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# Electricity Safety - Bushfire Mitigation Plan

ENGIE Hazelwood Mine

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**Classification:**     Confidential         Restricted         Unclassified         Internal

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## REVISION/CHECKING HISTORY

REV No.	AUTHOR	DATE	CHECKED BY	APPROVED BY		
0	P Brimblecombe		C Morley	30 Sep 2010	R Polmear	
1	P Brimblecombe		C Morley		S Kemsley	
2	P Brimblecombe	7 Dec 2012	S Kemsley	7 Dec 2012	S Kemsley	7 Dec 12
3	P Brimblecombe	14 Jun 2013	S Kemsley	19 Jun 2013	D Day	Jun 2013
4	P Brimblecombe	13 May 2014	S Dargan	May 2014	S Kemsley	Jun 2014
5	P Brimblecombe	Jun 2015	S Kemsley	Jun 2015	S Kemsley	Jun 2015
6	P Brimblecombe	Jun 2016	L Zajarski	Jun 2016	P Brimble-combe	Jun 2016
7	P Brimblecombe	Oct 2016	P Brimblecombe	Oct 2016	P Brimble-combe	Oct 2016
8	P Brimblecombe	Mar 2017	S.Dargan	Apr 2017	S Dargan	2017
9	N.Wynn	July 2017	R.Dugan	Aug 2017	N.Wynn	Aug 2017
10	N.Wynn	Aug 2017	C.Barlow	Aug 2017	N.Wynn	Aug 2017
11	N.Wynn	Aug 2017	A.Cooke	Aug 2017	N.Wynn	Aug 2017
12	N.Wynn	May 2018	M.Anderson	May 2018	A.Cooke	June 2018

## REVISIONS

REV No.	DATE	DESCRIPTION OF CHANGE
0		Development of document from draft for approval
1		Update based on ESV clarifications, organisational change and document review process
2	7 Dec 2012	Update based on ESV clarifications and recommendations
3	19 Jun 2013	Review and update for proposed new regulations
4	12 May 2014	Review and update for current year
5	June 2015	Review to reflect recommendations and affirmations from Board of Inquiry's October 2014 report into the Hazelwood Mine Fire and update for current year
6	June 2016	Review and update for current year
7	Oct 2016	Update based on ESV clarifications and recommendations
8	Jun 2017	Review and update for current year, including business closure
9	July 2017	Final review and update with reference to the closure project
10	Aug 2017	Checked by ENGIE legal C Barlow
11	Aug 2017	Add changes recommended by ESV, document classification, section 6 references update.
12	May 2018	Reviewed following cessation of BWE operations

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## 1 Purpose

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Comply with the requirements of relevant Victorian legislation.

### **Relevant Legislation and Regulations**

- **Electricity Safety Act 1998(Vic) (Version No 025)**
- **Electricity Safety (Bushfire Mitigation) Regulations 2013 (Version No 62)**

As a business that has electric lines above the surface of the land and in a hazardous bushfire area, ENGIE Hazelwood meets the definition of a “specified operator”.

## 2 Scope

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This plan details the practices and procedures in place at ENGIE Hazelwood for the prevention of fire caused by overhead electrical assets and the mitigation of any fire incident that may occur. As most of the “at risk” electrical equipment is operated by the mine, the main responsibilities for this plan are with mine personnel.

## 3 Responsibilities & Authorities

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### 3.1. Mine Lead:

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- a) ensure that the processes and procedures required to comply with the applicable regulations are in place and followed;
- b) ensure that this Electricity Safety – Bushfire Mitigation Plan is reviewed and updated at regular intervals in line with legislation, regulations and industry “Best Practices”; and
- c) have an audit process in place to ensure that the regulatory requirements are being met.

### 3.2. Production Manager, Mine:

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- a) ensure that all operational personnel and contractors understand their responsibilities and comply with this plan;

### 3.3. Head of Compliance:

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- a) ensure that this Electricity Safety – Bushfire Mitigation Plan is reviewed and updated annually to comply with the regulations and ensure that any changes to relevant operational procedures are compliant with the regulations and reflected in this Electricity Safety – Bushfire Mitigation Plan.

### 3.4. Project Director:

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- a) ensure that a copy of the current plan is submitted to Energy Safe Victoria annually before 1 July each year:  
and
- b) confirm that each submission gains ESV approval.

## 4 Prescribed Particulars

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### a) The name address and telephone number of the specified operator

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- Name: ENGIE Hazelwood
- Address: Brodribb Road, Morwell VIC 3840
- Phone No: (03) 5135 5000

### b) Person responsible for the preparation of the plan;

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Mine Electrical Asset Engineer,  
Ph (03) 5135 5003  
PO Box 195, Morwell, VIC 3840

### c) Person responsible for carrying out the plan;

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Mine Electrical Asset Engineer,  
Ph (03) 5135 5003  
PO Box 195, Morwell, VIC 3840

### d) Emergency contacts are the Mine High Voltage Availability Officers;

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Mine Electrical Asset Engineer,  
Ph (03) 5135 5003 / mobile 0408 126 223  
PO Box 195, Morwell, VIC 3840

### e) Fire Policies:

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ENGIE Hazelwood manages and maintains its overhead lines infrastructure to ensure that the probability of the lines causing a fire is minimised in a known high risk environment.

Mine Fire Service Policy (refer to Paradigm original document ID 2589),

The key purpose of the *Mine Fire Service* Policy is to provide a framework of standards and guidelines which are aimed at:

- Outlining management's commitment to minimising the risks associated with fire at the Hazelwood Mine;
- Protecting ENGIE Hazelwood employees and contractors (Mine personnel) and third parties attending the mine;
- Protecting Mine plant, equipment, infrastructure and exposed coal reserves;

- Minimising fire-related disruptions to the decommissioning and rehabilitation operations;
- Providing a means of promptly reporting, containing and extinguishing fires at the Mine;
- Preventing the development of a major coal fire giving rise to impacts on third parties and the environment; and
- Ensuring the infrastructure at the Mine for fire prevention, mitigation, and suppression meets industry best practice, and operational requirements.

#### f) The objectives of the plan;

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ENGIE Hazelwood needs its overhead lines infrastructure to not cause a fire in a known high risk environment. To ensure this the lines are regularly inspected, vegetation is removed well in excess of the minimum requirements (refer to the Electrical Safety - Electric Line Clearance Plan, Paradigm original document ID 50008) and a Maintenance Management System (Maximo) is used to track and manage the repair of identified faults.

The overhead lines infrastructure needs to be maintained at a high level of security from fire as it provides secure power supplies to major mine pumping stations used to fight fire in the mine environment.

#### g) Plan of the mine showing overhead power lines;

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The whole site is in an area assigned a fire hazard rating of "high" by the Country Fire Authority.

Note: the "at risk" business power lines are shown in black. The other coloured lines on the map indicate overhead lines, on our site, owned by MECs.

Drawing of mine showing all overhead power lines – Appendix 1

Site Locality Map - Appendix 2

#### h) Preventative strategies;

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Vegetation is removed from the vicinity of Mine power lines whenever it is identified as an issue. This could be during routine inspections by trained Electrical Asset Inspectors and / or ad hoc inspections by mine electrical personnel during normal operating procedures.

There is limited vegetation on site and all vegetation is reviewed annually with the process Mine Vegetation Assessment for Fire Risk (refer to the Paradigm original document ID 51447).

The power lines are routinely inspected by contracted inspectors. All faults are recorded into the maintenance management system by Hazelwood staff, and managed through, the Computerised Maintenance Management System (Maximo). This allows Hazelwood personnel to independently review all reported faults as an audit of the inspection work.

Local Electrical Instructions (refer to the Paradigm original document ID 3136) – section 14.11

- These instructions detail the maintenance practices relating to vegetation removal near, and external inspection of the ENGIE Hazelwood high voltage overhead line system in the mine within the required 3 year time frame.

Because of the limited nature of the electrical network within the mine, all areas of the network are accessible at all times and clearances to power lines are much greater than the minimum requirements.

#### i) Plan for inspection;

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<b>Authoriser:</b>		<b>Page:</b>	6 of 14	<b>Ver/Status:</b>	1.8 / Current
<b>Responsible:</b>	Electrical Safety Management System	<b>OrigID:</b>	44944	<b>Version Date:</b>	26/06/2018
<b>Folder:</b>	Electricity Safety Management Scheme	<b>DocID:</b>	57157	<b>Review Date:</b>	26/06/2023

All overhead high voltage power lines are inspected on a 3 year cycle. A contract is let annually (or up to 3 yearly) for the inspection of a nominated portion of the mine distribution system and all limited life poles on site. This is managed by a time based routine within the Computerised Maintenance Management System (Maximo).

## j) Accreditation of Lines Inspectors;

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ENGIE Hazelwood does not directly employ linesmen. When the line inspections are due each year, an order is placed on an external service provider, for the inspection of the plant and equipment due that year.

The order requires the inspections be completed by persons with Certificate II accreditation in Asset Inspection (or equivalent as approved by ESV).

Inspector qualifications are checked by the person responsible for the contract, as part of the Contract Management Process (refer to SMS documents within Paradigm, original ID 49509, 49510 & 49511), when the external inspector presents themselves for access to the equipment. The Responsible Officer for the contract controls access to the site, monitors progress and checks on site activities.

Other personnel carrying out ad hoc inspections, as part of normal operational activities on the power distribution system, are trained by Registered Training Organisations to required Units of Competency in the Australian Qualifications Framework as Electrical Operators and authorised by ENGIE Hazelwood to operate the mine high voltage power distribution system. This gives them knowledge of the required line clearances.

## k) Operation and Maintenance Plans for at-risk electric lines;

### i) in the event of a fire:-

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The Mine power distribution system (“at risk supply network”) is expected to operate without substantial impairment to ensure power supply is maintained to all plant. This may involve the utilisation of redundancies built into the system.

In line with the recommendations and affirmations in the October 2014 report of the Board of Inquiry into the Hazelwood Mine Fire, a number of additional safeguards and/or redundancies have been added to the Mine power distribution system.

In the event of a fire, any non-essential planned maintenance activity will be cancelled and all Mine personnel drawn into assisting with the fire response.

The Mine Fire Service Technical Guidelines (refer to the Paradigm document original ID 54977) details the requirements for the operation of electric lines to plant and pumping systems which supply the Mine’s reticulated fire service system.

In the event of a major fire within the business, the Emergency Response Plan Hazelwood Project (refer to the Paradigm original document ID 55545) would be implemented and actions necessary to protect the Mine’s power systems would be directed by the Hazelwood Emergency Commander, or CFA Incident Controller with technical support from ENGIE Hazelwood personnel.

### ii) during a day of Total Fire Ban:-

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Any planned maintenance work on the power distribution system would be cancelled. This includes work by Ausnet Services that would affect the redundant electrical supply requirements for the site.

The Mine power distribution system (“at risk supply network”) is expected to operate without substantial impairment. This may involve the utilisation of redundancies built into the system.

In line with the recommendations and affirmations in the October 2014 report of the Board of Inquiry into the Hazelwood Mine Fire, a number of additional safeguards and/or redundancies have been added to the Mine power distribution system.

On a day of CFA-declared Total Fire Ban, any non-essential planned maintenance activity would be cancelled (and any essential maintenance which is proposed to proceed, risk assessed to ensure that it did not constitute a fire risk).

On most high and extreme fire risk days the protection of electricity supply and electrical substations (as critical Mine infrastructure), would typically be specifically detailed on a Hazelwood Mine Fire Readiness Plan, (Appendix 2 of Paradigm original document ID 36546) issued under the Fire Readiness Planning Guidelines (Paradigm original document ID 36546). This document is typically issued on the day prior to each day of Total Fire Ban, as well as internally assessed days of high fire risk for the Mine.

### iii) during a fire danger period:-

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All inspections and high priority maintenance work would have been completed prior to the start of the fire danger period to minimise fire risk due to the power distribution network. Any required vegetation removal will also have been completed.

The mine power distribution system (“at risk supply network”) is expected to operate without substantial impairment. This may involve the utilisation of redundancies built into the system.

In line with the recommendations and affirmations in the October 2014 report of the Board of Inquiry into the Hazelwood Mine Fire, a number of additional safeguards and/or redundancies have been added to the Mine power distribution system.

Due to susceptibility of coal mines to fire, ENGIE Hazelwood declares a Fire Season for the Mine, independently of the CFA declared season (which typically takes effect some time prior to the CFA fire season). The declaration of a Mine Fire Season under the Fire Readiness Planning Guidelines (Paradigm original document ID 36546) initiates a series of preparatory measures within the Mine to ensure all protective equipment and systems are serviceable, and that necessary training and inspections have been conducted to implement a high level of preparedness.

Maintenance activities for the overhead lines assets are planned around the requirements for pumping systems supplying the Mines reticulated water system. All maintenance activities are risk ranked and prioritised within ENGIE Hazelwood’s computerised maintenance management system (Maximo).

## I) Investigations, analysis and methodology to be adopted for the mitigation of the risk of fire ignition from at-risk electric lines:

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All fires are reported and entered into Hazelwood’s Incident Management and reporting Procedure and investigated as per the business procedure (Paradigm original document ID 35510)

The electric lines for the business are designed to limit the risk of fire ignition.

This is achieved through several design initiatives which are not practical for the public distribution system.

1. There are no automatic reclose facilities enabled within the Mine. This limits the possibility of energising a damaged line without suitable inspection and monitoring of the situation.
2. All mine feeders are installed with Sensitive Earth Leakage protection to protect personnel and plant in the event of a fault. This system limits the amount of energy delivered to an earth fault. By limiting the duration and magnitude of fault current, the chance of a fault causing a fire is minimised.
3. All the mine high voltage overhead lines operate at 6,600V. The line hardware specified and used on all new installations is 12,000V and 22,000V hardware. This minimises the risk of an electrical fault that will cause a fire.



4. All operations of protection at the substations supplying power to the business overhead electric lines require a full inspection of the line prior to the restoration of supply (refer to Local Electrical Instructions, Paradigm original document ID 3136).
5. Overhead electric line design is managed to minimise the number of crossovers (especially mid span crossovers) to limit the potential for conductor clash.
6. Major changes to the high voltage overhead lines distribution system are modelled by an independent engineering consultant to ensure there is no overloading of individual lines that might contribute to ignition of fires. With the mine now entering the rehabilitation and closure phase, it no longer produces coal and all LME activities have ceased. This has resulted in a large reduction of LME related 6,600 V lines and therefore, the risk of overloading power lines is very small.

All fires on site are recorded and investigated through the ENGIE Hazelwood Incident Management System (INX). Recommendations from the INX reports are sent to the Rehabilitation Project Management Team for action.

Mine fire is subject to risk assessment under the Occupational Health and Safety Regulations 2007 (Vic), Part 5.3. Under these regulations fire has been determined to be a Major Mining Hazard. In accordance with the requirements of these regulations, a detailed risk assessment has been undertaken and a series of control measures established to reduce risks to the extent that is reasonably practicable. These risk assessments and control measures are subject to periodic review in accordance with the requirements of the regulations, and also oversight from the relevant regulator (WorkSafe Victoria).

In addition to meeting our Worksafe commitments ENGIE Hazelwood is required to assess risks that may have the potential to impact upon public health and safety, community facility and the environment. ENGIE assess those risks through its Risk Management Plan (RMP) (formally the Risk Assessment and Management Plan (RAMP)), a requirement of the mining license (*Mineral Resources (Sustainable Development)(Mineral Industries) Regulations 2013*, Schedule 15 (4.1) and MIN5004, Section 1A). The RMP provides a detailed assessment of mine fire and the prevention and mitigation measures implemented and incorporated into its policies and procedures. It is also a condition of the license that the RMP must be approved by the Department Head of DEDJTR. Additionally, a summary of all fires on site are sent to both the CFA and DEDJTR MFEU, for further review and oversight, on a monthly basis.

#### m) Details of the processes and procedures by which the specified operator will:

##### i) Monitor the implementation of the bushfire mitigation plan:-

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When the Annual Fire Season for the Mine is declared, the Mine Production Manager provides weekly reports to the mine management team on the status of relevant fire preparedness activities under the Fire Readiness Planning Guidelines (Paradigm original document ID 36546).

##### ii) Audit the implementation of the bushfire mitigation plan:-

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All elements of regulatory compliance are audited by Hazelwood internal auditors, ENGIE's auditors, Independent Auditors and various regulators, including Worksafe and DEDJTR. These regulators have adopted a process of regular audits and site inspections specifically related to fire, both prior to and during the declared fire season.

##### iii) Identify any deficiencies in the plan or the plans effectiveness:-

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All fire policies and procedures are reviewed annually prior to the commencement of the Annual Fire Season declared for the Mine as per the Mine Pre-Fire Season Checklist (Paradigm original document ID 36549).

In addition business processes ensure the update of policies and procedures based on input from any incident investigations, internal audits, external audits, regulator reviews, etc, by logging and monitoring of action items using the INX software package.

The regulatory audits relating to fire preparedness conducted by WorkSafe Victoria and DEDJTR MFEU can also identify deficiencies in the plans or systems in use on site. Recommendations from the regulators are enforceable and have to be complied with.

#### **iv) Change the plan and the plans implementation to rectify any deficiencies identified.**

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As noted in point iii), the business has a process to capture and implement improvements for policies and procedures based on findings, recommendations and / or employee suggestions.

#### **v) Monitor the effectiveness of inspections carried out under the plan**

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Contractors employed to perform inspections are regularly checked and audited.

All contractors working on site are subject to routine inspections and audit under our procedure SMS Evaluation of Contractors Procedure (Paradigm original document ID 49513).

This procedure requires the Contract Manager to check the contractor on site and confirm that the all health and safety requirements are being met, that the contractors' personnel are qualified and licensed for the work they are performing, and documented work procedures are being followed to the required standard.

#### **vi) Audit the effectiveness of inspections carried out under the plan:-**

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All elements of regulatory compliance are audited by Hazelwood internal auditors, ENGIE's auditors, Independent Auditors and various regulators, including Worksafe and DEDJTR. This would include both the processes used and documentation created under point (v). All faults identified by the inspectors would be planned for rectification by Hazelwood employees and as a result physically inspected by Hazelwood employees. This allows ENGIE Hazelwood to audit the findings of the contracted inspectors.

#### **n) The policy in relation to assistance to be provided to fire control authorities in the investigation of fires near the specified operator's at-risk electric lines;**

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ENGIE Hazelwood maintains a close relationship with the local CFA due to the high risk of fire to the business.

Regular meetings and joint exercises are held with the CFA.

In line with the recommendations and affirmations in the Board of Inquiry's October 2014 report into the Hazelwood Mine Fire, a number of additional training, resource sharing and communication initiatives have been implemented between ENGIE Hazelwood and the CFA.

ENGIE Hazelwood's, Emergency Response Plan Hazelwood Project (Paradigm original document ID 55545) details the relationship between ENGIE Hazelwood, the CFA and other state emergency service organisations.

The Emergency Response Plan details the requirements for statutory investigations as well as regulatory investigations by other emergency services authorities, and the support to be provided by ENGIE Hazelwood.

In addition, significant fires are also reported to DEDJTR and Worksafe. Should a significant fire be caused by the mine electrical assets, a report would also be provided to ESV under our procedures.

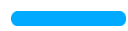
## 5 Accessibility of Documents

- a) The current approved version of this document is kept on the business document management system and a copy is accessible at the Head Office during normal business hours.
- b) A copy of the version approved by ESV is placed on Hazelwood's public web site.

## 6 References

Number	Description
Paradigm original document ID 2589	Mine Fire Service Policy
Paradigm original document ID 3136	Local Electrical Instructions
Paradigm original document ID 55545	Emergency Response Plan Hazelwood Project
Paradigm original document ID 36546	Fire Readiness Planning Guidelines
Paradigm original document ID 49513	SMS Evaluation of Contractors Procedure
Paradigm original document ID 35510	Incident Management Reporting Procedure
Paradigm original document ID 50008	Electrical Safety – Electrical Line Clearance Plan
Paradigm original document ID 15447	Mine Vegetation Assessment For Fire Risk
Paradigm original document ID 36549	Mine Pre-Fire Season Checklist
Paradigm original document ID 54977	Mine Fire Service Technical Guidelines
Paradigm original document ID 49509	SMS 1 Contractors Self Evaluation Form
Paradigm original document ID 49510	SMS 2 ENGIE Health & Safety Evaluation Form
Paradigm original	Safety Inspection Form (formally SMS 3)

<b>document ID 55886</b>	
<b>HP CM MD 18/355</b>	Hazelwood Mine - Risk Management Plan – RMP 3.2
<b>n/a</b>	Occupational Health and Safety Regulations 2007 (part 5.3)
<b>n/a</b>	Board of Inquiry Report into the Hazelwood Mine Fire (October 2014)



Appendix 1 – Drawing of the Mine as at June 2015.

Note: The electrical infrastructure has not changed in the last 12 months)

The whole site is in an area assigned a fire hazard rating of "high" by the CFA.



Note: the “at risk” business power lines are shown in black. The other coloured lines on the map indicate overhead lines, on our site, owned by MECs



Appendix 2 – Hazelwood Locality Map

