the Register of Regulated Structures is current and complete on any given day.

I32 All entries in the Register of Regulated Structures must be approved by the chief executive officer for the holder of this authority, or their delegate, as being accurate and correct.

I33 The holder must, at the same time as providing the annual return, supply to the administering authority a copy of the records contained in the Register of Regulated Structures, in the electronic format required by the administering authority.

I34 **Transitional arrangements**
All existing structures that have not been assessed in accordance with either the Manual or the former Manual for Assessing Hazard Categories and Hydraulic Performance of Dams must be assessed and certified in accordance with the Manual within 6 months of amendment of the authority adopting this schedule.

I35 All existing structures must subsequently comply with the timetable for any further assessments in accordance with the Manual specified in Table 1 (Transitional requirements for existing structures), depending on the consequence category for each existing structure assessed in the most recent previous certification for that structure.

I36 Table 1 ceases to apply for a structure once any of the following events has occurred:
(a) It has been brought into compliance with the hydraulic performance criteria applicable to the structure under the Manual; or

(b) It has been decommissioned; or
(c) It has been certified as no longer being assessed as a regulated structure.

I37 Certification of the transitional assessment required by I34 and I35 (as applicable) must be provided to the administering authority within 6 months of amendment of the authority adopting this schedule.

Table I1 – Transitional Hydraulic Performance Requirements for Existing Structures

Transition period required for existing structures to achieve the requirements of the *Manual for Assessing Consequence Categories and Hydraulic Performance of Dams*			
Compliance with criteria	**High**	**Significant**	**Low**
>90% and a history of good compliance performance in last 5 years	No transition required	No transition required	No transitional conditions apply. Review consequence assessment every 7 years.
>70%-≤90%	Within 7 years, unless otherwise agreed with the administering authority, based on no history of unauthorised releases.	Within 10 years, unless otherwise agreed with the administering authority, based on no history of unauthorised releases.	No transitional conditions apply. Review consequence assessment every 7 years.
>50-≤70%	Within 5 years unless otherwise agreed with the administering authority, based on no history of unauthorised releases.	Within 7 years unless otherwise agreed with the administering authority, based on no history of unauthorised releases.	Review consequence assessment every 7 years.
≤50%	Within 5 years or as per compliance requirements (e.g. TEP timing)	Within 5 years or as per compliance requirements (e.g. TEP timing)	Review consequence assessment every 5 years.
Regulated levee designed to prevent the ingress of clean flood water <100% compliant	Within 5 years unless otherwise agreed with the administering authority.		

I38 **Regulated Structures Location and Performance**

Each regulated dam must be wholly located within the control points defined in Table I2 – Location of Regulated Dams Containing Hazardous Waste.

Table I2 – Location of Regulated Dams Containing Hazardous Waste

Name of Regulated Dam Containing Hazardous Waste	**Map Reference (GDA94, MGA, Zone 54)**	
	Easting	**Northing**
Slimes Dam 1	393948 394253 394331 394089	7579362 7579367 7579003 7578993
Slimes Dam 3A	394260 394526 394785 394361	7578787 7578913 7578774 7578557
Slimes Dam 3B	394360 394785	7578557 7578774

	394791 394537	7578352 7578246
Gypsum Cells 1 & 2	394031 394384 394561 394498 394451 394097 394110	7581493 7581564 7581517 7581077 7580680 7580739 7581116
Gypsum Cell 3A	393957 394382 394385 394031	7581879 7582027 7581564 7581493
Gypsum Cell 3B	394382 394385 394561 394609	7582027 7581564 7581517 7582110
Gypsum Cell 3D	393640 393383 393229 393081 393036 393714 393848 393793	7581894 7581841 7582103 7582072 7582333 7582461 7581851 7581810
Gypsum Cell 4A & 4B	394589 394007 393741 394212	7582141 7581899 7583107 7583200
Gypsum Cell 5A	393618 393758 392970 392830	7583259 7582486 7582338 7583109
Gypsum Cell 5B	TBD[2] TBD[2] TBD[2] TBD[2]	TBD[2] TBD[2] TBD[2] TBD[2]
Emergency Dump Pond	394092 394243 394232 394082	7580690 7580672 7580580 7580600
Evaporation Pond	394347 394435 394409 394318	7580687 7580675 7580468 7580479
Decant Pond Cell 3C	TBD[1] TBD[1] TBD[1] TBD[1]	TBD[1] TBD[1] TBD[1] TBD[1]
Gypsum Cell 3D	393640 393383 393229 393081 393036 393714 393848 393793	7581894 7581841 7582103 7582072 7582333 7582461 7581851 7581810

NOTE: In circumstances where slimes dams meet the criteria for high hazard dams containing hazardous waste, the Code of Environmental Compliance for High Hazard Dams Containing Hazardous Waste must be complied with.

TBD[1] – To be determined prior to construction of Decant Pond Cell 3C.

TBD[2] – To be determined prior to the operation of Gypsum Cell 5B

I39 Each regulated dam must be consistent with the basic details in Table I3 – Size and Purpose of Dams Containing Hazardous Waste below.

Table I3 – Size and Purpose of Regulated Dams Containing Hazardous Waste

Name of Regulated Dam Containing Hazardous Waste	Maximum Surface Area of Contents in Dam (ha)	Maximum Volume of Dam (m^3)	Maximum Depth of Dam (m)	Purpose of Dam
Slimes Dam 1	7.1	406,304 m^3	9	Site water management and storage of slimes
Slimes Dam 3A	7.4	269,840 m^3	5	Site water management and storage of slimes
Slimes Dam 3B	11.5	528,040 m^3	6.4	Site water management and storage of slimes
Gypsum Cells 1 & 2	25	5 x 10^6 m^3 gypsum with an additional 325,000 m^3 process water catchment	38	Acidic water management and permanent storage of gypsum and acid residue
Gypsum Cell 3A	13.4	628,859 m^3	7	Acidic water management
Gypsum Cell 3B	11.1	391,500 m^3	4.4	Acidic water management
Gypsum Cell 4A	38	12 x 10^6 m^3 gypsum with an additional 460,000 m^3 process water catchment	70	Acidic water management and permanent storage of gypsum and acid residue
Gypsum Cell 4B	31	9.85 x 10^6 m^3 gypsum with an additional 320,000 m^3 process water catchment	70	Acidic water management and permanent storage of gypsum and acid residue
Gypsum Cell 5A	47.1	16 x 10^6 m^3 gypsum with an additional 513,000 m^3 process water catchment	70	Acidic water management and permanent storage of gypsum and acid residue
Gypsum Cell 5B	45	30,463,800 m^3	70	Acidic water management and permanent storage of gypsum and acid residue
Emergency Dump Pond	4.7	11,145 m^3	3.9	Emergency storage of gypsum and acid residue [2]
Evaporation Pond	1.87	42,051 m^3	3.1	Site water management and emergency storage of gypsum and acid residue [1,2]
Decant Pond Cell 3C	14.5	356,000 m^3	3.9	Acidic water management
Gypsum Cell 3D	28	1,208,665 m^3	5.8	Acidic water management

1 Gypsum may be stored in the Evaporation Pond in an emergency event only when the Emergency Dump Pond has reached its Mandatory Reporting Level.

2 Gypsum stored in the Emergency Dump Pond and Evaporation Pond must be removed as close to the liner as safely possible, as soon as practicable and no later than 3 months following the emergency event.

I40 Each regulated dam must meet the hydraulic performance criteria specified in Table I4 – Hydraulic Performance of Regulated Dams.

Table I4 – Hydraulic Performance of Regulated Dams

Dam Name		Design Storage Allowance	Spillway Design Storm	Mandatory Reporting Level
Slimes Dam 1		450 mm below spillway	1 in 100 year ARI	1:100 year ARI
Slimes Dam 3A		450 mm below spillway	1 in 100 Year ARI	1:100 year ARI
Slimes Dam 3B		450 mm below spillway	1 in 100 Year ARI	1:100 year ARI
Gypsum Storage Facility[1]	Cells 1 & 2	1:100 AEP	0.002 AEP critical storm	RL275.14 in respect to Cell 3D and RL270.85 in respect to the Surge Ditch
	Cells 3A & 3B		0.005 AEP critical storm	
	Cell 3D		0.001 AEP critical storm	
	Cells 4A & 4B		0.001 AEP critical storm	
	Cell 5A		0.001 AEP critical storm	
	Cell 5B[3]		0.001 AEP critical storm	
	Surge Ditch		0.005 AEP critical storm	
Evaporation Pond		1 in 10 year, 3 month wet or 1 in 200 year, 3 month wet[2]	1 in 100 Year ARI	1:10 year ARI
Decant Pond Cell 3C		1 in 100, 3 month wet	1 in 10 000 Year ARI	1:100 year ARI

1. Cells 1 & 2, 3A & 3B, 3D, 4A & 4B, 5A and surge ditch (comprising the Gypsum Storage Facility) are to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system in accordance with the linked system plan "IPL – Phosphate Hill Operations Gypsum Storage Facility Linked System Plan" that is certified (25/06/2018) by Dr. Susan Jane Henderson (RPEQ 4952).

2 The latter criteria applies if the evaporation pond is being used for current storage of gypsum in emergencies as described in Table I3.

3. The requirements of condition I10 must be met prior to operation of Cell 5B.

I41 The holder of this environmental authority must ensure proper management of Decant Pond Cell 3C, including but not limited to the Leak Detection and Recovery System, to prevent any release of contaminants into the receiving environment.

Schedule J – Definitions

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

"acceptance criteria" means the measures by which the actions implemented to rehabilitate the land are deemed to be complete. 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.

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

"AEP" means Annual Exceedance Probability

"airblast overpressure" means energy transmitted from the blast site within the atmosphere in the form of pressure waves. The maximum excess pressure in the wave, above ambient pressure is the peak airblast overpressure measured in decibels linear (dB).

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

"annual exceedance probability" or "**AEP"** is the probability that at least one event in excess of a particular magnitude will occur in any given year.

"annual inspection report" means an assessment prepared by a suitably qualified and experienced person containing details of the assessment against the most recent consequence assessment report and design plan (or system design plan);

(a) against recommendations contained in previous annual inspections reports;

(b) against recognised dam safety deficiency indicators;

(c) for changes in circumstances potentially leading to a change in consequence category;

(d) for conformance with the conditions of this authority;

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

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

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

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

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

"ARI" means Average Recurrence Interval.

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

"**assessed**" or "**assessment**" by a suitably qualified and experienced person in relation to a consequence 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 of the assessment:

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

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

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

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

"**associated works**" in relation to a dam, means:

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

(b) any land used for those operations.

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

"background" means the average of samples taken prior to the commencement of mining from the same waterway that the current sample has been taken. Background is also used in relation to noise – could this be confusing.

"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.

"certification" means assessment and approval must be undertaken by a suitably qualified and experienced person in relation to any assessment or documentation required by this Manual, including design plans, 'as constructed' drawings and specifications, construction, operation or an annual report regarding regulated structures, undertaken in accordance with the Board of Professional Engineers of Queensland Policy Certification by RPEQs (ID: 1.4 (2A)).

"certifying", **"certify"** or **"certified"** have a corresponding meaning as 'certification'.

"cfu" means colony forming unit.

"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.

"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 the purpose of preparing a design plan.

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

"consequence category" means a category, either low, significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the *Manual for assessing consequence categories and hydraulic performance of structures* (ESR/2016/1933).

"dam" means a land-based structure or a void that contains, diverts or controls flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works.

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

"design plan" is a document setting out how all identified consequence scenarios are addressed in the planned design and operation of a regulated structure.

"DSA" means Design Storage Allowance.

"design storage allowance" or **"DSA"** means an available volume, estimated in accordance with the *Manual for assessing consequence categories and hydraulic performance of structures* (ESR/2016/1933) published by the administering authority, must be provided in a dam as at 1 November each year in order to prevent a discharge from that dam to an annual exceedance probability (AEP) specified in that Manual.

"EC" means Electrical Conductivity.

"emergency event" in the context of this environmental authority, is an unexpected situation which will disrupt production and where environmental harm has the potential to occur if alternate actions are not taken (e.g., mechanical failure of a component of the monohydrate gypsum conveyance system).

"environmental authority holder" means the holder of this environmental authority.

"existing authority" has the meaning in section 94 of the *Environmental Offsets Act 2014*.

"flare pit" means containment area where any hydrocarbon that is discovered in an over-pressured reservoir during a drilling operation is diverted to, and combusted. The flare pit is only used during the drilling and work over process on a petroleum well.

"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.

"hydraulic performance" means the capacity of a regulated dam to contain or safely pass flowable substances based on the design criteria specified for the relevant consequence category in the *Manual for assessing consequence categories and hydraulic performance of structures* (ESR/2016/1933).

"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, gypsum stacks 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.

"**levee**" means an embankment that only provides 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.

"low consequence dam" means any dam that is not a high or significant consequence category as assessed using the *Manual for assessing consequence categories and hydraulic performance of structures* (ESR/2016/1933).

"mandatory reporting level" or **"MRL"** means a warning and reporting level determined in accordance with the criteria in the *Manual for assessing consequence categories and hydraulic performance of structures* (ESR/2016/1933) published by the administering authority.

"manual" means the *Manual for assessing consequence categories and hydraulic performance of structures* (ESR/2016/1933) published by the administering authority, as amended from time to time.

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

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

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

(a) clay if mined for use for its ceramic properties, kaolin and bentonite;
(b) foundry sand;
(c) hydrocarbons and other substances or matter occurring in association with shale or coal and necessarily mined, extracted, produced or released by or in connection with mining for shale or coal or for the purpose of enhancing the safety of current or future mining operations for coal or the extraction or production of mineral oil there from;
(d) limestone if mined for use for its chemical properties;
(e) marble;
(f) mineral oil or gas extracted or produced from shale or coal by in situ processes;
(g) peat;
(h) salt including brine;
(i) shale from which mineral oil may be extracted or produced;
(j) silica, including silica sand, if mined for use for its chemical properties;
(k) rock mined in block or slab form for building or monumental purposes;

but does not include—

(l) living matter;
(m) petroleum within the meaning of the *Petroleum Act 1923*;
(n) soil, sand, gravel or rock (other than rock mined in block or slab form for building or monumental purposes) to be used or to be supplied for use as such, whether intact or in broken form;
(o) water.

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

"NATA" means National Association of Testing Authorities (Australia).

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

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

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

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

"ore or waste rock characterised as having acid forming potential" means any rock with either a Net Acid Producing Potential of greater than 5 kg of H_2SO_4/tonne or a Net Acid Generation oxidation pH of less than 4.5 (pH unit).

"operational plan" includes:

(a) normal operating procedures and rules (including clear documentation and definition of process inputs in the DSA);

(b) contingency and emergency action plans including operating procedures designed to avoid and/or minimise environmental impacts including threats to human life resulting from any overtopping or loss of structural integrity of the regulated structure.

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

"prescribed environmental matters" has the meaning in section 10 of the *Environmental Offsets Act 2014*, limited to the matters of State environmental significant listed in schedule 2 of the *Environmental Offsets Regulation 2014*.

"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.

"Register of Regulated Structures" includes:

(a) Date of entry in the register;

(b) Name of the structure, its purpose and intended/actual contents;

(c) The consequence category of the dam as assessed using the *Manual for assessing consequence categories and hydraulic performance of structures* (ESR/2016/1933);

(d) Dates, names, and reference for the design plan plus dates, names, and reference numbers of all document(s) lodged as part of a design plan for the dam;

(e) Name and qualifications of the suitably qualified and experienced person who certified the design plan and 'as constructed' drawings;

(f) For the regulated dam, other than in relation to any levees –

i. The dimensions (metres) and surface area (hectares) of the dam measured at the footprint of the dam;

ii. Coordinates (latitude and longitude in GDA94) within five metres at any point from the outside of the dam including its storage area

iii. Dam crest volume (megalitres);

iv. Spillway crest level (metres AHD).

v. Maximum operating level (metres AHD);

vi. Storage rating table of stored volume versus level (metres AHD);

vii. Design storage allowance (megalitres) and associated level of the dam (metres AHD);

viii. Mandatory reporting level (metres AHD);

(g) The design plan title and reference relevant to the dam;

(h) The date construction was certified as compliant with the design plan;

(i) The name and details of the suitably qualified and experienced person who certified that the constructed dam was compliant with the design plan;

(j) Details of the composition and construction of any liner;

(k) The system for the detection of any leakage through the floor and sides of the dam;

(l) Dates when the regulated dam underwent an annual inspection for structural and operational adequacy, and to ascertain the available storage volume for 1 November of any year;

(m) Dates when recommendations and actions arising from the annual inspection were provided to the administering authority;

(n) Dam water quality as obtained from any monitoring required under this authority as at 1 November of each year.

"regulated structure" means any structure in the significant or high consequence category as assessed using the *Manual for assessing consequence categories and hydraulic performance of structures* (ESR/2016/1933) published by the administering authority. A regulated structure does not include:

- a fabricated or manufactured tank or container, designed and constructed to an Australian Standard that deals with strength and structural integrity of that tank or container;
- a sump or earthen pit used to store residual drilling material and drilling fluid only for the duration of drilling and well completion activities;
- a flare pit.

"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.

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

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

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

"residual drilling material" means waste drilling materials including muds and cuttings or cement returns from well holes and which have been left behind after the drilling fluids are pumped out.

"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.

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

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

"sensitive place" means;

- a 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 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.

"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.

"significant residual impacts" has the meaning in section 8 *Environmental Offsets Act 2014*.

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

"structure" means dam or levee.

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

- for regulated dams, an RPEQ who is a civil engineer with the required qualifications in dam safety and dam design
- for regulated levees, an RPEQ who is a civil engineer with the required qualifications in the design of flood protection embankments.

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

hydraulic design or engineering hydrology.

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

"tolerable limits" means that a range of values could be accepted to achieve an overall environmental management objective (e.g., 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" has the meaning in Schedule 4 of the *Environmental Protection Act 1994* and means:

(1) a river, creek or stream in which water flows permanently or intermittently—
    (a) in a natural channel, whether artificially improved or not; or
    (b) in an artificial channel that has changed the course of the watercourse.
(2) Watercourse includes the bed and banks and any other element of a river, creek or stream confining or containing water.

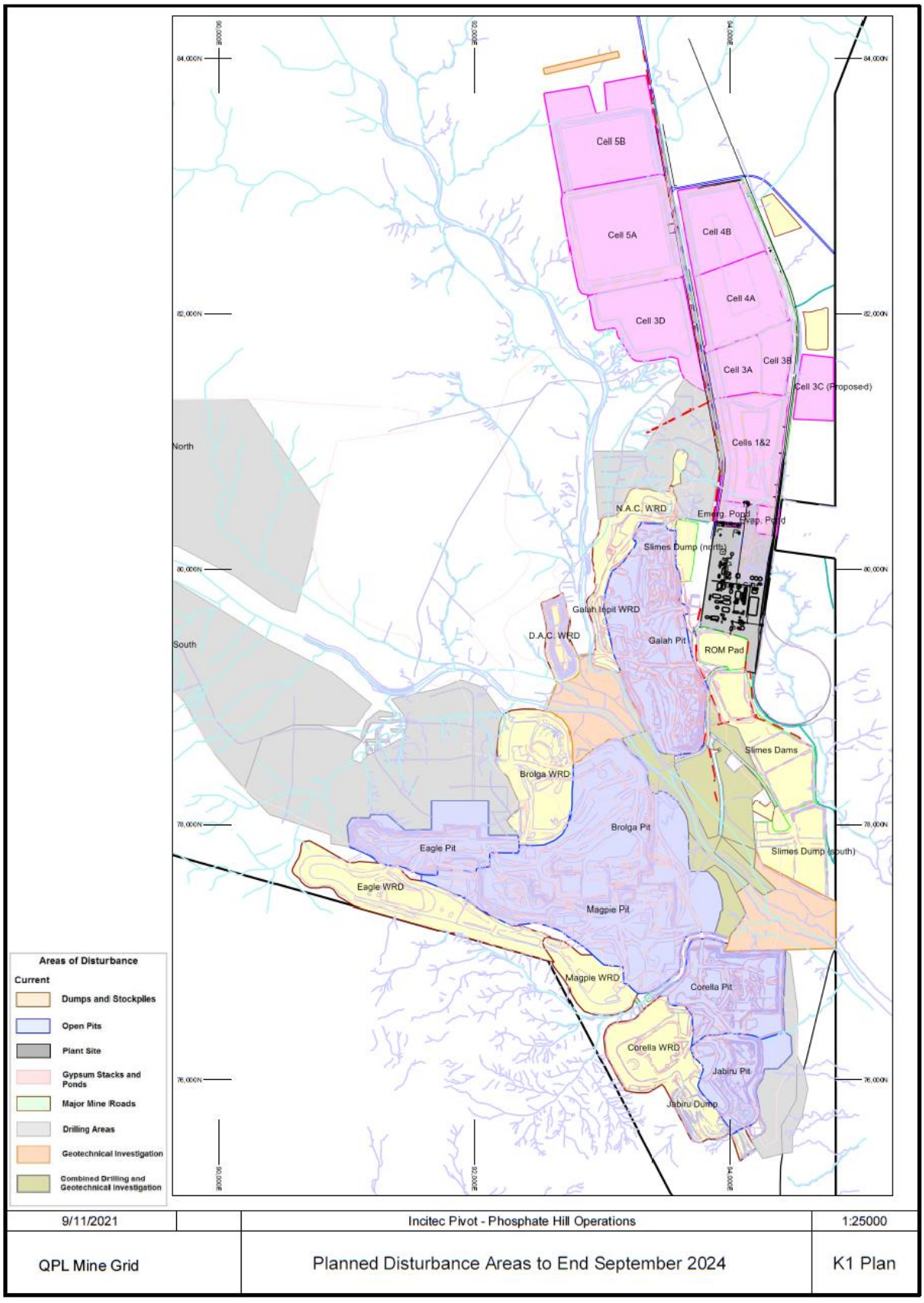
"waters" includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water natural or artificial watercourse, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, and groundwater and any part thereof.

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

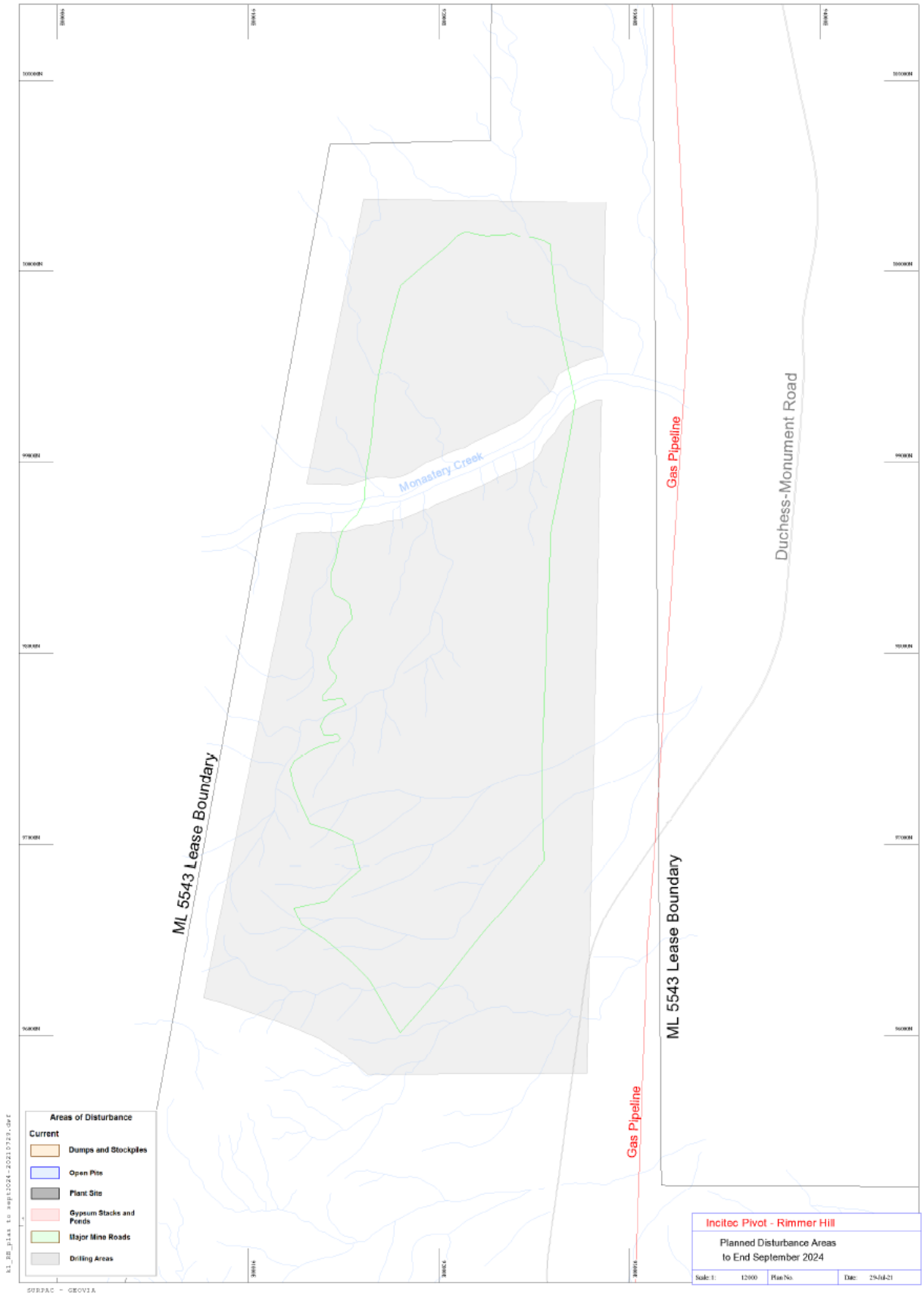
"wet season" means the time of year, covering one or more months, when most of the average annual rainfall in a region occurs. For the purposes of DSA determination this time of year is deemed to extend from 1 November in one year to 31 May in the following year inclusive.

Schedule K - Maps

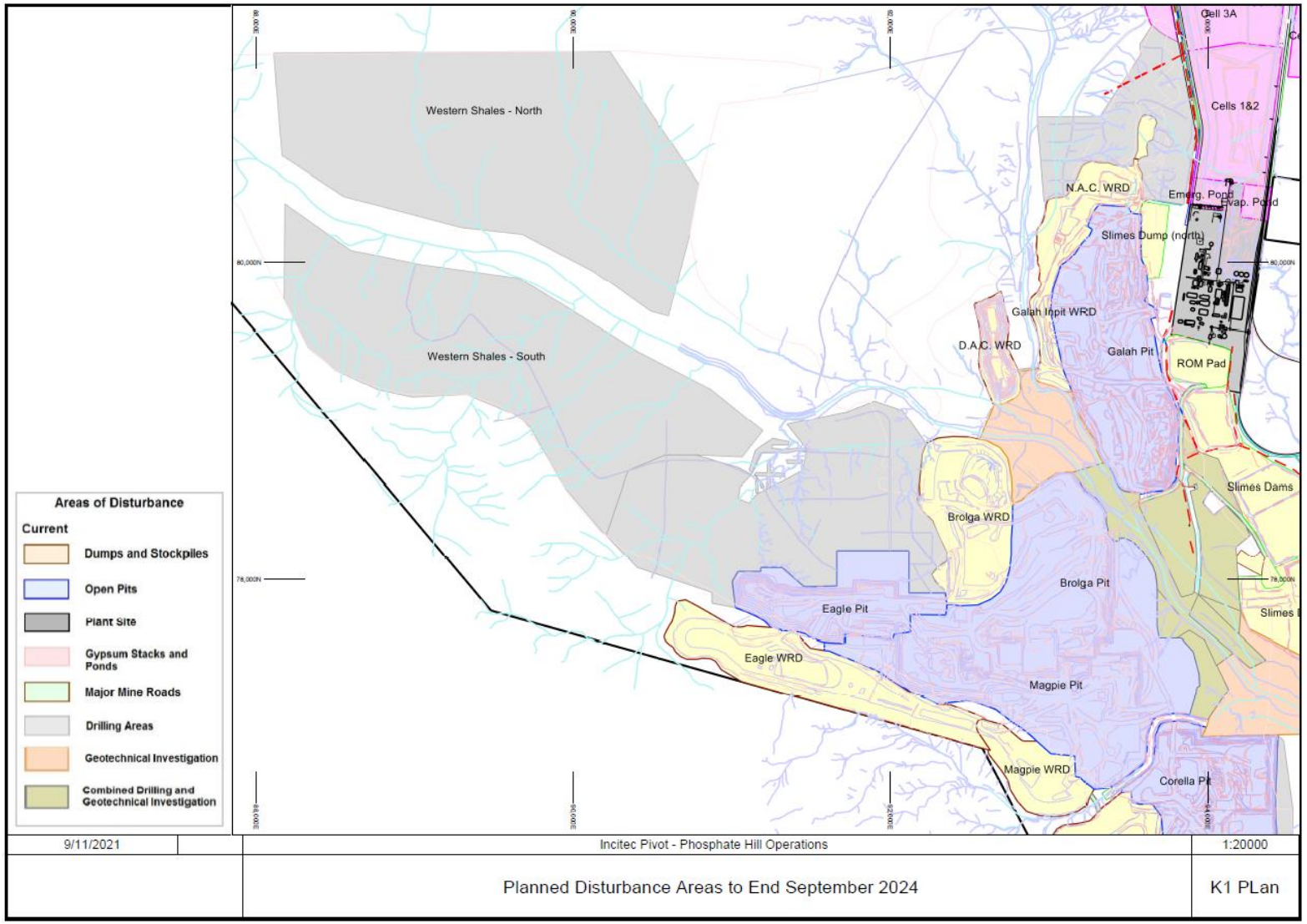
Map K1(A) – Mine Infrastructure Layout



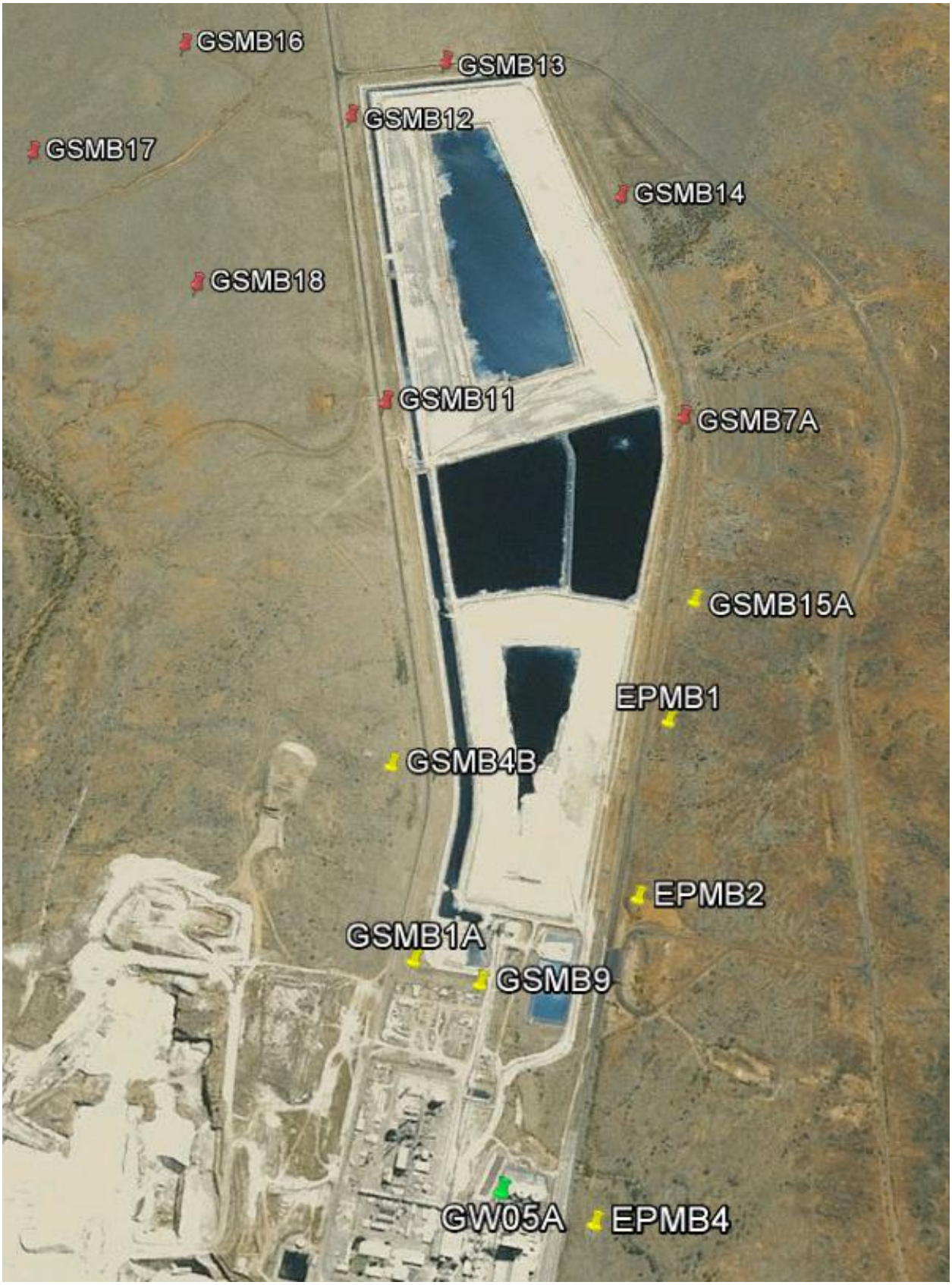
Map K1(B) – Rimmer Hill Exploration Area



Map K1(C) – Western Shale Deposit Area

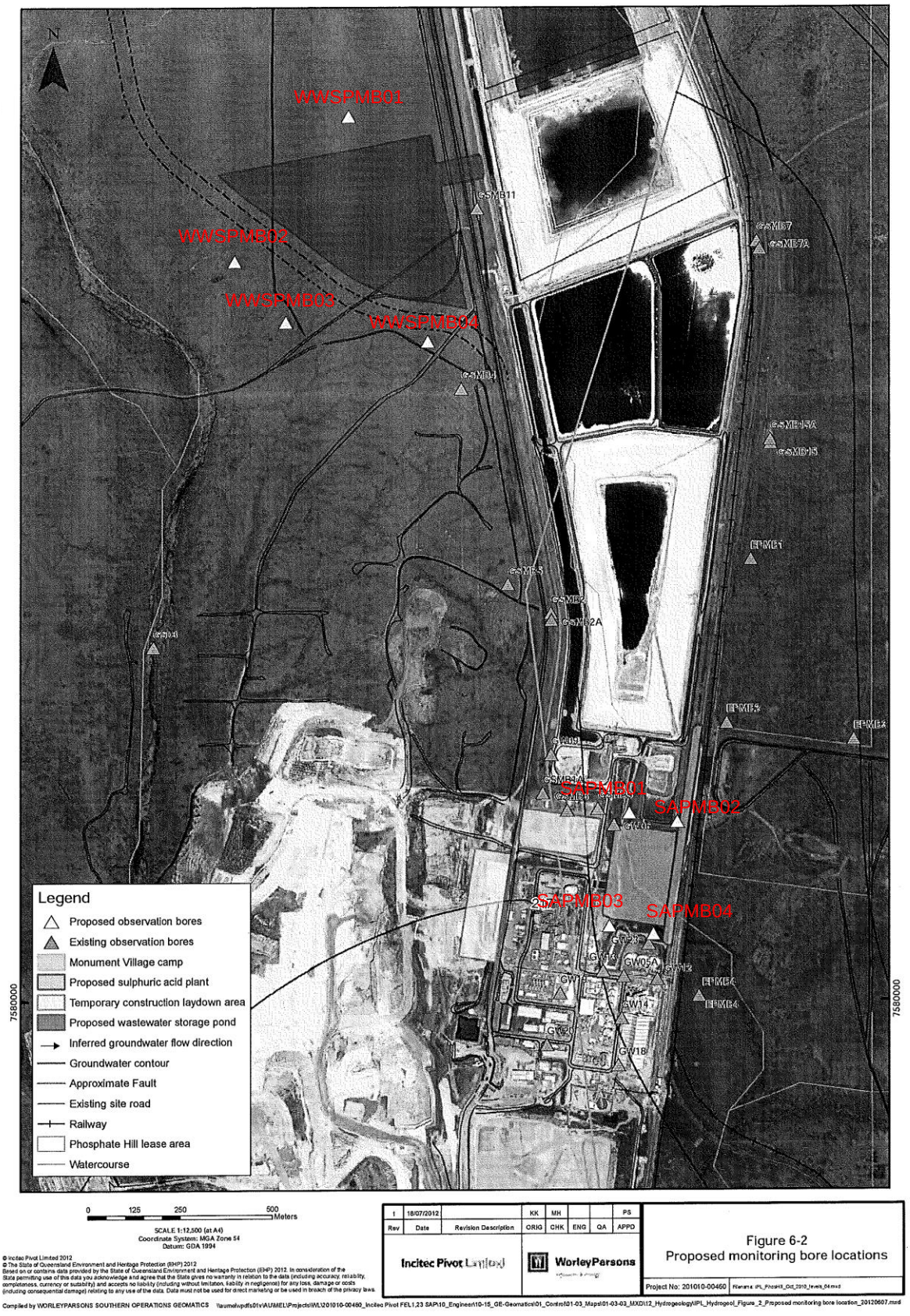


Map K2(A) – Groundwater Monitoring Sites – Gypsum Stacks



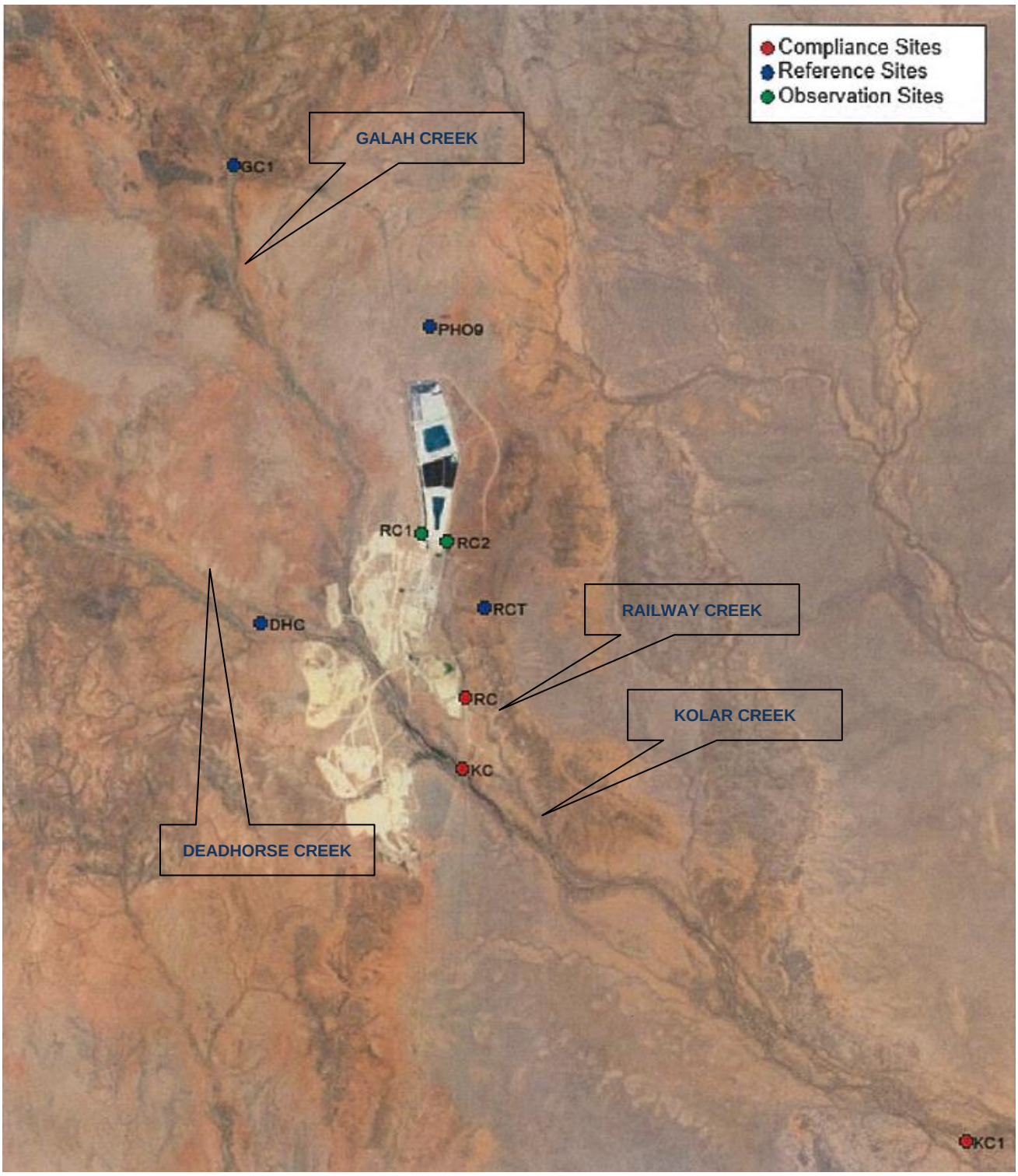
Map K2(B) – Groundwater Monitoring Sites – Slimes Dams

Map K2(C) – Groundwater Monitoring Sites – SAP & Wastewater Storage Pond



Map K3 – Contaminant Release Points

Map K4 – Creek Monitoring Sites for Surface Water and Sediments



Map K5 – Aquifer Dewatering Monitoring Locations

Note: End of Flow Monitoring Point – Location not static

Map K6 – Approved Irrigation Areas

Map K7 – Waste Disposal Trench Location

END OF ENVIRONMENTAL AUTHORITY