



Illawarra Coal



DENDROBIUM MINE BUSHFIRE MANAGEMENT PLAN

DENMP0034

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REVIEW HISTORY

| Revision | Description of Changes | Date | Approved |
|----------|---|----------|----------------|
| 0 | Draft submitted | Nov 04 | Bryan Quinn |
| 1.0 | Incorporating comments on draft | Feb 05 | David Oliver |
| 2.0 | Three yearly review as required by Development Consent | Mar 08 | David Oliver |
| 3.0 | Review as required by the revised Development Consent (issued 8 December 2008) | April 09 | Wayne Price |
| 4.0 | Three yearly reviews in line with Development Consent conditions. Minor changes to roles and responsibilities section, references. | Mar 12 | Wayne Price |
| 5.0 | The following changes have been made: <ul style="list-style-type: none"> Updated roles and responsibilities References to parent company changed Update in accordance with Development Consent | Jan 2018 | Bryony Andrews |
| 5.1 | Updated link to the Dendrobium Mine Development Consent | May 2018 | |
| 6.0 | The following changes have been made: <ul style="list-style-type: none"> Updated roles and responsibilities References to parent company changed Update in accordance with Development Consent | June 18 | Peter McMillan |

Persons involved in the review of this document include:

| Name | | |
|-------------------|----------------------------|-----------------|
| Frank Cook | Specialist Land Management | Illawarra Coal |
| Peter McMillan | Environmental Supervisor | Dendrobium Mine |
| Michelle Grierson | Environment Officer | Illawarra Coal |

Representatives from external organisations and regulatory agencies involved in the development of this document include:

| Title | Organisation |
|--------------------------------|--------------------|
| Community Safety Officer | Rural Fire Service |
| Captain Mt Kembla Fire Brigade | Rural Fire Service |
| Catchment Officer | WaterNSW |

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1 INTRODUCTION

1.1 Background

This Bushfire Management Plan (BMP) covers the Dendrobium Mine and associated facilities, adjacent land and local community and environment.

This document is a module of the Environmental Management System (EMS) document.

1.2 Scope

The scope of this BMP includes the following:

- The Dendrobium Pit Top;
- Kemira Valley Coal Loading Facility (KVCLF);
- Ventilation Shaft Number 1 (located within the Metropolitan Special Area administered by WaterNSW);
- Ventilation Shafts Number 2 and 3 (located within the Metropolitan Special Area and within Mining Lease ML1566); and
- Local community and environment including adjacent lands, property, infrastructure, bushland and other natural environmental features.

2 OBJECTIVES OF THE PLAN

The objectives of the BMP are to:

- Comply with the Dendrobium Development Consent;
- Comply with relevant legislative and other requirements related to bushfire management;
- Provide the frame work for management of bushfire risks;
- Detail the measures in place to protect company, public and private assets and the natural environment from the adverse impacts of uncontrolled wild fire;
- Describe bushfire hazard reduction measures;
- Outline the control measures to prevent spread of fire from Company premises to adjacent lands;
- Describe the communications, response and processes in place to manage bushfire emergencies;
- Describe bushfire protection zone management practices;
- Minimise the fire risks to personnel, the general community and fire-fighters;
- Protect the local WaterNSW lands, natural features and infrastructure from the adverse impacts of uncontrolled bushfire; and
- Cooperate with relevant bushfire services and other authorities in relation to bushfire management, bushfire hazard reduction and emergency response.

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3 RESPONSIBILITY

Implementation of the plan is the responsibility of the owners or occupiers (land managers) of the land on which the bushfire risk is situated. The Rural Fires Act 1997 imposes this responsibility on both public and private land managers.

The roles and responsibilities relating to bushfire management at Dendrobium and related facilities are summarised in Table 3-1.

Table 3-1: Roles and Responsibilities – Bushfire Management

| Responsibilities | Role |
|--|-----------------------------|
| Overall coordination and periodic review of this management plan | Environment Supervisor |
| Coordination of on-site hazard mitigation strategies in association with the Rural Fire Service | Environment Officer |
| Coordination of Bushfire risk assessments / inspections | Environment Officer |
| Coordination of off-site hazard mitigation strategies in association with the Rural Fire Service | Specialists Land Management |
| Coordination of off-site hazard mitigation strategies in association with the Rural Fire Service | Specialists Land Management |
| Participation in Bushfire risk assessments / inspections | Specialist Land Management |
| Inspection and maintenance of firefighting equipment, including mains, hydrants, extinguishers and hoses | Dendrobium Fire Officer |

4 LEGISLATIVE AND OTHER REQUIREMENTS

4.1 Legislative Requirements

Bushfire Risk Management is both governed and restricted by the:

- Rural Fires Act 1997, Work Health and Safety Act 2011, Local Bushfire Management Plans, Local Operation Plan;
- The NSW Rural Fire Service (by way of Fire Permits and Hazard Reduction Certificates); and
- NSW Rural Fire Service, Planning for Bushfire Protection Guideline (2006).

4.2 Development Consent Conditions

Schedule 4 of the *Dendrobium Mine Development Consent* contains several conditions relating to bushfire management. This management plan has been developed in accordance with the requirements of the consent.

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5 LOCATION CHARACTERISTICS AND SUMMARY OF BUSHFIRE RISK FACTORS

5.1 Local Conditions, Site Conditions and Bushfire History

5.1.1 Climate

Wollongong is characterised by a relatively humid, temperate, moderate climate with annual average rainfall of 1200 to 1500mm. Temperature and rainfall conditions vary across the City (East of the escarpment) with the climate on top of the escarpment tending towards warm temperate. The average monthly summer temperature over the City is 24°C and the average monthly winter temperature over the City is 17°C.

The escarpment has a significant influence on the climatic conditions of the region. There is significant variation in seasonal weather patterns, with the summer season being the prime bushfire period.

5.1.2 Vegetation

The Illawarra escarpment is characterised by dense vegetation and undergrowth with variable vegetation types and communities including rainforests, wet and dry sclerophyll forests, heath-land, as well as grasslands, pastoral lands and open woodlands.

The remote areas, steep slopes and dense bushland areas of the escarpment are difficult to readily access to manage uncontrolled bushfire. The locality of bushfire, available fuel load and the prevailing weather conditions are key factors influencing the significance of bushfire risk.

5.1.3 Bushfire History

The Dendrobium Mine site locality, escarpment and WaterNSW special areas have been subject to significant bushfires in the past. Significant fires occurred in September 1939, October 1968, November 1980, January 1994, December 1997, December 2000 and 2001. The most recent local uncontrolled bushfire event of significance occurred in the area around the Dendrobium No. 1 Ventilation Shaft area at Kembla Heights in September 2003. No loss of property or infrastructure occurred because of this event.

These fires coincided with extended dry periods, hot, dry and windy conditions leading to extreme fire weather. All the above fires burnt extensive areas of bushland.

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5.2 Ignition Sources

Potential ignition sources at site include:

- Hot exhausts from vehicles;
- Spark or flame sources from grinders or welders;
- Frictional sources (surface conveyor);
- Electrical equipment faults;
- Auto combustion of mixed chemicals;
- Overhead power line arcing faults;
- Vegetation interference with overhead power lines; and
- Debris blown onto overhead power aerials.

External ignitions sources include:

- Illegal burning off;
- Torching of dumped cars;
- Inappropriately discarded cigarette butts;
- Deliberate lighting of bushland (arson); and
- Loss of containment of authorised hazard reduction burns.

Natural ignition sources include:

- Lightning strikes; and
- Spontaneous Combustion of organic matter.

5.3 Prescribed Burning

Prescribed burns are generally planned to be conducted between April to September each year when conditions are favourable. Prescribed burns can take place outside this period if suitable conditions exist. If the weather restricts the completion of the prescribed burning program, incomplete proposals are reviewed by the Illawarra Bushfire Management Committee and rescheduled if possible.

Prescribed burning programs may be supplemented with mechanical clearing.

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5.4 Site Conditions

5.4.1 *Dendrobium Pit Top*

The Dendrobium Mine Pit Top area is predominantly cleared of natural vegetation with some remnant stands of trees remaining on site (refer to Figure 10-1 for site layout). The site is surrounded by dense bushland in proximity to the Mount Kembla Village and Kembla Heights communities. The site property boundary is characterised by steep slopes and is densely wooded in areas. A relatively large proportion of the Pit Top working and storage area is sealed.

5.4.2 *Kemira Valley Coal Loading Facility (KVCLF)*

KVCLF is a cleared site with rehabilitated areas predominantly grassed. The KVCLF borders highly naturally vegetated areas (escarpment) to the North and West and grassed pastoral lands to the East. The majority of roads on the site are sealed. (Refer Figure 10-1).

5.4.3 *Ventilation Shaft No. 1*

The Ventilation Shaft No. 1 site is located within the WaterNSW Metropolitan Special Area. The site is surrounded by natural bushland. The access road is unsealed.

5.4.4 *Ventilation Shaft No.2 and 3*

The Ventilation Shaft 2/3 site is located within the WaterNSW Metropolitan Special Area. The site is accessed via the unsealed Fire Trail 6C. A fire protection buffer zone is provided around the site boundary, which is surrounded by bushland (Refer Figure 10-2).

6 BUSHFIRE RISK ASSESSMENT AND MANAGEMENT PROCESS

6.1 Bushfire Risk Assessment

Bushfire risk is defined as the chance of a bushfire causing harm to persons, property and the natural environment.

Key factors determining the significance of the risk include:

- Actual and potential consequences of the fire;
- Locality of the fire;
- Prevailing conditions;
- Firefighting resources available; and
- Capacity and ability to affectively respond to and control the fire.

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Key Risk Control Measures include:

- Maintenance of fire protection zones and boundaries;
- Hazard reduction activities;
- Control of activities on site;
- Training of personnel;
- Competency of Emergency Response Services;
- Availability of resources, personnel and equipment to attend fires; and
- Inspections and assessment.

6.2 Bushfire Risk Management

Bushfire risk in relation to the Dendrobium sites is mitigated by the following specific activities:

- Access roads and trails are monitored during regular inspections, with remedial and maintenance work carried out as required;
- Unauthorised access is prevented by locking Fire Trail access gates and access gates to other controlled areas. Fire Trails are maintained to a standard for Category 1 Fire Tanker access where possible;
- The Company 'Asset Protection Zones' are maintained between Dendrobium sites and neighbouring land and property; and
- Mechanical hazard reduction programs (not burning). Any hazard reduction burns will be completed in conjunction with the relevant authorities.

Areas targeted near the Dendrobium Pit Top include land holdings bordering onto the local community housing areas. An asset protection zone is maintained at the urban interface with the Dendrobium Pit Top and the KVLFF.

Kemira Valley contains cleared sections of land between the Dendrobium holdings and the Mt Kembla community. A large portion of this land is used as pastoral land and acts as a buffer between the KVCLF site and residential land.

An asset protection zone is maintained around the No.1 Ventilation Shaft infrastructure.

A sediment pond at the Ventilation Shaft 2/3 site is available for the provision of water for fire fighting purposes at this site. Cordeaux Dam is in close proximity to the site and could be used as a source of water for aerial fire fighting.

Asset Protection Zones are inspected annually if any major changes identified or required the relevant agencies will be notified (NSW Rural Fire Service, and WaterNSW).

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Asset Protection Zones are reflected in Figure 10-3: Asset Protection Zones - Dendrobium Pit Top, Kemira Valley and Ventilation Shaft 1” and Figure 10-4: Asset Protection Zone - Ventilation Shaft 2/3”.

6.2.1 Hazard Reduction Authorisations and Permits

Except for general maintenance, hand clearing and machine clearing requires a permit to disturb to be issued.

6.2.2 Risk Management and Emergency Response Procedures On-Site

The following documents are in place at Dendrobium Mine:

- *Fire and Explosion - Material Risk Event (DENCRV0025)* identifies the fire hazards, resources, procedures, equipment and inspections, required to maintain a system for fire prevention and fire fighting capability.
- *Dendrobium Mine - Emergency Response Control Plan: Overview – DENMP0088* defines a standard set of procedures and responses to ensure the effective management of any incident, threat, injury or emergency arising from any source at the mine where the relevant Critical Safety Hazard Management Plan has been ineffective in controlling the fundamental hazard.
- *Dendrobium Mine - Emergency Response Control Plan: Incident Response – DENMP0090* defines the actions that are to be taken in response to a fire or other emergency by persons at the mine.
- *Dealing with Bushfire Risk (DENP0093)* informs employees of the steps to be taken if there is Bushfire activity around the surface infrastructure of the mine.
- *Gas and Ventilation Monitoring TARPs (DENTARP0009)* defines gas monitoring and evacuation procedures to be established in the event of smoke from Bushfires entering the underground workings.
- *Procedure for Evacuation in Event of Fire (DENP0069)* covers the emergency evacuation of personnel from the underground areas of the mine in the event of an outbreak of fire.
- *Surface Evacuation (DENP0249)* provides a procedure for evacuation of the surface area of the mine in an emergency.
- *Loss of Pressure or Quantity of Water to the Fire Fighting Supply System (DENP0035)* ensures the safety of the persons who are underground when the water supply to underground is interrupted, or becomes ineffective.

In the event of an emergency at a Dendrobium controlled site, the *Dendrobium Standard Procedure Emergency Contacts* is referenced.

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Table 6-1: Emergency Contact List

| Contact | Number |
|--|--------------|
| Emergency number (Fire Brigade) | 000 |
| Dendrobium Control Room (Dendrobium sites incl. KVCLF) | 4255 4402 |
| Environment Protection Authority | 131 555 |
| Wollongong City Council | 4227 7111 |
| WaterNSW Emergency Reporting (24 hours) | 1800 061 069 |
| Endeavour Energy | 131 003 |

In the case of an emergency and where a tanker is required on site, the Rural Fire Service (RFS) will be contacted.

6.2.3 Firefighting Aides and Suppressants

In addition to the vegetation control measures, fire-fighting aides are available on-site for attending to fires. Fire hydrants, extinguishers, fire blankets, connections and hoses are installed at strategic locations around the sites. Firefighting systems at the Pit Top uses the town water source, whilst the KVCLF utilises recycled site water.

In the event of a bushfire the KVCLF stockpile sprays can be utilised to dampen the coal stockpile area. Firefighting tenders and resources require transportation to the Shaft site (No. 1, 2&3) as no firefighting system is readily available at the sites. Non-essential personnel are required to evacuate WaterNSW controlled areas in the event of bushfire threat.

Site firefighting apparatus and systems are inspected for good working order on a monthly basis by the Dendrobium Fire Officer. Automatic fire equipment and fire alarms are tested by a contracting firm.

Gutters and other fire hazard collection points are inspected and addressed on a seasonal basis to ensure that leaves and other flammable material are removed as required.

6.2.4 Fire Training for Company Personnel

Company personnel are trained in basic fire fighting by attending Southern Mines Rescue Training. This training is compulsory and is carried out on an annual basis. Most employees on site are capable of operating fire-fighting equipment.

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6.2.5 Construction of buildings in Bushfire prone areas

Australian Standard AS 3959—2009 specifies requirements for the design and construction of buildings in Bushfire-prone areas. Where required, buildings will comply with the requirements of AS 3959.

Fire Safety Statements are completed for the bathhouse at the Dendrobium Pit Top and the Sizer at Kemira Valley on an annual basis.

7 REPORTING

Bushfire management activities undertaken in the period are reported in the Annual Review (formerly known as the AEMR). The Annual Review is distributed to relevant agencies and stakeholders.

Bushfire management actions for the Dendrobium operation are also contained in the Illawarra Bushfire Management Plan. These actions are also recorded against the Illawarra Bushfire Management Plan prior to the commencement of the fire season. Dendrobium / Illawarra Coal's representative on the Illawarra Bushfire Management Committee is the Specialist Land Management.

Bushfire events associated with the Dendrobium operations will be reported to relevant agencies whenever they occur.

8 RECORD KEEPING

Reports containing information relating to monitoring, inspections and observations, correspondence, notification and approvals, records of communication with statutory authorities and other bodies, audit reports and reviews are maintained for a period of at least 7 years and are available in the Companies records management system.

9 DOCUMENT CONTROL

The Bushfire Management Plan is controlled within the Mine's 'Document Management System'. Revisions to the Plan are limited to persons with the appropriate authority.

Plan versions and updates are tracked in the Document Management System.

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10 REFERENCES

Dendrobium Mine – Gas and Ventilation Monitoring TARPs (DENTARP0009)
Dendrobium Mine - Dealing with a Bushfire (DENP0093)
Dendrobium Mine - Designated Areas, Smoking Materials and Searches (DENP0036).
Dendrobium Mine - Emergency Fire Provisions (DENP0017)
Dendrobium Mine - Emergency Response Control Plan: Overview – DENMP0088
Dendrobium Mine - Emergency Response Control Plan: Incident Response – DENMP0090
Dendrobium Mine - Evacuation in Event of Fire (DENP0069)
Dendrobium Mine - Loss of Pressure or Quantity of Water to the Fire Fighting Supply System (DENP0035)
Dendrobium Mine - Fire and Explosion Material Risk Event (DENCVR0025)
Dendrobium Mine - Surface Evacuation (DENP0249)
NSW Rural Fire Service (2006) Planning for Bushfire Protection Guideline
NSW Rural Fire Service (2015) Illawarra Bushfire Risk Management Plan
Work Health and Safety Act (2011)
Rural Fires Act (1997)
AS3959 (2009) Construction of Buildings in Bushfire Prone Areas
State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011- SEPP28

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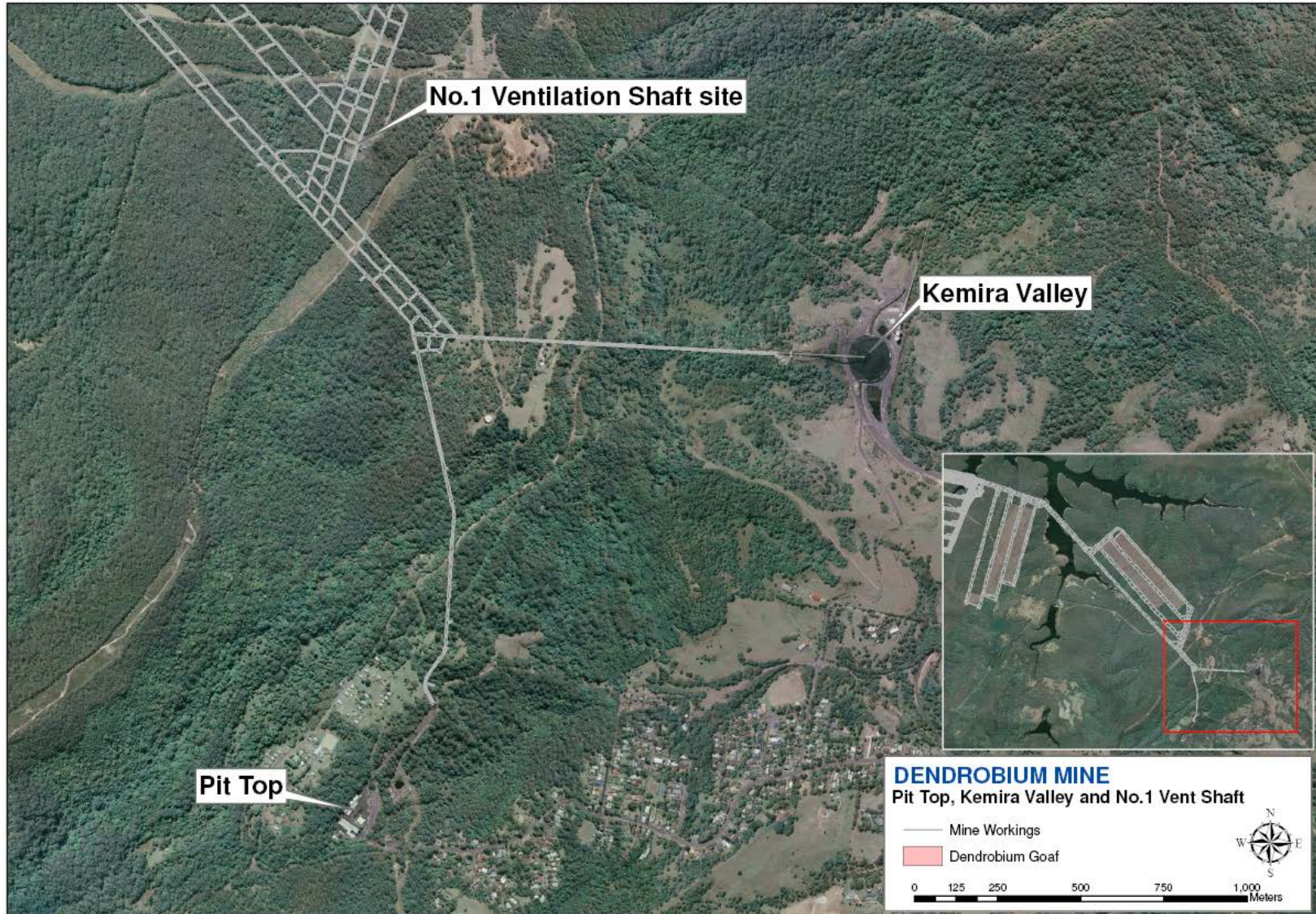


Figure 10-1: Site Plan - Pit Top, Kemira Valley and Ventilation Shaft 1

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Figure 10-2: Site Plan - Ventilation Shaft 2 and 3

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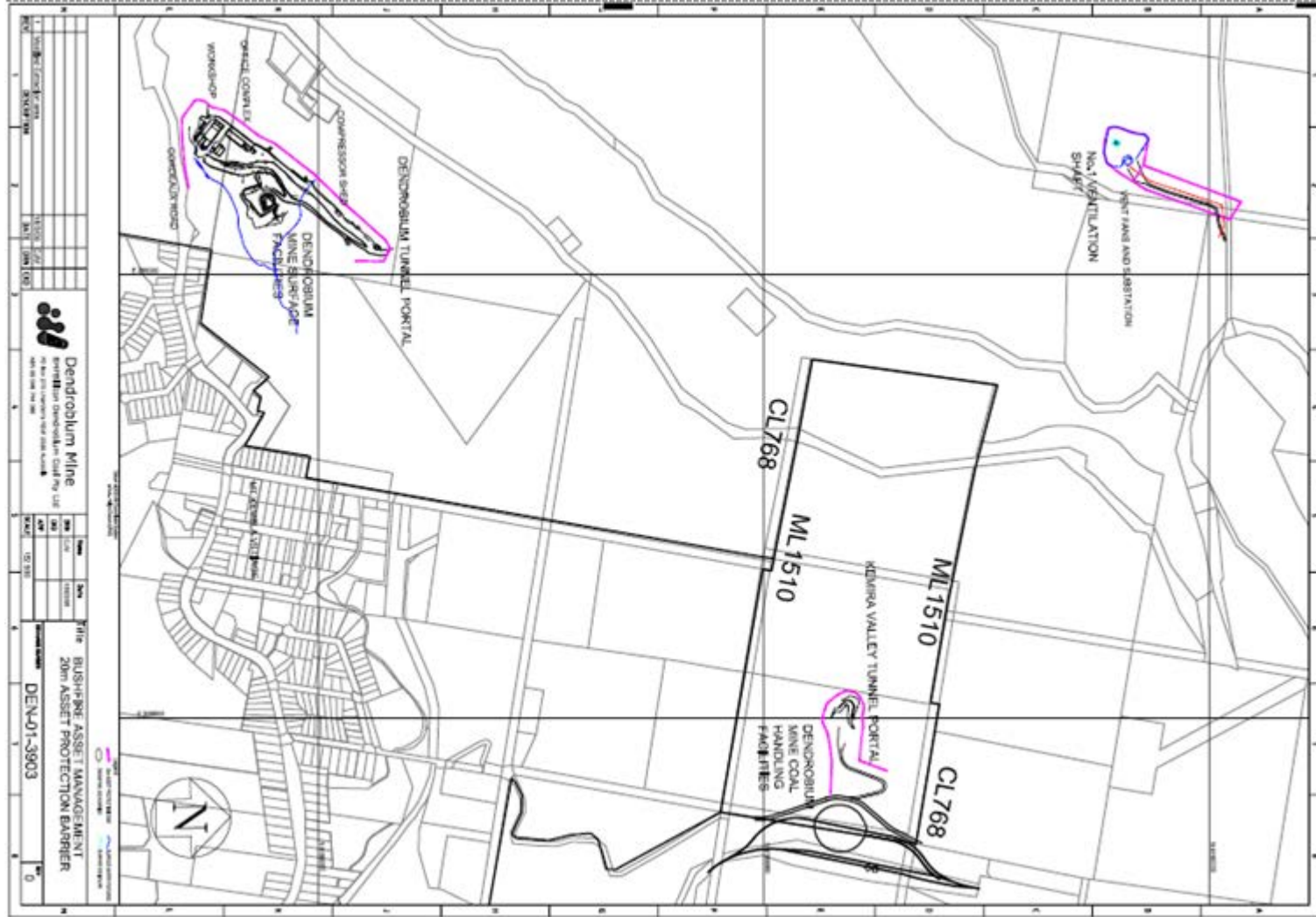


Figure 10-3: Asset Protection Zones - Dendrobium Pit Top, Kemira Valley and Ventilation Shaft 1

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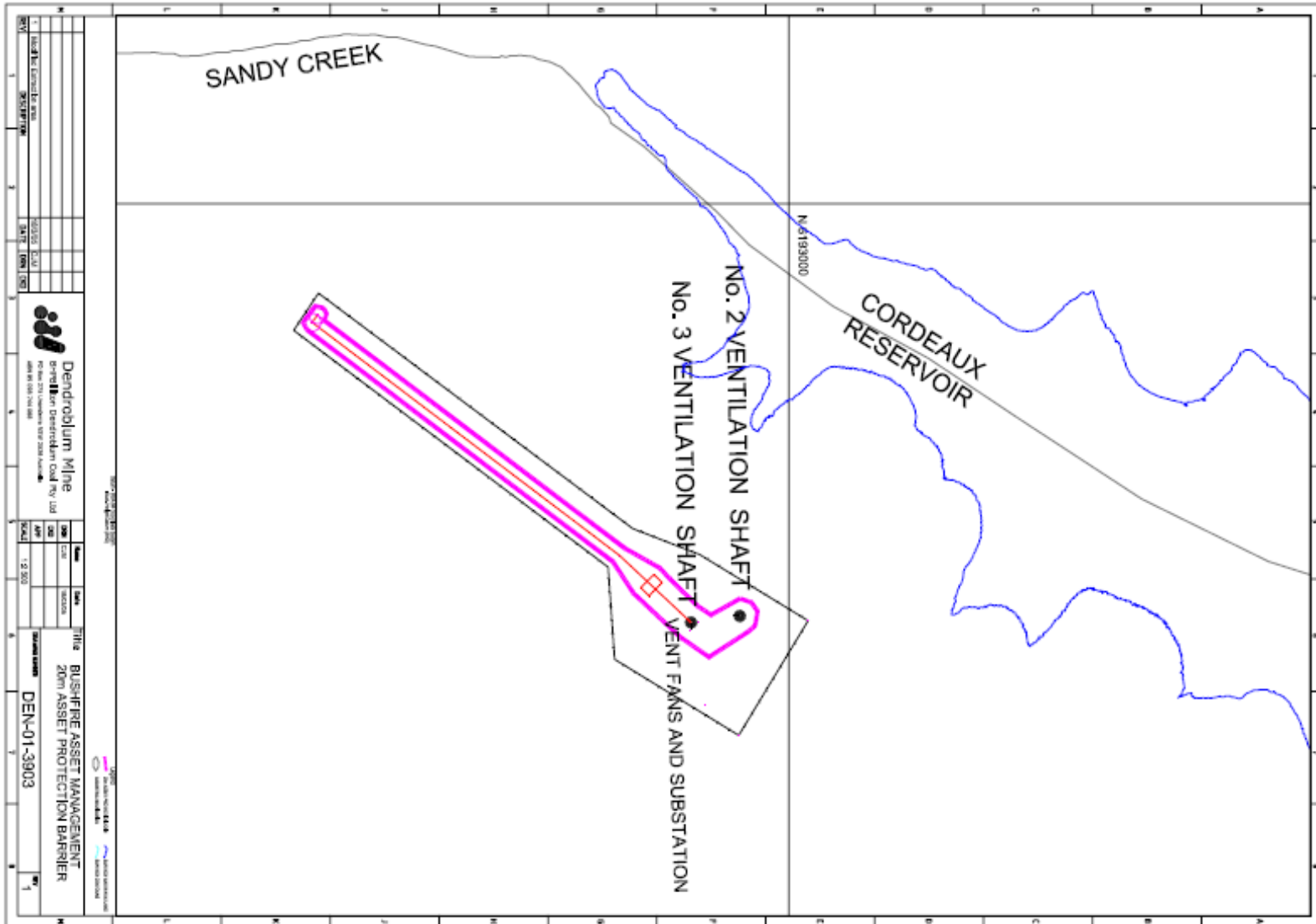


Figure 10-4: Asset Protection Zone - Ventilation Shaft 2/3

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