



australia's aluminium

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**ALCOA OF AUSTRALIA LIMITED**  
**BUSHFIRE MITIGATION AND LINE CLEARANCE PLANS**  
**2014/2015**

Rev D as submitted 27 06 2014

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## PREFACE

This document is a combined Bushfire Mitigation and Line Clearance plan for 2014 and 2015.

ALCOA of AUSTRALIA LIMITED, has chosen to combined both its bushfire mitigation plans and line clearance plans into one document for the sake of clarity. The vegetation control activities for line clearance also form part of the bushfire mitigation activities.

ALCOA of AUSTRALIA LIMITED has chosen to give priority to the requirements of the Electricity Safety (Bushfire Mitigation) Regulation where it perceives there is a conflict with the Electricity Safety (Electric Line Clearance) Regulation.

This document was drafted for March 31 2014.

The document is available for inspection at Alcoa's Point Henry Smelter's Reception desk, 450 Point Henry Road, Moolap, Victoria, 3221, during office hours, 08:00 – 16:00 weekdays and on the Alcoa's website; [www.alcoa.com.au](http://www.alcoa.com.au)

This document has been authorised for submission to Energy Safe Vitoria on behalf of ALCOA of AUSTRALIA LIMITED by;

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Power Systems Manager, Victorian Smelters  
PO BOX 460, GEELONG, 3220  
03 5245 1330 (0417 058 904)

27<sup>th</sup> June 2014

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# PRESCRIBED PARTICULARS FOR BUSHFIRE MITIGATION PLANS — SPECIFIED OPERATORS

## (A) THE SPECIFIED OPERATOR

ALCOA OF AUSTRALIA LTD,  
Postal Address  
PO BOX 460, GEELONG, VIC 3220.

Location address  
450 Point Henry Road, MOOLAP, VIC 3221

## MANAGEMENT STRUCTURE

A description of the Management and Ownership structure of the Facilities is as follows:

The Anglesea Power Station and the Point Henry (METALS) Facilities are owned, operated and managed by ALCOA of AUSTRALIA LIMITED. ALCOA of AUSTRALIA LIMITED will herein be referred to as “ALCOA”. Where site-specific detail is provided, the respective site names – “Anglesea Power Station”, “Point Henry (METALS)” or “Portland Aluminium” – will be used.

The Portland Aluminium Smelter Facility is owned as a Joint Venture between ALCOA of AUSTRALIA LIMITED, MARUBENI ALUMINIUM AUSTRALIA PTY LTD., CITIC NOMINEES PTY. LTD., and EASTERN ALUMINIUM (PORTLAND) PTY. LTD. It is managed and operated on behalf of the owners by ALCOA PORTLAND ALUMINIUM PTY. LTD., a wholly owned subsidiary of ALCOA of AUSTRALIA LIMITED. ALCOA PORTLAND ALUMINIUM PTY LTD. trades as PORTLAND ALUMINIUM. Where site-specific detail is provided, it will be referred to as “Portland Aluminium”.

For the purposes of clarity and brevity throughout these documents, the name “ALCOA” will refer to and imply “Anglesea Power Station”, “Point Henry” and “Portland Aluminium”.

The “Point Henry Site” is not in a high fire risk area.

(B) THE RESPONSIBLE PERSON AND THE PERSON RESPONSIBLE FOR THE PREPARATION OF THE PLAN

David Le Lievre,  
Power Systems Manager, Victorian Smelters  
PO BOX 460, GEELONG, 3220  
03 5245 1330 (0417 058 904)

(C) THE PERSONS WHO ARE RESPONSIBLE FOR CARRYING OUT THE PLAN

THE APS TO PTH 220 KV TRANSMISSION LINE

Dean Schmidt,  
Electrical Engineer  
Anglesea Power Station,  
Camp Road Anglesea 3230  
03 5263 4288

THE ANGLESEA POWER STATION ELECTRIC LINES

Dean Schmidt,  
Electrical Engineer  
Anglesea Power Station,  
Camp Road Anglesea 3230  
03 5263 4288

THE PORTLAND ALUMINIUM ELECTRIC LINES

David Rundell,  
Senior Staff Engineer  
Portland Aluminium Quarry Rd;  
Portland, 3305  
03 5521 5305



## (D) EMERGENCY CONTACT DETAILS

### THE APS TO PTH 220 kV TRANSMISSION LINE

To initiate Emergency switching to de-energise the line  
Alcoa Point Henry Plant Emergency Response (24 hours) 03 5245 1740 request the Duty HV operator to be contacted.

For Routine issues use contact details listed in C) above.

### THE ANGLESEA POWER STATION ELECTRIC LINES

To initiate Emergency switching to de-energise the lines  
Anglesea Power Station Control room (24 hours) 03 5263 4231

For Routine issues use contact details listed in C) above.

### THE PORTLAND ALUMINIUM ELECTRIC LINES

To initiate Emergency switching to de-energise the lines  
Portland Aluminium's Plant Emergency Response (24 hours) 03 5521 5420 request the Duty HV operator to be contacted.

For Routine issues use contact details listed in C) above.

## (E) BUSHFIRE MITIGATION POLICY

It is Alcoa's policy to operate worldwide in a safe, responsible manner which respects the environment and the health of our employees, our customers and the communities where we operate. We will not compromise environmental, health or safety values for profit or production.

In relationship to Bushfire Mitigation, Alcoa will maintain its Electricity Aerial lines and Vegetation clearances in a condition such these present a minimum as practicable risk for bushfire initiation.

## (F) THE PLAN TO ACHIEVE THE MITIGATION OF BUSHFIRE DANGER

### THE APS TO PTH 220 kV TRANSMISSION LINE

#### GENERAL INFORMATION

The Anglesea Power Station to Point Henry (APS – PTH) 220 kV transmission line. This line was installed in 1968 under the Mines (Aluminium Agreement) Act 1961, part 19. (3) (c), and connected to the GTS-PTH 220 kV transmission line. In 1982 it was extended from Coppards road to Point Henry as an independent "third" circuit. This work was completed under a contract with the SECV.

An active maintenance program is in place to ensure the transmission line is maintained such that it presents minimal risk to the public and to prevent bushfire initiation. It was the first 220 kV transmission line in Victoria to have "anti-climbing barriers" installed on its towers for its entire length.

#### RECENT MAINTENANCE ACTIVITIES

As well as routine tasks, the following significant tasks have been undertaken in the past 10 years;

- Replacement of all insulators between APS and EGTS
- Replacement of the ground-wire between APS and EGTS
- Exposure of 3 grillage tower foundations for corrosion evaluation
- Replacement of cathodic protection on selected towers
- Reinforcement of corroded buried steel sections
- Application of epoxy coatings to selected tower legs

- Replacement of all insulators tower 77 and tower 85AA
- Painting of tower 85AA
- Selected bolt replacement

#### THE MAINTENANCE OF THE TRANSMISSION LINE

The transmission line is currently maintained under contract by Powercor Services, (the Service Provider). Previously it was maintained by the SECV and then GPU.

The transmission line is inspected a minimum of 3 times a years, for structural and hardwire integrity, vegetation clearances and insulator cleanliness.

#### RISK MITIGATION TECHNIQUES

##### PREVENTION OF FIRES FROM STRUCTURAL FAILURES - SUBSURFACE AND GROUND INTERFACE CORROSION

The strain towers in the original section of the transmission line were constructed with “Grillage” style foundations, that is a concrete base approximately 3 metres underground a galvanized steel pyramid lattice support each tower leg. To establish that these buried structures were sound, three separate legs were excavated to the concrete level cleaned and inspected. No structural issues were found. The exposed steel was encased in concrete and the hole backfilled. To protect the remaining legs, a sacrificial anode cathodic protection system was installed. This system is monitored to ensure its effectiveness.

In additional to the strain towers, all suspensions towers have had all steel work at or below ground level, cleaned, repaired where necessary and a protective coating added.

This coating is inspected annually.

Several towers have been completely painted and have had bolts replaced.

##### PREVENTION OF FIRES FROM LINE HARDWARE FAILURE

As a minimum, the line hardware is inspected annually via a climbing patrol. As a result of these inspections, most insulators on the line have been replaced.

The first group of insulators changed was from APS to Coppards road, the original section of the line. More recently, insulators from tower 72 to tower 85 have been changed. The remaining insulators will be changed when their condition dictates.

##### PREVENTION OF FIRES FROM CONDUCTOR FAILURE

The condition of the conductors has been assessed by various methods. Visual inspections are done by climbing patrols, from the ground and from helicopters. Infrared inspections are undertaken to locate any “hot joints”. Also during line outages, coinciding with the Power Station shutdowns, bridges have been removed and the conductor sent to a materials laboratory for assessment of condition and remaining life. Presently, no significant conductor issues are present.

As part of the program, the groundwire from APS to Coppards road was replaced.

##### PREVENTION OF FIRES FROM VEGETATION IMPACT

There is a proactive program of vegetation clearing along the transmission line. Each year, prior to the bushfire season the line is patrolled and trees that have the potential to grow or fall into the clearance zone as specified in the Electricity Safety (Electric Line Clearance) Regulation 2010 are identified. A report is generated. Following up, a tree and vegetation clearing crew then move through the easement pruning and / or removing the trees and vegetation designated in the report.

In addition, landowners along the line are informed, as required about the appropriate vegetation species that are suitable for planting in the easement.

## THE APS POWER STATION ELECTRIC LINES

### GENERAL INFORMATION

The Anglesea Power Station Distribution HV mine feeder lines operate at 3.3 kV and supply power to the mine, well bores and workshops. The lines are fed from the 3.3kv switchboards in the power station. The circuits are earth fault current limited by earth resistors. In addition, the mine feeders have earth conductor and sensitive balanced earth fault protection line to reduce the risk of cross arm fires. There is a program in place to replace bare aerial conductor construction with ABC construction.

An alternative supply is available from a 22/3.3 kV transformer fed from the Powercor 22kV network. It cannot be run in parallel to the normal supply and is used mainly during the Power Station shutdown every 4 years when the transmission line is not available.

An active program is in place to ensure the mine feeder lines are maintained such that it presents minimal risk to and to prevent bushfire initiation.

### RECENT MAINTENANCE ACTIVITIES

As well as routine tasks, the following significant tasks have been undertaken in the past 15 years;

- Replacement of 60% of all poles with concrete poles.
- Replacement of 60% bare aerial conductors with 22kV insulated ABC aerials.
- Disconnection from supply and removing conductors from Pole 61 to Pole 98 of sections of the feeder not currently needed by mining requirements.

### THE MAINTENANCE OF THE MINE FEEDER LINES

The Mine Feeders are currently maintained by a combination of Alcoa electricians and linemen under contract by Powercor Services.

They are inspected a minimum of 3 times a year, for structural and hardwire integrity, vegetation clearances and insulator cleanliness.

### RISK MITIGATION TECHNIQUES

#### PREVENTION OF FIRES FROM POLES FAILURES

All poles, concrete or wood, supporting the mine feeders, are inspected on a 3 year cycle by a qualified pole inspector, who services are normally supplied by Powercor.

#### PREVENTION OF FIRES FROM LINE HARDWARE FAILURE.

As a minimum, the line hardware including crossarms, insulators pole guys, ABC support hardware and miscellaneous is inspected two yearly using Powercor linemen.

Transformers and associated switchgear and fuses are inspected and maintained by Alcoa Electricians.

Expulsion drop out fuses are not used on the power station overhead lines. Only powder filled fuses are used to minimize bushfire risk associated with a cut-out fuse operating.

#### PREVENTION OF FIRES FROM CONDUCTOR FAILURE.

The condition of the conductors is assessed by various methods. These include visual inspections during routine pole hardware inspections and from the ground. Infrared inspections are undertaken to locate any "hot joints".



### PREVENTION OF FIRES FROM VEGETATION IMPACT.

There is a proactive program of vegetation clearing along the mine feeders . Each year, prior to the bushfire season the mine feeders are patrolled and trees that have the potential to grow or fall into the clearance zone are identified. A report is generated. Following up, a tree and vegetation clearing crew then work along the feeders pruning and / or removing the trees and vegetation designated in the report.

## PORTLAND ALUMINIUM ELECTRIC LINES - 22 kV DISTRIBUTION SYSTEM

### GENERAL INFORMATION

The Portland Aluminium Distribution HV distribution lines operate at 22 kV and supply auxiliary power to the Smelter and Ship Unloader. The lines are fed from the 220 / 22 kV “L” transformer and distribution racks in the Portland switchyard. The circuits are earth fault current limited by earth resistors, and overload protection by powder filled fuses.

The Portland 22 kV distribution system outside the main switchyard is fully insulated in construction, all cables are fully insulated with earth screens and /or armour, all transformers are fully enclosed and all switchgear is fully enclosed.

The HV cables are buried underground or alternatively supported on cables trays or catenary wires supported by wooden poles.

As such the only part of the system considered to be “aerial lines” are the sections of cables supported by catenary wires supported by wooden poles.

An active program is in place to ensure the distribution feeder lines are maintained such that it presents minimal risk to personnel and to prevent bushfire initiation. As illustrated by the photograph in Appendix B: Referenced Photographs of Portland Aerials Lines there is no vegetation that presents a risk to the aerial lines.

### THE MAINTENANCE OF THE PLANT DISTRIBUTION SYSTEM

The Plant Feeders are currently maintained by a combination of Portland Aluminium electricians and linesmen under contract by Powercor Services. They are inspected a minimum of 2 times a years, for structural and hardwire integrity,

### RISK MITIGATION TECHNIQUES.

#### PREVENTION OF FIRES FROM POLE FAILURES

All poles, concrete or wood, supporting the plant feeders, are inspected on a 3 year cycle by a qualified pole inspector, who services are supplied by Powercor and their subcontractor Electrix. This meets the requirement of less than 37 months in the regulations.

#### PREVENTION OF FIRES FROM LINE HARDWARE FAILURE

As a minimum, the line hardware including catenary cables, and cable support hardware is inspected and maintained by Portland Aluminium Electricians. The use of linesmen to perform these inspections is considered inappropriate as the construction method is vastly different from conventional distribution power line construction

Transformers and associated switchgear and fuses are inspected and maintained by Alcoa Electricians.

#### PREVENTION OF FIRES FROM CONDUCTOR FAILURE

Due to the distribution the risk bushfire initiation from conductor failure is considered to be remote. Infrared inspections are undertaken to locate any “hot joints” for the cable connections and switchgear in the switchyard where open construction is used.

### PREVENTION OF FIRES FROM VEGETATION IMPACT

There is no vegetation planted within any area that is likely to any impact on the insulated cables and as such the risk bushfire initiation the distribution system is considered to be remote. See photographs in Appendix B

### PORTLAND ALUMINIUM ELECTRIC LINES - EXPOSED 500 kV AND 220 kV BUSBARS AND INCOMING LINES

The Exposed 500 kV and 220 kV busbars are contained in switchyard, an area kept free of vegetation except some ornamental beds along the access roads. The rest of the area is either paved or covered by blue metal to reduce step and touch potential.

Routine maintenance is performed and protection maintenance complies with the NER.

This area is considered to be an extremely low fire risk. See photographs in Appendix B: Referenced Photographs of Portland Aerials Lines

The incoming 500 kV lines are managed by SP Ausnet until inside the switchyard.

### (G) PLANS OF THE LAND TO WHICH THE BUSHFIRE MITIGATION PLAN APPLIES

#### ALCOA DRAWINGS ATTACHED IN APPENDIX A: REFERENCED DRAWINGS

#### THE APS TO PTH 220 kV TRANSMISSION LINE

- See Drawing Number # A3 429299-001-AA
- Hazardous Bushfire Risk Areas (HBRA)
- Map Name, City/Shire, Distribution Company
- Geelong Harbour A4, City of Greater Geelong, Powercor.
- Geelong Harbour A5, City of Greater Geelong, Powercor.
- Geelong E5, City of Greater Geelong, Powercor.
- Connewarre D1, City of Greater Geelong, Powercor
- Connewarre, City of Greater Geelong & Surf Coast Shire, Powercor.
- Mount Duneed, Surf Coast Shire, Powercor.
- Torquay, Surf Coast Shire, Powercor.
- Anglesea, Surf Coast Shire, Powercor.

#### THE ANGLESEA POWER STATION ELECTRIC LINES

- Drawing Number # A0 005992-003-AP
- Hazardous Bushfire Risk Areas (HBRA)
- Map Name, City/Shire, Distribution Company
- Anglesea, Surf Coast Shire, Powercor.
- Anglesea B5, Surf Coast Shire, Powercor.
- Anglesea C5, Surf Coast Shire, Powercor.

#### THE PORTLAND ALUMINIUM ELECTRIC LINES

- See Drawing Number B1-328000-040-PV
- Hazardous Bushfire Risk Areas (HBRA)
- Map Name, Shire, Distribution Company
- Cape Nelson E1, Shire of Glenelg, Powercor.
- Lawrence Rock A1, Shire of Glenelg, Powercor.

## (H) THE PREVENTATIVE STRATEGIES TO BE ADOPTED

### THE MAINTENANCE OF THE APS-PTH TRANSMISSION LINE

#### GENERAL INFORMATION

The transmission line is currently maintained under contract by Powercor Services, (the Service Provider). Previously it was maintained by the SECV and then GPU.

The transmission line is inspected a minimum of 3 times a years, for structural and hardwire integrity, vegetation clearances and insulator cleanliness.

#### RISK MITIGATION TECHNIQUES.

##### PREVENTION OF FIRES FROM STRUCTURAL FAILURES - SUBSURFACE AND GROUND INTERFACE CORROSION

The strain towers in the original section of the transmission line were constructed with “Grillage” style foundations, that is a concrete base approximately 3 metres underground a galvanized steel pyramid lattice support each tower leg. To establish that these buried structures were sound, three separate legs were excavated to the concrete level cleaned and inspected. No structural issues were found. The exposed steel was encased in concrete and the hole backfilled. To protect the remaining legs, a sacrificial anode cathodic protection system was installed. This system is monitor to ensure its effectiveness.

In additional to the strain towers, all suspensions towers have had all steel work at or below ground level, cleaned, repaired where necessary and a protective coating added.

These coatings are inspected annually.

In addition, several towers have been painted and have bolts replaced.

##### PREVENTION OF FIRES FROM LINE HARDWARE FAILURE

As a minimum, the line hardware is inspected annually via a climbing patrol. As a result of these inspections, most insulators on the line have been replaced.

The first group of insulators changed was from APS to Coppards road, the original section of the line. More recently, insulators from tower 72 to tower 85 have been changed. The remaining insulators will be changed when their condition dictates.

##### PREVENTION OF FIRES FROM CONDUCTOR FAILURE

The condition of the conductors has been assessed by various methods. Visual inspections are done by climbing patrols, from the ground and from helicopters. Infrared inspections are undertaken to locate any “hot joints”. Also during line outages, coinciding with the Power Station shutdowns, bridges have been removed and the conductor sent to a materials laboratory for assessment of condition and remaining life. Presently, no significant conductor issues are present.

As part of the program, the groundwire from APS to Coppards road was replaced.

##### PREVENTION OF FIRES FROM VEGETATION IMPACT

There is a proactive program of vegetation clearing along the transmission line. Each year, prior to the bushfire season the line is patrolled and trees that have the potential to grow or fall into the clearance zone are identified. A report is generated. Following up, a tree and vegetation clearing crew then move through the easement pruning and / or removing the trees and vegetation designated in the report.

Alcoa has chosen to give priority to the requirements of the Electricity Safety (Bushfire Mitigation) Regulations where it perceives there is a conflict with the Electricity Safety (Electric Line Clearance) Regulations.

In addition, landowners along the line are informed, as required about the appropriate vegetation species that are suitable for planting in the easement.

## THE MAINTENANCE OF THE APS MINE FEEDER LINES

### GENERAL INFORMATION

The Mine Feeders is currently maintained by a combination of Alcoa electricians and linemen under contract by Powercor Services.

They are inspected a minimum of 3 times a years, for structural and hardwire integrity, vegetation clearances and insulator cleanliness.

### RISK MITIGATION TECHNIQUES.

#### PREVENTION OF FIRES FROM POLES FAILURES

All poles, concrete or wood, supporting the mine feeders, are inspected on a 3 year cycle by a qualified pole inspector, who services are normally supplied by Powercor.

#### PREVENTION OF FIRES FROM LINE HARDWARE FAILURE

As a minimum, the line hardware including crossarms, insulators pole guys, ABC support hardware and miscellaneous is inspected on a 3 year cycle using Powercor linesmen.

Transformers and associated switchgear and fuses are inspected and maintained by Alcoa Electricians.

#### PREVENTION OF FIRES FROM CONDUCTOR FAILURE

The condition of the conductors is assessed by various methods. These include visual inspections during routine pole hardware inspections and from the ground. Infrared inspections are undertaken to locate any "hot joints".

#### PREVENTION OF FIRES FROM VEGETATION IMPACT

There is a proactive program of vegetation clearing along the mine feeders . Each year, prior to the bushfire season the mine feeders are patrolled and trees that have the potential to grow into the clearance zone are identified. A report is generated. Following up, a tree and vegetation clearing crew then work along the feeders pruning and / or removing the trees and vegetation designated in the report.

Alcoa has chosen to give priority to the requirements of the Electricity Safety (Bushfire Mitigation) Regulations where it perceives there is a conflict with the Electricity Safety (Electric Line Clearance) Regulations.

## PORTLAND ALUMINIUM ELECTRIC LINES - 22 kV DISTRIBUTION SYSTEM

### GENERAL INFORMATION

The Plant Feeders are currently maintained by a combination of Portland Aluminium electricians and linesmen under contract by Powercor Services. They are inspected a minimum of 2 times a years, for structural and hardwire integrity,

### RISK MITIGATION TECHNIQUES.

#### PREVENTION OF FIRES FROM POLES FAILURES

All poles, concrete or wood, supporting the plant feeders, are inspected on a 3 year cycle by a qualified pole inspector, who services are normally supplied by Powercor, or Powercor contractor, normally Electricrix

#### PREVENTION OF FIRES FROM LINE HARDWARE FAILURE

As a minimum, the line hardware including catenary wires and cable support hardware is inspected and maintained by Portland Aluminium Electricians. The use of linesmen to perform these inspections is



considered inappropriate as the construction method is vastly different from conventional distribution power line construction.

Transformers and associated switchgear and fuses are inspected and maintained by Alcoa Electricians.

#### PREVENTION OF FIRES FROM CONDUCTOR FAILURE

Due to the distribution system design and construction, the risk of bushfire initiation from conductor failure is considered to be extremely remote. Infrared inspections are undertaken to locate any "hot joints" for the cable connections and switchgear in the switchyard where open construction is used.

#### PREVENTION OF FIRES FROM VEGETATION IMPACT

There is no vegetation planted within any area that is likely to any impact on the insulated cables and as such the risk bushfire initiation the distribution system is considered to be extremely remote.

### PORTLAND ALUMINIUM ELECTRIC LINES - EXPOSED 500 kV AND 220 kV BUSBARS AND INCOMING LINES

#### GENERAL INFORMATION

The Exposed 500 kV and 220 kV Busbars are contained in switchyard, an area kept free of vegetation except for some ornamental beds along the access roads and low shrubs on the batters within the switchyard perimeter fence. The rest of the area is either paved or covered by blue metal to reduce step and touch potential and is kept vegetation free by the spraying of herbicide

Routine maintenance is performed and protection maintenance complies with the NER.

This area is considered to be an extremely low fire risk with respect to Bushfire initiation.

The incoming 500 kV lines are managed by SP Ausnet until inside the switchyard.

#### (I) LIST ALL WORKS REQUIRED FOR THE STRATEGIES REFERRED

As detailed in (h) above.

#### (J) PLAN FOR INSPECTION THAT ENSURES THAT ALL OF THE SPECIFIED OPERATOR'S AT-RISK LINES ARE INSPECTED

This is detailed in

(h) The Preventative Strategies to be adopted, above, and the rest of this section.

#### 2014

- The six monthly inspection of the 22kV poles and associated hardware was performed in March 2014.
- Two 220kV transmission towers were painted in Bay B in February 2014.
- The painting of the Bay 7 towers is scheduled for late 2014.

#### 2015

- The painting of the Bay A towers is scheduled for early 2015.
- Inspection of the wooden poles by Powercor is scheduled to be completed mid 2015.

### THE APS TO PTH 220 kV TRANSMISSION LINE

#### WORK COMPLETED

Powercor have completed routine ground patrols and they completed a detailed climbing patrol in October 2013.

In addition, Powercor contracted Vemco to conduct an easement inspection in October 2013. Vegetation identified for clearing was completed by 30 November 2013.

#### PLANNED

Depending on the season, climbing patrols and Vemco's Vegetation inspection and clearance works will be conducted such that all remedial work will be completed before the end of November 2014 or before the Fire Restriction Period commences whichever is earlier.

### THE APS POWER STATION ELECTRIC LINES

#### WORK COMPLETED

Powercor and its contractors have inspected all poles and hardware. Two wooden cross arms, supporting pole top transformers, were replaced with steel cross arms.

Vemco, as Powercor's subcontractor, completed the vegetation clearance inspection in September 2013 and the required remedial work was completed in November 2013.

#### PLANNED

Prior to the 2014/2015 Bushfire season, re-growth will be inspected and where necessary remedial work will be undertaken

### THE PORTLAND ALUMINIUM ELECTRIC LINES

#### 2014

Powercor and its contractors have inspected all poles and hardware last year.

There is no vegetation situated near the aerial lines. As discussed earlier, these lines are insulated cables supported by steel catenary cables attached to poles. There are no bare aerial conductors outside the main switchyard.

The only vegetation control work will be routine spraying with herbicide in the switchyard to maintain the blue metal surface "weed free." Weed spraying works were completed in May 2014 and vegetation was removed under the 500 kV SP-Ausnet lines inside the switchyard perimeter fence.

**(K) DETAILS OF THE PROCESSES AND PROCEDURES FOR ENSURING THAT ONLY PERSONS WHO HAVE SATISFACTORILY COMPLETED A TRAINING COURSE**

To comply with the intent of the regulations, Alcoa will use Powercor and its subcontractors; Electrix for Pole and hardware inspection and Vemco for Vegetation inspection and control. These contractors are suitably trained having satisfactorily completed a training course approved by Energy Safe Victoria.

Alcoa will supplement this work with its internal electrical work force to perform addition inspections

**(L) OPERATION AND MAINTENANCE PLANS FOR THE SPECIFIED OPERATOR'S AT-RISK ELECTRIC LINES**

**OPERATIONS IN THE EVENT OF A FIRE**

Alcoa will continue to operate its lines as normal, unless there is a specific request from the CFA or SP Ausnet's Transmission Operations Centre is received to de-energise any of its lines.

During "Ash Wednesday" the APS to PTH 220 kV transmission line tripped from direct impact of fire under the line. The line remained de-energised until the CFA requested through the SECV's system control centre to restore the line to allow Alcoa to pump water from its mine to Alcoa's Fire dam. The Dam was being used by the CFA for fire fighting water.

Alcoa would cooperate with the CFA, SP Ausnet's Transmission Operations Centre or other emergency services in any future emergency.

**OPERATIONS DURING A TOTAL FIRE BAN**

Alcoa will continue to operate its lines as normal, unless there is a specific request from the CFA or SP Ausnet's Transmission Operations Centre to de-energise any of its lines.

**OPERATIONS DURING THE FIRE DANGER PERIOD.**

Alcoa will continue to operate its lines as normal, unless there is a specific request from the CFA or SP Ausnet's Transmission Operations Centre to de-energise any of its lines.

**(M) THE INVESTIGATIONS, ANALYSIS AND METHODOLOGY TO BE ADOPTED BY THE SPECIFIED OPERATOR FOR THE PREVENTION OF FIRE IGNITION FROM ITS AT-RISK ELECTRIC LINES**

Alcoa is not aware of any fires initiated by any of its lines since 1962.

**FOR THE APS TRANSMISSION LINE;**

Alcoa reviews its transmission line maintenance contract and activities with Powercor annually. Generally transmission lines are low fire hazards, due to their large clearances. It is in Alcoa's interest to keep the line in service as there is no N-1 contingency and a line outage has a significant economic impact. Alcoa has been extremely conservative in ensuring the line is maintained to a high standard, and vegetation clearances are in excess of those required by the regulations.

**FOR THE PLANT DISTRIBUTION LINES;**

Alcoa has favoured insulated construction for its distribution lines for many years. Several of its employees are CFA members and Alcoa has a good working relationship with the local CFA units. It uses its CFA connection to ensure that the hazard around its distribution lines are minimised.

Alcoa reviews its asset's maintenance practices with Powercor to ensure that the latest technologies are used and where necessary modifies its plans to include these technologies.

For any incident where a fire was initiated as a result of any of its "at risk" lines, Alcoa would investigate the incident as a "major incident" as part of its incident reporting system. These incidents would be escalated to head office in New York. Where required, Alcoa would use Powercor and other expert engineering consultants to determine the root cause of the failure and the appropriate corrective actions.

#### (N) DETAILS OF THE PROCESSES AND PROCEDURES

##### MONITOR AND AUDIT THE IMPLEMENTATION OF THE BUSHFIRE MITIGATION PLAN

###### FOR THE APS TRANSMISSION LINE

Alcoa reviews its transmission line maintenance contract and activities with Powercor annually. Generally transmission lines are low fire hazards, due to their large clearances. It is in Alcoa's interest to keep the line in service as there is not N-1 contingency and a line outage has a significant economic impact. Alcoa has been extremely conservative in ensuring the line is maintained to a high standard, and vegetation clearances are in excess of those required by the regulations.

Alcoa will audit Power's performance against the agreed plan in August and December yearly.

In addition, Alcoa's supervision will drive the entire easement every two years with the Powercor contract supervisor to visually inspect from ground level the condition of the easement against the various inspection reports.

###### FOR THE PLANT DISTRIBUTION LINES

Alcoa has favoured insulated construction for its distribution lines for many years. Several of its employees are CFA members and Alcoa has a good working relationship with the local CFA. It uses its CFA connection to ensure that the hazard around its distribution lines are minimised.

All work associated with Bushfire mitigation is recorded as "mandated work" and failure to complete the work within the specified period is highlighted to senior management.

Alcoa's engineer will inspect the easements with a Powercor representative to ensure all vegetation clearing work has been completed prior to the start of the declared fires restriction period.

###### FOR PORTLAND

The nominated responsible person will audit that the mandated three yearly inspection is budgeted, and performed as required by this plan.

##### IDENTIFY ANY DEFICIENCIES IN THE PLAN OR THE PLAN'S IMPLEMENTATION

See Monitor and audit the implementation of the bushfire mitigation plan, above. Alcoa reviews its plans as a minimum every 3 years, but generally yearly as a results of the findings for the inspection programs, audits and any incidents.

Alcoa will also liaise with Powercor about any incidents and changes in technology that may be relevant to the maintenance and inspection of its lines.

##### MONITOR AND AUDIT THE EFFECTIVENESS OF INSPECTIONS CARRIED OUT UNDER THE PLAN

See 1. above. Alcoa reviews its plans as a minimum every 3 years, but generally yearly as a results of the findings for the inspection and audit programs.

For the APS transmission line, Alcoa will conduct a full ground line inspection with Powercor at a minimum of every 2 years to review compliance with Alcoa's maintenance contract, and assess the frequency of contracted work.

#### IMPROVE THE PLAN AND THE PLAN'S IMPLEMENTATION IF ANY DEFICIENCIES ARE IDENTIFIED

Alcoa reviews its asset's maintenance practices with Powercor to ensure that the latest technologies are used and where necessary modifies its plans to include these technologies.

#### ENSURE THAT ANY TRAINING NECESSARY FOR PERSONS ASSIGNED TO PERFORM FUNCTIONS UNDER THE PLAN IS PROVIDED

#### MONITORING THE COMPETENCE OF THE PERSONS ASSIGNED TO CARRY OUT THE INSPECTIONS UNDER THE PLAN

To comply with the intent of the regulations, Alcoa will use Powercor and its subcontractors who are suitably trained to complete the mandated inspection work. Alcoa relies on Powercor's and its subcontractor's exposure to issues within the broader industry for their expertise.

Alcoa will seek yearly from Powercor a statement that its linesmen, subcontract poles and line inspectors, and vegetation clearance inspectors and works are appropriately trained having satisfactorily completed a training course approved by Energy Safe Victoria to meet the requirements of the Electricity safety (Bushfire Mitigation) regulations and Electricity safety (line Clearance) regulations. This will be monitored by spot audits to verify the statement.

#### QUALIFICATIONS.

##### APS LINE AND 3.3 kV DISTRIBUTION SYSTEM AND 22 kV AERIAL CABLES AT PORTLAND

The Powercor linemen are either qualified Cert III in ESI - Transmission Lineworker<sup>1</sup> or Cert III in ESI - Distribution Lineworker as appropriate. Refer to the VESI skills matrix.

The Electrix pole and line inspectors are qualified Cert III in ESI - Distribution Lineworker with additional pole and hardware inspection qualifications. Refer to the VESI skills matrix.

The Vemco line clearance and inspection crew, employees or contractors, have all or some of the following qualification and training appropriate for the task being undertaken;

- A current Limits of Approach (Electrical Systems Identification and Powerline Clearance Distances, Module NUE260) qualification or equivalent
- Line Clearance Certificate
- OH&S Work Platform certificate (EWP licence (If 2 man bucket and no ticket, can be "under instruction' with a licensed person)
- Chainsaw Certificate (Safe use of Chainsaw)
- Manual Handling
- Noise Conservation
- First Aid Level One
- Horticulture/Arboriculture Certificate
- Traffic Control Certification
- Wood Chipper Operation training
- Road Traffic management at Worksite.

Note: Electrical systems identification and powerline clearance requirements: Any employee required to perform vegetation clearing works near overhead powerlines shall have satisfactorily completed a training course approved by Energy Safe Victoria relating to tree clearing by non-electrical personnel (or equivalent

The VEMCO Group ensures that all Contractors and employees hold appropriate certificates for both themselves and their equipment that legally entitles them to undertake the work. A record of these documents is filed at the VEMCO, Ballarat Office.

Where there is a requirement to cut or remove a Hazard tree that is on land that Alcoa does not own or control, it will ensure the assessment prior is completed by a qualified arborist; and a suitably qualified arborist means an arborist who has:

- the qualification of National Certificate Level IV in Horticulture and Arboriculture, including the "Assess Trees" module, or an equivalent qualification; and
- at least 3 years of field experience in assessing trees

#### THE ALCOA (ANGLESEA) AND PORTLAND ALUMINIUM ELECTRICIANS HAVE THE FOLLOWING QUALIFICATIONS.

"A" grade electrical licence.

At Anglesea, the electricians have on average been employed for more than ten years and undertake inspections of the HV switchgear and transformers as part of a "Planned Maintenance activity" (PM) which includes a detail scope of work describing items of equipment and hardware to be inspected.

At Portland, the electricians have on average been employed for more than 5 years.

They are attached to the High Voltage group which maintains both the HV switchyard and plant 22 kV distribution cables including the aerial insulated cable system. They undertake inspections of the HV switchgear and transformers as part of a "Planned Maintenance activity" (PM) which includes a detail scope of work describing items of equipment and hardware to be inspected.

(O) THE COMPANY POLICY IN RELATION TO THE ASSISTANCE TO BE PROVIDED TO FIRE CONTROL AUTHORITIES IN THE INVESTIGATION OF FIRES NEAR THE SPECIFIED OPERATOR'S AT RISK ELECTRIC LINES  
Alcoa will cooperate with the CFA, and any other authority as required.

## MANAGEMENT PLAN FOR THE ELECTRICITY SAFETY (LINE CLEARANCE)

### REGULATIONS.

#### GENERAL INFORMATION

With respect to vegetation control in minimising the risk of Bushfire initiation, Alcoa understand there is commonality with the Electricity safety (Bushfire Mitigation) regulations. Where there is commonality, the appropriate section of the Bushfire Mitigation plan will be referenced.

However, Alcoa has chosen to give priority to the requirements of the Electricity Safety (Bushfire Mitigation) Regulations where it perceives there is a conflict with the Electricity Safety (Electric Line Clearance) Regulations.

#### RESPONSIBLE PERSONS

9 (3) (A & B)

See Bushfire Mitigation Plan (BMP) (b) The responsible person and the person responsible for the preparation of the plan

9 (3) (c)

See BMP (c) The persons who are responsible for carrying out the plan

EMERGENCY CONTACTS

9 (3) (d)

See BMP (d) Emergency Contact Details

OBJECTIVES

9 (3) (E)

See BMP (e) Bushfire Mitigation Policy and (f) The plan to achieve the mitigation of bushfire danger

MAP

9 (3) (F)

See BMP (g) Plans of the land to which the bushfire mitigation plan applies

LOCATION OF TREES

9 (3) (G)

See BMP (g) Plans of the land to which the bushfire mitigation plan applies

There are no trees that fall under (g)(ii) or (g)(iii).

IDENTIFYING SIGNIFICANT TREES

9 (3) (H).

Alcoa has been maintaining its easements for many years. No new lines have been added recently. If a new line were to be added, Alcoa would ensure it is added in an area where there were no trees of significance by using an appropriately qualified person with a Certificate of Arboriculture

MANAGING TREE AND CLEARANCE SPACE

9 (3) (i)

See BMP section

(h) The Preventative Strategies to be adopted In particular, the paragraphs titled “Prevention of Fires from Vegetation impact.”

#### PERFORMANCE OF RESPONSIBLE PERSON

##### 9 (3) (J)

See BMP Monitor and audit the effectiveness of inspections carried out under the plan

In addition to the details in BMP (n)(3), the responsible person has included in his personal performance objective a requirement to audit the plan for compliance and to escalate any issues to senior Alcoa Victorian Operations’ management.

#### AUDIT PROCESSES

##### 9 (3) (K)

See BMP Monitor and audit the effectiveness of inspections carried out under the plan

The Responsible person named in BMP (b) will confirm with the location responsible persons named in BMP (b) that the necessary work nominated in this plan is scheduled and implemented in accordance with the plan. He will also audit the performance of Powercor and its contractors in conjunction with the location responsible persons.

#### TREE CUTTING EXPERIENCE

##### 9 (3) (L)

See BMP Ensure that any training necessary for persons assigned to perform functions under the plan is provided and Monitoring the competence of the persons assigned to carry out the inspections under the plan

In particular, for tree cutting and removal along the APS 220 kV line easement, which passes through a mix of private and crown land, Alcoa uses Powercor to manage the easement, with the contractual obligation to ensure the easement is maintained to standards required by the Electricity Safety (Bushfire Mitigation) Regulations and the Electricity Safety (Electric Line Clearance) Regulations. To meet these obligations, Powercor subcontracts Vemco, a company recognised within the VESI, to have the necessary skills to managed vegetation safely within a transmission easement.

#### DISPLAY OF PLAN

##### 9 (9)

The document is available for inspection at Point Henry Smelter’s Reception desk, 450 Point Henry Road, Moolap, Victoria, 3221, during office hours, 08:00 – 16:00 weekdays and on the Alcoa’s website; [www.alcoa.com.au](http://www.alcoa.com.au)

## THE CODE OF PRACTICE FOR ELECTRIC LINE CLEARANCE

### CLEARANCE SPACE



2 (2) (c)

See BMP The Maintenance of the APS-PTH Transmission line

In particular, the paragraphs titled "Prevention of Fires from Vegetation impact."

2 (3)

See BMP The Maintenance of the APS-PTH Transmission line

In particular, the paragraphs titled "Prevention of Fires from Vegetation impact."

Alcoa has chosen to give priority to the requirements of the Electricity Safety (Bushfire Mitigation) Regulations where it perceives there is a conflict with the Electricity Safety (Electric Line Clearance) Regulations.

## HAZARD TREES

3 (A) (B)

See BMP

(h) The Preventative Strategies to be adopted

In particular, the paragraphs titled "Prevention of Fires from Vegetation impact."

Alcoa uses its best endeavours to ensure that trees do not grow into the space such as they become a "Hazard tree". Alcoa will verify through Powercor and Vemco that a qualified arborist was used in the assessment.

HABITAT TREES

4 (1)(A)(B)(C).

Alcoa uses its best endeavours to ensure that trees do not grow into the space such as they become a "Hazard tree" as well as a "Habitat Tree." Alcoa will ensure through Powercor and Vemco that sufficient clearance is maintained to allow cutting or removal to take place outside the breeding season.

4 (2)

See 4 (1)(a)(b)(c), Alcoa will comply with the regulations.

NOTIFICATION AND CONSULTATION

5(2)

Alcoa will ensure through Powercor and Vemco that appropriate notice is given as per the requirements in the Electricity Safety (Electric Line Clearance) Regulations, see 5(4)(A)(B) below.

5(3)

There are no trees of cultural or environmental significance

5(4)(A)(B)

Alcoa will ensure through Powercor and Vemco that the required notice is given.

For trees that is on public land or within the boundary of a private property which Alcoa neither occupies nor owns. The following notice will be given;-

- at least 14 days and not more than 60 days before the intended cutting or removal is to occur; and
- in writing or by publication in a newspaper circulating generally in the locality of the land in which the tree is to be cut or removed

5(5)(A)(B)

Alcoa will ensure through Powercor and Vemco that the required consultation is undertaken.

URGENT CUTTING OR REMOVAL

6(3)(4)

Alcoa will ensure to its best endeavours, through Powercor and Vemco, that urgent cutting or removal is not required. However, if required the required notice will be given and the required record made.

6(5)

Alcoa considers the need for urgent cutting or removal a notifiable incident which requires Powercor and hence Vemco to escalate the incident to the Alcoa responsible person. This will be treated as an incident within the Alcoa incident system, receive management review and corrective actions will be generated. The incident records will be kept in the Alcoa controlled document system for at least five years.

6(6)

Alcoa understands the limitations of 6(6) and will work within its requirements.

#### DISPUTE RESOLUTION

9

Alcoa will, in the first instance, rely on Powercor and Vemco through their dispute resolution procedures to address the issues. However, should the issue not be resolved, Alcoa requires Powercor to escalate the issue to the Alcoa responsible person who will escalate the issue to Alcoa's senior management and community relations department.

## APPENDICES

### APPENDIX A: REFERENCED DRAWINGS

THE APS TO PTH 220 kV TRANSMISSION LINE

Drawing Number # A3 429299-001-AA

THE ANGLESEA POWER STATION ELECTRIC LINES

Drawing Number # A0 005992-003-AP

THE PORTLAND ALUMINIUM ELECTRIC LINES

Drawing Number B1-328000-040-PV

**APPENDIX B: REFERENCED PHOTOGRAPHS OF PORTLAND AERIALS LINES**



**PORTLAND MAIN SWITCHYARD ILLUSTRATING LACK OF SIGNIFICANT VEGETATION**



**PORTLAND 22kV AERIAL LINES SHOWING THE INSULATED CABLE CONSTRUCTION AND LACK OF SIGNIFICANT VEGETATION**