

Date : 4/09/2018 12:50:54 PM

From : sch4p4(6) Personal Information

To : "MCCOSKER Juliana"

Cc : "ENS EMD Environmental Mine Record" , sch4p4(6) Personal Information

Subject : Ensham - Rehab for 2019

Hi Juliana,

Just a quick line to follow up on our 2019 rehab schedule conversation during your recent visit to Ensham. The current plan takes through until end of January 2019 as per the condition G8 of our EA and from that point on we have planned to commence work associated with the rehabilitation of the Boggy Creek Diversion. This work will involve removal of infrastructure at the Yongala village (power lines, buildings etc) along with significant volumes of overburden that currently sits within the footprint of the diversion rehab design in preparation for work in the diversion itself later in the year.

Happy to discuss if you have any queries on our plan for next year.

Regards

sch4p4(6) Personal Information

Manager ♦ HSET Systems
Health Safety Environment Training
Ensham Resources

P ♦ (07) 4987 3615

M ♦ sch4p4(6) Personal Information

E ♦ sch4p4(6) Personal Information

Published on DES Disclosure Log
RTI Act 2009

Date : 19/04/2017 7:17:25 AM
From : "Dave Meyers"
To : "ALLAN Charissa" , "COPP Rachel"
Cc : "sch4p4(6) Personal Information"; "ENS EMD Environmental Mine Record"
Subject : RE: Feedback on Condition G5 - Rehab Success Criteria
Attachment : image003.jpg;image005.png;image006.png;image008.png;image009.png;
 thanks Charissa, appreciate your feedback.

Regards

sch4p4(6) Personal Information

Manager - HSET Systems
 Health Safety Environment Training



P - (07) 4987 3615

M - sch4p4(6) Personal Information

E - sch4p4(6) Personal Information

From: ALLAN Charissa [mailto:Charissa.Allan@ehp.qld.gov.au]
Sent: Tuesday, 18 April 2017 3:44 PM
To: sch4p4(6) Personal Information
Cc: sch4p4(6) Personal Information; "ENS EMD Environmental Mine Record"
Subject: RE: Feedback on Condition G5 - Rehab Success Criteria

Hi sch4p4(6) Personal Information

Thank you for coming to the office to meet with Rachel and I on 12 April 2017.

As per our conversation, please see below for feedback regarding the proposed groundwater and rehabilitation success criteria.

Groundwater amendment:

- The submission must demonstrate that the alternative monitoring bore will provide the ability to monitor the same aquifer/s as the currently approved bore for ongoing and future impacts of mining; and,
- Please submit the AGE 2015 and 2016 reports, and the supporting information, with the application submission. Note as discussed last week we will review these documents and determine if the inclusion of these documents will be adequate to meet the legislative requirements for an EA amendment. If not we will provide further feedback on what is missing and will need to be included in the formal EA amendment.

Rehabilitation success criteria:

- At present the rehabilitation completion criteria that have been proposed are not specific and measureable, therefore, the level of success cannot be measured;
- For rehabilitation success criteria the below must be considered:
 - Rehabilitation Goals - Each rehabilitation goal should be clearly linked to a rehabilitation objective, indicator and completion criteria;
 - Rehabilitation Objectives should propose a clear description of the rehabilitation outcomes. Additionally, rehabilitation objectives are required to be stated in a way that allows the development of measurable indicators that can then be audited against the completion criteria;
 - Rehabilitation Indicators are required to be measurable indicators that can be audited against the completion criteria to determine if the rehabilitation objectives are being met;
 - Completion Criteria - the completion criteria should reference or link back to relevant EA conditions, management plans or rehabilitation commitments. Additionally, there will be specific completion criteria that will require certification by a RPEQ or suitably qualified person. Completion criteria that may require certification relate to monitoring requirements, species identification, vegetation cover and density, drainage barriers, safety of slopes etc.;
 - It is important to consider Environmental Values that may be impacted prior and post-rehabilitation (i.e. groundwater, surface water, land, etc.); and,
- Note that each rehabilitation goal may have one or more rehabilitation objectives. Additionally, the completion criteria and indicators should demonstrate how the rehabilitation objective will be achieved. For example:

Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
Non-polluting	<ul style="list-style-type: none"> ▪ polluted water contained on site or treated; ▪ low risk of seepage to groundwater aquifers and surface water. 	<ul style="list-style-type: none"> ▪ upstream and downstream surface and ground water quality (e.g. sediment load, pH, heavy metal content, etc.) meet EA conditions specifically conditions [insert condition] to [insert condition]. 	<ul style="list-style-type: none"> ▪ groundwater monitoring bores have parameters consistent with those specified in Table XX of the EA, for a period of at least X years. ▪ receiving waters affected by surface water run-off have

			contaminant limits consistent with those specified in Table XX of the EA, for a period of at least XX years.
--	--	--	--

Note that the above table is provided as an example only.

Should you have any questions, please do not hesitate in contacting me.

Kind Regards,



Charissa Allan
Principal Environmental Officer
Business Centre (Coal) | Coal and Central Queensland Compliance
Department of Environment and Heritage Protection

P 07 4987 9339
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720



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If you are an existing EHP customer, your details are already in Connect and you can get your Connect EHP Customer Reference by emailing connecthelp@ehp.qld.gov.au.

From: [sch4p4(6) Personal Information] <[sch4p4(6) Personal Information]>
Sent: Tuesday, 18 April 2017 10:08 AM
To: ALLAN Charissa <Charissa.Allan@ehp.qld.gov.au>; COPP Rachel <Rachel.Copp@ehp.qld.gov.au>
Cc: [sch4p4(6) Personal Information] <[sch4p4(6) Personal Information]>; ENS EMD Environmental Mine Record <EnvironmentalMineRecord@ensham.com.au>
Subject: Feedback on Condition G5 - Rehab Success Criteria
Importance: High

Good morning Charissa,

are you in a position as yet to provide us feedback on the discussion we had on the 12th April 2017 regarding the draft table addressing condition G5 ♦ Rehab Success Criteria?

Regards

[sch4p4(6) Personal Information]
Manager - HSET Systems
Health Safety Environment Training



P - (07) 4987 3615
M - [sch4p4(6) Personal Information]
E - [sch4p4(6) Personal Information]

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Date : 9/05/2017 4:15:32 PM

From : "ALLAN Charissa"

To : "BENNINK Kate"

Cc : "COPP Rachel"

Subject : FW: Feedback on Condition G5 - Rehab Success Criteria

Attachment :

image005.png;image008.png;image003.jpg;image006.png;image009.png;image001.png;image004.png;image007.png;image008.png;

Hi Kate,

Please see below for the email sent to Ensham with comments regarding the groundwater and rehabilitation criteria amendment.

Kind Regards,



Charissa Allan
Principal Environmental Officer
Business Centre (Coal) | Coal and Central Queensland Compliance
Department of Environment and Heritage Protection

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From: [redacted] [mailto:[redacted]]
Sent: Wednesday, 19 April 2017 7:17 AM
To: ALLAN Charissa <Charissa.Allan@ehp.qld.gov.au>; COPP Rachel <Rachel.Copp@ehp.qld.gov.au>
Cc: [redacted] [mailto:[redacted]]; ENS EMD Environmental Mine Record <EnvironmentalMineRecord@ensham.com.au>
Subject: RE: Feedback on Condition G5 - Rehab Success Criteria

thanks Charissa, appreciate your feedback.

Regards

[redacted] Personal Information
Manager - HSET Systems
Health Safety Environment Training



P - (07) 4987 3615

M - [redacted] Personal Information

E - [redacted] Personal Information

From: ALLAN Charissa [mailto:Charissa.Allan@ehp.qld.gov.au]
Sent: Tuesday, 18 April 2017 3:44 PM
To: [redacted] Personal Information
Cc: [redacted] ENS EMD Environmental Mine Record
Subject: RE: Feedback on Condition G5 - Rehab Success Criteria

Hi [redacted] Personal Information

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Note that the above table is provided as an example only.

Should you have any questions, please do not hesitate in contacting me.

Kind Regards,



Charissa Allan
Principal Environmental Officer
Business Centre (Coal) | Coal and Central Queensland Compliance
Department of Environment and Heritage Protection

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PO Box 3028, Emerald QLD 4720



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From: [sch4p4(6) Personal Information]
Sent: Tuesday, 18 April 2017 10:08 AM
To: ALLAN Charissa <Charissa.Allan@ehp.qld.gov.au>; COPP Rachel <Rachel.Copp@ehp.qld.gov.au>
Cc: [sch4p4(6) Personal Information]; ENS EMD Environmental Mine Record <EnvironmentalMineRecord@ensham.com.au>
Subject: Feedback on Condition G5 - Rehab Success Criteria
Importance: High

Good morning Charissa,

are you in a position as yet to provide us feedback on the discussion we had on the 12th April 2017 regarding the draft table addressing condition G5 – Rehab Success Criteria?

Regards

[sch4p4(6) Personal Information]
Manager - HSET Systems
Health Safety Environment Training



P - (07) 4987 3615
M [sch4p4(6) Personal Information]
E [sch4p4(6) Personal Information]

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Date : 12/06/2017 1:31:41 PM

From : "ALLAN Charissa"

To : "sch4p4(6) Personal Information"

Cc : "sch4p4(6) Personal Information", "Daniel Yates", "ENS EMD Environmental Mine Record", "tshort@latierra.com.au", "COPP Rachel"

Subject : Feedback re: Rehabilitation Management Plan - Ensham Coal Mine

Attachment : image001.png;image003.png;image005.png;image006.png;

Hi sch4p4(6) Personal Information

I am writing in regards to the Rehabilitation Management Plan (RMP) for Ensham Coal Mine submitted to the department on 30 May 2017.

Please see below for comments requiring your consideration.

1. As per condition G11(a), Ensham must provide information regarding the stage and quality of the existing rehabilitation. Please provide additional information including:
 - A breakdown of the stages of rehabilitation (i.e. shaped and contoured, topsoiled, seeded, requires monitoring); and,
 - A breakdown of rehabilitation quality (i.e. successful (requires monitoring), requires maintenance, requires rework).

Ideally, in future updates of the RMP, the quality of the existing rehabilitation should be linked to the achievement of the rehabilitation success criteria i.e. 4/5 of the success criteria categories have been achieved.

2. Page 19 of the RMP states that, "Practice at Ensham and other mines in central Queensland shows that this material can be effectively rehabilitated with slope gradients of up to 15%. If steeper than this, than Permian overburdens should be clad with at least 1m of durable rock to prevent erosion." Please note that slope gradients should be consistent with the approved rehabilitation success criteria (Appendix 4 of Environmental Authority EPML00732813).
3. Page 25 of the RMP states that, "If respread to create a 200mm soil layer for rehabilitation this quantity is sufficient to cover approximately 1,800ha. This highlights a topsoil deficit of around 3,000ha. Ensham will manage this deficit by:
 - Strategically using topsoil to promote rapid groundcover establishment and stabilisation of outer slopes that drain to the broader environment;
 - Ameliorate Permian overburden to create a plant growth medium or 'topsoil substitute' e.g. by additions of organic matter, gypsum and/or fertiliser".

Please describe the strategies in more detail, including research and demonstration of these techniques and how and where each technic might be applied at Ensham Coal Mine.

4. In section 6 of the RMP, rehabilitation methods relating to contaminated land are listed as "Complete contaminated land assessment and management." This should state "contaminated land assessment, treatment and management".
5. In section 6 of the RMP, "Spread hay mulch for immediate groundcover" has been listed in the rehabilitation methods for several of the domains. Hay has the potential to cause eutrophication, if washed into surface water environments. Please describe the process of selection of suitable locations for hay mulch and accompanying methods to ensure integrity of hay mulch as groundcover.
6. Final landform designs, including end of mine design required by condition G11(h), have not included in the RMP. Ensham are required to provide a commitment on when the final designs will be available for inclusion in the RMP (e.g. on completion of the Residual Void Project).
7. Page 28 of the RMP states that, "It is reasonably foreseeable that some rehabilitation may achieve the rehabilitation goals of safe, stable, non-polluting and sustainable land use, but remain 'different' in form and function to unmined reference sites". Whilst the department understands that the rehabilitated landforms will be 'different' in form and function to unmined reference sites, how will Ensham ensure that these landforms are compatible and tied into the surrounding landscape?
8. Provide a description of each of the rehabilitation reference sites detailed in Table 8-1: Details of reference sites for rehabilitation monitoring (GDA 94, Zone 55), including the topography, vegetation types, and existing and potential future impacts, and how the reference site is comparable with the rehabilitation success criteria.
9. It is recommended that the additional reference sites further afield of the Ensham Coal Mine be included to capture regional variation in the landscape and incorporate comparable landforms (i.e. slope, floodplains, etc.).
10. Table 9-1: Environmental value linkages to rehabilitation indicators and completion criteria and Table 1-2: Indicators and completion criteria should be amended to reflect the rehabilitation success criteria listed in Appendix 4: Rehabilitation Success Criteria of the EA.

As per condition G13 of the Ensham Coal Mine EA, Ensham have 20 business days to update the RMP to address the above comments and resubmit the RMP. A response is therefore required by **COB 10 July 2017**.

Should you wish to discuss any of the comments, please do not hesitate in contacting the department.

Kind Regards,

Charissa Allan
Principal Environmental Officer
Business Centre (Coal) | Coal and Central Queensland Compliance
Department of Environment and Heritage Protection



P 07 4987 9339
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720



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If you are an existing EHP customer, your details are already in Connect and you can get your Connect EHP Customer Reference by emailing connecthelp@ehp.qld.gov.au.

Date : 5/10/2018 1:46:46 PM

From : sch4p4(6) Personal Information

To : "MCCOSKER Juliana"

Subject : Copy of application and shape file.

Attachment : rehabilitation-report signed.pdf;Application signed.pdf;Ensham PRR 27 Aug 18.pdf;Ramp 10 Certification Area_exported.shp;Ramp 10 Certification Area_exported.shx;Ramp 10 Certification Area_exported.dbf;image001.jpg;
Hi Juliana,

I have attached forms plus shape file.
The shape file is GDA 94 datum.

If you have any problems let me know.

Ciao (picked this up in Italy, can't say I am fluent in the language though)

sch4p4(6) Personal Information
Superintendent Environment



P: (07) 4987 3637

M: sch4p4(6) Personal Information

E: sch4p4(6) Personal Information

Report

Environmental Protection Act 1994

Rehabilitation report

This report is the approved form to be used by an applicant submitting a final rehabilitation report pursuant to section 264 of the Environmental Protection Act 1994 (EP Act). It is also the report to be used by an applicant submitting a progressive rehabilitation report under section 318ZF of the EP Act or removing a prescribed environmentally relevant activity (ERA) from an environmental authority as part of an amendment application under section 226 of the EP Act.

How to use a rehabilitation report

The holder of an environmental authority must submit either a final rehabilitation report as part of the requirements of an application to surrender an environmental authority or a progressive rehabilitation report as part of an application for progressive certification. A rehabilitation report must also be submitted to support an amendment application where a prescribed ERA is being removed from an environmental authority. This report must be supported by enough information to allow the administering authority to decide whether the conditions of the environmental authority have been complied with and whether the land on which ERA has been carried out, has been satisfactory rehabilitated. The administering authority may also conduct a field inspection and may request that further rehabilitation be undertaken where relevant.

GUIDE

If you require assistance in answering any part of this form, or have any questions about your application, please contact Permit and Licence Management. Contact details are at the end of this form.

If more space is required for any responses, please attach additional information as a separate page.

The environmental authority number and details may be found on the existing environmental authority or quoted in other correspondence received from the administering authority.

Information requirements

Tick the applicable rehabilitation report type

- ☐ Final rehabilitation report to support an application to surrender an environmental authority
- ☒ Progressive rehabilitation report to support an application for progressive certification
- ☐ Rehabilitation report to support an application to amend an environmental authority

1. Environmental authority number

ENVIRONMENTAL AUTHORITY NUMBER EPML00732813

NAME OF ENVIRONMENTAL AUTHORITY HOLDER/S

Bligh Coal Limited

Idemitsu Australia Resources Pty Ltd

Bowen Investment (Australia) Pty Ltd

2. Author (or compiler) of the rehabilitation report



CONTACT NAME AND BUSINESS NAME (IF APPLICABLE) sch4p4(6) Personal Information Environmental	
RESIDENTIAL ADDRESS OR REGISTERED BUSINESS ADDRESS (NOT A POST OFFICE BOX ADDRESS) sch4p4(6) Personal Information Emerald Qld 4720	
PHONE sch4p4(6) Personal Information	FACSIMILE
EMAIL sch4p4(6) Personal Information @highlandsenvironmental.com.au	

3. Future contact for rehabilitation/post surrender

Only complete this section if the future contact is different to the author (or compiler) nominated above.

CONTACT NAME AND BUSINESS NAME (IF APPLICABLE) sch4p4(6) Personal Information Resources	
RESIDENTIAL ADDRESS OR REGISTERED BUSINESS ADDRESS (NOT A POST OFFICE BOX ADDRESS) Duckponds Rd Emerald Qld 4720	
PHONE sch4p4(6) Personal Information	FACSIMILE
EMAIL @ensham.com.au	

4. Disturbance and rehabilitation

PERIOD OF DISTURBANCE: 1993 - 2018	
TOTAL AREA DISTURBED: 972000 m ²	TOTAL AREA REHABILITATED: 972000 m ²

You must attach all of the relevant information for each check box in this section for the rehabilitation undertaken.

5. Description and status of rehabilitation

5.1 All activities	
☒	Describe the nature and extent of disturbance.
☒	Describe the status of the rehabilitation.
☒	Provide an assessment of the rehabilitation against any conditions of the environmental authority or any standards referenced in a relevant

	plan of operations. This must include analysis of any monitoring data and results relevant to any rehabilitation indicators.
☒	Attach maps and diagrams at an appropriate scale that identifies: the proposed rehabilitated area in relation to the property/tenure boundaries GPS coordinates (in GDA 94) of the corners of the rehabilitated area or metes and bounds of the perimeter of the rehabilitated area. the extent of disturbance the final landform (contoured at an appropriate intervals) and drainage pattern the nature of the rehabilitation (if different types were used) any remaining items of infrastructure (if any) including any heritage listed features any inhabited dwellings and community infrastructure any land that was or is contaminated as a result of the activities undertaken onsite.
☒	Attach relevant photographs of the rehabilitation along with a plan illustrating where the photograph was taken from and its aspect.
☐	Attach any statements or certificates by an appropriately qualified person regarding the construction, stability or likely future performance of structures forming part of the rehabilitation (e.g. dams, escarpments).
5.2 Resource activities only	
☒	Provide information about any consultation undertaken regarding the rehabilitation.
☐	Identify and illustrate any areas that have previously been certified under a progressive certification application. ☒ N/A – previous progressive certification has not been done
☐	For surrender applications, describe any mining activities that have occurred in the area, noting historic disturbance that occurred prior to the grant of the current tenement and any previous tenements that gave continuous entitlement to the resource. ☐ N/A – historic disturbance is not separate to this rehabilitation proposal
☐	Provide indicative figures for any amounts of overburden, waste rock or resources that have been removed from the land or is now deposited on the land. ☒ N/A – materials have not been removed or deposited in relation to rehabilitation.

Historic information is only required if you are trying to establish that areas of historic disturbance have not been reworked under the current or preceding tenements with continuous entitlements and liabilities

6. Do you have an approved transitional environmental program in place or have you submitted one?

- ☐ Yes → ☐ A draft transitional environmental program is approved and all environmental commitments under the program have been completed;
- ☐ A draft transitional environmental program is approved and there is further land management/rehabilitation, monitoring and

maintenance required.

☐ A draft transitional environmental program has been submitted with the correct fee together with this application and there is further land management/rehabilitation, monitoring and maintenance required.

☒ No

There are various reasons why some items of infrastructure may be left post decommissioning or post surrender of an environmental authority. For example the landowner may request that a road remains to provide access to land or that a dam remain for water storage purposes.

7. **Has the landowner or any proposed future landowner, agreed to take over any infrastructure or areas of disturbance on site?** ☐ Yes → Attach an agreement signed by the current landowner and any future landowner (if applicable) clearly indicating what existing structures or disturbed areas they will be taking ownership of, and the state of the structure or area upon transfer. Please use the template document attached to this back of this form. ☒ No → Go to question **Error! Reference source not found..**

Under the *Mineral Resources Act 1989*, approval from the Mining Registrar is required for infrastructure to be left on the land. For further information see the *Mineral Resources Act 1989*:

- Mining lease: section 276(1)(c) and 312(4)
- Mining claim section 81(g)(ii)

8. **For an environmental authority over a mining lease or mining claim tenure, has the approval under the *Mineral Resources Act 1989* been obtained to leave any infrastructure on the land?** ☐ Yes → Attach a copy of the approval. ☐ No

☒ N/A

Throughout the life of the activity, the holder of the environmental authority is required to notify the administering authority if a notifiable activity (as listed in Schedule 3 of the EP Act) is being carried out on the land, or if the land has been contaminated by a hazardous contaminant. The particulars of such land are then recorded on the EMR or CLR.

Refer to Chapter 7, Part 8 of the EP Act for further information on contaminated land requirements.

9. **Is the land on the environmental management register (EMR) or the contaminated land register (CLR)?** ☐ Yes → Provide information on:
- The contaminated land status
 - Contamination from the activity relevant to the environmental authority and from any historic activities conducted on the site
 - How the land this will meet the rehabilitation commitments including the intended future land use for the site
 - Any suitability statements or draft site management plans for the land.

☒ No

10. Is this rehabilitation report for a resource activity?

- ☒ Yes → Complete questions 11 and 12 below.
☐ No → Go to the declaration.

The environmental risk assessment must be completed using a methodology agreed to by the administering authority. For information on how to determine residual risk, visit www.business.qld.gov.au.

Natural processes as well as human activities may have an adverse effect on rehabilitation. It is therefore possible that a site that has been satisfactorily rehabilitated may fail at some time in the future. This is called the 'residual risk'. Examples of residual risk include the future costs of likely repairs, any necessary monitoring and maintenance costs or any ongoing monitoring costs.

Where rehabilitation is complete and there is no residual risk payment required, you may apply for a complete discharge of financial assurance held, or an amendment of financial assurance in the case of a partial surrender.

In other cases the amount returned will be decreased by the required residual risk payment.

11. Environmental risk assessment

11.1 Final rehabilitation report

- ☒ Attach an environmental risk assessment that shows any part of the land that is likely to change or fail in future. Include details of the extent that monitoring, maintenance, reconstruction or other remedial action may be necessary. This will determine the residual risk remaining for the site.

11.2 Progressive rehabilitation report

- ☒ Attach an environmental risk assessment that: Shows any part of the land that is likely to change or fail to the extent that monitoring, maintenance, reconstruction or other remedial action may be necessary. Identifies all credible risks for the proposed certified rehabilitated area. Evaluates the likelihood and effect of events that reach a threshold of significance published by the administering authority.

12. Did the environmental risk assessment above identify any residual risk remaining at present? ☐ Yes → Attach a

proposal that outlines the residual risks associated with the rehabilitation and a calculation of the ongoing financial cost of managing the residual risk. ☒ No

Privacy statement

The Department of Environment and Heritage Protection (the department) is committed to protecting the privacy, accuracy and security of your personal information in accordance with the *Information Privacy Act 2009*. The department is collecting your personal information in accordance with sections 226, 262, 264, 318ZD and 318ZF of the *Environmental Protection Act 1994* in order to process your application to surrender an environmental authority or application for progressive certification. The information will only be accessed by authorised employees within the department. Information may be given to the Department of Natural Resources and Mines for the purposes of processing the application to surrender the environmental authority. Your information will not be given to any other person or agency unless you have given us permission or we are authorised or required by law. All information supplied on this form may be disclosed publicly in accordance with the *Right to Information Act 2009* and *Evidence Act 1977*. For queries about privacy matters email: privacy@ehp.qld.gov.au or telephone: (07) 3330 5436.

The latest version of this publication and other publications referenced in this document can be found at www.qld.gov.au using the relevant publication number (EM872) for this form as a search term or by contacting Permit and Licence Management.

13. Declaration

Note: If you have not told the truth in this application you may be prosecuted. I/We declare that: The information provided is true and correct to the best of my knowledge. I understand that it is an offence under section 480 of the *Environmental Protection Act 1994* to give to the administering authority or an authorised person a document containing information that I know is false, misleading or incomplete in a material particular. I understand that failure to provide sufficient information may result in the application being refused. I understand that all information supplied in this form may be disclosed publicly in accordance with the *Right to Information Act 2009* and the *Evidence Act 1977*.

NAME sch4p4(6) Personal Information	
SIGNATURE	sch4p4(6) Personal Information
POSITION OF SIGNATORY Superintendent Environment	DATE 20/8/2018

Enquiries:

Permit and Licence Management
Phone: 13 QGOV (13 74 68)
Fax: (07) 3330 5875
Email: palm@ehp.qld.gov.au

Attachment 1—Landowner statement

This attachment is to be used by the environmental authority holder to attach to the final rehabilitation report or the progressive rehabilitation that accompanies an application to surrender an environmental authority or an application for progressive certification respectively. It is to also be attached to the rehabilitation report for an application to amend an environmental authority where a prescribed ERA is being removed from the environmental authority.

This form is to be used:

- To obtain a statement from the land owner of their overall satisfaction with the rehabilitation.
- If there is a proposed transfer of remaining infrastructure (e.g. a road) or remaining disturbed areas (e.g. extraction voids) to the landowner in a particular state.

The information provided on this form will be considered by the administering authority in the assessment of whether the conditions of the environmental authority have been complied with and whether the land has been satisfactorily rehabilitated. The administering authority may also conduct a field inspection and may request that further rehabilitation be undertake where relevant.

If you require assistance in answering any part of this form, or have any questions about your application, please contact Permit and Licence Management. Contact details are at the end of this form.

GUIDE

If more space is required for any responses, please attach additional information as a separate page.

Example of land description
Lot: 1
Plan: 123456
Tenure: Special Lease 12
Current usage: Reserve

Information requirements

1. Land description

LOT(S)
PART OF 3
PLAN(S)
CP911009
TENURE
Freehold
CURRENT USAGE
Mining and grazing

2. Environmental authority number

ENVIRONMENTAL AUTHORITY NUMBER
EPML00732813



Where the landowner is not an individual (e.g. a company or group), provide the name and contact details of a person who is authorised to act on behalf of the landowner.

3. Landowner

NAME OF LANDOWNER S.78B(2)	
CONTACT NAME (IF COMPANY/GROUP ETC.)	
POSTAL ADDRESS	
PHONE	FACSIMILE
EMAIL	

Examples of remaining infrastructure includes roads, storage sheds etc. Inheritance of disturbed land and infrastructure brings with it responsibilities for maintenance and management.

4. Are there any infrastructure or disturbed areas which you wish to take ownership of?

- ☐ Yes → Briefly described the infrastructure or areas and the status of which you would accept ownership below, then go to question 5.
- ☒ No → Go to question 7.

INFRASTRUCTURE/DISTURBED AREA (I.E. ROAD ALONG WESTERN BOUNDARY)	STATUS (I.E. IN ITS CURRENT STATE AS AN UNSEALED DIRT ROAD)
--	---

5. Have you made an agreement with the holder of the environmental authority regarding the infrastructure or disturbed areas which you wish to take ownership of?

- ☐ Yes → Attach a copy of the signed agreement and fill in the table below.
- ☐ No → There must be an agreement in place, and details of the agreement provided to the administering authority for the application to be decided.

DATE OF AGREEMENT	NUMBER OF PAGES
-------------------	-----------------

6. Are there any items of infrastructure or areas of disturbance which you believe an agreement is still required, but has not been made?

- ☐ Yes → Provide information of outstanding agreements required below.
- ☐ No

INFRASTRUCTURE/DISTURBED AREA STILL TO BE AGREED UPON

You may attach photographs or plans to illustrate any matters about which you believe are unsatisfactory. Make sure that any attachments are clearly labelled and referenced.

7. Indicate your level of satisfaction of the rehabilitation so far.

- ☐ Satisfactory (further comments may be provided below, if necessary)
- ☐ Unsatisfactory (provide further information below)

FURTHER COMMENTS

Privacy statement

The Department of Environment and Heritage Protection (the department) is committed to protecting the privacy, accuracy and security of your personal information in accordance with the *Information Privacy Act 2009*. The department is collecting your personal information in

8. Landowner certification

Tick the applicable box

- ☒ I am the landowner for the land described in question 1.
- ☐ I am authorised to sign on behalf of the landowner for the land described in question 1.

accordance with sections 226, 262, 264, 318ZD and 318ZF of the *Environmental Protection Act 1994* in order to process your application to surrender an environmental authority or application for progressive certification. The information will only be accessed by authorised employees within the department. Information may be given to the Department of Natural Resources and Mines for the purposes of processing the application to surrender the environmental authority. Your information will not be given to any other person or agency unless you have given us permission or we are authorised or required by law. All information supplied on this form may be disclosed publicly in accordance with the *Right to Information Act 2009* and *Evidence Act 1977*. For queries about privacy matters email: privacy@ehp.qld.gov.au or telephone: (07) 3330 5436.

The landowner or person authorised to act on behalf of the landowner is required to sign this form.

Further information

The latest version of this publication and other publications referenced in this document can be found at www.qld.gov.au using the relevant publication number (EM872) for this form as a search term or by contacting Permit and Licence Management.

Declaration

I/We declare that:

- The information provided is true and correct to the best of my knowledge. I understand that it is an offence under section 480 of the *Environmental Protection Act 1994* to give to the administering authority or an authorised person a document containing information that I know is false, misleading or incomplete in a material particular.
- I understand that all information supplied in this form may be disclosed publicly in accordance with the *Right to Information Act 2009* and the *Evidence Act 1977*.

NAME	
SIGNATURE	
POSITION OF SIGNATORY	DATE

Application form

Environmental Protection Act 1994

Application for the certification of progressive rehabilitation

This approved form is to only be used for resource projects under section 318ZD of the Environmental Protection Act 1994 (EP Act), to request the certification of progressive rehabilitation.

The certification of progressive rehabilitation allows holders of an environmental authority to stage the rehabilitation requirements for a site across discrete areas. Once the proposed progressive rehabilitation areas are certified, any additional changes to rehabilitation conditions within the environmental authority will not impact on the certified areas.

Only complete this form if a progressive rehabilitation report and a compliance statement can be completed and attached to this application.

Definitions of terms used in this form

Where there is inconsistency between the definition of terms here and the terms used in the EP Act, the terms in the EP Act apply.

Resource activity	An activity that is any of the following: <ul style="list-style-type: none">(a) a geothermal activity(b) a GHG storage activity(c) a mining activity(d) a petroleum activity.
Resource project	Resource activities carried out, or proposed to be carried out, under one or more resource tenures, in any combination, as a single integrated operation.
Resource tenure	Is either a: <ul style="list-style-type: none">(a) geothermal tenure(b) a greenhouse gas (GHG) storage tenure(c) a mining tenure(d) a petroleum tenure.

GUIDE

Application details

If you require assistance in answering any part of this form, or have any questions about your application please contact Permit and Licence Management. Contact details are at the end of this form.

The environmental authority number and details may be found on the existing environmental authority or quoted in other correspondence received from the administering authority.

If more space is required for any responses, please attach additional information as a separate page.

If there is an agent acting on behalf of the environmental authority holder, provide details in this section. An agent could be a consultant or a contact for the environmental authority holder.

As statutory documents need to be sent to all applicants, this section can also be used when there are multiple environmental authority holders to nominate an address for statutory documentation to be sent 'care of' to.

1. Environmental authority details

ENVIRONMENTAL AUTHORITY NUMBER

EPML00732813

ENVIRONMENTAL AUTHORITY HOLDERS NAMES

Bligh Coal Limited, Idemitsu Australia Resources Pty Ltd, Bowen Investment (Australia) Pty Ltd

Agent details/address for service

The address supplied here will also be used as a service address for sending statutory documents. If this section is left blank, statutory documents will be sent to the address previously supplied for the holder or principal applicant for the environmental authority.

INDIVIDUAL OR BUSINESS NAME (INCLUDE TRADING NAME IF RELEVANT)

RESIDENTIAL ADDRESS OR REGISTERED BUSINESS ADDRESS (NOT A POST OFFICE BOX ADDRESS)

POSTAL ADDRESS (IF DIFFERENT FROM ABOVE)

CONTACT PERSON

PHONE

FACSIMILE

EMAIL

2. General location details (if applicable)

STREET NUMBER

STREET NAME

DUCKPONDS ROAD

SUBURB/TOWN

EMERALD

POSTCODE

4720

Answer 'whole' if this progressive certification covers the entire tenure and 'part' if the application is only for a portion of the tenure.

3. Resource tenure details

TENURE TYPE	TENURE NUMBER	WHOLE OR PART	EXPIRY DATE	CANCELLATION DATE (WHERE RELEVANT)
ML	70049	Part	31/1/2028	

Where 'part' of a tenure has been identified as the subject of this application, attach a plan that contains the GPS coordinates (in GDA 94) of the corners of the area or the metes and bounds of the perimeter of the area.

☒ → Tick to indicate attachment

4. Identify any non-resource land tenure that is within the proposed certified area

LOT	PLAN	LAND OWNER NAME

5. Has a progressive rehabilitation report been completed?

A progressive rehabilitation report (EM872) must be completed using the approved form available at www.qld.gov.au.

☐ No → This application cannot be progressed

☒ Yes → Attach a copy to this application

Only a person with appropriate environmental expertise and/or experience in planning and executing site operations should sign this compliance statement.

6. Compliance Statement

This Compliance Statement must be completed for the environmental authority holder.

Attach a separate document to this application form which describes the extent to which:

- The activities carried out within the proposed certified rehabilitated area, have

Application form
Certification of progressive rehabilitation

Methods to verify compliance may include a desktop assessment of documentation, an interview with the landowner/holder or a field operator and a site inspection. Evidence used may include photographs, statements and other documentation (maps, plans, approvals, monitoring results etc).

complied with the conditions of the environmental authority – List each condition and describe the extent of compliance.

- The Progressive Rehabilitation Report is accurate (include the version number and date of the Progressive Rehabilitation Report).

Describe the qualifications and experience of person signing the compliance statement.

sch4p4(6) Personal Information

Provide details of the date, method and evidence used to verify compliance and accuracy.

Reviewed the data comprised in the Progressive Rehabilitation Report and inspected the area of the application on a regular basis over the last two years in my role at Enslam Mine.

Contact number of person signing the compliance statement

sch4p4(6) Personal Information

sch4p4(6) Personal Information

I, SUPERINTENDENT ENVIRONMENT
(insert name and position of person making the compliance statement)

- Make this Compliance Statement for the holder of the environmental authority identified in Question 1.
- Confirm that, to the best of my knowledge, all information provided as part of this Compliance Statement, including attachments, is true, correct and complete. I am aware that it is an offence under s.480 of the *Environmental Protection Act 1994*, to give the administering authority information that I know is false, misleading or incomplete.
- Confirm that, to the best of my knowledge, this Compliance Statement, including attachments does not include false, misleading or incomplete information.
- Confirm that, to the best of my knowledge that I have not knowingly failed to reveal any relevant information or document to the administering authority.
- Confirm that, to the best of my knowledge, all information provided in this Compliance Statement, including attachments, address the relevant matters and are factually correct.

Application form
Certification of progressive rehabilitation

- Confirm that the opinions expressed in this Compliance Statement, including attachments, are honestly and reasonably held.
- I understand that all information supplied as part of this Compliance Statement, including attachments can be disclosed publicly in accordance with the *Right to Information Act 2009* and the *Evidence Act 1977*.

SIGNATURE	<div style="border: 1px solid red; height: 60px; margin: 5px;"></div>	
DATE 30/8/2018		

Where there is more than 1 holder of the environmental authority, this declaration is to be signed by all holders, unless there is an agreement between all holders that 1 can sign on behalf of the other.

Note: If only 1 holder is signing this application form, they are committing all holders to the content of the application and the declaration.

Where the environmental authority holder is a company, this form must be signed by an authorised person for that company.

Privacy statement

The Department of Environment and Heritage Protection is committed to protecting the privacy, accuracy and security of your personal information in accordance with the *Information Privacy Act 2009*. The information will only be accessed by authorised employees within the department. Some of this information may be given to the Department of Natural Resources and Mines for the purpose of the joint regulation of mining activities. Your information will not be given to any other person or agency

Declaration

Note: If you have not told the truth in this application you may be prosecuted.

Where an agreement is in place between all holders of the environmental authority, that 1 holder can sign on behalf of the other joint holders, please tick the below checkbox.

- ☐ I have the authority to sign this form on behalf of all the joint holders of the environmental authority.

I declare that:

- I am the holder of the environmental authority or an authorised signatory for the environmental authority holder.
- The information provided is true and correct to the best of my knowledge. I understand that it is an offence under section 480 of the *Environmental Protection Act 1994* to give to the administering authority or an authorised person a document containing information that I know is false, misleading or incomplete in a material particular.
- I understand that failure to provide sufficient information may result in the application being refused.
- I understand that all information supplied on or with this application form may be disclosed publicly in accordance with the *Right to Information Act 2009* and the *Evidence Act 1977*.

ENVIRONMENTAL AUTHORITY HOLDER'S NAME
SIGNATURE

Application form
Certification of progressive rehabilitation

unless you have given us permission or we are authorised or required by law. All information supplied on this form may be disclosed publicly in accordance with the *Right to Information Act 2009* and *Evidence Act 1977*. For queries about privacy matters email:

privacy@ehp.qld.gov.au or
telephone: (07) 3330 5436

POSITION OF SIGNATORY	DATE
JOINT HOLDER'S NAME (IF APPLICABLE)	JOINT HOLDER'S SIGNATURE (IF APPLICABLE)
JOINT HOLDER'S NAME (IF APPLICABLE)	JOINT HOLDER'S SIGNATURE (IF APPLICABLE)

Applicant checklist

- ☒ Application form to request certification of progressive rehabilitation has been signed and completed
- ☒ Question 3: A plan describing the GPS coordinates or metes and bounds of the proposed certified area for a resource activity (if applicable)
- ☒ Question 5: Progressive Rehabilitation Report has been attached.
- ☒ Question 6: Documentation attached which describes the extent of information required as part of the Compliance Statement.

Further information

The latest version of this publication and other publications referenced in this document can be found at www.qld.gov.au using the relevant publication number (EM890) as a search term or by contacting Permit and Licence Management.

Please submit your completed application to:

Post:

Permit and Licence Management
Department of Environment and
Heritage Protection
GPO Box 2454
BRISBANE QLD 4001

Courier or hand delivery:

Permit and Licence Management
Department of Environment and
Heritage Protection
Level 3, 400 George Street
BRISBANE QLD 4000
Business hours: 8:30am–4:30pm
business days

Enquiries:

Permit and Licence Management
Phone: 13 QGOV (13 74 68)
Fax: (07) 3330 5875
Email: palm@ehp.qld.gov.au



Ensham
R E S O U R C E S

ENSHAM
RESOURCES
PTY LIMITED

ABN 23 011 048 678

As Operator of the
Ensham Coal Project

Duckponds Road
via Emerald
PO Box 1565
Emerald QLD 4720
Australia

Telephone:
+61 7 4987 3601

Facsimile:
+61 7 4987 3622

Website:
www.ensham.com.au

The Ensham Coal Project
is a joint venture of the
following companies which
are liable severally in the
following proportions:

Bligh Coal Limited
ABN 20 010 186 393
47.5%

Idemitsu Australia
Resources Pty Ltd
ABN 45 010 236 272
37.5%

Bowen Investment
(Australia) Pty Ltd
ABN 12 002 806 831
15.0%

PROGRESSIVE REHABILITATION REPORT

To support an application for certification of progressive
rehabilitation at Ensham coal mine

27 August 2018

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1 Introduction

This progressive rehabilitation report supports an application for certification of an area of progressive rehabilitation at the Ensham coal mine near Comet in central Queensland.

The mine uses conventional open-cut and underground mining methods to extract coal from the late Permian-age Rangal coal measures. Mining commenced in 1993 and has disturbed an area of approximately 4,590 hectares (ha) to date. By the end of 2018 the mine aims to have progressively rehabilitated more than 1,400 ha of that disturbance. Most rehabilitation at Ensham has a target post-mining land use of cattle grazing.

1.1 Purpose of this report

This progressive rehabilitation report has been prepared in accordance with the following.

- *Environmental Protection Act 1994* (EP Act) Section 318ZF (including requirements of Section 264)
- *Report, Environmental Protection Act 1994, Rehabilitation Report*, EM872 (Part 1), version 1.3 (DES 2018a)
- *Application Form, Environmental Protection Act 1994, Application for the certification of progressive rehabilitation*, EM891, version 2 (DES 2018b).

The purpose of this report is to describe the subject rehabilitation in sufficient detail to demonstrate that the conditions of the environmental authority have been complied with and the land has been satisfactorily rehabilitated. Satisfactory rehabilitation is safe, stable, non-polluting and able to sustain an agreed post-mining land use. In addition to demonstrating compliance and rehabilitation success, this report also describes on-going environmental management requirements and presents a detailed assessment of environmental risks associated with the rehabilitation.

1.1.1 Report structure

This report is structured as follows.

Section 1 – Introductory context, compliance checklist and description of the land

Section 2 – Nature and extent of disturbance, time-lapse imagery

Section 3 – Extent to which rehabilitation satisfies agreed completion criteria

Section 4 - Extent to which rehabilitation satisfies conditions of the environmental authority

Section 5 – Stakeholder consultation

Section 6 – Contaminated land

Section 7 – Environmental risk assessment and consideration of residual risk to government

1.1.2 Addressing requirements of the EP Act

To make straightforward the assessment of compliance with the EP Act, this report explicitly addresses the relevant clauses in Section 318ZF and 264 (Table 1).

Table 1-1 – EP Act requirement checklist

Section	Requirement	Where addressed
264(1)(a)	A final rehabilitation report must— be in the approved form; and	Form attached
264(1)(b)(i)	include enough information to allow the administering authority to decide whether— the conditions of the environmental authority have been complied with; and	Section 4
264(1)(b)(ii)	the land on which each relevant activity for the environmental authority has been carried out has been satisfactorily rehabilitated; and	Section 3
264(1)(c)	describe any ongoing environmental management needs for the land; and	Section 7
264(1)(d)(i)(A)	for an environmental authority for a resource activity— state details of— the monitoring program and the results of monitoring rehabilitation indicators required under any condition of the environmental authority; and	Section 3
264(1)(d)(i)(B)	any consultation with affected owners and occupiers, members of the public, community groups, government agencies and other bodies about any completion criteria for rehabilitation stated in the environmental authority; and	Section 5
264(1)(d)(ii)	state an environmental risk assessment of the land; and	Section 7
264(1)(d)(iii)	propose the residual risks associated with the rehabilitation of the land, worked out under a guideline or other document publicly available from the administering authority; and	Section 7
264(1)(e)	include another matter prescribed under a regulation.	Not relevant
264(2)(a)	The environmental risk assessment must— use a methodology agreed to by the administering authority; and	Section 7
264(2)(b)	show any part of the land that is likely to change or fail to the extent that monitoring, maintenance, reconstruction or other remedial action may be necessary.	Section 7
318ZD(1)(a)	The application must be— in the approved form; and	Form provided
318ZD(1)(b)	supported by enough information to enable the administering authority to decide the application; and	This report
318ZD(1)(c)(i)	accompanied by— a progressive rehabilitation report for the environmental authority that complies with section 318ZF; and	This report
318ZD(1)(c)(ii)	a compliance statement for the report; and	Application form Appendix A
318ZD(1)(c)(iii)	the fee prescribed under a regulation.	Not relevant
318ZD(2)(a)	The compliance statement must— be made for the environmental authority holder; and	Application form Appendix A
318ZD(2)(b)(i)	state— the extent to which activities carried out under the environmental authority relating to the proposed certified rehabilitated area for the	Application form Appendix A

	relevant tenure have complied with the conditions of the environmental authority; and	
318ZD(2)(b)(ii)	the extent to which the progressive rehabilitation report is accurate.	Application form Appendix A
318ZF(1)(a)	The progressive rehabilitation report must— contain the information required under section 264 for a final rehabilitation report, as if a reference in that section to the land were a reference to the proposed certified rehabilitated area; and	As above
318ZF(1)(b)(i)	include— a map of an appropriate scale that shows the proposed certified rehabilitated area; and	Figures throughout
318ZF(1)(b)(ii)	relevant information to locate the proposed certified rehabilitated area, including, for example, GPS information or a survey; and	Figure 6
318ZF(1)(b)(iii)	an environmental risk assessment for the proposed certified rehabilitated area; and	Section 7
318ZF(1)(c)(i)	if progressive certification has previously been given for a relevant tenure for the environmental authority— state when the certification was given; and	Not relevant
318ZF(1)(c)(ii)	identify the certified rehabilitated area the subject of the certification.	Not relevant
318ZF(2)(a)	The environmental risk assessment must— comply with a methodology published by the administering authority; and	Not relevant
318ZF(2)(b)	identify all credible risks for the proposed certified rehabilitated area; and	Section 7
318ZF(2)(c)	evaluate the likelihood and effects of events that reach a threshold of significance published by the administering authority.	Section 7

1.2 Ensham coal mine

Ensham coal mine is located about 50 kilometres (km) east of Emerald, near the township of Comet in central Queensland. It is a modern, efficient mine that currently produces around 6 million tonnes per annum (mtpa) of quality thermal coal by traditional open-cut strip and underground bord-and-pillar mining methods.

1.2.1 Environmental authority holders

The latest Environmental authority EPML00732813 (the EA) took effect on 28 May 2018. The Ensham joint venture partners are the EA holders.

Ensham is a joint venture between Idemitsu Australia Resources Pty Limited (IAR) (47.5%), Bligh Coal Limited (37.5%) and Bowen Investment (Australia) Pty Limited (15%). Ensham Resources Pty Limited, a wholly owned subsidiary of IAR, operates the mine on behalf of the joint venture partners.

1.2.2 Mining activities

Open-cut mining commenced in 1993 at Yongala (Y Pit) and later progressed to Ensham (Pits A, B, C, D, E and F) (Figure 1). Underground mining commenced in 2010 with first coal in September 2011. Mining tenements and affected land areas and background landholders are listed (Table 2).



Figure 1 – Ensham coal mine tenements and mining activities

Table 1-2 – Mining tenements, affected lands and landholders

Mining tenement	Area (ha)	Lot on plan	Landholders
ML7459	6,154	Lot 31 CP864573 Lot 32 RP908643 Lot 30 CP864574 Lot 33 RP864576	Bligh Coal Ltd (47.5%) Idemitsu Australia Resources Pty Ltd (37.5%) Bowen Investment (Australia) Pty Ltd (15%)
ML7460	774	Lot 31 CP864573 Lot 32 RP908643	Bligh Coal Ltd (47.5%) Idemitsu Australia Resources Pty Ltd (37.5%) Bowen Investment (Australia) Pty Ltd (15%)
ML70049 [#]	1,648	Lot 3 CP911009 Lot 2 SP165518	MD, ME, EM, JD & SM Shaw RH & RJ Simmons
ML70326	26	Lot 31 CP864573	Bligh Coal Ltd (47.5%) Idemitsu Australia Resources Pty Ltd (37.5%) Bowen Investment (Australia) Pty Ltd (15%)
ML70365	2,763	Lot 31 CP864573 Lot 32 RP908643	Bligh Coal Ltd (47.5%) Idemitsu Australia Resources Pty Ltd (37.5%) Bowen Investment (Australia) Pty Ltd (15%)
ML70366	254	Lot 30 CP864574	Bligh Coal Ltd (47.5%) Idemitsu Australia Resources Pty Ltd (37.5%) Bowen Investment (Australia) Pty Ltd (15%)
ML70367	1,003	Lot 31 CP864573 Lot 32 RP908643	Bligh Coal Ltd (47.5%) Idemitsu Australia Resources Pty Ltd (37.5%) Bowen Investment (Australia) Pty Ltd (15%)
TOTAL	12,622		

[#] tenement containing rehabilitation that is subject of this report

1.2.3 Description of the subject land

The subject land is a 97 ha area of progressive rehabilitation within ML70049 at Y Pit (Yongala) that was rehabilitated in 2007 and 2009. The application area is a single polygon. The following land and rehabilitation descriptors are provided.

- Rehabilitation area (Figure 1-2)
- Cadastre (Figure 1-3)
- Boundary points (GDA94) (Figure 1-4)
- Final topography (Figure 1-5)
- Catchment limits (Figure 1-6)

- Monitoring locations (Figure 1-7)
- Sequence of rehabilitation (Figure 1-8)

Published on DES Disclosure Log
RTI Act 2009



Figure 2 Rehabilitation area



Figure 3 Cadastre boundaries



Figure 4 Rehabilitation boundary points

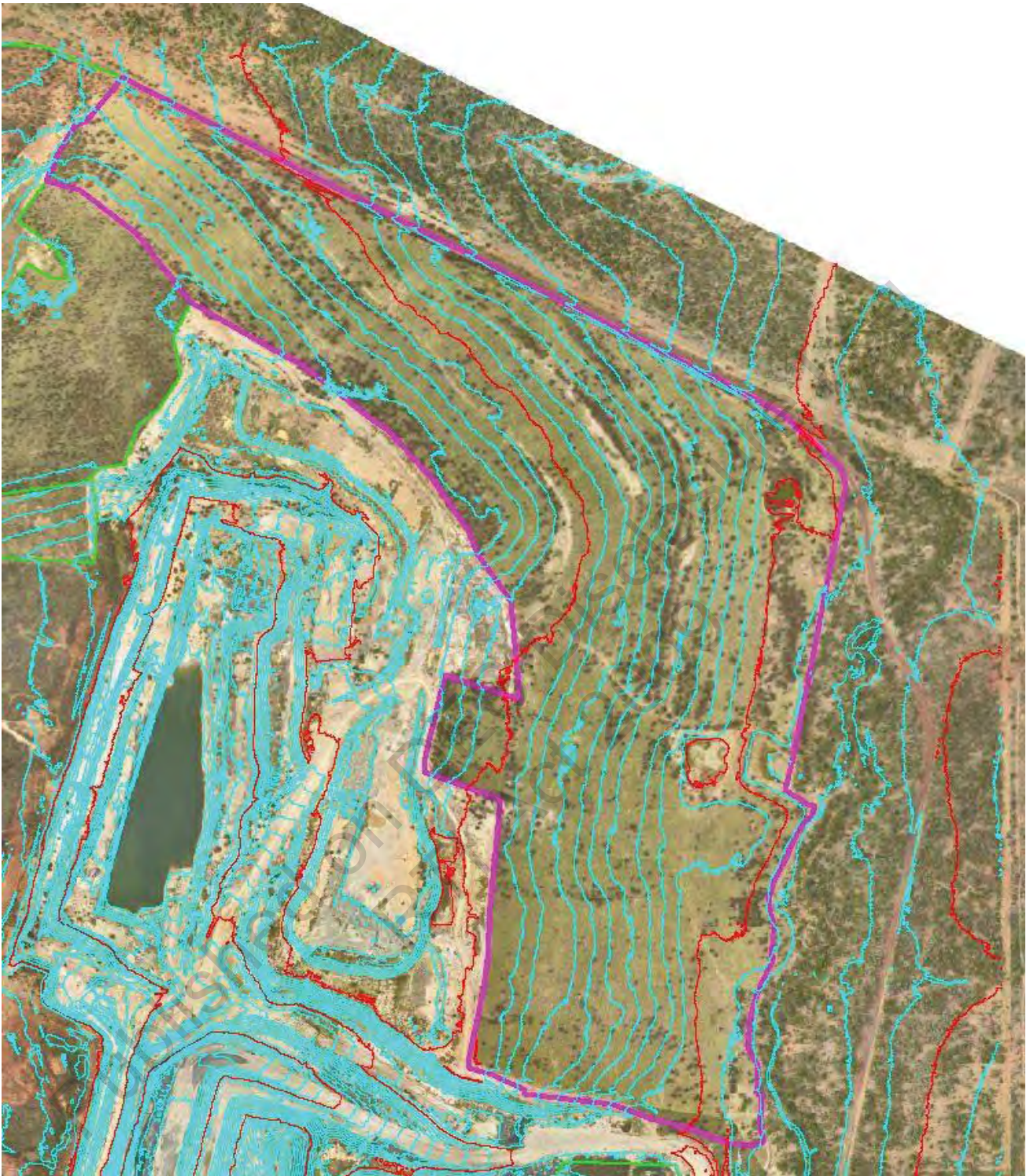


Figure 5 Rehabilitation final topography



Figure 6 Rehabilitation catchment limits



Figure 7 Monitoring locations



Figure 8 Sequence of rehabilitation

2 Nature and extent of disturbance

2.1 Pre-mining land condition

Prior to mining, the "Yongala" property was used for cattle grazing. The 1992 Environmental Management Overview Strategy (EMOS by Hollingsworth, Dames and Moore, 1992) notes:

"The only current land use within the study area is beef cattle grazing on predominantly native pasture of low to moderate productivity with some small areas of introduced pasture species – mainly buffel grass."

That EMOS also assessed land suitable for cattle grazing, adopting the scheme by Shields and Williams (1991). According to that assessment, the subject land was a mix of Class 3 and Class 4 suitable, and Class 5 unsuitable land for sustainable cattle grazing (Figure 2-1). Class 3 and Class 4 lands are suitable with moderate and severe limitations, respectively. Class 5 land has limitations that are so extreme that cattle grazing is not recommended.

Regarding the pre-mining land condition of the Yongalla property, the EMOS found:

"Overall, the Yongala property, which comprises the major part of the study area, is currently in a moderately to in places severely degraded condition.....those areas which are potential susceptible to degradation due to landform, soil type and drainage conditions, already reflect a substantial level of degradation.

In places, very deep erosion gullies have developed in many of the depressional drainageways within the property...The size and severity of gullying is attributable to the generally dispersive nature of the soils and substrate materials within those land units and uncontrolled surface water runoff."

Much of the unmined land at Yongala is simply not suitable for agricultural improvement, i.e. clearing and sowing with improved pastures, and extensive remnant native vegetation exists.

2.2 Mining activities

The subject land has been transformed by open-cut coal mining. The general sequence, timing and nature of mining disturbance is as follows.

- Pre-mining land condition, 1966 (Figure 2-2)
- Mining underway, 1993 (Figure 2-3)
- Rehabilitation underway, 2007 (Figure 2-4)
- Rehabilitation in monitoring and assessment phase, 2018 (Figure 2-5)



Figure 9 Pre-mining land suitability classes



Figure 10 Pre-mining land condition (1966)



Figure 11 Mining underway (1993)



Figure 12 Rehabilitation underway (2007)



Figure 13 Rehabilitation in monitoring and assessment phase (2018)

3 Status of rehabilitation

This section outlines the status of the rehabilitation and the degree to which it satisfies agreed completion criteria.

3.1 Completion criteria

In 2017, Ensham and the then Department of Environment and Heritage Protection (DEHP) each developed rehabilitation completion criteria, which were set in the EA. For sustainable cattle grazing on overburden emplacement areas, the relevant completion criteria are as follows (Table 3-1).

Table 3-1 – Rehabilitation completion criteria

Goals	Objective	Indicators	Completion Criteria
Safe	Safety hazards in rehabilitation are similar to surrounding unmined landscapes	Hazard assessment by a suitably qualified and experienced person	0 (zero) significant difference as defined in <i>AS/NZS ISO 13000:2009 Risk Management</i>
Stable	Landforms are both geotechnically and erosionally stable	Factor of safety	≥ 1.5 as defined in <i>Guideline Geotechnical considerations in open pit mines (State of Western Australia 1999)</i> .
		Slope gradient	Maximum 15% slope
		Groundcover	≥ 50% established and persistent groundcover that is not significantly different from non-mining affected land that is or will be used for a similar purpose
Non-polluting	Surface runoff leaving domain is non-polluting to receiving waters	pH	7.5 – 8.3 as developed in accordance with section 4.3 the <i>Queensland Water Quality Guideline 2009 (see Rehabilitation Management Plan for dataset)</i>
		EC (salinity)	130 – 510µs/cm as per Fitzroy Central zone Rateable 10 th to 90 th percentile of Table G.4 of the <i>Queensland Water Quality Guidelines (2009)</i> .
		Total Suspended Solids (TSS) (sediment loss)	<10mg/L as per <i>Nogoa River Sub-basin EPP Water (2009) Environmental Values and Water Quality Objectives Basin No. 130 (part), including all waters of the Nogoa River Sub-basin (2011)</i> .
		Sulphate (SO ₄ ²⁺)	2.2 – 22.0mg/L as developed in accordance with section 4.3 the <i>Queensland Water Quality Guideline 2009</i>

			(see <i>Rehabilitation Management Plan for dataset</i>)
		Groundcover	≥ 50% established and persistent groundcover that is not significantly different from non-mining affected land that is or will be used for a similar purpose.
	Deep drainage (seepage) from domain is non-polluting to recognised groundwater resources	Per condition G6, this table is to be updated by 31 March 2019 to include indicators and criteria for any potential groundwater impacts, as this may be influenced by residual mining voids	
Land use	Rehabilitation is suitable for sustainable cattle grazing	Land suitability assessment by a suitably qualified person	Class 2 to 4 as defined in the <i>Guidelines for Agricultural Land Evaluation in Queensland</i> (State Department of Queensland 2013).

Comprehensive rehabilitation monitoring has occurred since the rehabilitation was completed, and much of the following analysis relies on that monitoring data as cited.

3.2 Safe to humans and wildlife

Objectives, indicators and completion criteria for 'safe to humans and wildlife' have been identified (Table 3-1). Safety hazards for people and wildlife accessing and using the rehabilitation have been compared with hazards for the same activities in surrounding unmined lands (Table 4). In this hazard analysis, the standard *IAR Risk Matrix and Risk Acceptance Threshold Model* has been used, including likelihood and consequence tables, and quantitative risk matrix (Appendix B). This IAR tool recognises *AS/NZS ISO 31000:2009 Risk Management*, Queensland safety and health legislation and recognised standards. The types of activities assessed are those typically associated with the final land use of cattle grazing.

3.3 Stable

There are three facets of 'stable' to consider, i.e. engineering factor of safety, maximum slope gradient and groundcover percentage. Factor of safety is a civil engineering calculation of theoretical load-bearing mass stability, while slope gradient and groundcover are surrogate indicators for mass stability and erosional stability, respectively.

3.3.1 Factor of safety

Geotechnical slope stability at Ensham has been investigated in detail (Douglas Partners 2009a and 2009b) for overburden slopes as part of B and C Pits flood protection levee design works. Results showed that slopes of 75 % (37°) to 100 % (45°) were marginally stable and slopes formed to 25 % (14°) or less will readily achieve a safety factor greater than the minimum acceptable long-term safety factor of 1.5. The rehabilitation subject to this application features a very conservative

maximum slope gradient of 10 % (5.7°) and is therefore, according to previous geotechnical assessments, fundamentally stable regarding risk of mass material movement.

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Table 3-2 – Safety hazards in rehabilitation compared to unmined land

Activity	Hazard	Rehabilitation			Unmined land			Comments
		Likelihood	Consequence	Score	Likelihood	Consequence	Score	
Human access / egress on foot	Slips, trips and falls	3 possible	2 minor	8 moderate	3 possible	2 minor	8 moderate	<p>Hazards are comparable in rehabilitation and unmined land, because:</p> <ul style="list-style-type: none"> • Uneven ground is common to rehabilitation and unmined adjacent land. • Sloping land is common to rehabilitation and unmined adjacent land. • Rehabilitation features slopes of <12% and humans can readily transit slopes of this gradient and more.
Human access / egress on vehicle	Bumps, humps and jarring	2 unlikely	2 minor	5 low	2 unlikely	2 minor	5 low	<p>Hazards are comparable in rehabilitation and unmined land, because:</p> <ul style="list-style-type: none"> • Uneven ground is common to rehabilitation and unmined adjacent land. • Sloping land is common to rehabilitation and unmined adjacent land. • Rehabilitation features slopes of <12% and vehicles can readily transit slopes of this gradient with due care and attention.

Animal access / egress on foot	Slips, trips and falls	1 rare	1 insignificant	1 low	1 rare	1 insignificant	1 low	<p>Hazards are comparable in rehabilitation and unmined land, because:</p> <ul style="list-style-type: none"> • Uneven ground is common to rehabilitation and unmined adjacent land. • Sloping land is common to rehabilitation and unmined adjacent land. • Rehabilitation features slopes of <12% and animals, including cattle and other domestic animals, can readily transit slopes of this gradient and more.
Wildlife and cattle drink retained water	Contaminants in waters above guideline levels	2 unlikely	2 minor	5 low	1 rare	2 minor	3 low	<p>Hazards are comparable in rehabilitation and unmined land, because:</p> <ul style="list-style-type: none"> • There is no acid and metalliferous drainage (AMD) on site. • Monitoring shows dam water in the rehabilitation area has suitable quality for cattle drinking. • Cattle have been grazing the rehabilitation and drinking the dam water for several years with no discernible adverse effects.

3.3.2 Maximum slope gradient

Aerial survey data (Figure 14) shows that:

- 100 % of the certification area complies with the maximum slope criterion of 15 % (8.5°).
- The landform features slope gradients of 10 % (5.7°) maximum and is less than that overall due to the incorporation of benches in the landform design.

3.3.3 Groundcover percentage

Groundcover has been assessed annually in rehabilitation monitoring (Table 3-3). Like most pasture-based rehabilitation, groundcover was low initially but rapidly increased thereafter (Figure 3-1). Groundcover percentages have remained high even following the introduction of grazing and compare favourably to unmined reference sites. The certification area complies with the minimum groundcover percentage criterion of ≥ 50 %.

Table 3-3 Groundcover percentages

Year	Groundcover (%)			
	Rehabilitation	Ref Site 1	Ref site 2	F-pit ref site
2007	3	61	45	43
2008	95	88	61	77
2009	99	63	97	n/a
2010	96	95	74	n/a
2014	100	100	100	n/a
2015 before grazing	99	n/a	n/a	n/a
2016 after grazing	92	n/a	n/a	n/a
March 2018	82			
June 2018	74			

In 2015/16 a grazing trial was conducted on the rehabilitation. A total of 110 breeder units (cows with calves at foot) grazed the rehabilitation for a 142-day period. This very high stocking rate of 1 unit/ha was possible due to the large volume of standing forage, assessed at almost 7,000 kg/ha pre-grazing. Results show that when intensively grazed for a long duration, a very high groundcover percentage is maintained. Since that time the rehabilitation has continued to be rotationally grazed at the sole discretion of the background landholder.

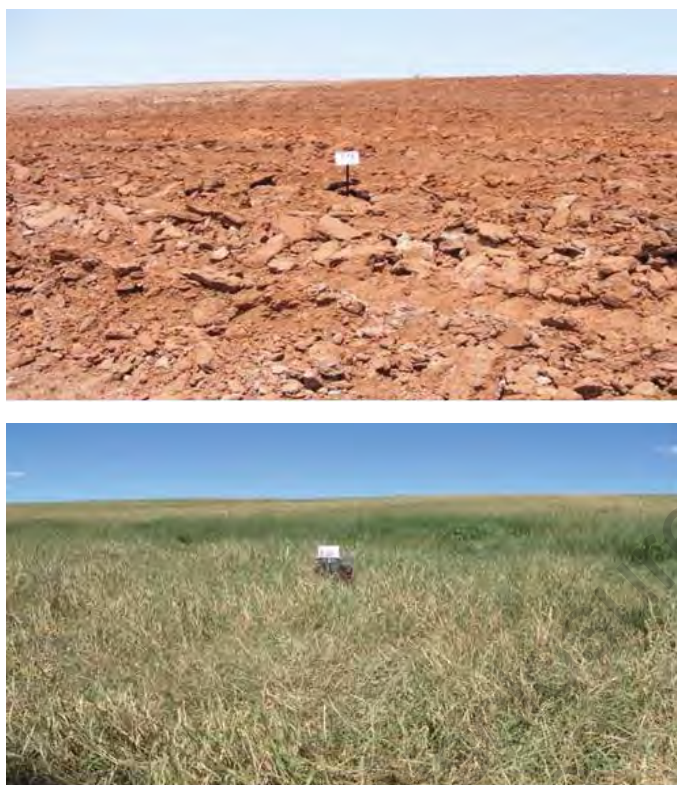


Figure 14 Rapid establishment of persistent groundcover (2007 top and 2008 bottom)

3.4 Non-polluting

'Non-polluting' is assessed as the quality of water that leaves the rehabilitation polygon. For this indicator, the quality of surface water runoff from the rehabilitation is not significantly different to that from upstream, unmined locations. Groundwater is not an aspect for consideration in certification of progressive rehabilitation. Groundwater impacts will be considered at mine closure, prior to surrender of the EA and mining tenements.

In late 2017 and 2018, nine samples of runoff water from the rehabilitation area were collected (Table 3-4). None of this was runoff leaving the rehabilitation polygon as none did during this period. Rather samples were taken of rainfall runoff within the rehabilitation itself where preferential flow paths could be identified.

Samples A to E were taken on bare ground, immediately up-catchment from the dam located within the rehabilitation. This skewed results, particularly for TSS, and these amounts of suspended solids are not representative of water quality leaving the rehabilitation. Samples F to I were taken from more typical areas with high groundcover percentages.

If runoff were to leave the rehabilitation it would enter Boggy Creek, a tributary of the Nogoa River. Monitoring of Boggy Creek immediately upstream of the rehabilitation shows a median TSS of 4,742 mg/L in four flow events. This result reflects the ephemeral nature of flows in Boggy Creek, the inherent erosivity of soils within the Boggy Creek catchment, and the high intensity-duration of rainfall events required to cause a flow in Boggy Creek. The receiving waters for runoff from the rehabilitation have a very high sediment load.

Table 3-4 Runoff water quality

Sample	pH	EC μS/cm	TSS mg/L	SO ₄ mg/L
A	7.49	219	56	21
B	7.01	64	36	3
C	6.95	120	5510	9
D	6.61	109	415	2
E	6.1	326	3950	4
F	6.69	138	154	2
G	6.35	330	80	8
H	6.93	482	96	4
I	7.0	114	93	3
Median	6.79	211.33	1154.44	6.22

The completion criteria threshold limit of <10mg/L as per *Nogoa River Sub-basin EPP Water (2009) Environmental Values and Water Quality Objectives Basin No. 130 (part)*, including all waters of the *Nogoa River Sub-basin (2011)*, as inserted by DEHP in 2017, is not reflective of local receiving waters.

The median soil pH value of 6.79 is reflective of the moderately acid to neutral surface soil conditions in the rehabilitation (discuss in detail in Section 3.5).

3.5 Land use

The ability of the rehabilitation to sustain an agreed post-mining land use is assessed as Land Suitability according to the Queensland Government's guidelines for agricultural land evaluation (DNR/DSITIA 2013). In late 2017, Highlands Environmental conducted an on-ground land suitability assessment of the rehabilitation, using a methodology and rule-set adapted from Shields and Williams (1991). Four sites were assessed (Table 3-5) in the rehabilitation (Figure 3-2).

Table 3-5 Sites assessed in the rehabilitation

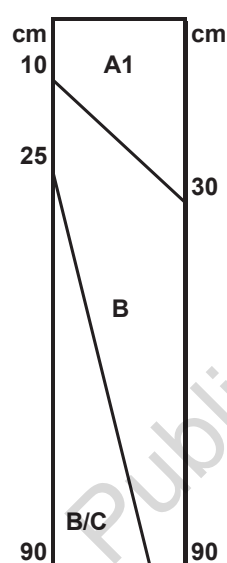
#	Coordinates	Type	Landform	Slope	Vegetation	Topsoil depth	Spoil type	Hole depth
41	654825,7415673	Detail	Upper slope	<10%	Rhodes grass	30cm	Permian	90cm
42	654822,7416618	Detail	Upper slope	<10%	Rhodes grass	25cm	Tertiary	90cm

#	Coordinates	Type	Landform	Slope	Vegetation	Topsoil depth	Spoil type	Hole depth
47	0654373,7417118	Check	Mid slope	<10%	Rhodes grass, Acacia spp.	25cm	n/a	25cm
48	0653259,7403419	Check	Lower slope	<5%	Buffel grass, Acacia spp.	10cm	Tertiary	35cm



Figure 15 Surface and vegetation conditions at Site 41 (left), Site 47 (middle) and Site 48 (right)

Soils profiles were described as follows:



The **topsoil (A1)** is a reddish brown (5YR4/3, 5YR4/4) to strong brown (7.5YR4/6) loamy sand with a fine sub-angular blocky structure; field pH is 6.0-6.5. Clear change to:

The **subsoil (B)** is mine overburden of Permian or Tertiary age; rock is present; mottles below 70cm; field pH 7.0-7.5. Abrupt change to:

Substrate rock (B/C) is present from 25cm depth.

Profile photo is Site 42.



Soils were sampled and sent to a testing laboratory for analysis. Soil chemical properties were comprehensively described (Table 3-6).

Table 3-6 Soil chemical properties

Site 41

Depth cm	pH 1:5 water	ECe dS/m	CEC Meq/100g	Ca Meq/100g	K Meq/100g	Mg Meq/100g	Na Meq/100g	ESP %	Ca/Mg	P mg/kg
0-10	5.5	2.4	6.71	2.7	0.53	2.4	0.97	14	1.1	<5
20-30	5.7	2.4	7.24	2.1	0.25	3.6	1.2	17	0.6	
40-50	7	3.7	14.7	3	0.45	8.6	2.6	17	0.4	
60-70	7.8	4.7	14	2.9	0.47	7.9	2.6	19	0.4	
80-90	7.6	4.2	13.6	2.7	0.48	7.9	2.4	18	0.3	

Site 42

Depth cm	pH 1:5 water	ECe dS/m	CEC Meq/100g	Ca Meq/100g	K Meq/100g	Mg Meq/100g	Na Meq/100g	ESP %	Ca/Mg	P mg/kg
0-10	5.5	1.4	5.35	2	0.75	1.6	0.77	14	1.3	<5
20-30	5.5	1.4	5.02	1.1	0.28	2.1	1.2	23	0.5	
40-50	6.9	2	6.93	1.3	0.16	3.7	1.8	26	0.4	
60-70	7	2.6	12.4	2.2	0.3	6.9	3.1	25	0.3	
80-90	7.2	2.3	11.1	2.3	0.22	5.9	2.7	24	0.4	

Site 47

Depth cm	pH 1:5 water	ECe dS/m	CEC Meq/100g	Ca Meq/100g	K Meq/100g	Mg Meq/100g	Na Meq/100g	ESP %	Ca/Mg	P mg/kg
0-10	5.7	0.4	4.69	1.9	0.63	1.7	0.19	4.1	1.1	<5

Site 48

Depth cm	pH 1:5 water	ECe dS/m	CEC Meq/100g	Ca Meq/100g	K Meq/100g	Mg Meq/100g	Na Meq/100g	ESP %	Ca/Mg	P mg/kg
0-10	6.9	1.1	5.19	1.6	0.26	2.2	1	20	0.7	9

Soil pH is moderately acid (5.5) grading to neutral and mildly alkaline at depth (7.8). Topsoil is non-saline but subsoil can be moderately saline (4.7dS/m). CEC low to very low, indicating the capacity of the soil to hold and exchange cations important in plant nutrition. ESP shows topsoil is non-sodic to extremely sodic (20%) and subsoil is extremely sodic (26%), meaning soil is prone to dispersion when wet and excessive erosion. Low calcium and a prevalence of magnesium on the exchange surfaces will exacerbate dispersion and erosion risk. Phosphorus is deficient in this soil.

The rehabilitation is land suitability class 4 for sustainable beef cattle grazing (Table 3-7). Rehabilitation has severe limitations making it marginally suited for cattle grazing and will require major inputs to ensure sustainability and prevent land degradation. The key limitations to sustainable cattle grazing in this rehabilitation are: topsoil and subsoil erosion risk (Ea4 and Eb4), poor soil water holding capacity (M4); and nutrient deficiency (Nd4).

Table 3-7 Land suitability class

Limitation	Surface soil erosion	Subsoil erosion	Water supply	Surface condition	Rockiness	Micro-relief	Wetness	Real acid drainage	Pot. Acid drainage	Nutrient deficiency	Elemental imbalance	Soil depth	Salinity	Vegetation	Landscape complexity
Code	Ea	Eb	M	Ps	R	Tm	W	Ar	Ap	Nd	Tx	Sd	Sa	V	Lc
Class	4	4	4	3	3	2	3	2	1	4	3	3	2	2	1

4 Assessment against conditions of the EA

Relevant conditions of the EA have been identified and the extent to which rehabilitation complies with conditions has been determined (Table 4-1).

Table 4-1 – Assessment against conditions of the EA

No	EA condition	Compliance	Comment
A1	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.	Yes	An amount of financial assurance is in place.
A2	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.	Yes	Financial assurance is reviewed and paid with each replacement plan of operations.
A5	Monitoring and records 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.	Yes	All rehabilitation monitoring data is kept in perpetuity.
G4	Rehabilitation success criteria All surface areas significantly disturbed by mining activities must be rehabilitated to a safe, stable and non-polluting landform, with a self-sustaining vegetation cover in accordance with Appendix 4: Rehabilitation success criteria . Underground workings must be rehabilitated to be safe, stable and non-polluting.	Yes	As outlined herein.
G5	Appendix 4: Rehabilitation success criteria The environmental authority holder must apply to amend the environmental authority to update Appendix 4: Rehabilitation success criteria for all domains excluding voids by 28 April 2017 .	Yes	Completed by due date.
G7	Rehabilitation activities Rehabilitation must commence progressively in accordance with the Rehabilitation Management Plan required by Condition G11 .	Yes	Rehabilitation is conducted progressively.

G11 G12 G13 G14	To do with the Rehabilitation Management Plan.	Yes	Plan was developed and implemented in accordance with requirements of the EA.
G25	Rehabilitation monitoring Rehabilitation monitoring in accordance with Condition G11 must be conducted by a suitably qualified person on a yearly basis and provided to the administering authority upon request.	Yes	Rehabilitation monitoring is conducted throughout each year by competent persons.
G26	An annual report that describes rehabilitation status against the requirements of Condition G4 must be developed by a suitably qualified person and provided to the administering authority upon request	Yes	Report completed annually.

4.1 Summary status of the rehabilitation

Monitoring and assessment of the rehabilitation demonstrates it has been satisfactorily rehabilitated. The rehabilitation:

1. Meets or exceeds objectives for rehabilitation and agreed indicators and criteria (Section 3). Although some water quality threshold limits are exceeded, rainfall runoff leaving the rehabilitation is non-polluting to receiving waters in Boggy Creek.
2. Is compliant with relevant sections of the EA (refer to Table 4-1).

5 Stakeholder consultation

Extensive stakeholder consultation about rehabilitation was conducted for preparation of the mine Environmental Impact Statements (EIS'). Amongst other important aspects, the EIS' clearly state the target post-mining land use for most rehabilitation is cattle grazing, consistent with surrounding land uses. Ensham has met commitments made in the EIS with respect to land rehabilitation on the subject land.

More recently Ensham has conducted the following stakeholder consultation with respect to rehabilitation on ML70049.

5.1 Background landholder

Ensham personnel meet regularly with the background landholders (identified in Table 2). As this landholder has grazed the rehabilitation subject to this application for several years, rehabilitation and land use are standard items of discussion. The landholder has expressed no valid concerns about the standard of rehabilitation delivered by Ensham and would like access to more rehabilitation to augment his grazing of the broader Yongala property. The landholder independently manages grazing of the rehabilitation, including cattle types and numbers, and graze / spell durations, while Ensham continues to monitor the rehabilitation annually.

Ensham and the background landholder are currently negotiating the retention of final voids and other mining infrastructure, e.g. access roads, electrical transmission lines, tanks and bores, by the landholder at mine closure. Although none of these matters are directly relevant to this application, the landholder has expressed an unwillingness to participate in this progressive rehabilitation certification process until these other matters are resolved to his satisfaction. He has expressed an opinion that if the reshaping rehabilitation being undertaken at Pit E is indicative of what would be carried out at Yongala, he could live with it.

5.2 Central Queensland Mine Rehabilitation Group (CQMRG)

In 2009, Ensham hosted a meeting of the CQMRG. This group includes representatives from a broad range of stakeholders and is focussed on land rehabilitation and extension of relevant research, knowledge and experience. The group inspected several areas of rehabilitation at the mine and Ensham received positive feedback about its pasture / grazing focus.

5.3 Government

Ensham has welcomed government officers to inspect rehabilitation at various times to date and will continue to do so. For example, recent compliance audits by the former Department of Environment and Heritage Protection occurred on 8/12/16, 15&16/3/17 and 29/11/17 and included inspections of mine rehabilitation.

A recent tour by high level officials of DES, DNRME and Treasury inspected this area at Yongala as well as other rehabilitation areas and were impressed by the results.

6 Contaminated land

The subject land is listed on the *Environmental Management Register* due to the EA listing the following Environmentally Relevant Activities as being located on the mining leases.

ERA 8(3) Chemical Storage – storing more than 500m³ of chemicals of class C1 or C2 combustible liquids under AS1940 or dangerous goods class 3 under subsection (1)(c).

ERA 16(2)(a) Extractive and Screening Activities – extracting, other than by dredging, in a year, the following quantity of material - 5000t to 100,000t.

ERA 56 Regulated Waste Storage – receiving and storing regulated waste.

ERA 60(1)(d) Waste Disposal – operating a facility for disposing of, in a year, the following quantity of waste mentioned in subsection (1)(a) - more than 200000t.

ERA 62 Waste Transfer Station Operation – operating on a commercial basis or in course of carrying on a commercial enterprise, a waste transfer station that receives a total quantity of at least 30t or 30m³ of waste on any day.

ERA 63(1)(b)(i) Sewage Treatment – operating sewage treatment works, other than no-release works, with a total daily peak design capacity of more than 100 but not more than 1500EP if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme.

Schedule 2A:

ERA 13 Mining black coal.

A formal contaminated land assessment and report is not required for this application for certification of progressive rehabilitation because:

- a) None of the listed ERAs, apart from ERA 13, have been conducted on the land subject to this application;
- b) Before applying for surrender of the mining lease, a site-wide formal contaminated land assessment will be conducted, and any contaminated land will be remediated then;
- c) Rehabilitation monitoring, including soil sampling and analysis, does not indicate any contamination on the subject land; and,
- d) The subject land can sustain an agreed post-mining land use (see Section 3.5).

7 Assessment of risk

A thorough assessment of risk was conducted using the Ensham STD.04.00.01 Risk Management system standard.

7.1 Environmental risk assessment

A risk assessment workshop was conducted on 3 July 2018 and a detailed report of that process is provided (Appendix C). This risk assessment identifies all credible risks associated with the rehabilitation. It evaluates the likelihood and effects of events that reach a threshold of significance published by the administering authority. Here, *“threshold of significance published by the administering authority”* is taken to mean environmental harm as defined in the EP Act, i.e. any adverse effect on an environmental value.

This risk assessment was conducted in the following context.

- The period for consideration is from certification until relinquishment of mining tenure and surrender of the EA,
- Ensham shall manage the rehabilitation during this period and is responsible for its maintenance to the condition in place at the time of certification,
- Risks generally relate to risks to government of Ensham not being able to monitor and maintain the rehabilitation to the standards to which it was certified.

7.2 Residual risk

There is no significant residual risk associated with the rehabilitation.

Enduring obligations to remedy any rehabilitation failure remain vested in the EA holder until surrender. On this basis, certification of the progressive rehabilitation poses no risk to government. Despite certification, Ensham will continue to monitor and manage the rehabilitation including any corrective measures, though none are reasonably foreseeable at this time. Currently the costs of monitoring approximately 1200ha of rehabilitation is approximately s.37(3)(d) Deferal of access annually. It has not been necessary to undertake any weed control over this area to date. The rehabilitation will continue to be grazed by the background landholder.

7.3 Ongoing environmental management requirements

Ongoing environmental management needs will be minimal for the rehabilitation. These will include period inspection and annual land condition monitoring and weed and feral animal control as needed. Normal agricultural management practices will continue to be used by the background landholder. Ongoing management needs are not anticipated to be significantly different to those typically required on surrounding unmined land used for the same purpose.

It is important to note that normal agricultural management practices will include minor disturbances within the certified rehabilitation. These disturbances may be for tracks, firebreaks,

fence lines, pasture improvement, water reticulation and other activities typically associated with grazing land management in central Queensland. In accordance with grazing best practice, Ensham will encourage the background landholder to maintain or improve land condition while grazing the rehabilitation.

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8 References

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Douglas Partners (2009b) *Report on geotechnical assessment, Ensham mine C Pit and B Pit levee upgrade Emerald*. Project no. 47793, 17 September 2009.

Hollingsworth, Dames and Moore (1992) *Ensham Coal Project, Yongala Mine, Environmental Management Overview Strategy*, November 1992

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Appendix A – Field Monitoring Results

Site Name/ Number: En Ramp 10N		Recorder: Terry / Johnelle			Date: 11/10/07	Comments	
Ground Cover Categories		TOTAL 1-33	TOTAL 34-67	TOTAL 68-100	SITE TOTAL	Groundcover includes mulch hay	
>5%		33	34	33	100		
5-15%							
15-30%							
30-50%							
50-90%						Site standing feed (Kg/Ha)	
>90%							
Species frequency by category						Estimated contribution to yield (%)	
Desirable Perennials	RHODES	10	22	15	47	General Site Description	
	BUFFEL	4	4	6	14		
	UNIDENTIFIED GRASS	3		2	5		
	UROCHLOA						
GRASSES	Less Desirable Annual	WHEAT	19	21	9	49	Average Ground Cover = 2.5 Desirable Perennial Freq. = 57 Intermediate Frequency = 0 Crops frequency = 51 Less Desirable Annual Freq = 0 Less Desirable Per Freq = 0 Less Desirable Per + Ann Freq = 0 Forbes = 5
		MILLET		1	2	3	
		Other unidentified grasses					
		SECA					
		BURGUNDY BEAN	2	1		3	
	Forbes	UNIDENTIFIED LEGUME	1	1		2	
		OTHER FORBES					
		Sedges					
		WOODY PLANTS					

Site Name/ Number: En R10N		Recorder: Terry			Date: 10/4/08	Comments	
Ground Cover Categories		TOTAL 1-33	TOTAL 34-67	TOTAL 68-100	SITE TOTAL	Some legumes (Seca & Verano stylo) in bare areas by Rhodes. Isolated Buffel also in bare areas (not in GC transects). Some immature Acacoas were noted.	
>5%		0	0	0	0		
5-15%		0	0	1	1		
15-30%		0	0	0	0		
30-50%		1	0	2	3		
50-90%		3	6	2	11		
>90%		29	28	28	85	Estimated contribution to yield (%)	
Species frequency by category							
GRASSES	Desirable Perennials	RHODES CALLIDE	22	24	23	69	39
		RHODES KATAMBORA	30	33	29	92	60
			0	0	0	0	
			0	0	0	0	
		Frequency Total	28	34	32	94	
	Intermediate Perennials		0	0	0	0	
			0	0	0	0	
			0	0	0	0	
			0	0	0	0	
		Frequency Total	0	0	0	0	
Less Desirable Annual		0	0	0	0		
		0	0	0	0		
		0	0	0	0		
		0	0	0	0		
	Frequency Total	0	0	0	0		
CROP	Annual	Other Identified Grasses	0	0	0	0	
		Frequency Total	0	0	0	0	
			0	0	0	0	
			0	0	0	0	
		Frequency Total	0	0	0	0	
OTHERS	Forbes		0	0	0	0	
			0	0	0	0	
			0	0	0	0	
			0	0	0	0	
		Frequency Total	0	0	0	0	
	Sedges						
	WOODY PLANTS						
	Native Legumes	BURGUNDY BEAN	3	2	6	11	1
			0	0	0	0	
			0	0	0	0	
		0	0	0	0		
Frequency Total		3	2	7	12		

General Site Description	

Average Ground Cover =	95.1
Desirable Perennial Freq. =	94
Intermediate Frequency =	0
Less Desirable Annual Freq =	0
Less Desirable Per Freq =	0
Less Desirable Per + Ann Freq =	0
Crop Annual=	0
Native Legumes=	12
Forbes =	0

Site Name/ Number: R10N		Recorder: Bernie/Benn			Date: 25/07/2014		Comments		
Ground Cover Categories		TOTAL 1-33	TOTAL 34-67	TOTAL 68-100	SITE TOTAL				
>5%		0	0	0	0				
5-15%		0	0	0	0				
15-30%		0	0	0	0				
30-50%		0	0	0	0				
50-90%		0	0	0	0				
>90%		33	34	33	100	Estimated contribution to yield (%)			
Species frequency by category									
GRASSES	Desirable Perennials	Chloris gayana - katembora	33	34	33	100	General Site Description		
			0	0	0	0			
			0	0	0	0			
			0	0	0	0			
			0	0	0	0			
			0	0	0	0			
	Frequency Total								
		0	0	0	0				
		0	0	0					
	Frequency Total								
	Less Desirable	Perennials		0	0	0	Average Ground Cover = 100%		
			0	0	0				
			0	0	0	Desirable Perennial Freq. = 100%			
			0	0	0				
			0	0	0	Intermediate Frequency = 0			
Annual			0	0	0	Less Desirable Annual Freq = 0			
			0	0	0	Less Desirable Per Freq = 0			
		Other Identified Grasses		0	0	0			
		Frequency Total				0	Less Desirable Per + Ann Freq = 0		
			0	0	0	0			
CROP		Annual		0	0	0	Crop Annual= 0		
			0	0	0	Native Legumes= 0			
			0	0	0	Forbes = 0			
	Frequency Total				0				
OTHERS	Forbes		0	0	0				
			0	0	0				
			0	0	0				
			0	0	0				
			0	0	0				
	Sedges		0	0	0				
	WOODY PLANTS		0	0	0				
	Native Legumes		0	0	0				
			0	0	0				
			0	0	0				
		Frequency Total				0			



Table 20: EnR10N GRASS Check Data

Site Name/ Number: En R10N		Recorder: Terry				Date:22/04/09	Comments
Ground Cover Categories		TOTAL 1-33	TOTAL 34-67	TOTAL 68-100	SITE TOTAL	Site standing feed (Kg/Ha) 8000Kg/Ha	Dry matter yeild; Callide 50%, Katambora 50%, Burgundy Bean traces.
>5%		0	0	0	0		
5-15%		0	0	0	0		
15-30%		0	0	0	0		
30-50%		0	0	0	0		
50-90%		0	0	0	0	Estimated contribution to yield (%)	
>90%		33	34	33	100		
Species frequency by category							
GRASSES	Desirable Perennials		0	0	0		General Site Description Several dying patches, up to 5m across. Cause? "Death Path" GPS Photo 1034.
		RHODES CALLIDE	31	27	30	88	
		RHODES KATAMBORA	23	15	12	50	
			0	0	0	0	
			0	0	0	0	
		Frequency Total	28	34	33	95	
	Less Desirable Annual		0	0	0	0	
		Frequency Total	0	0	0	0	
			0	0	0	0	
			0	0	0	0	
		Frequency Total	0	0	0	0	
CROP	Other Identified Grasses		0	0	0	0	Average Ground Cover = 95.1 Desirable Perennial Freq. = 95 Intermediate Frequency = 0 Less Desirable Annual Freq = 0 Less Desirable Per Freq = 0 Less Desirable Per + Ann Freq = 0 Crop Annual = 0 Native Legumes = 0 Forbes = 6
		Frequency Total	0	0	0	0	
		Frequency Total					
	Forbes	BURGUNDY BEAN	2	1	2	5	
		NATIVE LEGUME	0	1	0	1	
			0	0	0	0	
			0	0	0	0	
		Frequency Total	2	2	2	6	
OTHERS	Sedges						
	WOODY PLANTS						
	ACACIA SHIRLYI						
	Native Legumes		0	0	0	0	
			0	0	0	0	
			0	0	0	0	
			0	0	0	0	
		Frequency Total	0	0	0	0	

Figure 16 June 2018



Figure 17 June 2018

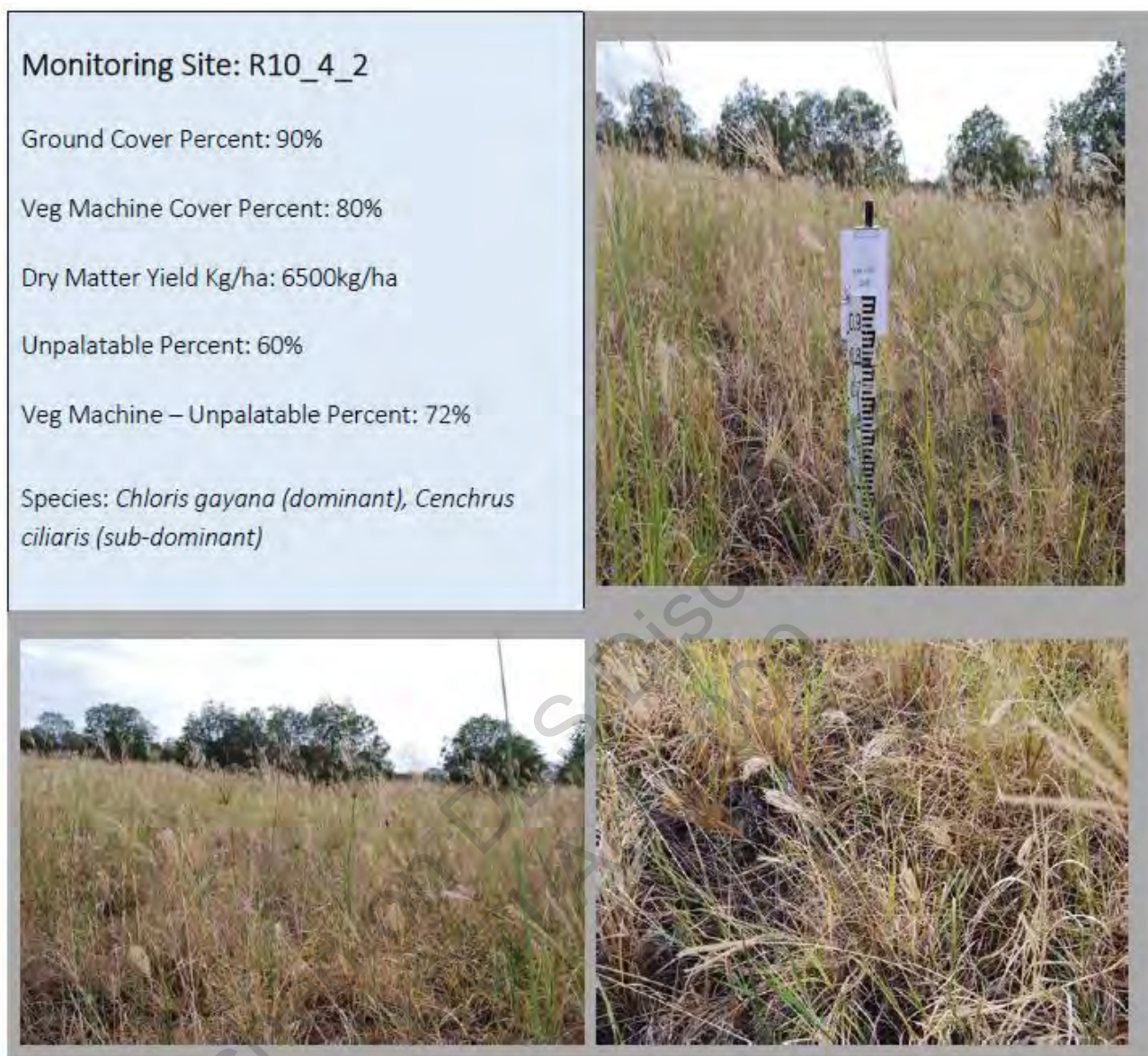


Figure 18 June 2018

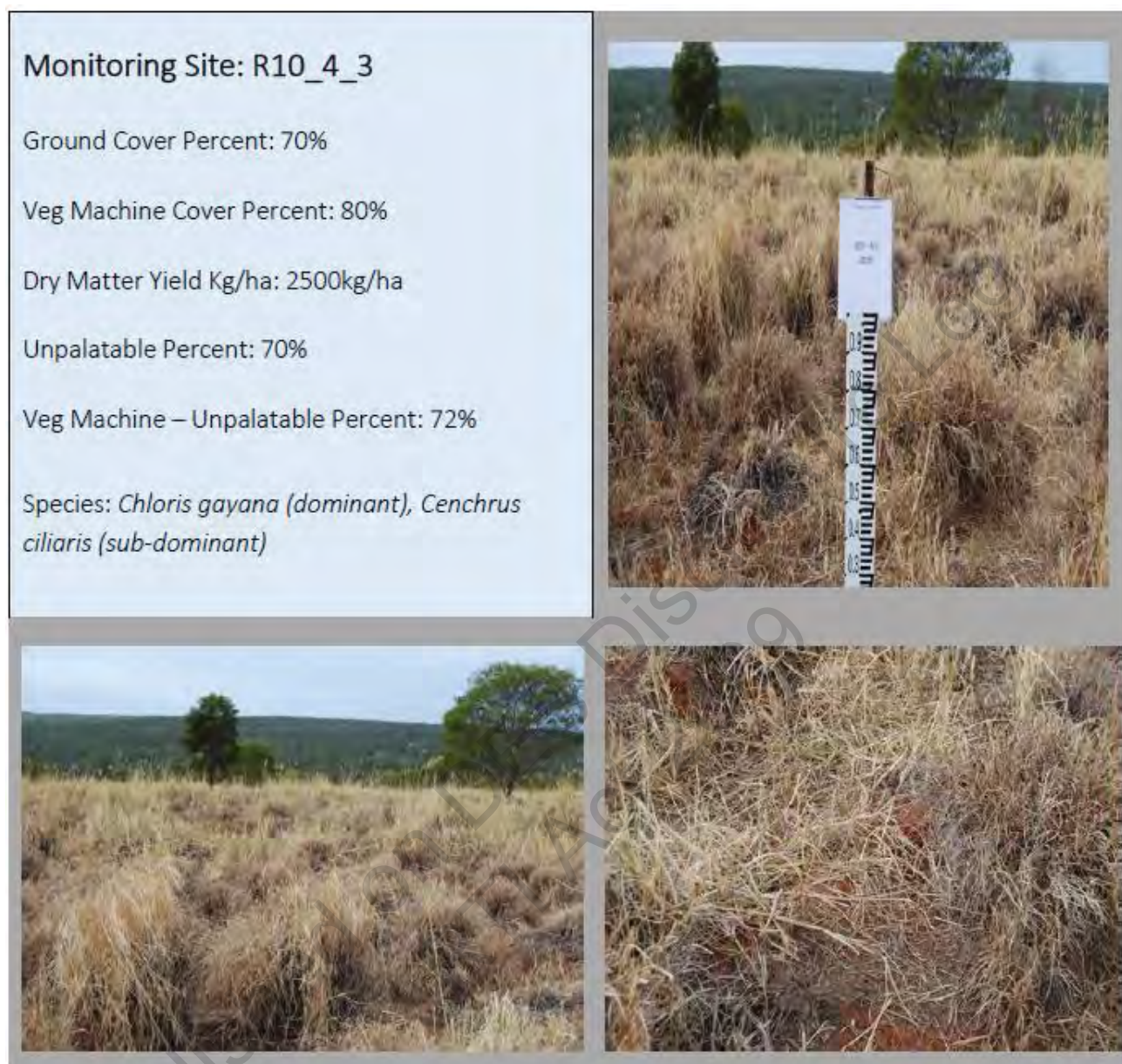


Figure 19 R10_4_3

	
Photo Plate 5: Site 3 Pre assessment	Photo Plate 6: Site 3 Post assessment
Date: 15 th March 2018	Date: 26 th June 2018
GPS: X: 148.51556 Y: -23.35815	

Appendix B - IAR risk matrix and risk acceptance threshold model

Published on DES Disclosure Log
RTI Act 2009

Appendix C – Report of environmental risk workshop

Published on DES Disclosure Log
RTI Act 2009

Date : 4/09/2018 12:50:54 PM

From : "sch4p4(6) Personal Information"

To : "MCCOSKER Juliana"

Cc : "ENS EMD Environmental Mine Record" , sch4p4(6) Personal Information, Daniel Yates

Subject : Ensham - Rehab for 2019

Hi Juliana,

Just a quick line to follow up on our 2019 rehab schedule conversation during your recent visit to Ensham. The current plan takes through until end of January 2019 as per the condition G8 of our EA and from that point on we have planned to commence work associated with the rehabilitation of the Boggy Creek Diversion. This work will involve removal of infrastructure at the Yongala village (power lines, buildings etc) along with significant volumes of overburden that currently sits within the footprint of the diversion rehab design in preparation for work in the diversion itself later in the year.

Happy to discuss if you have any queries on our plan for next year.

Regards

sch4p4(6) Personal Information

Manager HSET Systems

Health Safety Environment Training

Ensham Resources

P (07) 4987 3615

M sch4p4(6) Personal Information

E sch4p4(6) Personal Information

Published on DES Disclosure Log
RTI Act 2009

Date : 26/06/2018 4:52:53 PM

From : "ALLAN Charissa"

To : [redacted] Personal Information

Cc : [redacted] Personal Information, "ENS EMD Environmental Mine Record" , "MCCOSKER Juliana"

Subject : RE: Rehabilitation Progress Reporting

Attachment : image002.png;image003.jpg;

Good afternoon Neil,

Please be advised that the Department of Environment and Science acknowledges submission of the rehabilitation progress report on 26 June 2018, in accordance with Condition G8 of environmental authority EPML00732813.

Kind Regards,



Charissa Allan
A/Team Leader
Business Centre (Coal) | Coal and Central Queensland Compliance
Department of Environment and Science

P 07 4987 9339
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

From: [redacted] Personal Information, [redacted] Personal Information, [redacted] Personal Information

Sent: Tuesday, 26 June 2018 2:43 PM

To: ALLAN Charissa <Charissa.Allan@des.qld.gov.au>

Cc: [redacted] Personal Information <[redacted]@ensham.com.au>; ENS EMD Environmental Mine Record <EnvironmentalMineRecord@ensham.com.au>

Subject: Rehabilitation Progress Reporting

Hi Charissa,

Please find attached the report on rehabilitation progress.

cheers

[redacted] Personal Information
Superintendent Environment



P: (07) 4987 3637

M: [redacted] Personal Information

E: [redacted] Personal Information

Date : 2/02/2018 5:23:13 PM

From : "JOSEY Brenton"

To : "WHEELER Jeremy"

Cc : "MCCOSKER Juliana"

Subject : FW: Report on Rehabilitation Status

Attachment : Report on Rehabilitation Progress 20171219.pdf;EA 20170728 Permit EPML00732813 Bligh Coal Limited Ensham Coal Mine.pdf;image001.jpg;

Hi Jeremy,

Could you please review this document, Juliana suggested we may have tech support engaged to have a look at it.

Also Ensham EA needs a correction! Have fun!

Cheers!

Brenton

From: sch4p4(6) Personal Information
To: sch4p4(6) Personal Information
Sent: Wednesday, 17 January 2018 1:15 PM
To: JOSEY Brenton <Brenton.Josey@ehp.qld.gov.au>
Cc: ENS EMD Environmental Mine Record <EnvironmentalMineRecord@ensham.com.au>; sch4p4(6) Personal Information <Dave.Meyers@ensham.com.au>
Subject: Report on Rehabilitation Status

Hi Brenton,

Please find attached a report of the rehabilitation required to be undertaken by 19th December 2017.

Also as discussed yesterday, it has come to our attention during a review of our EMS that in the latest version of our EA EPML00732813 received 14 November 2017, conditions D4 – D8 are missing in the document.

The "takes effect" date is 28 July 2017, but it was reissued due to clerical errors and implementation problems with Connect.

If you require any further information, give me a call.

cheers

sch4p4(6) Personal Information

Superintendent Environment



P: (07) 4987 3637

M: sch4p4(6) Personal Information

E: sch4p4(6) Personal Information



ENSHAM
RESOURCES
PTY LIMITED

ABN 23 011 048 678
As Operator of the
Ensham Coal Project

Duckponds Road
via Emerald
PO Box 1565
Emerald QLD 4720
Australia

Telephone:
+61 7 4987 3601

Facsimile:
+61 7 4987 3622

Website:
www.ensham.com.au

The Ensham Coal Project
is a joint venture of the
following companies which
are liable severally in the
following proportions:

Bligh Coal Limited
ABN 20 010 186 393
47.5%

Idemitsu Australia
Resources Pty Ltd
ABN 45 010 236 272
37.5%

LG International
(Australia) Pty Limited
ABN 12 002 806 831
15.0%

10 January 2018

Brenton Josey
Department of Environment and Heritage Protection
Emerald Qld 4720

Via email: Brenton.Josey@ehp.qld.gov.au

Dear Brenton,

Re: Environmental Authority EPML00732813

In accordance with Condition G9 of the EA, notification of rehabilitation is required within 20 business days after each due date in Condition G8. The applicable dates and activities are listed below.

Table G8: Rehabilitation schedule

Time Frame	Location	Area	Activity
19 December 2017	Low wall spoil Pit D, E	At least 50 ha	Reshape
19 December 2017	Low wall spoil Pit D, E	At least 100 ha	Topsoil, rip and seed

The required areas and activities were achieved within the time frame.

Any questions or clarification, please contact me.

Regards

sch4p4(6) Personal Information

Superintendent Environment



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15.0%

10 January 2018

Brenton Josey
Department of Environment and Heritage Protection
Emerald Qld 4720

Via email: Brenton.Josey@ehp.qld.gov.au

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Re: Environmental Authority EPML00732813

In accordance with Condition G9 of the EA, notification of rehabilitation is required within 20 business days after each due date in Condition G8. The applicable dates and activities are listed below.

Table G8: Rehabilitation schedule

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The required areas and activities were achieved within the time frame.

Any questions or clarification, please contact me.

Regards

sch4p4(6) Personal Information

Superintendent Environment



Rehabilitation Progress Report

Rehabilitation at D/E pit has been undertaken to comply with the 2017 updated Rehabilitation Management Plan. Areas of Permian spoil are being reshaped to $\leq 15\%$ with any areas of tertiary spoil being reshaped to $\leq 10\%$. In excess of the 50 ha has been reshaped since 30th June 2017.

100 ha of rehabilitation was topsoiled, ripped and seeded as at 19th December 2017.

Figure 1 Pit D Rehabilitation

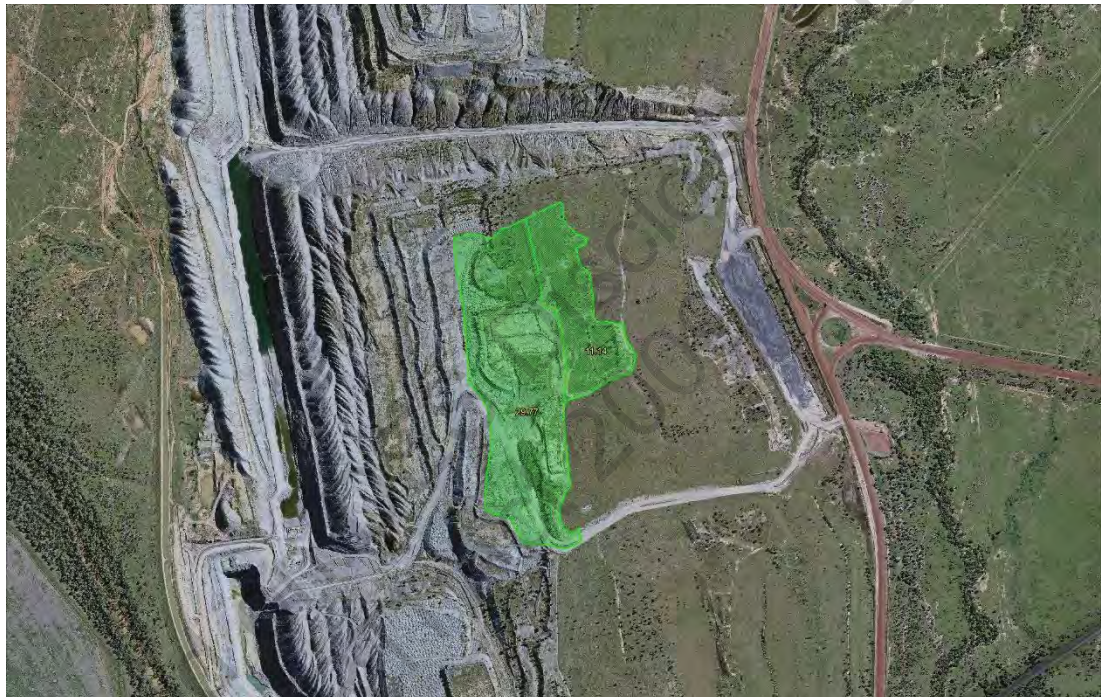


Figure 2 Pit D Rehabilitation





Figure 3 Pit E Rehabilitation



Figure 4 Pit E Eastern Rehabilitation





Figure 5 Pit E Central Rehabilitation



Figure 6 Pit E Western Rehabilitation



Permit

Environmental Protection Act 1994

Environmental authority EPML00732813

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

Environmental authority number: EPML00732813

Environmental authority takes effect on 28 July 2017

Environmental authority holder(s)

Name(s)	Registered address
IDEMITSU AUSTRALIA RESOURCES PTY LTD	Level 1 42-60 Albert St BRISBANE CITY QLD 4000 Australia
NATURAL RESOURCES INVESTMENT (AUSTRALIA) PTY LTD	Suite 3202, Level 32 Northpoint Building 100 Miller Street NORTH SYDNEY NSW 2060
BLIGH COAL LIMITED	Level 1 AM6060 Albert Street BRISBANE CITY QLD 4000

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Resource Activity, Ancillary 56 - Regulated Waste Storage, Receiving and storing regulated waste	ML70326
Resource Activity, Ancillary 56 - Regulated Waste Storage, Receiving and storing regulated waste	ML7460
Resource Activity, Ancillary 56 - Regulated Waste Storage, Receiving and storing regulated waste	ML70049
Resource Activity, Ancillary 56 - Regulated Waste Storage, Receiving and storing regulated waste	ML7459
Resource Activity, Ancillary 56 - Regulated Waste Storage, Receiving and storing regulated waste	ML70366
Resource Activity, Ancillary 56 - Regulated Waste Storage, Receiving and storing regulated waste	ML70367
Resource Activity, Ancillary 56 - Regulated Waste Storage, Receiving and storing regulated waste	ML70365
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	ML70326
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	ML7460

Environmentally relevant activity/activities	Location(s)
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	ML70049
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	ML7459
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	ML70366
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	ML70367
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	ML70365
Resource Activity, Schedule 2A, 13: Mining black coal	ML70326
Resource Activity, Schedule 2A, 13: Mining black coal	ML7460
Resource Activity, Schedule 2A, 13: Mining black coal	ML70049
Resource Activity, Schedule 2A, 13: Mining black coal	ML7459
Resource Activity, Schedule 2A, 13: Mining black coal	ML70366
Resource Activity, Schedule 2A, 13: Mining black coal	ML70367
Resource Activity, Schedule 2A, 13: Mining black coal	ML70365
Resource Activity, Ancillary 16 - Extraction and Screening, 2: Extracting, other than by dredging, in a year, the following quantity of material, (a) 5,000t to 100,000t	ML70326
Resource Activity, Ancillary 16 - Extraction and Screening, 2: Extracting, other than by dredging, in a year, the following quantity of material, (a) 5,000t to 100,000t	ML7460
Resource Activity, Ancillary 16 - Extraction and Screening, 2: Extracting, other than by dredging, in a year, the following quantity of material, (a) 5,000t to 100,000t	ML70049
Resource Activity, Ancillary 16 - Extraction and Screening, 2: Extracting, other than by dredging, in a year, the following quantity of material, (a) 5,000t to 100,000t	ML7459

Environmentally relevant activity/activities	Location(s)
Resource Activity, Ancillary 16 - Extraction and Screening, 2: Extracting, other than by dredging, in a year, the following quantity of material, (a) 5,000t to 100,000t	ML70366
Resource Activity, Ancillary 16 - Extraction and Screening, 2: Extracting, other than by dredging, in a year, the following quantity of material, (a) 5,000t to 100,000t	ML70367
Resource Activity, Ancillary 16 - Extraction and Screening, 2: Extracting, other than by dredging, in a year, the following quantity of material, (a) 5,000t to 100,000t	ML70365
Resource Activity, Ancillary 08 - Chemical Storage, 3: Storing more than 500 cubic metres of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection (1)(c)	ML70326
Resource Activity, Ancillary 08 - Chemical Storage, 3: Storing more than 500 cubic metres of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection (1)(c)	ML7460
Resource Activity, Ancillary 08 - Chemical Storage, 3: Storing more than 500 cubic metres of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection (1)(c)	ML70049
Resource Activity, Ancillary 08 - Chemical Storage, 3: Storing more than 500 cubic metres of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection (1)(c)	ML7459
Resource Activity, Ancillary 08 - Chemical Storage, 3: Storing more than 500 cubic metres of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection (1)(c)	ML70366
Resource Activity, Ancillary 08 - Chemical Storage, 3: Storing more than 500 cubic metres of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection (1)(c)	ML70367
Resource Activity, Ancillary 08 - Chemical Storage, 3: Storing more than 500 cubic metres of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection (1)(c)	ML70365
Resource Activity, Ancillary 62 - Waste transfer station operation, Operating, on a commercial basis or in the course of carrying on a commercial enterprise, a waste transfer station that receives a total quantity of at least 30t or 30 cubic metres of waste on any day	ML70326

Environmentally relevant activity/activities	Location(s)
Resource Activity, Ancillary 62 - Waste transfer station operation, Operating, on a commercial basis or in the course of carrying on a commercial enterprise, a waste transfer station that receives a total quantity of at least 30t or 30 cubic metres of waste on any day	ML7460
Resource Activity, Ancillary 62 - Waste transfer station operation, Operating, on a commercial basis or in the course of carrying on a commercial enterprise, a waste transfer station that receives a total quantity of at least 30t or 30 cubic metres of waste on any day	ML70049
Resource Activity, Ancillary 62 - Waste transfer station operation, Operating, on a commercial basis or in the course of carrying on a commercial enterprise, a waste transfer station that receives a total quantity of at least 30t or 30 cubic metres of waste on any day	ML7459
Resource Activity, Ancillary 62 - Waste transfer station operation, Operating, on a commercial basis or in the course of carrying on a commercial enterprise, a waste transfer station that receives a total quantity of at least 30t or 30 cubic metres of waste on any day	ML70366
Resource Activity, Ancillary 62 - Waste transfer station operation, Operating, on a commercial basis or in the course of carrying on a commercial enterprise, a waste transfer station that receives a total quantity of at least 30t or 30 cubic metres of waste on any day	ML70367
Resource Activity, Ancillary 62 - Waste transfer station operation, Operating, on a commercial basis or in the course of carrying on a commercial enterprise, a waste transfer station that receives a total quantity of at least 30t or 30 cubic metres of waste on any day	ML70365
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-i) more than 100 but not more than 1500EP if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme	ML70326
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-i) more than 100 but not more than 1500EP if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme	ML7460
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-i) more than 100 but not more than 1500EP if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme	ML70049

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-i) more than 100 but not more than 1500EP if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme	ML7459
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-i) more than 100 but not more than 1500EP if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme	ML70366
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-i) more than 100 but not more than 1500EP if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme	ML70367
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-i) more than 100 but not more than 1500EP if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme	ML70365

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.

Environmental authority

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-on the day the authority is issued.

However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the Sustainable Planning Act 2009 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.

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.

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

Enquiries:
Coal & Gemstone Mining
Department of Environment and Heritage Protection
Phone: 07 4987 9320
Email: crmining@ehp.qld.gov.au

Date issued: 12 October 2017

Legislative Requirements and Conditions of Environmental Authority

Condition

General

A1 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.

A2 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.

A3 Prevent and/or minimise likelihood of environmental harm

In carrying out the environmentally relevant activities, you must take all reasonable and practicable measures to prevent and/or minimise the likelihood of environmental harm being caused. Any environmentally relevant activity, that, if carried out incompetently, or negligently, may cause environmental harm, in a manner that could have been prevented, shall be carried out in a proper manner in accordance with the conditions of this authority.

NOTE: This authority authorises the environmentally relevant activity. It does not authorise environmental harm unless a condition contained within this authority explicitly authorises that harm. Where there is no condition or the authority is silent on a matter, the lack of a condition or silence shall not be construed as authorising harm.

A4 Maintenance of measures, plant and equipment

The environmental authority holder must ensure:

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

A5 Monitoring and records

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.

A6 Where monitoring is a requirement of this environmental authority, ensure that a competent person(s) conducts all monitoring.

A7 Notification of emergencies, incidents and exceptions

All reasonable actions are to be taken to minimise environmental harm, or potential environmental harm, resulting from any emergency, incident or circumstances not in accordance with the conditions of this environmental authority.

A8 As soon as practicable after becoming aware of any emergency, incident or information about circumstances which results or may result in environmental harm not in accordance with the conditions of this environmental authority, the administering authority must be notified in writing.

A9 Not more than ten (10) business days following the initial notification of an emergency, incident or information about circumstances which result or may result in environmental harm, written advice must be provided to the administering authority in relation to:

- (a) proposed actions to prevent a recurrence of the emergency or incident;
- (b) the outcomes of actions taken at the time to prevent or minimise environmental harm; and
- (c) proposed actions to respond to the information about circumstances which result or may result in environmental harm.

A10 As soon as practicable, but not more than six (6) weeks following the initial notification of an emergency, incident or information about circumstances which result or may result in environmental harm, environmental monitoring must be performed and written advice must be provided of the results of any such monitoring performed to the administering authority.

A11 Contaminants must not be released to the receiving environment unless they are in accordance with the contaminant limits authorised by this environmental authority.

A12 This environmental authority does not authorise environmental harm unless a condition contained within the authority explicitly authorises that harm. Where there is no condition or the authority is silent on a matter, the lack of a condition or silence shall not be construed as authorising harm.

A13 Definitions

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

A14 Scope of activity

This environmental authority authorises the mining of 12 million tonnes of run of mine (ROM) coal per annum.

A15 All reports, plans and programs must be made available to the administering authority upon request.

D1 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 (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.

D2 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.

D3 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 (EM635).

D9 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;
- b) construction of the regulated structure is in accordance with the design plan.

D10 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 D6, and
 - ii) a set of 'as constructed' drawings and specifications, and
 - iii) certification of those 'as constructed drawings and specifications' in accordance with Condition D9, 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.
 - v) the requirements of this authority relating to the construction of the regulated structure have been met;
 - vi) the holder has entered the details required under this authority, into a Register of regulated structures; and
 - vii) there is a current operational plan for the regulated structures.

D11 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.

D12 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.

D13 Mandatory reporting level

Conditions D14 to D17 inclusive only apply to Regulated Structures which have not been certified as low consequence category for 'failure to contain – overtopping'.

D14 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.

D15 The holder 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.

D16 The holder must, immediately on becoming aware that the MRL has been reached, act to prevent the occurrence of any unauthorised discharge from the regulated dam.

D17 The holder must record any changes to the MRL in the Register of Regulated Structures.

D18 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.

D19 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).

D20 The holder 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.

D21 The holder 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.

D22 Annual inspection report

Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.

D23 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 recommended actions to ensure the integrity of the regulated structure.

D24 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 (EM635).

D25 The holder must:

a) within 20 business days of receipt of the annual inspection report, provide to the administering authority:

i) the recommendations 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.

D26 Transfer arrangements

The holder must provide a copy of any reports, documentation and certifications prepared under this authority, including but not limited to any Register of Regulated Structures, consequence assessment, design plan and other supporting documentation, to a new holder on transfer of this authority.

D27 Register of regulated structures

A Register of regulated structures must be established and maintained by the holder for each regulated dam.

D28 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.

- D29 The holder must make a final entry of the required information in the Register of regulated structures once compliance with Conditions D10 and D11 has been achieved.
- D30 The holder must ensure that the information contained in the Register of regulated structures is current and complete on any given day.
- D31 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.
- D32 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.
- D33 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.

- D34 All existing structures must subsequently comply with the timetable for any further assessments in accordance with the Manual specified in Table D34, depending on the consequence category for each existing structure assessed in the most recent previous certification for that structure.

Table D34 (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.

- D35 Table D34 ceases to apply for a structure once any of the following events has occurred:
- it has been brought into compliance with the hydraulic performance criteria applicable to the structure under the Manual; or
 - it has been decommissioned; or
 - it has been certified as no longer being assessed as a regulated structure.

- D36 Certification of the transitional assessment required by Conditions D33 and D34 (as applicable) must be provided to the administering authority within 6 months of amendment of the authority adopting this schedule.
- D37 Design requirements for the levee and adjacent mining excavation include:
- a) the design level of the levee crest shall be at least one (1) metre above the estimated 1 in 1,000 ARI flood event for the adjacent watercourses; and
 - b) mining excavation slopes adjacent to the levee must remain stable and are to be designed with a factor of safety of one point five (1.5) (calculated from the levee toe) or above based on an accepted stability analysis.
- D38 The flood protection levee authorised under this environmental authority must be constructed and maintained such that:
- a) it does not result in increased erosion of the bank or bed of the Nogoa River;
 - b) it does not significantly impact upon riparian or existing remnant vegetation; and
 - c) the levee itself will not erode during any flood events up to the 1 in 1,000 ARI event.
- Note: ³ Please note that for some model conditions, such as model conditions for dams associated with a resource activity – non mining activity, the notification requirements may be located in a separate part of the conditions of an environmental authority (e.g. under notification requirement conditions).
- F1 Storage of tyres
- Scrap tyres stored awaiting disposal or transport for take-back and recycling, or waste-to-energy options must be stored in stable stacks and at least 10m from any other scrap tyre storage area, or combustible or flammable material, including vegetation.
- F2 All reasonable and practicable fire prevention measures must be implemented, including removal of grass and other materials within a 10m radius of the scrap tyre storage area.
- F3 Disposing of scrap tyres resulting from the authorised activities in spoil emplacements is acceptable, provided tyres are placed as deep in the spoil as reasonably practicable. A record must be kept of the number and location for tyres disposed.
- F4 Scrap tyres resulting from the mining activities disposed within the operational land must not impede saturated aquifers or compromise the stability of the consolidated landform.

F5 Waste Management

A Waste Management Plan, in accordance with the Environmental Protection (Waste Management) Policy 2000, must be implemented and must cover:

- a) describe how Ensham mine recognise and apply the waste management hierarchy;
- b) identify characterisations of wastes generated from the project and general volume trends over the past five (5) years;
- c) a program for safe recycling or disposal of all wastes - reusing and recycling where possible;
- d) waste commitments with auditable targets to reduce, reuse and recycle;
- e) the waste management control strategies must consider:
 - i) the type of wastes;
 - ii) segregation of the wastes;
 - iii) storage of the wastes;
 - iv) transport of the wastes;
 - v) monitoring and reporting matters concerning the waste;
 - vi) emergency response planning;
 - vii) disposal, reused and recycling options;
- f) identify the potential adverse and beneficial impacts of the wastes generated;
- g) detail the hazardous characteristics of the waste generated (if any);
- h) cover a disposal procedure for hazardous wastes ;
- i) outline the process to be implemented to allow for continuous improvement of the waste management systems;
- j) identify responsible staff (positions) for implementing, managing and reporting the Waste Management Plan; and
- k) cover a staff awareness and induction program that encourages re-use and recycling.

F6 Waste must not be burned or allowed to be burned on the licensed site unless by approval of the administering authority.

F7 A designated area must be set aside for the segregation of economically viable, recyclable solid and liquid waste.

F8 Records must be kept for five (5) years, and must include the following information:

- a) date of pickup of waste;
- b) description of waste;
- c) cross reference to relevant waste transport documentation;
- d) quantity of waste;
- e) origin of the waste;
- f) destination of the waste; and
- g) intended fate of the waste, for example, type of waste treatment, reprocessing or disposal.

NOTE: Records of documents maintained in compliance with a waste tracking system established under the Environmental Protection Act 1994 or any other law for regulated waste will be deemed to satisfy this condition.

F9 Records of trade and regulated wastes or material leaving the mining lease for recycling or disposal, including the final destination and method of treatment, must be in accordance with the Environmental Protection (Waste Management) Policy 2000.

F10 All regulated waste received at and removed from the site must be transported by a person who holds a current authority to transport such waste under the provisions of the Environmental Protection Act 1994.

F11 Except as otherwise provided by the conditions of this authority, all waste removed from the site must be taken to a facility that is lawfully allowed to accept such waste under the provisions of the Environmental Protection Act 1994.

Condition

Acoustic

E1 Noise nuisance

Noise from activities must not cause an environmental nuisance at any sensitive receptor or commercial place.

- E2 All noise from activities must not exceed the levels for the time periods specified in Table E2 at any sensitive receptor or commercial place.

Table E2 (Noise limits)

Noise Level dB(A)	7am – 6pm	6pm – 10pm	10pm – 7am
	Noise measured at a 'Noise sensitive place'		
L _A 10, adj, 10 mins	B/g + 5	B/g + 5	B/g + 3
L _A 1, adj, 10 mins	N/A	N/A	B/g + 8
	Noise measured at a 'Commercial place'		
L _A 10, adj, 10 mins	B/g + 10	B/g + 10	B/g + 5

- E3 Noise monitoring

When requested by the administering authority, noise monitoring must be undertaken to investigate any complaint of noise nuisance, and the results notified within fourteen (14) days to the administering authority. Monitoring must include:

- a) L_A 10, adj, 10 mins
- b) L_A 1, adj, 10 mins
- c) the level and frequency of occurrence of impulsive or tonal noise;
- d) atmospheric conditions including wind speed and direction;
- e) effects due to extraneous factors such as traffic noise; and
- f) location date and time of recording.

- E4 Noise is not considered to be a nuisance under Condition E1 if monitoring shows that noise does not exceed the levels in the time periods specified in Table E2 (Noise limits).

- E5 The method of measurement and reporting of noise monitoring must comply with the current edition of the administering authority's Noise Measurement Manual.

- E6 If monitoring indicates exceedance of the relevant limits in Condition E4, then the environmental authority holder must:

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

E7 Vibration nuisance

Vibration from the licensed activities must not cause an environmental nuisance at any sensitive or commercial place.

E8 When requested by the administering authority, vibration monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within fourteen (14) days to the administering authority following completion of monitoring.

E9 If the environmental authority holder can provide evidence through monitoring that the limits defined in Table E9 are not being exceeded then the environmental authority holder is not in breach of Condition E7. Monitoring must include:

- a) location of the blast(s) within the mining area (including which bench level); and
- b) atmospheric conditions including temperature, relative humidity and wind speed and direction; and
- c) location, date and time of recording.

Table E9 (Vibration limits)

Location	Vibration measured
Sensitive or commercial place	5 mm/s peak particle velocity for nine (9) out of ten (10) consecutive blasts and not greater than 10 mm/s peak particle velocity at any time

E10 If monitoring indicates exceedance of the relevant limits in Table E9 (Vibration limits), then the environmental authority holder must:

- a) address the complaint including the use of appropriate dispute resolution if required; and
- b) immediately implement vibration abatement measures so that vibration from the activity does not result in further environmental nuisance.

E11 Airblast overpressure nuisance

The airblast overpressure level from blasting operations on the premises must not exceed the limits defined in Table E11 at any nuisance sensitive or commercial place.

Table E11 (Airblast overpressure level)

Location	Airblast Overpressure Measured
Sensitive or commercial place	Air blast overpressure level of 115 db (Linear peak) for nine (9) out of ten (10) consecutive blasts initiated and not greater than 120 db (Linear peak) at any time.

- E12 When requested by the administering authority, airblast overpressure monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within fourteen (14) days to the administering authority following completion of monitoring.
- E13 Airblast overpressure monitoring must include the following descriptors, characteristics and conditions:
- location of the blast(s) within the mining area (including which bench level);
 - atmospheric conditions including temperature, relative humidity and wind speed and direction; and
 - location, date and time of recording.
- E14 If monitoring indicates exceedance of the relevant limits in Table E11, then the environmental authority holder must:
- address the complaint including the use of appropriate dispute resolution if required; and
 - immediately implement airblast overpressure abatement measures so that airblast overpressure from the activity does not result in further environmental nuisance.
- E15 The method of measurement and reporting of airblast overpressure levels must comply with the current edition of the administering authority's Noise Measurement Manual.

Condition

Air

B1 Dust nuisance

The release of dust or particulate matter or both resulting from the mining activity must not cause an environmental nuisance at any nuisance sensitive or commercial place.

B2 When requested by the administering authority or as a result of a complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer), dust and particulate monitoring must be undertaken, and the results thereof notified to the administering authority within fourteen (14) days following completion of monitoring. Monitoring must be carried out at a place(s) relevant to the potentially affected dust sensitive place. Dust and particulate matter must not exceed the following levels when measured at any nuisance sensitive or commercial place:

(a) dust deposition of 120 milligrams per square metre per day, when monitored in accordance with Australian Standard AS 3580.10.1 of 2003 (or more recent editions); and

(b) a concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (μm) (PM10) suspended in the atmosphere of 50 micrograms per cubic metre over a 24 hour averaging time, at a nuisance sensitive or commercial place downwind of the site, cannot be exceeded more than five (5) times per year, when monitored in accordance with:

- i) Australian Standard AS 3580.9.6 of 2003 (or more recent editions) Ambient air - Particulate matter - Determination of suspended particulate PM10 high-volume sampler with size-selective inlet - Gravimetric method; or
- ii) any alternative method of monitoring PM10 which may be permitted by the Air Quality Sampling Manual as published from time to time by the administering authority.
- iii) any alternative method of monitoring PM10 as set out in the relevant Australian Standard including AS/NZ 3580.9.9:2006 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM10 low volume sampler – Gravimetric method; AS/NZS 3580.9.6:2003 Methods for sampling and analysis of ambient air – Determination of particulate matter – PM10 high volume sampler with size-selected inlet – Gravimetric method; AS/NZS 3580.9.7:2009 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – Dichotomous sampler (PM10, coarse PM and PM2.5) – Gravimetric method; AS/NZS 3580.9.8:2008 Methods for sampling and analysis of ambient air – Method 9.8: Determination of suspended particulate matter – PM10 continuous direct mass method using a tapered element oscillating microbalance analyser, AS/NZS 3580.9.11:2008 Methods for sampling and analysis of ambient air – Method 9.11 Determination of suspended particulate matter – PM10 beta attenuation monitors (or more recent editions).

- B3 If monitoring indicates exceedance of the relevant limits in Condition B2, then the environmental authority holder must:
- (a) address the complaint including the use of appropriate dispute resolution if required; and
 - (b) immediately implement dust abatement measures so that emissions of dust from the activity do not result in further environmental nuisance.
- B4 The release of noxious or offensive odour(s) or any other noxious or offensive airborne contaminant(s) resulting from the mining activity must not cause an environmental nuisance at any nuisance sensitive or commercial place.
- B5 When requested by the administering authority, odour monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within fourteen (14) days to the administering authority following completion of monitoring.
- B6 If the administering authority determines the odour released to constitute an environmental nuisance, then the environmental authority holder must:
- (a) address the complaint including the use of appropriate dispute resolution if required; and
 - (b) immediately implement odour abatement measures so that emissions of odour from the activity do not result in further environmental nuisance.

Condition

Land

- G1 Preventing contaminant release to land

Contaminants must not be released to land in a manner which constitutes nuisance, material or serious environmental harm.

G2 Bord and pillar – factors of safety

The holder of the environmental authority will determine relevant pillar and roadway dimensions to ensure that the following factors of safety are achieved:

- a) 2.11 for bord and pillar workings beneath the Nogoa River anabranch;
- b) 2.11 for access roadways beneath the Nogoa River to connect the bord and pillar and longwall mining areas; and
- c) 1.6 for all other bord and pillar workings beneath the floodplain of the Nogoa River.

G3 Operational management protocols must be put in place to ensure that minimum pillar and roadway dimensions calculated to achieve the factors of safety in Condition G2 are achieved during the life of the bord and pillar operation.

G4 Rehabilitation success criteria

All surface areas significantly disturbed by mining activities must be rehabilitated to a safe, stable and non-polluting landform, with a self-sustaining vegetation cover in accordance with Appendix 4: Rehabilitation success criteria (attached as supporting document to this permit).

Underground workings must be rehabilitated to be safe, stable and non-polluting.

G5 Appendix 4: Rehabilitation success criteria.

The environmental authority holder must apply to amend the environmental authority to update Appendix 4: Rehabilitations Success Criteria for all domains excluding voids by 28 April 2017.

G6 The environmental authority holder must apply to amend the environmental authority to update Appendix 4: Rehabilitations Success Criteria for all domains including voids by 31 March 2019

G7 Rehabilitation activities

Rehabilitation must commence progressively in accordance with the Rehabilitation Management Plan required by Condition G11.

- G8 In addition to Condition G7, rehabilitation activities must be completed as specified in Table G8: Rehabilitation schedule and as shown in Appendix 5: Location of rehabilitation, in accordance with Appendix 4: Rehabilitation success criteria.

Table G8: Rehabilitation schedule

Time Frame	Location	Area	Activity
30 June 2017	Low wall spoil Pit B	At least 110 ha	Topsoil, rip and seed
30 June 2017	Low wall spoil Pit D, E	At least 50 ha	Reshape
19 December 2017	Low wall spoil Pit D, E	At least 50 ha	Reshape
19 December 2017	Low wall spoil Pit D, E	At least 100 ha	Topsoil, rip and seed
29 June 2018	Low wall spoil Pit D, E, F	At least 50 ha	Reshape
31 January 2019	Low wall spoil Pit D, E, F	At least 50 ha	Reshape
31 January 2019	Low wall spoil Pit D, E, F	At least 100 ha	Topsoil, rip and seed

- G9 Within 20 business days after each due date in Table G8: Rehabilitation schedule, the administering authority must receive notification on how rehabilitation has been undertaken in accordance with Condition G8.
- G10 A final report that describes and confirms that rehabilitation in accordance with Table G8: Rehabilitation schedule, has been undertaken, must be completed by a suitably qualified person and provided to the administering authority by 31 March 2019.

G11 Rehabilitation Management Plan

A Rehabilitation Management Plan for all mining domains must be developed by a suitably qualified person that includes the following:

- a) a map existing of areas of rehabilitation including classification of stage (i.e. time since establishment) and quality;
- b) a strategy for progressive rehabilitation, including a progressive rehabilitation schedule;
- c) details of the design objectives for rehabilitation of each domain to achieve rehabilitation success criteria and the identified post mining land uses;
- d) specify the spoil characteristics, soil analysis and soil separation for use on rehabilitation;
- e) specify the topsoil requirements for the site and how topsoil will be managed for use in rehabilitation;
- f) details of any topsoil deficit and how any deficit will be managed for successful rehabilitation;
- g) details of rehabilitation methods to be applied to areas;
- h) details of landform design including end of mine design;
- i) details of how landform design will be consistent with surrounding topography;
- j) identification of planned native vegetation rehabilitation areas and corridors;
- k) identification of at least a minimum of three (3) reference sites for use in rehabilitation monitoring;
- l) description of rehabilitation indicators and how these will be monitored;
- m) description of management actions to address unsuccessful rehabilitation or redesign;
- n) description of end of mine landform design planning and post mining land uses across the mine; and
- o) include a triple bottom line assessment (or a comparative alternative assessment method) of the proposed final landform design criteria and alternatives.

G12 The Rehabilitation Management Plan required by Condition G11 must be submitted to the administering authority by 31 May 2017 for review and comment.

G13 Within 20 business days of receiving comments from the administering authority, the Rehabilitation Management Plan must be updated to address the comments and resubmitted to the administering authority for approval.

G14 Rehabilitation activities must comply with the Approved Rehabilitation Management Plan.

G15 Residual voids

Residual voids must not cause any serious environmental harm to land, surface waters or any recognised groundwater aquifer, other than the environmental harm constituted by the existence of the residual void itself and subject to any other condition within this environmental authority.

G16 Residual Void Project

A Residual Void Project must be completed and submitted to the administering authority for review and comment by 31 March 2019, and must be comprised of the following at a minimum:

- a) Terms of Reference;
- b) Residual Void Study;
- c) Progress Reports; and
- d) Rehabilitation success criteria for voids

G17 The Terms of Reference for the Residual Void Project required by Condition G16 must be submitted to the administering authority by 15 March 2017 for review and comment.

G18 Within 20 business days of receiving comments from the administering authority, the Terms of Reference must be updated to address the comments and resubmitted to the administering authority for approval.

Once approved, the Terms of Reference may only be amended with written agreement from the administering authority.

G19 The Residual Void Project must be carried out in accordance with the Approved Terms of Reference.

- G20 The Residual Void Project required by Condition G16 must include, but not be limited to, the following:
- a) options available for minimising final void area and volume;
 - b) design objectives for rehabilitation of final voids;
 - c) void hydrology, addressing the long-term water balance in the voids, connections to groundwater resources and water quality parameters in the long term;
 - d) pit wall stability, considering the effects of long-term erosion and weathering of the pit wall and the effects of significant hydrological events;
 - e) options available for minimising risk of flood interaction for all flood events up to and including the Probable Maximum Flood level;
 - f) void capability to support native flora and fauna; and
 - g) void rehabilitation success criteria and final void areas and volumes to meet the outcomes in Condition G4.
- G21 Progress reports must detail the status of the Residual Void Project in accordance with the approved Terms of Reference and must be provided to the administering authority on or before the following dates:
- a) 31 July 2017;
 - b) 31 January 2018;
 - c) 31 July 2018; and
 - d) 31 October 2018; or
 - e) at any time upon request by the administering authority within 28 business days of receiving the request.
- G22 The Residual Void Project must be submitted to the administering authority in accordance with the approved Terms of Reference for review and comment.
- G23 Within 20 business of receiving comments from the administering authority, the Residual Void Project required by Condition G16 must be updated to address the comments and resubmitted to the administering authority for approval.
- G24 Prior to 31 March 2019 the environmental authority holder must submit an Environmental Authority amendment application to populate Appendix 4: Rehabilitation Success Criteria with rehabilitation success criteria for voids and residual void areas and volumes.

G25 Rehabilitation monitoring

Rehabilitation monitoring in accordance with Condition G11 must be conducted by a suitably qualified person on a yearly basis and provided to the administering authority upon request.

G26 An annual report that describes rehabilitation status against the requirements of Condition G4 must be developed by a suitably qualified person and provided to the administering authority upon request

G27 Post Closure Management Plan

A Post Closure Management Plan for the site must be prepared at least 18 months prior to the final coal processing on site and implemented for a nominal period of:

- a) at least thirty (30) years following final coal processing on site; or
- b) a shorter period if the site is proven to be geotechnically and geochemically stable and it can be demonstrated to the satisfaction of the administering authority that no release of contaminants from the site will result in environmental harm.

G28 The Post Closure Management Plan must include the following elements:

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

G29 Mine Waste

A Mining Waste Management Plan together with the certification by an appropriately qualified person must be developed and implemented during the continuation of the environmental authority. The Mining Waste Management Plan must at a minimum include:

- a) characterisation programs to ensure that all mining waste is progressively characterised during disposal for net acid producing potential, salinity and the following parameters: pH, Electrical Conductivity (EC), Acid Neutralising Capacity (ANC), Net Acid Generation (NAG) (reporting NAG capacity and NAG pH after oxidation), Total Sulphur (S), Chromium Reducible Sulphur (Scr), Boron (B) Cadmium (Cd), Iron (Fe), Aluminium (Al), Copper (Cu), Magnesium (Mg), Manganese (Mn), Calcium (Ca), Sodium (Na), Zinc (Zn) and Sulphate (SO₄);
- b) individual parameters in a) above can be removed following sufficient mine waste characterisation to demonstrate that certain individual parameters are not present in sufficient quantities to warrant further characterisation;
- c) characterisation programs to ensure that the physical properties of the mining waste is progressively characterised during disposal;
- d) the availability or leachability of metals from the mining waste;
- e) quantification of PAF from mining waste present;
- f) review impacts of the PAF mining waste on the rehabilitation;
- g) management actions for mining waste that has been identified as having a high availability or leachability of metals;
- h) management actions for mining waste that has been defined as PAF;
- i) identification of environmental impacts and potential environmental impacts;
- j) control measures for routine operations to minimise likelihood of environmental harm;
- k) contingency plans and emergency procedures for non-routine situations; and
- l) periodic review of environmental performance and continual improvement.

G30 Storage and handling of flammable and combustible liquids

All flammable and combustible liquids must be contained within an on-site containment system and controlled in a manner that prevents environmental harm and maintained in accordance with the current version of AS 1940 – Storage and Handling of Flammable and Combustible Liquids.

G31 Spillage of all flammable and combustible liquids must be controlled in a manner that prevents environmental harm.

G32 Storage and handling of chemicals

All chemicals must be contained within an on-site containment system and controlled in a manner that prevents environmental harm and maintained in accordance with the current version of the relevant Australian Standard.

G33 Spillage of all chemicals must be controlled in a manner that prevents environmental harm.

G34 Infrastructure

All infrastructure, constructed by or for the environmental authority holder during the licensed activities including water storage structures, must be removed from the site prior to surrender, except where agreed in writing by the post mining land owner / holder.

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

G35 Exploration

Disturbance due to exploration activities in areas not authorised to be mined must be rehabilitated in accordance with provisions detailed in the Code of Environmental Compliance for Exploration and Mineral Development Projects.

Condition

Social

H1 Complaint response

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

H2 The holder of this environmental authority must record the following details for all complaints received and provide this information to the administering authority on request:

- a) time, date, name and contact details of the complainant;
- b) reasons for the complaint;
- c) conclusions formed; and
- d) any actions taken

Condition

Water

C1 Contaminant Release

Contaminants that will, or have the potential to cause environmental harm must not be released directly or indirectly to any waters as a result of the authorised mining activities, except as permitted under the conditions of this environmental authority.

C2 Unless otherwise permitted under the conditions of this environmental authority, the release of mine affected water to waters must only occur from the release points specified in Table C2 and depicted in Appendix 1 attached to this environmental authority.

Table C2 (Mine affected water release points, sources and receiving waters)

Release Point (RP)	Easting (GDA94)	Northing (GDA94)	Mine Affected Water Source and Location	Monitoring Point	Receiving waters description
RP 1	653753	7401398	Ramp 24 Fill Point Dam, Ramp ¾ Drain, A, B, C, D, E, F and Y Pits	End of pipe	Nogoa River
RP2	654270	7412235	Y pit	End of pipe	Boggy creek

C3 The release of mine affected water to internal water management infrastructure that is installed and operated in accordance with a water management plan that complies with Condition C30 is permitted.

- C4 The release of mine affected water to waters in accordance with Condition C2 must not exceed the release limits stated in Table C4 when measured at the monitoring points specified in Table C2 for each quality characteristic.

Table C4 (Mine Affected Water Release Limits)

Quality Characteristics	Release Limits	Monitoring Frequency
Electrical conductivity ($\mu\text{S}/\text{cm}$)	10,000 $\mu\text{S}/\text{cm}$ (end of pipe)	Real time telemetry for EC and pH with grab samples at commencement and weekly thereafter when safe to do so and access permits. Daily grab samples if telemetry not available.
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	The first sample must be taken as soon as practicable following commencement of release.
Sulphate (SO_4^{2-})	1,000mg/L	Commencement of release and thereafter weekly during release.
Turbidity (NTU)	360	Daily during release (the first sample must be taken within 2 hours of commencement of release).

- C5 The release of mine affected water to waters from the release points must be monitored at the locations specified in Table C2 for each quality characteristics and at the frequency specified in Table C4 and Table C5.

NOTE: the administering authority will take into consideration any extenuating circumstances prior to determining an appropriate enforcement response in the event Condition C5 is contravened due to a temporary lack of safe or practical access. The administering authority expects the environmental authority holder to take all reasonable and practicable measures to maintain safe and practical access to designated monitoring locations.

Table C5 (Release contaminant trigger investigation levels)

Quality Characteristic	Trigger Levels* (µg/L)	Monitoring Frequency
Aluminium	300	Commencement of release and thereafter weekly during release.
Ammonia	900	
Arsenic	13	
Boron	370	
Cadmium	0.2	
Chromium	1.0	
Cobalt	90	
Copper	10	
Fluoride (total)	2000	
Iron	300	
Lead	4	
Manganese	1900	
Mercury	0.2	
Molybdenum	34	
Nickel	11	
Nitrate	1100	
Selenium	10	
Silver	1	
Sodium	TBA	

Petroleum hydrocarbons (C6-C9)	20	
Petroleum hydrocarbons (C10-C36)	100	
Uranium	20	
Vanadium	20	
Zinc	20	

NOTE:

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.
2. The quality characteristics required to be monitored as per Table C5 can be reviewed once the results of two years monitoring data is available, or if sufficient data is available to adequately demonstrate negligible environmental risk, and it may be determined that a reduced monitoring frequency is appropriate or that certain quality characteristics can be removed from Table C5 by amendment.
3. SMD – slightly moderately disturbed level of protection, guideline refers ANZECC & ARMCANZ (200).
4. LOR – typical reporting for method stated. ICPMS/CV FIMS – analytical method required to achieve LOR.

- C6 If quality characteristics of the release exceed any of the trigger levels specified in Table C5 during a release event, the environmental authority holder must compare the downstream monitoring point (MP5) to the trigger values specified in Table C5 and:
- (a) where the trigger values are not exceeded then no action is to be taken; or
 - (b) where the downstream monitoring points outlined in Table C20 exceed the trigger values specified Table C5 for any quality characteristic, compare the results of the downstream site to the data from background monitoring sites and;
 - (i) if the result is less than or equal to the background monitoring site data, then no action is to be taken; or
 - (ii) if the result is greater than the background monitoring site data, complete an investigation into the potential for environmental harm and provide a written report to the administering authority within 90 days, outlining:
 - 1) details of the investigations carried out; and
 - 2) actions taken to prevent environmental harm.

NOTE: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with Condition C6 b) ii of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.

- C7 If an exceedance in accordance with Condition C6 b) ii is identified, the holder of the authority must notify the administering authority in writing within 24 hours of receiving the result.

C8 Mine Affected Water Release Events

The environmental authority holder must ensure a stream flow gauging station/s is installed, operated and maintained to determine and record stream flows at the locations and flow recording frequency specified in Table C8.

Table C8 (Contaminant Release during Flow Events)

Receiving waters	Release point (RP)	Gauging Station	Gauging Station Easting	Gauging Station Northing	Receiving water flow recording frequency	Receiving water flow criteria for discharge (m3/s)	Electrical conductivity and sulphate release limits
Nogoa River	RP1	"GS2" DNRM Gauging Station 130219A Nogoa River at Duck Ponds.	650392	7402391	Continuous real time	Medium Flow 10m ³ /sec	Electrical conductivity (µS/cm): 10,000 Sulphate (SO ₄ ²⁻): 1,000mg/L
						Low Flow For a period of 28 days after natural flow events that exceed 10m ³ /sec	Electrical conductivity (µS/cm): <650 Sulphate (SO ₄ ²⁻): <250 mg/L
Boggy Creek	RP2	"GS3" Ramp 8 crossing of Boggy Creek at Yongala.	654855	7412729	Continuous real time	Medium Flow 2m ³ /sec	Electrical conductivity (µS/cm): 10,000 Sulphate (SO ₄ ²⁻): 1,000mg/L
						Low Flow <1.0m ³ /sec for a period of 28 days after natural flow events that exceed 2m ³ /sec	Electrical conductivity (µS/cm): <650 Sulphate (SO ₄ ²⁻): <250 mg/L

- C9 Notwithstanding any other condition of this environmental authority, the release of mine affected water to waters in accordance with Condition C2 must only take place during periods of natural flow events in accordance with the receiving water flow criteria for discharge specified in Table C8 for the release point(s) specified in Table C2.
- C10 The holder is prohibited from releasing mine affected water into releases made from Fairbairn Dam for entitlement holders or environmental flows in accordance with the Water Act 2000, Water Regulation 2002, Water Resource (Fitzroy Basin) Plan 2011 or Fitzroy Basin Resource Operations Plan.
- C11 The daily quantity of mine affected water released from each release point must be measured and recorded at the monitoring points in Table C2.
- C12 Releases to waters must be undertaken so as not to cause erosion of the bed and banks of the receiving waters, or cause a material build-up of sediment in such waters.
- C13 The 80th percentile of electrical conductivity (EC) values recorded at the downstream monitoring point (MP5) must not exceed 1,200 μ S/cm at any time during the release influence period and have a maximum value of no greater than 1,440 μ S/cm. The 80th percentile must be calculated using all EC values recorded by the monitoring station during the release influence period.
- NOTE: The release influence period is the period during which the downstream monitoring points are influenced by mine affected water released from Ensham Coal Mine and includes both the duration of release and any lag time between release point/s and downstream monitoring points
- C14 If electrical conductivity recorded at MP6 exceeds 650 μ S/cm during a release event, the environmental authority holder must immediately notify the administering authority and seek written approval to continue releasing mine affected water.

C15 Notification of Release Event

The environmental authority holder must notify the administering authority as soon as practicable and no later than twenty-four (24) hours after commencing to release mine affected water to the receiving environment. Notification must include the submission of written advice to the administering authority of the following information:

- a) release commencement date/time;
- b) details regarding the compliance of the release with the conditions of Department Interest: Water of the environmental authority (that is, contaminant limits, natural flow, discharge volume);
- c) release point/s;
- d) release rate;
- e) release salinity; and
- f) receiving water/s including the natural flow rate.

NOTE: Notification to the administering authority must be addressed through a notification to the WaTERS Unit.

C16 The environmental authority holder must notify the administering authority as soon as practicable and nominally no later than twenty-four (24) hours after cessation of a release event of the cessation of a release notified under Condition C15 and within 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 Department 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.

NOTE: Successive or intermittent releases occurring within twenty-four (24) hours of the cessation of any individual release can be considered part of a single release event and do not require individual notification for the purpose of compliance with Conditions C15 and C16, provided the relevant details of the release are included within the notification provided in accordance with Conditions C15 and C16

C17 Notification of Release Event Exceedance

If the release limits defined in Table C4 are exceeded, the holder of the environmental authority must notify the administering authority within twenty-four (24) hours of receiving the results.

C18 The environmental authority holder must, within twenty-eight (28) days of a release that is not compliant with the conditions of this environmental authority, provide a report to the administering authority detailing:

- a) the reason for the release;
- b) the location of the release;
- c) the total volume of the release and which (if any) part of this volume was non-compliant;
- d) the total duration of the release and which (if any) part of this period was non-compliant;
- e) all water quality monitoring results (including all laboratory analyses);
- f) identification of any environmental harm as a result of the non-compliance;
- g) all calculations; and
- h) any other matters pertinent to the water release event.

C19 Release notification – potentially affected stakeholder

The environmental authority holder must notify all potentially affected stakeholders on commencement (within 2 hours or another time frame as agreed to in writing with the relevant potentially affected stakeholder) of releasing mine affected water to the receiving environment. Notification must be in the form agreed to by the potentially affected stakeholder. Notification must include the following information unless otherwise agreed to by the potentially affected stakeholder:

- a) release commencement date/time;
- b) release location (release point/s);
- c) release rate;
- d) receiving waters for the release;
- e) receiving water flow rate
- f) water quality of the release including salinity and pH; and
- g) estimated duration of the release.

C20 Receiving Environment Monitoring and Contaminant Trigger Levels

The quality of the receiving waters must be monitored at the locations specified in Table C20 for each quality characteristic and at the monitoring frequency stated in Table C21.

Table C20 (Receiving water upstream background sites and downstream monitoring points)

Monitoring Points	Receiving Waters Location Description	Easting (GDA94)	Northing (GDA94)
Upstream background monitoring point			
MP2	Nogoa River at Duckponds (130219A)	650392.4	7402391.3
MP4	Boggy Creek – Ramp 8 crossing of Boggy Creek at Yongala	654855	7412729
Downstream monitoring points			
MP5	Nogoa River at Ensham Lease Boundary	654688	7400679
MP6	Mackenzie River at Riley's Crossing (130113A)	663861	7395396

C21 If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels for pH, suspended solids or sulphate specified in Table C21 during a release event the environmental authority holder must compare the downstream results to the upstream results in the receiving waters and:

a) where the downstream result is the same or a lower value than the upstream value for the quality characteristic then no action is to be taken; or

b) where the downstream results exceed the upstream results complete an investigation 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.

Table C21 (Receiving waters contaminant trigger levels)

Quality Characteristic	Contaminant Trigger Levels	Monitoring Frequency	Comments
Electrical Conductivity ($\mu\text{S}/\text{cm}$)	Cease Release 1,440 $\mu\text{S}/\text{cm}$ (MP5) 1,200 $\mu\text{S}/\text{cm}$ (80th%ile) (MP5) Approval Trigger 650 $\mu\text{S}/\text{cm}$ (MP6)	Real time telemetry. Daily grab samples if telemetry not available (the first sample must be taken as soon as practicable).	Grab samples shall be taken only when safe to do so and access permits. Refer to Condition C14.
pH	6.5-9.0		
Suspended Solids (mg/L)	1,000	Grab samples at commencement and weekly thereafter	Grab samples shall be taken only when safe to do so and access permits
Sulphate (SO_4^{2-})	250		

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

* Quality characteristics required to be monitored as stated. Trigger level to be reviewed once the results of appropriate monitoring data is available.

NOTE: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with Condition C21(b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.

C22 Receiving Environment Monitoring Program (REMP)

The environmental authority holder must maintain and implement a Receiving Environment Monitoring Program (REMP) to monitor, identify and describe any adverse impacts to surface water environmental values, quality and flows due to the authorised mining activity. This must include monitoring the effects of the mine on the receiving environment periodically (under natural flow conditions) and while mine affected water is being discharged from the site.

For the purposes of the REMP, the receiving environment is the waters of the Nogoa River, downstream of Ensham Coal Mine to Riley's Crossing of the Mackenzie River and downstream of the Comet River junction. The REMP should encompass any sensitive receiving waters or environmental values downstream of the authorised mining activity that will potentially be directly affected by an authorised release of mine affected water.

C23 The REMP must:

- a) assess the condition or state of receiving waters, including upstream conditions, spatially within the REMP area, considering background water quality characteristics based on accurate and reliable monitoring data that takes into consideration temporal variation (e.g. seasonality);
- b) be designed to facilitate assessment against water quality objectives for the relevant environmental values that need to be protected;
- c) include monitoring from background reference sites (e.g. upstream or background) and downstream sites from the release (as a minimum, the locations specified in Table C20);
- d) specify the frequency and timing of sampling required in order to reliably assess ambient conditions and to provide sufficient data to derive site specific background reference values in accordance with the Queensland Water Quality Guidelines 2006. This should include monitoring during periods of natural flow irrespective of mine or other discharges;
- e) include monitoring and assessment of dissolved oxygen saturation, temperature and all water quality parameters listed in Table C4 and C5;
- f) include, where appropriate, monitoring of metals/metalloids in sediments (in accordance with ANZECC & ARMCANZ 2000, BATLEY and/or the most recent version of AS5667.1 Guidance on Sampling of Bottom Sediments);
- g) include, where appropriate, monitoring of macroinvertebrates in accordance with the AusRivas methodology,
- h) apply procedures and/or guidelines from ANZECC & ARMCANZ 2000 and other relevant guideline documents;
- i) describe sampling and analysis methods and quality assurance and control; and
- j) incorporate stream flow and hydrological information in the interpretations of water quality and biological data.

- C24 A report outlining the findings of the REMP, including all monitoring results and interpretations in accordance with Conditions C22 and C23 must be prepared annually and made available on request to the administering authority. This must include an assessment of background reference water quality, the condition of downstream water quality compared against water quality objectives, and the suitability of current discharge limits to protect downstream environmental values.

C25 Water reuse

Mine affected water may be piped or trucked or transferred by some other means that does not contravene the conditions of this environmental authority and deposited into artificial water storage structures, such as farm dams or tanks, or used directly at properties owned by the environmental authority holder or a third party (with the consent of the third party).

C26 All determinations of water quality and biological monitoring must be performed by an appropriately qualified person.

C27 The release of any contaminants as permitted by this environmental authority, directly or indirectly to waters, other than internal water management infrastructure that is installed and operated in accordance with a water management plan that complies with Condition C30:

- a) must not produce any visible discolouration of receiving waters; and
- b) must not produce any slick or other visible or odorous evidence of oil, grease or petrochemicals nor contain visible floating oil, grease, scum, litter or other objectionable matter.

C28 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 with each annual return:

- a) the date on which the sample was taken;
- b) the time at which the sample was taken;
- c) the monitoring point at which the sample was taken;
- d) the measured or estimated daily quantity of the contaminants released from all release points;
- e) the release flow rate at the time of sampling for each release point;
- f) the results of all monitoring and details of any exceedances with the conditions of this environmental authority; and
- g) water quality monitoring data must be provided to the administering authority in the specified electronic format upon request.

C29 Activities within watercourses

Destroying native vegetation, excavating, or placing fill in a watercourse, lake or spring necessary for and associated with mining operations must be undertaken in accordance with the administering authority's Guideline - Activities in a Watercourse, Lake or Spring associated with Mining Activities

C30 Water Management Plan

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

C31 Saline drainage

The holder of this environmental authority must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of saline drainage.

C32 Acid rock drainage

The holder of this environmental authority must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of acid rock drainage.

C33 Stormwater and water sediment 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 minimise erosion and the release of sediment to receiving waters and contamination of stormwater.

C34 Stormwater, other than mine affected water, is permitted to be released to waters from:

- a) erosion and sediment control structures that are installed and operated in accordance with the Erosion and Sediment Control Plan required by Condition C33; and
- b) water management infrastructure that is installed and operated, in accordance with a Water Management Plan that complies with Condition C30, for the purpose of ensuring water does not become mine affected water.

C35 The maintenance and cleaning of any vehicles, plant or equipment must not be carried out in areas from which contaminants can be released into any receiving waters.

C36 Any spillage of wastes, contaminants or other materials must be cleaned up as quickly as practicable to minimise the release of wastes, contaminants or materials to any stormwater drainage system or receiving waters.

C37 Sewage effluent

Sewage effluent used for dust suppression or irrigation must not exceed sewage release limits defined in Table C37.

Table C37 (Sewage effluent quality standards)

Quality	Release limit	Units	Limit type	Monitoring frequency
5 Day BOD	20	mg/L	max	On release
pH	6 - 8		range	On release
Free Chlorine residuals	1.0	mg/L	max	On release
Faecal coliforms (based on the average of a minimum of 5 samples)	1,000	Colonies per 100ml	max	On release

C38 Groundwater

Mining operations must not adversely impact the groundwater receiving environment.

C39 Groundwater quality and levels must be monitored by an appropriately qualified person at the locations and frequencies defined in Table C8 and for quality characteristics identified in Table C9.

C40 The holder of the environmental authority will provide an equivalent (in quality and quantity), alternative water supply to the owner of the privately owned bore/s, as listed in Table C8, as a result of demonstrated adverse impact caused by the Ensham mine.

C41 Subject to Condition C39, if the groundwater investigation trigger levels defined in Table C9 are exceeded then the environmental authority holder must complete an investigation into the potential for environmental harm and notify the administering authority with twenty-eight (28) days of receiving the analysis results.

- C42 The standing water level for groundwater monitoring bore RB06 must be provided to the administering authority, and included in the environmental authority via an amendment by 30 April 2018.
- C43 Groundwater drawdown fluctuations of greater than 2m from the standing water levels specified in Table C8, not resulting from the pumping of licensed bores, must be notified to the administering authority within twenty-eight (28) days following detection of drawdown.
- C44 Background Groundwater Monitoring Program

A background groundwater monitoring program must be developed, implemented and maintained to include bore(s) that are located an appropriate distance from potential sources of impact from mining activities to provide the following:

- a) representative groundwater samples from the aquifers potentially affected by mining activities;
 - b) routine sampling to determine background groundwater data as far as practicable; and,
 - c) background groundwater data in hydraulically isolated background bore(s) that have not been affected by any mining activities.
- C45 The groundwater monitoring data must be reviewed on an annual basis. The review must include the assessment of groundwater levels and quality data and the suitability of the monitoring network. The assessment must be submitted to the administering authority within twenty-eight (28) days of receiving the review report.
- C46 The following information must be recorded in relation to all groundwater water sampling:
- 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; and
 - d) the results of all monitoring.

Table C8 (Groundwater monitoring locations)						
Location	Monitoring Point	Easting (GDA94)	Northing (GDA94)	Aquifer	Standing Water Levels (mAHD)	Frequency
Nogoa River Alluvium	EC01	650018	7403059	Alluvium	143.63	Quarterly
Nogoa River Alluvium	EC03	650338	7402547	Alluvium	143.18	Quarterly
Nogoa River Alluvium	EC07	650973	7401746	Alluvium	141.39	Quarterly
Nogoa River Alluvium	EC09A	651354	7401504	Alluvium	140.33	Quarterly
Nogoa River Alluvium	EC11	651517	7401192	Alluvium	139.54	Quarterly
Nogoa River Alluvium	EC13	651517	7400776	Alluvium	138.95	Quarterly
Nogoa River Alluvium	EC14	651676	7400653	Alluvium	138.76	Quarterly
Nogoa River Alluvium	GW01	653934	7400423	Alluvium	139.50	Quarterly
Regional Bores (Private Property)	Karanga (Bore A)	649043	7388304	Unknown	133.15	Quarterly
Regional Bores (Private Property)	Winton Creek (Bore 4)	642771	7400758	Unknown	137.76	Quarterly
Regional Bores (Private Property)	Twin Bore (Bore 5)	641319	7401567	Unknown	153.25	Quarterly
Regional Bores (Private Property)	Jamar Bore (Bore 7)	642025	7399084	Rewan Formation	115.02	Quarterly
Regional Bores (Private Property)	Yongala (RN89383)	657586	7415693	Burngrove Formation	213.47	Quarterly
Regional Bores (Private Property)	Fairhills (RN89380)	658696	7416877	Burngrove Formation	213.75	Quarterly
Regional Bores (Private Property)	Railway (RN90140)	663591	7412470	Undiff Coal Measures	162.61	Quarterly
Regional Bores (Ensham Mine)	RB01	650018	7412835	Rewan, Rangal	146.24	Quarterly
Regional Bores (Ensham Mine)	RB02	647787	7410365	Rewan, Rangal	135.29	Quarterly
Regional Bores (Ensham Mine)	RB03	645503	7402324	Rewan,	136.42	Quarterly

				Rangal		
Regional Bores (Ensham Mine)	RB04	642784	7398932	Rewan	136.06	Quarterly
Regional Bores (Ensham Mine)	RB05	646209	7395311	Rangal – overburden, coal	137.21	Quarterly
Regional Bores (Ensham Mine)	RB06	648836	7392168	Rangal coal	As per Condition C42	Quarterly

Table C9 (Groundwater investigation trigger levels)

Parameter	Unit	Trigger Levels	Limit Type
pH	pH Units	mean $\pm$ 3s #	Minimum/Maximum
Electrical Conductivity	Micro Siemens per centimetre	mean $\pm$ 3s #	DERM (2010) [1]
Total Dissolved Solids	Milligram per litre	mean $\pm$ 3s #	DERM (2010) [1]
Calcium	Milligram per litre	mean + 3s #	DERM (2010) [1]
Magnesium	Milligram per litre	mean + 3s #	DERM (2010) [1]
Sodium	Milligram per litre	mean + 3s #	DERM (2010) [1]
Potassium	Milligram per litre	mean + 3s #	DERM (2010) [1]
Chloride	Milligram per litre	mean + 3s #	DERM (2010) [1]
Sulfate	Milligram per litre	mean + 3s #	DERM (2010) [1]
Carbonate	Milligram per litre	mean + 3s #	DERM (2010) [1]
Bicarbonate	Milligram per litre	mean + 3s #	DERM (2010) [1]
Iron	Milligram per litre	mean + 3s #	DERM (2010) [1]

Aluminium	Milligram per litre	5	ANZECC (2000) Livestock Drinking Water Level
Silver	Milligram per litre	0.002	Based on available dataset upper limit
Arsenic	Milligram per litre	0.5	ANZECC (2000) Livestock Drinking Water Level
Mercury	Milligram per litre	0.002	ANZECC (2000) Livestock Drinking Water Level
Antimony	Milligram per litre	0.005	Based on available dataset upper limit
Molybdenum	Milligram per litre	0.15	ANZECC (2000) Livestock Drinking Water Level
Selenium	Milligram per litre	0.1	Based on available dataset upper limit
Total Petroleum Hydrocarbons C6-C9 (silica gel) *	Micrograms per litre	≤20 (LOR)	Laboratory limit of reporting (LOR)
Total Petroleum Hydrocarbons C10-C14 (silica gel) *	Micrograms per litre	≤50 (LOR)	Laboratory limit of reporting (LOR)
Total Petroleum Hydrocarbons C15-C28 (silica gel) *	Micrograms per litre	≤100 (LOR)	Laboratory limit of reporting (LOR)
Total Petroleum Hydrocarbons C29-C36 (silica gel) *	Micrograms per litre	≤50 (LOR)	Laboratory limit of reporting (LOR)
NOTE: All metals and metalloids must be measured as total (unfiltered) and dissolved (filtered). Trigger levels for metal and metalloids apply if dissolved results exceed trigger.			
* TPH analysis with silica gel clean-up. If monitoring requirements change to TRH according to the National Environment Protection Measures (NEPM) the trigger levels should remain unchanged.			
# Specific limits for individual monitoring points apply. Trigger levels applied to individual bores at the time of submission of the Background Groundwater Monitoring Program are included in Appendix 3 (Attached as a supporting document to this permit) with recognition that as the volume of groundwater data increases, these limits will be modified when applied to ongoing sampling results.			
[1] DERM (2010) Guideline - Recording Interpretation and Analysis of Monitoring Results, ERA 60 - Waste Disposal. Trigger levels to be recalculated annually and applied, based on ongoing water quality monitoring data			

Definitions

Key terms and/or phrases used in this document are defined in this section. 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 actions implemented are deemed to be complete. The acceptance criteria indicate the success of the decommissioning and rehabilitation outcomes or remediation of areas which have been significantly disturbed by the environmentally relevant activities. Acceptance criteria may include information regarding:

- a) stability of final land forms in terms of settlement, erosion, weathering, pondage and drainage;
- b) control of geochemical and contaminant transport processes;
- c) quality of runoff waters and potential impact on receiving environment;
- d) vegetation establishment, survival and succession;
- e) vegetation productivity, sustained growth and structure development;
- f) fauna colonisation and habitat development;
- g) 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;
- h) microbiological studies including recolonisation by mycorrhizal fungi, microbial biomass and respiration;
- i) effects of various establishment treatments such as deep ripping, topsoil handling, seeding and fertiliser application on vegetation growth and development;
- j) resilience of vegetation to disease, insect attack, drought and fire; and
- k) vegetation water use and effects on ground water levels and catchment yields.

“accepted engineering standards” in relation to dams, means those standards of design, construction, operation and maintenance that are broadly accepted within the profession of engineering as being good practice for the purpose and application being considered. In the case of dams, the most relevant documents would be publications of the Australian National Committee on Large Dams (ANCOLD), guidelines published by Queensland government departments, and relevant Australian and New Zealand Standards.

“acid rock drainage” means any contaminated discharge emanating from a mining activity formed through a series of chemical and biological reactions, when geological strata is disturbed and exposed to oxygen and moisture as a result of mining activity.

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

“affected person” is someone whose drinking water can potentially be impacted as a result of discharges from a dam or their life can be put at risk due to dwellings or workplaces being in the path of a dam break flood.

“airblast overpressure” means energy transmitted from the blast site within the atmosphere in the form of pressure waves. The maximum excess pressure in this 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 exceedence probability” or **“AEP”** means 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 the *Australian and New Zealand Guidelines for Fresh Marine Water Quality 2000*.

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

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

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

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

“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*.

“bed and banks” for a waters, river, creek, stream, lake, lagoon, pond, swamp, wetland or dam means land over which the water of the waters, lake, lagoon, pond, swamp, wetland or dam normally flows or that is

normally covered by the water, whether permanently or intermittently; but does not include land adjoining or adjacent to the bed and banks that is from time to time covered by floodwater.

“beneficial use” in respect of dams means that the current or proposed owner of the land on which a dam stands, has found a use for that dam that is:

- a) of benefit to that owner in that it adds real value to their business or to the general community,
- b) in accordance with relevant provisions of the *Environmental Protection Act 1994*,
- c) sustainable by virtue of written undertakings given by that owner to maintain that dam, and
- d) the transfer and use have been approved or authorised under any relevant legislation.

“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’.

“chemical” means –

- a) an agricultural chemical product or veterinary chemical product within the meaning of the *Agricultural and Veterinary Chemicals Code Act 1994* (Commonwealth); or
- b) a dangerous good under the dangerous goods code; or
- c) a lead hazardous substance within the meaning of the *Workplace Health and Safety Regulation 1997*; or
- d) a drug or poison in the *Standard for the Uniform Scheduling of Drugs and Poisons* prepared by the Australian Health Ministers’ Advisory Council and published by the Commonwealth; or
- e) any substance used as, or intended for use as –
 - i) a pesticide, insecticide, fungicide, herbicide, rodenticide, nematocide, miticide, fumigant or related product; or
 - ii) a surface active agent, including, for example, soap or related detergent; or
 - iii) a paint solvent, pigment, dye, printing ink, industrial polish, adhesive, sealant, food additive, bleach, sanitiser, disinfectant, or biocide; or
 - iv) a fertiliser for agricultural, horticultural or garden use; or
- f) a substance used for, or intended for use for –
 - i) mineral processing or treatment of metal, pulp and paper, textile, timber, water or wastewater; or
 - ii) manufacture of plastic or synthetic rubber.

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

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

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

"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 (EM635)*.

"contaminated" means the substance has come into contact with a contaminant.

"contaminant" A contaminant can be –

- a) a gas, liquid or solid; or
- b) an odour; or
- c) an organism (whether alive or dead), including a virus; or
- d) energy, including noise, heat, radioactivity and electromagnetic radiation; or
- e) a combination of contaminants.

"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.

"design storage allowance or DSA" means an available volume, estimated in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* 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.

"designer" for the purposes of a regulated dam, means the certifier of the design plan for the regulated dam.

"effluent" treated waste water discharged from sewage treatment plants.

"emergency action plan" means documentation forming part of the operational plan held by the holder or a nominated responsible officer, that identifies emergency conditions that sets out procedures and actions that will be followed and taken by the dam owner and operating personnel in the event of an emergency. The actions are to minimise the risk and consequences of failure, and ensure timely warning to downstream communities and the implementation of protection measures. The plan must require dam owners to annually update contact.

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

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

“environmentally relevant activity” means an environmentally relevant activity as defined under Section 18 of the *Environmental Protection Act 1994* and listed under Schedule 2 of the *Environmental Protection Regulation 2008*.

“existing structure” means a structure that was in existence prior to the adoption of this schedule of conditions under the authority.

“extreme Storm Storage” – means a storm storage allowance determined in accordance with the criteria in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* published by the administering authority

“financial assurance” means a security required under the *Environmental Protection Act 1994* by the administering authority to cover the cost of rehabilitation or remediation of disturbed land or to secure compliance with the environmental authority.

“flowable substance” means matter or a mixture of materials which can flow under any conditions potentially affecting that substance. Constituents of a flowable substance can include water, other liquids fluids or solids, or a mixture that includes water and any other liquids fluids or solids either in solution or suspension.

“foreseeable future” is the period used for assessing the total probability of an event occurring. Permanent structures and ecological sustainability should be expected to still exist at the end of a 150 year foreseeable future with an acceptable probability of failure before that time. **“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.

“holder” means:

- a) where this document is an environmental authority, any person who is the holder of, or is acting under, that environmental authority; or
- b) where this document is a development approval, any person who is the registered operator for that development approval.

“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 (EM635)*.

“infrastructure” means water storage dams, roads and tracks, buildings and other structures built for the purpose and duration of the conduct of the environmentally relevant activities, but does not include other facilities required for the long term management of the impact of those activities or the protection of potential resources. Such other facilities include dams other than water storage dams, waste dumps, voids, or stockpiles and assets, that have been decommissioned, rehabilitated, and lawfully recognised as being subject to subsequent transfer with ownership of the land.

“lake” includes –

- a) lagoon, swamp or other natural collection of water, whether permanent or intermittent; and
- b) the bed and banks and any other element confining or containing the water.

“**L_A 10, adj, 10 mins**” means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 10% of any 10-minute measurement period, using Fast response.

“**L_A 1, adj, 10 mins**” means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 1% of any 10-minute measurement period, using Fast response.

“**L_A, max adj, T**” means the average maximum A-weighted sound pressure level, adjusted for noise character and measured over any 10 minute period, using Fast response.

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

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

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

“**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* (EM635).

“**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* (EM635) published by the administering authority.

“**manual**” means the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures* (EM635) published by the administering authority.

“**mg/L**” means milligrams per litre.

“**mine affected water**”

- a) means the following types of water:
- i) pit water, tailings dam water, processing plant water;
 - ii) water contaminated by a mining activity which would have been an environmentally relevant activity under Schedule 2 of the *Environmental Protection Regulation 2008* if it had not formed part of the mining activity;
 - iii) rainfall runoff which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated, excluding rainfall runoff discharging through release points associated with erosion and sediment control structures that have been installed in accordance with the standards and requirements of an Erosion and Sediment Control Plan to manage such runoff, provided that this water has not been mixed with pit water, tailings dam water, processing plant water or workshop water;
 - iv) groundwater which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated;
 - v) groundwater from the mine's dewatering activities;

- vi) a mix of mine affected water (under any of paragraphs i)-v) and other water.
- b) does not include surface water runoff which, to the extent that it has been in contact with areas disturbed by mining activities that have not yet been completely rehabilitated, has only been in contact with:
 - i) land that has been rehabilitated to a stable landform and either capped or revegetated in accordance with the acceptance criteria set out in the environmental authority but only still awaiting maintenance and monitoring of the rehabilitation over a specified period of time to demonstrate rehabilitation success; or
 - ii) land that has partially been rehabilitated and monitoring demonstrates the relevant part of the landform with which the water has been in contact does not cause environmental harm to waters or groundwater, for example:
 - 1) areas that are been capped and have monitoring data demonstrating hazardous material adequately contained with the site;
 - 2) evidence provided through monitoring that the relevant surface water would have met the water quality parameters for mine affected water release limits in this environmental authority, if those parameters had been applicable to the surface water runoff; or
 - iii) both.

“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’).

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

“nature” includes:

- a) ecosystems and their constituent parts; and
- b) all natural and physical resources; and
- c) natural dynamic processes.

“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.

“operational land” means the land associated with the project for which this environmental authority has been issued.

“operational plan” includes:

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

“Potentially Affected Stakeholders” includes (but should not be limited to)

- a) the administering authority;
- b) a local landholder whose property is riparian, downstream of the release point specified in Table C1 of the environmental authority and is determined by the environmental authority holder to be potentially impacted by mine affected water releases;
- c) other party nominated by the administering authority;
- d) the relevant local government authority;
- e) a Resource Operations Licence (ROL) holder or other water entitlement holder under the *Water Act 2000* located between the nearest compliance point listed in Table 1 of the operational policy and the release point specified in Table C1 of the environmental authority; and
- f) does not include a landholder or other party who by written agreement with the environment authority holder has declined to be notified for the purpose of this condition.

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

- a) a marine park under the *Marine Parks Act 1992*; or
- b) a World Heritage Area.

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

“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.

“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 structure as assessed using the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)*;
- 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 structure;
- e) name and qualifications of the suitably qualified and experienced person who certified the design plan and 'as constructed' drawings;
- f) for the regulated structure, 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 structure;
- 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 structure 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.

“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.

“regulated dam” means any dam in the significant or high consequence category as assessed using the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)* published by the administering authority.

“regulated structure” includes dams which are regulated dams, land-based containment structures, levees, bunds and voids, but not a tank or container designed and constructed to an Australian Standard that deals with strength and structural integrity.

“regulated waste” means non-domestic waste mentioned in schedule 7 of the *Environmental Protection Regulation 2008* (whether or not it has been treated or immobilised), and includes:

- a) for an element – any chemical compound containing the element; and
- b) anything that has contained the waste.

“rehabilitation” the process of reshaping and revegetating land to restore it to a stable landform and in accordance with the acceptance criteria set out in this environmental authority and, where relevant, includes remediation of contaminated land.

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

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

“saline 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) a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or
- b) a motel, hotel or hostel; or
- c) an educational institution; or
- d) a medical centre or hospital; or
- e) a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 1992* or a *World Heritage Area*; or
- f) a public park or gardens.

“sewage” means the used water of person's to be treated at a sewage treatment plant.

“significant disturbance” – includes land

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

Some examples of disturbed land include:

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

However, the following areas are not included:

- a) areas off lease (e.g. roads or tracks which provide access to the mining lease);

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

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

“stable” in relation to land, means land form dimensions are 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 (trafficability), erosion resistance and geochemical stability with respect to seepage, leachate and related 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:

- a) for regulated dams, an RPEQ who is a civil engineer with the required qualifications in dam safety and dam design;
- b) 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.

“Suitably qualified person” in relation to rehabilitation means one who holds relevant professional qualifications to the satisfaction of the administering authority; AND demonstrated knowledge, experience and expertise in relevant fields as set out below:

- a) rehabilitation practices for resource activities; and
- b) a total of five years of suitable experience and demonstrated expertise in the following categories:
 - i. coal mine site rehabilitation;
 - ii. development of rehabilitation management plans and monitoring programs; and
 - iii. Assessment of rehabilitation performance indicators in the resources industry.

“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.

“Terms of Reference” means the purpose, structure, scope and timing of the Residual Void Project, as approved by the administering authority.

“tolerable limits” means a range of parameters regarded as being sufficient to meet the objective of protecting relevant environmental values. For example, a range of settlement for a tailings capping, rather

than a single value, could still meet the objective of draining the cap quickly, preventing pondage and limiting infiltration and percolation.

“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.

“void” means any constructed, open excavation in the ground.

“waste” as defined in section 13 of the *Environmental Protection Act 1994*.

“water” means –

- a) water in waters or spring;
- b) underground water;
- c) overland flow water; or
- d) water that has been collected in a dam.

“waste water” means used water from the activity, process water or contaminated storm water.

“watercourse” has the meaning in Schedule 4 of the *Environmental Protection Act 1994* and means 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.

Watercourse includes the bed and banks and any other element of a river, creek or stream confining or containing water.

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

“Water year” means the 12-month period from 1 July to 30 June.

“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.

“µg/L” means micrograms per litre.

Appendices

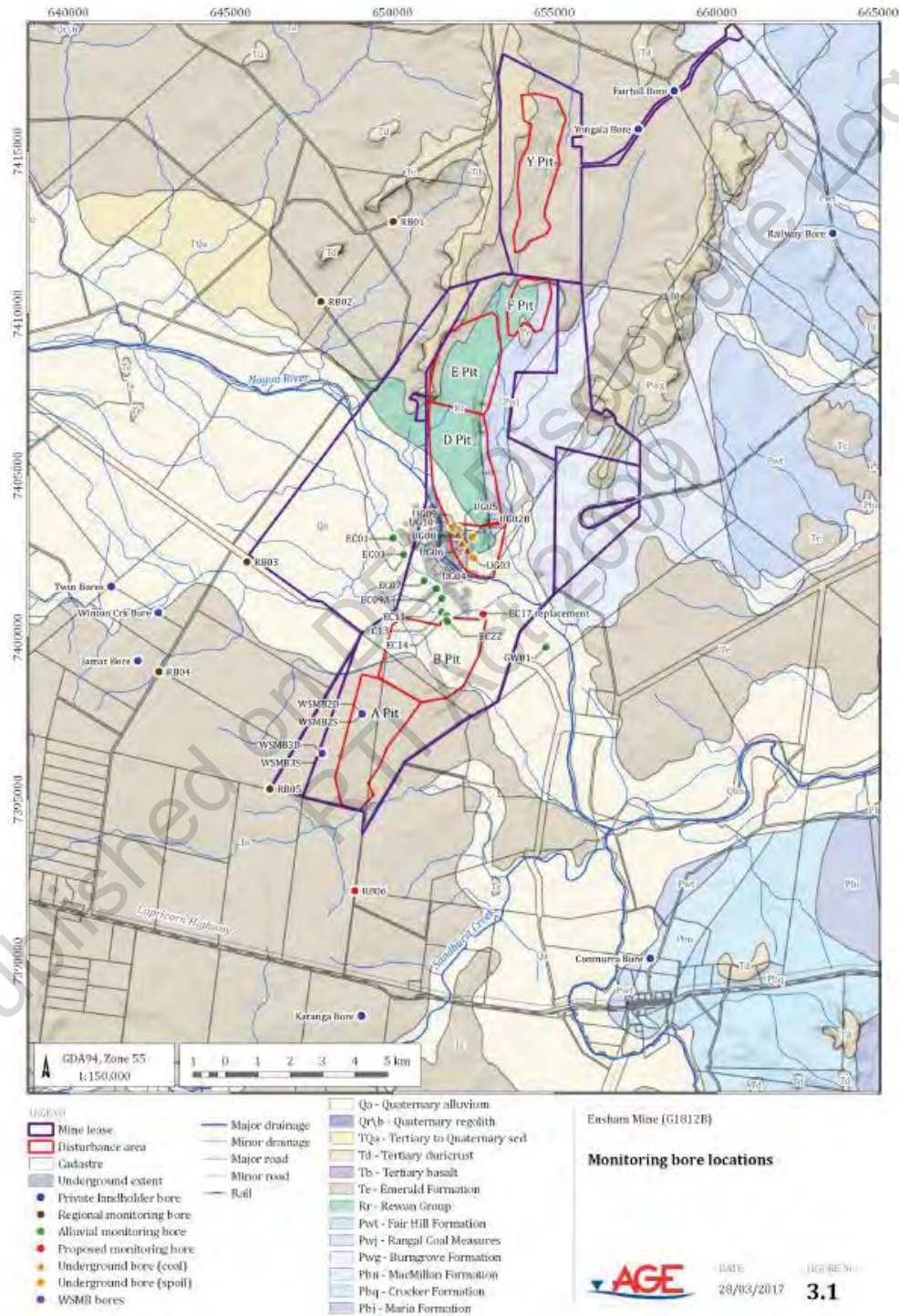
Appendix 1 – EA Water Monitoring Points



EA Water Monitoring Points			
●	Release Points	Scale	Natural
●	Monitoring Points	Date	14/06/2010
●	Gauging Stations	Version	1
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Appendix 2 - Groundwater Monitoring Network Review



Appendix 3 Groundwater Trigger Levels (Background Groundwater Monitoring Report)

Monitoring	pH	EC	TDS	Ca	Mg	Na	K	Cl	SO ₄	CO ₃	HCO ₃	Fe
Units	pH units	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Limit type	range	max	max	max	max	max	max	max	max	max	max	max
Bore EC01	6.2 – 8.1	62,98 1	43,93 4	1,344	2,162	10,71 4	15	21,21 2	2,040	8	2,739	3.66
Bore EC02	6.7 – 7.9	17,09 2	13,99 2	149	356	2,720	9	4,413	390	9	1,547	3.82
Bore EC03	5.6 – 8.2	48,04 6	40,92 8	1,800	2,186	5,672	24	16,64 7	1,749	9	1,214	21.21
Bore EC04	6.6 – 8.0	5,763	3,563	275	222	761	9	1,304	173	9	1,519	3.45
Bore EC05	6.9 – 8.2	53,64 2	38,43 0	1,360	1,853	8,209	27	18,93 9	1,783	9	1,220	2.02
Bore EC06	6.3 – 7.8	6,176	4,608	426	317	625	26	1,794	143	9	1,409	7.55
Bore EC07	6.3 – 8.1	30,19 1	18,41 2	1,149	1,264	4,964	23	11,93 0	1,080	9	896	11.31
Bore EC08	6.8 – 7.7	2,502	1,552	136	82	342	13	502	11	10	807	14.08
Bore EC09	6.2 – 8.3	50,52 5	42,53 2	1,737	1,829	6,807	15	17,96 1	1,607	10	869	13.43
Bore EC09A	5.9 – 8.2	47,11 0	35,18 3	1,406	1,926	6,346	21	15,88 1	1,446	9	1,291	21.83
Bore EC10	6.5 – 8.4	7,640	3,637	203	227	832	7	1,583	162	9	563	1.15
Bore EC11	6.0 – 8.2	27,78 3	18,58 3	838	807	3,362	21	7,820	695	9	1,070	33.45
Bore EC12	5.2 – 8.7	16,73 2	11,32 6	1,017	1,086	1,594	18	6,768	359	8	615	31.05
Bore EC13	5.7 – 8.4	33,75 5	28,17 2	1,209	953	4,386	32	10,56 7	858	9	1,144	10.16
Bore EC14	5.9 – 8.2	11,81 4	10,21 1	608	512	1,237	26	3,646	227	9	838	12.57
Bore EC15	6.6 – 8.1	4,280	2,577	258	218	249	6	1,176	79	1	559	2.41
Bore EC16	6.4 – 8.5	1,844	1,106	32	27	386	7	281	23	9	750	9.47
Bore EC17	6.1 – 7.8	2,698	2,173	146	96	327	7	550	425	1	464	9.94
Bore EC18	- ²	- ²	5,000 ¹	1,000 ¹	- ²	- ²	- ²	- ²	1,000 ¹	- ²	- ²	- ²
Bore EC19	7.0 – 8.1	629	429	21	32	63	1	26	18	1	241	0.05
Bore EC20	6.2 – 7.6	1,326	753	88	53	122	6	196	49	1	409	0.92
Bore EC22	6.2 – 8.5	6,859	6,020	320	342	792	11	2,256	1,727	9	694	2.45
Bore EC23	9.2 – 8.5	9,019	6,352	420	438	1,037	8	2,710	183	1	1,024	1.21
Bore GW1	7.1 – 8.8	15,63 4	9,003	182	460	2,189	10	4,178	284	93	2,043	1.25
Bore GW2	6.7 – 7.9	5,078	2,448	57	30	120	8	1,051	143	10	599	2.08
DERM 13020177	6.2 – 9.1	7,092	3,747	60	124	1,060	3	1,561	471	10	748	5.77
Weir Bore	6.5 – 9.4	3,264	1,872	39	56	568	12	879	110	79	1,035	1.30
Jamar	7.1 – 8.6	6,595	3,624	108	81	1,160	18	2,101	3	1	538	8.04

Monitoring	pH	EC	TDS	Ca	Mg	Na	K	Cl	SO ₄	CO ₃	HCO ₃	Fe
Units	pH units	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Limit type	range	max	max	max	max	max	max	max	max	max	max	max
100169	.. ²	.. ²	5,000 ¹	1,000 ¹	.. ²	.. ²	.. ²	.. ²	1,000 ¹	.. ²	.. ²	.. ²
100037	.. ²	.. ²	5,000 ¹	1,000 ¹	.. ²	.. ²	.. ²	.. ²	1,000 ¹	.. ²	.. ²	.. ²
132290	.. ²	.. ²	5,000 ¹	1,000 ¹	.. ²	.. ²	.. ²	.. ²	1,000 ¹	.. ²	.. ²	.. ²
37512	.. ²	.. ²	5,000 ¹	1,000 ¹	.. ²	.. ²	.. ²	.. ²	1,000 ¹	.. ²	.. ²	.. ²
103685	.. ²	.. ²	5,000 ¹	1,000 ¹	.. ²	.. ²	.. ²	.. ²	1,000 ¹	.. ²	.. ²	.. ²
RN100036	.. ²	.. ²	5,000 ¹	1,000 ¹	.. ²	.. ²	.. ²	.. ²	1,000 ¹	.. ²	.. ²	.. ²
RN103024	.. ²	.. ²	5,000 ¹	1,000 ¹	.. ²	.. ²	.. ²	.. ²	1,000 ¹	.. ²	.. ²	.. ²

- ¹ ANZECC Water Quality Guidelines (2000) Stockwater used in the absence of sufficient data to support a site specific trigger value.
² Additional data required to set a trigger value

Appendix 4: Rehabilitation Success Criteria.

Mine Domain	Rehabilitation Feature Name	Goals	Objective	Indicators	Completion Criteria
1A	Sustainable cattle grazing on overburden emplacement areas	Safe	Safety hazards in rehabilitation are similar to surrounding unmined landscapes	Hazard assessment by a suitably qualified and experienced person	0 (zero) significant difference as defined in AS/NZS ISO 13000:2009 Risk Management
		Non-polluting	Surface runoff leaving domain is non-polluting to receiving waters	pH	7.5 – 8.3 as developed in accordance with section 4.3 the <i>Queensland Water Quality Guideline 2009</i> (see <i>Rehabilitation Management Plan for dataset</i>)
				EC (salinity)	130 – 510µs/cm as per Fitzroy Central zone Rateable 10 th to 90 th percentile of Table G.4 of the <i>Queensland Water Quality Guidelines (2009)</i> .
				Total Suspended Solids (TSS) (sediment loss)	<10mg/L as per <i>Nogoa River Sub-basin EPP Water (2009) Environmental Values and Water Quality Objectives Basin No. 130 (part), including all waters of the Nogoa River Sub-basin (2011)</i> .
				Sulphate (SO ₄ ²⁺)	2.2 – 22.0mg/L as developed in accordance with section 4.3 the <i>Queensland Water Quality Guideline 2009</i> (see <i>Rehabilitation Management Plan for dataset</i>)
				Groundcover	≥ 50% established and persistent groundcover that is not significantly different from non-mining affected land that is or will be used for a similar purpose.
			Deep drainage (seepage) from domain is non-polluting to recognised groundwater resources	Per condition G6, this table is to be updated by 31 March 2019 to include indicators and criteria for any potential groundwater impacts, as this may be influenced by residual mining voids	

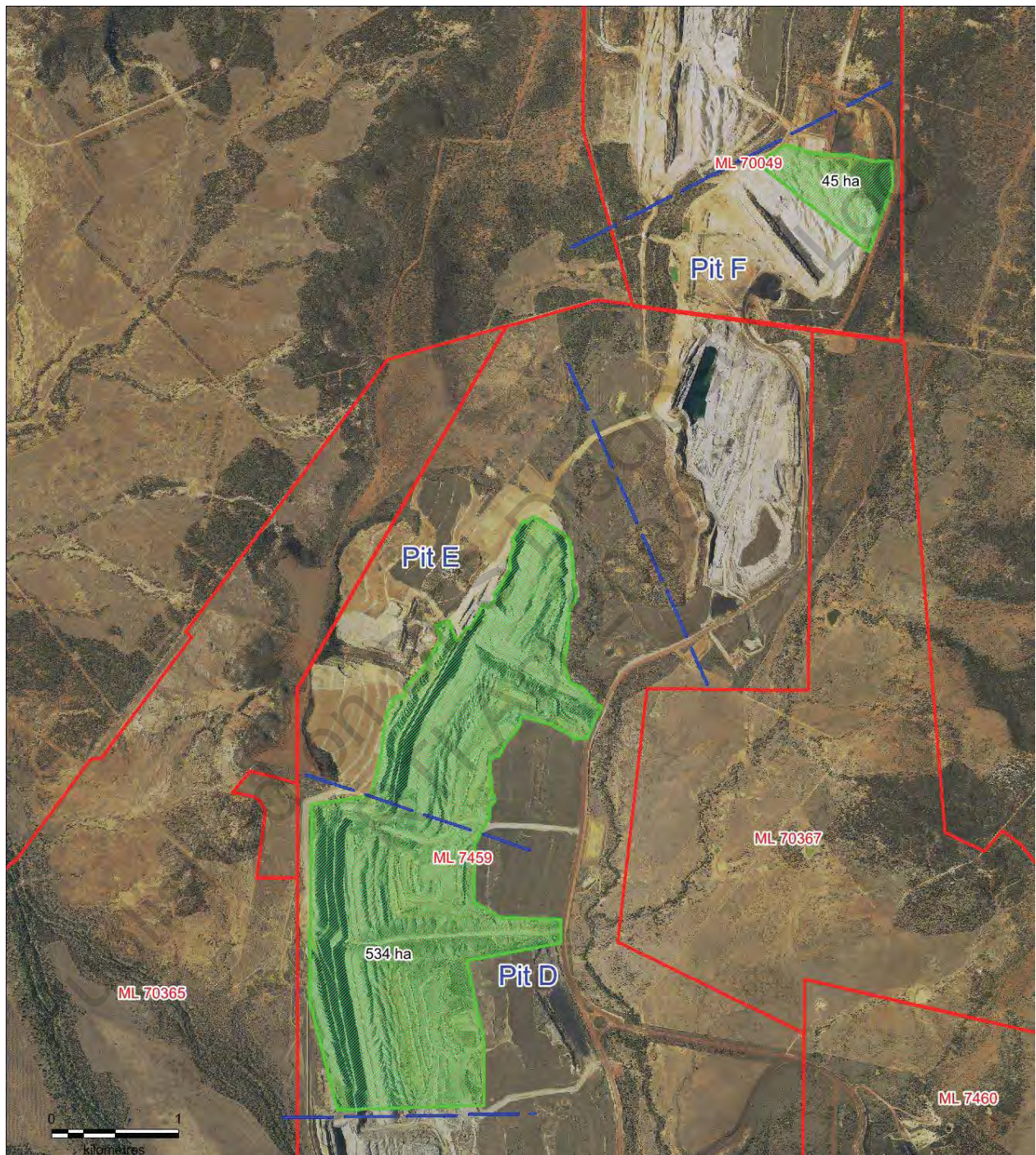
Mine Domain	Rehabilitation Feature Name	Goals	Objective	Indicators	Completion Criteria
1A	Sustainable cattle grazing on overburden emplacement areas	Stable	Landforms are both geotechnically and erosionally stable	Factor of safety	≥ 1.5 as defined in Guideline <i>Geotechnical considerations in open pit mines (State of Western Australia 1999)</i> .
				Slope gradient	Maximum 15% slope
				Groundcover	≥ 50% established and persistent groundcover that is not significantly different from non-mining affected land that is or will be used for a similar purpose
		Land use	Rehabilitation is suitable for sustainable cattle grazing	Land suitability assessment by a suitably qualified person	Class 2 to 4 as defined in the <i>Guidelines for Agricultural Land Evaluation in Queensland (State Department of Queensland 2013)</i> .
2x	Remnant mining voids on mining pits	Per condition G6, this table is to be updated by 31 March 2019 to include indicators and criteria for final voids			

Mine Domain	Rehabilitation Feature Name	Goals	Objective	Indicators	Completion Criteria
3A	Sustainable cattle grazing on mining infrastructure areas	Safe	Safety hazards in rehabilitation are similar to surrounding unmined landscapes	Hazard assessment by a suitably qualified and experienced person	0 (zero) significant difference as defined in AS/NZS ISO 13000:2009 Risk Management
		Non-polluting	Surface runoff leaving domain is non-polluting to receiving waters	pH	7.5 – 8.3 as developed in accordance with section 4.3 the <i>Queensland Water Quality Guideline 2009</i> (see <i>Rehabilitation Management Plan for dataset</i>)
				EC (salinity)	130 – 510µs/cm as per Fitzroy Central zone Rateable 10 th to 90 th percentile of Table G4 of the <i>Queensland Water Quality Guidelines (2009)</i> .
				TSS (sediment loss)	<10mg/L as per <i>Nogoa River Sub-basin EPP Water (2009) Environmental Values and Water Quality Objectives Basin No. 130 (part), including all waters of the Nogoa River Sub-basin (2011)</i> .
				Sulphate (SO ₄ ²⁺)	2.2 – 22.0mg/L as developed in accordance with section 4.3 the <i>Queensland Water Quality Guideline 2009</i> (see <i>Rehabilitation Management Plan for dataset</i>)
				Groundcover	≥ 50% established and persistent groundcover that is not significantly different from non-mining affected land that is or will be used for a similar purpose
		Stable	Landforms are both geotechnically and erosionally stable	Factor of safety	≥ 1.5 as defined in <i>Guideline Geotechnical considerations in open pit mines (State of Western Australia 1999)</i> .
				Slope gradient	Maximum 15% slope
				Groundcover	≥ 50% established and persistent groundcover that is not significantly different from non-mining affected land that is or will be used for a similar purpose
		Land use	Rehabilitation is suitable for sustainable cattle grazing	Land suitability assessment by a suitably qualified person	Class 2 to 4 as defined in the <i>Guidelines for Agricultural Land Evaluation in Queensland (State Department of Queensland 2013)</i> .

Mine Domain	Rehabilitation Feature Name	Goals	Objective	Indicators	Completion Criteria
3E	Landholder retained infrastructure on mining infrastructure areas	Safe	Safety hazards in rehabilitation are similar to surrounding unmined landscapes	Hazard assessment by a suitably qualified and experienced person	0 (zero) significant difference as defined in AS/NZS ISO 13000:2009 Risk Management
		Non-polluting	Surface runoff leaving domain is non-polluting to receiving waters	pH	7.5 – 8.3 as developed in accordance with section 4.3 the <i>Queensland Water Quality Guideline 2009</i> (see <i>Rehabilitation Management Plan for dataset</i>)
				EC (salinity)	130 – 510µs/cm as per Fitzroy Central zone Rateable 10 th to 90 th percentile of Table G4 of the <i>Queensland Water Quality Guidelines (2009)</i> .
				TSS (sediment loss)	<10mg/L as per <i>Nogoa River Sub-basin EPP Water (2009) Environmental Values and Water Quality Objectives Basin No. 130 (part)</i> , including all waters of the <i>Nogoa River Sub-basin (2011)</i> .
				Sulphate (SO ₄ ²⁺)	2.2 – 22.0mg/L as developed in accordance with section 4.3 the <i>Queensland Water Quality Guideline 2009</i> (see <i>Rehabilitation Management Plan for dataset</i>)
				Groundcover	≥ 50% established and persistent groundcover that is not significantly different from non-mining affected land that is or will be used for a similar purpose.
		Stable	Landholder accepts the condition of infrastructure, including its structural integrity	Legally binding agreement	Executed by each party
		Land use	Landholder formally accepts infrastructure for his/her ongoing beneficial use	Legally binding agreement	Executed by each party

Mine Domain	Rehabilitation Feature Name	Goals	Objective	Indicators	Completion Criteria
4D	Watercourse bed, banks and riparian vegetation of the Boggy Creek diversion	Safe	Safety hazards in rehabilitation are similar to surrounding unmined landscapes	Hazard assessment by a suitably qualified and experienced person	0 (zero) significant difference as defined in AS/NZS ISO 13000:2009 Risk Management
		Non-polluting	Surface runoff leaving domain is non-polluting to receiving waters	pH	7.5 – 8.3 as developed in accordance with section 4.3 the <i>Queensland Water Quality Guideline 2009</i> (see <i>Rehabilitation Management Plan</i> for dataset)
				EC (salinity)	130 – 510µs/cm as per Fitzroy Central zone Rateable 10 th to 90 th percentile of Table G4 of the <i>Queensland Water Quality Guidelines (2009)</i> .
				TSS (sediment loss)	<10mg/L as per <i>Nogoa River Sub-basin EPP Water (2009) Environmental Values and Water Quality Objectives Basin No. 130 (part)</i> , including all waters of the <i>Nogoa River Sub-basin (2011)</i> .
				Sulphate (SO ₄ ²⁺)	2.2 – 22.0mg/L as developed in accordance with section 4.3 the <i>Queensland Water Quality Guideline 2009</i> (see <i>Rehabilitation Management Plan</i> for dataset)
		Stable	Landforms are both geotechnically and erosionally stable	Factor of safety	≥ 1.5 as defined in <i>Guideline Geotechnical considerations in open pit mines (State of Western Australia 1999)</i> .
				Index of diversion condition assessed by a suitably qualified geomorphologist	> 10 as defined in <i>Criteria for functioning river landscape units in mining and post-mining landscapes</i> (ACARP Project number C20017).
		Land use	Riparian vegetation is suitable for conservation of rehabilitated creek diversion areas	Index of diversion condition assessed by a suitably qualified geomorphologist	> 10 as defined in <i>Criteria for functioning river landscape units in mining and post-mining landscapes</i> (ACARP Project number C20017).

Appendix 5: Location of Rehabilitation



END OF ENVIRONMENTAL AUTHORITY

Date : 4/01/2017 8:34:08 AM

From : sch4p4(6) Personal Information

To : "MARSHALL Michelle"

Cc : "BENNINK Kate" , "COPP Rachel" , sch4p4(6) Personal Information , "Daniel Yates" , "ENS EMD Environmental Mine Record"

Subject : Landform Design Criteria - Table G20

Attachment : 20161230 - G20 Table excluding final voids.xlsx;image001.jpg;

Good morning Michelle,

Please find attached the proposed G20 table for inclusion into the EA as discussed at our last meeting on the 21st December 2016. Appreciate any feedback or queries you may have prior to this being the final submission.

Regards

sch4p4(6) Personal Information

Manager - HSET Systems
Health Safety Environment Training



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E - sch4p4(6) Personal Information
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GOAL	Rehabilitation Domain	Rehabilitation Management Plan			Key Closure Metrics			Rehabilitation Monitoring Plan	
		Rehabilitation hazards	Control strategy	Final land use	Objective (what we want)	Indicator (what to measure)	Criteria (threshold limit to meet)	Type	Frequency
SAFETY	1. Spoil dump/s	Accessibility / Stock safety	Final slope angles dependent on spoil characterisation water management	Low intensity cattle grazing	Domain will be safe to humans, stock and wildlife in the foreseeable future.	Final Slope angle	Slope angles as per design	As built survey	At landform completion
						Biologically toxic materials, e.g. heavy metals	Contamination levels as defined by National Environmental Protection (Assessment of Site Contamination) Measure 1999 for recreational land and water runoff complies to ANZECC Guidelines for stock.	Soil survey with laboratory analysis. Water sampling with laboratory analysis.	At landform completion
						Declared plants	Comparable to reference sites Compliant with Land Protection (Pest and Stock Route Management) Act 2002	On-ground assessment, transects	As per rehab monitoring program
	2. Industrial Areas	Toxicity (ingest, inhale)	Contaminated lands assesment, soil remediation or removal	Low intensity cattle grazing	Domain will be safe to humans, stock and wildlife in the foreseeable future.	Biologically toxic materials, e.g. heavy metals	Contamination levels as defined by National Environmental Protection (Assessment of Site Contamination) Measure 1999 for recreational land and water runoff complies to ANZECC Guidelines for stock.	Soil survey with laboratory analysis	At landform completion
NON-POLLUTING	1. Spoil dumps	Salinity; Sodictity; High erodibility	Land form design parameters, selective spoil placement, use of topsoil, mulching, rapid vegetation establishment	Low intensity cattle grazing	Domain does not cause pollution to surrounding environment.	Surface water runoff quality	Comparable to reference sites	Water sampling with laboratory analysis.	After Rain events
						Erosional soil loss	Comparable to reference sites	Lidar	Annually until comparable to reference sites
						Vegetative cover	Comparable to reference sites	On-ground assessment, remote sensing	Annually
	2. Industrial Areas	Contaminated leachate	Contaminated lands assesment, soil remediation or removed, vegetation establishment	Low intensity cattle grazing	Domain does not cause pollution to surrounding environment.	Soil contaminants	Contamination levels as defined by National Environmental Protection (Assessment of Site Contamination) Measure 1999 for recreational land	soil test with laboratory analysis	At landform completion until specified limits achieved
						Vegetative cover	Comparable to reference sites	Visual / remote sensing	Annually
STABLE	1. Spoil dumps	Salinity; Sodictity; High erodibility	Final slope angles to achieve sustainable rates of erosional soil loss	Low intensity cattle grazing	Domain is erosionally stable	Erosional soil loss	Comparable to reference sites	Lidar	Annually until comparable to reference sites
						Vegetative cover	Comparable to reference sites	On-ground assessment,	Annually
	2. Industrial Areas	Salinity; Sodictity; High erodibility	Vegetative cover, topsoil, cover material	Low intensity cattle grazing	Domain is erosionally stable	Vegetative cover	Comparable to reference sites	On-ground assessment,	Annually
						Erosional soil loss	Comparable to reference sites	Lidar	Annually until comparable to reference sites
LAND USE	1. Spoil dumps	Land use unviable / unsuccessful	Perennial pasture for grazing	Low intensity cattle grazing	Rehabilitated land is suitable for low management intensity cattle grazing.	Pasture persistence	Pasture composition maintained	On-ground assessment, re	Annually
						Land and soil capability class	Class 3 to Class 6	On-ground assessment	At year 2
						Pasture growth rate	Comparable to reference sites	On-ground assessment	Annually
						Digestibility to cattle	Comparable to reference sites	Sampling and laboratory analysis	Annually
						Carrying capacity	Comparable to reference sites	On-ground assessment	Annually
						grass species			
							Comparable to reference sites		
	2. Industrial Areas	Land use unviable / unsuccessful	Perennial pasture for grazing	Low intensity cattle grazing	Rehabilitated land that supports low intensity cattle grazing.	Pasture persistence	Comparable to reference sites	On-ground assessment	Annually
						Carrying capacity	Comparable to reference sites	On-ground assessment	Annually
						Pasture growth (DM)	Comparable to reference sites	On-ground assessment	Annually
						Digestibility to cattle (utilisation)	Comparable to reference sites	Sampling and laboratory analysis	Annually
						grass species	Comparable to reference sites	On-ground assessment	Annually
	3. Clean water dams	Water quality not suitable for livestock consumption.	Clean water source for stock	Low intensity cattle grazing	Domain will be safe to humans, stock and wildlife in the foreseeable future.	Water quality	stock quality water as defined by ANZECC Guidelines	Water sampling with laboratory analysis.	Annually

Date : 8/08/2018 4:29:54 PM

From : "sch4p4(6) Personal Information"

To : "MCCOSKER Juliana"

Subject : photos

Attachment : Ramp 81 South.jpg;Pit E Northern End.jpg;image001.jpg;

Hi Julianna,

Here are the before rehab photos for north and south of Pit E.

cheers

sch4p4(6) Personal Information

Superintendent Environment



P: (07) 4987 3637

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E: sch4p4(6) Personal Information

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Date : 9/11/2018 3:03:05 PM

From : sch4p4(6) Personal Information

To : "MCCOSKER Juliana"

Subject : photos

Attachment : IMG_1734.jpg;IMG_1730.jpg;IMG_1731.jpg;IMG_1738.jpg;IMG_1740.jpg;image001.jpg;

Hi Juliana,

This is where we are up to.

Probably already got 100 ha reshaped for the year. 50 ha completed topsoiled, fertilised, ripped, seeded and hay mulched.

Remaining 50 ha probably 90 % complete except for hay mulching.

sch4p4(6) Personal Information

Superintendent Environment



P: (07) 4987 3637

M: sch4p4(6) Personal Information

E: sch4p4(6) Personal Information

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