

Application form

Environmental Protection Act 1994

Submission of a progressive rehabilitation and closure plan

This is the approved form for a progressive rehabilitation and closure plan (PRC plan) under section 126C of the Environmental Protection Act 1994 for a site-specific application for a mining activity relating to a mining lease.

Only use this application form if you are required to submit a PRC plan, where:

- You are applying for a new site-specific environmental authority for a mining activity relating to a mining lease.
OR
- The administering authority has included the requirement to submit a proposed PRC plan in an information request for a new site-specific environmental authority for a mining activity relating to a mining lease.
OR
- You completed a PRC plan as part of an EIS process and are submitting the PRC plan in the approved form as required under section 126C.
OR
- You have an existing site-specific environmental authority for a mining activity relating to a mining lease and have received a transition notice from the administering authority¹ in accordance with section 754 of the *Environmental Protection Act 1994* (EP Act).
OR
- Where none of the above apply: you have an existing site-specific environmental authority for a mining activity, you do not otherwise have a PRCP schedule approved yet one is required, and any of the following applies:
 - You have failed to comply with a transition notice;
 - You did not receive a transition notice as required under the legislation;
 - The administering authority has refused your proposed PRCP schedule.

Before completing this application form it is recommended that you:

- Read the Guideline – Progressive Rehabilitation and Closure Plans (ESR/2019/4964²), which explains the information you are required to provide with this application.
- Have a pre-lodgement meeting. To request a pre-lodgement meeting, please fill out and lodge the form Application for pre-lodgement services (ESR/2015/1664).

¹ The Department of Environment and Science is the administering authority under the *Environmental Protection Act 1994*.

² This is the publication number. The publication number can be used as a search term to find the latest version of a publication at www.qld.gov.au.



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If you require assistance in answering any part of this form, or have any questions about your application, please contact the relevant business centre. Contact details are at the end of this form (Section 10).

Privacy statement

The administering authority is collecting the information on this approved form to process your application for a PRC plan. The collection of information is authorised under Chapter 3 and Chapter 5 of the EP Act. Some of the information may be disclosed to the Department of Resources and Queensland Treasury for the purpose of processing this application or the Rehabilitation Commissioner in accordance with s444J of the EP Act the if accessing the information is necessary or convenient to be done in the performance of the Commissioner's functions.

Please note that the administering authority is required to keep this application on a register of documents open for inspection by members of the public under section 541 of the EP Act, and must permit a person to take extracts from the register pursuant to section 542 of the EP Act.

Your personal information will not be otherwise disclosed to any other parties unless authorised or required by law. For queries about privacy matters please email privacy@des.qld.gov.au or telephone 13 74 68.

Definitions of terms used in this form	
<i>(Where there is inconsistency between the definition of terms used here and the terms used in the EP Act, the terms in the EP Act apply)</i>	
Available for improvement	In relation to land in an improvement area for a non-use management area, means land in the improvement area that is not being mined, other than land to which any of the following applies— a) the land is being used for operating infrastructure or machinery for mining, including, for example, a dam or water storage facility; b) the land is identified in the PRCP schedule or the application for an environmental authority relating to the schedule as containing a probable or proved ore reserve that is to be mined within 10 years after the land would otherwise have become available for improvement; c) the land is required for the mining of a probable or proved reserve mentioned in paragraph (b).
Available for rehabilitation	For a rehabilitation area, means land in the area is not being mined, unless— a) the land is being used for operating infrastructure or machinery for mining, including, for example, a dam or water storage facility; or b) the land is identified in the PRCP schedule or the application for an environmental authority relating to the schedule as containing a probable or proved ore reserve, under section 126D(6) of the EP Act, that is to be mined within 10 years after the land would otherwise have become available for rehabilitation; or - ba) the land is required for the mining of a probable or proved reserve mentioned in paragraph (b); or c) the land contains permanent infrastructure identified in the proposed PRCP schedule as remaining on the land for a post-mining land use.
Land outcome document	For land, means the following documents relating to the land— a) an environmental authority for a resource activity on the land; b) a document made under a condition of an environmental authority

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	mentioned in paragraph (a), if– i. the document relates to the management of a void within the meaning of section 126D of the EP Act on the land, or the rehabilitation of the land; and ii. the document was received by the administering authority before the assent date; and iii. the administering authority has not, within 20 business days after the assent date, given notice to the environmental authority holder that the document is insufficient in a material particular relevant to a matter mentioned in subparagraph (i); and iv. before the assent date, the document has not been superseded; c) a document made under a condition of an environmental authority mentioned in paragraph (a), if– i. the document relates to the management of a void within the meaning of section 126D of the EP Act on the land, or the rehabilitation of the land; and ii. the environmental authority requires the document to be given to the administering authority on a stated day that is on or after the assent date, or does not state a day when the document must be given; and iii. the document is received by the administering authority within three years after the assent date; and iv. the administering authority does not, within 20 business days after receiving the document, give the environmental authority holder a notice that the document is insufficient in a material particular relevant to a matter in subparagraph (i); d) a report evaluating an EIS under the <i>State Development and Public Works Organisation Act 1971</i>, section 34D; e) an EIS assessment report; f) a written agreement between the holder of an environmental authority mentioned in paragraph (a) and the State that is in force on the assent date.
Improvement area	For a non-use management area, means an area of land in the non-use management area to which a management milestone relates.
Management milestone	For a non-use management area, means each significant event or step necessary to– a) achieve best practice management of the area; and b) minimise risks to the environment.
Non-use management area	Means an area of land the subject of a PRC plan that cannot be rehabilitated to a stable condition after all relevant activities for the PRC plan carried out on the land have ended.
Post-mining land use	For land the subject of a PRC plan, means the purpose for which the land will be used after all relevant activities for the PRC plan carried out on the land have ended.
PRC plan	For land the subject of a mining lease, means a progressive rehabilitation and closure plan for the land that consists of – a) the rehabilitation planning part of the PRC plan; and

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	b) the PRCP schedule for the PRC plan, including any conditions imposed on the schedule.
PRCP schedule	For a PRC plan, means a schedule of the plan that – a) complies with section 126D of the EP Act; and b) is approved under chapter 5, part 5, division 2 of the EP Act, with or without conditions.
Proposed PRC plan	For an application, a proposed PRC plan means a PRC plan proposed for land the subject of a mining lease that: (a) complies with Chapter 5, part 2, division 3; and (b) either – accompanies the application; or is submitted for the application after the application is made
Rehabilitation area	For land the subject of a post-mining land use, means an area of the land to which a rehabilitation milestone for the post-mining land use relates.
Rehabilitation milestone	For the rehabilitation of land, means each significant event or step necessary to rehabilitate the land to a stable condition.

The fields marked with an asterisk * are mandatory. If they are not completed then your application may be considered not properly made under section 128 of the EP Act.

Section 1 – Environmental authority details

Does this application relate to an existing environmental authority for a mining activity relating to a mining lease approved through a site-specific application?*

☐ No – Provide the reference number for your environmental authority application:

AR Insert.

☒ Yes – Provide your environmental authority number:

EPML00720413

Section 2 – Applicant details

Details of the applicant are to be provided in this section.

If there is an agent acting on behalf of the applicant, details of the agent are to be provided. An agent could be a consultant or contractor for the environmental authority holder.

The person nominated as the application contact will receive correspondence relating to this application.

NAME / COMPANY NAME* Batchfire Resources Pty Ltd	TRADING NAME (*IF AN ORGANISATION) Batchfire Resources Pty Ltd
REGISTERED BUSINESS ADDRESS / RESIDENTIAL ADDRESS (NOT A POST OFFICE BOX) * S2, Level 11, 141 Queen Street, Brisbane Qld 4000	POSTAL ADDRESS (*WHERE DIFFERENT) PO Box 144, Biloela Qld 4715
ABN / ACN (*IF AN ORGANISATION) 84 607 340 189	NAME OF APPLICATION CONTACT* Maurice Gayler
EMAIL* maurice.gayler@batchfire.com.au	TELEPHONE* (07) 4845 1522 or 0459 581 986

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- ☒ INDICATE IF YOU WANT TO RECEIVE CORRESPONDENCE VIA EMAIL
- ☐ INDICATE IF THIS FORM IS BEING COMPLETED BY AN AGENT FOR THE ENVIRONMENTAL AUTHORITY HOLDER*
- NOTE: If an agent is nominated, please provide evidence of appointment by the authority holder/s.**

Section 3 – Website address

If this application relates to an application for a new site-specific environmental authority for a mining activity, would you like to use the details on the environmental application form?	☐ No – Provide details below. ☐ Yes – Go to next section.				
Provide the website address for the application notice and application documents.	Insert.				
Provide details of the contact person if technical assistance is required.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 2px;">NAME Insert.</td> <td style="width: 40%; padding: 2px;">TELEPHONE Insert.</td> </tr> <tr> <td colspan="2" style="padding: 2px;">EMAIL Insert.</td> </tr> </table>	NAME Insert.	TELEPHONE Insert.	EMAIL Insert.	
NAME Insert.	TELEPHONE Insert.				
EMAIL Insert.					

Section 4 – Non-use management areas (new environmental authority applications only)

Does this application for a proposed PRC plan include a NUMA justified under section 126D(2)(b) of the EP Act? *	☒ No – Go to next section. ☐ Yes
Has a public interest evaluation been carried out by a qualified entity for the NUMA(s)? *	☐ No – Go to next section. ☐ Yes
Has the proposed NUMA(s) changed since the public interest evaluation was carried out in the EIS? *	☐ No – Go to next section. ☐ Yes – Provide details below.
How has the proposed NUMA(s) changed since the public interest evaluation was carried out?	Please provide details below. Insert.

Section 5 – PRC plan structure

The PRC plan must be prepared in accordance with the structure/format shown in Appendix 1 of this application form.	
Requirement	Requirement met?
Include a cover page that complies with Appendix 1 of this application form.	☒ Yes
Include a table of contents that complies with Appendix 1 of this application form.	☒ Yes

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Section 6 – PRC plan Checklist			
The PRC plan must meet the information requirements stated in section 3 of the Guideline – Progressive Rehabilitation and Closure Plans (ESR/2019/4964), and sections 126C and 126D of the EP Act (note there is a limited exception for transitional PRC plans). All PRC plan requirements are mandatory. For each requirement, insert a reference to the section of the PRC plan which satisfies the requirement. Justification must be provided for any requirement for which the response is Not Applicable (NA). If more space is required, please attach a separate sheet.			
PRC plan Requirement	Requirement met? (Yes / NA)	PRC Plan Section No.	Justification
Rehabilitation planning part of the PRC plan The rehabilitation planning part of the PRC plan must include the information required under section 126C the EP Act, including information requirements described in the Guideline – Progressive Rehabilitation and Closure Plans (ESR/2019/4964) in accordance with section 126C(1)(j) of the EP Act.			
Project description <i>Note: For existing mines transitioning to the PRC plan framework, pre-disturbance information collected as part of an EIS process or original environmental authority application should be included. If this information is unable to be provided, or cannot be developed because of the mine's life stage, this should be clearly explained in this section of the rehabilitation planning part of the PRC plan.</i>			
Describe the following:			
each resource tenure, including the area of each tenure, to which the application relates;	Yes	2.2	Insert.
the relevant activities to which the application relates;	Yes	2.1 and 2.14	Insert.
the likely duration of the relevant activities	Yes	2.1	Insert.

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Include a detailed description, including maps, of how and where the relevant activities are to be carried out.	Yes	2.1 and 10.2	Insert.
Consultation			
Include details of the consultation undertaken by the applicant in developing the proposed PRC plan.	Yes	3.1 and 3.2	Insert.
Include details of how the applicant will undertake ongoing consultation in relation to the rehabilitation to be carried out under the plan.	Yes	3.3	Insert.
Post-mining land use			
State the extent to which each proposed post-mining land use identified in the proposed PRCP schedule for the plan is consistent with the outcome of consultation with the community in developing the PRC plan.	Yes	3.2.1	Insert.
State the extent to which each proposed post-mining land use identified in the proposed PRCP schedule for the plan is consistent with any strategies or plans for the land of a local government, the State or the Commonwealth.	Yes	4.2 and 4.3	Insert.
Non-use management area			
<i>Note for Transitional PRC plans: The holder is not required to comply with a requirements under section 126C(1)(g) or (h) or 126D(2) or (3) for the proposed PRCP schedule for the plan in relation to land if a land outcome document identifies the outcome for the land as the same, or substantially similar to, the outcome for the land if it were a non-use management area.</i>			
State the extent to which each proposed non-use management area identified in the PRCP schedule for the plan is consistent with the outcome of consultation with the community in developing the PRC plan.	Yes	3.2.1	Insert.

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State the extent to which each non-use management area identified in the PRCP schedule for the plan is consistent with any strategies or plans for the land of a local government, the State or the Commonwealth.	Yes	5	Insert.
For each proposed non-use management area, state the reasons the applicant considers the area cannot be rehabilitated to a stable condition because of a matter mentioned in section 126D(2).	NA	Insert.	This is a requirement of section 126C(1)(g) of the EP Act, which does not apply to Callide Mine because the NUMA has been identified in a land outcome document and is being transitioned into the PRCP schedule.
For each matter mentioned in the requirement above, include copies of reports or other evidence relied on by the proponent for each proposed non-use management area.	NA	Insert.	This is a requirement of section 126C(1)(h) of the EP Act, which does not apply to Callide Mine because the NUMA has been identified in a land outcome document and is being transitioned into the PRCP schedule.
Rehabilitation and management methodology <i>Note: Section 3.5 of the Guideline – Progressive Rehabilitation and Closure Plans (ESR/2019/4964) outlines the range of information that must be included as appendices to the rehabilitation planning part of the PRC plan.</i>			
For each post-mining land use, state the applicant's proposed methods or techniques for rehabilitating the land to a stable condition in a way that supports the rehabilitation milestones under the proposed PRCP schedule.	Yes	4	Insert.
For each non-use management area, state the applicant's proposed methodology for achieving best practice management of the area to support the management milestones under the proposed PRCP schedule for the area.	Yes	5	Insert.

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Risk assessment				
Identify the risks of a stable condition for land described as a post-mining land use not being achieved, and how the applicant intends to manage or minimise the risks.	Yes	7 and Appendix G	Insert.	
PRCP Guideline				
Include any other information prescribed by the administering authority in the Guideline – Progressive Rehabilitation and Closure Plans (ESR/2019/4964).	Yes	All	Insert.	
Include the spatial information required in the Guideline – Progressive Rehabilitation and Closure Plans (ESR/2019/4964). See Attachment 1 of this form for details on how spatial information must be submitted.	Yes	Attached to PRCP submission email	Insert.	
Other information				
Include the other information the administering authority reasonably considers necessary to decide whether to approve the PRCP schedule.	Yes	All	Insert.	
PRCP Schedule	The proposed PRCP schedule must comply with section 126D of the EP Act, and be written in accordance with the Guideline – Progressive Rehabilitation and Closure Plans (ESR/2019/4964). The administering authority will assess the proposed PRCP schedule in conjunction with the rehabilitation planning part of the PRC plan and other application documents, and decide whether to approve the proposed PRCP schedule, with or without conditions, or refuse the proposed PRCP schedule.			

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Include a PRCP schedule prepared using the PRCP schedule template (ESR/2019/5103 ³).	Yes	Appendix A (Excel spreadsheet version attached to PRCP submission email)	Insert.
Include maps showing all of the land mentioned in the PRCP schedule, as it relates to being progressively rehabilitated.	Yes	10.3	Insert.

Section 7 – Non-use management areas (transitional applications only)	
Does this application for a proposed PRC plan include a NUMA? *	☐ No – Go to next section. ☒ Yes
Does the relevant environmental authority or any other land outcome document identify an outcome for the land that is the same, or substantially similar, to the outcome for the land if it were a NUMA under a PRCP schedule?	☐ No – Go to next section. ☒ Yes
Does the environmental authority or any other land outcome document state sufficient detail to identify either the location or the area of the land to which the outcome relates?	☒ No – Provide details below. ☐ Yes – Provide the document name(s) in Section 8.
If the area is not identified – how will the total area of the land to which the outcome relates be minimised? *	
The areas of the final voids have been minimised as far as possible in the development of the final landform designs.	

³ This is the publication number. The publication number can be used as a search term to find the latest version of a publication at www.gld.gov.au.

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If the location is not identified – how will the environmental authority holder ensure the location of the land to which the outcome relates minimises risks to the environment? *	The location and extent of the final voids is governed by the location of the coal resource, the existing Mining Lease boundaries, the topography and the overburden emplacement final landform design criteria. Management methods for the NUMA reflect the steps necessary to minimise risks to the environment.
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Section 8 – Transitional PRC plan requirements (transitional applications only)					
In accordance with transitional provisions in the EP Act, an applicant with an existing environmental authority is able to transition aspects of the PRCP schedule from existing land outcome documents. Indicate below any information that is being transitioned from a land outcome document.					
PML/NUMA	Rehabilitation /improvement area	Milestone Reference	Identify which of the below is being transitioned from a land outcome document		Page No.
			Land outcome	Milestone criteria	
Bushland	RA1, RA2 & RA3	Insert.	☒	☐	7 to 9
Grazing	RA4	Insert.	☒	☐	7 & 9
Final Voids and Ramps	IA1	MM1 & MM2	☒	☒	34 & 35
Bushland	Insert.	RM7	☐	☒	16 to 21

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					(Completion) Criteria (Anglo Coal, 2003)	
Grazing	Insert.	RM8	☐	☒	Callide Mine Report on Rehabilitation Acceptance (Completion) Criteria (Anglo Coal, 2003)	16 to 21
Each land outcome document must be submitted with this approved form						
☒ All land outcome documents identified above have been attached to this approved form.						

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Section 9 – Declaration*

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

I declare that:

- I am the holder of the environmental authority, or authorised signatory for the holder of the environmental authority.
- The information I have 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, or ought reasonably to know, is false or misleading in a material particular.
- I understand that under section 480A of the *Environmental Protection Act 1994* that, if I am required to give a document to the administering authority or an authorised person, it is an offence to give a document that I know or ought reasonably to know, contains incomplete information in a material particular.
- I understand that failure to provide sufficient information may result in the application being refused. I understand that an incomplete application may be invalid. Invalid applications will be returned without processing and will only be processed if resubmitted with all invalidating issues addressed.
- 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*.
- I will comply with all conditions and milestones of my approved PRCP schedule as well as any relevant provisions in the *Environmental Protection Act 1994*.
- I understand that I am responsible for managing the environmental impacts of these activities, and that approval of this application is not an endorsement by the administering authority of the effectiveness of management practices proposed or implemented.

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

☒ I HAVE AUTHORITY TO SIGN THIS FORM ON BEHALF OF ALL THE JOINT HOLDERS OF THE ENVIRONMENTAL AUTHORITY.

Applicant's signature

APPLICANT'S NAME

Maurice Gayler

POSITION

Manager -
Environment
& Community

COMPANY /

ORGANISATION

Batchfire
Resources Pty Ltd

APPLICANT'S SIGNATURE



DATE

27/04/2023

Joint holder(s) signature if applicable

NAME, POSITION AND COMPANY NAME

Stuart Schmidt, GM – ESG & Development, Batchfire Resources Pty Ltd, for Batchfire Callide Pty Ltd ACN 081 022 228

SIGNATURE



DATE

27/04/2023

NAME, POSITION AND COMPANY NAME

Stuart Schmidt, GM – ESG & Development, Batchfire Resources Pty Ltd, for Batchfire Callide No 2. Pty Ltd ACN 004 784 454

SIGNATURE



DATE

27/04/2023

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OR ☐ I HAVE ATTACHED A DOCUMENT THAT PROVIDES THE REQUIRED INFORMATION FOR ALL JOINT HOLDERS.

Where the environmental authority holder is a company, this form must be signed by an authorised person for that company. Where there is more than one holder of the environmental authority, this declaration is to be signed by all holders, unless there is an agreement between all holders that one can sign on behalf of the other(s).

If you are signing on behalf of the environmental authority holder(s) you must provide a letter of authorisation.

Section 10 - Submission

Please submit your completed application form and supporting material to the Department of Environment and Science office that services the industry applicable to your environmental authority.

A list of business centres can be found at www.des.qld.gov.au using the words 'business centres' as a search term.

Enquiries: Minerals Business Centre
PO Box 7230
Cairns QLD 4870
Phone: 07 4222 5352
Fax: 07 4222 5070
Email: ESCairns@des.qld.gov.au

Coal Business Centre
PO Box 3028
Emerald QLD 4720
Phone: 07 4987 9320
Email: CRMining@des.qld.gov.au

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 (ESR/2019/4957 for this form) or title as a search term.

surrounding environment, and evidence showing how the proposed location will prevent or minimise environmental harm.

- 3.5. Rehabilitation management methodology:** This section will include information describing how the proposed rehabilitation and management methodology have been developed and will be implemented. For each proposed post-mining land use for land, state the proposed methods or techniques for rehabilitating the land to a stable condition in a way that supports the rehabilitation milestones under the proposed PRCP schedule. This should include details of the general rehabilitation practices, tailings storage facilities, voids, underground mining and built infrastructure. For each proposed NUMA, state the proposed methodology for achieving best practice management of the area to support the management milestones under the proposed PRCP schedule for the area.
- 3.6. Risk assessment:** This section will include a risk assessment that identifies the risk of a stable condition for land not being achieved and a risk treatment plan outlining how the applicant will manage or minimise the risk. All proposed NUMAs should also have a completed risk assessment. If rehabilitation trials are planned, this is also where relevant details must be given.
- 3.7. Monitoring and maintenance:** This section will include a monitoring and maintenance program that identifies and describes the monitoring systems that will be undertaken to demonstrate a milestone and milestone criteria have been achieved. It must include timing of when each rehabilitation or management milestone is to be achieved and be accompanied by maps outlining the relevant land.
- 4. Appendices and attachments:** The completed PRCP schedule and any relevant required reports/plans are to be included in this section. The Progressive Rehabilitation and Closure Plan Schedule template (ESR/2019/5103) should be included.

Appendix 1—PRC plan structure

Appendix 1 describes the formatting/structural requirements for a completed PRC plan. This includes the information required in a PRC plan cover page and table of contents, and the structure of a PRC plan.

A PRC plan must include the following sections in the order listed:

1. **Cover page:** This section must include the following information:
 - Title of the project
 - Document title
 - Version number
 - Document ID number
 - Date of submission
 - Tenure number(s)
 - Environmental authority holder name
 - Environmental authority holder contact details.
2. **Table of contents:** This section must include the following information:
 - Sections of PRC plan
 - Sub-sections of PRC plan
 - Figures, tables and maps (as applicable).
3. **Rehabilitation planning part**
 - 3.1. **Project planning:** This section will include baseline information, site location details, a description of the project and information on rehabilitation/improvement planning.
 - 3.2. **Community consultation:** This section will include information on stakeholder consultation including a community consultation register and community consultation plan. The community consultation register must include consultation dates, identification of each community member, description of consultation type (workshop, quarterly meetings, etc.), information provided to the community, issues raised/discussed by the community, how issues have been considered, decisions/outcomes of engagement, and commitments made by the applicant. The community consultation plan must include the objectives for community consultation, how the community will be engaged, proposed consultation frequency, what information will be released for community consultation, and how feedback/comments will be considered.
 - 3.3. **Post-mining land use:** This section will include the assessment of PMLU options, methodology for determining PMLU options, and details of each nominated PMLU. It must be consistent with the outcome of consultation with the community in developing the plan, and any strategies or plans for the land of a local government, the State or the Commonwealth.
 - 3.4. **Non-use management areas (if applicable):** This section will include the justification for the NUMA and details of each nominated NUMA. In providing justification for the NUMA, it must:
 - state the reasons the applicant considers the area cannot be rehabilitated to a stable condition
 - include copies of reports or other evidence relied on by the applicant for each proposed non-use management area
 - state the extent to which the proposed non-use management area is consistent with the outcome of consultation with the community in developing the plan, and
 - state the extent to which the non-use management area is consistent with any strategies or plans for the land of a local government, the State or the Commonwealth.
 - The detail of each nominated NUMA must include information demonstrating that the proposed footprint of each NUMA is as small as practicable, an assessment of the NUMA location options, a description of the proposed location of each NUMA and the environmental values of the

Attachment 1—Spatial data requirements for PRC plan

Attachment 1 provides guidance on the required content of spatial information (shapefiles) for the submission of a PRC plan. This attachment should be read in conjunction with the department's guideline: Spatial Information Submission (ESR/2018/4337). To obtain a copy of the guideline, the spreadsheet containing the schema (in Table 2) and a shapefile template for PCR plans are available on the Queensland Government's website at www.qld.gov.au, using the search term "submission of spatial information". The following sections provide information about the required fields and attributes for datasets.

Required files—Table 1

The applicant must submit shapefiles detailing the following:

- the location and maximum extent of disturbance footprint for the mine life
- the PMLU and NUMAs for the area within the resource tenure(s)
- the rehabilitation and improvement areas within the resource tenure(s)
- any sensitive receptors
- extent of a floodplain
- existing rehabilitation (if the PRC plan is for an existing environmental authority).

A minimum of one (1) shapefile must be submitted for a PRC plan, detailing the above-listed information, as outlined within Table 1. Each file must be named in accordance with the requirements outlined within the department's guideline: Spatial Information Submission (ESR/2018/4337).

Where the PRC plan relates to a site where a NUMA or floodplain are not present, this should be stated in the spatial information submission email to which the relevant spatial files are attached.

Table 1: Shapefile checklist

File	Spatial information requirement	Schema	Example file name (e.g. using submission date of 30 June 2020)
1	PRC plan – polygon	Table 2	EPPR00372556_PRC_PY_30062020

Where:

- PRCP = PRC plan
- PY = polygon (geometry)

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Table 2: Schema for PRC plan

Field Name	Type	Length	Definition	Domain Values ⁴	Domain Value Description	Mandatory/ Optional
FID	Object ID	N/A	The unique identifier for the spatial feature.			Mandatory
SHAPE	Geometry	N/A	Allowed Geometry: Polygon			Mandatory
PERMIT_REF	TEXT	50	The alpha-numeric environmental authority number relevant to the spatial information (if this PRC plan does not relate to an existing environmental authority, please provide the relevant application number instead).			Mandatory
PROCESS	TEXT	4	The relevant process spatial data is being submitted for	PRCP	Progressive rehabilitation and closure plan	Mandatory
SITE_NAME	TEXT	254	Site name relating to the environmental authority.			Mandatory
SITE_ID	TEXT	20	This field contains a unique identifier for the spatial feature, which has been generated by the applicant.			Mandatory
FEATURE	TEXT	10	This field contains the land use feature on site which this polygon or point is describing. Select the relevant option of either post-mining land use, rehabilitation area, non-use management area, improvement area, maximum disturbance footprint, sensitive receptor, existing rehabilitation or floodplain using the codes specified.	PMLU	Post-mining land use	Mandatory
				REHAB_AREA	Rehabilitation area	Mandatory
				NUMA	Non-use management area	Mandatory if the PRCP schedule proposes or changes a non-use management area
				IMPRV_AREA	Improvement area	Mandatory if the PRCP schedule proposes or changes a non-use management area
				FOOTPRINT	Maximum disturbance footprint over mine life	Mandatory
				SR	Sensitive receptor	Mandatory

⁴ If blank, populate based on Attribute type and definition.

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Field Name	Type	Length	Definition	Domain Values ⁴	Domain Value Description	Mandatory/ Optional
				EX_REH	Existing rehabilitation	Mandatory if the application is for an existing environmental authority and there is existing rehabilitation undertaken
				FLDP	Floodplain	Mandatory if there is a floodplain located within the environmental authority boundary
FEAT_DESC	TEXT	254	Feature description		This field provides a description of the feature identified in 'FEATURE'.	Mandatory
PMLU_TYPE	TEXT	10	This field provides a description of the post mining land use type.	GRAZ NAT_ECO WTR_ST REC HB_ECS AGRI FOR CROP PERM_INFRA IND LNDFL Oth	Grazing Native ecosystem Water storage Recreation Habitat and ecosystem services Agriculture Forestry Cropping Permanent infrastructure Industrial Landfill Other	Mandatory for each PMLU.
DATE_	DATE	dd/mm/yyyy	Date of submission. This field identifies the date the spatial information was submitted.			Mandatory
SOURCE	TEXT	5	This field identifies the source of the spatial information and the capture	DIG	Digitising (Tracing over Ortho Imagery)	Mandatory

Application form
Submission of a progressive rehabilitation and closure plan

Field Name	Type	Length	Definition	Domain Values ⁴	Domain Value Description	Mandatory/ Optional
			methodology for the spatial information provided.	GPSD	GPS Differential Survey	
				GPSND	GPS Non Differential Survey	
				RTK	Real-Time Kinematic (RTK) Survey	
				UK	Un Known	
AREA_HA	DOUBLE	N/A	This field indicates the area in Hectares. (Polygon only)			Mandatory if GEOMETRY = polygon.
COMMENTS	TEXT	254	A free text field has been provided to include any additional information the proponent wishes to provide in relation to the data.			Mandatory if PMLU_TYPE = Oth

Callide Mine PRCP - DESI Not Properly Made Application Notice dated 15 May 2023	
Actions	Batchfire's Response
To make the application properly made, you must take the following action:	
Provide a revised PRC plan that propose PMLUs that are consistent with Land Outcome Documents and provide sufficient information to address the requirements of section 3.2 of the PRCP guideline that are applicable to transitional PRC plans; or	The Environmental Authority (EA) for Callide Mine (EPML00720413) was amended by agreement, in accordance with Section 215(1)(b) of the <i>Environmental Protection Act 1994</i> (EP Act), on 1 July 2024. The EA amendment included amendments to EA conditions F8 and F9 confirming that residual final voids are pre-approved NUMAs. Hence, the proposed final void NUMAs are consistent with the EA, which is the primary Land Outcome Document. The PRCP has been updated to reflect the amendments to EA conditions F8 and F9 that clarify the residual voids are NUMAs. Section 3.2 of the PRCP guideline is not relevant to the pre-approved residual void NUMAs.
If NUMAs are proposed as an alternate to the pre approved PMLUs for residual voids (i.e. not pre approved in a land outcome document), provide a revised PRC plan that address: - o The requirements of section 3.3 of the PRCP guideline, including: ▪ Information to demonstrate that section 126D(2) of EP Act is satisfied ▪ a detailed description of the nominated NUMAs ▪ reasons the applicant considers the area cannot be rehabilitated to a stable condition ▪ reports or other evidence relied on by the applicant for the proposed NUMAs ▪ information demonstrating that the proposed footprint of each NUMA is as small as practicable ▪ an assessment of the NUMA location options, having regard to the constraints of the resource location, with an analysis of the potential environmental harm and sensitivity of the surrounding environment of each option ▪ a description of the proposed location of each NUMA and the environmental values of the surrounding environment ▪ evidence showing how the proposed location will prevent or minimise environmental harm.	As explained above, the Callide Mine EA has been amended to clarify that residual voids are pre-approved NUMAs. The requirements of Section 3.3 of the PRCP guideline that are listed are not applicable to pre-approved NUMAs and have therefore not been addressed in the revised PRCP. The revised PRCP addresses the requirements of Sections 3.3 and 6.3.2 of the PRCP guideline that are applicable to transitional PRCPs with pre-approved NUMAs.

Permit

Environmental Protection Act 1994

Environmental authority EPML00744813 – Foxleigh Mine

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

Permit number: EPML00744813

Takes Effect From: 13 August 2024

Anniversary date: 21 September

Environmental authority holder(s)

Name	Registered address
CAML Resources Pty Ltd	Level 12 300 Queen Street BRISBANE CITY QLD 4000
Nippon Steel Australia Pty Limited	
Foxleigh Coal Pty Ltd	

Environmentally relevant activity and location details

Environmentally relevant activity(ies)	Location(s)
<i>Environmental Protection Regulation 2019 , Schedule 3:</i> ERA13 Mining black coal	ML70171 ML70309 ML70310 ML70429 ML70430 ML70431 ML70470
<i>Environmental Protection Regulation 2019, Schedule 2:</i> ERA 31 Mineral processing, Threshold 2 – Processing, in a year, the following quantities of mineral products, other than coke – (b) more than 100,000t.	
ERA 8 Chemical storage, Threshold 3 – Storing more than 500m ³ total quantity of chemicals of Class 1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection 1(c).	
ERA 15 Fuel burning – Using fuel burning equipment that is capable of burning at least 500kg of fuel in an hour.	
ERA 16 Extractive and screening activities, Threshold 3 – Screening, in a year, the following quantity of material – (c) more than 1,000,000t.	
ERA 33 Crushing, milling grinding or screening – Crushing, grinding, milling or screening more than 5,000t of material in a year.	
ERA 56 Regulated waste storage – Receiving and storing regulated waste.	
ERA 60 Waste disposal, Threshold 1 – Operating a facility for disposing of, in a year, the following quantity of waste mentioned in subsection (1)(a) – (a) less than 50,000t.	



Additional information for applicants*Environmentally relevant activities*

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

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

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

Contaminated land

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



Alisha Stewart
Department of Environment, Science and Innovation
Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:
Business Centre (Coal)
Department of Environment and Science
PO Box 3028
EMERALD QLD 4720
Phone: (07) 4987 9320
Email: CRMining@des.qld.gov.au

Date issued: 13 August 2024

Privacy statement

Pursuant to section 540 of the EP Act, the Department is required to maintain a register of certain documents and information authorised under the EP Act. A copy of this document will be kept on the public register. The register is available for inspection by members of the public who are able to take extracts, or copies of the documents from the register. Documents that are required to be kept on the register are published in their entirety, unless alteration is required by the EP Act. There is no general discretion allowing the Department to withhold documents or information required to be kept on the public register. For more information on the Department's public register, search 'public register' at www.qld.gov.au. For queries about privacy matters please email privacy@des.qld.gov.au or telephone 13 74 68.

Obligations under the *Environmental Protection Act 1994*

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

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

Conditions of environmental authority

Environmental authority EPML00744813 – Foxleigh Mine

Schedule A - General	
Condition number	Condition
A1	This environmental authority authorises environmental harm referred to in the conditions. Where there is no condition or this environmental authority is silent on a matter, the lack of a condition or silence does not authorise environmental harm.
A2	In carrying out the mining activity authorised by this environmental authority, the holder of this environmental authority must comply with <i>Appendix 1 - Figure 1: Approved Foxleigh Mine Activities</i> attached to this environmental authority.
Maintenance of measures, plant and equipment	
A3	The holder of this environmental authority must: a) install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority; b) maintain such measures, plant and equipment in a proper and efficient condition; c) operate such measures, plant and equipment in a proper and efficient manner; and d) ensure all instruments and devices used for the measurement or monitoring of any parameter under any condition of this environmental authority are properly calibrated.
Monitoring	
A4	Upon request from the administering authority, copies of monitoring records and reports should be made available and provided to the administering authority's nominated office within 10 business days or an alternative timeframe agreed between the administering authority and the holder.
A5	Any management or monitoring plans, systems or programs required to be developed and implemented by a condition of this environmental authority should be reviewed for effectiveness in minimising the likelihood of environmental harm on an annual basis, and amended promptly if required, unless a particular review date and amendment program is specified in the plan, system or program.
A6	Except where specified otherwise in another condition of this authority, all monitoring records or reports required by this environmental authority must be kept for a period of not less than 5 years.
Risk management	
A7	The holder of this environmental authority must develop and implement a risk management system for mining activities which mirrors the content requirement of the <i>Standard for Risk Management (ISO31000:2009)</i> , or the latest edition of an Australian standard for risk management, to the extent relevant to environmental management, by three (3) months from the issue of this EA.
Notification of emergencies, incidents and exceptions	
A8	The holder of this environmental authority must notify the administering authority by written notification within twenty-four (24) hours , after becoming aware of any emergency or incident which results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with the conditions of this environmental authority.

A9	Within ten (10) business days following the initial notification of an emergency or incident, or receipt of monitoring results, whichever is the latter, further written advice must be provided to the administering authority, including the following: a) results and interpretation of any samples taken and analysed; b) outcomes of actions taken at the time to prevent or minimise unlawful environmental harm; and c) proposed actions to prevent a recurrence of the emergency or incident.
Chemicals and flammable or combustible liquids	
A10	All explosives, hazardous chemicals, corrosive substances, toxic substances, gases and dangerous goods must be stored and handled in accordance with the current Australian standard where such is applicable.
A11	Minimise the potential for contamination of land and waters by diverting stormwater around contaminated areas and facilities used for the storage of chemicals and flammable or combustible liquids.
Complaint Response	
A12	The holder of this environmental authority must record all environmental complaints received about the mining activities including: a) name, address and contact number for of the complainant; b) time and date of complaint; c) reasons for the complaint; d) investigations undertaken; e) conclusions formed; f) actions taken to resolve the complaint; g) any abatement measures implemented; and, h) any person responsible for resolving the complaint.
A13	The holder of this environmental authority must, when requested by the administering authority, undertake relevant specified monitoring within a reasonable timeframe nominated or agreed to by the administering authority to investigate any complaint of environmental harm.
A14	The results of the investigation required by condition A13 (including an analysis and interpretation of the monitoring results) and abatement measures, where implemented, must be provided to the administering authority: a) within ten (10) business days of completion of the investigation; or b) no later than ten (10) business days after the end of the timeframe nominated by the administering authority to undertake the investigation.
Third-party reporting	
A15	The holder of this environmental authority must: a) obtain from a suitably qualified and experienced third party a report on compliance with the conditions of this environmental authority at regular intervals not exceeding three (3) years from 20 April 2021; and b) provide each report to the administering authority within ninety (90) days of its completion.

A16	Where a condition of this environmental authority requires compliance with a standard, policy or guideline published externally to this environmental authority and the standard is amended or changed subsequent to the issue of this environmental authority the holder of this environmental authority must: a) comply with the amended or changed standard, policy or guideline within two (2) years of the amendment or change being made, unless a different period is specified in the amended standard or relevant legislation, or where the amendment or change relates specifically to regulated structures referred to in condition J37, the time specified in that condition; and b) until compliance with the amended or changed standard, policy or guideline is achieved, continue to remain in compliance with the corresponding provision that was current immediately prior to the relevant amendment or change.
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Schedule B - Air	
Dust nuisance	
B1	The proponent shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the dust and particulate matter emissions generated by the mining activities do not cause exceedances of the following levels when measured at any sensitive or commercial place: a) dust deposition of 120 milligrams per square metre per day, averaged over one (1) month, when monitored in accordance with the most recent version of <i>Australian Standard AS3580.10.1 Methods for sampling and analysis of ambient air—Determination of particulate matter—Deposited matter – Gravimetric method</i>; b) a concentration of particulate matter with an aerodynamic diameter of less than 10 micrometres (PM₁₀) suspended in the atmosphere of 50 micrograms per cubic metre over a 24-hour averaging time, for no more than five (5) exceedances recorded each year, when monitored in accordance with the most recent version of either: i) <i>Australian Standard AS3580.9.6 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM10 high volume sampler with size-selective inlet – Gravimetric method</i>, or ii) <i>Australian Standard AS3580.9.9 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM10 low volume sampler—Gravimetric method</i>; c) a concentration of particulate matter suspended in the atmosphere of 90 micrograms per cubic metre over a one (1) year averaging time, when monitored in accordance with the most recent version of <i>AS/NZS3580.9.3:2003 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—Total suspended particulate matter (TSP)—High volume sampler gravimetric method</i>.
Meteorological monitoring	
B2	The environmental authority holder must establish and maintain a permanent automatic meteorological station to continuously measure and record wind speed, wind direction, temperature, relative humidity and rainfall intensity. <i>Note: It is possible for environmental authority holders to utilise relevant and available weather monitoring information collected by other parties as reference data for the purposes of this condition.</i>
Odour nuisance	
B3	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.
B4	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 complaints (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.

B5	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.
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Schedule C - Waste management	
C1	Unless otherwise permitted by the conditions of this environmental authority or with prior approval from the administering authority and in accordance with a relevant standard operating procedure, waste must not be burnt.
C2	The holder of this environmental authority may burn vegetation cleared in the course of carrying out the extraction activities provided the activities does not cause environmental harm at any environmentally sensitive place and adheres to the following conditions: a) be in accordance with a Permit to Burn issued under the <i>Fire and Rescue Service Act 1990</i>; b) ensure retained trees are not damaged by the burn; c) ensure any infrastructure is not damaged or affected by the burn; d) be twenty (20) metres from any watercourse; e) any nearby neighbors must be notified; and, f) fire authorities must be notified.
Tailings disposal	
C3	Tailings must be managed in accordance with procedures contained within the plan of operations. These procedures must include provisions for: a) containment of tailings; b) the management of seepage and leachates both during operation and the foreseeable future; c) the control of fugitive emissions to air; d) a program of progressive sampling and characterisation to identify acid producing potential and metal concentrations of tailings; e) maintaining records of the relative locations of any other waste stored within the tailings; f) rehabilitation strategy; and g) monitoring of rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of tailings, including the prevention and management of acid mine drainage, erosion minimisation and establishment of vegetation cover.
Acid sulphate soils	
C4	Treat and manage acid sulphate soils in accordance with the latest edition of the <i>Queensland Acid Sulfate Soil Technical Manual</i> .

Waste rock	
C5	A waste rock and spoil disposal plan should be developed and include, where relevant, at least: a) effective characterisation of the waste rock and spoil to predict under the proposed placement and disposal strategy the quality of runoff and seepage generated concerning potentially environmentally significant effects including salinity, acidity, alkalinity and dissolved metals, metalloids and non-metallic inorganic substances; b) a program of progressive sampling and characterisation to identify dispersive and non-dispersive spoil and the salinity, acid and alkali producing potential and metal concentrations of waste rock; c) A materials balance and disposal plan demonstrating how potentially acid forming and acid forming waste rock will be selectively placed and/or encapsulated to minimise the potential generation of acid mine drainage; d) where relevant, a sampling program to verify encapsulation and/or placement of potentially acid-forming and acid-forming waste rock; e) how often the performance of the plan will be assessed; f) the indicators or other criteria on which the performance of the plan will be assessed; and g) rehabilitation strategy.

Schedule D - Noise and vibration	
Noise nuisance	
D1	Subject to condition D2 noise from the mining activity must not cause an environmental nuisance at any sensitive or commercial place.
D2	When requested by the administering authority, noise monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within ten (10) business days to the administering authority following completion of monitoring.
D3	The method of measurement and reporting of noise levels must comply with the latest edition of the administering authority's <i>Noise Measurement Manual</i> .
Vibration nuisance	
D4	Subject to condition D5 vibration from the mining activity must not cause an environmental nuisance at any sensitive or commercial place.
D5	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 ten (10) business days to the administering authority following completion of monitoring.
Airblast overpressure nuisance	
D6	The airblast overpressure level from blasting operations must not exceed the limits defined in <i>Table 1: Airblast overpressure level</i> at any sensitive or commercial place.

Table 1: Airblast overpressure level

Location		Airblast overpressure measured
Sensitive or commercial place		Air blast overpressure level of 115db (Linear peak) for nine (9) out of ten (10) consecutive blasts initiated and not greater than 120db (Linear peak) at any time.
D7	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 ten (10) business days to the administering authority following completion of monitoring.	

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D8	Airblast overpressure monitoring must include the following descriptors, characteristics and conditions: a) location of the blast(s) within the mining area; b) atmospheric conditions including temperature, relative humidity and wind speed and direction; and c) location, date and time of recording.
D9	If monitoring indicates exceedance of the relevant limits in <i>Table 1: Airblast overpressure level</i>, then the environmental authority holder must: a) address the complaint including the use of appropriate dispute resolution if required; and b) immediately implement airblast overpressure abatement measures so that airblast overpressure from the activity does not result in further environmental nuisance.
D10	The method of measurement and reporting of airblast overpressure levels must comply with the current edition of the administering authority's <i>Noise Measurement Manual</i>.
Schedule E - Groundwater	
E1	The holder of this environmental authority must not release contaminants to groundwater.
E2	All determinations of groundwater quality and biological monitoring must be performed by an appropriately qualified person.
E3	The holder of the environmental authority must develop and implement a groundwater monitoring program to monitor groundwater quality and levels by 31 August 2016. Groundwater monitoring locations and frequencies as per <i>Table 2: Groundwater monitoring locations and frequency</i>, quality triggers and limits as per <i>Table 3: Groundwater quality triggers and limits</i> and level trigger thresholds as per <i>Table 4: Groundwater Level Monitoring</i> must be finalised based on background groundwater monitoring program defined in condition E4 and be submitted to the administering authority by 31 August 2016.

Table 2: Groundwater monitoring locations and frequency

Monitoring point	Easting (GDA 94)	Northing (GDA 94)	Surface RL (m) ¹	Monitoring frequency
GMP1	678180	7465000	To be supplied to the administering authority in accordance with condition E3 .	Levels collected from Rewan and underlying coal measure formations and analysed monthly for the initial twelve (12) months of baseline data collection and following that, quarterly.
GMP2	678370	7470200	To be supplied to the administering authority in accordance with condition E3 .	Levels collected from Rewan and underlying coal measure formations and analysed monthly for the initial twelve (12) months of baseline data collection and following that, quarterly.
GMP3	681400	7470100	To be supplied to the administering authority in accordance with condition E3 .	Levels collected from underlying coal measure formations and analysed monthly for the initial twelve (12) months of baseline data collection and following that, quarterly.
GMP4	681400	7470100	To be supplied to the administering authority in accordance with condition E3 .	Samples collected from alluvium and analysed monthly for the initial twelve (12) months of baseline data collection and following that, quarterly. Standing water levels to be measured monthly.

Table 3: Groundwater quality triggers and limits

Water quality indicator	Unit	Contaminant triggers	Contaminant limit
Aluminium	µg/L	To be supplied to the administering authority as required by condition E3	To be supplied to the administering authority as required by condition E3 .
Antimony	µg/L	To be supplied to the administering authority as required by condition E3	To be supplied to the administering authority as required by condition E3 .
Arsenic	µg/L	To be supplied to the administering authority as required by condition E3	To be supplied to the administering authority as required by condition E3 .
Calcium	µg/L	To be supplied to the administering authority as required by condition E3	To be supplied to the administering authority as required by condition E3 .
Chlorine	µg/L	To be supplied to the administering authority as required by condition E3	To be supplied to the administering authority as required by condition E3 .
CO ₃	µg/L	To be supplied to the administering authority as required by condition E3	To be supplied to the administering authority as required by condition E3 .
Dissolved Solids (Total)	µg/L	To be supplied to the administering authority as required by condition E3	To be supplied to the administering authority as required by condition E3 .
Electrical Conductivity	µS/cm	To be supplied to the administering authority as required by condition E3	To be supplied to the administering authority as required by condition E3 .
HCO ₃	µg/L	To be supplied to the administering authority as required by condition E3	To be supplied to the administering authority as required by condition E3 .
Iron	µg/L	To be supplied to the administering authority as required by condition E3	To be supplied to the administering authority as required by condition E3 .
Magnesium	µg/L	To be supplied to the administering authority as required by condition E3	To be supplied to the administering authority as required by condition E3 .
Mercury	µg/L	To be supplied to the administering authority as required by condition E3	To be supplied to the administering authority as required by condition E3 .
Molybdenum	µg/L	To be supplied to the administering authority as required by condition E3	To be supplied to the administering authority as required by condition E3 .
pH	pH Units	To be supplied to the administering authority as required by condition E3	To be supplied to the administering authority as required by condition E3 .
Potassium	µg/L	To be supplied to the administering authority as required by condition E3	To be supplied to the administering authority as required by condition E3 .
Selenium	µg/L	To be supplied to the administering authority as required by condition E3	To be supplied to the administering authority as required by condition E3 .
Silver	µg/L	To be supplied to the administering authority as required by condition E3	To be supplied to the administering authority as required by condition E3 .
SO ₄	µg/L	To be supplied to the administering authority as required by condition E3	To be supplied to the administering authority as required by condition E3 .
Sodium	µg/L	To be supplied to the administering authority as required by condition E3	To be supplied to the administering authority as required by condition E3 .

Table 4: Groundwater level monitoring

Monitoring point	Level trigger threshold
GMP1	To be supplied to the administering authority as required by condition E3
GMP2	To be supplied to the administering authority as required by condition E3
GMP3	To be supplied to the administering authority as required by condition E3
GMP4	To be supplied to the administering authority as required by condition E3

E4	A background groundwater monitoring program must be developed to include the following: a) groundwater monitoring locations (bore(s)) that are located an appropriate distance from potential sources of impact from mining activities and are representative of the aquifers potentially affected by mining activities b) representative groundwater samples from each of the bores; c) containment parameters, background groundwater levels, quality triggers and contaminant limits must be determined; d) sampling at a frequency of not less than monthly must be undertaken to determine groundwater levels and quality; e) finalise the required information relating to groundwater under <i>Table 3: Groundwater quality triggers and limits</i>, <i>Table 2: Groundwater monitoring locations and frequencies</i> and <i>Table 5: Mine affected water release points, sources and receiving waters</i> of this environmental authority; Review of the results from the groundwater monitoring program must occur to determine if further assessment on the following aspects below would be warranted: a) groundwater interactions with surface waters of Cockatoo Creek; b) impacts on potential shallow alluvial stygofauna; c) impacts on potential groundwater dependent ecosystems across the site; and d) the role of the Rewan formation and groundwater storage in associated sediments. <i>Note: If a review of the results indicate deficiencies in data recorded, or, warrants that further assessment is required, the holder of the environmental authority must undertake a more detailed assessment and present a report to the department outlining associated risks within the time period specified by the department.</i>
E5	The groundwater level and the water quality indicators specified in <i>Table 3: Groundwater quality triggers and limits</i> must be monitored for at the locations in <i>Table 2: Groundwater monitoring locations and frequency</i> and <i>Appendix 1, Figure 2: Groundwater monitoring locations (bores)</i> at the frequencies in <i>Table 2: Groundwater monitoring locations and frequency</i>.
E6	Groundwater levels when measured at the monitoring locations specified in <i>Table 2: Groundwater monitoring locations and frequency</i> and <i>Appendix 1, Figure 2: Groundwater monitoring locations (bores)</i> must not exceed the groundwater level trigger thresholds specified in <i>Table 4: Groundwater level monitoring</i>.

Environmental authority EPML00744813 – Foxleigh Mine

E7	If water quality indicators listed in <i>Table 3: Groundwater quality triggers and limits</i> are found to exceed any of the contaminant limits stated in <i>Table 3: Groundwater quality triggers and limits</i> , or, groundwater levels stated in <i>Table 4: Groundwater level monitoring</i> are found to exceed any of the level trigger thresholds, the holder of this environmental authority must complete an investigation in accordance with the ANZG (2018).
E8	Results of monitoring groundwater from compliance bores identified in <i>Table 2: Groundwater monitoring locations and frequency</i> must not exceed any of the contaminant limits defined in <i>Table 3: Groundwater quality triggers and limits</i> .
Bore construction and maintenance and decommissioning	
E9	The construction, maintenance, management and decommissioning of groundwater bores (including groundwater monitoring bores) must be undertaken in a manner that prevents or minimises impacts to the environment and ensures the integrity of the bores to obtain accurate monitoring.

Schedule F - Water	
Contaminant release	
F1	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.
F2	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 <i>Table 5: Mine affected water release point, sources and receiving waters</i> and depicted in <i>Appendix 1, Figure 3: Release Points and Monitoring Point Locations</i> attached to this environmental authority.

Table 5: Mine affected water release points, sources and receiving waters

Release point (RP)	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)	Mine affected water source and location	Monitoring point		Receiving waters description
				Water flow	Water quality	
RP 1	-22.9180	148.7890	ML4 Pits, Foxleigh and Foxleigh Plains mining areas	Cockatoo Creek US	Roper Creek DS2	Cockatoo Creek
RP 2	-22.9679	148.7992	Foxleigh and Foxleigh Plains mining areas	Cockatoo Creek US	Roper Creek DS2	Cockatoo Creek
RP 3	-23.0164	148.8196	Far South, Foxleigh and Foxleigh Plains mining areas	Roper Creek US	Roper Creek DS2	Roper Creek

F3	The release of mine affected water to internal water management infrastructure installed and operated in accordance with a water management plan that complies with conditions F30 and F31 is permitted.
F4	The release of mine affected water to waters in accordance with condition F2 must not exceed the release limits stated in <i>Table 6: Mine affected water release limits</i> when measured at the monitoring points specified in <i>Table 5: Mine affected water release points, sources and receiving waters</i> , <i>Table 8a: Flow triggers to start mine affected water release</i> and <i>Table 8b: Flow triggers to cease mine affected water release</i> for each quality characteristic.

Table 6: Mine affected water release limits

Quality characteristic	Release limits	Monitoring frequency
Electrical Conductivity ($\mu\text{S}/\text{cm}$)	Electrical conductivity ($\mu\text{S}/\text{cm}$) <10,000	Daily during release (the first sample must be taken within two (2) hours of commencement of release)
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	Daily during release (the first sample must be taken within two (2) hours of commencement of release)
Turbidity (NTU)	Current limit or limit derived from suspended solids limit and demonstrated correlation between turbidity to suspended solids historical monitoring data for dam water*	Daily during release* (first sample within two hours of commencement of release) Note: Turbidity is required to assess ecosystems impacts and can provide instantaneous results.
Suspended solids (mg/L)	650* Limit to be determined based on receiving water reference data and achievable best practice sedimentation control and treatment*	Daily during release* (first sample within two hours of commencement of release)
Sulfate (SO_4^{2-}) (mg/L)	Sulfate (SO_4^{2-}) (mg/L) < 3,000	Daily during release* (first sample within two hours of commencement of release)

Note: *Limit for suspended solids can be omitted if turbidity limit is included. Limit for turbidity not required if suspended solids limit included. Both indicators should be measured in all cases.

F5	The release of mine affected water to waters from the release points must be monitored at the locations specified in <i>Table 5: Mine affected water release points, sources and receiving waters</i> for each quality characteristics and at the frequency specified in <i>Table 6: Mine affected water release limits</i> and <i>Table 8a: Flow triggers to start mine affected water release</i> and <i>Table 8b: Flow Triggers to cease mine affected water release</i>. Note: The administering authority will take into consideration any extenuating circumstances prior to determining an appropriate enforcement response, in the event condition F5 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.
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Table 7: Release contaminant trigger investigation levels, potential contaminants

Quality characteristic	Trigger levels (µg/L)	Comment on trigger level	Monitoring frequency
Aluminium	55	For aquatic ecosystem protection, based on SMD guideline	Commencement of release and thereafter weekly during release
Arsenic	13	For aquatic ecosystem protection, based on SMD guideline	
Cadmium	0.2	For aquatic ecosystem protection, based on SMD guideline	
Chromium	1	For aquatic ecosystem protection, based on SMD guideline	
Copper	2	For aquatic ecosystem protection, based on SMD guideline	
Iron	300	For aquatic ecosystem protection, based on low reliability guideline	
Lead	4	For aquatic ecosystem protection, based on SMD guideline	
Mercury	0.2	For aquatic ecosystem protection, based on LOR for CV FIMS	
Nickel	11	For aquatic ecosystem protection, based on SMD guideline	
Zinc	8	For aquatic ecosystem protection, based on SMD guideline	
Boron	370	For aquatic ecosystem protection, based on SMD guideline	
Cobalt	90	For aquatic ecosystem protection, based on low reliability guideline	
Manganese	1900	For aquatic ecosystem protection, based on SMD guideline	
Molybdenum	34	For aquatic ecosystem protection, based on low reliability guideline	
Selenium	10	For aquatic ecosystem protection, based on LOR for ICPMS	
Silver	1	For aquatic ecosystem protection, based on LOR for ICPMS	
Uranium	1	For aquatic ecosystem protection, based on LOR for ICPMS	
Vanadium	10	For aquatic ecosystem protection, based on LOR for ICPMS	
Ammonia	900	For aquatic ecosystem protection, based on LOR for ICPMS	
Nitrate	1100	For aquatic ecosystem protection, based on ambient Qld WQ Guidelines (2006) for TN	
Sodium*	TBA – to be provided to the administering authority by 30 June 2017 .		
Petroleum hydrocarbons (C6-C9)	20		
Petroleum hydrocarbons (C10-C36)	100		
Fluoride (total)	2000	Protection of livestock and short term irrigation guideline	
Suspended Solids*	Limit to be determined based on receiving water reference data and achievable best practice sedimentation control and treatment and provided to the administering authority by 30 June 2017 .		
Sulfate (SO ₄ ²⁻) (mg/L)*	Limit to be determined based on receiving water reference data and achievable best practice sedimentation control and treatment and provided to the administering authority by 30 June 2017 .	<i>Drinking water environmental values from NHMRC 2006 guidelines OR ANZG</i>	

Notes:

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 3 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. It may be determined that a reduced monitoring frequency is appropriate or certain quality characteristics can be removed from Table 3 by amendment.
3. SMD—slightly moderately disturbed level of protection, guideline refers ANZG (2018).
4. LOR—typical reporting for method stated. ICPMS/CV FIMS—analytical method required to achieve LOR.

Table 8a: Flow triggers to start mine affected water release

Receiving waters / stream	Release point	Monitoring point	Monitoring point latitude (decimal degree, GDA94)	Monitoring point longitude (decimal degree, GDA94)	Receiving water flow recording frequency	Receiving water flow criteria to start discharge (m ³ /s)	Maximum release rate for all combined RP flows
Cockatoo Creek	RP 1	Cockatoo Creek US	-22.8904	148.7661	Continuous (minimum daily)	0.66	2m ³ /s
Cockatoo Creek	RP 2	Cockatoo Creek US	-22.8904	148.7661	Continuous (minimum daily)	0.66	
Roper Creek	RP 3	Roper Creek US	-22.8762	148.6719	Continuous (minimum daily)	0.95	

Table 8b: Flow triggers to cease mine affected water release

Receiving waters / stream	Release point (RP)	Monitoring point	Monitoring point latitude (decimal degree, GDA94)	Monitoring point longitude (decimal degree, GDA94)	Receiving water flow recording frequency	Receiving water flow criteria to cease discharge (m ³ /s)
Cockatoo Creek	RP 1	Roper Creek DS2	-23.0105	148.8415	Continuous (minimum daily)	<0.5
Cockatoo Creek	RP 2	Roper Creek DS2	-23.0105	148.8415	Continuous (minimum daily)	<0.5
Roper Creek	RP 3	Ropers Creek DS2	-23.0105	148.8415	Continuous (minimum daily)	<0.5

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F6	If quality characteristics of the release exceed any of the trigger levels specified in <i>Table 7: Release contaminant trigger investigation levels, potential contaminants</i> during a release event, the environmental authority holder must compare the downstream results in the receiving waters to the trigger values specified in <i>Table 7: Release contaminant trigger investigation levels, potential contaminants</i> and: 1) where the trigger values are not exceeded then no action is to be taken; or 2) where the downstream results exceed the trigger values specified <i>Table 7: Release contaminant trigger investigation levels, potential contaminants</i> for any quality characteristic, compare the results of the downstream site to the data from background monitoring sites and: a) if the result is less than the background monitoring site data, then no action is to be taken; or b) 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 ninety (90) days of receiving the result, outlining: i) details of the investigations carried out; and ii) actions taken to prevent environmental harm. Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with F6 2) b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.
F7	If an exceedance in accordance with condition F6 (2) (b) is identified, the holder of the authority must notify the administering authority in writing within twenty-four (24) hours of receiving the result.
Mine affected water release events	
F8	The 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 <i>Table 8a -Flow triggers to start mine affected water release and 8b – Flow triggers to cease mine affected water release</i>.
F9	Notwithstanding any other condition of this environmental authority, the release of mine affected water to waters in accordance with condition F2 must only start when natural flow in the receiving environment meets the trigger values specified in <i>Table 8a: Flow triggers to start mine affected water release</i> for the release point(s) specified in <i>Table 5: Mine affected water release points, sources and receiving waters</i>.
F10	The releases of mine affected water to waters in accordance with conditions F6 must not exceed a maximum release rate for all combined release points flows of 2m³/s
F11	The electrical conductivity (EC) values recorded at the downstream monitoring point on Roper Creek (Roper Creek DS2) must not exceed 2000µS/cm at any time during the release influence period.
F12	The electrical conductivity (EC) values recorded at the Barwon Park monitoring station on Roper Creek (Roper Creek Barwon Park) must not exceed 1500µS/cm at any time during the release influence period.
F13	If electrical conductivity (EC) recorded at Bingegang Weir exceeds 650µS/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.
F14	The daily quantity of mine affected water released from each release point must be measured and recorded.

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F15	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.
Notification of release event	
F16	The environmental authority holder must notify the administering authority via WaTERS within 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 Schedule F - Water of this 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.
F17	The environmental authority holder must notify the administering authority via WaTERS, as soon as practicable and no later than twenty-four (24) hours after the cessation of a release event, of the cessation of a release notified under condition F16. The cessation notification must include the following information: release cessation date/time; a) natural flow volume in receiving water; b) volume of water released; c) details regarding the compliance of the release with the conditions of Schedule F - Water of this environmental authority (i.e. contamination limits, natural flow, discharge volume); <i>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 F16 and F17, provided the relevant details of the release are included within the notification provided in accordance with conditions F16 and F17.</i>
F18	The holder of this environmental authority must within twenty eight (28) days after cessation of a release event notified under condition F16 provide a report to the administering authority via WaTERS, which must include the following information: a) all in-situ water quality monitoring results; and b) any other matters pertinent to the water release event.
Notification of release event exceedance	
F19	If the release limits defined in <i>Table 6: Mine affected water release limits</i>, <i>Table 8a: Flow triggers to start mine affected water release</i> and <i>Table 8b: Flow triggers to cease mine affected water release</i> are exceeded, the holder of the environmental authority must notify the administering authority within twenty-four (24) hours of receiving the results.

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F20	The environmental authority holder must, within twenty-eight (28) days of a release that exceeds the conditions of this 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.
F21	In the event that water storages defined in <i>Table 9: On-site water storage contaminant limits</i> exceed the contaminant limits defined in <i>Table 9: On-site water storage contaminant limits</i>, the holder of the environmental authority must implement measures, where practicable, to prevent access to waters by all livestock.

Table 9: On-site water storage contaminant limits

Quality characteristic	Test value	Contaminant limit
pH (pH unit)	Range	4 - 9 [^]
EC (µS/cm)	Maximum	5970*
Sulphate (mg/L)	Maximum	1000*
Fluoride (mg/L)	Maximum	2*
Aluminium (mg/L)	Maximum	5*
Arsenic (mg/L)	Maximum	0.5*
Cadmium (mg/L)	Maximum	0.01*
Cobalt (mg/L)	Maximum	1*
Copper (mg/L)	Maximum	1*
Lead (mg/L)	Maximum	0.1*
Nickel (mg/L)	Maximum	1*
Zinc (mg/L)	Maximum	20*

* Contaminant limit based on ANZECC & ARMCANZ (2000) stock water quality guidelines.

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

Note: Total measurements (unfiltered) must be taken and analysed.

Receiving environment monitoring and contaminant trigger levels	
F22	The quality of the receiving waters must be monitored at the locations specified in <i>Table 11: Receiving water upstream background sites and downstream monitoring points</i> for each quality characteristic and at the monitoring frequency stated in <i>Table 10: Receiving waters contaminant trigger levels</i> .

Table 10: Receiving waters contaminant trigger levels

Quality characteristic	Trigger level	Monitoring frequency
pH	6.5 – 8.0	Daily during the release
Suspended solids (mg/L)	650	
Sulphate (SO ₄ ²⁻) (mg/L)	250 (Protection of drinking water environmental value)	
Sodium (mg/L)	To be supplied to the administering authority by 30 June 2017 .	

Table 11: Receiving water upstream background sites and downstream monitoring points

Monitoring points and receiving waters location description	Site Reference	Latitude (Decimal degree, GDA94)	Longitude (Decimal degree, GDA94)
Upstream background monitoring points			
Roper Creek US	Located 200m downstream of Dysart Middlemount Road	-22.8778	148.6729
Cockatoo Creek US	Located 1.5km upstream of homestead parallel to Foxleigh Road	-22.8778	148.7742
Carlo Creek US	Located 50m upstream of the Barwon Park Middlemount Road and Carlo Creek Crossing	22.9238	148.8269
Parrot Creek DS (Downstream of Capcoal Mine and Upstream of Foxleigh Mine)	Located 200m downstream of haul rod	- 22.9218	148.6665
Downstream monitoring points			
Roper Creek DS2	Located at the confluence of Roper Creek and Cockatoo Creek	-23.0101	148.8392
Roper Creek at Barwon Park	Located 50m downstream of the Mackenzie River Capella Road, Roper Creek Crossing	-23.0577	148.8897
Cockatoo Creek DS	Located 50m upstream of the Lake Lindsay road and Cockatoo Creek Crossing	-23.0029	148.8331

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F23	If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in <i>Table 10: Receiving waters contaminant trigger levels</i> 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. <i>Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with F22 b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.</i>
F24	All determinations of water quality and biological monitoring must be performed by an appropriately qualified person.
Receiving environment monitoring program (REMP)	
F25	The environmental authority holder must develop and implement a Receiving Environment Monitoring Program (REMP) to monitor, identify and describe any adverse impacts to surface water environmental values, quality and flows due to the authorised mining activity. This must include monitoring the effects of the mine on the receiving environment periodically (under natural flow conditions) and while mine affected water is being discharged from the site. For the purposes of the REMP, the receiving environment is the waters of Roper Creek and connected or surrounding waterways within 10km downstream of the release. The REMP should encompass any sensitive receiving waters or environmental values downstream of the authorised mining activity that will potentially be directly affected by an authorised release of mine affected water.
F26	A REMP design document that addresses the requirements of the REMP must be prepared and made available to the administering authority upon request.
F27	A report outlining the findings of the REMP, including all monitoring results and interpretations 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.
Water reuse	
F28	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).

Annual water monitoring reporting	
F29	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: 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 mine affected water released from all release points; e) the release flow rate at the time of sampling for each release point; f) the results of all monitoring and details of any exceedances of the conditions of this environmental authority; and g) water quality monitoring data must be provided to the administering authority in the specified electronic format upon request.
Temporary interference with waterways	
F30	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 Department of Natural Resources and Mines (or its successor) <i>Guideline - Activities in a Watercourse, Lake or Spring Associated with Mining Activities</i>.
Water management plan	
F31	A Water Management Plan must be developed by an appropriately qualified person and implemented.
Stormwater and water sediment controls	
F32	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.
F33	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 F32; and b) water management infrastructure that is installed and operated, in accordance with a Water Management Plan that complies with condition F31, for the purpose of ensuring water does not become mine affected water.
F34	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.

Schedule G - Watercourse diversions	
Permanent watercourse diversions (Foxleigh Plains ML70431)	
G1	Permanent watercourse diversions, or the re-establishment of a pre-existing watercourse where a temporary watercourse diversion is being replaced, must be designed, constructed and operated to: a) incorporate natural features (including geomorphic and vegetation) present at the location of the diversion; and b) maintain the pre-existing hydrologic characteristics of surface water and groundwater systems for the area in which the watercourse diversion is located; and c) maintain the hydraulic characteristics of the permanent watercourse diversion that are equivalent to other local watercourses and are suitable for the area in which the diversion is located without using artificial structures that require on-going maintenance; and d) maintain sediment transport and water quality regimes that allow the diversion to be self-sustaining, while minimising any adverse impacts to upstream and downstream water quality, geomorphology, fauna and vegetation; and e) maintain equilibrium and functionality in all substrate conditions at the location of the diversion.
Design plan	
G2	A certified Design Plan that achieves condition G1 for a permanent watercourse diversion, must be submitted to the administering authority at least ten (10) business days before commencing construction of the diversion.
G3	The certified Design Plan for any temporary or permanent watercourse diversion must be consistent with the functional design/s (B. Phillips - Hatch Hydrobiology, 14 March 2016, <i>Technical Report – Foxleigh Plains Diversion – Functional Design Report</i> , Revision 1) that formed a part of the application documents for this environmental authority.
Construction and operation	
G4	A certified set of 'as constructed' drawings and specifications must be submitted to the administering authority within sixty (60) business days from the completion of construction of any temporary or permanent watercourse diversions, and/or re-establishment of the pre-existing watercourse.
G5	The certified set of 'as constructed' drawings and specifications must state: a) that the 'as constructed' drawings and specifications meet the original intent of the design plan for the watercourse diversion; and b) construction of the watercourse diversion is in accordance with the design plan.

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Register	
G6	The details of watercourse diversions planned and constructed under this environmental authority must be accurately recorded in a Register of Watercourse Diversions, required to be kept by the holder of this environmental authority.
G7	An electronic copy of the Register of Watercourse Diversions required under condition G6 must be provided to the administering authority on request.
Annual inspection report	
G8	Each permanent watercourse diversion must be inspected each calendar year by a suitably qualified and experienced person.
G9	At each annual inspection, the condition and adequacy of all components of the permanent watercourse diversion must be assessed and a suitably qualified and experienced person must prepare an annual inspection report containing details of the assessment, and include a recommendations section, with any recommended actions to ensure the integrity of the permanent watercourse diversion, or a positive statement that no recommendations are required.
G10	The annual inspection report specified in condition G9 must assess: a) if the permanent watercourse diversion is functioning as intended in the design plan and <i>Appendix 2 – Rehabilitation requirements</i> of this environmental authority; and b) if the permanent watercourse diversion meets the outcomes for the operation and monitoring of permanent diversions as per the Department of Natural Resources and Mines <i>Guideline: Works that interfere with water in a watercourse – watercourse diversions</i>.
G11	The holder must within twenty (20) business days of receipt of the annual inspection report, provide to the administering authority: a) the recommendations section of the annual inspection report; and b) if applicable, any actions being taken in response to those recommendations.
G12	If, following receipt of the recommendations and (if applicable) recommended actions, as per condition G11 , the administering authority requests a copy of the annual inspection report from the holder, the holder must provide this to the administering authority within ten (10) business days of receipt of the request.

Schedule H – Land	
Rehabilitation	
H1	Land disturbed by mining must be rehabilitated in accordance with <i>Appendix 2: Rehabilitation requirements</i> and <i>Appendix 4: Approved residual voids</i> of this environmental authority.
H2	Rehabilitation completion criteria for the Foxleigh Plains watercourse diversion (ML70431) must be submitted to the administering authority by way of an amendment to this environmental authority within ten (10) business days of submitting the ‘as constructed’ Design Plans to the administering authority, as required by condition G4.
Contaminated land	
H3	Before applying for surrender of a mining lease, the holder must (if applicable) provide to the administering authority a site investigation report under the Act, in relation to any part of the mining lease which has been used for notifiable activities or which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use.
H4	Before applying for progressive rehabilitation certification for an area, the holder must (if applicable) provide to the administering authority a site investigation report under the Act, in relation to any part of the area the subject of the application which has been used for notifiable activities or which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use under condition H1 .
H5	Minimise the potential for contamination of land by hazardous contaminants.
Infrastructure	
H6	All bunding for coal stockpiles must be a minimum of 30m from the lease boundary.
Biodiversity offsets	
H7	Offsets under the <i>Environmental Offsets Act 2014</i> Significant residual impacts to prescribed environmental matters are not authorised under this environmental authority or the <i>Environmental Offsets Act 2014</i>, unless: a) the impacts are specified in <i>Table 12 – Authorised significant residual impacts to prescribed environmental matters under the Environmental Offsets Act 2014</i>; or b) the impacts are covered by the offset requirements of EPBC Approval No 2010/5421, issued under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (as specified in <i>Table 13: Authorised significant residual impacts to prescribed environmental matters under the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC approval 2010/5421)</i>; or c) the impacts are specified in <i>Table 14: Authorised significant residual impacts to MSES that are not covered under the Environmental Offsets Act 2014 or the Environment Protection and Biodiversity Conservation Act 1999 (covered under the Conservation Area)</i>, relating to the Conservation Area required under condition H12.
H8	Records demonstrating that each impact to a prescribed environmental matter did not, or is not likely to, result in a significant residual impact to that matter must be: a) completed by an appropriately qualified person; and b) kept for the life of the environmental authority.

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H9	An environmental offset made in accordance with the <i>Environmental Offsets Act 2014</i> and Queensland Environmental Offsets Policy, as amended from time to time, must be undertaken for the maximum extent of impact to each prescribed environmental matter authorised in <i>Table 12 – Authorised significant residual impacts to prescribed environmental matters</i> .
H10	For proposed offsets relating to significant residual impacts listed in <i>Table 12 – Authorised significant residual impacts to prescribed environmental matters under the Environmental Offsets Act 2014</i> , a notice of election under section 18 of the <i>Environmental Offsets Act 2014</i> must be provided to the administering authority by 31 August 2023 .
H11	Immediately following provision of the notice of election required under condition H10 to the administering authority, the environmental authority holder must do all things reasonably necessary to enter into an agreed delivery arrangement with the administering authority under section 19 of the <i>Environmental Offsets Act 2014</i> .
H12	Conservation Area The environmental authority holder must obtain legal security of the Conservation Area shown in Figure 4: Conservation area reference map by 30 June 2024 and maintain legal security for the life of the EA.
H13	The environmental authority holder must manage the Conservation Area to achieve, at minimum, the BioCondition scores listed as “Final BioCondition score” in <i>Table 15: Conservation Area BioCondition Scores</i> .
H14	The BioCondition scores required under condition H13 must be determined by an appropriately qualified person according to the latest version of the Queensland BioCondition Assessment Manual.
H15	The BioCondition scores required under condition H13 must be achieved by 30 June 2043 .
H16	Once the BioCondition scores required under condition H13 are achieved, including if they are achieved before 30 June 2043 , they must be maintained as a minimum standard for the life of the environmental authority.
H17	The environmental authority holder must develop and implement a Conservation Area Improvement Plan by 31 December 2023 .
H18	The Conservation Area Improvement Plan required by condition H17 must include the following: a) A description of the vegetation communities and environmental values within the Conservation Area b) A description of how the final BioCondition scores will be achieved, including: i) Identification of the risks that may result in failure to achieve the final BioCondition scores ii) How the identified risks will be managed and mitigated iii) Any actions that will or may be taken to improve the starting BioCondition score c) A statement that specifies the chosen method of legal security d) Any other information that the environmental authority holder considers necessary to achieve the requirements of condition H13.
H19	Mining activity or any related disturbance is not authorised to occur within the Conservation Area.

Table 12: Authorised significant residual impacts to prescribed environmental matters under the *Environmental Offsets Act 2014*

Prescribed environmental matters	RE ID	Maximum Extent of Impact (ha)
REGULATED VEGETATION		
Endangered regional ecosystems	11.3.1	20.08
Regional ecosystems within the defined distance from the defining banks of a relevant watercourse on the vegetation management watercourse map	NA	59.99

Table 13: Authorised significant residual impacts to prescribed environmental matters under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC approval 2010/5421)

Protected Matter	Maximum Extent of Impact (ha)
Brigalow (<i>Acacia harpophylla</i> dominant and co-dominant) threatened ecological community	96.2
Squatter Pigeon (<i>Geophaps scripta scripta</i>) primary habitat	202.5

* For location reference map, see Appendix 3, *Figure 5: Authorised significant residual impacts to prescribed environmental matters under the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC approval 2010/5421)*.

Table 14: Authorised significant residual impacts to prescribed environmental matters that are not covered under the *Environmental Offsets Act 2014* or the *Environmental Protection and Biodiversity Conservation Act 1999* (covered under the Conservation Area).

Prescribed environmental matters	RE ID	Location of impact (Polygon ID)*	Maximum Extent of Impact (ha)
REGULATED VEGETATION			
Of concern regional ecosystems	11.3.2	23	9.5
	11.3.3	17, 18	1.36
Regional ecosystems within the defined distance from the defining banks of a relevant watercourse on the vegetation management watercourse map	11.3.3	17	0.23
	11.3.25	6	0.47

* For polygon ID reference map, see Appendix 3, *Figure 6: Authorised significant residual impacts to prescribed environmental matters that are not covered under the Environmental Offsets Act 2014 or the Environmental Protection and Biodiversity Conservation Act 1999 (covered under the Conservation Area)*.

Table 15: Conservation Area BioCondition Scores

Regional Ecosystem	Area (ha)	Starting BioCondition score	Final BioCondition score	Location (Polygon ID)*
11.3.1 – Acacia harpophylla and/or Casuarina cristata open forest on alluvial plains	3.04	4	6	102
11.3.2 – Eucalyptus populnea woodland on alluvial plains	46.35	7	7	99, 104
		5	7	100, 108
		2	4	110
11.3.3 – Eucalyptus coolabah woodland on alluvial plains	23.45	7	7	98
		6	7	103, 109
11.3.25 – Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines	13.34	7	7	97

* For polygon ID reference map of the Conservation Area, see *Figure 4: Conservation area reference map*.

Schedule J - Regulated structures	
J1	The consequence category of any structure must be assessed by a suitably qualified and experienced person in accordance with the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> 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.
J2	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.
J3	Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> .
Design and construction of a regulated structure	
J4	Conditions J5 to J9 inclusive do not apply to existing structures.
J5	All regulated structures must be designed by, and constructed under the supervision of, a suitably qualified and experienced person in accordance with the requirements of the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> .
J6	Construction of a regulated structure is prohibited unless: a) the holder has submitted a consequence category assessment report and certification to the administering authority; and b) certification for the design, design plan and the associated operating procedures has been certified by a suitably qualified and experienced person in compliance with the relevant condition of this authority.
J7	Certification must be provided by the suitably qualified and experienced person who oversees the preparation of the design plan in the form set out in the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> , and must be recorded in the Register of Regulated Structures.
J8	Regulated structures must: a) be designed and constructed in compliance with the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i>; b) be designed and constructed with due consideration given to ensuring that the design integrity would not be compromised on account of: i) floodwaters from entering the regulated dam from any watercourse or drainage line; and ii) wall failure due to erosion by floodwaters arising from any watercourse or drainage line.
J9	Certification by the suitably qualified and experienced person who supervises the construction must be submitted to the administering authority on the completion of construction of the regulated structure, and state that: a) the 'as constructed' drawings and specifications meet the original intent of the design plan for that regulated structure; and b) construction of the regulated structure is in accordance with the design plan.

Notification of affected persons	
J10	All affected persons must be provided with a copy of the emergency action plan in place for each regulated structure: a) for existing structures that are regulated structures, within ten (10) business days of this condition taking effect; b) prior to the operation of the new regulated structure; and c) if the emergency action plan is amended, within five (5) business days of it being amended.
Operation of a regulated structure	
J11	Operation of a regulated structure, except for an existing structure, is prohibited unless the holder has submitted to the administering authority in respect of regulated structure, all of the following: a) one paper copy and one electronic copy of the design plan and certification of the 'design plan' in accordance with condition J6; b) a set of 'as constructed' drawings and specifications; c) certification of the 'as constructed drawings and specifications' in accordance with condition J9; d) where the regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the design storage allowance (DSA) volume across the system, a copy of the certified system design plan; e) the requirements of this authority relating to the construction of the regulated structure have been met; f) the holder has entered the details required under this authority, into a Register of Regulated Structures; and g) there is a current operational plan for the regulated structure
J12	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 twelve (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.
J13	Each regulated structure must be maintained and operated, for the duration of its operational life until decommissioned and rehabilitated, in compliance with the current operational plan and, if applicable, the current design plan and associated certified 'as constructed' drawings.
Mandatory reporting level	
J14	Conditions J15 to J16 inclusive only apply to regulated structures which have not been certified as low consequence category for 'failure to contain – overtopping'.
J15	The Mandatory Reporting Level (MRL) must be marked on a regulated dam in such a way that during routine inspections of that dam, it is clearly observable.

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J16	The holder must, as soon as practicable but 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.
J17	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.
J18	The holder must record any changes to the MRL in the Register of Regulated Structures.
Design storage allowance	
J19	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.
J20	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 DSA volume for the dam (or network of linked containment systems).
J21	The holder must, as soon as practicable but 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.
J22	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.
Annual inspection report	
J23	Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.
J24	At each annual inspection, the condition and adequacy of all components of the regulated structure must be assessed and a suitably qualified and experienced person must prepare an annual inspection report containing details of the assessment and include a recommendations section, with any recommended actions to ensure the integrity of the regulated structure or a positive statement that no recommendations are required.
J25	The suitably qualified and experienced person who prepared the annual inspection report must certify the report in accordance with the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> .
J26	The holder must within twenty (20) business days of receipt of the annual inspection report, provide to the administering authority: a) the recommendations section of the annual inspection report; and b) if applicable, any actions being taken in response to those recommendations; and c) if, following receipt of the recommendations and (if applicable) recommended actions, the administering authority requests a copy of the annual inspection report from the holder, provide this to the administering authority within ten (10) business days of receipt of the request.
Transfer arrangements	

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J27	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.
Decommissioning and rehabilitation	
J28	Regulated structures must not be abandoned but be either: a) decommissioned and rehabilitated to achieve compliance with condition J29; or b) be left in-situ for a use by the landholder provided that: i) it no longer contains contaminants that will migrate into the environment; and ii) it contains water of a quality that is demonstrated to be suitable for its intended use(s); and c) the holder of the environmental authority and the landholder agree in writing that the; i) dam will be used by the landholder following the cessation of the environmentally relevant activity(ies); and ii) landholder is responsible for the dam, on and from an agreed date.
J29	Before surrendering this environmental authority the site must be rehabilitated to achieve a safe, stable and non-polluting landform in accordance with <i>Appendix 2: Rehabilitation requirements of this environmental authority</i> .
Register of regulated structures	
J30	A Register of Regulated Structures must be established and maintained by the holder for each regulated structure.
J31	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.
J32	The holder must make a final entry of the required information in the Register of Regulated Structures once compliance with condition J11 and J12 has been achieved.
J33	The holder must ensure that the information contained in the Register of Regulated Structures is current and complete on any given day.
J34	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
J35	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.
Transitional arrangements	
J36	All existing structures that have not been assessed in accordance with either the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> or the former <i>Manual for Assessing Hazard Categories and Hydraulic Performance of Dams</i> must be assessed and certified in accordance with the <i>Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)</i> by 6 November 2016 .
J37	All existing structures must subsequently comply with the timetable for any further assessments in accordance with the Manual specified in <i>Table 16: Transitional hydraulic performance requirements for existing structures</i> , depending on the consequence category for each existing structure assessed in the most recent previous certification for that structure.

J38	<i>Table 16: Transitional hydraulic performance requirements for existing structures</i> ceases to apply for a structure once any of the following events has occurred: a) it has been brought into compliance with the hydraulic performance criteria applicable to the structure under the Manual; or b) it has been decommissioned; or c) it has been certified as no longer being assessed as a regulated structure..
J39	Certification of the transitional assessment required by J36 and J37 (as applicable) must be provided to the administering authority within 6 months of amendment of the authority adopting this schedule, being 6 November 2016.

Table 16: Transitional hydraulic performance requirements for existing structures

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

**Note: Levees designed for the diversion of contaminated waters or protection of the structural integrity of a dam are not to be considered as part of this provision. These levees are considered a key design element of the relevant dam and transitional periods should as such align to that relevant compliance criteria and consequence category.*

Definitions

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

‘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.

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

‘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 (dBL).

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

‘annual exceedance 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.

‘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 relating 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 consequence assessment of a dam, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit of the assessment:

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

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

‘associated works’ means in relation to a dam,

- 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 an environmental authority or departmental approval.

‘background’, with reference to the water schedule means the average of samples taken prior to the commencement of mining from the same waterway that the current sample has been taken.

‘BioCondition score’ has the meaning given in the latest version of the BioCondition Assessment Manual published by the Queensland Herbarium.

‘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 Australian Code for the Transport of Dangerous Goods by Road and Rail approved by the Australian Transport Council; or
- c) a lead hazardous substance within the meaning of the Workplace Health and Safety Regulation 1997;
- d) a drug or poison in the Standard for the Uniform Scheduling of Drugs and Poisons prepared by the Australian Health Ministers’ Advisory Council and published by the Commonwealth; or
- e) any substance used as, or intended for use as:
 - i) a pesticide, insecticide, fungicide, herbicide, rodenticide, nematocide, miticide, fumigant or related product; or
 - ii) a surface active agent, including, for example, soap or related detergent; or
 - iii) a paint solvent, pigment, dye, printing ink, industrial polish, adhesive, sealant, food additive, bleach, sanitiser, disinfectant, or biocide; or
 - iv) a fertiliser for agricultural, horticultural or garden use; or
 - v) a substance used for, or intended for use for mineral processing or treatment of metal, pulp and paper, textile, timber, water or wastewater; or
 - vi) manufacture of plastic or synthetic rubber.

‘commercial place’ means a workplace 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.

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

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

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

‘construction’ or ‘constructed’ in relation to a **regulated structure** includes building a new regulated structure and lifting or otherwise modifying an existing regulated structure, but does not include investigations and testing necessary for the purpose of preparing a design plan.

‘construction’ or ‘constructed’, in relation to **watercourse diversions**, is the process of building, or modifying an existing diversion, but does not include investigations and testing necessary for the purpose of preparing a design plan

‘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 (eg via spillway).

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

‘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 plan’ is a document that contains the design, operation, monitoring and revegetation criteria of a **watercourse diversion** that addresses the outcomes stated in conditions on the environmental authority relating to the diversion. The document should include, but not be limited to:

- a) required information under a functional design;
- b) the location, function and description of geomorphic and riparian vegetation features within the proposed watercourse diversion;
- c) results from hydrologic, hydraulic and sediment transportation modelling used in the design of the diversion;
- d) a revegetation and vegetation management plan (a revegetation plan) for the diversion;
- e) engineering drawings depicting the physical attributes and dimensions of the diversion;
- f) (if relevant) the staged development of a permanent watercourse diversion including the proposed use of temporary watercourse diversions with identified lifespans;
- g) all investigation and other reports relied on by the design;
- h) plans and specifications sufficient to complete construction and revegetation in accordance with the design.

‘design storage allowance’ or ‘DSA’ means an available volume, estimated in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (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.

‘development approval’ means a development approval under the *Integrated Planning Act 1997* or the *Sustainable Planning Act 2009* in relation to a matter that involves an environmentally relevant activity under the *Environmental Protection Act 1994*

‘disturbance’ of land includes:

- a) compacting, removing, covering, exposing or stockpiling of earth;
- b) removal or destruction of vegetation or topsoil or both to an extent where the land has been made susceptible to erosion;
- c) carrying out mining within a watercourse, waterway, wetland or lake;

- d) the submersion of areas by tailings or hazardous contaminant storage and dam/structure walls;
- e) temporary infrastructure, including any infrastructure (roads, tracks, bridges, culverts, dam/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be removed after the mining activity has ceased; or
- f) releasing of contaminants into the soil, or underlying geological strata.

However, the following areas are not included when calculating areas of 'disturbance':

- a) areas off lease (e.g. roads or tracks which provide access to the mining lease);
- b) areas previously disturbed which have achieved the rehabilitation outcomes;
- c) by agreement with the administering authority, areas previously 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, dam/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be left by agreement with the landowner.
- e) disturbance that pre-existed the grant of the tenure.

'EC' means electrical conductivity.

'effluent' means treated waste water released 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 affected persons and the implementation of protection measures. The plan must require dam owners to annually review and update contact information where required

'Environmental authority' means 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.

'environmental offset' has the meaning in section 7 of the *Environmental Offsets Act 2014*.

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

'existing structure' means a structure that prior to <<TBA insert date when EA is issued with new dam manual conditions>> meets any or both of the following, a structure:

- a) with a design that is in accordance with the March 2016, Version 5.00 *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures* and that is considerably in progress;
- b) that is under considerable construction or that is constructed.

'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 (ESR/2016/1933)* published by the administering authority.

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

'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.

‘functional design’ is a document that contains ‘conceptual’ information about the design, operation and revegetation criteria of a watercourse diversion that addresses the outcomes stated in the conditions on the environmental authority relating to the diversion. The document should include, but not be limited to:

- a) geomorphic and vegetation assessment of the existing watercourse;
- b) hydrologic conditions of the existing watercourse;
- c) the proposed watercourse diversion route;
- d) results from hydrologic, hydraulic and sediment transportation modelling used in the design of the diversion.

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

‘hazard 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 ‘Manual for Assessing Hazard Categories and Hydraulic Performance of Dams’.

‘Holder’ means any person who is the holder of, or is acting under, that environmental authority.

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

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

‘in-situ pit walls’ means unexcavated faces of exposed overburden or coal (highwalls).

‘in-pit backfill spoil’ means overburden that has been backfilled in the mining void (low-walls).

‘land’ in the ‘land schedule’ of this document means land excluding waters and the atmosphere, that is, the term has a different meaning from the term as defined in the *Environmental Protection Act 1994*. For the purposes of the *Acts Interpretation Act 1954*, it is expressly noted that the term ‘land’ in this environmental authority relates to physical land and not to interests in land.

‘land use’ –means the selected post mining use of the land, which is planned to occur after the cessation of mining operations.

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

‘legal security’ for the Conservation Area means that an area of land is legally secured through one of the following mechanisms:

- a voluntary declaration as an area of high nature conservation value under the *Vegetation Management Act 1999*; or
- a statutory covenant for environmental purposes under the *Land Act 1994* or *Land Title Act 1994*

‘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.

‘licensed place’ means the mining activities carried out at the mining tenements detailed in Table # (page #) of this environmental authority.

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

‘m’ means metres.

‘mandatory reporting level’ or ‘MRL’ means a warning and reporting level determined in accordance with the criteria in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams* (EM635) published by the administering authority.

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

‘maximum extent of impact’ means the total, cumulative, residual extent and duration of impact to a prescribed environmental matter that will occur over a project’s life after all reasonable avoidance and reasonable on-site mitigation measures have been, or will be, undertaken.

‘mineral residue material’ means material described as coal waste produced from Coal Handling and Preparation Plant (CHPP).

‘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.

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

‘modification or modifying’ (see definition of ‘construction’)

‘NATA’ means National Association of Testing Authorities, Australia.

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

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

‘operational plan’ for a **dam** means a document that amongst other things sets out procedures and criteria to be used for operating a dam during a particular time period. The operational plan as defined herein may form part of a plan of operations or plan otherwise required in legislation.

‘operational plan’ includes:

- a) normal operating procedures and rules (including clear documentation and definition of process inputs in the DSA);
- b) contingency and emergency action plans including operating procedures designed to avoid and/or minimise environmental impacts including threats to human life resulting from any overtopping or loss of structural integrity of the regulated structure

‘peak particle velocity (ppv)’ means a measure of ground vibration magnitude which is the maximum rate of change of ground displacement with time, usually measured in millimetres/second (mm/s).

‘Permanent watercourse diversion’ is a man-made structure that incorporates the geomorphologic, hydraulic, hydrologic and ecological components of a local watercourse and is designed, constructed, operated and maintained according to an engineering standard that ultimately achieves a self-sustaining watercourse able to function without features or characteristics that rely on ongoing maintenance or that impose a financial or other burden on the proponent, government or the community.

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

‘Pre-existing watercourse’ is the section of watercourse from which the flow of water will be diverted as a result of the construction and operation of a watercourse diversion.

‘Probable Maximum Flood (PMF)’ means the flood that may be expected from the most severe combination of critical meteorological and hydrologic conditions that are reasonably possible in a particular drainage area.

‘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.

‘receiving environment’ in relation to an activity that causes or may cause environmental harm, means the part of the environment to which the harm is, or may be, caused. The receiving environment includes (but is not limited to):

- a) a watercourse;
- b) groundwater; and
- c) an area of land that is not specified in Figure 1 of this environmental authority.

‘receiving waters’ means the waters into which this environmental authority authorises releases of mine affected water.

‘register of regulated structures’ includes:

- a) Date of entry in the register;
- b) Name of the structure, its purpose and intended/actual contents;
- c) The consequence category of the dam as assessed using the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)*;
- d) Dates, names, and reference for the design plan plus dates, names, and reference numbers of all document(s) lodged as part of a design plan for the dam;
- e) Name and qualifications of the suitably qualified and experienced person who certified the design plan and 'as constructed' drawings;
- f) For the regulated dam, other than in relation to any levees –
 - i. The dimensions (metres) and surface area (hectares) of the dam measured at the footprint of the dam;
 - ii. Coordinates (latitude and longitude in GDA94) within five metres at any point from the outside of the dam including its storage area
 - iii. Dam crest volume (megalitres);
 - iv. Spillway crest level (metres AHD).
 - v. Maximum operating level (metres AHD);
 - vi. Storage rating table of stored volume versus level (metres AHD);
 - vii. Design storage allowance (megalitres) and associated level of the dam (metres AHD);
 - viii. Mandatory reporting level (metres AHD);
- g) The design plan title and reference relevant to the dam;
- h) The date construction was certified as compliant with the design plan;
- i) The name and details of the suitably qualified and experienced person who certified that the constructed dam was compliant with the design plan;
- j) Details of the composition and construction of any liner;
- k) The system for the detection of any leakage through the floor and sides of the dam;
- l) Dates when the regulated dam underwent an annual inspection for structural and operational adequacy, and to ascertain the available storage volume for 1 November of any year;
- m) Dates when recommendations and actions arising from the annual inspection were provided to the administering authority;
- n) Dam water quality as obtained from any monitoring required under this authority as at 1 November of each year.

‘regulated dam’ means any dam in the significant or high hazard category as assessed using the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635)* published by the administering authority.

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

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

‘rehabilitation’ the process of reshaping and revegetating land to restore it to a stable landform.

‘release event’ means a surface water discharge from mine affected water storages or contaminated areas on the licensed place.

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

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

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

‘revegetation’ is the re-establishment of vegetation¹ of a species and density of cover similar to surrounding undisturbed areas or the landform that existed before mining activities on soil surfaces associated with the construction or rehabilitation of a watercourse diversion.

‘saline drainage’ The movement of waters, contaminated with salts, as a result of the mining activity.

‘self-sustaining’ means not requiring on-going intervention and maintenance to maintain functional riverine processes and characteristics

‘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.

Note: The definition of ‘sensitive place’ and ‘commercial place’ is based on Schedule 1 of EPP Noise. That is, a sensitive place is inside or outside on a dwelling, library & educational institution, childcare or kindergarten, school or playground, hospital, surgery or other medical institution, commercial & retail activity, protected area or an area identified under a conservation plan under Nature Conservation Act 1992 as a critical habitat or an area of major interest, marine park under Marine Parks Act 2004, park or garden that is outside of the mining lease and open to the public for the use other than for sport or organised entertainment. A commercial place is inside or outside a commercial or retail activity.

A mining camp (i.e., accommodation and ancillary facilities for mine employees or contractors or both, associated with the mine the subject of the environmental authority) is not a sensitive place for that mine or mining project, whether or not the mining camp is located within a mining tenement that is part of the mining project the subject of the environmental authority. For example, the mining camp might be located on neighbouring land owned or leased by the same company as one of the holders of the environmental authority for the mining project, or a related company. Accommodation for mine employees or contractors is a sensitive place if the land is held by a mining company or related company, and if occupation is restricted to the employees, contractors and their families for the particular mine or mines which are held by the same company or a related company.

For example, a township (occupied by the mine employees, contractors and their families for multiple mines that are held by different companies) would be a sensitive place, even if part or all of the township is constructed on land owned by one or more of the companies.

‘significant residual impact’ has the meaning in section 8 *Environmental Offsets Act 2014*.

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

‘suitably qualified and experienced person’ means a person who is a Registered Professional Engineer of Queensland under the provisions of the *Professional Engineers Act 2002*, who has an **appropriate level of**

¹Not including a species declared under the Land Protection (Pest and Stock Route Management) Regulation 2003 as a category class 1 pest, category class 2 pest or category class 3 pest.

expertise in the structures, geomechanics, hydrology, hydraulics and environmental impact of watercourse diversions.

An **appropriate level of expertise** includes:

- demonstrable competency, experience and expertise in:
 - investigation, design or construction of watercourses diversions
 - operation and maintenance of watercourse diversions
 - geomechanics with particular emphasis on channel equilibrium, geology and geochemistry
 - hydrology with particular reference to flooding, estimation of extreme storms, water management or meteorology
 - hydraulics with particular reference to sediment transport and deposition and erosion control
 - hydrogeology with particular reference to seepage and groundwater
 - solute transport processes and monitoring thereof, or
- sufficient knowledge and experience to certify that where the **suitably qualified and experienced person** has relied on advice and information provided by other **persons with relevant expertise***:
 - they consider it reasonable to rely on that advice and information
 - the expert providing the advice and information has knowledge, competency, suitable experience and demonstrated expertise in the matters related to watercourse diversions.

Persons with relevant expertise include:

- Geomorphologist: person who has demonstrated competency and relevant experience in stream geomorphology and watercourse diversions.
- Geotechnical Expert: person who has demonstrated competency and relevant experience in geotechnical assessment of soil characteristics suitable for watercourse diversions.
- Vegetation Expert: person who has demonstrated competency and relevant experience in the identification, role and function of vegetation with watercourses and adjoining floodplains, and has demonstrated competency and relevant experience in revegetation of watercourse diversions and adjoining floodplains. .
- Groundwater Expert: person who has demonstrated competency and relevant experience in groundwater systems.
- Surface Water Expert: person who has demonstrated competency and relevant experience in hydrology.
- Engineer: person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the *Professional Persons Act 2002* or has similar qualifications under a respected professional registration association, and has demonstrated competency and relevant experience in design and construction of watercourse diversions.
- Soils Expert: person who has demonstrated competency and relevant experience in soil classification including the physical, chemical and hydrologic analysis of soil.

‘structure’ in relation to **regulated structures** means dam or levee.

‘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. .

‘the Act’ means the *Environmental Protection Act 1994*.

‘µS/cm’ means micro siemens per centimetre.

‘void’ means any constructed, open excavation in the ground.

‘watercourse’ has the meaning in Schedule 4 of the *Environmental Protection Act 1994* and means:

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

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

END OF DEFINITIONS

Appendix 1

Figure 1: Approved Foxleigh Mine Activities

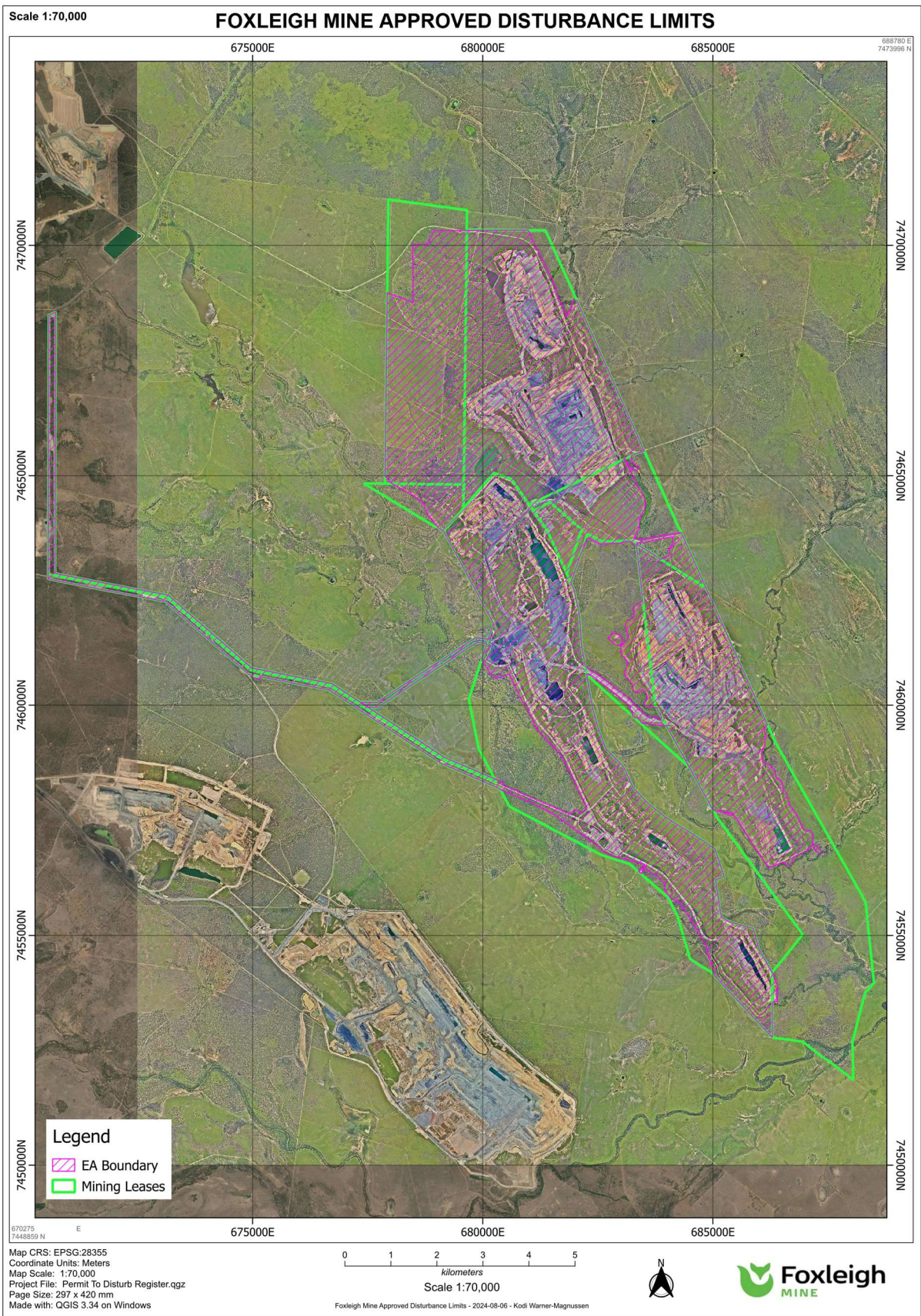


Figure 2: Groundwater monitoring locations (bores)

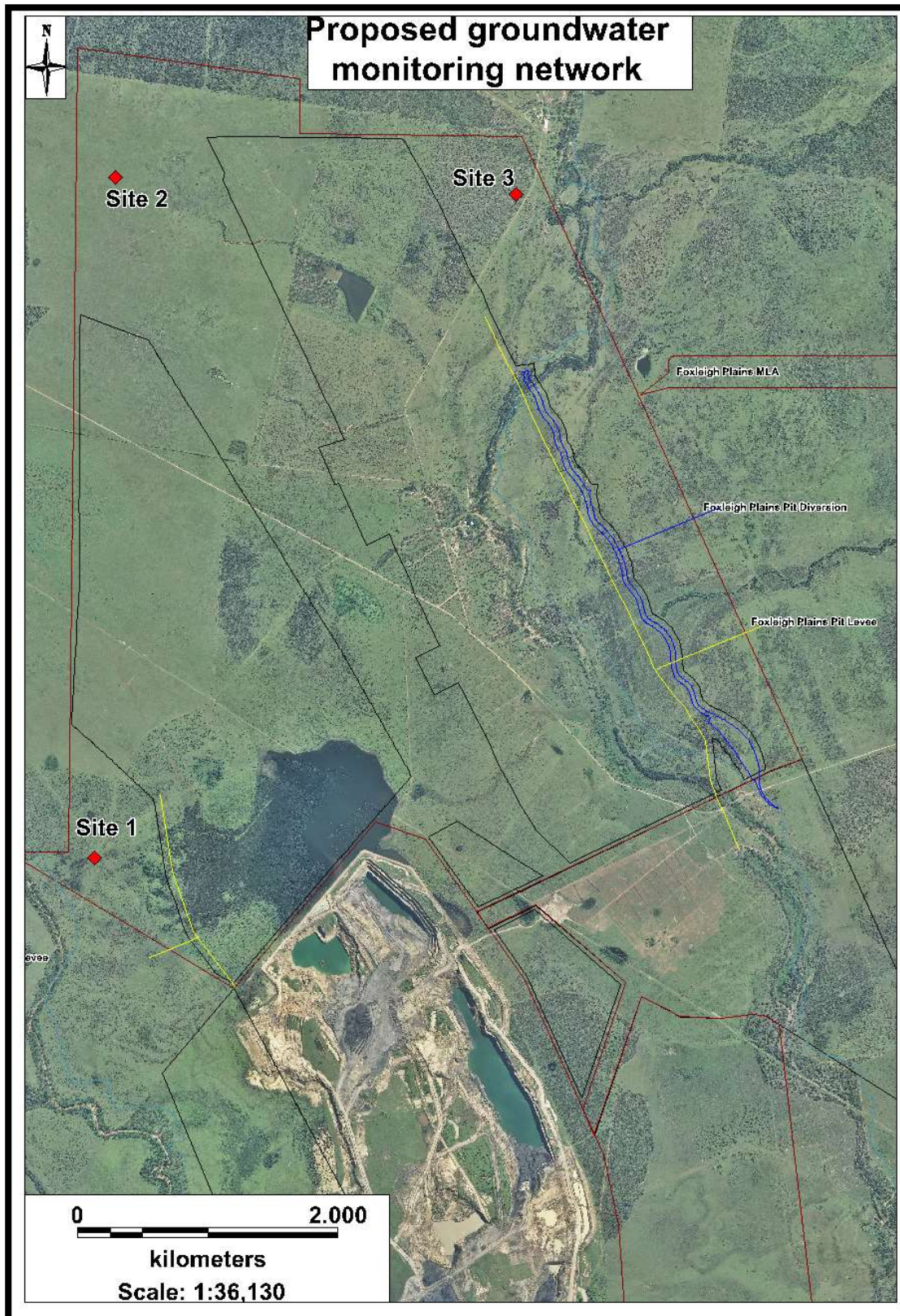
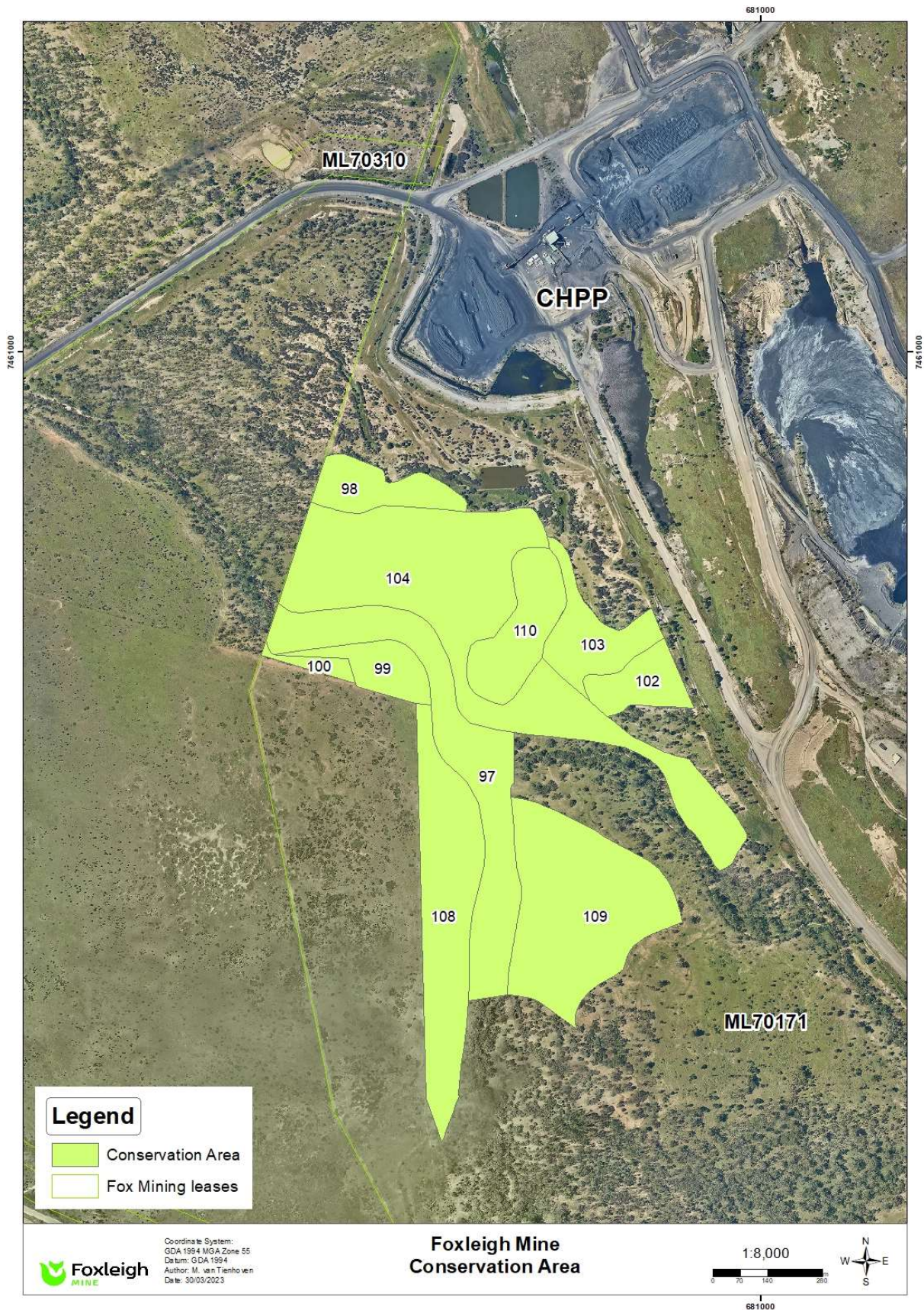


Figure 3: Release point and monitoring point locations



Figure 4: Conservation area reference map



Appendix 2:

Rehabilitation Requirements

Mine Domain	Mine Feature Name	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
All mine surface features	Infrastructure areas: - Raw and mine-affected water storage dams - Roads and tracks - ROM stockpile areas - MIA (workshops and associated laydown, hardstand, fuel storage, washdown bay areas) - CHPP - Administration offices - Explosive magazine - Power reticulation network - Fencing Mining areas: - Spoil emplacement areas Mine residue storage areas	- Safe for humans and wildlife - Non polluting - Stable - Able to sustain agreed post-mining land use	Predominantly a self-sustaining, low maintenance pasture vegetation supporting a grazing post mining land use, or a self-sustaining, low maintenance vegetation state with similar structure, composition and function to that of a native terrestrial or riparian ecosystem of the brigalow belt. Establishment of a native ecosystem connectivity corridor between Cockatoo creek and Roper Creek (East to West) in the vicinity of the CHPP infrastructure area. Where agricultural land use applies, to return self-sustaining grazing land that is sustainable and economically viable.	Infrastructure removed as required and revegetated to a light grazing post mining land use with a mix of pasture and native grass species or revegetated to a native ecosystem. Potential for erosion of waste dump slopes is reduced by correct spoil placement and functional drainage. Adequate access areas used for agriculture that can be maintained into the future. Suitable vegetation is planted for agricultural uses. Adequate shade and water is available for stock use. Topsoil/growth medium spread minimum 150mm depth, with no bare areas greater than 100m². Ripping to a minimum depth of 50cm at 1m spacing. Revegetation seed mix complies with final agreed	Any infrastructure that is to remain post closure, shall have a written agreement between the post mining landowner and Foxleigh Management Pty Ltd. Surface water run off quality is similar to the water quality of the surrounding catchment and within the EA conditions. Infrastructure areas land reshaped to slope range <10% (5.71°). Adequate erosion control structures have been installed, with no sites of significant wind or gully erosion that will cause harm to fauna. Vegetation established across areas with a suitable species mix for the agreed final land use of grazing or native ecosystem. Areas where agricultural land use applies, have pasture grass species present and provide stock with nutritional

Environmental authority EPML00744813 – Foxleigh Mine

				land use of grazing or native ecosystem.	requirements, as well as being capable of setting viable seed and flowering similar to reference sites in the Middlemount area and/or with a land suitability class (grazing) of 4.
Mine Domain	Mine Feature Name	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
Mining areas	Residual voids as per Appendix 4 and Figure 7 excluding areas of backfill spoil reprofiled to rehabilitation grade.	1. Safe for humans and wildlife 2. Non polluting 3. Stable	Residual voids to remain as water body surrounded by in-situ pit walls and backfilled spoil. Residual voids will be unsuited to any beneficial land use (i.e. Non-Use Management Area). Residual voids will be safe, stable, and non-polluting. Voids will remain as groundwater sinks and will not release contaminants to the downstream receiving waters, including surrounding groundwater aquifers.	Fencing and exclusion zones are established on the in-situ pit walls for exclusion of humans and cattle. Stable in situ pit walls left standing at the slope created by the final blast and a diversion bank provided at the top for safety and drainage. Any exposed coal seam covered with material to minimise highly saline water leaching into void water stores. Drains constructed to redirect surface water from flowing over the in-situ pit walls or in-pit spoil dumps. Geotechnical stability and risk assessments conducted to determine the appropriate treatments prior to closure.	All residual voids protected by permanently rehabilitated stable flood protection landforms providing immunity for a minimum 0.1% AEP event. In-situ pit wall and floor slopes <275% (<70°) and assessed by a suitably qualified person to be long-term stable as per geotechnical stability risk assessment Backfilled spoil walls and floor within the NUMA footprint 70% (<35°) and assessed by a suitably qualified person to be long-term stable as per geotechnical stability risk assessment. A suitability qualified person certifies in-situ pit walls to be stable as per geotechnical stability risk assessment.

					Drainage structures along in-situ pit walls and in-pit spoil dump have been revegetated with native shrub and grass species, with water drainage that flows naturally without pooling or flooding. Modelling confirms voids will remain as groundwater sinks and contaminants will not be released to the receiving environment or groundwater aquifers post-mining. A groundwater monitoring network designed by a suitability qualified person implemented onsite to monitor interaction of residual voids with surrounding aquifers. No groundwater contamination is evidenced by groundwater monitoring over 5 years post mining. Safety fencing and signage erected around pit walls to prevent access to humans and cattle.
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Environmental authority EPML00744813 – Foxleigh Mine

Mine Domain	Mine Feature Name	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
Mining areas	Spoil emplacement areas	1. Safe for humans and wildlife 2. Non polluting 3. Stable 4. Able to sustain agreed post-mining land use	Predominantly a self-sustaining, low maintenance pasture vegetation supporting a grazing post mining land use, or a self-sustaining, low maintenance vegetation state with similar structure, composition and function to that of a native terrestrial or riparian ecosystem of the brigalow belt.	Outer spoil slopes reshaped to 17% (9.65°). Internally draining spoil slopes reshaped to <45% (24.23°) with appropriate spoil placement, functional drainage and erosion control structures to reduce slope erosion potential. Final rehabilitated spoil dumps will be hills with a mix of pasture and native grass species or native vegetation. Topsoil/growth medium spread at minimum 150mm rate with no bare areas greater than 100m².	Spoil flat areas (out of pit and in-pit) surfaces have been constructed to a slope range <10% (5.71°). Spoil slopes (out of pit and in-pit) have been constructed to a slope range < 17% (9.65°). Outer spoil slopes are no longer than 100m between benches.
Mining areas	Mineral residue storage areas	1. Safe for humans and wildlife 2. Non polluting 3. Stable 4. Able to sustain agreed post-mining land use	Predominantly a self-sustaining, low maintenance pasture vegetation supporting a grazing post mining land use, or a self-sustaining, low maintenance vegetation state with similar structure, composition and function to that of a native terrestrial or riparian ecosystem of the brigalow belt.	Tailings material will be physically and chemically assessed to determine the appropriate capping required. Mineral residue material capped with coarse reject and/or spoil and revegetated with a mix of pasture and native grass species or native vegetation. Topsoil/growth medium spread at the rate of 150mm with no bare	Tailings and mineral residue material capped with an appropriate capping material. Species mix established to meet the agreed final land use of grazing or native ecosystem. Surface water run off quality is similar to the water quality of the surrounding catchment and within the EA conditions.

Environmental authority EPML00744813 – Foxleigh Mine

				areas greater than 100m ² .	A suitability qualified person certifies stability of the capped and rehabilitated landforms. Coarse reject landforms shaped to a slope range <10% (5.71°).
Mine Domain	Mine Feature Name	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
Watercourse diversions	Creek diversions and levees	1. Safe for humans and wildlife 2. Non polluting 3. Stable 4. Able to sustain agreed post-mining land use	Creek diversions that operate in equilibrium with adjoining reaches of the watercourse.	Creek diversion must incorporate similar geomorphic and riparian vegetation features to those of the pre-existing watercourse and adjoining landscape. Surface water qualities of flow events through the diversion are similar to the water quality of the surrounding catchment and within the EA conditions. Remediation of the disturbed area within the watercourse diversion and adjoining floodplain is stable with evidence of vegetation achieving a trajectory of self-sustainability. Topsoil/growth medium spread at a minimum rate of 150mm with no bare areas greater than 100m². Seed mix includes riparian vegetation.	In accordance with condition H2

Appendix 3: Approved significant residual impacts

Figure 5: Authorised significant residual impacts to prescribed environmental matters under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC approval 2010/5421)

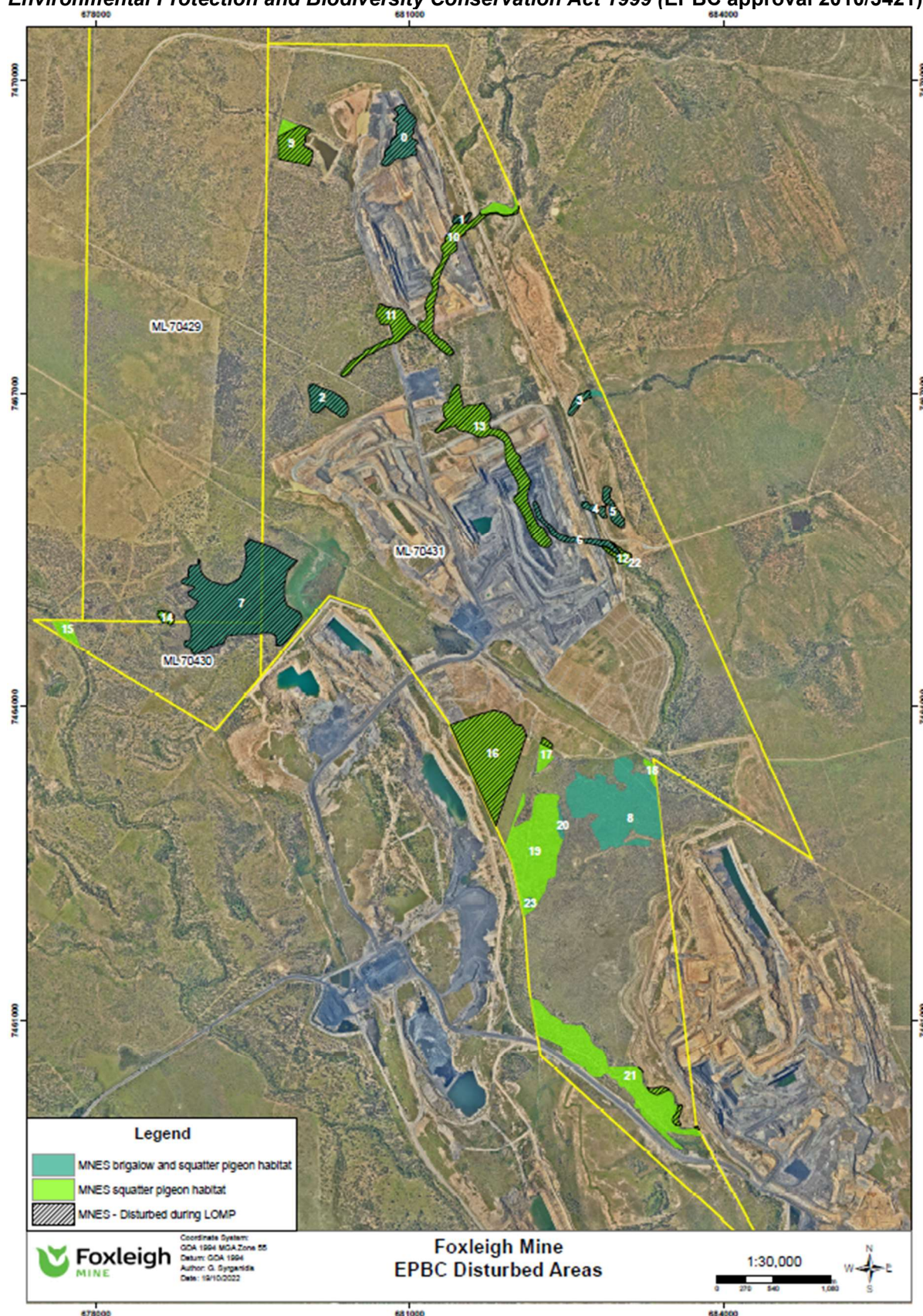
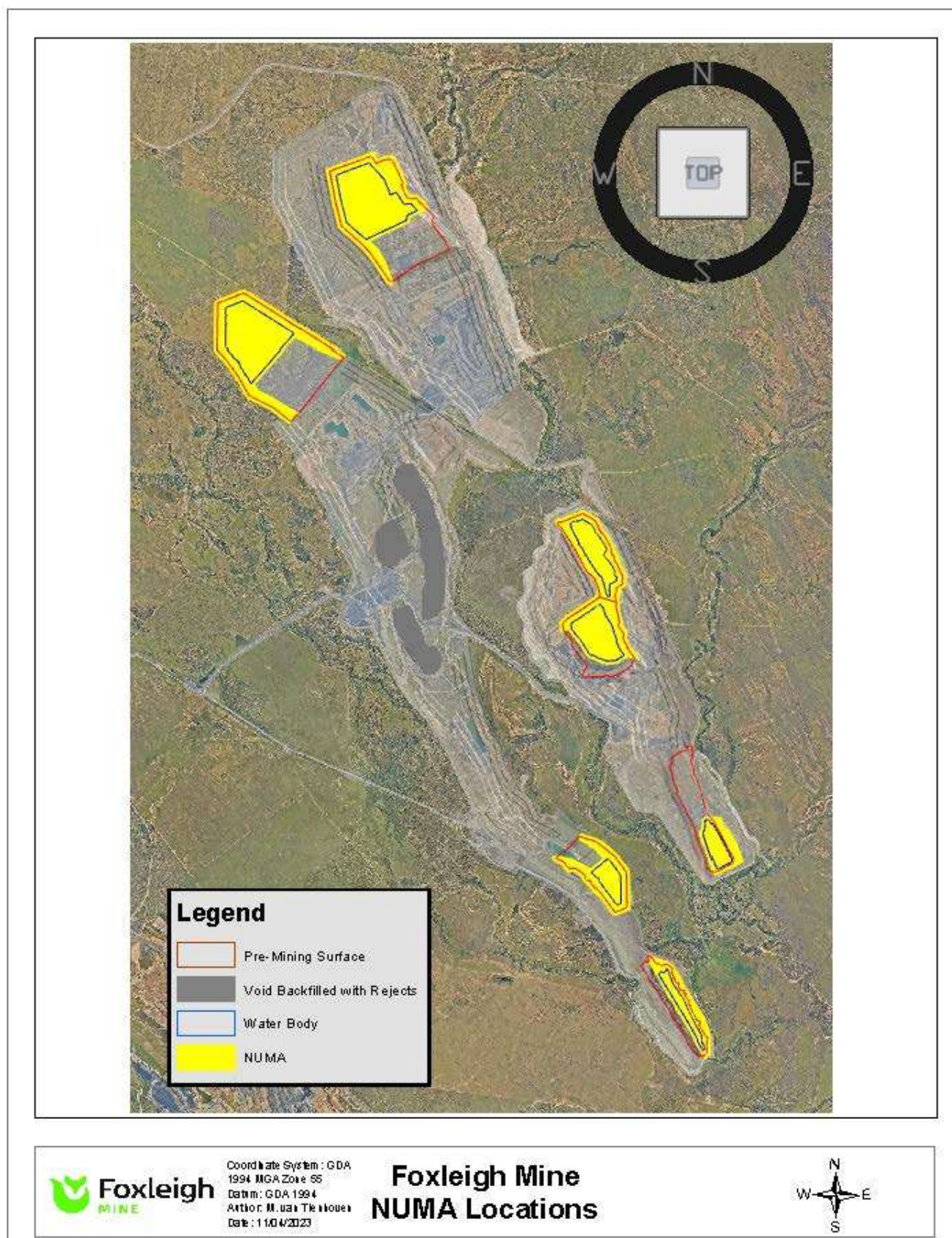


Figure 6: Authorised significant residual impacts to prescribed environmental matters that are not covered under the *Environmental Offsets Act 2014* or the *Environmental Protection and Biodiversity Conservation Act 1999* (covered under the Conservation Area)



Figure 7: NUMA locations at Foxleigh Mine



Appendix 4: Approved Residual Voids

Residual void	Total NUMA Area (Ha)	Void water body surface Area (Ha)
Eagle Nest	187.3	92
Fox Plains	185.5	101.9
One Tree West	93.8	48.9
Pipeline Pit	89.3	37.8
WC Pit	74.6	20.9
Far South	54.0	21.2
Carlo	45.8	23.1

END OF PERMIT

CALLIDE MINE

PROGRESSIVE REHABILITATION AND CLOSURE PLAN

ML5632, ML5641, ML5653, ML5654, ML5655,
ML5662, ML6993, ML6994, ML700059, ML80030,
ML80092, ML80093, ML80107, ML80115, ML80117,
ML80118, ML80122, ML80151, ML80186

29 July 2024

BATCHFIRE RESOURCES PTY LTD

S2, Level 11, 141 Queen St
Brisbane Qld 4000

DOCUMENT CONTROL

Project Name	Callide Mine
Document Title	Callide Mine Progressive Rehabilitation and Closure Plan
Document Version	Version 2
Document ID #	Callide Mine PRCPv2
Tenures	Mining Leases 5632, 5641, 5653, 5654, 5655,5662, 6993, 6994, 700059, 80030,80092, 80093, 80107, 80115, 80117, 80118, 80122, 80151, 80186
Environmental Authority Holder Name	Batchfire Callide Pty Ltd Batchfire Callide No. 2 Pty Ltd
Client/Environmental Authority Holder Contact Details	S2, Level 11, 141 Queen Street, Brisbane Qld 4000
File Name	Callide Mine PRCPv2
Date of Submission	29 July 2024

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- Appendix C4 Callide Mine Report on Completion Criteria for Residual Voids 2005
- Appendix D Groundwater Report
- Appendix E Final Void Water Balance Report
- Appendix F Final Landform Slope Assessment
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1 INTRODUCTION

This Progressive Rehabilitation and Closure Plan (PRCP) has been prepared for the Callide Mine in accordance with the transition notice issued under section 754 of the *Environmental Protection Act 1994* (Qld) (EP Act). This notice was issued to Batchfire Callide Pty Ltd and Batchfire Callide No. 2 Pty Ltd (the Environmental Authority (EA) holders).

This PRCP has been developed in accordance with the requirements of section 126C and 126D of the EP Act and associated *Environmental Protection Regulation 2019* (Qld) (EP Regulation) and the following guidelines and information sheets prepared by the Department of Environment, Science and Innovation (DESI):

- *Guideline: Progressive Rehabilitation and Closure Plans – version 3.00* (DESI, 2023);
- *Information Sheet: Non-Use Management Areas – version 1.01* (DESI, 2024c);
- *Information Sheet: Common Issues with PRCP Applications - version 1.01* (DESI, 2024a);
- *Information Sheet: Voids in Flood Plains – version 1.01* (DESI, 2024d); and
- *Information Sheet: Community Consultation for PRCP – version 1.01* (DESI, 2024b).

A pre-lodgement meeting with DESI for the Callide Mine PRCP was held on 3 February 2021, with a follow-up meeting on 29 March 2021.

The main report of this PRCP provides the rehabilitation planning part of the PRCP. The PRCP schedule is provided in the *PRCP Schedule* (Appendix A) and as a separate attachment in Excel format, in accordance with the PRCP schedule template (DESI, 2019).

The PRCP is structured as follows:

- Section 1: Introduction
- Section 2: Rehabilitation Planning
- Section 3: Community Consultation
- Section 4: Post-Mining Land Use
- Section 5: Non-Use Management Areas
- Section 6: Rehabilitation Management Methodology
- Section 7: Risk Assessment
- Section 8: Rehabilitation Trials
- Section 9: Monitoring and Maintenance
- Section 10: PRCP Schedule
- Appendices including:
 - Appendix A: PRCP Schedule
 - Appendix B: Community Consultation Register

- Appendix C: Land Outcome Documents
 - Appendix C1: Environmental Authority EPML00720413
 - Appendix C2: Callide Mine Rehabilitation Management Plan 2018
 - Appendix C3: Callide Mine Report on Rehabilitation Acceptance (Completion) Criteria 2003
 - Appendix C4: Callide Mine Report on Completion Criteria for Residual Voids 2005
- Appendix D: Groundwater Report
- Appendix E: Final Void Water Balance Report
- Appendix F: Final Landform Slope Assessment
- Appendix G: Risk Assessment

2 REHABILITATION PLANNING

2.1 PROJECT DESCRIPTION

Callide Mine is an open cut coal mine located approximately 20 km north of Biloela in Central Queensland (Figure 1). Callide Mine is owned and operated by Batchfire Resources Pty Ltd (Batchfire) in accordance with the Callide Mine EA (EPML00720413).

2.1.1 Current Operations

Mining commenced at Callide Mine in 1944. Callide Mine has an annual production rate of approximately 10.5 Million tonnes of product coal. The mine produces low-sulphur, sub-bituminous thermal coal that is predominantly used to supply Queensland's domestic power demands via the adjacent Callide Power Station (Figure 2). Mined coal is also used in the power generation for alumina refining in Gladstone and is exported to the international market. Mining at Callide Mine is expected to be completed by 2047.

Callide Mine comprises four discrete open cut mining areas as shown in Figures 2 to 6 and summarised as follows:

- Dunn Creek mining area (Figure 3):
 - Mining commenced at Dunn Creek mining area in 1944.
 - Coal is currently mined in Dunn Creek Pit (the western pit) and The Bluff Pit (the eastern pit). Mining operations involve a dragline and truck and shovel pre-stripping.
 - The primary infrastructure area for Callide Mine is located at the Dunn Creek mining area and includes a coal processing area and a Mine Industrial Area (MIA). The coal processing area includes a Coal Handling Plant (CHP), run-of-mine (ROM) and product coal stockpiles, conveyors and train loading facilities. The MIA includes administration buildings and offices, and workshops and maintenance facilities. ROM coal from Dunn Creek, Trap Gully and The Hut is hauled to the Dunn Creek CHP. Once crushed in the CHP, coal is either conveyed to the nearby Callide Power Station or loaded onto trains and transported to Gladstone.
- Trap Gully mining area (Figure 4):
 - Mining commenced at Trap Gully mining area in 1981.
 - Coal is mined in a single open cut pit (Trap Gully Pit) using a dragline and truck and shovel fleet. ROM coal from Trap Gully is hauled to the Dunn Creek CHP for crushing and transport from site.
 - Mine infrastructure at Trap Gully includes haul roads, water fill station, ROM coal pads and mine water dams.
- The Hut mining area (Figure 5):
 - Mining commenced at The Hut mining area in 1990. ROM coal from The Hut is hauled to the Dunn Creek CHP for crushing and transport from site.
 - Open cut mining in the Central Valley North (CVN) Pit, Central Valley South (CVS) Pit and Eastern Hillside Pit has been completed.
 - Mine infrastructure at The Hut includes haul roads, a laydown area, ROM coal pad and mine water dams.

■ Boundary Hill mining area (Figure 6):

- Mining commenced at Boundary Hill mining area in 1983. Boundary Hill operates independently of the other mining areas at Callide Mine.
- Coal is currently mined in Boundary Hill South (BHS) Pit and the Campbell's Creek Pit using a dragline and truck and shovel fleet. ROM coal is hauled from the pits to an in-pit CHP (also called 'the Stamler') for crushing. Crushed coal is then conveyed to the Boundary Hill train load out facility and transported to Gladstone. A mine infrastructure area (MIA) is located at Boundary Hill including a crib room, administration building and workshops.
- Open cut mining in the Boundary Hill North Pit and the Boundary Hill East Pit has been completed.

2.1.2 Environmentally Relevant Activities

The Callide Mine EA authorises the following Environmentally Relevant Activities (ERAs):

- Resource activity 13 – Mining black coal;
- ERA 33 – Crushing, Milling, Grinding or Screening for crushing, grinding, milling or screening more than 5,000 t of material in a year; and
- ERA 63(1)(b)(i) – Sewage Treatment for operating a sewage treatment works, other than no-release works, with a total daily peak design capacity of more than 100 but not more than 1,500 Equivalent Persons (EP) if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme.

2.1.3 Pre-Disturbance Information

As detailed in Section 2.1.1, mining commenced at Callide Mine in 1944. Callide Mine has progressively expanded across the four mining areas since this time. Pre-disturbance information has been developed and approvals sought in accordance with the legislative requirements in place at the time of each individual approval, including through EA applications and amendments and Environmental Impact Statement (EIS) processes. This information is of varying age and format, and it was therefore not possible to include all pre-disturbance information in the PRCP. In addition, it was not considered necessary to include pre-disturbance information for areas that have already been subject to mining operations. Baseline information has been summarised and included in the PRCP where it is considered relevant to rehabilitation planning.

2.2 RESOURCE TENEMENTS

Table 1 lists the resource tenements that make up the Callide Mine, all of which are held by the proponent. The Mining Leases (MLs) for each mining area are shown on Figures 3 to 6.

Table 1 Mining Tenements held by Batchfire

ML NUMBER	TENURE EXPIRY DATE	AREA (ha)
Dunn Creek		1,698
ML5632	31/07/2031	6
ML5641	30/06/2037	13
ML80030	31/03/2024	919
ML80092	31/12/2021	72
ML80093	31/12/2021*	1
ML80118	31/12/2028	475

ML NUMBER	TENURE EXPIRY DATE	AREA (ha)
ML6993	31/12/2021*	212
Trap Gully		1,562
ML5653	30/11/2023	323
ML5662	30/11/2032	73
ML80117	31/07/2029	688
ML80122	31/07/2027	474
ML700059	31/10/2045	3
The Hut		1,314
ML5654	31/05/2028	1,314
Boundary Hill		1,865
ML5655	30/09/2024	822
ML6994	30/11/2025	25
ML80107	30/09/2044	230
ML80115	31/03/2026	83
ML80151	31/12/2030	86
ML80186	31/01/2043	619

* Renewal has been lodged

2.3 TOPOGRAPHY

The topography in the vicinity of the mine transitions from the elevated Callide Range in the north-east to the lower lying Callide Creek floodplain in the south-west (Figure 7). An escarpment and several peaks including Mount Murchison (elevation 520 mAHD) and Giles Peak extend from the Callide Range into the mine site (Figure 7).

The natural topography within and surrounding the Callide mining areas ranges from steeply sloping areas within the Callide Timber Reserve, to gently undulating grazing land in the western areas.

Local drainage features are characterised by incised banks and have been significantly degraded by historical clearing and cattle grazing activities. The local drainage is discussed in Section 2.6.2. The local topography and surface drainage are shown in Figure 7.

2.4 CLIMATE

2.4.1 Regional

The climate of the region is subtropical with moderately dry winters and wetter summers. The region is subject to climatic extremes including drought, flooding, bushfires and cyclones.

2.4.2 Local

The climate at the Callide Mine is sub-tropical, characterised by high variability in rainfall, temperature, and evaporation, typical of Central Queensland.

The nearest Bureau of Meteorology (BoM) weather station is the Thangool Airport weather station (station number 039089), located approximately 20km south of the Callide Mine.

The average annual rainfall at the Thangool Airport weather station is 660 mm. Rainfall at this location shows marked annual and seasonal variability with dominant weather cycles of varying duration of drought followed by wet years. The seasonal average rainfall is 280.8 mm in summer, 135.7 mm in autumn, 82.7 mm in winter and 157.4 mm in spring (BoM, 2022). The region shows a pronounced wet season with most of the rainfall occurring between from November to March, although variations in monthly rainfall can be extreme.

The highest monthly mean daytime temperatures (36°C to 37°C) occur between December and February, and the lowest monthly mean daytime temperatures (20°C to 23°C) occur between June and August. A combination of high temperatures and low humidity results in high evaporation rates across the Callide Valley. Average daily pan evaporation is highest in December (7.4 mm) and lowest in June (2.9 mm) with an average annual pan evaporation of 2,005 mm.

Prevailing winds are east to southeast between January and April, moving to south to southeast between May and August, then north to northeast from September to December. Average daily wind speed varies between 2.4 and 3.0 m/s through the year.

The Future Climate Dashboard (Queensland Government, 2021) shows the mean temperature in the region increasing by approximately 3°C by 2070. Evaporation is predicted to increase by approximately 1.2 mm/day by 2070 and rainfall is expected to decrease by approximately 0.02 mm/day by 2070.

2.5 GEOLOGICAL SETTING

Callide Mine is located in the Callide Basin. The Callide Basin is a discrete sedimentary geological basin that is localised within a half graben structure and bounded on all sides by basement rocks. The sedimentary rocks of the Callide Basin are therefore geologically isolated from contemporaneous rocks elsewhere in the region.

The Callide Basin comprises two geological formations, namely the Callide Coal Measures and the overlying Precipice Sandstone. These formations are undeformed basin-fill strata and do not exhibit any major faulting or folding. The Callide Basin is up to 200 m thick in the centre and thins towards the basin margins.

During the early Tertiary period, the Callide Basin was blanketed by sedimentary deposits of the Biloela Formation. Tertiary volcanism deposited basalt that caps the elevated areas of the basin.

The exposed surfaces of the sedimentary formations and basalt were subsequently modified by extended periods of erosion, weathering and mineralisation. This has resulted in the development of a deep weathered profile (up to approximately 100 m thick), localised surface duricrust and thin residual sheetwash and creek deposits.

The surface geology is shown in Figure 8. The local stratigraphy includes (in descending order from youngest to oldest):

- Recent residual surface sediments;
- Tertiary basalt;
- Biloela Formation;
- Precipice Sandstone;
- Callide Coal Measures, including the target coal seams; and
- The underlying basement rocks.

A detailed description of the local stratigraphy and lithology is provided in the *Groundwater Report* (Appendix D).

2.6 SURFACE WATER

This section provides an overview of the catchment and drainage setting for the Callide Mine.

2.6.1 Regional Setting

Callide Mine is located within the Callide Creek catchment of the Callide Basin, in the upper Fitzroy Basin (Figure 9). The dominant land uses within the Callide Creek catchment are mining, forestry, power generation and agriculture (irrigated cropping, intensive livestock production and meat processing).

Callide Creek is a regionally significant watercourse located approximately 4 km south and 9 km west of the Callide Mine (Figure 9). The upper reaches of Callide Creek and its tributaries exhibit highly ephemeral, short duration, surface water flows that are typically restricted to the wet season (i.e., November to April).

Callide Dam is located in the upper reaches of Callide Creek (Figure 9). Callide Dam is the largest dam in the Callide Basin and has a full storage capacity of 136 Giga Litres (GL).

Downstream of Callide Dam, Callide Creek forms a braided river system comprising multiple channels spanning a broad alluvial floodplain (Figure 7). Releases from Callide Dam maintain perennial surface water flow in the larger creek channels. Agricultural water supplies are abstracted from Callide Creek and associated creek alluvium.

2.6.2 Local Setting

The Callide Range forms local catchment boundaries. Gate Creek, Oaky Creek, Dunn Creek and several tributaries form on the western slopes of the Callide Range and drain west to the Callide Creek floodplain (Figure 7). The headwaters of Bell Creek form on the northern slopes of the range (Figure 7).

Drainage at Dunn Creek is generally north to south. Some minor catchments are truncated by the open cut pit highwall and creeks convey runoff around the eastern and western ends of the open cut mining area (Figure 2). There are a number of mine water dams at the southern end of the MLs. The Dunn Creek mining area ultimately drains south via Dunn Creek and other tributary drainage lines into Callide Dam, approximately 1.5km south of the Dunn Creek MLs (Figure 2).

Drainage at Trap Gully is generally east to west. The main drainage line is Trap Gully Creek (Figure 2). Oaky Creek drains through the northern part of the ML in an area not affected by mining. Trap Gully Creek joins Oaky Creek approximately 2 km downstream of Trap Gully, then flows into Callide Creek approximately 8km further downstream (Figure 2).

Drainage at The Hut is generally east to west. The main drainage line is Oaky Creek that runs through the centre of the mining area (Figure 2). A permanent diversion of Oaky Creek, that is authorised under a Water Licence, diverts drainage around the northern end of the CVN Pit and its overburden emplacement area. Oaky Creek enters the Trap Gully mining area approximately 2 km downstream (Figure 2).

Drainage at Boundary Hill is generally north-east to south-west. The main drainage line is Campbell's Creek, which drains through the southern portion of the MLs between Boundary Hill North Pit and Boundary Hill South Pit overburden emplacement areas (Figure 2). Lake Gasteen is located on a tributary of Campbell's Creek at the western end of Boundary Hill North Pit. Campbell's Creek joins Gate Creek immediately downstream of the MLs (Figure 2). Gate Creek flows to the south-west and joins Callide Creek approximately 7 km downstream of the Boundary Hill MLs (Figure 7).

2.7 GROUNDWATER

The *Groundwater Report* (Appendix D) presents the groundwater levels, groundwater quality and hydraulic properties of the key hydro-stratigraphic units, including:

- Hydrographs that show the groundwater levels over time;
- Box and whisker plots that show the hydraulic properties of each hydro-stratigraphic unit; and
- Groundwater quality statistics for each hydro-stratigraphic unit.

Based on the available information, the local hydro-stratigraphy comprises:

- Dry and unsaturated residual surface sediments and basalt that do not contribute significantly to the groundwater regime.
- The Biloela Formation aquitard that acts as a confining layer and restricts recharge to the underlying aquifer.
- A productive aquifer that includes the Precipice Sandstone and the uppermost sandstone deposit of the Callide Coal Measures. This is the main groundwater-bearing formation in the Callide Basin.
- Underlying aquitards including the remainder of the Callide Coal Measures and the underlying basement aquitard. The Callide Coal Measures includes water-bearing coal seams that yield limited volumes of groundwater and are not considered productive aquifers.

The groundwater regime is typically recharged by rainfall that occurs during the wet season. Seasonal runoff concentrates on the upper surfaces of the elevated landforms and along drainage lines, enhancing infiltration in these areas. A portion of the surface water infiltration moves through the unsaturated rock profile to recharge the underlying groundwater table. Recharge is impeded by the overlying Biloela Formation aquitard, where present.

Groundwater flows south-west from the elevated groundwater recharge areas in the Callide Range towards the lower lying areas.

There is significant spatial variation in the groundwater table depth due to changes in topography. In general, the groundwater table is deeper in areas of elevated terrain and is shallower in lower lying areas and below incised creeks. In the elevated areas at the eastern margin of the basin, the groundwater table is typically located in the Callide Coal Measures at depths of up to approximately 100 m below ground level. In the lower lying areas in the south-west of the basin, the groundwater table is typically located in the Precipice Sandstone between approximately 10 m and 60 m below ground level. In general, the Precipice Sandstone and Callide Coal Measures are partially or fully saturated, where present.

In the vicinity of the open cut mining areas, groundwater levels and flow directions have been extensively modified. Where mining has intersected the groundwater table, active pit dewatering has depressurised the surrounding groundwater regime and lowered groundwater levels. This has created a zone of groundwater drawdown around the open cut pits. The observed groundwater drawdown effects are an expected outcome of the approved mining activities and will continue to develop over time as the approved mining activities progress.

The main groundwater discharge mechanism is active dewatering and evaporation from the open cut pits. Groundwater discharge also occurs regionally through evapotranspiration from woodland vegetation, where present.

Groundwater level data indicate that the groundwater table is typically located several metres below the bed of creeks within the vicinity of the mining areas. The separating depth between the creek beds and the groundwater table means that there is no direct interconnection between the groundwater table and surface waters in these areas. Groundwater does not provide baseflow to surface waters within the vicinity of Callide Mine.

Groundwater quality in the Precipice Sandstone and Callide Coal Measures is typically pH neutral and non saline to brackish, with low concentrations of metals, metalloids, and other solutes. Groundwater in the basement rock and Biloela Formation is distinctly more saline, with maximum Electrical Conductivity (EC) levels of up to approximately 40,000 $\mu\text{S}/\text{cm}$.

There are several groundwater supply bores located on four neighbouring properties. Batchfire has a Make Good Agreement (MGA) in place with the owners of all four properties. The MGAs include the requirement for Batchfire to monitor the groundwater level in the landholder's bores. In the event that any of the bores are adversely impacted as a result of the mining activities, the MGAs require Batchfire to make good with an equivalent alternative water supply. To date, the bores have not been adversely impacted.

2.8 SOILS

2.8.1 Soil Types and Properties

Assessments of soil and topsoil availability within each of the four mining areas has been conducted at varying levels of detail and progressively over a number of decades as part the of numerous mine approvals that have been obtained for the current mining operations. Soil field surveys and desktop assessments indicate that 14 soil types occur across the Callide Mine MLs. Soil types are shown in Figure 10 and documented in Table 2. Table 2 also presents the approximate depth of topsoil that is available to be stripped and reused for each soil type.

Table 2 Soil Types and Depth of Topsoil Available for Reuse

SOIL TYPE	AUSTRALIAN SOIL CLASSIFICATION	APPROXIMATE DEPTH OF TOPSOIL AVAILABLE (m)
Alluvial soils	Dermosol	0.30 to 1.00
Self-mulching basaltic soils	Vertosol	0.10 to 0.45
Brigalow supporting clay soils	Vertosol	0.20 to 0.40
Cracking clays	Vertosol	0.10 to 0.50
Non-cracking clays	Dermosol	0.20 to 0.30
Duplex soils	Sodosols, Kurosols, Chromosols	0.15 to 0.35
Escarpment soils	Tenosols, Rudosols	0.10 to 0.15
Gradational soils	Dermosol, Kandosol	0.25 to 0.40
High gravel content soils	Tenosol, Rudosol	0.10 to 0.25
Grey loamy sands	Tenosol, Rudosol	0.20 to 0.35
Red earths	Dermosol, Kandosol	0.30 to 0.50
Sandy loam to loamy sands	Tenosol, Rudosol	0.15 to 0.45
Silts	Dermosol	0.10 to 0.30
Soils on steep slopes	Tenosol, Rudosol	0.00 to 0.25

2.8.2 Soil Productivity

Several baseline land capability assessments have been conducted for the different mining areas at Callide Mine. More than 70% of Dunn Creek, Trap Gully and The Hut was assessed as being Class 7 or 8, with only Trap Gully having notable areas of Class 6 (18%) and Class 4 (10%). At Boundary Hill, a 1992 review of land capability on unmined land concluded that most areas fell into Classes 6 and 7 (Anglo Coal (Callide Management), 2003).

2.8.3 Land Stability

There is no known pre-existing land degradation or erosion within the Callide Mine MLs that would contribute to ongoing stability issues.

2.9 FLORA AND VEGETATION COMMUNITIES

Figures 11 to 14 show the Regional Ecosystem (RE) mapping within the Callide Mine ML boundaries as per the *Vegetation Management Act 1999* (Qld) (VM Act). Vegetation communities representing 22 REs (both remnant and regrowth) were mapped within the four mining areas. The VM Act status REs present within the Callide Mine MLs are listed in Table 3, along with the corresponding vegetation management and biodiversity status and the approximate area of remnant and high value regrowth.

Table 3 Regional Ecosystems Mapped within the Callide Mine MLs

REGIONAL ECOSYSTEM	SHORT DESCRIPTION	VM ACT STATUS	BIODIVERSITY STATUS	APPROXIMATE AREA (ha)	
				HIGH VALUE REGROWTH	REMNANT
Dunn Creek				66	288
11.3.2	Eucalyptus populnea woodland on alluvial plains	Of concern	Of concern	1	-
11.3.26	Eucalyptus moluccana or E. microcarpa woodland to open forest on margins of alluvial plains	Least concern	No concern at present	2	1
11.8.3	Semi-evergreen vine thicket on Cainozoic igneous rocks	Of concern	Of concern	17	8
11.8.4	Eucalyptus melanophloia woodland to open woodland on Cainozoic igneous rocks.	Least concern	No concern at present	9	24
11.9.5	Acacia harpophylla and/or Casuarina cristata open forest to woodland on fine-grained sedimentary rocks	Endange red	Endangered	2	-
11.10.1	Corymbia citriodora woodland on coarse-grained sedimentary rocks	Least concern	No concern at present	1	10
11.10.4	Eucalyptus decorticans, Lysicarpus angustifolius +/- Eucalyptus spp., Corymbia spp., Acacia spp. woodland on coarse-grained sedimentary rocks	Least concern	No concern at present	-	8
11.10.7	Eucalyptus crebra woodland on coarse-grained sedimentary rocks	Least concern	No concern at present	1	23
11.10.8	Semi-evergreen vine thicket in sheltered habitats on medium to coarse-grained sedimentary rocks	Of concern	Of concern	7	-
11.10.13	Eucalyptus spp. and/or Corymbia spp. open forest on scarps and sandstone tablelands	Least concern	No concern at present	18	176
11.11.4	Eucalyptus crebra woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges	Least concern	No concern at present	1	4

REGIONAL ECOSYSTEM	SHORT DESCRIPTION	VM ACT STATUS	BIODIVERSITY STATUS	APPROXIMATE AREA (ha)	
				HIGH VALUE REGROWTH	REMNANT
11.11.15	Eucalyptus crebra woodland to open woodland on deformed and metamorphosed sediments and interbedded volcanics	Least concern	No concern at present	8	34
Trap Gully				60	211
11.3.2	Eucalyptus populnea woodland on alluvial plains	Of concern	Of concern	<1	-
11.3.25	Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines	Least concern	Of concern	-	12
11.3.26	Eucalyptus moluccana or E. microcarpa woodland to open forest on margins of alluvial plains	Least concern	No concern at present	4	-
11.3.4	Eucalyptus tereticornis and/or Eucalyptus spp. woodland on alluvial plains	Of concern	Of concern	-	34
11.3.6	Eucalyptus melanophloia woodland on alluvial plains	Least concern	Of concern	-	2
11.8.3	Semi-evergreen vine thicket on Cainozoic igneous rocks	Of concern	Of concern	6	-
11.8.4	Eucalyptus melanophloia woodland to open woodland on Cainozoic igneous rocks.	Least concern	No concern at present	29	8
11.9.1	Acacia harpophylla-Eucalyptus cambageana woodland to open forest on fine-grained sedimentary rocks	Endangered	Endangered	1	-
11.9.2	Eucalyptus melanophloia +/- E. orgadophila woodland to open woodland on fine-grained sedimentary rocks	Least concern	No concern at present	2	-
11.9.5	Acacia harpophylla and/or Casuarina cristata open forest to woodland on fine-grained sedimentary rocks	Endangered	Endangered	2	-
11.10.1	Corymbia citriodora woodland on coarse-grained sedimentary rocks	Least concern	No concern at present	13	-
11.10.4	Eucalyptus decorticans, Lysicarpus angustifolius +/-	Least concern	No concern at present	-	7

REGIONAL ECOSYSTEM	SHORT DESCRIPTION	VM ACT STATUS	BIODIVERSITY STATUS	APPROXIMATE AREA (ha)	
				HIGH VALUE REGROWTH	REMNAINT
	Eucalyptus spp., Corymbia spp., Acacia spp. woodland on coarse-grained sedimentary rocks				
11.10.13	Eucalyptus spp. and/or Corymbia spp. open forest on scarps and sandstone tablelands	Least concern	No concern at present	1	147
The Hut				53	471
11.3.25	Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines	Least concern	Of Concern	9	1
11.3.26	Eucalyptus moluccana or E. microcarpa woodland to open forest on margins of alluvial plains	Least concern	No concern at present	-	3
11.3.4	Eucalyptus tereticornis and/or Eucalyptus spp. woodland on alluvial plains	Of concern	Of concern	25	3
11.3.6	Eucalyptus melanophloia woodland on alluvial plains	Least concern	Of concern	2	-
11.8.3	Semi-evergreen vine thicket on Cainozoic igneous rocks	Of concern	Of concern	3	-
11.8.4	Eucalyptus melanophloia woodland to open woodland on Cainozoic igneous rocks.	Least concern	No concern at present	2	-
11.10.1	Corymbia citriodora woodland on coarse-grained sedimentary rocks	Least concern	No concern at present	1	33
11.10.4	Eucalyptus decorticans, Lysicarpus angustifolius +/- Eucalyptus spp., Corymbia spp., Acacia spp. woodland on coarse-grained sedimentary rocks	Least concern	No concern at present	-	15
11.10.13	Eucalyptus spp. and/or Corymbia spp. open forest on scarps and sandstone tablelands	Least concern	No concern at present	11	416
Boundary Hill				96	147
11.3.1	Acacia harpophylla and/or Casuarina cristata open forest on alluvial plains	Endange red	Endangered	<1	-

REGIONAL ECOSYSTEM	SHORT DESCRIPTION	VM ACT STATUS	BIODIVERSITY STATUS	APPROXIMATE AREA (ha)	
				HIGH VALUE REGROWTH	REMNNANT
11.3.11	Semi-evergreen vine thicket on alluvial plains	Endange red	Endangered	<1	-
11.3.2	Eucalyptus populnea woodland on alluvial plains	Of concern	Of Concern	<1	-
11.3.25	Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines	Least concern	Of Concern	<1	2
11.3.4	Eucalyptus tereticornis and/or Eucalyptus spp. woodland on alluvial plains	Of concern	Of Concern	<1	-
11.8.4	Eucalyptus melanophloia woodland to open woodland on Cainozoic igneous rocks.	Least concern	No concern at present	-	7
11.9.1	Acacia harpophylla-Eucalyptus cambageana woodland to open forest on fine-grained sedimentary rocks	Endange red	Endangered	<1	2
11.9.4a	Semi-evergreen vine thicket, generally dominated by a low tree layer, on fine-grained sedimentary rocks	Of concern	Endangered	2	16
11.9.5	Acacia harpophylla and/or Casuarina cristata open forest to woodland on fine-grained sedimentary rocks	Endange red	Endangered	1	6
11.9.9	Eucalyptus crebra woodland on fine-grained sedimentary rocks	Least concern	No concern at present	5	19
11.9.13	Eucalyptus moluccana or E. microcarpa open forest on fine grained sedimentary rocks	Of concern	Of concern	6	20
11.10.1	Corymbia citriodora woodland on coarse-grained sedimentary rocks	Least concern	No concern at present	56	75
11.10.7	Eucalyptus crebra woodland on coarse-grained sedimentary rocks	Least concern	No concern at present	11	-
11.11.4	Eucalyptus crebra woodland on old sedimentary rocks with varying degrees of	Least concern	No concern at present	8	-

REGIONAL ECOSYSTEM	SHORT DESCRIPTION	VM ACT STATUS	BIODIVERSITY STATUS	APPROXIMATE AREA (ha)	
				HIGH VALUE REGROWTH	REMNANT
	metamorphism and folding. Coastal ranges				
11.11.15	Eucalyptus crebra woodland to open woodland on deformed and metamorphosed sediments and interbedded volcanics	Least concern	No concern at present	5	-

2.10 FAUNA PRESENCE AND POPULATIONS

A number of fauna surveys have been conducted across the Callide Mine MLs and surrounding areas, for various approvals that have been obtained over the life of the mine. No endangered fauna species have been observed within the Callide Mine MLs during these surveys.

The following species of conservation significance have been observed within the Callide Mine MLs:

- Squatter Pigeon (Southern) (*Geophaps scripta scripta*) listed as Vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) and the *Nature Conservation Act 1992* (Qld) (NC Act); and
- Short-beaked Echidna (*Tachyglossus aculeatus*) listed as Special Least Concern under the NC Act.

The following species of conservation significance have been assessed as having a moderate or high likelihood of occurring with the Callide Mine MLs:

- The Greater Glider (Central) (*Petauroides armillatus*) listed as Endangered under the EPBC Act and the NC Act;
- The White-throated Needletail (*Hirundapus caudacutus*) listed as Vulnerable under the NC Act; and
- The Koala (*Phascolarctos cinereus*) listed as Endangered under the EPBC Act and the NC Act.

2.11 PRE-MINING LAND USE

Prior to the commencement of mining activities, the land with the Callide Mine MLs was used for the following:

- Low intensity cattle grazing on native or improved pastures (Dunn Creek, Trap Gully, The Hut and Boundary Hill); and
- Selective logging (Dunn Creek, Trap Gully and The Hut) in areas within the Callide Timber Reserve.

2.12 UNDERLYING LANDHOLDERS

Land ownership within the Callide Mine MLs is described in Table 4. The majority of the underlying land parcels are either freehold land owned by Batchfire or land within the Callide Timber Reserve, owned by the Queensland government. Figure 15 shows the land parcels underlying the MLs and indicates those that are not owned by Batchfire, including:

- Areas of the Timber Reserve at Dunn Creek, Trap Gully and The Hut, owned by The State of Queensland (DESI);

- Land leased to Aurizon Network Pty Ltd for areas associated with the rail infrastructure at the southern end of Dunn Creek; and
- Small areas of freehold land at Dunn Creek owned by Craig E Polsen.

There are several easements within the Callide Mine MLs (Figure 15) associated with the following third-party infrastructure:

- Two parallel powerlines running between Boundary Hill North Pit and Boundary Hill East Pit; and
- A high voltage electrical substation and associated powerline at Dunn Creek.

Table 4 Land Ownership at Callide Mine

LOT & PLAN	REGISTERED PROPRIETOR	TENURE
Dunn Creek		
Lot 170 Plan 1843	The State of Queensland (DESI)	Timber Reserve
Lot 10 Plan RP912765	Batchfire Callide Pty Ltd	Freehold
Lot 6 Plan RP848846	Batchfire Callide Pty Ltd	Freehold
Lot 13 Plan RP848909	Batchfire Callide Pty Ltd	Freehold
Lot 12 Plan RP848908	Batchfire Callide Pty Ltd	Freehold
Lot 23 Plan SP129150	Batchfire Callide Pty Ltd	Freehold
Lot 16 Plan SP120478	Batchfire Callide Pty Ltd	Freehold
Lot 100 Plan SP301602	Batchfire Callide Pty Ltd	Freehold
Lot 101 Plan SP301602	Craig E Polsen	Freehold
Lot 421 Plan RN1357	Aurizon Network Pty Ltd	Lands Lease
Lot 15 Plan 120478	Aurizon Network Pty Ltd	Lands Lease
Lot 17 Plan SP120478	Batchfire Callide Pty Ltd	Freehold
Lot 31 Plan RN869	Batchfire Callide Pty Ltd	Freehold
Lot 52 Plan RP843058	Craig E Polsen	Freehold
Trap Gully		
Lot 170 Plan FTY1843	The State of Queensland (DESI)	Timber Reserve
Lot 7 Plan RN1519	Batchfire Callide Pty Ltd	Freehold
Lot 152 Plan RN1429	Batchfire Callide Pty Ltd	Lands Lease
Lot 4 Plan SP328354	Batchfire Callide Pty Ltd	Freehold
Lot 10 Plan SP307514	Batchfire Callide Pty Ltd	Freehold
The Hut		
Lot 170 Plan FTY1843	The State of Queensland (DESI)	Timber Reserve
Boundary Hill		
Lot 38 Plan RP801409	Batchfire Callide Pty Ltd	Freehold
Lot 1 Plan SP200831	Batchfire Callide Pty Ltd	Lands Lease
Lot 3 Plan SP216326	Batchfire Callide Pty Ltd	Freehold
Lot 2 Plan SP231268	Batchfire Callide Pty Ltd	Freehold

LOT & PLAN	REGISTERED PROPRIETOR	TENURE
Lot 153 Plan RN1431	Batchfire Callide Pty Ltd	Lands Lease
Lot 11 Plan RP801163	Batchfire Callide Pty Ltd	Freehold
Lot 1 Plan SP301592	Batchfire Callide Pty Ltd	Freehold
Lot 134 Plan SP301592	Batchfire Callide Pty Ltd	Freehold
Lot 94 Plan SP301592	Batchfire Callide Pty Ltd	Freehold

2.13 DESIGN FOR CLOSURE

The Callide Mine is an existing mine transitioning to the PRCP framework and therefore design for closure for approved mining activities is not required.

2.14 REHABILITATION / IMPROVEMENT PLANNING

2.14.1 Rehabilitation and Improvement Areas

The mining activity domains, corresponding to the rehabilitation areas (RAs) and improvement areas (IAs) described in Section 10.2, in each of the four mining areas at Callide Mine are summarised in Table 5. The location of these mining activity areas is shown in Figures 27 to 30.

Table 5 Rehabilitation Area and Improvement Area Summary

AREA	RELEVANT ACTIVITY	MINING AREA (ha)				TOTAL (ha)
		DUNN CREEK	TRAP GULLY	THE HUT	BOUNDARY HILL	
RA1	Rehabilitated Overburden Emplacement Areas	197.5	28.3	144.4	242.7	612.9
RA2	Overburden Emplacement Areas	567.4	972.2	368.9	671.1	2,579.6
RA3 & RA4	Mine Infrastructure Areas	114.5	11.9	14.5	148.1	289.0
RA5	Retained Mine Infrastructure	16.9	1.2	2.0	13.3	33.4
RA6	Creek Diversions	-	2.7	10.1	-	12.8
IA1	Final Voids and Ramps	332.2	190.5	171.9	423.5	1,118.1
<i>Sub-Total</i>						<i>4,645.8</i>
Undisturbed	None	470.2	356.5	602.7	366.8	1,796.2
Total (ha)		1,698	1,562	1,314	1,865	6,439

Note: The individual areas presented in this table have been rounded to one decimal place and therefore may not balance with the total ML area

The total of all RAs for Callide Mine is 3,527.7 ha, and the total of all IAs is 1,118.1 ha.

2.14.2 Land Availability

Land availability for progressive rehabilitation and closure over the remaining life of the mine is discussed in Section 10.3.

2.14.3 Existing Rehabilitation

Rehabilitation of mined land at Callide Mine commenced in the late 1980s. Figure 16 shows the locations of existing rehabilitation within each mining area up to the end of 2022. Table 6 provides the approximate areas that have been rehabilitated within each mining area by year of completion (i.e. seeding). The rehabilitation methods for the completed rehabilitation are as described in Section 4. Approval for the progressive certification of this completed rehabilitation under the EP Act has not been sought to date.

Table 6 Existing Rehabilitation Areas by Year of Completion

YEAR COMPLETED	MINING AREA (ha)				TOTAL (ha)
	DUNN CREEK	TRAP GULLY	THE HUT	BOUNDARY HILL	
1981	9	-	-	-	9
1985	-	-	-	54	54
1991	-	-	6	-	6
1992	-	28	6	-	34
1993	-	-	-	41	41
1994	33	-	-	14	47
1997	-	-	6	-	6
1998	-	-	10	-	10
1999	-	-	3	28	31
2000	5	-	-	-	5
2001	14	-	-	6	20
2002	23	-	27	36	86
2003	10	-	-	5	14
2004	7	-	-	11	18
2005	15	-	-	39	54
2006	12	-	29	-	41
2007	9	-	24	-	33
2010	-	-	-	2	2
2011	-	-	-	6	6
2014	23	-	-	-	23
2015	9	-	-	-	9
2022	28	-	33	-	62
Total (ha)	197	28	144	242	611

Existing rehabilitation at Dunn Creek includes areas south of the Bluff and Dunn Creek Pits and areas at the western end of the Dunn Creek Pit overburden emplacement area that have been progressively rehabilitated between 1994 and 2022, as shown on Figure 16. Areas at the eastern end of the Bluff Pit overburden emplacement area were rehabilitated during 2014 and 2015.

Existing rehabilitation at Trap Gully comprises an area surrounding the Trap Gully Creek Diversion Channel that was completed in 1992.

Rehabilitation completed at The Hut includes disturbed areas between the southern end of the CVN Pit overburden emplacement area and the northern end of the CVS Pit. These areas were rehabilitated in 2005-2006 and 2022. An area at the southern end of the Eastern Hillside Pit overburden emplacement area was rehabilitated

in 2007. Areas surrounding the Oak Creek Diversion Channel were progressively rehabilitated between 1991 and 2002.

Existing rehabilitation at Boundary Hill includes areas at the north-western and western ends of the Boundary Hill North overburden emplacement areas that were progressively rehabilitated between 1985 and 2011, as shown on Figure 16.

2.14.4 Undisturbed Areas

A large portion of the Callide Mine MLs will be undisturbed by mining activities and these areas are shown in Figures 21 to 24. The total area of undisturbed areas within the Callide Mine MLs is 1,796.2 ha (Table 5).

The Post-Mining Land Use (PMLU) for the undisturbed areas will be either bushland or grazing, which is consistent with the pre-mining land use and the land use of the adjoining areas. The specific PMLU for each undisturbed area is indicated on Figures 21 to 24.

The Mt Murchison Nature Refuge extends into the western end of the Dunn Creek mining area and the south-eastern corner of the Trap Gully mining area (Figures 21 and 22). The Nature Refuge was established by a voluntary conservation agreement and is protected under the NC Act. The Nature Refuge will not be disturbed by mining activities and will remain in place post-mining. These undisturbed areas do not require any rehabilitation and hence are not discussed further in this PRCP.

Third party infrastructure is located at the Dunn Creek and Boundary Hill mining areas. At Dunn Creek there is a small high voltage electrical substation located west of the mine infrastructure area (Figure 3). At Boundary Hill there are two parallel powerlines located between Boundary Hill North Pit and Boundary Hill East Pit (Figure 6). Third party infrastructure is undisturbed by mining and will remain after mine closure (Figures 21 and 24). Third party infrastructure is not within the scope of the PRCP.

3 COMMUNITY CONSULTATION

This section includes discussion of the following:

- Key stakeholder groups involved in the PRCP consultation programs (Section 3.1);
- Details of consultation undertaken for the development of the PRCP (Section 3.2);
- The extent to which the proposed PMLUs and Non-Use Management Areas (NUMAs) are consistent with the outcome of community consultation in the development of the PRCP (Section 3.2.1); and
- Details of proposed ongoing consultation in relation to rehabilitation to be undertaken under the PRCP (Section 3.3).

3.1 STAKEHOLDERS

Batchfire has been operating the Callide Mine since 2016 and has established relationships with local community stakeholders including those with a genuine interest in the rehabilitation and closure of the mine. Based on Batchfire's existing stakeholder knowledge and relationships, the following key stakeholder groups were identified for the PRCP consultation programs:

- Landholders – underlying and adjoining (Section 2.12);
- Traditional Owners – Gaangalu Nation People;
- Local government – Banana Shire Council;
- State government – DESI;
- Local Biloela community members and the general public; and
- Mine workforce.

3.2 CONSULTATION FOR DEVELOPMENT OF THE PRCP

Key stakeholders have been consulted during development of the PRCP. Early consultation has enabled relationships with key stakeholders to be established, and these relationships have been maintained through regular consultation using a range of formats, including:

- Targeted communication (letters/emails);
- Community meetings;
- Site visits;
- Displays at the local Biloela shopping centre;
- PRCP information brochures and feedback forms;
- Town hall sessions for the mine workforce; and
- Information available on the Batchfire website.

Consultation that has been undertaken by Batchfire during development of the PRCP is detailed in the *Community Consultation Register* (Appendix B). The register includes the following details:

- Consultation date;
- Stakeholder consulted;

- Consultation type;
- Information provided to the stakeholder;
- Details of any issues raised by the stakeholder;
- How issues raised were considered;
- Response/decisions/outcomes of consultation; and
- Details of any commitments made by Batchfire as a result of the consultation.

Note that community meetings with underlying and adjoining landholders were not undertaken as normal during 2020, 2021 and 2022 due to COVID-19 restrictions. Communication with landholders during this time was predominantly via email, with one-on-one meetings where required.

3.2.1 Consistency of Consultation Outcomes with PMLUs and NUMAs

Batchfire does not have access to any records of previous consultation undertaken by the previous mine owner/s in relation to PMLUs and NUMAs for the mine. Consultation undertaken by Batchfire during development of the PRCP has therefore included information on the transitioned PMLUs and NUMAs.

A PRCP information brochure and feedback form was widely distributed by Batchfire during development of the PRCP. This brochure provided details of proposed PMLUs and NUMAs and invited input from the community. No concerns with the PMLUs and NUMAs proposed for the Callide Mine were raised during this consultation, and stakeholders supported the land predominantly being returned to the pre-mining land uses of bushland and grazing. As documented in the Consultation Register, the following suggestions for alternative PMLUs were made:

- Use of the Boundary Hill East final void NUMA as a Waste Management Facility by the Banana Shire Council;
- Incorporation of recreational areas such as walking trails, motorbike tracks and fishing areas; and
- Establishment of cultural heritage conservation zone/s.

Batchfire considered these suggestions in light of the transitioned PMLUs, NUMAs and relevant PRCP obligations. The use of the Boundary Hill East final void NUMA as a Waste Management Facility by the Banana Shire Council is not proposed in the PRCP as this is not an approved activity in the Callide Mine EA and detailed technical assessments are required to confirm the feasibility of establishing such a facility in the final void. Batchfire is continuing discussions with the Banana Shire Council in relation to the assessment of the potential feasibility of this option.

Incorporation of recreational areas with the PMLUs was not considered appropriate for the Callide Mine as the land within the MLs will be privately owned post mining, and providing public access to the land for recreational activities would need to be at the discretion of the landholder. It was also concluded that the PRCP is not an appropriate mechanism for the protection and/or management of areas of cultural heritage significance, and it was agreed with the Traditional Owners in PRCP consultation that these matters would continue to be addressed through existing cultural heritage agreements and processes under the *Aboriginal Cultural Heritage Act 2003* (Qld).

The potential for the beneficial re-use of final void water was also raised with stakeholders during PRCP consultation. This option received a positive response from stakeholders including adjoining landholders interested in farm and agricultural water supply opportunities, and the Banana Shire Council. This option is not proposed in the current PRCP as further detailed assessments would be required to confirm the feasibility of this option. However, Batchfire is proposing to conduct further work to assess the feasibility of this option and, if demonstrated to be feasible, may include this in a future PRCP amendment application.

Given the lack of any objections or significant issues raised by stakeholders, the transitioned PMLUs and NUMAs are therefore considered to be generally well supported by the local community and consistent with the outcomes of PRCP consultation.

3.3 ONGOING PRCP CONSULTATION

Batchfire has developed a plan for future community consultation in relation to rehabilitation conducted in accordance with the PRCP. The objectives of this consultation will be to:

- Ensure full and transparent engagement;
- Communicate progressive rehabilitation plans and schedules;
- Communicate mine closure impacts; and
- Address community concerns in relation to the environmental legacy of the mine.

The community consultation plan developed by Batchfire for the implementation phase of the PRCP is shown in Table 7.

The consultation plan includes the following:

- Community member(s) to be consulted;
- Engagement type;
- Consultation frequency;
- Information released; and
- How feedback will be considered.

Table 7 Community Consultation Plan

COMMUNITY MEMBER	ENGAGEMENT TYPE	PROPOSED CONSULTATION FREQUENCY	INFORMATION RELEASED	HOW FEEDBACK CONSIDERED
Traditional Owners ■ Gaangalu Nation People Cultural Heritage Committee ■ Gaangalu Nation People Native Title	■ Face-to-face meeting ■ Letter and survey to group members as required	■ As required to ensure timely resolution of cultural heritage / Native title issues (generally biannually). ■ 12 months prior to needing the resolution, longer for complicated negotiations ■ Prior to any PRCP schedule amendments (as necessary)	■ Cultural Heritage management and issues ■ Native Title issues relating to mining activities ■ Rehabilitation plans and schedules ■ Closure plans ■ Monitoring results (as necessary)	Will be dependent on the nature of the feedback but may include provision of additional information or amendment of rehabilitation/closure plans
Water infrastructure owners ■ OCW Pty Ltd ■ Sunwater ■ Neighbours with Make Good Agreements	■ Face-to-face meeting ■ Phone or email ■ Letter and survey to group members as required ■ Quarterly report where required by agreement	■ Quarterly reports ■ As required for operational aspects of rehabilitation and closure	■ Information relating to supply of water as per agreements ■ Rehabilitation plans and schedules ■ Closure plans	Will be dependent on the nature of the feedback
Adjoining landholders	■ Individual face-to-face meeting ■ Letter/email as required ■ Site visit ■ Social event (e.g. BBQ dinner) ■ Newsletter ■ Complaints procedure	■ At least annually ■ As required during rehabilitation work, to discuss and agree on mitigation of operational issues ■ Biannual social events ■ Upon completion of PRCP ■ Prior to any PRCP schedule amendments (as necessary)	■ Information on mining activities ■ Rehabilitation plans and schedules ■ Closure plans ■ Monitoring results (as necessary) ■ Information on anticipated impacts to the functionality of their properties. Eg. Access to water, weed	Will be dependent on the nature of the feedback but may include provision of additional information or amendment of rehabilitation/closure plans

COMMUNITY MEMBER	ENGAGEMENT TYPE	PROPOSED CONSULTATION FREQUENCY	INFORMATION RELEASED	HOW FEEDBACK CONSIDERED
			management, changes to surface water runoff, impacts to groundwater, increased sediment load in creeks	
Easement holders with infrastructure adjacent to the mine site ■ Powerlink ■ Ergon ■ Telstra ■ Optus ■ Aurizon	■ Face-to-face meeting ■ Email information regarding possible interruptions ■ Site visit ■ Newsletter	■ As required for operational aspects of rehabilitation and closure ■ Annually on-going throughout operational life of mine	■ Information on anticipated impacts to the functionality of their operations— mining infrastructure, invasive species, hydrology, traffic, safety & blasting ■ Rehabilitation plans and schedules ■ Closure plans	Will be dependent on the nature of the feedback
Local community groups and general public	■ Annual community progress meeting ■ Participation in local community events ■ Display and survey in local shopping centre ■ Newsletter ■ Website	■ At least annually ■ Prior to any PRCP schedule amendments (as necessary)	■ Current operations and rehabilitation activities ■ PRCP development ■ Information relevant to mine closure ■ Monitoring results (as necessary)	Will be dependent on the nature of the feedback but may include provision of additional information or amendment of rehabilitation/closure plans
Mine workforce	■ Toolbox meeting ■ Presentation ■ Social event ■ Newsletter ■ Feedback survey	■ As required ■ At least quarterly ■ Prior to any PRCP schedule amendments (as necessary)	■ Current operations and rehabilitation activities ■ PRCP development ■ Progressive rehabilitation activities and schedule ■ Closure plans	Will be dependent on the nature of the feedback but may include provision of additional information or amendment of rehabilitation/closure plans

COMMUNITY MEMBER	ENGAGEMENT TYPE	PROPOSED CONSULTATION FREQUENCY	INFORMATION RELEASED	HOW FEEDBACK CONSIDERED
Local government ■ Banana Shire Council	■ Face-to-face meeting ■ Email ■ Site visit ■ Newsletter	■ As required during rehabilitation work (e.g. when issues arise) ■ Regular monthly catch-up with CEO	■ Information regarding possible interruptions ■ Information on anticipated amenity or operational impacts eg. mining infrastructure, invasive species, hydrology, traffic, safety and blasting ■ PRCP development ■ Progressive rehabilitation activities and schedule ■ Closure plans ■ Monitoring results (as necessary)	Will be dependent on the nature of the feedback but may include provision of additional information or amendment of rehabilitation/closure plans
State government ■ DESI ■ Department of Resources (Brisbane and Rockhampton)	■ Face-to-face meeting ■ Site visit	■ Quarterly meeting ■ As required to address any issues that arise ■ Annual site visit	■ Information on current operations and progress, new developments ■ PRCP Implementation	Will be dependent on the nature of the feedback but may include provision of additional information or amendment of rehabilitation/closure plans

4 POST-MINING LAND USE

4.1 INTRODUCTION

Under the transitional provisions of the EP Act, PMLUs that have been previously addressed in a Land Outcome Document (LOD) can be transitioned into a PRCP schedule. The LODs for the Callide Mine, relevant to the PMLUs and NUMAs, are provided in Appendix C and are as follows:

- Callide Mine EA (EPML000720413) (Appendix C1);
- *Callide Mine Rehabilitation Management Plan (RMP)* (Batchfire Resources, 2018) (Appendix C2);
- *Callide Mine Report on Rehabilitation Acceptance (Completion) Criteria* (RAC Report) (Anglo Coal, 2003) (Appendix C3); and
- *Callide Mine Report on Completion Criteria for Residual Voids* (Anglo Coal, 2005) (Appendix C4).

The RMP identifies the following PMLUs for the Callide Mine:

- Bushland; and
- Cattle grazing.

In addition, there a number of mine infrastructure components that are proposed be retained post mining and these are consistent with the above PMLUs. Retained Infrastructure is therefore proposed as a third PMLU that is consistent with the PMLUs identified in the RMP.

The location of the PMLUs within the Callide Mine MLs are shown in Figures 21 to 24.

In accordance with section 126C(1)(d) of the EP Act, the PMLUs are consistent with the outcomes of community consultation (Section 3.2.1) and the relevant government strategies and plans for land within the MLs.

The following sections describe each of the Callide Mine PMLUs.

4.2 BUSHLAND

Bushland is defined in the RMP as *areas revegetated using native and pasture grasses and native trees and shrubs, to create a self-sustaining vegetation cover*. The bushland PMLU will be similar to pre-mining and adjoining areas that have similar landscape and vegetation features, including the Callide Timber Reserve. Whilst not designed or intended to replicate native ecosystems, an incidental use of the bushland will be the provision of limited fauna habitat for local fauna.

The bushland PMLU will meet the 'stable condition' definition in accordance with section 111A of the EP Act, as follows:

- The land is safe and structurally stable – bushland will provide a safe and structurally stable PMLU. The bushland PMLU can be rehabilitated to a stable condition in accordance with the well-established rehabilitation methods as well as the milestone criteria that are based on the relevant EA conditions and LODs. The milestone criteria for the completion of bushland rehabilitation (Section 10.4) also include the requirement for certification of rehabilitation designs by suitably qualified persons, post-completion surveys and achievement of completion criteria including erosion.
- There is no environmental harm being caused by anything on or in the land – the rehabilitated bushland will not cause any environmental harm as all contaminants and structures (other than retained infrastructure) on and in the rehabilitated bushland will be removed during decommissioning and final rehabilitation.

- The land can sustain a PMLU – the rehabilitated landforms proposed to be used for bushland are similar to the pre-mining landforms and will be able to maintain a bushland PMLU.

The bushland PMLU also satisfies the requirements of Schedule 8A of the EP Regulation. A bushland PMLU is viable having regard to the use of land in the surrounding region and is consistent with the pre-mining land use. Significant areas of the Callide Mine MLs and the adjacent Callide Timber Reserve have similar bushland characteristics.

The bushland PMLU is consistent with the following Queensland strategies and plans:

- The *Central Queensland Regional Plan* (Department of State Development, Infrastructure and Planning (2013) recognises that the environmental, economic and social values from maintaining and enhancing biodiversity are important in realising economic growth and job creation opportunities. The bushland PMLU supports biodiversity enhancement by creating self-sustaining vegetation cover that will provide incidental habitat for local fauna.
- The *Banana Shire Planning Scheme 2021* (Banana Shire Council, 2021) aims to ensure that rehabilitated land is consistent with the natural landform, ecology and wildlife habitats, so that it can contribute to ecosystem health, liveability and prosperity, and so that natural processes and biodiversity are protected, managed and rehabilitated. Rehabilitation of land to a bushland PMLU is consistent with this framework.
- The bushland PMLU is an appropriate land use for a rural setting, in line with the *Banana Shire Planning Scheme 2021*.
- The *Queensland Resources Industry Development Plan* (Department of Resources, 2022) mentions regional biodiversity as a rehabilitation outcome. The bushland PMLU supports biodiversity enhancement by creating self-sustaining vegetation cover that will provide incidental habitat for local fauna.

The detailed rehabilitation methods for the bushland PMLU are described in Table 8. The rehabilitation methods were modified in 1998 with the introduction of deep ripping into surface preparation and the elimination of non-native pasture grasses from the seed mix. Prior to 1998, introduced pasture grasses were used extensively in the rehabilitation seed mix and deep ripping was not conducted as part of surface preparation. These changes to the rehabilitation methods were introduced to reduce the potential for erosion during the revegetation establishment phase, and to limit the spread of introduced pasture species such as Buffel grass.

The rehabilitation methods for the bushland PMLU are well established, successful methods that have been used for all rehabilitation conducted at Callide Mine from the 1980s to date. The Callide Mine rehabilitation methods are also consistent with methods and rehabilitation standards widely used in the Central Queensland coal mining industry. The milestone criteria for the Bushland PMLU (Section 10.4) have been developed taking into account relevant completion criteria from the RAC Report with amendments, where necessary, for the purposes of the PRCP. The completion criteria for each RA are provided in Table 8.

Table 8 Bushland PMLU Rehabilitation Methods and Completion Criteria

REHABILITATION AREAS & RELEVANT ACTIVITIES	REHABILITATION METHOD	COMPLETION CRITERIA
RA1 – Rehabilitated Overburden Emplacement Area	Rehabilitation of areas completed prior to 1998 was conducted using the following methods: ■ Profiling of overburden emplacements to the design slopes; ■ Spreading topsoil to an average depth of 150 mm; ■ Construction of drainage structures; ■ Rock mulching, where required on steeper slopes; and ■ Seeding. Rehabilitation of areas completed post 1998 was conducted using the methods described below for RA2.	■ Revegetation: – Diversity: 3 (pre-1998) and 4 (post 1998), or more Native species – Health: A minimum of 50% of trees are healthy and growing for pre-1998 revegetation areas and 60% of trees are healthy and growing for post-1998 rehabilitation. – Density: Trees >1.6m tall are >50 stems/ha for pre-1998 areas and >100 stems/ha for post-1998 areas. – Composition: 1 or more Eucalyptus, Acacia or Corymbia – Weeds: Extent and range of weeds species similar to surrounding non-mining land uses. – Groundcover: Mean groundcover ≥50% of leaf litter, plants, logs, rocks and grasses. ■ Soil and Erosion – pH levels within required range for vegetation growth – EC levels within range required for vegetation growth – Exchangeable Sodium Percentage (ESP) in topsoils <15% – Organic matter levels > 1% in top 100 mm of soil profile – No active erosion gullies > 2m deep or wide are present on outer slopes ■ Runoff water quality – pH 4.5 – 9.0 – EC 80th percentile 1,600 uS/cm and maximum 1,920 uS/cm – Suspended solids 1,000 mg/L
RA2 – Overburden Emplacement Area	The rehabilitation method is as follows: ■ Profiling the overburden emplacements to the design slopes (EA Table F2); ■ Spreading topsoil to an average depth of 150-200 mm and addition of fertiliser/ameliorants, where necessary; ■ Construction of drainage structures, including graded banks; ■ Rock mulching, where required on steeper slopes; ■ Contour ripping; and ■ Seeding with a mixture of native tree and grass species.	
RA3 – Mine Infrastructure Area	The mine infrastructure areas will be decommissioned and rehabilitated as follows: ■ Disconnecting the services (including water, electricity and gas); ■ Dismantling any powerlines, substations, and pipelines and removing them from site; ■ Demolishing and removing any buildings and infrastructure;	

REHABILITATION AREAS & RELEVANT ACTIVITIES	REHABILITATION METHOD	COMPLETION CRITERIA
	■ Removing any contaminated soil (in accordance with a contamination assessment) and either remediating it or disposing of it in the nearest final void; ■ Rehabilitation of the decommissioned and decontaminated infrastructure areas, including: – Reprofilling (where a significant change in the natural topography was required for the construction of the infrastructure) – Spreading topsoil to an average depth of 150 -200 mm and addition of fertiliser/ameliorants, where necessary; – Contour ripping; and – Seeding with a mixture of native tree and grass species (excluding pasture grasses). <i>Mine roads will be decommissioned and rehabilitated as follows:</i> ■ Removal of any coal residue from road surfaces and hardstands where required and disposal in the nearest final void; ■ Regrading of the road formation, where necessary; ■ Spreading topsoil to an average depth of 150 -200 mm and addition of fertiliser/ameliorants, where necessary; ■ Contour ripping; and ■ Seeding with a mixture of native tree and grass species (excluding pasture grasses). <i>Dams will be decommissioned and rehabilitated as follows:</i> ■ Dewatering of the storage with any mine affected water being pumped into the nearest final void and any clean water being released into the surrounding environment in accordance with the EA.	

REHABILITATION AREAS & RELEVANT ACTIVITIES	REHABILITATION METHOD	COMPLETION CRITERIA
	■ Removal of any contaminated soil (in accordance with a contamination assessment) and either remediating it or disposing of it in the nearest final void. ■ Breaching of the dam embankment and recontouring the residual embankment and storage area to a stable and free draining landform. ■ Spreading topsoil to an average depth of 150 -200 mm and addition of fertiliser/ameliorants, where necessary; ■ Contour ripping; and ■ Seeding with a mixture of native tree and grass species.	

4.3 GRAZING

The cattle grazing PMLU is proposed in suitable areas adjoining existing cattle grazing land. The cattle grazing PMLU will meet the 'stable condition' definition in accordance with section 111A of the EP Act, as follows:

- The land is safe and structurally stable – grazing land will provide a safe and structurally stable PMLU. The cattle grazing PMLU can be rehabilitated to a stable condition in accordance with the well-established rehabilitation methods and the milestone criteria that are based on the relevant EA conditions and LODs. The milestone criteria for the completion of grazing land rehabilitation (Section 10.4) also include the requirement for certification of rehabilitation designs by suitably qualified persons, post-completion surveys and achievement of completion criteria relating to erosion.
- There is no environmental harm being caused by anything on or in the land – the rehabilitated grazing land will not cause any environmental harm as all contaminants and structures (other than retained infrastructure) on and in the rehabilitated bushland will be removed during decommissioning and final rehabilitation.
- The land can sustain a PMLU – the rehabilitated landforms proposed to be used for grazing are similar to the pre-mining landforms and will be able to maintain a grazing PMLU. The rehabilitated landforms proposed to be used for grazing will be Class 1, 2 or 3 for native and improved pasture land management options, in accordance with Section 3 of the *Regional Land Suitability Frameworks for Qld* (Department of Natural Resources, Mines and Energy (DNRME) and Department of Science, Information Technology, Innovation and the Arts (DSITIA), 2013) and will be able to maintain a grazing PMLU.

The grazing PMLU also satisfies the requirements of Schedule 8A of the EP Regulation. A grazing PMLU is viable having regard to the use of land in the surrounding region and is consistent with the pre-mining land use. Significant areas of the Callide Mine MLs and the adjacent properties are grazing land.

The grazing PMLU is consistent with the following Queensland strategies and plans:

- The *Central Queensland Regional Plan* (Department of State Development, Infrastructure and Planning, 2013) recognises that the agriculture and resources sectors are the major economic drivers for the region. A key aspect of the Central Queensland Regional Plan is therefore to maximise opportunities for co-existence of resource and agricultural land uses. The grazing PMLU and associated return of land to its pre-mining land use of grazing is consistent with this key driver.
- The *Banana Shire Planning Scheme 2021* (Banana Shire Council, 2021) recognises that agricultural land contributes to the state, regional and local economy, and identifies that opportunities for increased production are realised through improved pasture productivity. The grazing PMLU will require land to be assessed as Class 1, 2 or 3 for native and improved pasture land management options, in accordance with Section 3 of the *Regional Land Suitability Frameworks for Qld* (DNRME and DSITIA, 2013).
- The grazing PMLU is an appropriate land use for a rural setting, in line with the *Banana Shire Planning Scheme 2021*.
- The *Queensland Resources Industry Development Plan* (Queensland Government, 2022) mentions agricultural land use as a rehabilitation outcome.

The detailed rehabilitation methods for the grazing PMLU are provided in Table 9. These rehabilitation methods and final landform designs are well established, successful methods widely used in the Central Queensland coal mining industry. The milestone criteria for the grazing PMLU (Section 10.4) have been developed taking into account relevant completion criteria from the RAC Report with amendments, where necessary, for the purposes of the PRCP. The completion criteria for each RA are shown in Table 9.

Table 9 Grazing PMLU Rehabilitation Methods and Completion Criteria

REHABILITATION AREAS & RELEVANT ACTIVITIES	REHABILITATION METHODS	COMPLETION CRITERIA
RA4 – Mine Infrastructure Area	The mine infrastructure areas will be decommissioned and rehabilitated as follows: ■ Disconnecting the services (including water, electricity and gas); ■ Dismantling any powerlines, substations, and pipelines and removing them from site; ■ Demolishing and removing any buildings and infrastructure; ■ Removing any contaminated soil (in accordance with a contamination assessment) and either remediating it or disposing of it in the nearest final void; ■ Rehabilitation of the decommissioned and decontaminated infrastructure areas, including: – Reprofilling (where a significant change in the natural topography was required for the construction of the infrastructure) – Spreading topsoil to an average depth of 150 -200 mm and addition of fertiliser/ameliorants, where necessary; – Contour ripping; and – Seeding with a mixture of native tree and grass species (excluding pasture grasses). Mine roads will be decommissioned and rehabilitated as follows: ■ Removal of any coal residue from road surfaces and hardstands and disposal in the nearest final void; ■ Regrading of the road formation, where necessary; ■ Spreading topsoil to an average depth of 150 -200 mm and addition of fertiliser/ameliorants, where necessary; ■ Contour ripping; and ■ Seeding with a mixture of native tree and grass species (excluding pasture grasses).	■ Groundcover – 50% for erosional stability ■ Runoff water quality – pH 4.5 – 9.0; – EC 80th percentile 1,600 uS/cm and maximum 1,920 uS/cm; and – Suspended solids 1,000 mg/L. ■ Cattle grazing suitability – Land assessed under Section 3 of the <i>Regional Land Suitability Frameworks for Queensland</i> (DNRME and DSITIA, 2013) as Class 1,2 or 3 for native and improved pasture land management options and confirmed compliant by a suitably qualified person.

REHABILITATION AREAS & RELEVANT ACTIVITIES	REHABILITATION METHODS	COMPLETION CRITERIA
	Dams will be decommissioned and rehabilitated as follows: ■ Dewatering of the storage with any mine affected water being pumped into the nearest final void and any clean water being released into the surrounding environment in accordance with the EA. ■ Removal of any contaminated soil (in accordance with a contamination assessment) and either remediating it or disposing of it in the nearest final void. ■ Breaching of the dam embankment and recontouring the residual embankment and storage area to a stable and free draining landform. ■ Spreading topsoil to an average depth of 150 -200 mm and addition of fertiliser/ameliorants, where necessary; ■ Contour ripping; and ■ Seeding with a mixture of native tree and grass species (excluding pasture grasses).	

4.4 RETAINED INFRASTRUCTURE

The retained infrastructure PMLU includes infrastructure items located on land where Batchfire is the underlying landholder. Each of the retained infrastructure items will be beneficial to the grazing and bushland PMLUs. The retained infrastructure items are as follows:

- Dunn Creek infrastructure including a workshop, warehouse, three sheds, three office buildings and two car parks; and
- Numerous dams that will provide a water source for cattle and local fauna (as shown in Figures 21 to 24).

Permanent creek diversions of Trap Gully Creek within the Trap Gully mining area (Figure 22) and Oaky Creek within The Hut mining area (Figure 23) will also be retained post mine closure. These diversions were both approved and constructed under the *Water Act 2000* (the Water Act). The Water Licence for the Trap Gully Creek has since been relinquished; however, the Oaky Creek Diversion continues to be maintained in accordance with a Water Licence.

The detailed preparation methods for retained infrastructure are provided in Table 10. These include contamination assessments and decontamination works, where necessary, identification of any ongoing maintenance requirements, and certification by a suitably qualified engineer that the infrastructure is suitable for the subsequent post mining land use.

In accordance with the Water Licence, the Oaky Creek Diversion will require submission of a Water Licence relinquishment application supported by a Final Monitoring and Evaluation Report that is certified by a Registered Professional Engineer of Qld (RPEQ), and approval of the licence relinquishment by the Queensland government. In accordance with the completion criteria for the creek diversions described in Table 10, a Final Monitoring and Evaluation Report certified by an RPEQ will also be required for the Trap Gully Diversion prior to mine closure.

Table 10 Retained Infrastructure PMLU Rehabilitation Methods and Completion Criteria

REHABILITATION AREAS & RELEVANT ACTIVITIES	REHABILITATION METHODS	COMPLETION CRITERIA
RA5 – Retained Mine Infrastructure (dams, mine infrastructure)	The rehabilitation methods for retained infrastructure will be as follows: ■ Removing any contaminated soil (in accordance with a contamination assessment) and either remediating it or disposing of it in the nearest final void; ■ Completing a structural engineering inspection to assess the structural integrity of the buildings; and ■ Completing any structural maintenance/repairs and ongoing maintenance requirements necessary prior to handing over the buildings to the new owner. The rehabilitation methods for retained dams will be as follows: ■ Dewatering of the storage with any mine affected water being pumped into the nearest final void and any clean water being released into the surrounding environment in accordance with the EA. ■ Removal of any accumulated sediment and/or contaminated soil (in accordance with a contamination assessment) and disposing of it in the nearest final void. ■ Completing an engineering inspection of the dam to confirm the structural integrity of the dam, dam embankment, spillway and associated features. ■ Completion of any structural maintenance/repairs and ongoing maintenance requirements prior to handing over to the new owner.	■ Certification from a suitably qualified structural engineer confirming the structural integrity of the retained buildings, completion of recommended maintenance/repairs and ongoing maintenance requirements, and suitability for the subsequent non-mining use. ■ Certification from a suitably qualified dam engineer confirming the structural integrity of the retained dam, completion of recommended maintenance/repairs and ongoing maintenance requirements, and suitability for the subsequent non-mining use.
RA6 – Creek Diversions	The requirements for drainage diversions that will remain in the final landform are as follows: Permanent creek diversions have been constructed in accordance with Water Licences issued under the Water Act as part of the mining activities in the Trap Gully and The Hut mining areas (Trap Gully Creek Diversion and Oaky Creek Diversion, respectively). Oaky Creek Diversion is maintained in accordance with a current Water Licence.	■ Certification from a suitably qualified drainage engineer (RPEQ) confirming: – the status of the drainage diversions; – compliance with the requirements of the Water Licence for the Oaky Creek Diversion; – achievement of a stable diversion for the Trap Gully Diversion.

REHABILITATION AREAS & RELEVANT ACTIVITIES	REHABILITATION METHODS	COMPLETION CRITERIA
	■ Completing an engineering inspection to assess the stability of the creek diversion; and ■ Completing any maintenance/repairs and ongoing monitoring/maintenance requirements.	

5 NON-USE MANAGEMENT AREAS

Under the transitional provisions of the EP Act, NUMAs that have been previously addressed in a Land Outcome Document can be transitioned into a PRCP schedule. The final voids at Callide Mine are pre-approved NUMAs in accordance with the Callide Mine EA conditions F8 and F9.

The Callide Mine EA condition F9 specifies the rehabilitation requirements, location and area of the Boundary Hill South residual void NUMA.

The Callide Mine EA condition F8 provides final landform design criteria and requirements for residual void NUMAs¹ for the Boundary Hill (excluding Boundary Hill South), Dunn Creek, Trap Gully and The Hut mining areas, including acceptance criteria stated in the Land Outcome Document *Callide Mine Report on Completion Criteria for Residual Voids 2005* (Anglo Coal, 2005). The *Callide Mine Report on Completion Criteria for Residual Voids 2005* (Anglo Coal, 2005) describes final void volumes and depths, and final void water balance modelling results that support the acceptance criteria. The quoted final void geometries and water balance modelling results are based on the final voids at the locations and to the extents presented in the *Report on Final Void Water Modelling Initial Investigations 2003* (Water Solutions, 2003). The *Report on Final Void Water Modelling Initial Investigations 2003* (Water Solutions, 2003) is also referenced repeatedly in the *Callide Mine Report on Completion Criteria for Residual Voids 2005* (Anglo Coal, 2005). As such, the locations and areas of the final voids presented in the *Report on Final Void Water Modelling Initial Investigations 2003* (Water Solutions, 2003) are relevant to section 754(4) of the EP Act.

The locations of the residual void NUMAs within the Callide Mine MLs are shown in Figures 21 to 24. The areas of the final voids have been minimised as far as possible in the development of the final landform designs and are consistent with the areas of the final voids identified in the Land Outcome Document. Where the exact locations of the final void NUMAs within the Boundary Hill (excluding Boundary Hill South), Dunn Creek, Trap Gully and The Hut mining areas differ from those identified in the Land Outcome Document, there are no material changes in environmental impacts associated with the location differences.

In accordance with section 126C(1)(d) of the EP Act, the NUMAs are consistent with the outcomes of community consultation (Section 3.2.1). There are no government strategies or plans that are relevant to the transitioned final void NUMAs.

The required management methods for the residual void areas are specified in EA conditions F8 and F9 and are consistent with best practice management measures commonly applied to residual voids in the Central Queensland coal mining industry. EA condition F8 also refers to acceptance criteria for final voids stated in the *Callide Mine Report on Completion Criteria for Residual Voids 2005* (Anglo Coal, 2005) and these have been adopted in the management measures and completion criteria provided in Table 11, where relevant.

Table 11 Final Void NUMA Management Methods and Completion Criteria

IMPROVEMENT AREA & RELEVANT ACTIVITIES	MANAGEMENT METHODS	COMPLETION CRITERIA
IA1 – Final Voids and Ramps	■ Final void highwall slopes will be no greater than 75 degrees in accordance with the approved residual void design outcomes (EA Table F3). ■ Final void low wall and ramp slopes will be generally angle of repose in accordance	■ Modelling indicates that the final voids will not spill to the environment in the long term. ■ Certification from a suitably qualified person that the final void will not cause environmental

¹ As defined in the Callide Mine EA condition F8(c).

IMPROVEMENT AREA & RELEVANT ACTIVITIES	MANAGEMENT METHODS	COMPLETION CRITERIA
	with the approved residual final void design outcomes (EA Table F3). ■ Safety bunds will be constructed along the top of the high walls and along the crest of the re-strip benches (EA Table F3). ■ Pre-strip benches will be shaped to shed runoff over the high wall at several locations to limit erosion (EA Table F3). ■ The low wall crest will drain away from the void (EA condition F8(c)). ■ Where appropriate and practical, a diversion drain will be constructed on the crest of the highwall to divert catchment runoff away from the void (EA condition F8(c)). ■ Where sufficient width for safe access exists, highwall benches will be topsoiled and shaped such that all drainage is directed off the bench onto natural surface or directed over the highwall face at a number of designated locations (EA condition F8(c)). For Boundary Hill South: ■ Final void landform design will be in accordance with EA Appendix 2, Figure 2 (EA condition F9(a)).	harm outside of the relevant tenure boundary. ■ Certification from a suitably qualified person that the water level and quality in the final void will not cause environmental harm to the surrounding environment.

6 REHABILITATION MANAGEMENT METHODOLOGY

This section provides the justification for the rehabilitation methods for PMLUs described in Section 4 and management methods for NUMAs described in Section 5.

6.1 GENERAL REHABILITATION PRACTICES

6.1.1 Hydrogeology

Section 2.7 provides a description of the local groundwater setting.

A detailed groundwater assessment is provided in the *Groundwater Report* (Appendix D), including a conceptual model of the project site's groundwater systems. The groundwater assessment considered the following:

- Groundwater occurrence including the existence of, and depth to, aquifers and aquitards;
- Groundwater recharge and discharge locations locally and regionally;
- Groundwater quality within each of the aquifers;
- Current groundwater use including existing groundwater supply bores;
- Groundwater flow direction, including field tests to determine hydraulic conductivity;
- Potentiometric mapping and hydro stratigraphic cross sections; and
- Groundwater modelling to determine potential changes to groundwater levels due to mining.

The key conclusions of the groundwater assessment are as follows:

- Trap Gully Pit and Boundary Hill South Pit voids will function as groundwater sinks.
- There are no uniformly elevated voids that could function as pure groundwater sources.
- The Boundary Hill East Pit, Eastern Hillside Pit, CVN Pit, CVS Pit, Dunn Creek Pit and Boundary Hill North Pit voids may function as a combination of groundwater source and sink. Any final voids that function as a groundwater source, could potentially result in seepage of saline final void water to the surrounding groundwater.

The modelling predictions indicating that some of the final void lakes may form groundwater sources post mining are unexpected and contrary to the findings of all previous final void groundwater assessments undertaken at Callide Mine. All previous Callide Mine final void assessments have concluded that all final voids would function as groundwater sinks following mine closure.

The current Callide Mine groundwater model is known to have significant data gaps, including a lack of groundwater monitoring data and geological information at key locations around the final voids. These data gaps are likely to have a significant bearing on the predicted groundwater elevations and, by extension, the functioning of the final voids as groundwater sources and/or sinks.

In order to improve the accuracy of the Callide Mine groundwater model and confirm the validity of the current post mining predictions, Batchfire has commenced an extensive PRCP groundwater field investigation program. The PRCP groundwater field investigation includes:

- Drilling and constructing a total of 12 groundwater monitoring bores and vibrating wire piezometer arrays that target key areas in and around the final voids; and
- Undertaking detailed surveys of the existing final voids and the associated geology.

This PRCP groundwater field investigation will form part of the broader groundwater field investigation program and groundwater model upgrade that are currently being undertaken for Callide Mine in consultation with DESI to address a range of operational compliance issues. Data collected from the PRCP groundwater field investigation program will improve the accuracy of the groundwater characterisation (particularly groundwater levels) and geological information (particularly final void geometry and coal seam levels) in the vicinity of the final void lakes that are predicted to seep to groundwater. It will be used to update the existing PRCP groundwater model and reassess the likelihood of seepage to groundwater from the final void lakes.

If the field investigation and upgraded groundwater model results indicate that seepage from any final void lakes to groundwater is likely, Batchfire will conduct further work as part of the PRCP approval process to assess the potential groundwater quality effects and consider feasible mitigation and/or management measures for the relevant final voids.

Feasible measures that may be considered include dewatering of final void water for beneficial reuse. Dewatering a final void would enable Batchfire to maintain the void lake at a lower elevation than the surrounding groundwater table, thereby establishing a groundwater sink in the dewatered final void. The beneficial reuse of pit/void water by adjoining landholders is a well established site water management practice at Callide Mine and is specifically authorised by the Callide Mine EA. Batchfire holds numerous beneficial reuse agreements with adjoining landholders who currently use pit water for farm water supply and agricultural purposes.

6.1.2 Flooding

There are no floodplains, as defined by section 41C of the EP Regulation, within the Callide Mine MLs as there are no watercourses with a stream order of 4 or higher under the Strahler stream order classification system within the MLs. Consequently, there is a low flood risk associated with the final voids and final landform and flooding is not a key consideration for rehabilitation and closure. Surface water drainage of the final landforms is illustrated in the final landform plans (Figures 17 to 20).

6.1.3 Soil and Capping Material Assessment

Batchfire operates under a *Topsoil Management Plan* (TSMP) (Hansen Bailey, 2018) that identifies the soil types and associated topsoil stripping depths in each of the four mining areas. The TSMP also includes topsoil stripping and stockpiling procedures and requires the maintenance of an up-to-date topsoil inventory that identifies topsoil stockpile locations and quantities in each of the four mining areas. The current stockpiled topsoil volumes are shown in Table 12 and the current location of topsoil stockpiles is shown in Figure 25.

In addition, Batchfire's rehabilitation planning process requires testing of topsoil prior to it being respread, to confirm any ameliorants, including gypsum, lime, compost and fertiliser, required to achieve successful revegetation. The topsoils are compatible with the revegetation species (Section 6.1.8) given that native and local species are used in rehabilitation.

Section 2.8.1 provides a summary of the soil types and topsoil stripping depths within each of the Callide Mine mining areas. Batchfire has completed a reconciliation of remaining life of mine (LOM) rehabilitation topsoil requirements with existing stockpiled topsoil volumes and future topsoil stripping volumes. The results of the assessment are presented in Table 12.

Table 12 Remaining LOM Rehabilitation Topsoil Balance

MINING AREA	AVAILABLE TOPSOIL VOLUME (m ³)			TOPSOIL VOLUME REQUIRED FOR LOM REHABILITATION (m ³)	TOPSOIL VOLUME SURPLUS / DEFICIT (m ³)
	CURRENTLY STOCKPILED	FUTURE DISTURBANCE	TOTAL		
Dunn Creek	402,595	461,600	864,195	994,427	-130,232
Trap Gully	801,522	1,163,400	1,964,922	1,964,618	304
The Hut	1,031,438	311,400	1,342,838	764,431	578,407
Boundary Hill	1,201,869	928,000	2,129,869	1,554,265	575,604
Total	3,437,424	2,864,400	6,301,824	5,277,742	1,024,082

Topsoil will be placed at a minimum average depth of 0.2 m at the Hut, Trap Gully and Boundary Hill and 0.15 m at Dunn Creek. The reconciliation indicates that there will be more than sufficient available topsoil resources to complete the rehabilitation of the four mining areas of the Callide Mine at the design minimum topsoil depths.

6.1.4 Waste Characterisation

Overburden geochemical characterisation for each of the four mining areas was undertaken by Soil Conservation and Environmental Services (*Callide Coalfields – An Assessment of Overburden Properties for Rehabilitation*, 1991). The key conclusions of this assessment were as follows:

- Acid potential was absent from the majority of the overburden material (i.e. overburden excluding carbonaceous material); and
- Rehabilitation would require topsoil due to the limitations of overburden as a plant emergence zone.

In order to address these issues, the current rehabilitation methods include the burial of any carbonaceous material at the surface of reprofiled overburden emplacements and the use of topsoil in revegetation. The key conclusions of the overburden geochemical characterisation are consistent with operating experience at Callide Mine over many decades where issues associated with overburden geochemistry adversely impacting rehabilitation and/or generating acid drainage, have not arisen. Consequently, the management of overburden geochemistry does not require any specific additional management measures in the rehabilitation method or mine closure planning.

6.1.5 Landform Design

The 3-dimensional final landform design for each of the four mining areas is shown in Figures 17 to 20. The final landform design is compliant with the final landform design criteria specified in EA Tables F2 and F3 and the requirements of Appendix 2, Figure 2 (for Boundary Hill South). The overburden emplacement slopes in the final landform are generally 15%. The rehabilitation construction methods and quality control/assurance requirements are described in Sections 4 and 5.

As required by EA condition F1, the final landform is safe and structurally stable and has been designed to be consistent with the surrounding topography, as far as practicable. The final landform is also consistent with the requirements for the designated PMLUs for each mining area. Landform stability will be achieved by ensuring the final landform meets the EA design criteria and the successful establishment of groundcover to assist in the prevention of erosion and sedimentation. An assessment of the final void NUMA slopes compared to the residual final void design outcomes specified in EA Table F3 is included in the *Final Landform Slope Assessment* (Appendix F). The assessment indicates that the final void slopes generally satisfy the design criteria. Further work is not recommended at this stage for a number of isolated areas where the design criteria is not met.

The final landforms have been designed to remain wholly within the MLs and do not extend inside the Mt Murchison Nature Refuge (Figures 21 and 22).

Surface drainage is shown in the final landform figures (Figures 17 to 20). Other than the final voids, the final landforms are generally designed to be free draining. As discussed in Section 6.1.2, there are no floodplains within the Callide Mine MLs.

EA Table F2 allows for the establishment of trial slopes on the overburden emplacements in the final landform at slopes greater than 15% and up to angle of repose. Any trial slopes would be specified during the final design for rehabilitation of specific overburden emplacement areas as per Rehabilitation Milestone 3 (Section 10.4).

6.1.6 Cover Design

Callide Mine does not generate tailings and rejects and does not have any tailings or rejects storage facilities. The geochemistry of overburden at Callide Mine is benign (Section 6.1.4) and does not require a cover in order to manage the overburden geochemistry.

6.1.7 Water Management

Post mining, the final landforms will generate the following waters:

- Final void water comprising runoff from final void catchments and any groundwater inflows to final voids;
- Runoff from rehabilitated overburden emplacement areas; and
- Runoff from rehabilitated mine infrastructure areas.

A final void water balance assessment was completed as part of the PRCP and is provided in the *Final Void Water Balance Report* (Appendix E). The assessment included all final voids in the final landforms (Figures 21 to 24) and involved modelling of the long-term post mining final void lake levels. The modelling was based on the final void catchment area and geometry and daily rainfall data. It also included groundwater inflow volumes generated by the PRCP groundwater model (refer to the *Groundwater Report* (Appendix D)).

The final void water balance assessment concluded that all final voids in the final landform would have sufficient capacity to contain accumulated void water, with nil overflow, in the long-term post mine closure. The assessment included modelling of final void lake salinity in the post mining phase and concluded that void lake salinity is likely to increase due to evaporative concentration over time. However, the containment of the void lake water within the void would prevent any potential contamination of surface water. The assessment of potential impacts of the final landform on groundwater in the post mining phase, including the final void lake, is discussed in Section 6.1.1.

As discussed in Section 4, the final landform of the rehabilitated overburden emplacement and mine infrastructure areas will be shaped with stable slopes generally up to 15% to achieve free drainage. The rehabilitation methodology includes decontamination of infrastructure areas and the incorporation of rock lined contour drains, erosion and sediment control measures, revegetation and contour ripping to control slope erosion. In addition, the rehabilitation completion criteria include water quality limits that are required to be achieved for runoff from all rehabilitated areas. These measures are designed to ensure the effective control of erosion and to ensure there is no potential contamination of surface water from runoff from rehabilitated areas.

As discussed in Section 4.4, there are permanent diversions of Trap Gully Creek within the Trap Gully mining area (Figure 22) and Oaky Creek within The Hut mining area (Figure 23) that will remain post mine closure. The diversions were both approved and constructed under Water Licences granted under the Water Act. The Oaky Creek Diversion continues to be maintained in accordance with a Water Licence. As discussed in Section 4.4, the Water Licence conditions (applicable to the Oaky Creek Diversion) require maintenance of the diversion and submission of an application for relinquishment to be supported by a Final Monitoring and Evaluation Report, certified by a Registered Professional Engineer (RPEQ). A Final Monitoring and Evaluation Report, certified by a RPEQ, will also be obtained for the Trap Gully Diversion prior to mine closure.

Overall, following certification by a RPEQ and the relinquishment of the Oaky Creek diversion Water Licence, there are not expected to be any ongoing surface water management requirements or treatments for the post closure phase.

6.1.8 Revegetation

This section provides a revegetation plan for establishing self-sustaining vegetation cover that is appropriate for the intended PMLUs of bushland and cattle grazing. The revegetation plan includes the establishment of native trees, shrubs and grasses (bushland PMLU) and native grazing species (grazing PMLU).

The revegetation objective for the Callide Mine is to revegetate the PMLU areas to either bushland or grazing land. This is consistent with the Rehabilitation Milestones identified in the PRCP schedule.

The steeper slopes of the final voids cannot be revegetated due to an inability to topsoil, rip, and seed due to the steepness of the slopes. In addition, the floor of the final voids will not be revegetated as the final voids are predicted to store water in perpetuity.

Key revegetation species that are suitable for the proposed bushland and grazing PMLUs include, but are not limited to, the list provided in Table 13. These species are consistent with species found in the undisturbed and surrounding areas of the mine (Section 2.9). The rehabilitation seed mix may be varied over time based on the results of germination and rehabilitation monitoring. The specific seed mix selected for individual areas of rehabilitation will also vary depending on the availability of seed at the time.

Table 13 Key Revegetation Species for the Bushland and Grazing PMLU

FAMILY	SPECIES	COMMON NAME
Amaranthaceae	<i>Enchylaena tomentosa</i>	Ruby saltbush
Asparagaceae	<i>Lomandra longifolia</i>	Basket grass
Asteraceae	<i>Cassinia laevis</i>	Cough bush, dead finish, curry bush, rosemary
	<i>Calotis lappulacea</i>	Yellow burr-daisy
Celastraceae	<i>Denhamia cunninghamii</i>	Yellowberry bush
Cyperaceae	<i>Gahnia aspera</i>	Rough saw-sedge, round sawsedge
Fabaceae	<i>Acacia bancroftiorum</i>	Bancroft's wattles
	<i>Acacia decora</i>	Showy wattle
	<i>Acacia implexa</i>	Lightwood or hickory wattle
	<i>Acacia leicocalyx</i>	Black wattle, lamb's tail wattle, curracabah
	<i>Acacia penninervis</i> subsp. <i>Penninervis</i>	Mountain hickory
	<i>Acacia podalyriifolia</i>	Queensland Silver wattle
	<i>Crotalaria mitchellii</i> subsp. <i>Mitchellii</i>	Yellow rattlepod
	<i>Hovea</i> spp.	-
	<i>Indigofera australis</i>	Australian indigo
	<i>Indigofera hirsuta</i>	Rough hairy indigo
Malvaceae	<i>Brachychiton populneus</i>	Kurrajong
	<i>Grewia latifolia</i>	Dog's balls, dysentery plant
	<i>Corymbia citriodora</i>	Lemon scented gum
	<i>Corymbia erythrophloia</i>	Red bloodwood
	<i>Corymbia tessellaris</i>	Carbeen, Moreton Day ash
	<i>Corymbia trachyphloia</i>	Brown bloodwood
	<i>Eucalyptus crebra</i>	Narrow-leaved ironbark
	<i>Eucalyptus exserta</i>	Queensland Peppermint gum

FAMILY	SPECIES	COMMON NAME
	<i>Eucalyptus melanophloia</i>	Silver-leaved ironbark
	<i>Eucalyptus moluccana</i>	Grey box, gum-topped box
	<i>Eucalyptus orgadophila</i>	Mountain coolibah
	<i>Eucalyptus tereticornis</i>	Forest red gum, blue gum, red iron gum
Oleaceae	<i>Notelaea microcarpa</i>	Velvet mock olive, or gorge mock olive
Picrodendraceae	<i>Petalostigma pubescens</i> *	Quinine bush
Poaceae	<i>Arundinella nepalensis</i>	Reedgrass
	<i>Bothriochloa decipiens</i>	Pitted bluegrass
	<i>Chloris divaricate</i> *	Slender chloris
	<i>Cymbopogon queenslandicus</i>	-
	<i>Cymbopogon refractus</i>	Barb wire grass
	<i>Cynodon dactylon</i> *	Scutch grass, bermuda grass, couch
	<i>Dichanthium sericeum</i> *	Silky blue-grass
	<i>Echinochloa utilis</i> *	Japanese millet / shirohe
	<i>Eragrostis elongata</i>	Clustered lovegrass
	<i>Eragrostis sororia</i>	Woodland lovegrass
	<i>Heteropogon contortus</i> *	Black spear grass
	<i>Panicum effusum</i> *	Hairy panic
	<i>Themeda triandra</i> *	Kangaroo grass
Rhamnaceae	<i>Alphitonia excelsa</i> *	Soap bush, red ash
Sapindaceae	<i>Dodonaea triangularis</i>	Native hops

Note: * Denotes species suitable for grazing

Seed will either be purchased from local commercial seed suppliers and/or collected from the local area. Collection of seed may only take place where the collector has the relevant permission and/or permits for the area from which they are collecting. Any seed requiring storage prior to planting is kept in a cool, dry area and protected from insects. Seeding rates will be determined on a case-by-case basis, depending on the revegetation species, the completion criteria for revegetation and the results of revegetation monitoring (Section 9.1.1).

Seeding will ideally be undertaken immediately prior to the onset of the wet season (i.e. in September or October). This gives the seed the best chance of striking, as soil moisture will be at its highest in the late wet season. Seeding will be undertaken utilising an agricultural-class tractor or small dozer and spreader.

Topsoil requirements (i.e. presence on site, required depth for successful rehabilitation and any required amelioration) are discussed in Section 6.1.3. If necessary, temporary stock fencing will be erected around revegetated areas to exclude stock.

Visual monitoring of the revegetation will commence within one month from the application of seed. Within 12 months of seeding, a determination can be made as to whether sufficient germination from the initial seeding has occurred, or if re-seeding is required. Formal monitoring of revegetated areas will commence after a typical wet season has passed following completion of the revegetation works (Section 9).

Weed management will also be undertaken during the establishment of revegetation and based on the results of rehabilitation monitoring, in accordance with the rehabilitation monitoring and maintenance program (Section 9).

6.2 TAILINGS STORAGE FACILITIES

Callide Mine does not have a washplant and does not produce any tailings. Hence there are no tailings storage facilities on the mine site.

6.3 VOIDS

Under the transitional provisions of the EP Act, NUMAs that have been previously addressed in a Land Outcome Document can be transitioned into a PRCP schedule. The residual voids at Callide Mine are pre-approved NUMAs in accordance with the Callide Mine EA conditions F8 and F9 (refer Section 5).

The Callide Mine EA condition F8 provides final landform design criteria and requirements for residual void NUMAs for the Boundary Hill (excluding Boundary Hill South), Dunn Creek, Trap Gully and The Hut mining areas. The Callide Mine EA condition F9 specifies the rehabilitation requirements, location and area of the residual void NUMA at Boundary Hill South. The location and 3-dimensional landforms of the final void NUMAs within the Callide Mine MLs are shown in Figures 21 to 24.

In accordance with section 126C(1)(d) of the EP Act, the NUMAs are consistent with the outcomes of community consultation (refer Section 3.2.1).

The areas of the final voids have been minimised as far as possible in the development of the final landform design. The location and extent of the of the final voids is governed by the location of the coal resource, the existing ML boundaries, the topography and the overburden emplacement final landform design criteria.

There are no floodplains, as defined by section 41C of the EP Regulation, within the Callide Mine MLs as there are no watercourses with a stream of 4 or higher under the Strahler stream order classification system within the MLs. Consequently, none of the proposed final voids are located within a floodplain.

The required management measures for the final voids and associated ramps are specified in EA Conditions F8 and F9 and are consistent with best practice management measures commonly applied to final voids in the Central Queensland coal mining industry. EA condition F8 also includes acceptance criteria for final voids that have been adopted in the management methods and completion criteria shown in Table 11.

The open cut mine final voids will be left in a safe, geotechnically stable form and at slopes that comply with the relevant Callide Mine EA landform criteria (Table 11). Highwalls are required to be at 75 degrees and low walls and ramps will generally be left at angle of repose. Any final highwall benches will have contour drains installed to limit the drainage points over the highwall. Access to highwalls will be prevented by the installation of bunds along the final highwall and along the crest of the highwall benches. Warning signs will also be installed along the final highwall.

An assessment of the final void NUMA slopes in comparison to the residual final void design outcomes specified in EA Table F3 is included in the *Final Landform Slope Assessment* (Appendix F). The assessment indicates that the slopes generally satisfy the design criteria. Further work is not recommended at this stage for a number of isolated areas where the design criteria is not met.

A final void water balance assessment was completed as part of the PRCP and is included in the *Final Void Water Balance Report* (Appendix E). The assessment included all final voids in the final landforms (Figures 21 to 24) and involved modelling of the long-term post mining final void lake levels. The modelling was based on the final void catchment areas and geometry and daily rainfall data. It also included groundwater inflow volumes generated by the PRCP groundwater model (refer to the *Groundwater Report* (Appendix D)).

The final void water balance assessment concluded that all final voids in the final landform would have sufficient capacity to contain accumulated void water, with nil overflow, in the long-term post mine closure. The assessment included modelling of final void lake salinity in the post mining phase and concluded that void lake salinity is likely to increase due to evaporative concentration over time. However, the containment of the void lake water within the void without any overflow would prevent any potential contamination of surface water.

The PRCP groundwater model assessed the post mine closure groundwater impacts and specifically the potential for final void lakes to become groundwater sources that could result in seepage of saline void lake water to the surrounding groundwater environment.

The key conclusions of the groundwater assessment are as follows:

- Trap Gully Pit and Boundary Hill South Pit voids will function as groundwater sinks.
- There are no uniformly elevated voids that could function as pure groundwater sources.
- The Boundary Hill East Pit, Eastern Hillside Pit, CVN Pit, CVS Pit, Dunn Creek Pit and Boundary Hill North Pit voids may function as a combination of groundwater source and sink. Any final voids that function as a groundwater source, could potentially result in seepage of saline final void water to the surrounding groundwater.

The modelling predictions indicating that some of the final void lakes may form groundwater sources post mining are unexpected and contrary to the findings of all previous final void groundwater assessments undertaken at Callide Mine. All previous Callide Mine final void assessments have concluded that all final voids would function as groundwater sinks following mine closure.

The current Callide Mine groundwater model is known to have significant data gaps, including a lack of groundwater monitoring data and geological information at key locations around the final voids. These data gaps are likely to have a significant bearing on the predicted groundwater elevations and, by extension, the functioning of the final voids as groundwater sources and/or sinks.

In order to improve the accuracy of the Callide Mine groundwater model and confirm the validity of the current post mining predictions, Batchfire has commenced an extensive PRCP groundwater field investigation program. The PRCP groundwater field investigation includes:

- Drilling and constructing total of 12 groundwater monitoring bores and vibrating wire piezometer arrays that target key areas in and around the final voids; and
- Undertaking detailed surveys of the existing final voids and the associated geology.

This PRCP groundwater field investigation will form part of the broader groundwater field investigation program and groundwater model upgrade that are currently being undertaken for Callide Mine in consultation with DESI to address a range of operational compliance issues. Data collected from the PRCP groundwater field investigation program will improve the accuracy of the groundwater characterisation (particularly groundwater levels) and geological information (particularly final void geometry and coal seam levels) in the vicinity of the final void lakes that are predicted to seep to groundwater. It will be used to update the existing PRCP groundwater model and reassess the likelihood of seepage to groundwater from the final void lakes.

If the field investigation and upgraded groundwater model results indicate that seepage from any final void lakes to groundwater is likely, Batchfire will conduct further work as part of the PRCP approval process to assess the potential groundwater quality effects and consider feasible mitigation and/or management measures for the relevant final voids.

Feasible measures that may be considered include dewatering of final void water for beneficial reuse. Dewatering a final void would enable Batchfire to maintain the void lake at a lower elevation than the surrounding groundwater table, thereby establishing a groundwater sink in the dewatered final void. The beneficial reuse of pit/void water by adjoining landholders is a well-established site water management practice at Callide Mine and is specifically authorised by the Callide Mine EA. Batchfire holds numerous beneficial reuse agreements with adjoining landholders who currently use pit water for farm water supply and agricultural purposes.

Overall, following the remodelling of the final void lake groundwater impacts and, where necessary, the development of final void lake management measures, the final voids are not expected to give rise to any significant environmental harm.

6.4 UNDERGROUND MINING

Callide Mine does not involve any underground mining.

6.5 BUILT INFRASTRUCTURE

Section 2.1.1 identifies the key components of built infrastructure that will be decommissioned and/or removed from site, and Section 4.4 describes the infrastructure that will be retained post mine closure. A detailed inventory of all mine site infrastructure items that will be decommissioned and/or removed is included in the Estimated Rehabilitation Cost Application Supporting Information Report. Section 4.4 also describes:

- Methods for decommissioning infrastructure; and
- The Trap Gully and Oaky Creek Diversion Channels which will remain post mine closure, including the identification of ongoing maintenance and certification requirements prior to mine closure.

The rehabilitation methods and milestone criteria for both decommissioned and retained infrastructure include the requirement for contamination assessments and decontamination, where necessary.

The retained infrastructure (other than the creek diversions) is located on Batchfire land and hence there are currently no agreements in place for the transfer of ownership.

7 RISK ASSESSMENT

Batchfire conducted a PRCP risk assessment in order to:

- Identify the risks of a stable condition for land described as a PMLU not being achieved and to identify existing and any additional risk management measures required; and
- Identify the risks of a NUMA causing environmental harm and not being safe and structurally stable and to identify existing and any additional management measures required.

The risk assessment matrix is included in the *Risk Assessment* (Appendix G). The risk assessment was conducted generally in accordance with the *Australian Standard ISO 31000:2018 Risk Management – Guidelines* (Standards Australia, 2018).

The results of the risk assessment have been used to confirm the suitability of the PMLU rehabilitation milestone criteria and the NUMA improvement milestone criteria. The risk assessment results were also taken into account in the development of the scheduled completion dates for achievement of the milestones.

8 REHABILITATION TRIALS

As discussed in Section 6.1.5, EA Table F2 allows for the establishment of trial slopes on the overburden emplacements in the final landform at slopes greater than 15% and up to angle of repose. Any trial slopes would be specified during the final design of specific overburden emplacement rehabilitation as per Rehabilitation Milestone 3 (Section 10.4).

9 MONITORING AND MAINTENANCE

This section provides the rehabilitation monitoring and maintenance plans for the relevant milestone criteria described in Section 10.4. Reporting of rehabilitation monitoring results and the progressive achievement of milestone criteria is also discussed in this section (Section 9.3).

9.1 REHABILITATION MONITORING

Rehabilitation monitoring focuses on the milestone criteria that relate to achieving successful rehabilitation and revegetation. Other milestone criteria require confirmation of achievement via certification by a suitably qualified person, and/or post-completion survey confirming that construction is in accordance with certified design plans (Table 18).

The rehabilitation monitoring methods are based on those outlined in the RAC Report, with some amendments to align with the milestone criteria.

The rehabilitation attributes included in the monitoring program are as follows:

- Revegetation;
- Erosion;
- Soil quality; and
- Runoff quality.

The monitoring method for these attributes and timing of monitoring are discussed in the following sections.

9.1.1 Revegetation Monitoring

Vegetation monitoring will be undertaken at a density that is appropriate for the area being monitored, to ensure representative coverage. Rehabilitation monitoring sites will typically comprise a plot covering an area of 20 m x 10 m, as shown on Figure 26, however the plot size may be modified based on site conditions. The start and end points of each monitoring site on the transect line will be marked using a star picket, and its GPS location recorded.

A general description of the vegetation type (e.g., mixed eucalypt woodland with grass understory) within each monitoring site will be recorded. The plot will then be divided into sub-plots. For a 20m x 10m monitoring site, the following sub-plots will typically be used (Figure 26):

- One 1 m x 10 m area;
- Five 2 m x 2m quadrats overlaying the 1 m x 10 m area, and located to one side of the centreline;
- One 20 m x 10 m area overlying the 2 m quadrats and located 5 m either side of the centreline; and
- One 50 m erosion monitoring transect running through the centre of the plot.

Information on vegetation monitoring parameters will be collected within each monitoring site. Typical vegetation monitoring parameters are listed in Table 14.

Table 14 Typical Vegetation Monitoring Parameters

TYPICAL SUB-PLOT	PARAMETERS
1 m x 10 m	■ Record all species present: – Native perennial grass cover; – Native other grass; – Native forbs and other species (non-grass); – 3P (palatable, perennial and productive) grazing pasture species (grazing PMLU); – Native shrubs (<1 m height); – Non-native grass; – Non-native forbs and shrubs; and – weeds. ■ Record ground cover: – Plants; – Litter; – Logs; – Rock; and – Bare ground.
2 m x 2 m	Count the number of plants of all species
20 m x 10 m	■ Density and basal area of tree species >1.6 m tall; ■ Measure the diameter at breast height (DBH) of all trees >1.6 m with a DBH greater than 2 cm; ■ Record canopy cover over the whole 20 m centreline using transect tape and measurement of canopy, sub-canopy and shrub layers where present; ■ Species richness – total number of different species in each life form layer; ■ Coarse woody debris – total length in metres of all woody debris over 0.5 m length and 0.1 m diameter; ■ Tree species recruitment – regeneration of canopy and sub-canopy species; ■ Subjectively describe tree health (by species, if relevant), noting signs of drought, stress, nutrient deficiencies, disease and severe insect attack. Where health problems are noted, record the percentage of healthy trees; ■ Record weed species present and extent of infestation; and ■ Photograph from each end of the plot, facing in towards the centreline.

Vegetation monitoring will commence after the first typical wet season following the completion of final seeding. Monitoring will nominally occur annually for the first 3 years (commencing after the first typical wet season following final seeding), biennially for the next four years (i.e., years 5 and 7 after commencement) and then every 5 years until the rehabilitation is certified. The frequency of monitoring will be adjusted as necessary, dependent on the growing conditions during the initial revegetation phase.

9.1.2 Erosion Monitoring

Erosion will be monitored at each monitoring site. Erosion monitoring will typically be undertaken along a 50 m transect running through the centre of the monitoring site (Figure 26). Erosion will be monitored using the transect tape to measure the length of each erosion gully and a measuring tape to measure depth from the soil surface.

The location, number and dimension of all gullies that are > 0.3 m wide and/or 0.3 m deep that intersect the transect will be recorded.

Erosion monitoring will be conducted in conjunction with revegetation monitoring, as described in Section 9.1.1.

9.1.3 Soil Monitoring

Surface Soil Sampling

Surface soil samples will be collected at each monitoring site. Five surface soil samples will be collected at intervals of approximately 5 m and bulked into one sample for analyses.

Surface soil samples will be analysed by a National Association of Testing Authorities (NATA) accredited laboratory for the following parameters:

- pH;
- EC;
- Chloride;
- Sulphate;
- Exchangeable Calcium/Magnesium/Potassium/Nitrogen;
- Cation exchange capacity;
- Particle size analysis and R1 dispersion index;
- 15 bar moisture content;
- Organic Carbon;
- Total and Nitrate Nitrogen; and
- Total and extractable Phosphorus, Copper, Manganese and Zinc.

Soil sampling will be conducted in conjunction with revegetation monitoring (Section 9.1.1).

9.1.4 Runoff Monitoring

Surface runoff monitoring sites will be established in drainage lines immediately downstream of completed rehabilitation e.g., in the drains at the toe of rehabilitation slopes. Details of the monitoring location, contributing catchment (including the area of rehabilitation) and the rainfall/runoff event will be recorded for each monitoring event.

Water samples will be sent to a NATA laboratory for analysis. Water quality monitoring parameters will include the following:

- pH;
- EC; and
- Suspended solids.

Runoff from rehabilitated areas will be monitored during wet season rainfall runoff events, where practicable. Runoff will be monitored at the same frequency as revegetation monitoring, as described in Section 9.1.1.

9.2 REHABILITATION MAINTENANCE

Maintenance requirements for rehabilitated areas (both establishing and completed) will be identified during ongoing rehabilitation monitoring (Section 9.1), as well as during ad-hoc inspections of rehabilitated areas. Where rehabilitation maintenance issues are identified, they will be assessed on a case-by-case basis to determine appropriate maintenance and/or remedial actions. Where necessary, suitably qualified specialists would be involved in the identification of appropriate maintenance/remedial measures e.g., soils specialist, drainage engineer, botanist.

Table 15 provides examples of typical rehabilitation maintenance issues that may arise and possible maintenance/remedial actions that would be considered by Batchfire should these occur.

Table 15 Potential Rehabilitation Maintenance

ISSUE	POTENTIAL REMEDIAL ACTION
Rehabilitated area fails to germinate or die-off following early establishment	Investigate topsoil quality and potential ameliorants required. Ameliorate and/or reseed affected areas, as required. If necessary, consider different revegetation species for future rehabilitation using this topsoil.
Species mix is not being achieved in revegetation	Investigate topsoil quality and potential ameliorants required. Ameliorate and/or reseed affected areas, as required. Consider alternative revegetation species.
Weed infestation	Assess and apply viable weed control measures for the specific weed species.
Erosion in rehabilitated areas	Investigate the cause of erosion and develop appropriate remediation measures e.g. repair/realign contour drains, additional cross ripping, reseeding bare areas. Repair unstable eroded areas including re-topsoiling and reseeding, where necessary.
Poor runoff water quality	Investigate the source of the poor water quality e.g. erosion causing high suspended sediment or poor soil quality affecting runoff quality. Apply appropriate remedial measures including those listed above. Desilt sediment control structures and/or install additional sediment controls.

9.3 REPORTING

Batchfire will prepare annual PRCP monitoring reports documenting all rehabilitation monitoring results (Section 9.1) and the progressive achievement of the relevant milestone criteria listed in Table 18, for all active RAs and IAs (Table 17). The reports will include the following:

- A register, and corresponding location plan, providing a unique identifier and the location, age, design details and status (against progressive milestone criteria) of all active RAs and IAs.
- Rehabilitation monitoring results for all active RAs including revegetation, erosion, soils and runoff water quality. These will be presented in graphs and/or tables that will include all prior year monitoring results and comparison with the corresponding milestone criteria. Analysis of the monitoring dataset trends will be provided including an assessment of the likelihood that the milestone criteria and schedule dates will be achieved. In any instances where the monitoring dataset trends indicate achievement of milestone criteria is not likely, rectification strategies will be identified.

- Details of any rehabilitation maintenance actions identified in rehabilitation monitoring, including responsible role and proposed timing of implementation.
- Copies of all certifications, post-completion surveys and other assessments completed in accordance with the milestone criteria (Table 18), supporting the status of rehabilitation and management milestones in the register.
- A full assessment of compliance with the approved PRCP schedule for the reporting year and identification of rectification actions for any non-compliances.

10 PRCP SCHEDULE

This section includes the key PRCP planning information that informed the development of the *PRCP Schedule* (Appendix A) including:

- PMLU plans;
- Rehabilitation and improvement areas;
- Land availability for progressive rehabilitation;
- Rehabilitation and management milestones;
- Milestone criteria; and
- Rehabilitation milestone timeframes.

The *PRCP Schedule* (Appendix A) is also provided in Excel format in accordance with the PRCP schedule template (DES, 2019).

10.1 POST MINING LAND USE PLANS

The PMLU plans for each of the four mining areas are shown in Figures 21 to 24. The PMLU plans show the following features:

- The LOM mining disturbance boundary (i.e., maximum disturbance footprint);
- Total ML boundary for each mining area;
- Location of PMLUs within the ML areas; and
- Location of NUMAs within the ML areas.

As explained in Section 6.1.2, there are no floodplains, as defined by section 41C of the EP Regulation, within the Callide Mine MLs and hence the PMLU figures do not include any flood plain extents.

Table 16 provides a summary of the PMLU areas for each mining area.

Table 16 Post Mining Land Use Areas

MINING AREA	MINE DISTURBANCE AREA (ha)				UNDISTURBED AREA (ha)						TOTAL ML AREA (ha)
	PMLU				NUMA	PMLU					
	Bushland	Grazing	Retained Infrastructure	Total	Final Void	Bushland	Nature Refuge	Grazing	Third Party Infrastructure	Total	
Dunn Creek	879.4	-	16.9	896.3	332.2	425.9	44.2	-	0.1	470.2	1,698
Trap Gully	1,012.4	-	3.8	1,016.2	190.5	212.1	56.6	87.8	-	356.5	1,562
The Hut	526.1	1.7	12.1	539.9	171.9	523.0	-	79.8	-	602.7	1,314
Boundary Hill	963.6	98.2	13.3	1,075.1	423.5	65.8	-	278.0	23.0	366.8	1,865
Total (ha)	3,381.5	99.9	46.1	3,527.5	1,118.1	1,226.8	100.8	445.6	23.1	1,796.2	6,439

Note: The individual areas presented in this table have been rounded to one decimal place and therefore may not balance with the total ML area.

10.2 REHABILITATION AND IMPROVEMENT AREAS

A rehabilitation area (RA) is an area of land in the PMLU to which a rehabilitation milestone for the post-mining use relates. As discussed in Section 4, Callide Mine has three PMLUs:

- Bushland;
- Cattle grazing; and
- Retained infrastructure.

An improvement area (IA) is, for a NUMA, an area of land in the NUMA to which a management milestone for the NUMA relates. As discussed in Section 5, Callide Mine has one NUMA which is the final voids and ramps.

The RAs and IAs adopted for the PMLUs and NUMA are described in Table 17 and shown in Figures 27 to 30. Only areas of disturbance have been included in the RAs and IAs.

Table 17 Rehabilitation Areas and Improvement Areas

REHABILITATION / IMPROVEMENT AREA	DESCRIPTION	POST-MINING LAND USE	AREA (ha)
RA1	Rehabilitated Overburden Emplacement Area	Bushland	612.9
RA2	Overburden Emplacement Area	Bushland	2,579.6
RA3	Mine Infrastructure Area	Bushland	189.1
RA4	Mine Infrastructure Area	Grazing	99.9
RA5	Retained Mine Infrastructure	Retained infrastructure	33.4
RA6	Creek Diversions	Retained infrastructure	12.8
<i>Rehabilitation Area Sub-Total</i>			3,527.7
IA1	Final Voids and Ramps	NUMA	1,118.1
Total-Area (ha)			4,645.8

The total of all RAs for Callide Mine is 3,527.7 ha, and the total of all IAs is 1,118.1 ha.

10.3 LAND AVAILABILITY FOR PROGRESSIVE REHABILITATION

Areas will become available for rehabilitation progressively over the life of the mine. Batchfire has developed a LOM rehabilitation schedule for the overburden emplacement areas, mine infrastructure areas and open cut pit final voids in accordance with the current LOM mining schedule, taking into consideration the availability of resources. Figures 31 to 34 show the year(s) that individual RAs within each mining area will be available for rehabilitation, in accordance with the current LOM mining schedule. This progressive rehabilitation timing has been used to develop the PRCP schedule.

Mine infrastructure areas (including buildings, haul roads and access roads, sediment dams and mine dams) that support the active mining activities at Callide Mine will generally not be available for rehabilitation until mining activities have been completed in the relevant mining area. Some mine infrastructure areas (for example access roads and laydown areas) will be utilised for the rehabilitation of overburden emplacement areas, and these mine infrastructure areas will therefore not be available for rehabilitation to commence until rehabilitation of overburden emplacement areas has been completed.

The primary infrastructure area for Callide Mine is located at the Dunn Creek mining area and therefore the mine infrastructure area at Dunn Creek will not be available for rehabilitation until the end of mine life (approximately 2047 in accordance with the current LOM mining schedule).

The open cut pit final voids will be utilised during final rehabilitation of the mine infrastructure areas (e.g. for disposing of mine affected water and contaminated soil) and therefore the final voids will not be available for improvement to commence until the calendar year after final rehabilitation of the mine infrastructure areas has been completed.

10.4 MILESTONES AND MILESTONE CRITERIA

Rehabilitation milestones that reflect the steps necessary to rehabilitate the land to a stable condition have been developed for each RA and are provided in Table 18. Milestone criteria that are considered appropriate to demonstrate the completion of progressive rehabilitation have been developed for each rehabilitation milestone and are also listed in Table 18. The milestone criteria for the final rehabilitation milestone are the completion criteria described in Section 4. These criteria will demonstrate the achievement of a stable condition for the PMLUs.

Management milestones developed for the IA are also listed in Table 18. These milestones reflect the steps necessary to:

- Achieve best practice management of the area: and
- Minimise risks to the environment.

Milestone criteria that are considered appropriate to demonstrate the completion of progressive improvement steps have been developed for the IA and are also listed in Table 18. The milestone criteria for the final milestone are the completion criteria described in Section 5. These criteria will demonstrate sufficient improvement of the NUMA.

Table 18 Rehabilitation and Improvement Milestones and Milestone Criteria

MILESTONE REFERENCE	REHABILITATION / IMPROVEMENT MILESTONE	MILESTONE CRITERIA	JUSTIFICATION
RM1	Infrastructure Decommissioning and Removal	■ Services disconnected and terminated ■ All infrastructure (other than retained infrastructure) demolished and removed from site ■ Coal residue removed from road surfaces and hardstands where required and disposed of in-pit ■ Dams (other than retained dams) dewatered, desilted and sediments disposed of in-pit, and earthworks to create stable, free draining landform completed ■ Contamination assessments completed for all infrastructure areas, any decontamination works required completed and certified	■ Section 2.6.3 of the RMP (Hansen Bailey, 2018) includes actions required for decommissioning and removal of infrastructure ■ Decontamination requirements are consistent with EA conditions F10 and F11
RM2	Preparation of Retained Infrastructure	■ Removal of any contaminated soil (in accordance with a contamination assessment) and either remediation or disposal in the nearest final void; ■ Completion of a structural engineering inspection to assess the structural integrity of the retained buildings; ■ Completion of any structural maintenance/repairs necessary prior to handing over the buildings to the new owner; and ■ Certification from a suitably qualified structural engineer confirming the structural integrity of the retained buildings, completion of recommended maintenance/repairs and ongoing maintenance requirements, and suitability for the subsequent non-mining use. ■ Retained dams dewatered, with any mine affected water being pumped into the nearest final void.	■ These criteria are the key actions required for preparation of retained infrastructure for use by a subsequent landholder ■ Decontamination requirements are consistent with EA conditions F10 and F11

MILESTONE REFERENCE	REHABILITATION / IMPROVEMENT MILESTONE	MILESTONE CRITERIA	JUSTIFICATION
		■ Removal of any accumulated sediment and/or contaminated soil (in accordance with a contamination assessment) and disposal in the nearest final void. ■ Completion of an engineering inspection of the dam to confirm the structural integrity of the dam embankment, spillway and associated features. ■ Certification from a suitably qualified dam engineer confirming the structural integrity of the retained dam, completion of recommended maintenance/repairs and ongoing maintenance requirements, and suitability for the subsequent non-mining use	
RM3	Landform Development and Reshaping/Reprofiling	■ For Boundary Hill (excluding Boundary Hill South), Dunn Creek, Trap Gully and The Hut, finalise engineering and design plans with landform slopes in accordance with EA Tables F2 and F3 and drainage and erosion and sediment control design – certified by a suitably qualified person ■ For Boundary Hill South, finalise engineering and design plans with landform in accordance with EA Appendix 2, Figure 2 and drainage and erosion and sediment control design – certified by a suitably qualified person ■ Bulk earthworks and trimming to achieve design final landform profile – confirmed by post-completion survey ■ Drainage and erosion and sediment control systems installed as per design – confirmed by post-completion survey	■ EA conditions F6(b) and F8(b) ■ EA condition F9(a) (for Boundary Hill South) Note the EA currently has different completion criteria for rehabilitation at Boundary Hill South (Appendix 1) that are not practical or workable. The rehabilitation of all Callide mining areas are proposed to be managed in the same way in the PRCP.
RM4	Surface Preparation	■ Confirm topsoil volume requirements, topsoil source and ameliorants required (determined by a suitably qualified person based on source topsoil testing results)	■ TSMP (Hansen Bailey, 2018) and standard practice ■ Based on Batchfire's Life of Mine topsoil balance

MILESTONE REFERENCE	REHABILITATION / IMPROVEMENT MILESTONE	MILESTONE CRITERIA	JUSTIFICATION
		■ Spread topsoil to a minimum depth of 150 mm on overburden emplacement at the Dunn Creek mining area and 200 mm at all other areas ■ Apply topsoil ameliorants specified (refer above) ■ Rock mulching of steeper slopes (in accordance with engineering and design plans and as specified by a suitably qualified person) ■ Contour ripping	■ EA condition F6(b) and Table F2 provide for rock mulching of steeper slopes
RM5	Revegetation	■ Finalise seed mix and application rates taking into account availability of suitable seeds and requirements of the PMLUs ■ Complete seeding of prepared areas	■ RMP (Batchfire, 2018)
RM6	Achievement of Surface Requirements	■ Construction of stock fencing, where required, to exclude or contain cattle ■ Monitoring of the establishment of revegetation until the PMLU completion criteria is achieved (below)	
RM7	Achievement of Bushland PMLU to a Stable Condition	■ Revegetation: – Diversity: 3 (pre-1998) and 4 (post 1998), or more Native species – Health: A minimum of 50% of trees are healthy and growing for pre-1998 revegetation areas and 60% of trees are healthy and growing for post-1998 rehabilitation. – Density: Trees >1.6m tall are >50 stems/ha for pre-1998 areas and >100 stems/ha for post-1998 areas. – Composition: 1 or more Eucalyptus, Acacia or Corymbia – Weeds: Extent and range of weeds species similar to surrounding non-mining land uses.	■ Completion criteria based on relevant components of Table 9.1 of the RAC Report (Anglo Coal, 2003) updated by Batchfire, where necessary, to suit the requirements of the PMLUs and PRCP

MILESTONE REFERENCE	REHABILITATION / IMPROVEMENT MILESTONE	MILESTONE CRITERIA	JUSTIFICATION
		- Groundcover: Mean groundcover $\geq 50\%$ of leaf litter, plants, logs, rocks and grasses. ■ Soil and Erosion - pH levels within required range for vegetation growth - EC levels within range required for vegetation growth - ESP in topsoils $< 15\%$ - Organic matter levels $> 1\%$ in top 100 mm of soil profile - No active erosion gullies $> 2\text{m}$ deep or wide are present on outer slopes ■ Runoff water quality - pH 4.5 – 9.0 - EC 80th percentile 1,600 uS/cm and maximum 1,920 uS/cm - Suspended solids 1,000 mg/L	
RM8	Achievement of Grazing PMLU to a Stable Condition	■ Groundcover 50% for erosional stability ■ Runoff water quality - pH 4.5 – 9.0; - EC 80th percentile 1,600 uS/cm and maximum 1,920 uS/cm; and - Suspended solids 1,000 mg/L. ■ Cattle grazing suitability - Land assessed under Section 3 of the <i>Regional Land Suitability Frameworks for Qld</i> (DNRME and DSITIA, 2013) as Class 1,2 or 3 for native and improved pasture land management options and confirmed compliant by a suitably qualified person	■ Completion criteria based on relevant components of Table 9.1 of the RAC Report (Anglo Coal, 2003), updated by Batchfire, where necessary, to suit the requirements of the PMLUs and PRCP

MILESTONE REFERENCE	REHABILITATION / IMPROVEMENT MILESTONE	MILESTONE CRITERIA	JUSTIFICATION
RM9	Management of Diversions	■ Ongoing monitoring is undertaken (in accordance with requirements of the Water Licence for the Oaky Creek Diversion) ■ Completion of any maintenance/repairs and ongoing monitoring/maintenance requirements ■ Oaky Creek Diversion satisfies completion criteria specified in the Water Licences design criteria ■ Submission of a Water Licence Relinquishment application for the Oaky Creek Diversion, supported by a Final Monitoring and Evaluation Report that is certified by an RPEQ ■ Final Monitoring and Evaluation Report that is certified by an RPEQ for the Trap Gully Diversion ■ Qld government relinquishment of the Water Licence for the Oaky Creek Diversion	■ Consistent with the requirements of the Water Licence for the Oaky Creek Diversion (Water Licence 105184)
MM1	Final Void Landform Development	■ Final void highwall slopes no greater than 75 degrees in accordance with the approved residual void design outcomes ■ Final void low wall and ramp slopes generally at angle of repose in accordance with the approved residual final void design outcomes ■ Safety bunds constructed along the top of the high walls and along the crest of the pre-strip benches ■ Pre-strip benches shaped to shed runoff over the high wall at several locations to limit erosion ■ The low wall crest drains away from the void ■ Where appropriate and practical, diversion drain constructed on the crest of the highwall to divert catchment runoff away from the void ■ Where sufficient width for safe access exists, highwall benches topsoiled and shaped such that all drainage is	■ EA condition F8(b) and (c) ■ EA Table F3 ■ EA condition F9 (for Boundary Hill South) Note the EA currently has different completion criteria for the Boundary Hill South final void (Appendix 1) that are not practical or workable. All residual final voids at all Callide mining areas are proposed to be managed in the same way in the PRCP.

MILESTONE REFERENCE	REHABILITATION / IMPROVEMENT MILESTONE	MILESTONE CRITERIA	JUSTIFICATION
		directed off the bench onto natural surface or directed over the highwall face at a number of designated locations For Boundary Hill South: ■ Final void landform in accordance with EA Appendix 2, Figure 2	
MM2	Achievement of Sufficient Improvement	■ Modelling indicates that the final voids will not spill to the environment in the long term. ■ Certification from a suitably qualified person that the final void will not cause environmental harm outside of the relevant tenure boundary. ■ Certification from a suitably qualified person that the water level and quality in the final void will not cause environmental harm to the surrounding environment.	■ EA condition F8(a) and (c)

10.5 TIMEFRAMES

The PRCP schedule incorporates milestone completion dates that are based on the timeframes for completion listed in Table 19. Timeframes for some rehabilitation milestones are variable and take into account the following factors:

- The size of the area to be rehabilitated / improved;
- The complexity of the rehabilitation / improvement methods;
- Contractor/equipment availability (e.g. alignment of rehabilitation / improvement activities across the four separate mining areas to maximise efficiency); and
- The suitability of weather seasonality for the rehabilitation / improvement (e.g. seeding should take place before the wet season and soon after the application of topsoil).

As per DESI requirements, milestones have a completion date of the 10 December of the relevant calendar year.

Table 19 Milestone Completion Dates

MILESTONE REFERENCE	REHABILITATION / IMPROVEMENT MILESTONE	TIMEFRAME FOR COMPLETION	JUSTIFICATION
RM1	Infrastructure Decommissioning and Removal	3 years	Allows time for demolition and removal of buildings, dam, road and hardstand decommissioning works, decontamination assessments and works
RM2	Preparation of Retained Infrastructure	3 years	Allows time for inspection, repairs/maintenance and engineering certification of retained buildings and dams, decontamination assessments and works
RM3	Landform Development and Reshaping/Reprofiling	Variable - 1 to 7 years	Will vary depending on the size and complexity of area to be rehabilitated, and contractor/equipment availability
RM4	Surface Preparation	Variable - 1 to 2 years	Allows time for identification and testing of topsoil resources for the area, topsoil spreading earthworks, addition of ameliorants and ripping
RM5	Revegetation	1 year	Allows for seeding after the completion of surface preparation and prior to the wet season
RM6	Achievement of Surface Requirements	3 years	Allows for stock fencing, where necessary, immediately following seeding and monitoring of germination /establishment of vegetation over the first three wet seasons and vegetation remediation works, where necessary
RM7	Achievement of Bushland PMLU to a Stable Condition	5 years	Allows time for establishment of trees, ground cover, soil and runoff quality to satisfy completion criteria

MILESTONE REFERENCE	REHABILITATION / IMPROVEMENT MILESTONE	TIMEFRAME FOR COMPLETION	JUSTIFICATION
RM8	Achievement of Grazing PMLU to a Stable Condition	5 years	Allows time for establishment of vegetation, ground cover, runoff quality and grazing land suitability to satisfy completion criteria
RM9	Management of Diversions	Over the remaining mine life, up to completion of active rehabilitation (i.e. RM5) in the relevant mining area	These diversions are subject to the conditions of the Water Licences granted under the Water Act
MM1	Final Void Landform Development	2 years	Allows time for any final void earthworks to achieve approved residual void design outcomes, highwall and pre-strip bench drainage earthworks and construction of safety bunds
MM2	Achievement of Sufficient Improvement	3 years	Allows time to complete technical assessments and certifications

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12 ABBREVIATIONS

ABBREVIATION	DEFINITION
%	Percent
AHD	Australian Height Datum
BHS	Boundary Hill South
BoM	Bureau of Meteorology
CEO	Chief Executive Officer
CHP	Coal Handling Plant
Cth	Commonwealth
CVN	Central Valley North
CVS	Central Valley South
DBH	Diameter at breast height
DESI	Department of Environment, Science and Innovation
DNRME	Department of Natural Resources, Mines and Energy
DSITIA	Department of Science, Information Technology, Innovation and the Arts
EA	Environmental Authority
EC	Electrical Conductivity
EIS	Environmental Impact Statement
EP	Equivalent Persons
EP Act	Environmental Protection Act 1994 (Qld)
EP Regulation	Environmental Protection Regulation 2019 (Qld)
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Cth)
ERA	Environmentally Relevant Activity
ESP	Exchangeable Sodium Percentage
GL	Giga Litres
ha	Hectare
IA	Improvement Area
km	Kilometre
LOD	Land Outcome Documents
LOM	Life of Mine
m	Metre
m ³	Cubic Metre
mg/L	Milligrams per litre

ABBREVIATION	DEFINITION
MIA	Mine Industrial Area
ML	Mining Lease
MM	Management Milestone
mm	Millimetres
mm/day	Millimetres per day
NATA	National Association of Testing Authorities
NC Act	Nature Conservation Act 1992 (Qld)
NUMA	Non-Use Management Area
PMLU	Post-Mining Land Use
PRCP	Progressive Rehabilitation and Closure Plan
Qld	Queensland
RA	Rehabilitation Area
RAC Report	Callide Mine Report on Rehabilitation Acceptance (Completion) Criteria
RE	Regional Ecosystem
RM	Rehabilitation Milestone
RMP	Rehabilitation Management Plan
ROM	Run-of-mine
RP	Registered Plan
RPEQ	Registered Professional Engineer of Queensland
SP	Survey Plan
TSMP	Topsoil Management Plan
VM Act	Vegetation Management Act 1999 (Qld)
Water Act	Water Act 2000 (Qld)

FIGURES



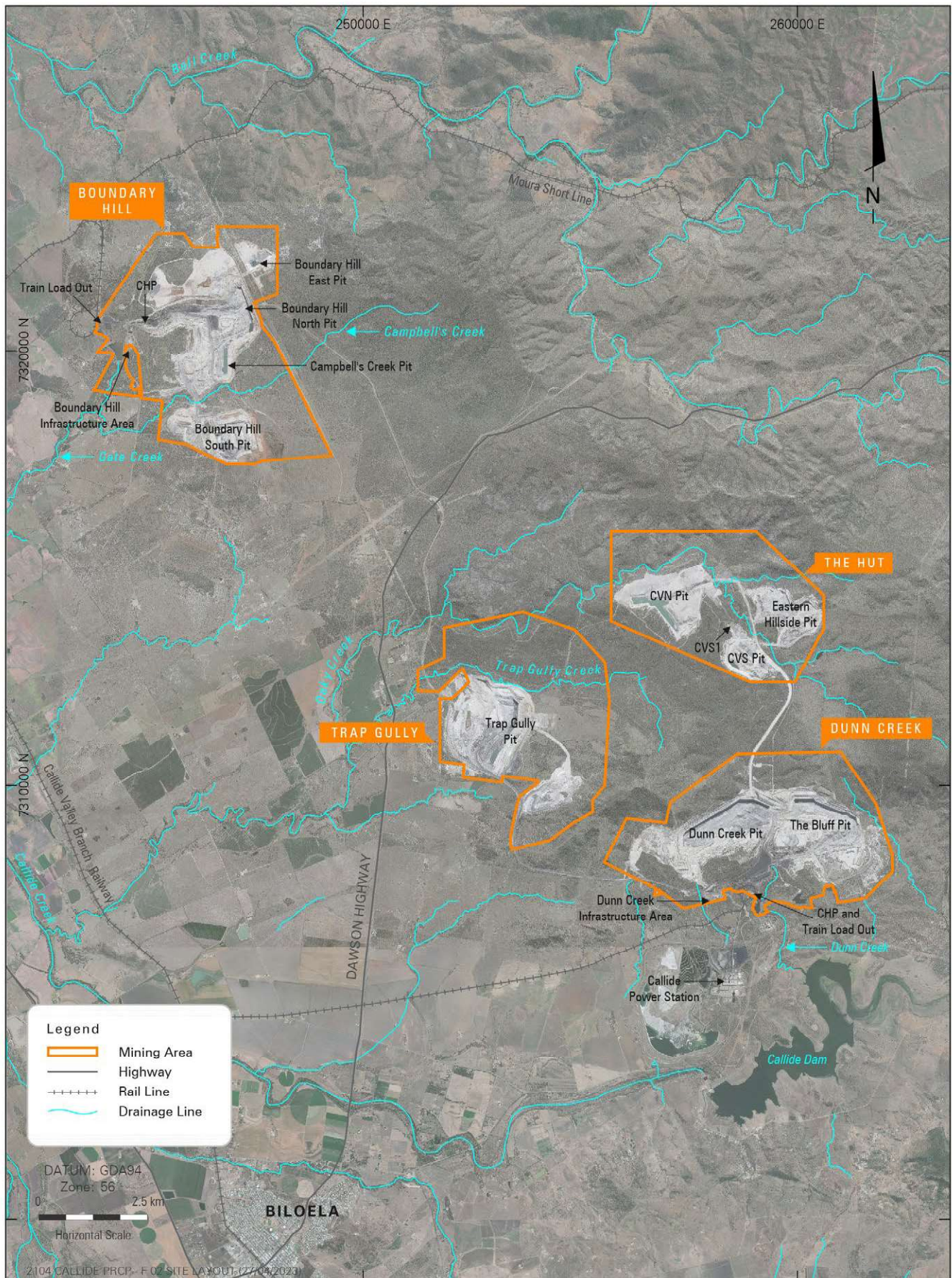
CALLIDE MINE

BATCHFIRE CALLIDE

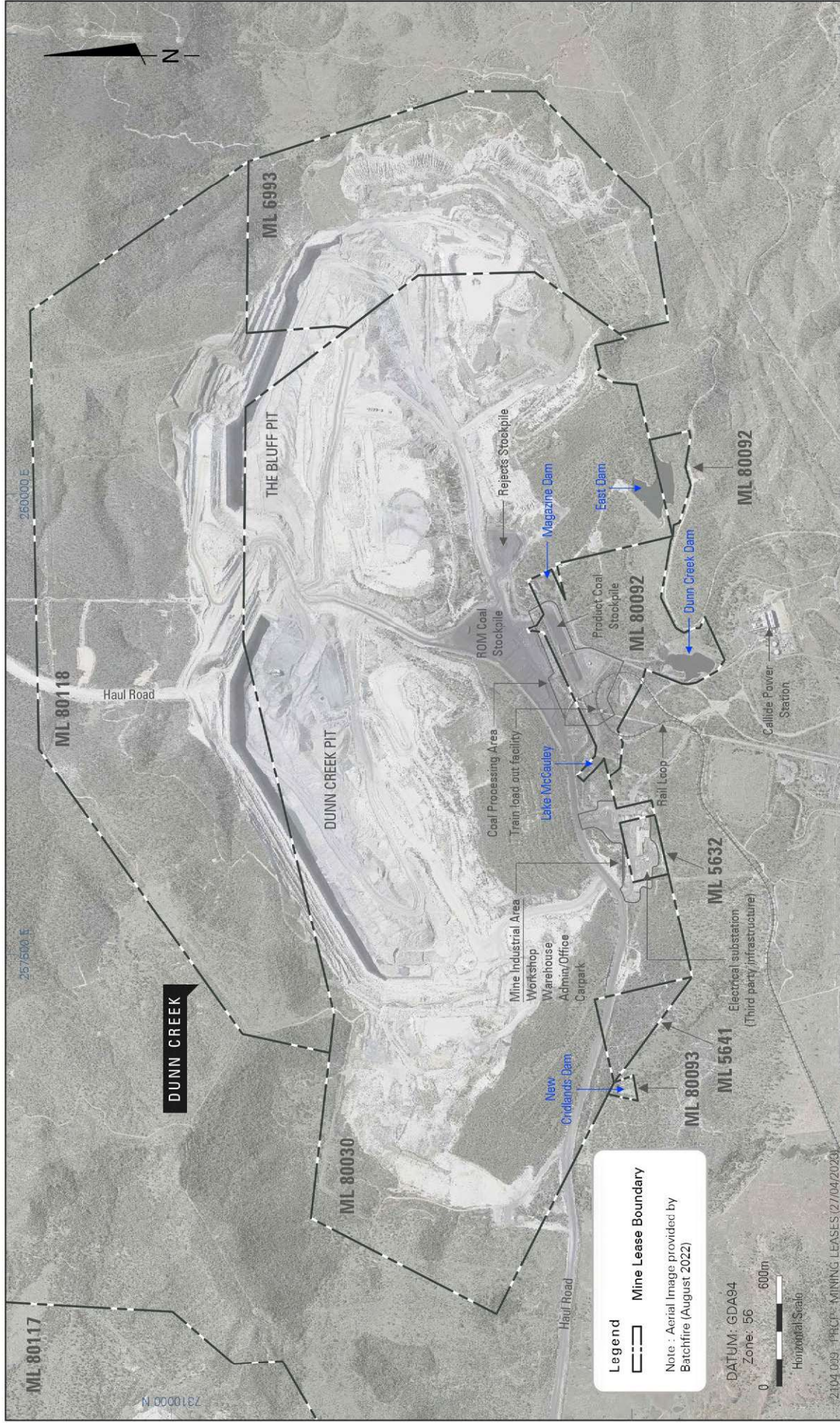


Callide Mine Location

FIGURE 1



CALLIDE MINE PRCP

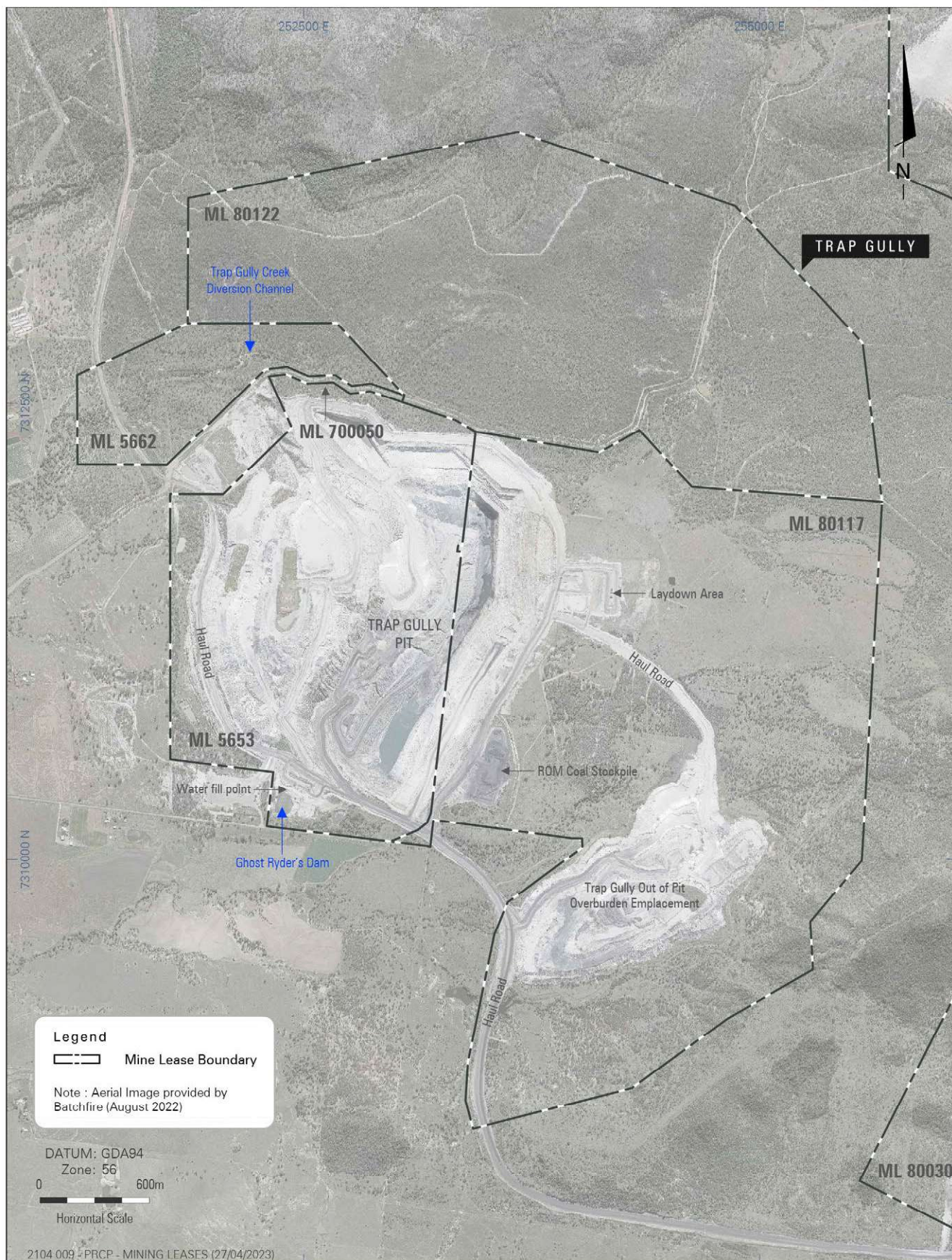


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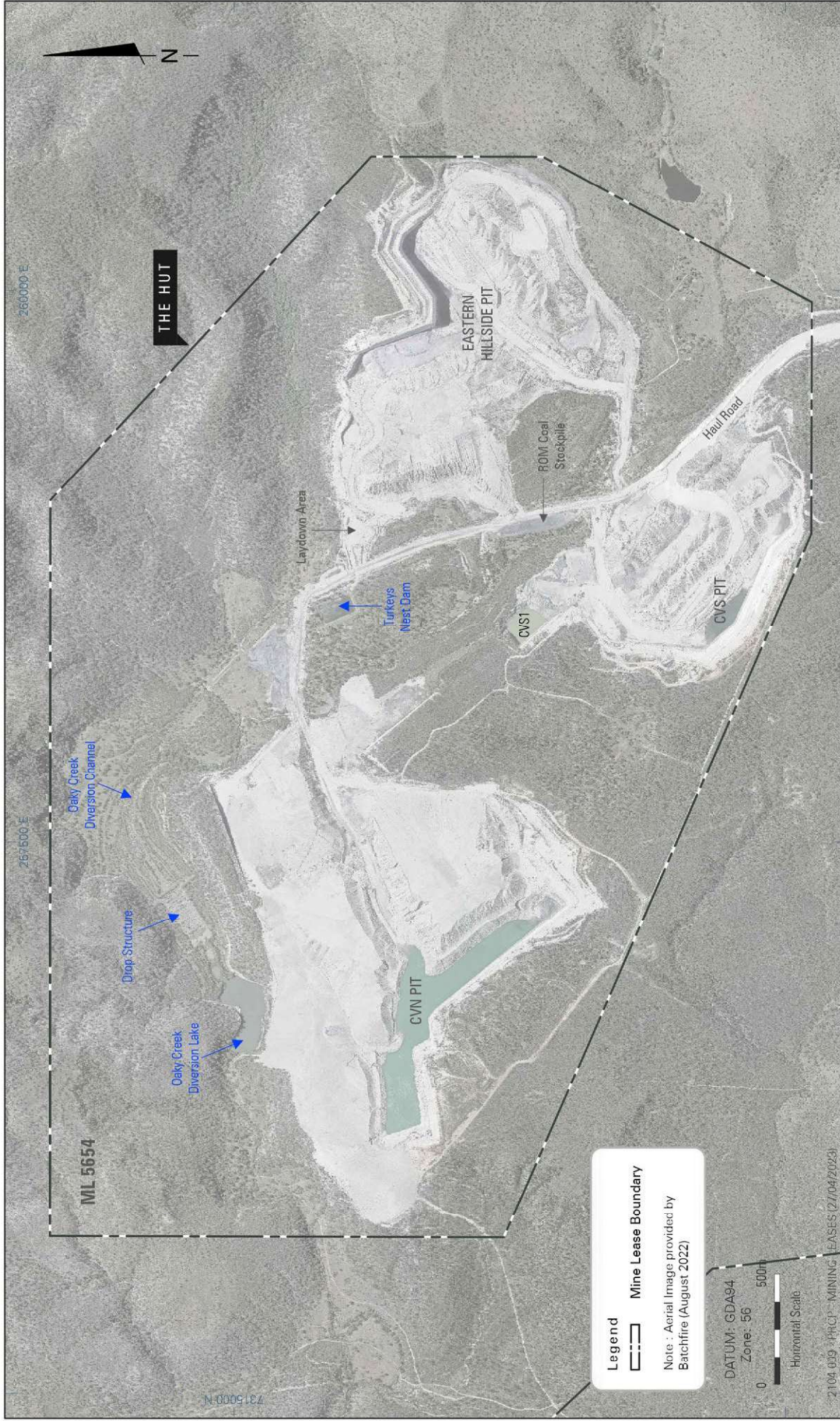
Dunn Creek Mining Leases and Infrastructure

FIGURE 3





CALLIDE MINE

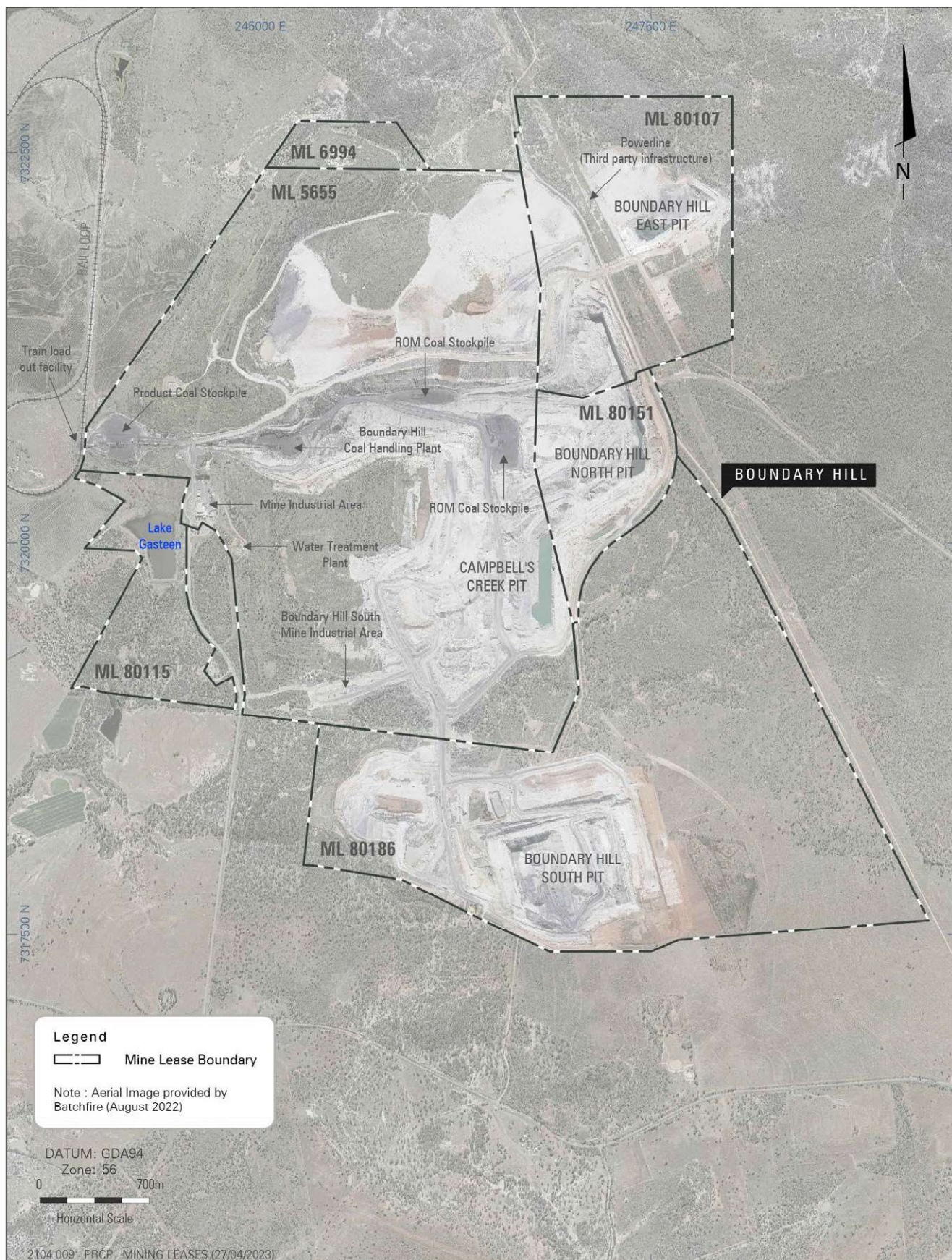


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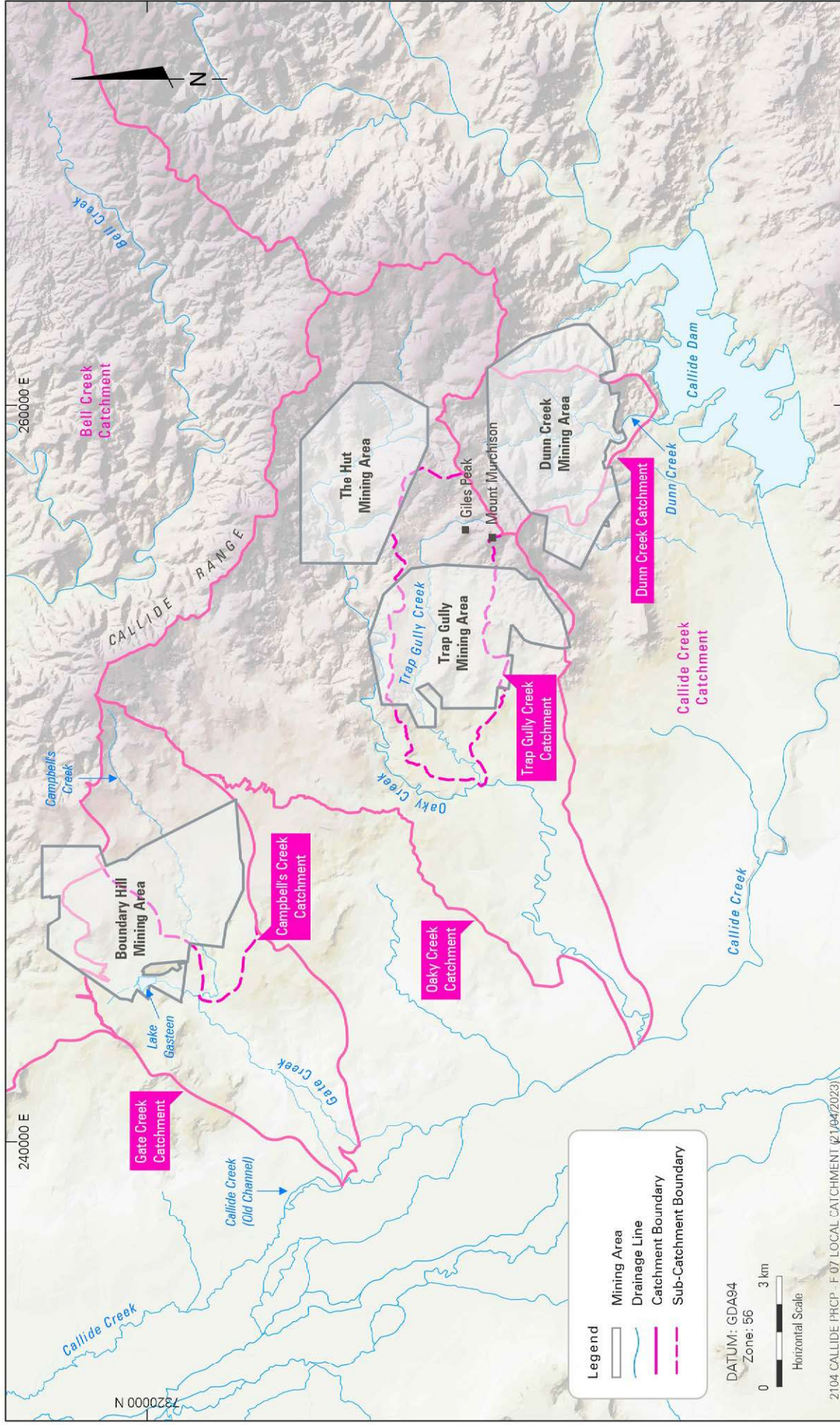
The Hut Mining Leases and Infrastructure

FIGURE 5





CALLIDE MINE

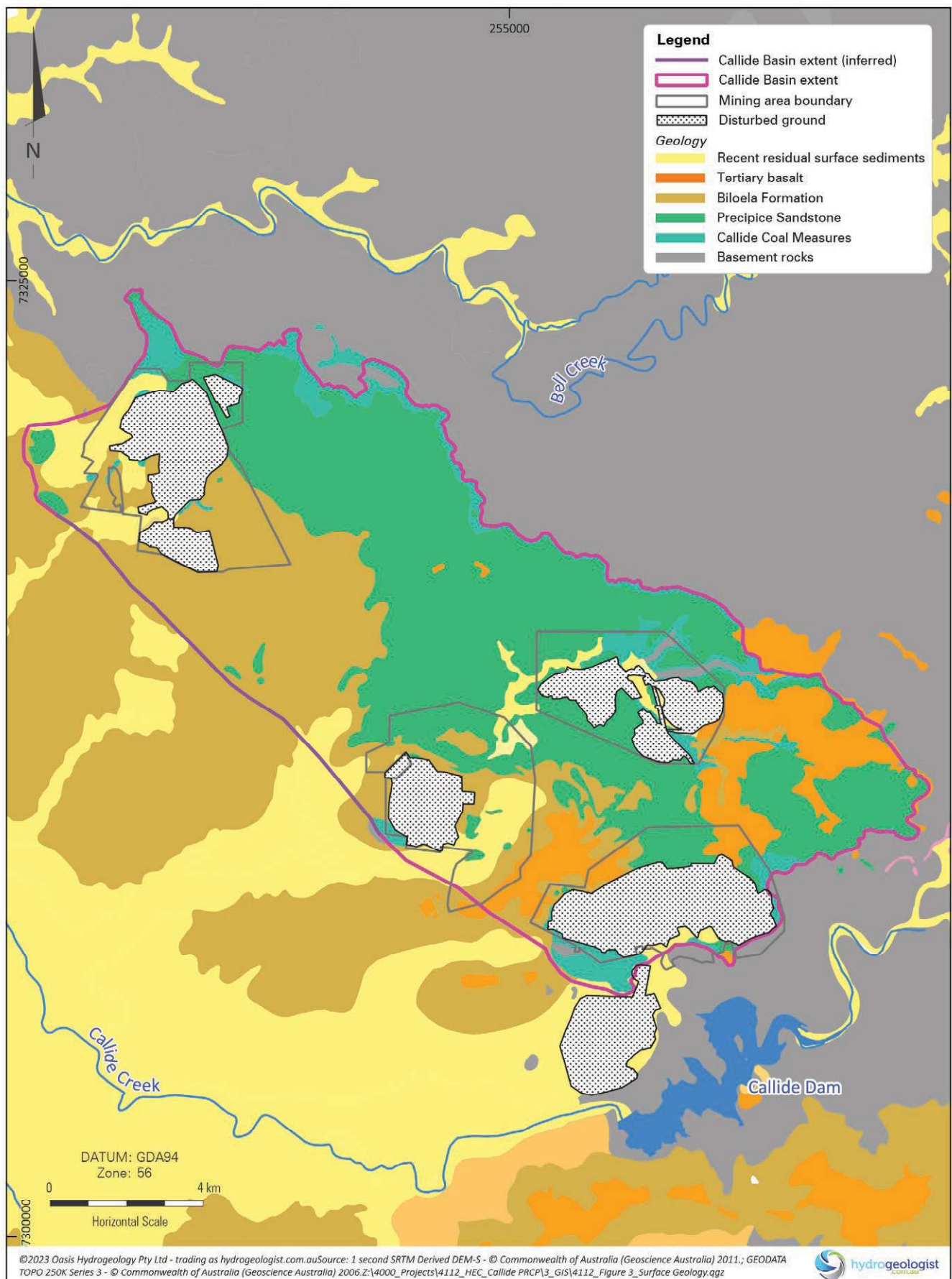


CALLIDE MINE PRCP

Local Catchment Setting

FIGURE 7

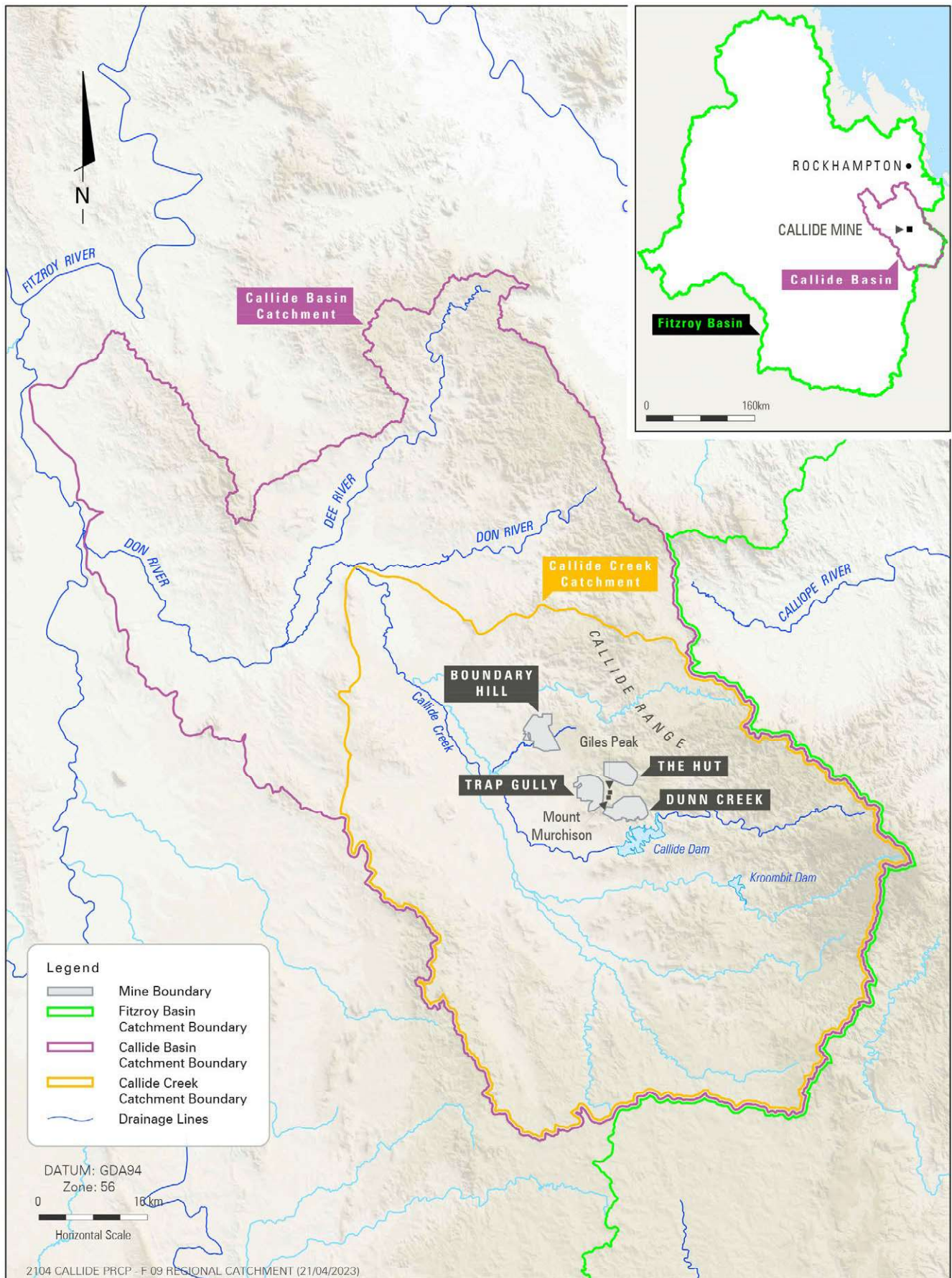




CALLIDE MINE

Surface Geology

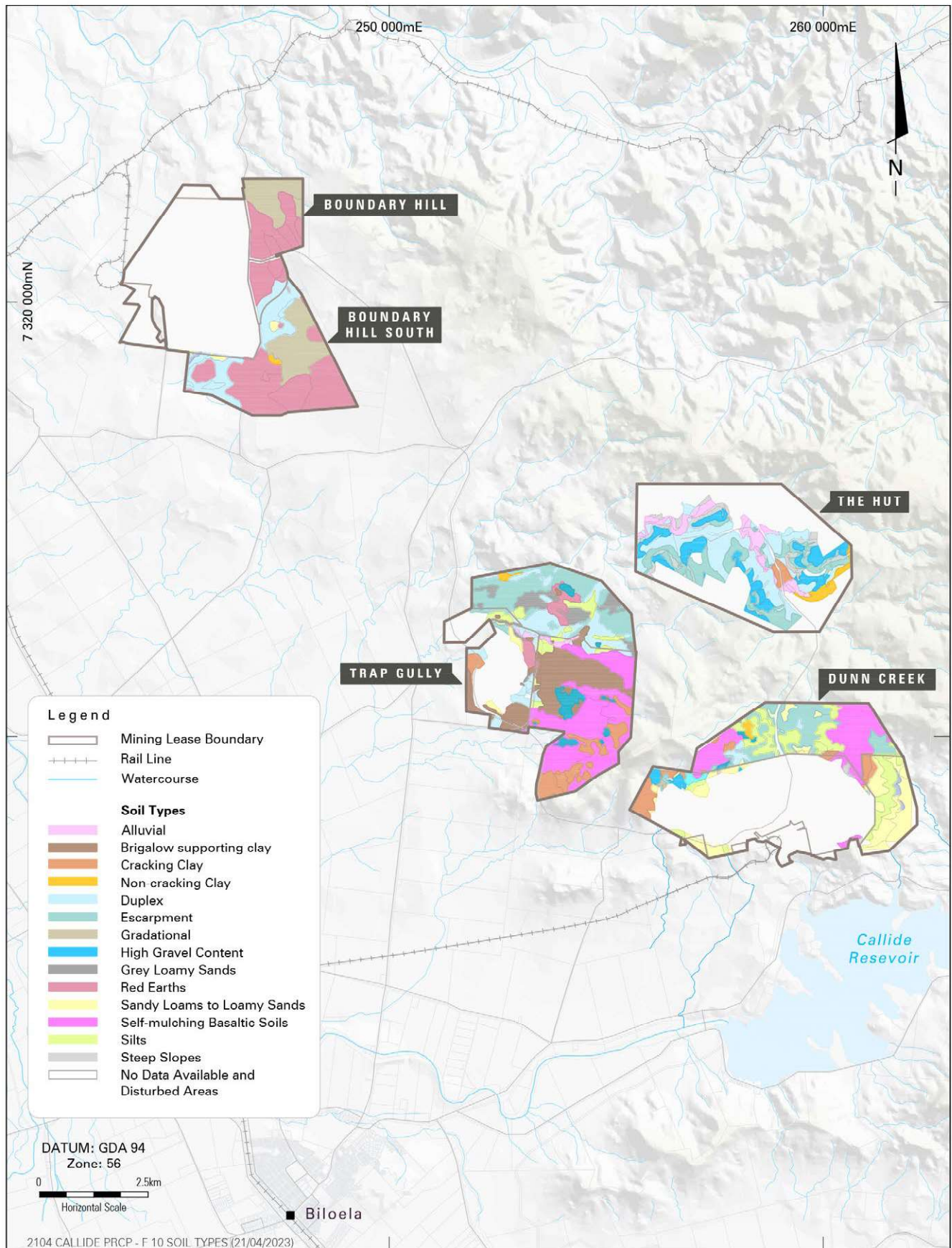
FIGURE 8



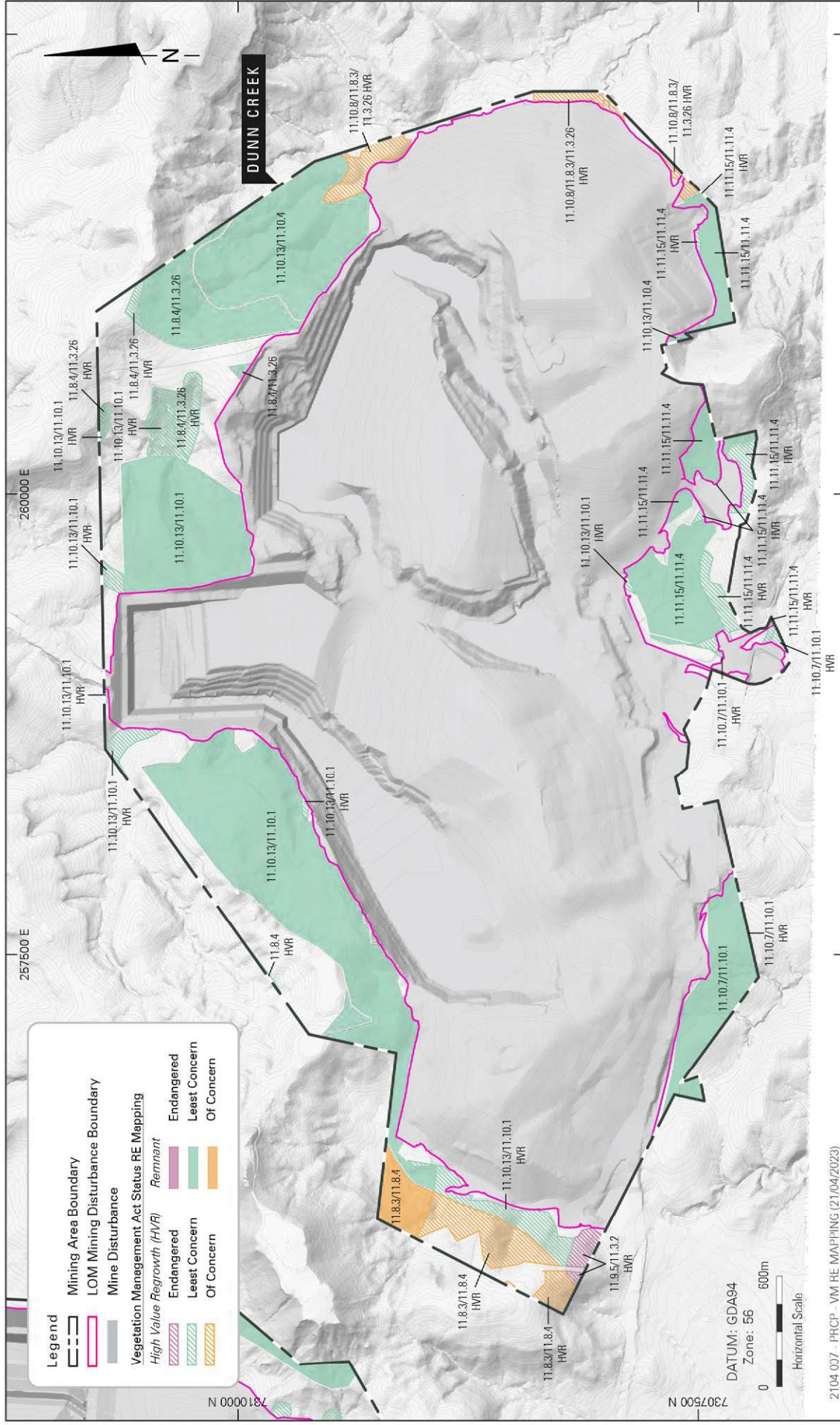
CALLIDE MINE PRCP

Regional Catchment Setting

FIGURE 9



CALLIDE MINE PRCP

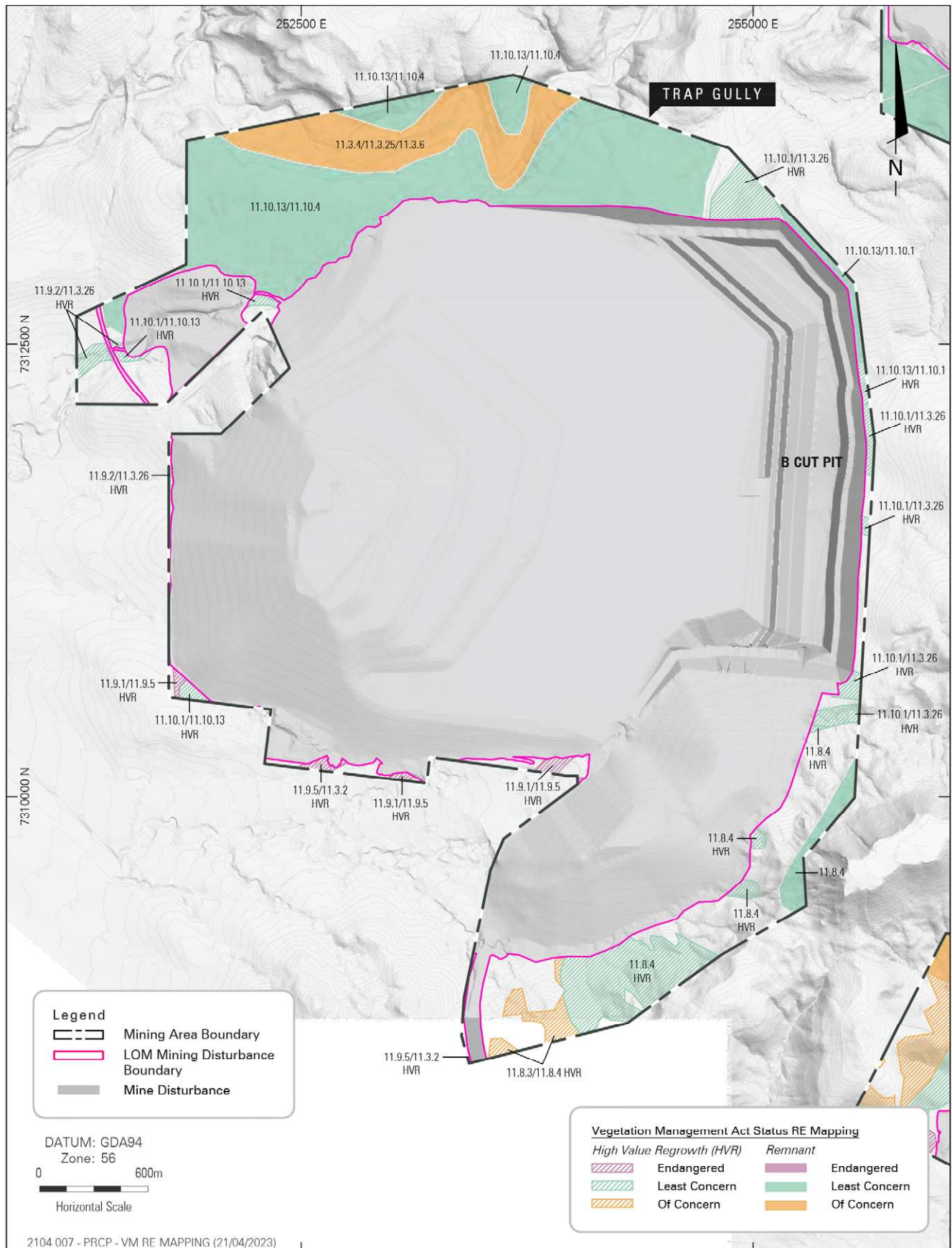


CALLIDE MINE PRCP

Dunn Creek Mining Area -
Vegetation Management Act Status RE Mapping



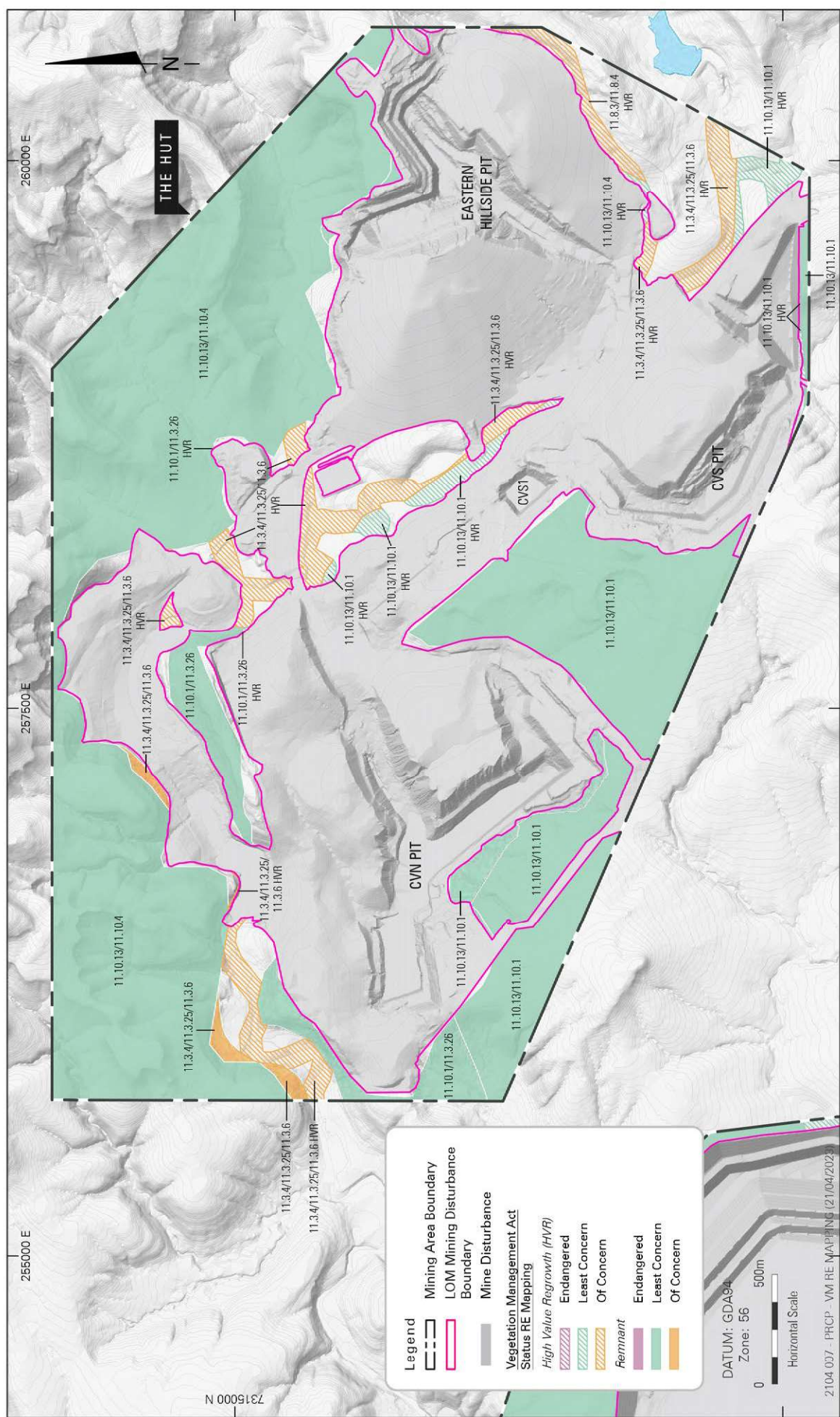
FIGURE 11



CALLIDE MINE PRCP

Trap Gully Mining Area -
Vegetation Management Act Status RE Mapping

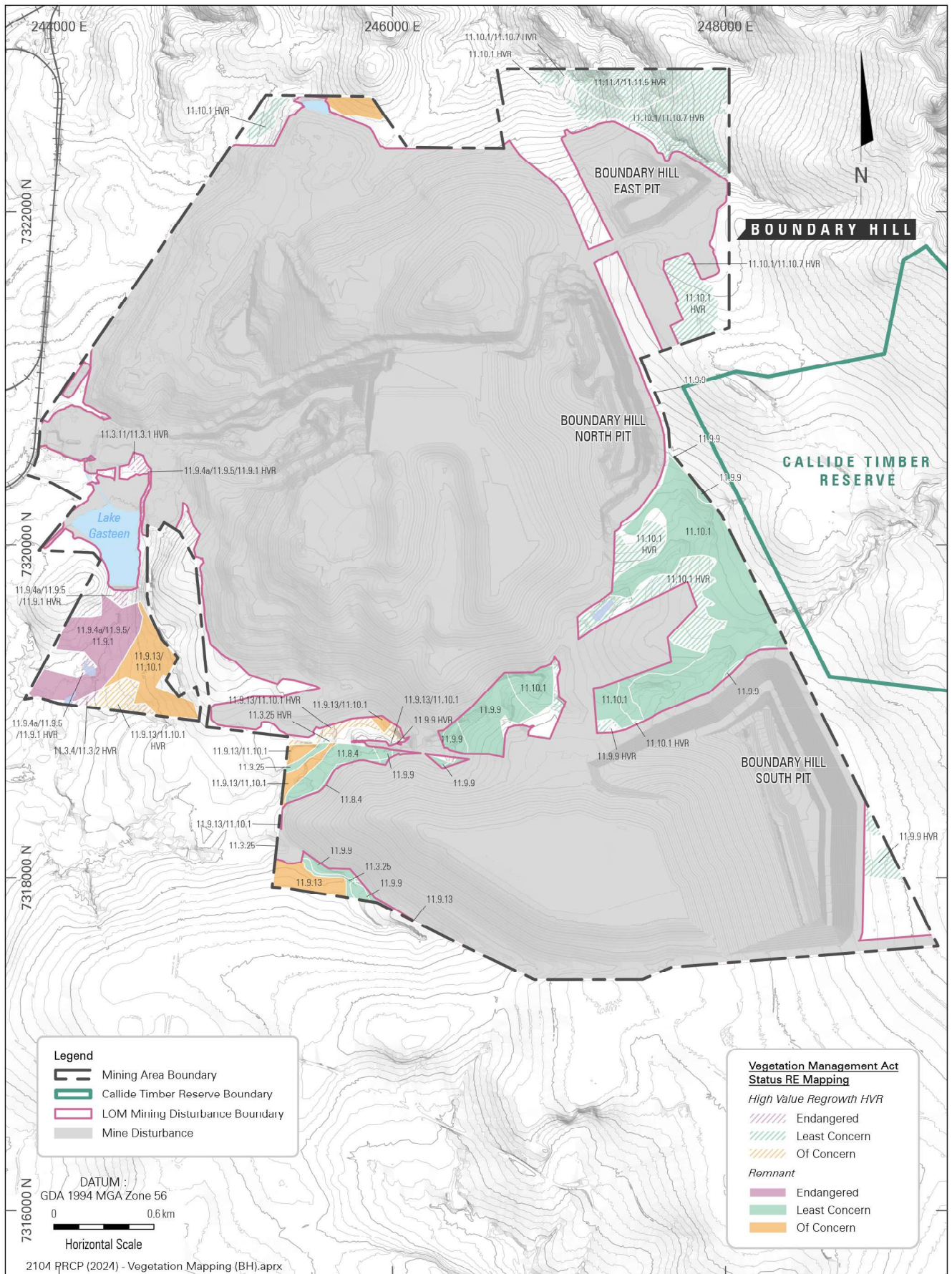
FIGURE 12

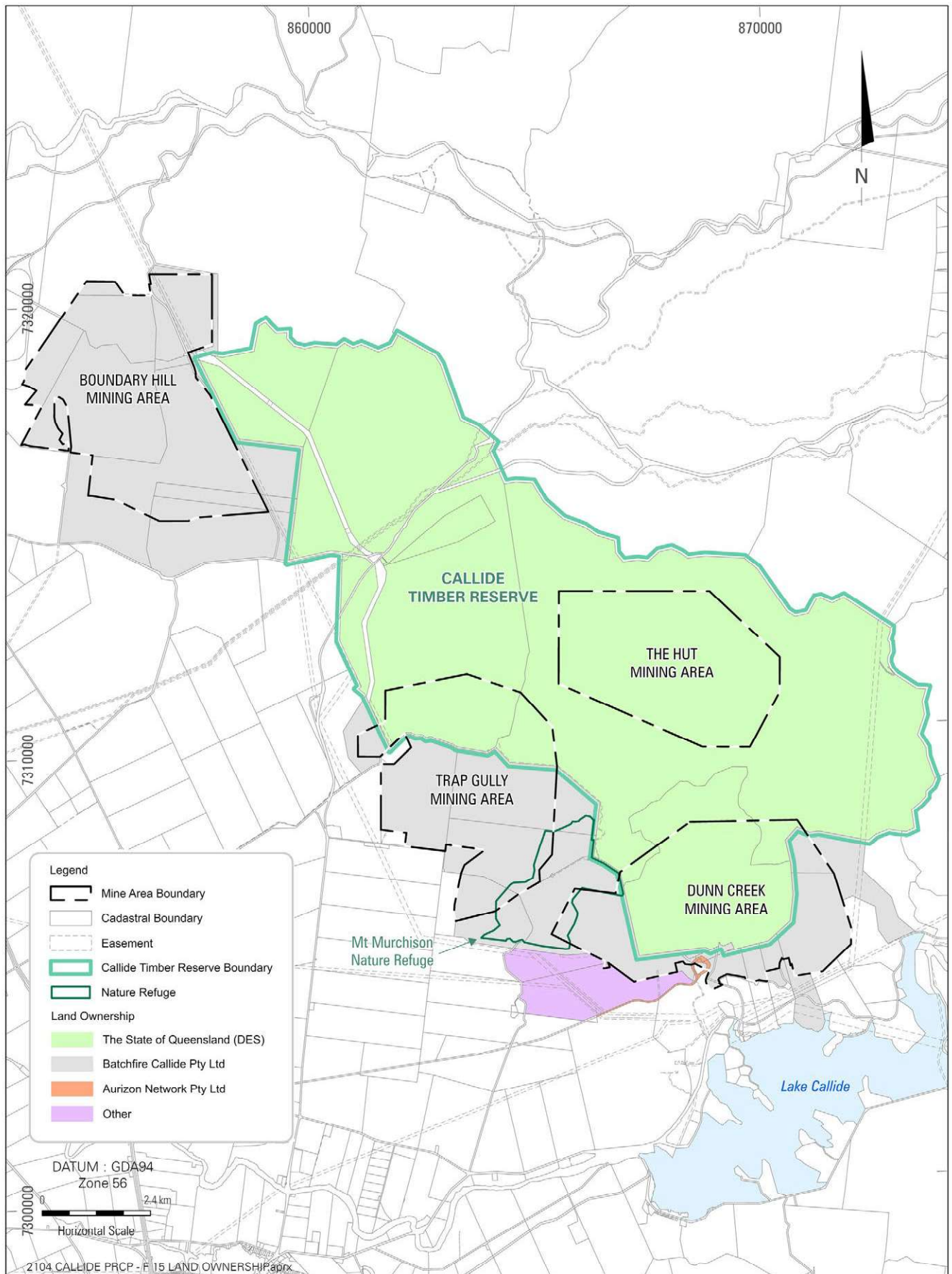


CALLIDE MINE PRCP

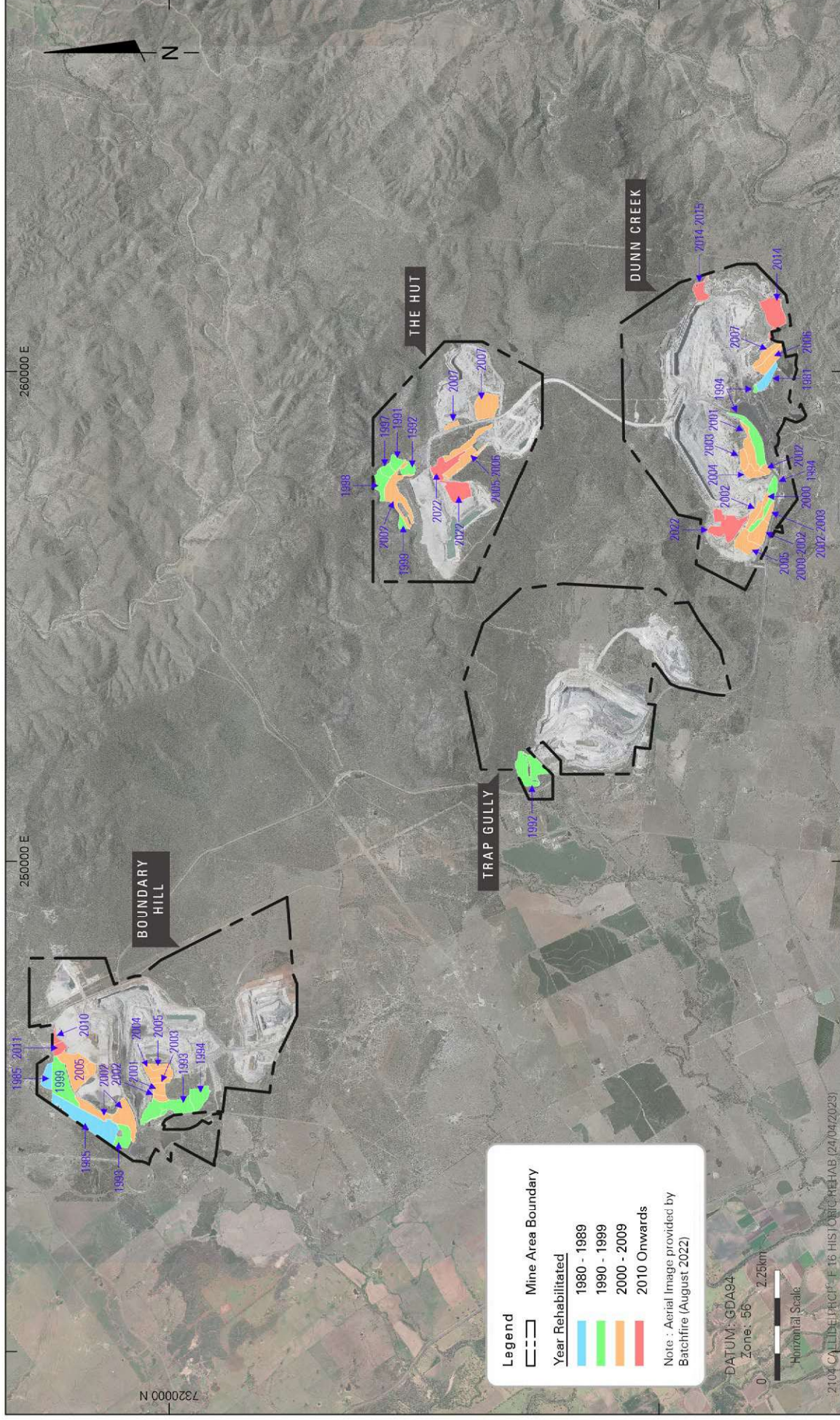
The Hut Mining Area - Vegetation Management Act Status RE Mapping

FIGURE 13





CALLIDE MINE PRCP



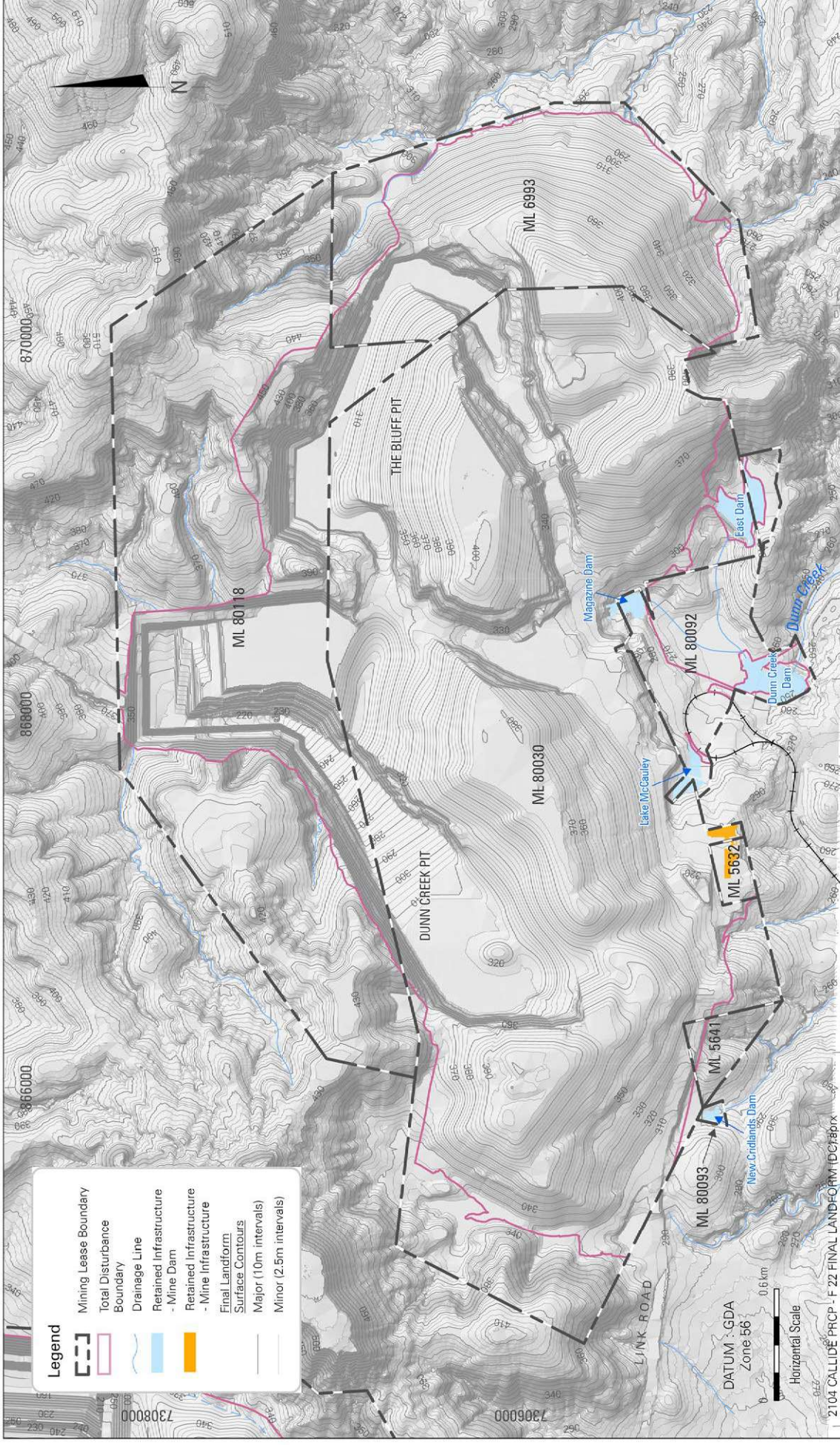
CALLIDE MINE PRCP

Existing Rehabilitation Areas

FIGURE 16



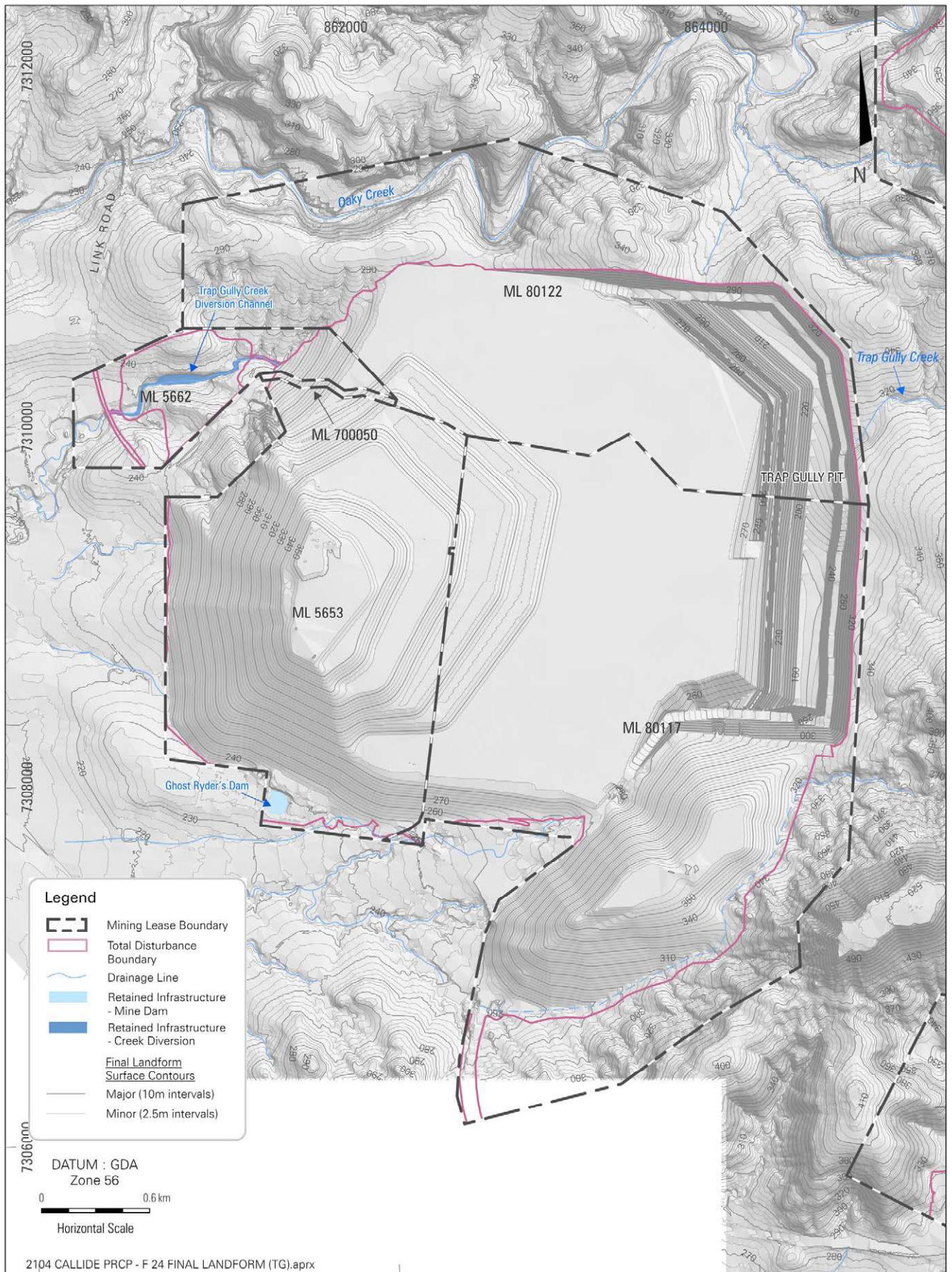
BATCHFIRE
CALLIDE

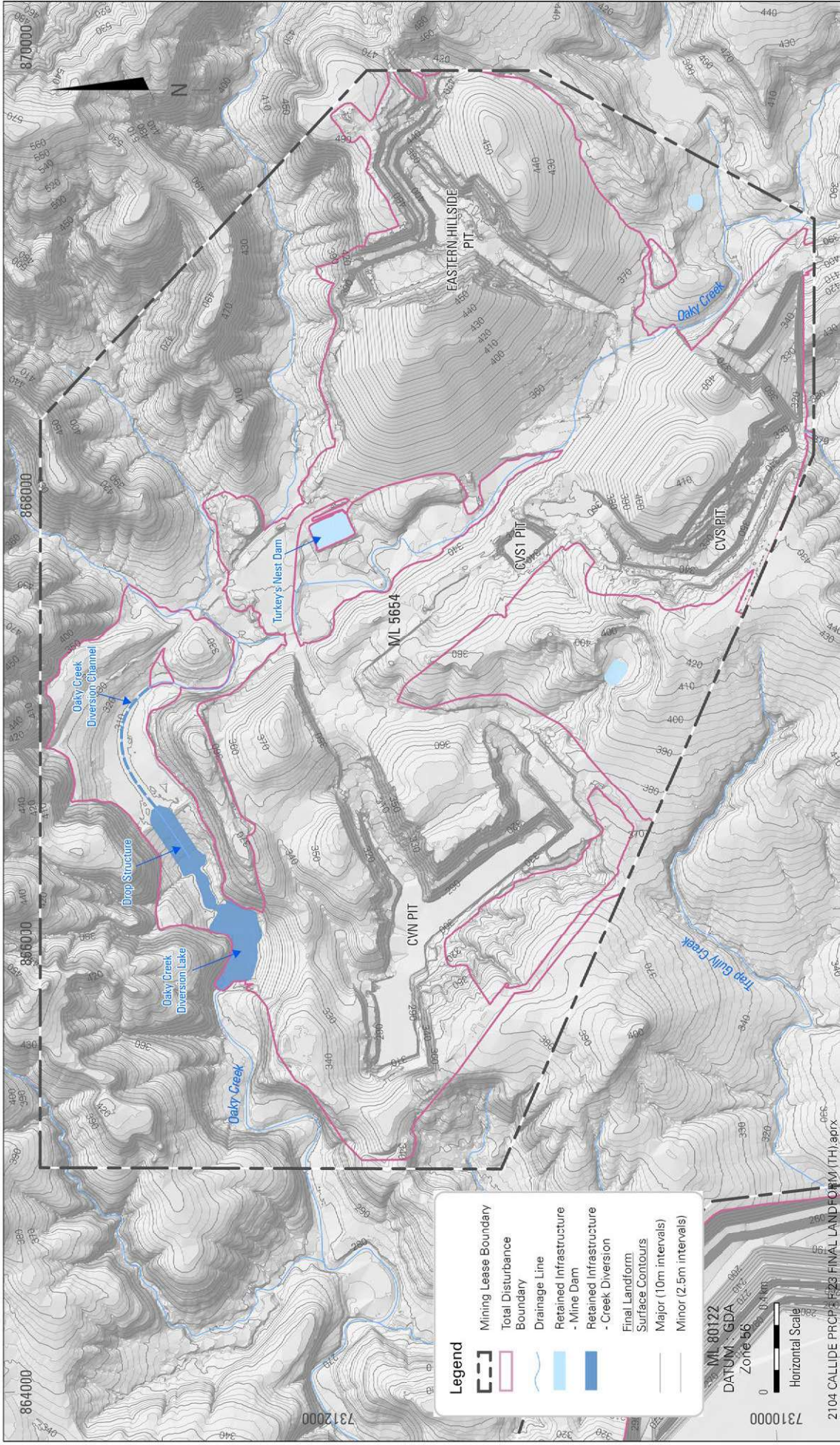


CALLIDE MINE PRCP
Dunn Creek Mining Area
- Final Landform

FIGURE 17





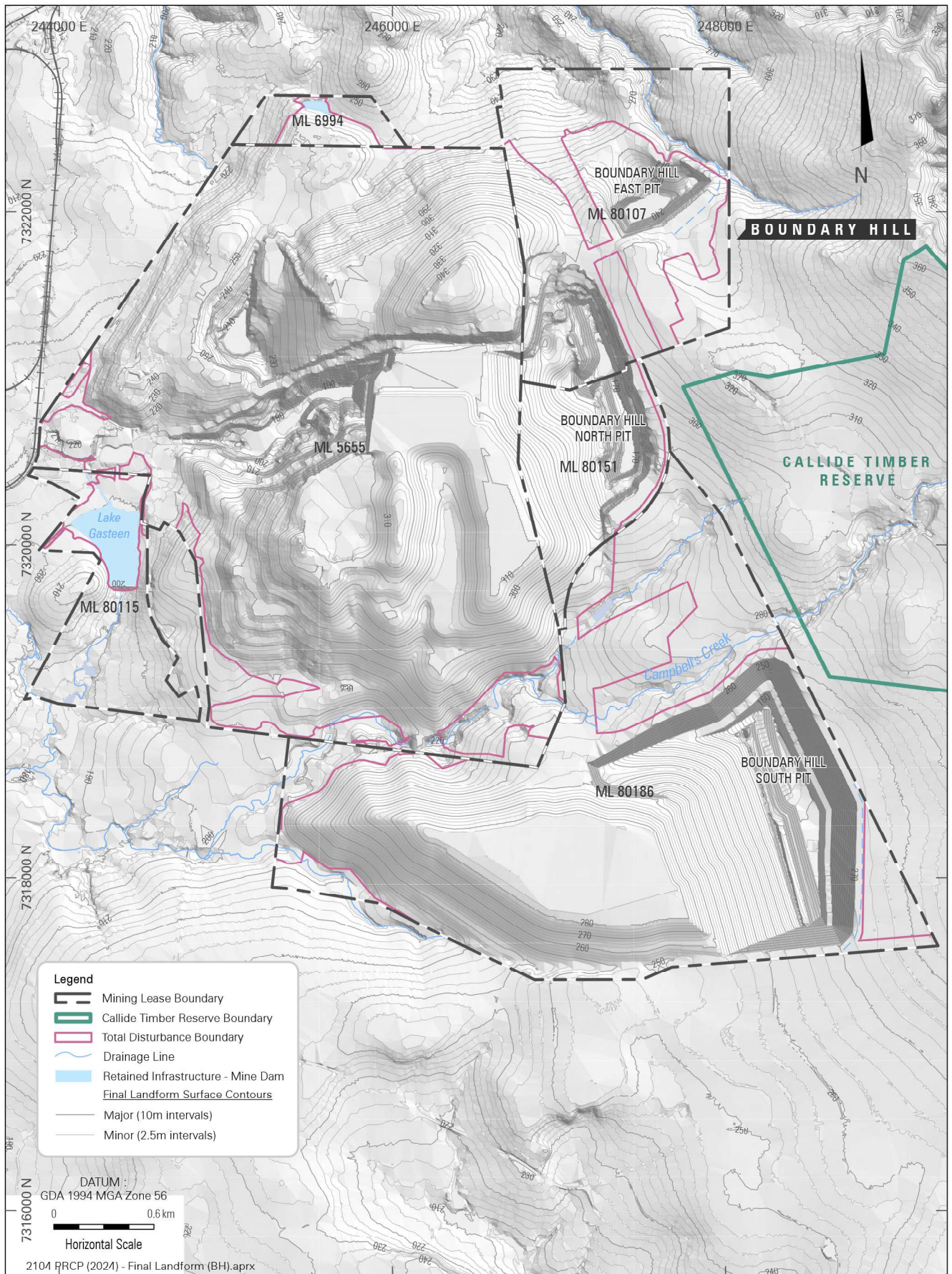


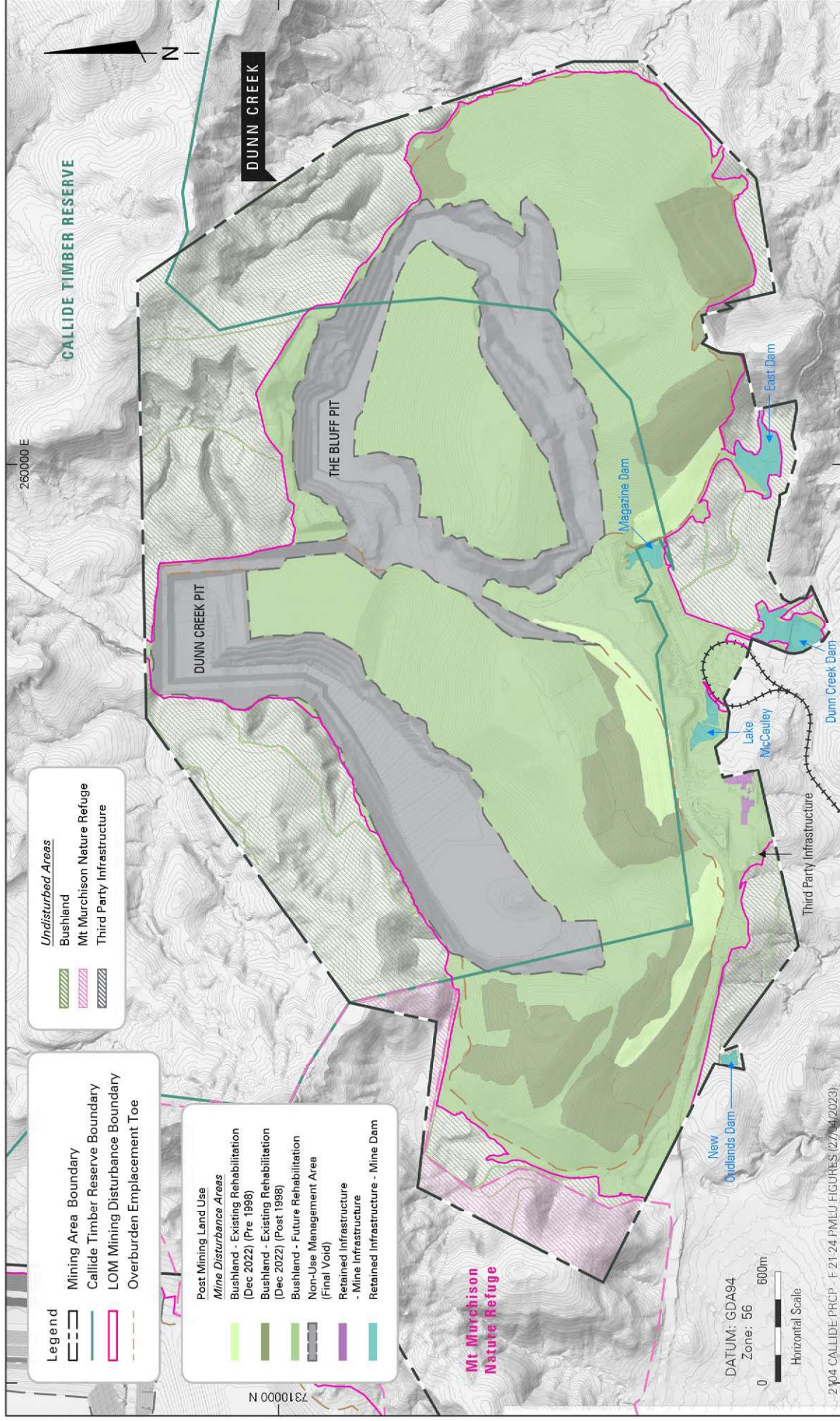
CALLIDE MINE PRCP

The Hut Mining Area
- Final Landform

FIGURE 19

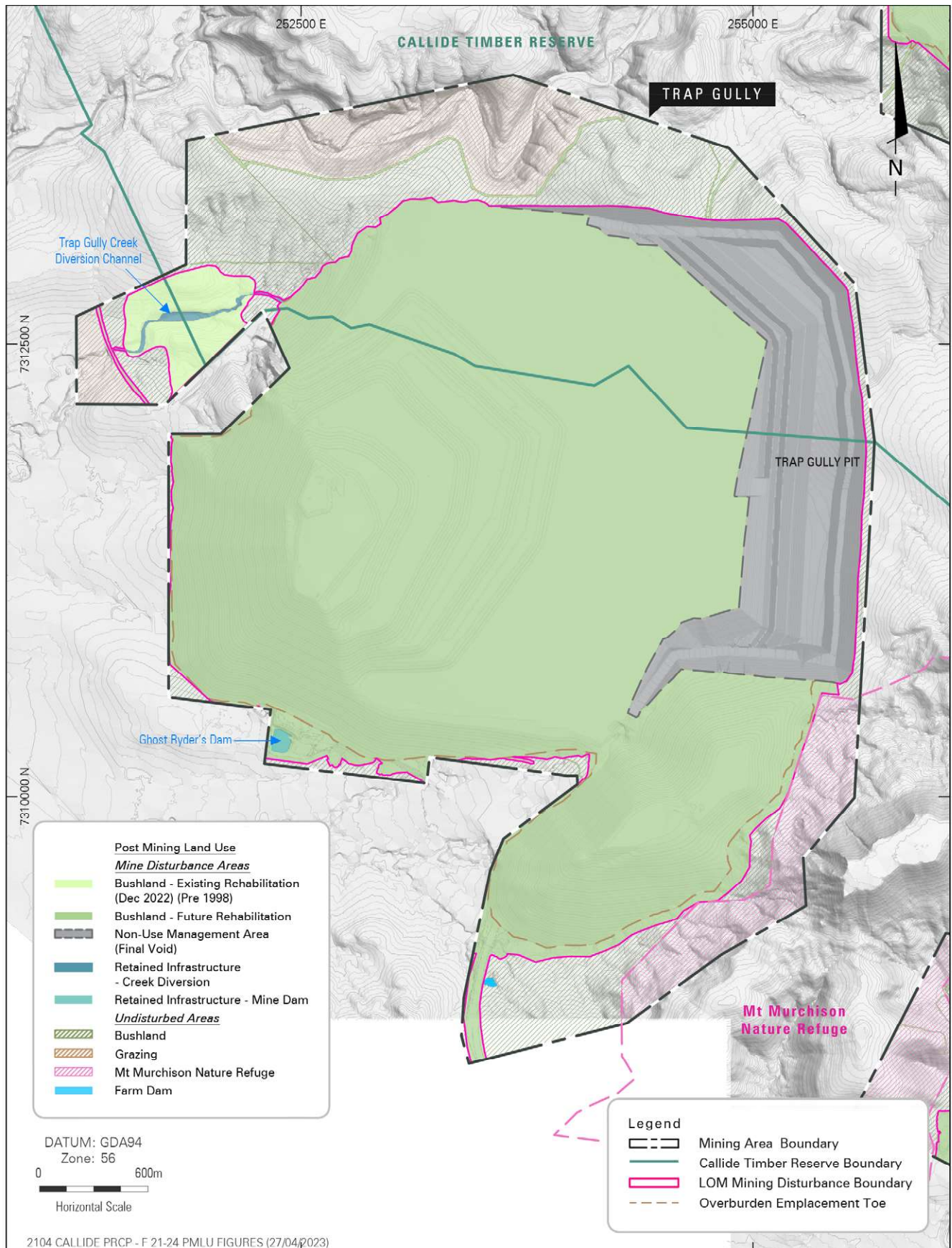






CALLIDE MINE PRCP
Dunn Creek Mining Area
- Post Mining Land Use

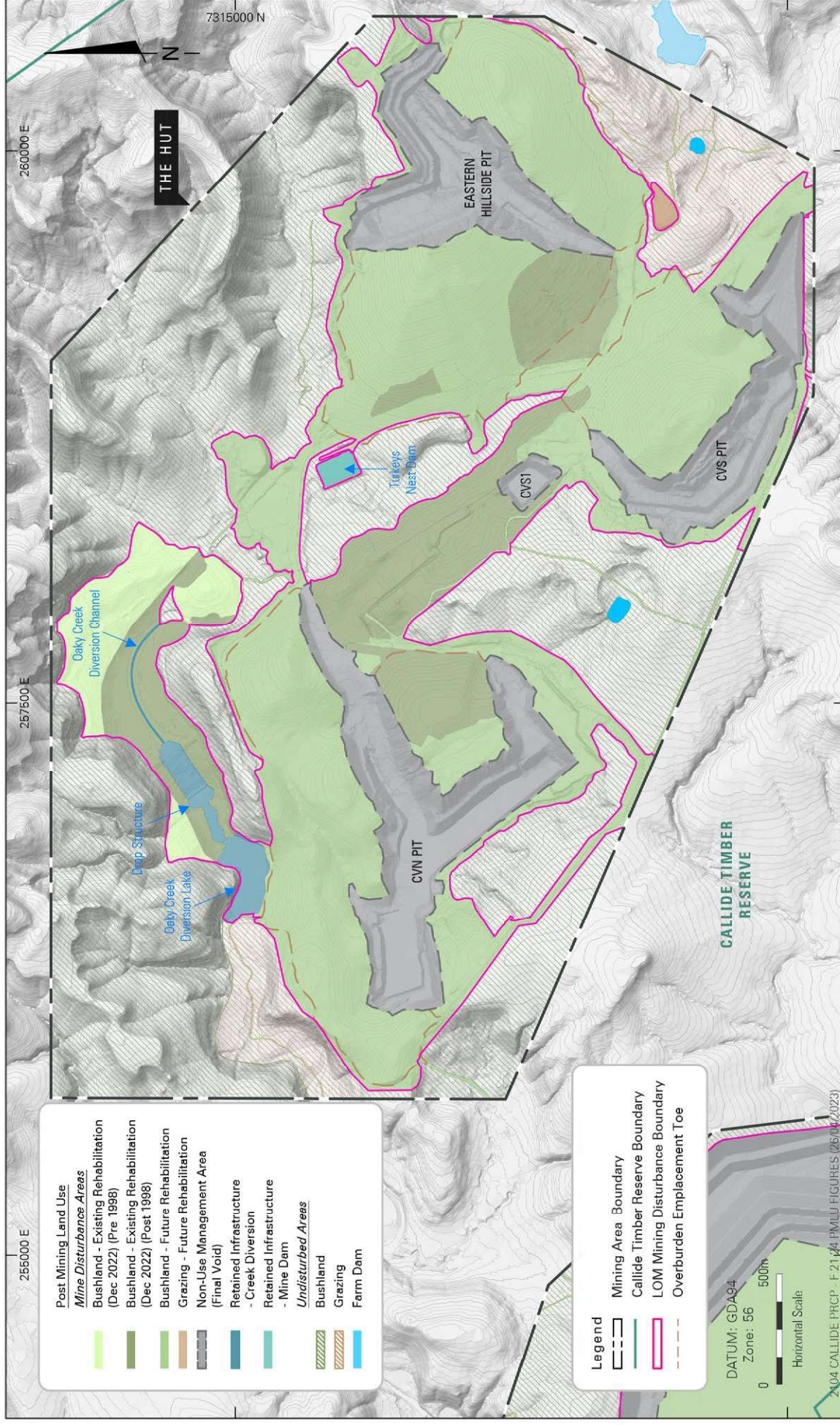
FIGURE 21



CALLIDE MINE PRCP

Trap Gully Mining Area
- Post Mining Land Use

FIGURE 22



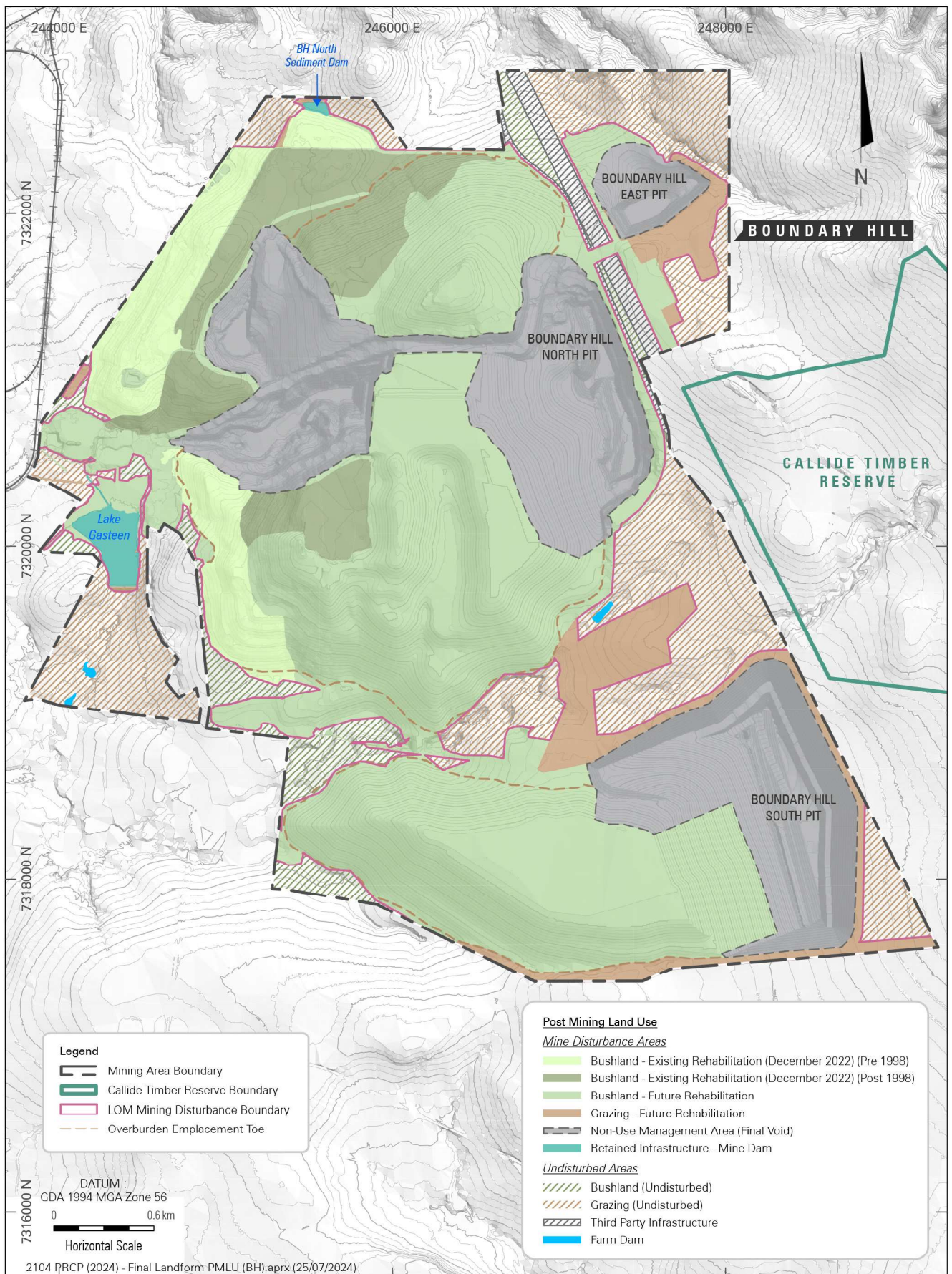
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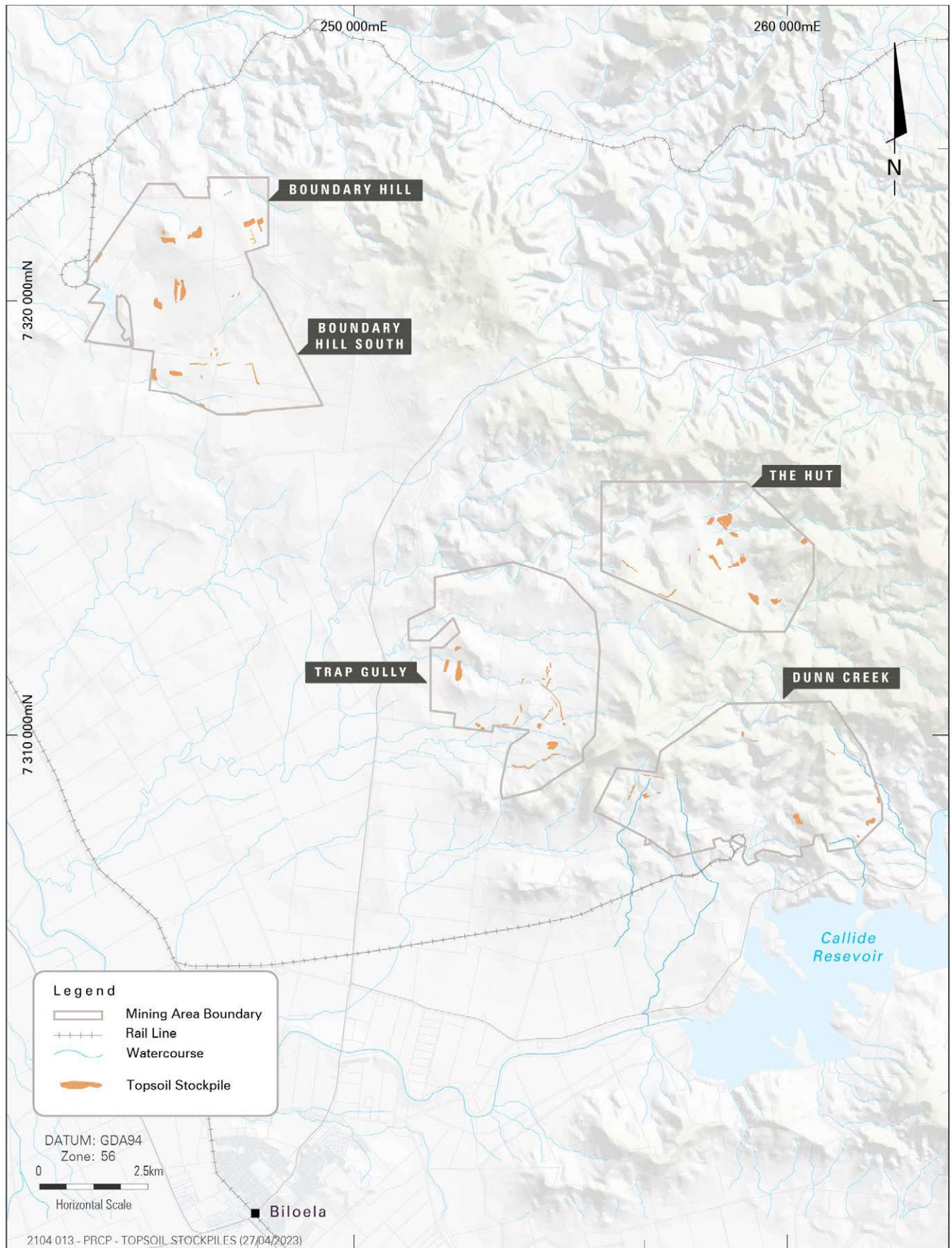
The Hut Mining Area
- Post Mining Land Use

FIGURE 23



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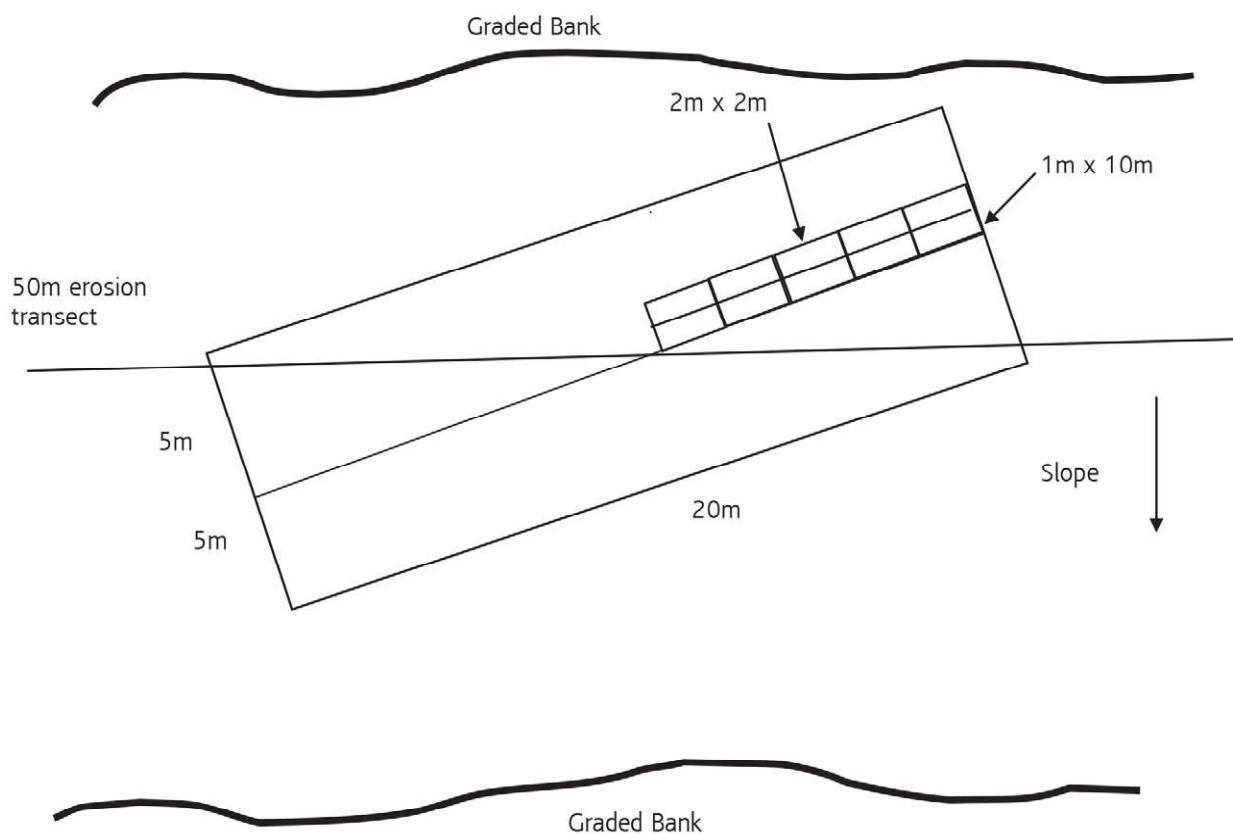




CALLIDE MINE

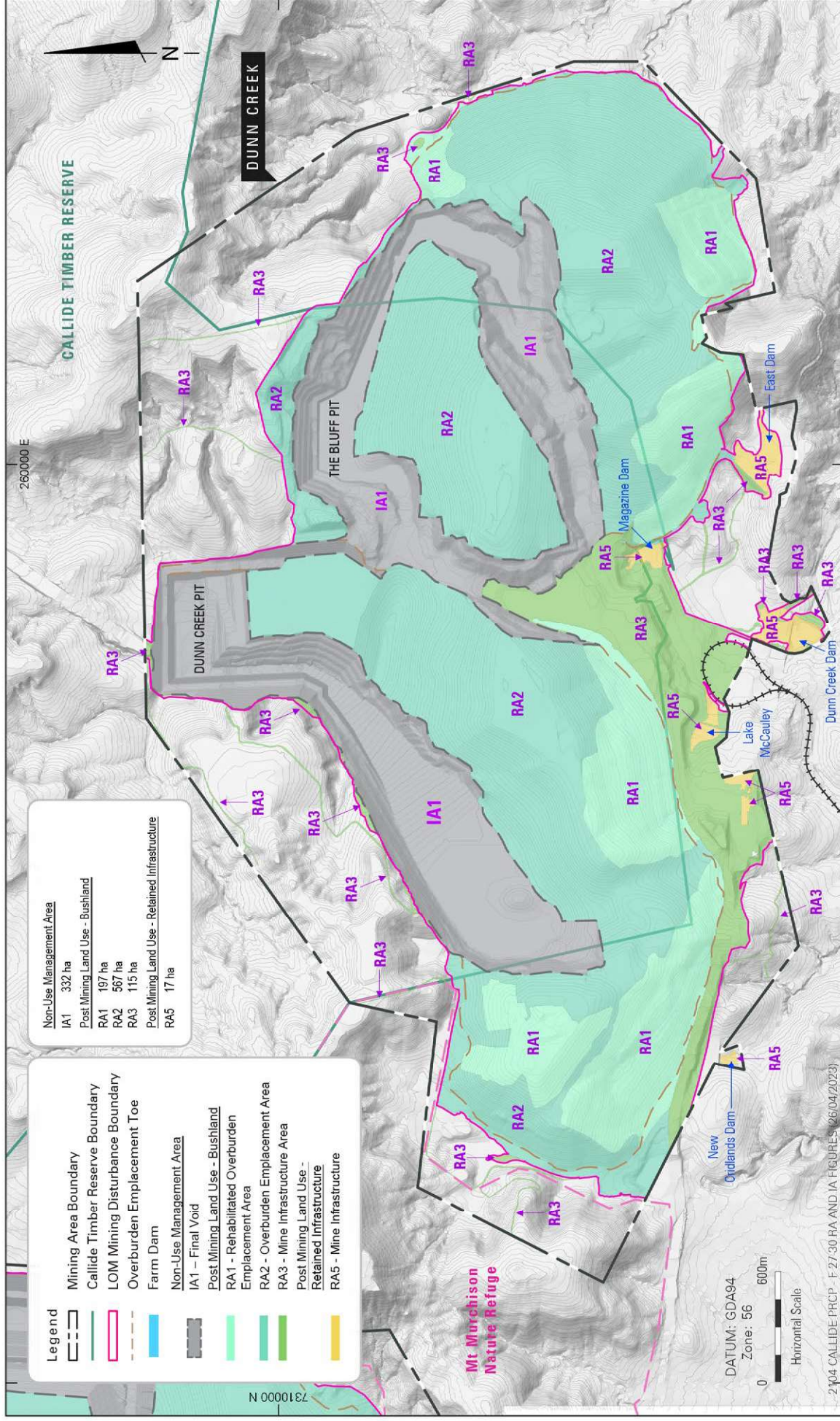
Topsoil Stockpiles

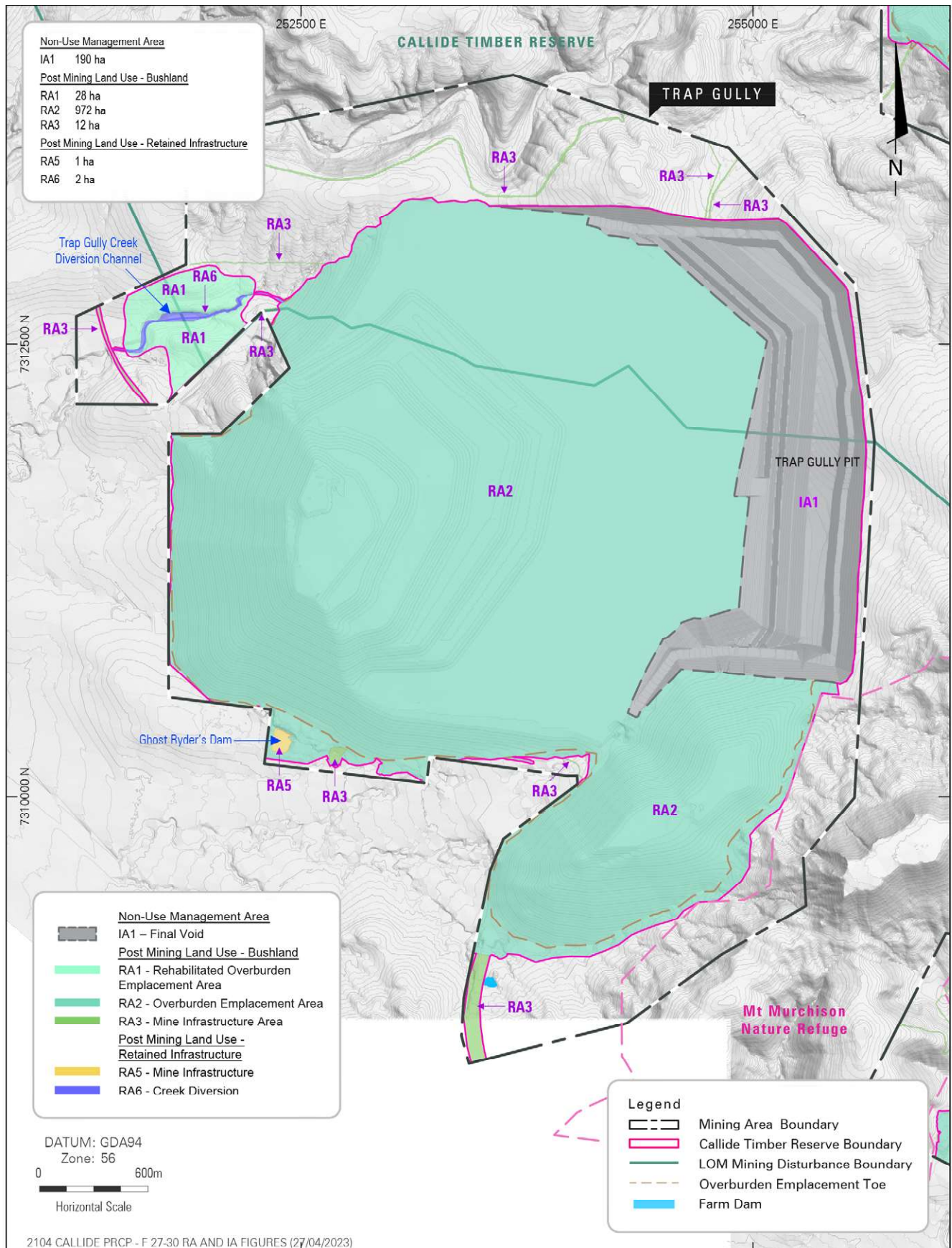
FIGURE 25

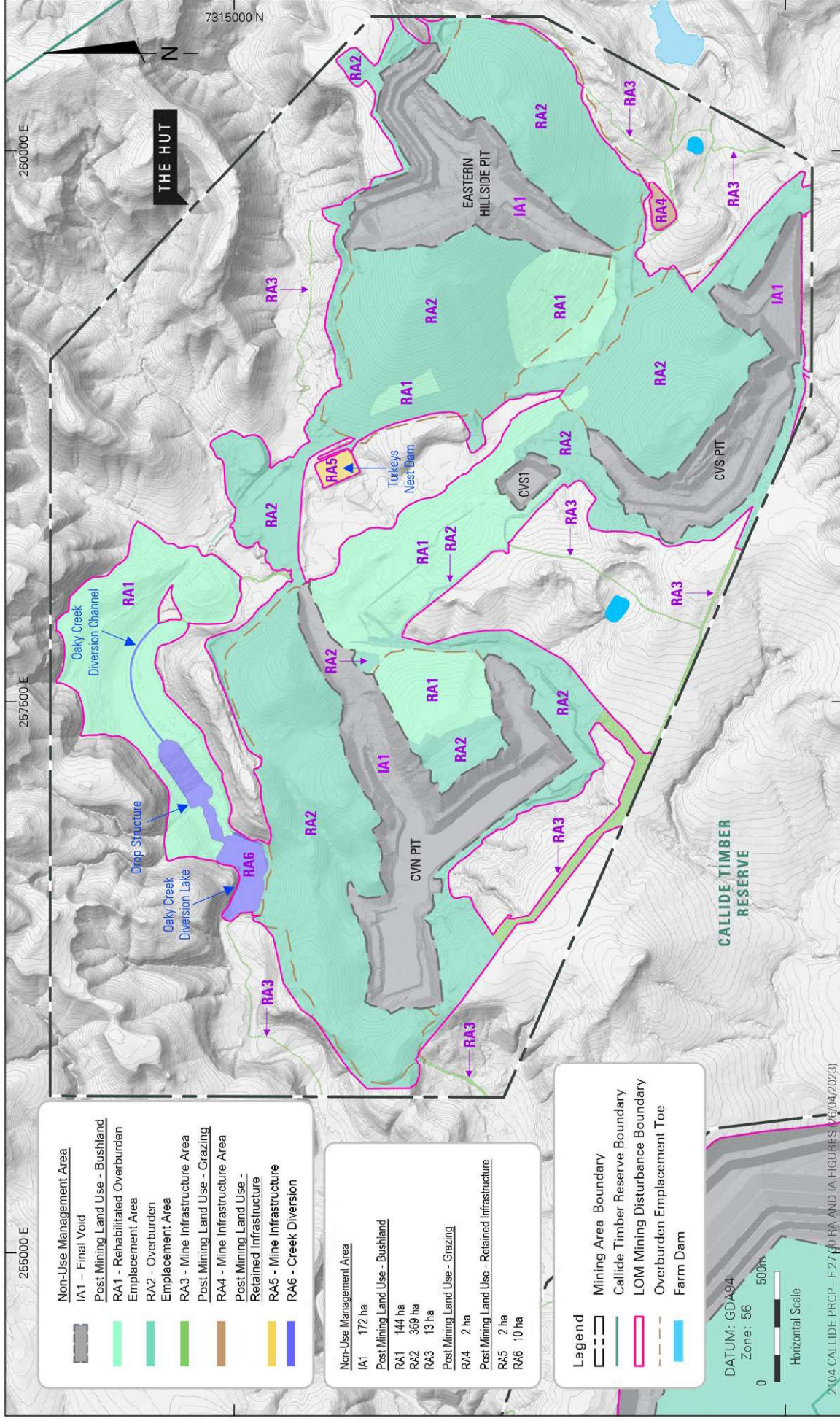


Source: Anglo Coal (Callide Management) Pty Ltd (2003). Callide Mine Report on Rehabilitation Acceptance (Completion) Criteria.

CALLIDE MINE







CALLIDE MINE PRCP

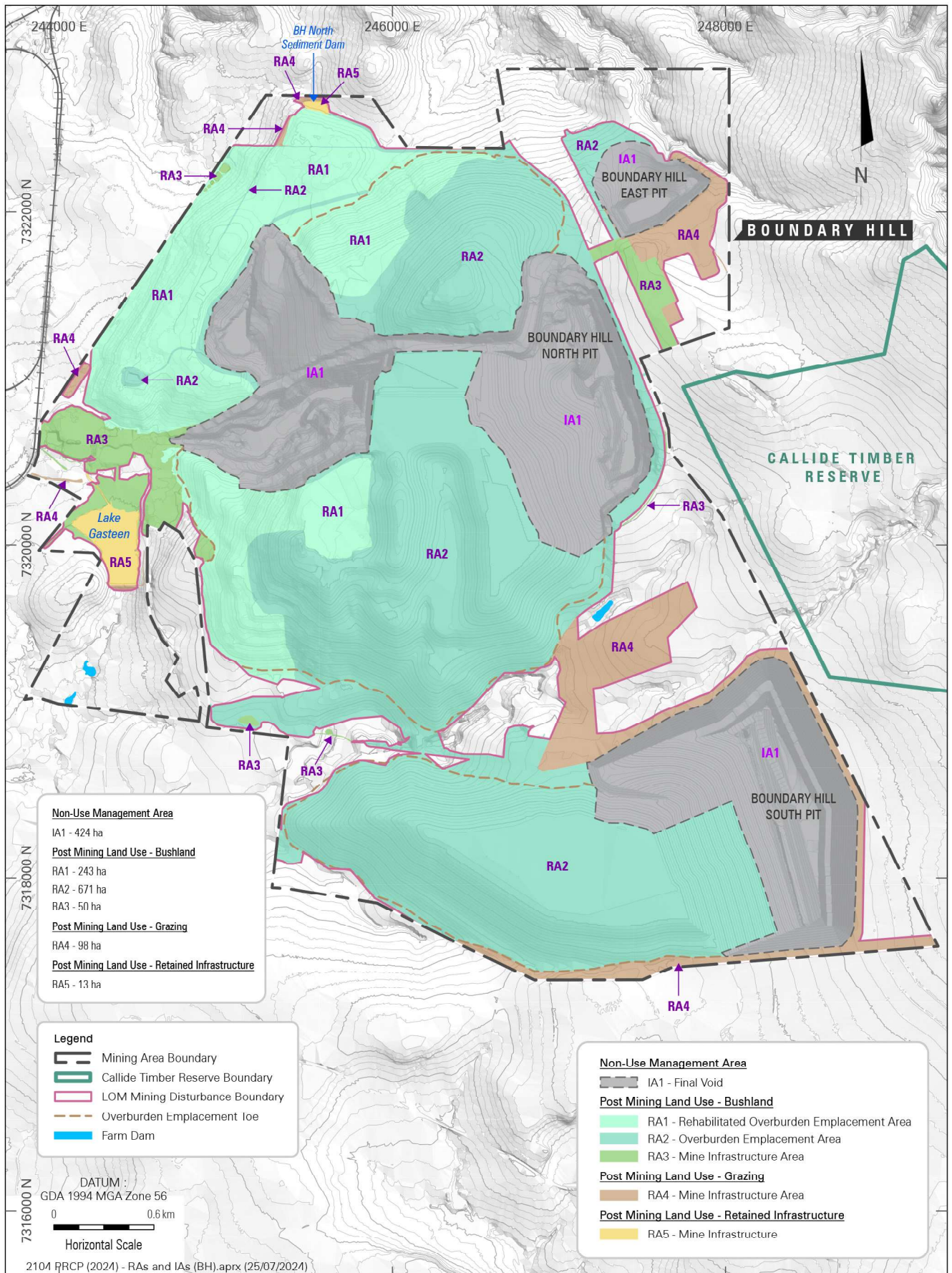
The Hut Mining Area

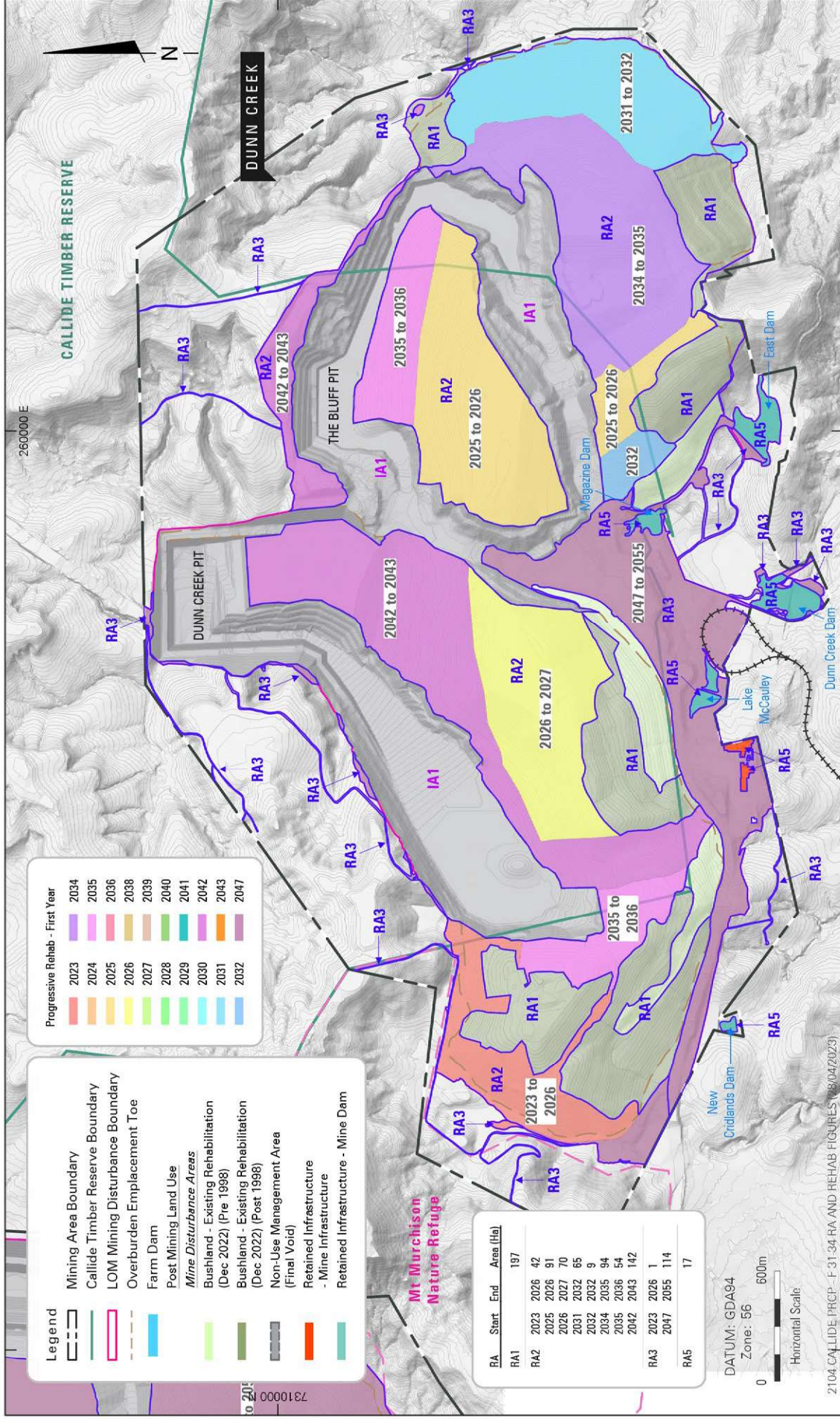
- Rehabilitation Areas (RAs) and Improvement Areas (IAs)

FIGURE 29



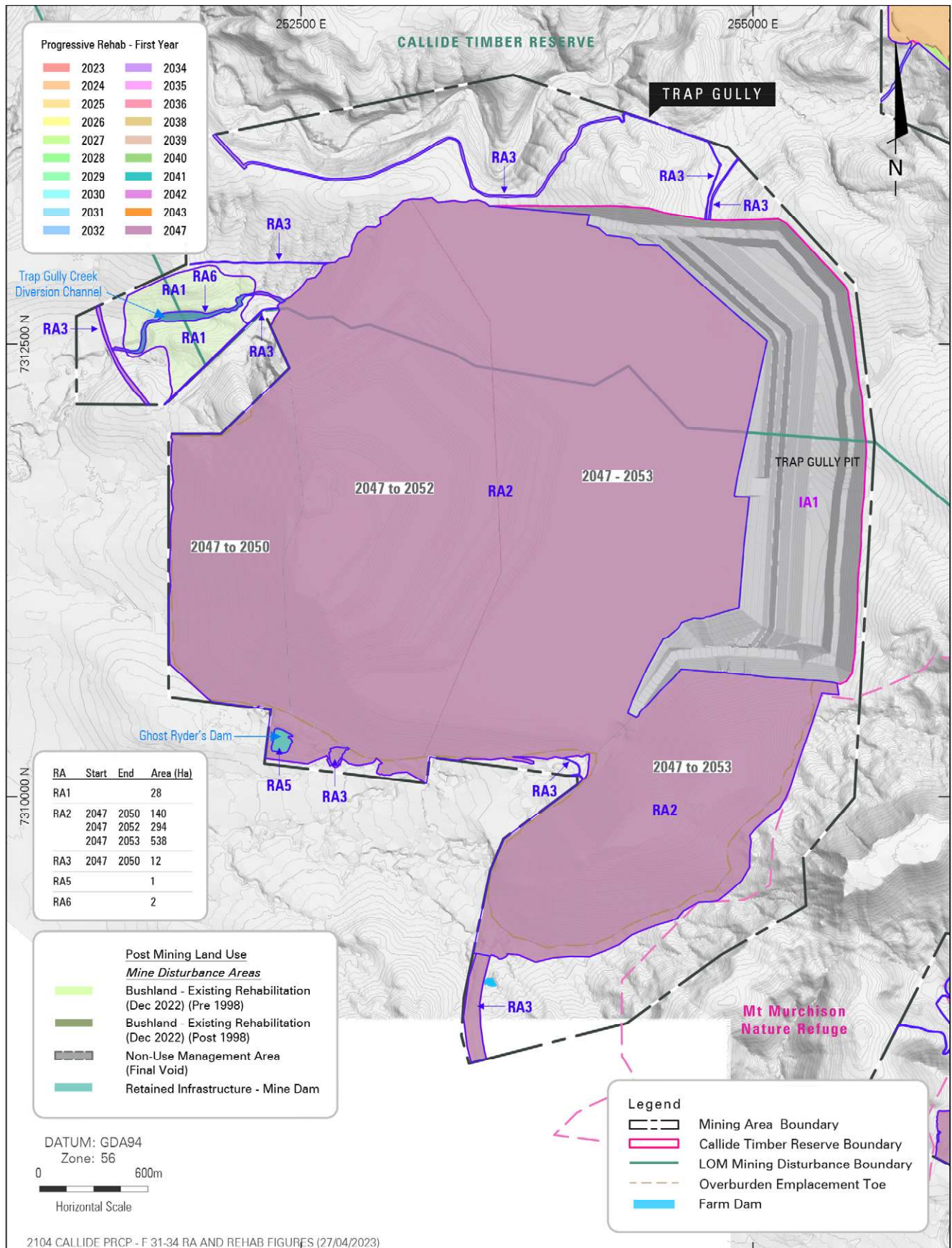
BATCHFIRE CALLIDE





CALLIDE MINE PRCP
Dunn Creek Mining Area
- Progressive Rehabilitation

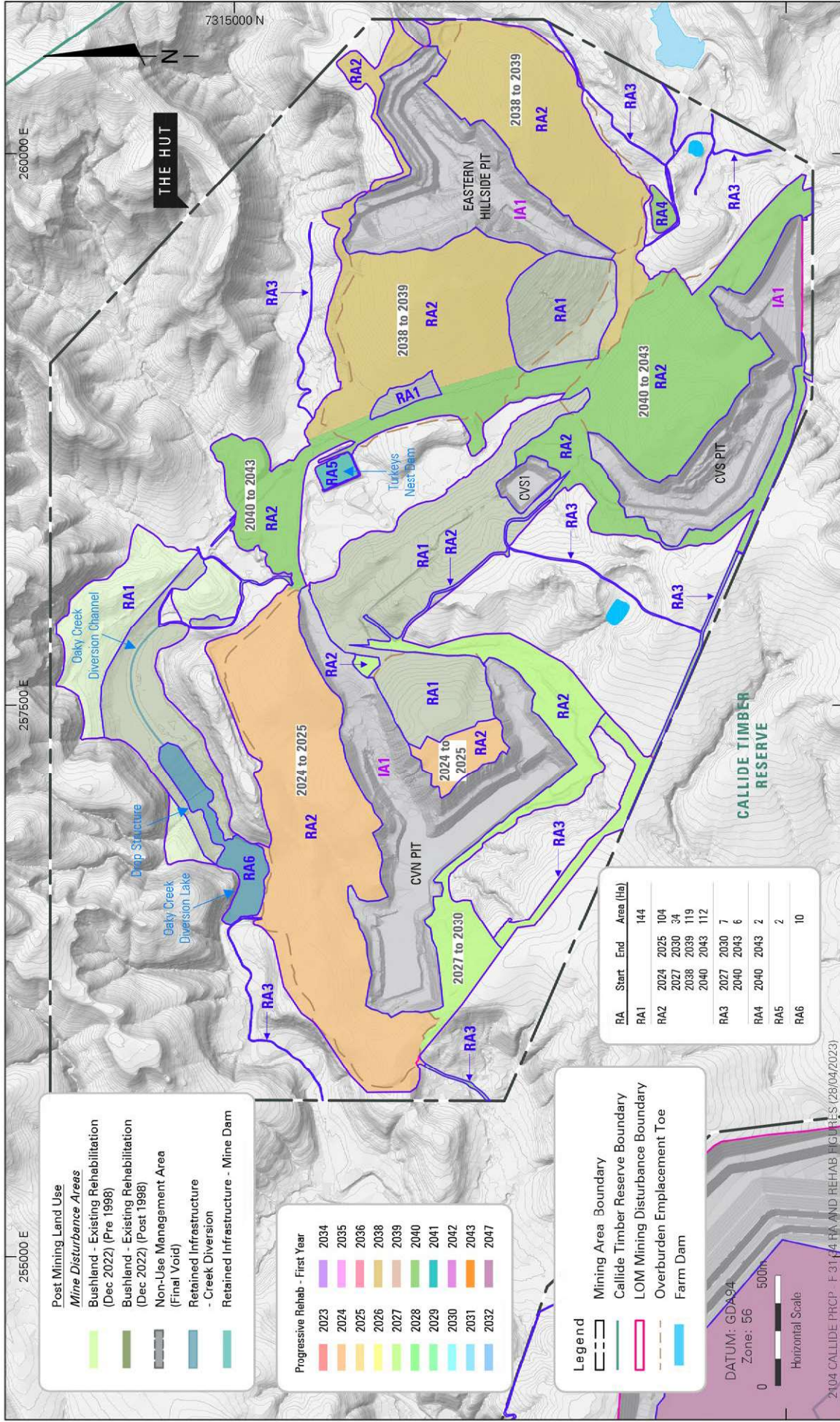
FIGURE 31



CALLIDE MINE PRCP

Trap Gully Mining Area
- Progressive Rehabilitation

FIGURE 32



CALLIDE MINE PRCP
The Hut Mining Area
- Progressive Rehabilitation

FIGURE 33

