

## **Bushfire Risk Assessment**

# COWAL GOLD OPERATIONS OPEN PIT CONTINUATION PROJECT

## State Significant Development SSD-42917792

Lake Cowal, NSW

Applicant: Evolution Mining (Cowal) Pty Limited

Mar 2023







#### Prepared for:

Environmental Impact Statement (EIS) by EMM Consulting for the applicant Evolution Mining (Cowal) Pty Limited

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## **Contents**

1.	INTR	ODUCTION	1
	1.1	PROJECT BACKGROUND	1
	1.2	PROJECT OVERVIEW	2
	1.3	BUSHFIRE PLANNING OVERVIEW	3
	1.4	APPROVAL PATHWAY	4
	1.5	LEGISLATION AND GUIDELINES	5
		1.5.1 Rural Fires Act 1997 – Duty 1 Section 63	5
		1.5.2 NSW RFS Planning for Bushfire Protection 2019	6
2.	SITE	DETAILS	7
	2.1	PROJECT ENVIRONMENT	7
	2.2	BUSHFIRE RISK	7
	2.3	FIRE SEASON & WEATHER	7
		2.3.1 Fire Danger Rating and Climate Change	8
		2.3.2 Bushfire Frequency & Ignition Sources	8
	2.4	VEGETATION	9
	2.5	TOPOGRAPHY AND SLOPES	9
3.	REC	OMMENDED BUSHFIRE MITIGATION STRATEGIES	10
	3.1	ASSET PROTECTION ZONES	10
	3.2	LANDSCAPE MAINTENANCE	11
	3.3	BUILDING DESIGN	12
	3.4	WATER SUPPLY	12
	3.5	ACCESS MANAGEMENT	13
		3.5.1 Alternate Access	14
	3.6	EMERGENCY MANAGEMENT PLANNING	14
		3.6.1 Monitor Fire Mitigation Works	15
	3.7	SUMMARY OF RECOMMENDATIONS	15
4.	REF	ERENCES	17
Λ <b>Т</b>		ENT DIA MARC	40



## 1. INTRODUCTION

EMM Consulting Pty Ltd (EMM) on behalf of the applicant Evolution Mining (Cowal) Pty Limited (Evolution) have engaged Cool Burn Fire and Ecology to prepare the Bushfire Risk Assessment to support the Environmental Impact Statement (EIS) for the Cowal Gold Operations Open Pit Continuation Project, a State Significant Development project SSD-42917792.

The Planning Secretary's Environmental Assessment Requirements (SEARs) has identified bushfire hazard as a key issue that requires 'an assessment of the likely risks to public safety specific to the bushfire risk'.

This bushfire threat assessment report has been prepared to:

- Inform the relevant stakeholders of the potential bushfire risk to public safety
- Recommends actions to mitigate the risk to an acceptable level commensurate with the bushfire risk, and
- Demonstrate how the Project meets the aims and objective NSW Rural Fire Service guidelines 'Planning for Bushfire Protection 2019' (PBP 2019).

Cool Burn Pty Ltd is recognised by the NSW Rural Fire Service (NSW RFS) and Fire Protection Association Australia (FPAA) as a suitably qualified consultant in bush fire risk assessment.

## 1.1 PROJECT BACKGROUND

Evolution is the owner and operator of Cowal Gold Operations (CGO), an existing open pit and underground gold mine approximately 38 kilometres (km) north-east of West Wyalong, in the central west region of New South Wales (NSW).

CGO is located on the traditional lands of the Wiradjuri People and is immediately adjacent to the western foreshore of Lake Cowal, which is an ephemeral waterbody. The existing CGO mine is shown at a regional scale in Figure 1 in Attachment 1.



CGO was first approved in 1999, and open pit mining operations commenced in 2005. Underground mining operations were approved in 2021 and development works to enable underground mining are underway.

This bushfire assessment report forms part of the EIS. It documents the assessment methods, results and the initiatives that would be built into the project design to avoid and minimise bushfire impacts, and the additional mitigation and management measures proposed to address residual impacts which cannot be avoided.

## 1.2 PROJECT OVERVIEW

Evolution is seeking approval for further open pit mining operations at CGO through the Open Pit Continuation Project (the Project). The Project primarily seeks to continue the open pit operations by approximately 10 years to 2036 and extend the total mine life by approximately two years to 2042.

This will involve further development of the existing E42 Pit and the development of open pit mining in three adjacent orebodies, known as 'E46', 'GR' and 'E41'. It is noted that the three adjacent ore bodies are within the existing mining lease (ML 1535). No change to the approved ore processing rate of 9.8 Mt per annum is proposed.

Other than the changes to existing approved activities as set out above, all activities that are currently approved under the existing Ministerial development consents are intended to continue. The existing activities approved under the consents are described in Chapter 3 of the EIS.

A detailed description of the Project is contained in Chapter 4 of EIS and a conceptual Project layout is shown in Figure 4. The project comprises the following key components:

- the continued operation of activities as approved under DA14/98 and SSD 10367;
- development of three new satellite open pits (the 'E46', 'GR' and 'E41' pits) to the north and south of the existing open pit, within the current approved mining lease;
- extending the existing open pit to the east and south via a 'cutback' within the current approved mine lease;
- extending open pit mining operations by approximately 10 years to 2036 and total mine life by approximately 2 years to 2042;
- expansion of the IWL to accommodate life of mine tailings;



- extension of the lake protection bund (LPB) system to provide continued separation and mutual protection between Lake Cowal and the mine;
- backfilling of one of the new satellite open pits (E46) with waste rock and establishment
  of a new waste rock emplacement on the backfilled pit to minimise the additional area
  required for waste rock disposal;
- expansion of the footprint of the existing WRE areas to accommodate additional waste rock;
- development of additional topsoil and subsoil stockpiles to accommodate materials from pre-stripping, with materials to be reused during progressive mine rehabilitation;
- upgrades to existing surface water drainage system, to assist with on-site water management and maximise on-site water conservation;
- modification of internal site access and haul roads;
- development of new water storages and relocation of some components of the surface water drainage system; and
- modification and relocation of some existing auxiliary mining infrastructure.

The Project will not change existing ore processing rates or methods, tailings disposal methods, main site access, water supply sources or hours of operation. The Project will also retain the existing open pit mining workforce.

## 1.3 BUSHFIRE PLANNING OVERVIEW

The EIS must address specific key issues with the level of assessment of likely impacts proportionate to the significance, and within the context of the development and the surrounding environment and having regard to applicable NSW Government policies and guidelines. The relevant NSW Government policy and guidelines for bushfire management are:

- Rural Fires Act 1997
- Planning for Bush Fire Protection 2019 (PBP)

The bushfire risk assessment aims to address the requirements of the SEARs (SSD-42917792) Key Issue of Hazards including 'the likely risk to public safety, paying particular attention to bushfire risks'.

Although the Project area is not mapped as within bushfire prone land(BPL) as detailed in Figure 2, the Project biodiversity offset sites have mapped BPL and the surrounding grasslands, agricultural areas and Lake Cowal have capacity for vegetation growth and development such



that they could sustain a bushfire, and subsequently constitute BPL. Bushfire risk would be considered in the context of the *Rural Fires Act 1997* at all levels of the development process, from project design, construction, operation through to decommissioning. There is a requirement to understand:

- Bushfire history and bushfire risk to the community landscape.
- Does the proposed development affect the bushfire risk of the project area?
- What is the potential bushfire risk toward the Project and assets (life and safety, the infrastructure and the environment)?
- What are the applicable bushfire protection measures (Plate 1) that can be implemented to reduce the bushfire risk of the Project to a level that is deemed acceptable?

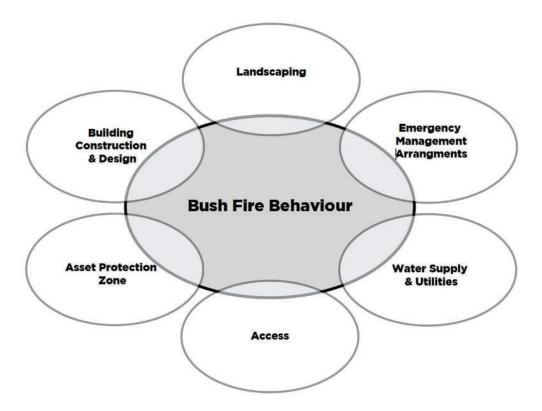


Plate 1: Bushfire Protection Measures (NSW RFS 2019)

## 1.4 APPROVAL PATHWAY

The Project will be assessed as a State Significant Development (SSD). Accordingly, an EIS for the Project is required under the NSW Environmental Planning and Assessment Act 1979 (EP&A Act). SEARs were issued 10 June 2022.



It is noted that the development does not require a bushfire safety authority from the NSW RFS (under section 100B of the Rural Fires Act), however, the development will need to demonstrate acceptable bushfire protection, and require consultation with the NSW RFS and stakeholders (e.g NSW Government Planning and Infrastructure, Local Government/Council, neighbouring land managers).

## 1.5 LEGISLATION AND GUIDELINES

This bushfire risk assessment acknowledges the *NSW Rural Fires Act 1997* as a legal requirement, and the Planning for Bushfire Protection 2019 (PBP) as a guideline to assess the suitability/performance of the project.

## 1.5.1 Rural Fires Act 1997 – Duty 1 Section 63

Statutory obligations under the *Rural Fires Act 1997* details the duty to prevent bushfire, to manage and mitigate the risks associated with bushfire. Land managers are required to take practical steps to prevent the occurrence of and to minimise the spread of bushfires on, or from, land under their control.

RF Act Part 4 Bushfire prevention: Sect. 63: Duties of public authorities and owners and occupiers of land to prevent bush fires:

- (1) It is the duty of a public authority to take the notified steps (if any) and any other practicable steps to prevent the occurrence of bush fires on, and to minimise the danger of the spread of a bush fire on or from:
  - a. any land vested in or under its control or management, or
  - b. any highway, road, street, land or thoroughfare, the maintenance of which is charged on the authority.
- (2) It is the duty of the owner or occupier of land to take the notified steps (if any) and any other practicable steps to prevent the occurrence of bush fires on, and to minimise the danger of the spread of bush fires on or from, that land.
- (3) A public authority or owner or occupier is liable for the costs incurred by it in performing the duty imposed by this section.



- (4) The Bush Fire Co-ordinating Committee may advise a person on whom a duty is imposed by this section of any steps (whether or not included in a bush fire risk management plan) that are necessary for the proper performance of the duty.
- (5) In this section: "notified steps" means:
  - c. any steps that the Bush Fire Co-ordinating Committee advises a person to take under subsection (4), or
  - d. any steps that are included in a bush fire risk management plan applying to the land.

## 1.5.2 NSW RFS Planning for Bushfire Protection 2019

Planning for Bush Fire Protection 2019 (PBP) is applicable to all development on bush fire prone land (BPL) in NSW. To comply with PBP the Project would require the following conditions to be met:

- Satisfy the aim and objectives of PBP
- Consider issues listed within PBP for the specific purpose for the Project (Chapter 8.3.6)
- Propose an appropriate combination of bushfire protection measures.

The overall aim of PBP is to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to Project objectives, site characteristics and protection of the environment.

The objectives of PBP are to:

- Afford buildings and their occupants protection from exposure to a bush fire
- Provide for a defendable space to be located around buildings and infrastructure
- Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings
- Ensure that appropriate operational access and egress for emergency service personnel and occupants is available
- Provide for ongoing management and maintenance of BPMs; and
- Ensure that utility services are adequate to meet the needs of firefighters.

PBP Chapter 8.3.6 states that where mining and associated activities are carried out on BPL, consideration should be given to any hazards and risks associated with bush fire. It may be necessary to implement measures to control and manage any identified hazards and risks.



## 2. SITE DETAILS

## 2.1 PROJECT ENVIRONMENT

The Project would extend on an existing gold mining operation, located within a broader rural landscape, within the Bland Shire Council LGA, on landholdings zoned RU1 Primary Production (Bland LEP 2011).

Land surrounding the Project site is characterised by rolling cropping and grazing land on floodplains, isolated wooded hills, and a large open expanse of shallow freshwater wetlands.

Neighbouring landholdings are primarily managed for agricultural, and the community.

The townships of West Wyalong, Condobolin and Forbes are the major service centres in proximity (<50km) to the Project locality. These centres have NSW RFS brigades and are designated Neighbourhood Safer Places (NSP). NSP are a place of last resort during a bush fire emergency.

## 2.2 BUSHFIRE RISK

The project is located within the Bland Temora Bushfire Management Committee region (BFMC) and is covered by the Bland Temora Bush Fire Risk Management Plan 2020.

The Cowal Gold Mine is referenced in the Bland Temora Bush Fire Risk Management Plan as:

 Asset ID 27 (Evolution Gold Mine - Lake Cowal): Unlikely (likelihood): Major (consequence): Medium risk: priority 4: Treatment #17 (Asset Protection Zone).

## 2.3 FIRE SEASON & WEATHER

The typical bushfire danger period commences from the 1st October to 31st March. This may be altered in consultation with Group Officer, Captains, Stakeholders and the BFMC.

The typical/average bushfire season climate in the Bland Temora Zone experiences temperatures between 26 – 34 degrees Celsius with some periods exceeding 35 degrees, relative humidity of less than 15% and dry westerly winds. This pattern will generally occur from October to March.



Rainfall within the area is commonly recognised as being 584mm per year (average annual rainfall recorded at CGO from 2007 to July 2022 averaged 456 mm, ATC Williams, 2023). Rainfall in the summer months is usually attached with storm events producing short heavy downpours, resulting in minor to local short term flooding.

Days of increased fire danger weather will generally occur during January and February. Prevailing winds associated with the bushfire season are north-westerly winds accompanied by high daytime temperatures and low humidity.

## 2.3.1 Fire Danger Rating and Climate Change

Bland Shire Council LGA falls within the South-Western NSW RFS Fire Weather District and has a current Fire Danger Rating (FDR) classification of:

- Forest = FFDR 80
- Grassland = GFDR 110

Over the next 30-40 years (expected lifespan of the project), the climate is projected to change, potentially resulting in more days of higher fire danger than previously experienced, and projected FFDR and GFDR exceeding current levels (Douglas, G. 2017). Planning for long term infrastructure should include consideration of the potential for increased fire danger and potentially higher fire frequencies.

## 2.3.2 Bushfire Frequency & Ignition Sources

Historically, the region has experienced an average of 150 bushfires per year with an average of 3 fires per year constituting major fires. Recent fires recorded in the locality in close proximity to the Project (SEED, geo.seed.nsw.gov.au):

• 2006-07 Bogey Fire (within 10km north, ignition source unknown)

The Cowal Gold Operations experienced a fire in 2017 on the south east lake foreshore. Fire ignition was from lightning strike, and burnt for a several days, reigniting due to the fuel load associated with vegetation matter thickness on the ground (pers. Comm. T Rawson, Cowal Gold).

The predominate sources of bushfire ignition in the area are:

Dry lightning



## 3. RECOMMENDED STRATEGIES

## BUSHFIRE

**MITIGATION** 

The Project owner/operator (Evolution Mining) is responsible for the actions associated with fire management and risk mitigation associated with the existing and proposed extension Project, across and within the Project landholdings. The following risk mitigation actions for the project have been developed to achieve compliance with the specifications and requirements of Section 8.3.6 of PBP for mining activities.

Standard bushfire protection measures (as per Plate 1 above) include:

- Asset Protection Zone (APZ) and landscape management actions required to protect assets and prevent the spread of fire (including, but not limited to fire control lines, slashing and mowing, potential grazing or agricultural activities for fuel management, landscaping and maintenance, property fire breaks).
- Building and construction requirements, commensurate with the purpose/use and constructions of the structures and, where applicable, the quantified bushfire attack level (BAL) ratings.
- Access provisions (e.g. public access, property access and fire trails).
- Water supply and utilities (power) provisions.
- Emergency management arrangements, consistent with the relevant emergency services requirements.

## 3.1 ASSET PROTECTION ZONES

The BFRMP recognises APZ as a key treatment for bushfire risk. An APZ does not eliminate the fire risk but provides a buffer zone between a bushfire hazard (grassland) and an asset, allows a defendable space for fire suppression and aims to avoid possible flame contact and/or excessive radiant heat.

The location and width of an APZ may lessen the radiant heat and flame contact from a bushfire toward an asset to an extent where damage to the asset is reduced to an acceptable level and fire control is more feasible. An APZ also provides an area to prevent any fire occurring within infrastructure (e.g. electrical fire) to ignite and spread into the surrounding vegetation and subsequently be the cause for a bushfire.



It is recommended that a 10m APZ be established around any building or associated infrastructure that interfaces unmanaged vegetation. APZ specifications for mining should provide:

- A minimum 10m APZ to protect all structures and associated buildings/infrastructure. Note: 'Infrastructure' for the purposes of requiring APZ excludes road access to the site, power easements or other services to the site, and associated fencing. Temporary construction and laydown areas do not require specific APZ.
- Hazardous infrastructure and hazardous material will require greater APZ based on the
  potential radiant heat exposure and the asset vulnerability. As the Project is predominantly
  in a grassland vegetation area, the Grassland Deeming provisions can be referenced to
  determine an acceptable APZ:
  - o Where an APZ of 50m can be provided, no further BPMs are required
  - Where an APZ of 20-50m is provided, construction should consider equivalent BAL12.5 standards (AS3959)
- The APZ will be provided/constructed and maintained for the life of the development to the standard of an Inner Protection Areas (IPA) as outline within Appendix 4 of PBP and the NSW RFS document Standard for asset protection zones.

More information on APZ's can be found in Standards for APZ (NSW RFS). <a href="https://www.rfs.nsw.gov.au/">https://www.rfs.nsw.gov.au/</a> data/assets/pdf file/0010/13321/Standards-for-Asset-Protection-Zones.pdf

It is recommended that a Bushfire and Emergency Management Operation Plan (BEMOP) is prepared to prompt frequent APZ performance monitoring and management actions.

## 3.2 LANDSCAPE MAINTENANCE

Landscape maintenance includes around infrastructure and across the broader landscape, in a way to reduce fire intensity and rate of spread as it may approach a structure or structures. This would require community consultation (neighbours) and monitoring, as it would offer the wider community a higher level of bushfire protection.

The Project construction area will include access provision cleared of woody vegetation and can be maintained as fuel free area for the period of construction and operation. Additional to the access, fuel management in the rural area can be achieved in ongoing agricultural practices such as grazing, cropping etc.



It is recommended that a Bushfire Management Plan (existing) will be updated and will prompt annual fuel monitoring assessments carried out ahead of the fire season (e.g. monitor in August annually) and to identify the potential risk and mitigation actions is prepared to prompt frequent APZ performance monitoring and management actions.

#### 3.3 BUILDING DESIGN

There are no specific bushfire protection requirements for Class 5-8 and Class 10 buildings and infrastructure. The Project and ancillary infrastructure are inherently designed and constructed of fire resilient materials. As such, AS3959-2018 is not considered as a set of Deemed to Satisfy (DTS) provisions but should be considered when demonstrating how the Project meets the aims and objectives of PBP.

Hazardous and critical component infrastructure and materials can be designed and housed to both prevent risk from a bushfire and mitigate risk to cause a potential bushfire.

Construction of new buildings should consider the objective of the AS3959-2018 (to reduce the risk of ignition from a bushfire).

## 3.4 WATER SUPPLY

The existing Cowal Gold operations would benefit from a water supply dedicated for bush firefighting purposes. The existing operations are supported by fire hydrants across the site, which would be maintained and extended to support the new development Such a water supply should be provided at strategic locations within the Project area, having consideration for essential equipment and accessibility e.g. near a main entrance, close to infrastructure.

For example only, a steel tank supply dedicated for Project and local community fire mitigation would provide suitable emergency water supplies (example provided Plate 2). Fast fill options and easily accessible fill points should be provided such as 65mm Storz fittings for hydrant stands or direct link to tanks. The tank hardstand will have access provisions capable of supporting heavy vehicle weight and manoeuvrability (e.g. a fully loaded Cat 1 fire truck -23 tonne) as detailed in Appendix 3 PBP.



It is recommended that water supplies and access points be detailed in an updated Bushfire Management Plan.



Plate 2: Example of water storage for Project and community firefighting response

## 3.5 ACCESS MANAGEMENT

Clear and safe access is critical for bushfire emergency response, safe firefighting and evacuation.

Main site access will be provided from the west via Bonehams Lane and Lake Cowal Road, which are existing sealed roads, suitable for heavy vehicle access. These are public roads and will provide a >8m wide carriageway for the life of the project.

The Project will require heavy vehicle access to support the mining operations. It is assumed and recommended that this construction access is maintained for the life of the development. As such the access (including internal access roads and infrastructure perimeter road) will be inherently capable of supporting Cat-1 fire vehicle access consistent with the following NSW RFS Fire Trail Standards (NSW RFS 2019):



- The width and capacity of the access provides for safe, reliable and unobstructed passage by a Cat 1 firefighting vehicle within acceptable operational limits:
  - The trafficable surface has a minimum width of 4 m (planned double lane access).
  - o The access has a minimum 4m height clearance overhead, free from any obstructions.
  - o Curves inner radius 6m.
  - o Crossfall less than 6 degrees.
  - Surfaces and crossing structures are capable of carrying vehicles with a gross vehicle mass of 15 tonnes and an axle load of 9 tonnes.
  - Turnaround provisions of 22m diameter or T junction at the termination of each access track and in position of the dedicated water supply tanks.
  - o Drainage and wet areas crossing are trafficable (where possible) or avoided.

#### 3.5.1 Alternate Access

The Project provides multiple opportunity for alternate access for emergency management. This access would be made suitable for heavy vehicle access (i.e. Cat 1 fire fighting vehicle standard).

It is recommended that the updated Bushfire Management Plan will detail access roads that would be used in an emergency, including evacuation routes to nearest mustering point, safe refuge (or NSP).

### 3.6 EMERGENCY MANAGEMENT PLANNING

Emergency management is required prior to Project construction and will be relevant during construction and operations.

It is recommended that the Project update/prepare and implements a Bushfire Management Plan which will detail the mitigation measures associated with the construction and operation of the Project. The Bushfire Management Plan will include:

- detailed measures to prevent or mitigate fires igniting e.g.
  - o hot works permits for works which may result in the ignition of fire.
  - hot works should not to be carried on Total Fire Ban days, or when local authorities or the Site Manager deems weather conditions too dangerous.
- 24-hour emergency contact details including alternative telephone contact.



- inductions for construction personnel on bushfire risk management and other fire related risks that could present at the project site, the project bushfire contingency plan and emergency response procedures.
- availability of fire-suppression equipment, access, and water including site infrastructure plans and site access and internal road plans.
- location of hazards (physical, chemical, electrical) that will impact on the firefighting operations and procedures to manage any identified hazards during firefighting.
- storage and maintenance of fuels and other flammable materials.
- notification of the local NSW RFS Fire Control Centre for any works that have the potential
  to ignite surrounding vegetation, proposed to be carried out during a bushfire fire danger
  period to ensure weather conditions are appropriate.
- appropriate bush fire emergency management planning.
- additional matters as agreed and required by the NSW RFS District Office.

## 3.6.1 Monitor Fire Mitigation Works

Annual monitoring of the recommended fire mitigation actions will ensure the actions are maintained to the specified performance criteria (if relevant). The preparation or update of a Bushfire Management Plan for the site will guide annual monitoring of the fire mitigation works for the mining operations and surrounding landholding, and will involve the following:

- Access performance criteria (against the recommended performance criteria detailed in this report and NSW Fire Trail Standards).
- APZ/setbacks and landscaping performance criteria (managed areas and surrounding fuel loads) as per the recommended performance criteria detailed in this report.
- Water supplies and water supply access conditions.

Monitoring should be conducted ahead of the annual declared bushfire season (e.g. August) by appropriately qualified staff or contractor, and reported to the Project Site Environmental Manager.

## 3.7 SUMMARY OF RECOMMENDATIONS

Table 2 summarises the bushfire mitigation measures and recommendations made in this report.

With the provisions of these recommendations, the Project would comply with the aims and objectives and specific performance criteria of PBP 2019.



Table 2 Summary of bushfire protection recommendations for Cowal Gold Operations Open Pit Continuation Project

Bushfire Protection Measure	Section	Summary of Recommendation	
Asset Protection Zone (APZ)	3.1	Minimum APZ 10m wide to be installed around any development footprint.  An APZ of 50m should be provided where practical  APZ to be managed as Inner Protection Area (IPA) for the life of development.	
Landscaping	3.2	APZ management to manage fuel loads as required.  An updated Bushfire Management Plan to guide landscape and APZ management, monitor and manage potential fuel loads surrounding the Project areas.	
Building Design	3.3	All new buildings associated with this project will reduce the risk of ignition from a bushfire (AS3959-2018).	
Water Supplies	3.4	Water supplies to be maintained and detailed in an updated Bushfire Management Plan.	
Access	3.5	Main access, internal roads and alternate egress to provide for safe, reliable, and unobstructed passage by a Cat 1 firefighting vehicle as per Section 3.5 of this document and maintained for the life of the development and detailed in an updated Bushfire Management Plan.	
	3.6	A Bushfire Management Plan should be prepared for the whole Cowal Gold operations and incorporate the biodiversity offset sites landholdings.	
Emergency Management		The Plan should be developed in consultation with the local NSW RFS District Office and communicated to relevant stakeholders.	
Emergency management		A Bush Management Plan will guide annual monitoring of the fire mitigation works for the mining operations and surrounding landholding:	
		<ul> <li>APZ and landscape fuel load management</li> <li>Access provisions</li> <li>Water supplies</li> </ul>	



## 4. REFERENCES

ATC Williams, 2023. Cowal Gold Operations Open Pit Continuation Project Surface Water Assessment

Bland Temora Bush Fire Risk Management Plan 2020. NSW RFS Bland Temora Bushfire Management Committee (BFMC)

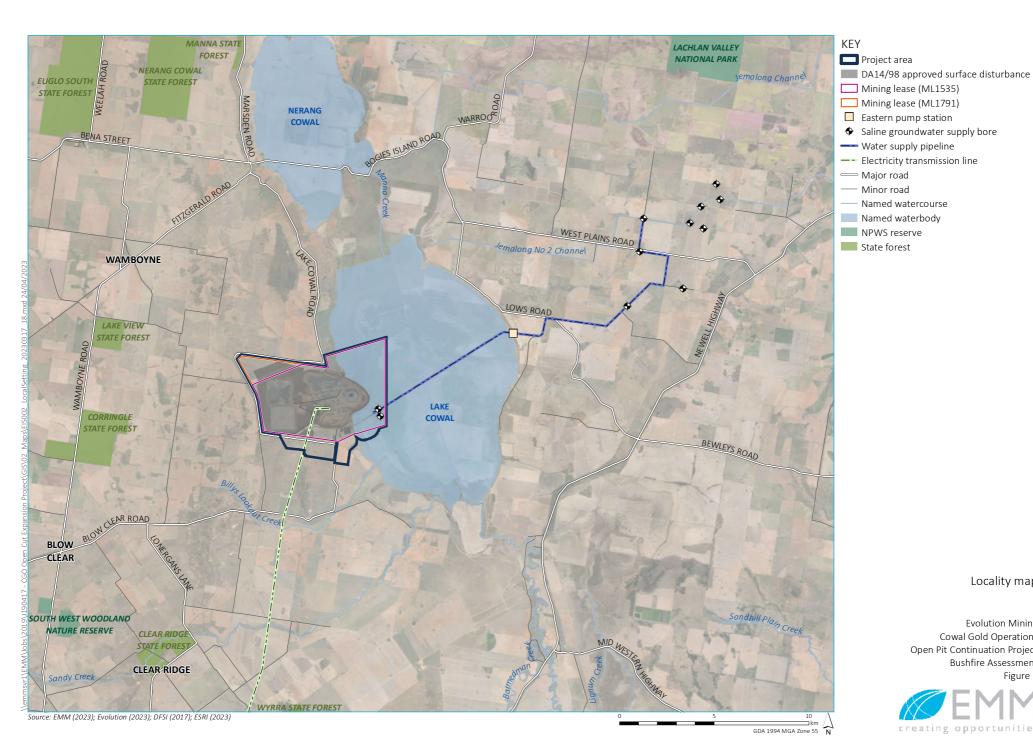
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NSW RFS Fire Trail Standards V1.1. (March 2019).

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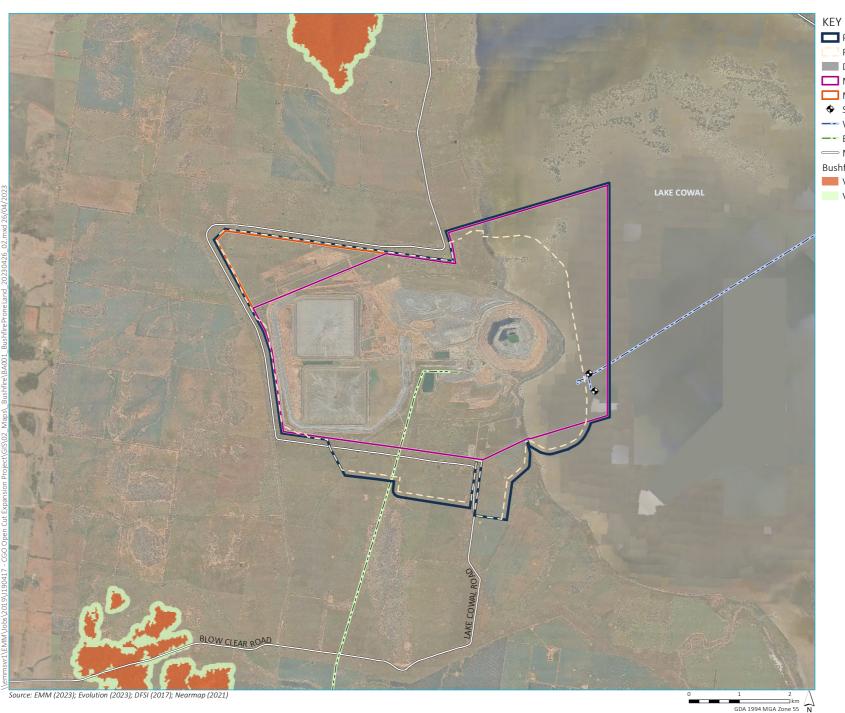
## ATTACHMENT 1. BTA MAPS



## Locality map

**Evolution Mining** Cowal Gold Operations Open Pit Continuation Project **Bushfire Assessment** Figure 1





Project area

Proposed disturbance footprint

DA14/98 approved surface disturbance

Mining lease (ML1535)

Mining lease (ML1791)

• Saline groundwater supply bore

— Water supply pipeline

--- Electricity transmission line

── Major road

Bushfire prone land

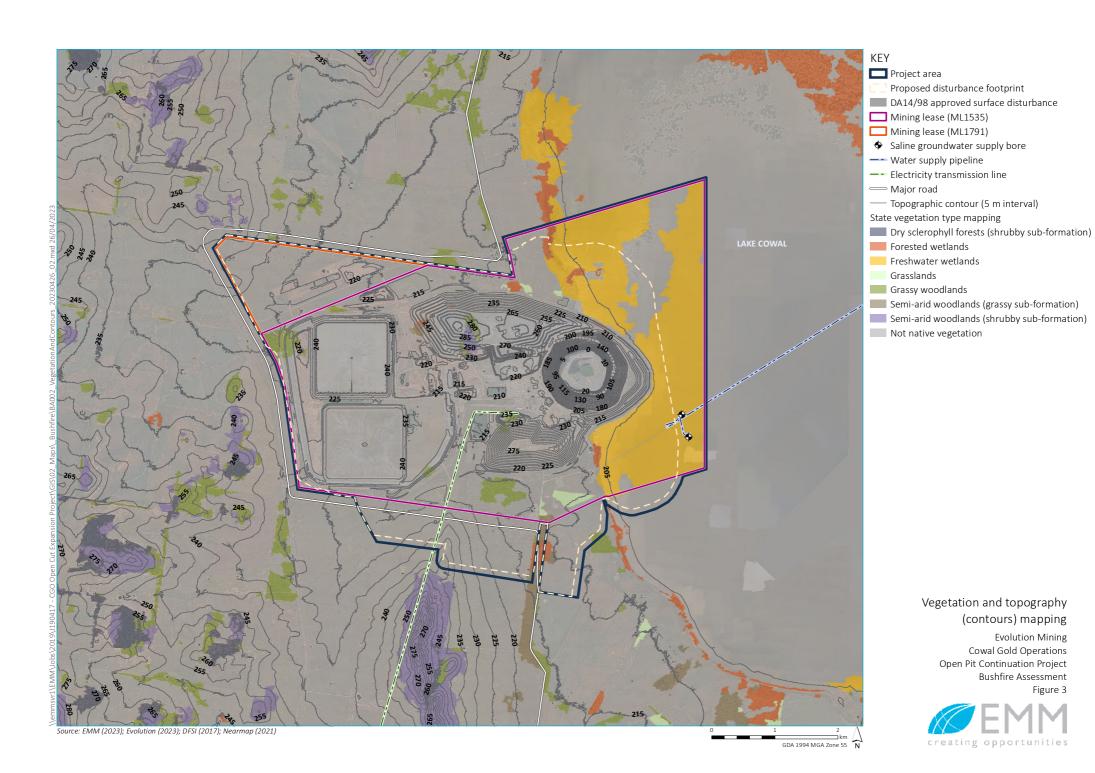
Vegetation category 1

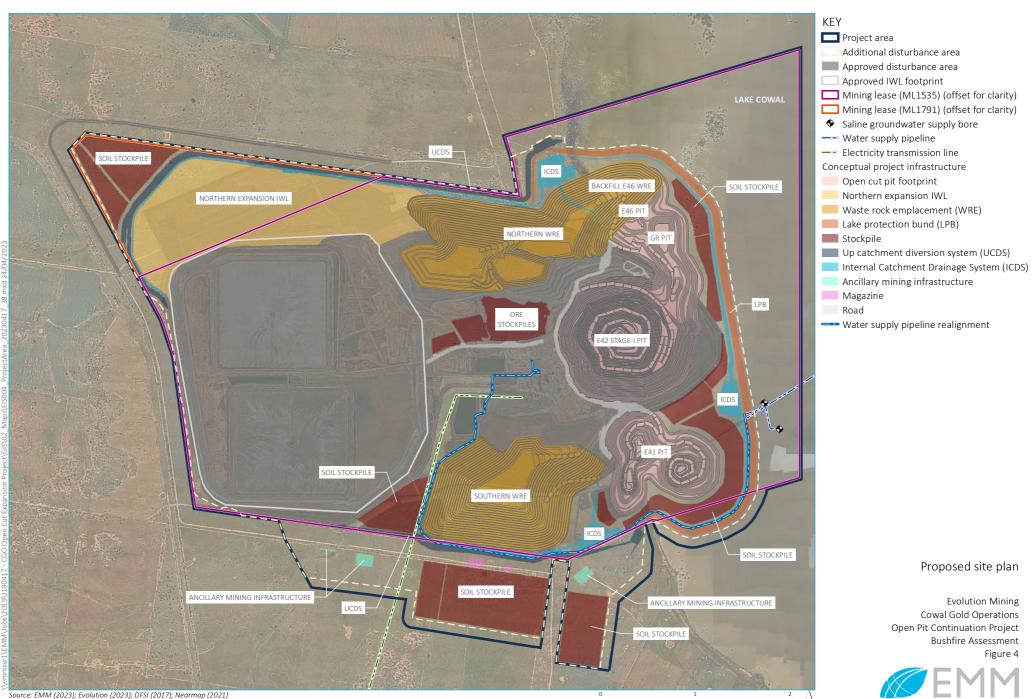
Vegetation buffer

#### Bushfire prone land map

**Evolution Mining** Cowal Gold Operations Open Pit Continuation Project **Bushfire Assessment** Figure 2







#### Proposed site plan

**Evolution Mining** Cowal Gold Operations Open Pit Continuation Project **Bushfire Assessment** Figure 4



GDA 1994 MGA Zone 55 N