AGL Macarthur

Bushfire Mitigation Plan 2025-2030

AGL Energy AEL Reference: MWF-HS-PLN-006 (Rev 6.3)

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Plan Revision History

Date	Version	Author	Comment	Sections
0.1	27/11/2014	B. Ryan	Initial 2014 Draft	All
0.2	28 Dec 2016	S. Cariss	Revised for 2016 and in preparation for submission to ESV	All
1.0	1 Feb 2017	S. Cariss	Revised for 2017/18 in preparation for submission to ESV	All
1.1	10 Feb 2017	S. Cariss	Revised relating to evaluation by ESV	All
1.2	24 Feb 2017	S. Cariss	Reference to Asset Inspector qualifications and training resulting from ESV evaluation	All
2.0	01 Aug 2018	R. Widdowson	BMP Working Group Review	All
2.1	31 Aug 2018	S. Cariss	Minor changes and rebranding	All
2.2	27 Jun 2019	R. Widdowson	Annual review AGL / Vestas	All
3.0	09 July 2020	S. Cariss	Annual review AGL Macarthur	All
3.1	29 Aug 2020	S. Cariss	Feedback post annual review	Section 13
4.0	18 Jun 2021	S. Cariss	Annual AGL Macarthur review	All
4.1	29 Jun 2021	S. Cariss	Minor changes resulting from the annual review and following the ESV Line Clearance Plan Systems Audit.	All
4.2	20 Aug 2021	S. Cariss	Changes resulting from the annual ESV review and approval processes.	All
4.3	27 May 2022	S. Cariss, D Martin, J Drew	Changes resulting from the annual AGL Hydro review and provided for the W&S Team for review.	All
4.4	25 Sep 2022	T. Woodland	Further changes resulting from the annual review by new W&S responsible persons, and changes to incorporate ESV feedback during the annual acceptance review	Section 1.1 (Exemptions) Section 2 (URL reference) Section 8 (Inspections) Section 11 (No fire starts) Section 17.6 (Engineered Solutions
5.0	23 Jun 2023	T. Woodland	Annual AGL Macarthur review and changes incorporating feedback from 2023 ESV Audit	All
5.1	07 Sep 2023	T. Woodland	Changes resulting from the annual ESV review and approval processes.	All
5.2	17 Oct 2023	T. Woodland	Changes resulting from ESV review and updated to reflect new operating model for AGL Macarthur Wind Farm	All
6.0	20 Jun 2024	T. Woodland	Annual AGL Macarthur review	All
6.1	18 Oct 2024	T. Yates	Changes from the ESV review and approval processes.	All
6.2	16 Jul 2025	T. Christophersen	Change AEL Reference from ML MC FI 02 to MWF-HS-PLN-006 Changes to Responsible Person table. Update to MWF electric line register. Updated referenced documents / procedures.	Page 1, Sections 2.1, 17.7, 17.8, 18
6.3	21 Apr 2026	T. Woodland	Annual AGL Macarthur review Changes to Responsible Person table. Update to align with 5 year plan	Sections 2.1, 2.2, 3, 7.6, 18

Distribution

Copy	Position
1	AGL Macarthur Wind Farm Reception
Electronic File	Energy Safe Victoria
Electronic File	Head of Wind
Electronic File	Operations Manager – Wind (VIC)
Electronic File	Electrical Balance of Plant Specialist (VIC)
Electronic File	Site Supervisor – Macarthur wind farm
Electronic File	HSE Advisor
Electronic File	AGL Web Site
Electronic File	AGL Enterprise Library

1. Regulation Compliance Summary

Electricity Safety (Bushfire Mitigation) regulations 2023

Regulation 6: Prescribed particulars for bushfire mitigation plans – Specified Operators

Specified operator legal entity
AGL HP1 Pty Ltd (ACN 080 429 901); and AGL HP2 Pty Ltd (ACN 080 810 546); and AGL HP3 Pty Ltd (ACN 080 735 815) Trading as **AGL Hydro Partnership (ABN 86 076 691 481)**

Reg	Requirement	Reference in this Plan
6 (a)	the name, address, email address and telephone number of the specified operator	Responsible Persons (Section 2)
6 (b)	the position, address, email address and telephone number of the person who was responsible for the preparation of the plan	Responsible Persons (Section 2)
6 (c)	the position, address, email address and telephone number of the persons who are responsible for carrying out the plan	Responsible Persons (Section 2)
6 (d)	the email address (if any) and telephone number of the specified operator's control room so that persons in the room can be contacted in an emergency that requires action by the specified operator to mitigate the danger of bushfire	Responsible Persons (Section 2)

Reg	Requirement	Reference in this Plan
6 (e)	the bushfire mitigation policy of the specified operator to minimise the risk of fire ignition from its at-risk electric lines	Policy (Section 4)
6 (f)	the objectives of the plan to achieve the mitigation of fire danger arising from the specified operator's at-risk electric lines	Objectives (Section 5)
6 (g)	a description, map or plan of the land to which the bushfire mitigation plan applies, identifying the location of the specified operator's at-risk electric lines	Scope (Section 6)
6 (h)	the preventative strategies and programs to be adopted by the specified operator to minimise the risk of the specified operator's at-risk electric lines starting fires	Preventative Strategies (Section 7)
6 (i)	a plan for inspection that ensures that all of the specified operator's at-risk electric lines are inspected at regular intervals of no longer than 37 months	Inspection Programs (Section 8)
6 (j)	details of the processes and procedures for ensuring that each person who is assigned to carry out the inspections referred to in paragraph (i) has satisfactorily completed a training course approved by Energy Safe Victoria and (ii) is competent to carry out such inspections	Qualifications, Training and Competency (Section 9)
6 (k)	details of the processes and procedures for ensuring that persons (other than persons referred to in paragraph (j)) who carry out or will carry out functions under the plan are competent to do so	Qualifications, Training and Competency (Section 9)
6 (l)(i)	the operation and maintenance plans for the specified operator's at-risk electric lines — in the event of a fire	Operations and Maintenance Plans (Section 10)
6 (l)(ii)	the operation and maintenance plans for the specified operator's at-risk electric lines — during a total fire ban day	Operations and Maintenance Plans (Section 10)
6 (l)(iii)	the operation and maintenance plans for the specified operator's at-risk electric lines — during a fire danger period	Operations and Maintenance Plans (Section 10)

Reg	Requirement	Reference in this Plan
6 (m)	the investigations, analysis and methodology to be adopted by the specified operator for the mitigation of the risk of fire ignition from its at-risk electric lines	Investigations, Analysis and Methodology (Section 11)
6 (n)(i)	details of the processes and procedures by which the specified operator will— monitor the implementation of the bushfire mitigation plan	Processes and Procedures (Section 12)
6 (n)(ii)	details of the processes and procedures by which the specified operator will— audit the implementation of the plan	Processes and Procedures (Section 12)
6 (n)(iii)	details of the processes and procedures by which the specified operator will— identify any deficiencies in the plan or the plan's implementation	Processes and Procedures (Section 12)
6 (n)(iv)	details of the processes and procedures by which the specified operator will— change the plan and the plan's implementation to rectify any deficiencies identified under subparagraph (iii)	Processes and Procedures (Section 12)
6 (n)(v)	details of the processes and procedures by which the specified operator will— monitor the effectiveness of inspections carried out under the plan	Processes and Procedures (Section 12)
6 (n)(vi)	details of the processes and procedures by which the specified operator will— audit the effectiveness of inspections carried out under the plan	Processes and Procedures (Section 12)
6 (o)	the policy of the specified operator 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	Assistance Provided to Fire Control Authorities (Section 13)
15 (1)	Energy Safe Victoria may, in writing, exempt a specified operator or major electricity company from any of the requirements of these regulations.	No exemptions have been issued by ESV.
15 (2)	An exemption under sub regulation (1) may specify conditions to which the exemption is subject.	

2. Responsibilities

2.1. Responsible Persons

Regulation	Specification – Contact Details
The position, email address, address and telephone number of the person who was responsible for the preparation of the plan.	***Tess Woodland*** ***Operations Manager - Wind*** AGL Energy 699 Bourke St Docklands 3008 Phone: 0498 701 509 Email: twoodland@agl.com.au
The position, email address, address and telephone number of the specified operator	***Pat Harding*** ***Head of Wind*** AGL Energy 699 Bourke St Melbourne VIC 300 Phone: 0498 524 832 Email: pharding2@agl.com.au
The position, email address, address and telephone number of the of the persons who are responsible for carrying out the plan	***Jake Barry*** ***Electrical Balance of Plant Specialist (Victoria)*** AGL Energy 1850 MacArthur-Hawkesdale Rd, Macarthur VIC 3286 Phone: 0498 796 635 Email: jbarry2@agl.com.au
The telephone number, email address (if available) of the specified operator's control room so that persons in the room can be contacted in an emergency that requires action by the specified operator to mitigate the danger of bushfire.	***AGL Dispatch Centre (24 hour availability)*** ***Duty Generation Dispatcher*** 699 Bourke St Docklands 3008 Phone: (03) 5754 3142 Email: agldc@agl.com.au
Information, including a copy of the Plan is available to be viewed by ESV or members of the public at Macarthur wind farm located at 1850 Hawkesdale Macarthur Rd, Macarthur 3286. A copy of the Plan is also available on the AGL internet site at: https://www.agl.com.au/about-agl/how-we-source-energy/renewable-energy/macarthur-wind-farm	

2.2. Management Structure, Processes and Practices

The AGL Macarthur management structure with respect to this plan is as follows (refer to appendices):

Head of Wind - responsible for:

- Overall management of AGL Macarthur;
- Timely completion and actioning of Bushfire Mitigation Plan strategies;
- Ensuring the actions of AGL Macarthur meet legislative requirements;
- Compliance and Verification of the Bushfire Mitigation Plan;
- Ensure proper liaison with other electric line and land management agencies; and
- Ensure the administration of the Bushfire Mitigation Plan meets legislative requirements.

Operations Manager - Wind – responsible for:

- Ensuring all outstanding work is completed in a timely manner and adequate resources are made available for the implementation of the plan;
- Ensuring all outstanding compliance issues are addressed and to ensure that matters are communicated to senior management; and
- Ensuring all compliance and Verification outcomes are reported to the Head of Wind in a timely manner.

eBOP Specialist (Victoria) – responsible for:

- Day to day operation of electric line asset maintenance in accordance with this plan;
- Asset inspection, vegetation control program and liaison with other land management agencies in accordance with this plan; and
- Allocation of contracts, with the responsibility of ensuring training and competencies are maintained in accordance with this plan.

Senior Electrical Engineer — responsible for:

- Providing technical advice as required to ensure that the assets are maintained to the required standard; and
- Assist with contractor evaluation and selection to ensure they are technically competent and can provide the required levels of service.

3. References

- AGL Macarthur Line Clearance Plan 2025-2026
- AGL Energy Customer Complaints Policy
- Electricity Safety Act 1998
- Electricity Safety (General) Regulations 2019
- Electricity Safety (Electric Line Clearance) Regulations 2020
- Electricity Safety (Management) Regulations 2019
- Electricity Safety (Bushfire Mitigation) Regulations 2023
- Electrical Safety (Bushfire Mitigation Duties) Regulations 2017
- Australian Standard AS4373 (2007) Pruning of Amenity Trees

4. Policy Introduction

Reg	Requirement
6 (e)	the bushfire mitigation policy of the specified operator to minimise the risk of fire ignition from its at-risk electric lines.

AGL Macarthur's management and employees are committed to avoiding fire ignition caused by electrical assets and achieving compliance with relevant legislative and regulatory requirements while encouraging innovation, system improvement and the effective use of our flexible resources. AGL Macarthur's policy is to mitigate as far as practicable the risk of fire starting from those at-risk AGL Macarthur assets.

This Bushfire Mitigation Plan outlines the policies, procedures, standards, codes, and guidelines that AGL Macarthur applies to construction, operation and management of our electrical infrastructure and sub-networks. The Plan also provides an overview of AGL Macarthur's bushfire risk management strategies in relation to key stakeholders including local government, government agencies and emergency services.

AGL Macarthur wind farm is committed to maintaining fire safe assets by:

- Periodic inspection of the assets to identify the works necessary to maintain fire safety;
- Operation programs to remove or manage the identified risks; and
- Monitoring and reporting regimes to measure the state of preparedness for the declared bushfire season and the effectiveness or programs.

5. Plan Objectives

Reg	Requirement
6 (f)	the objectives of the plan to achieve the mitigation of fire danger arising from the specified operator's at-risk electric lines.

The objectives of AGL Macarthur's Bushfire Mitigation Plan are as follows:

- Public safety;
- Compliance by AGL Macarthur with the *Electricity Safety Act 1998* and the Electricity Safety (Bushfire Mitigation) Regulations 2023;
- To maintain a program of inspection of assets on a regular basis dictated by the risks assessed at each location;
- Reduce the risk of fire starting from its assets;
- Vegetation management with compliance to minimum clearances and environmental practices
- Asset maintenance to a level consistent with industry standards;
- Liaise with fire attack and land management agencies to formulate strategies to minimise damage to the environment in the case of bushfires;
- Measurement, monitoring, reporting, and verification of program achievement and performance including the rectification of non-conformances; and
- Regular assessment of all programs in accordance with the relevant standards, regulations, and codes.

6. Scope

6.1. Overview

Macarthur wind farm is operated by AGL Hydro Partnership (hereafter, AGL Macarthur), a subsidiary of AGL Energy.

AGL and its contractors are committed to avoiding fire ignition caused by electrical assets and achieving compliance with relevant legislative and regulatory requirements while encouraging innovation, system improvement and the effective use of our flexible resources.

This Bushfire Mitigation Plan outlines the policies, procedures, standards, codes, and guidelines that AGL Macarthur applies to construction, operation and management of our electrical infrastructure and sub-networks. The Plan also provides an overview of AGL Macarthur's bushfire risk management strategies in relation to key stakeholders including local government, government agencies and emergency services.

6.2. Maps

Reg	Requirement
6 (g)	a description, map or plan of the land to which the bushfire mitigation plan applies, identifying the location of the specified operator's at-risk electric lines.

Macarthur wind farm's electric line assets are in the Moyne Shire in Victoria. Maps identifying the areas where the assets are located are provided in appendices 17.1-17.3 of this plan. The assets have been in operation since January 2013.

The Macarthur Wind Farm site covers an area in excess of 5,500 hectares (approximately 55 km2), with dimensions in the order of 11 km in the north-south direction and 8 km in the east-west direction. The site is contiguous and involves 3 separate host landholders.

The site and surrounding area comprise relatively flat farmland on the Western Volcanic Plains of Victoria. It is characterised by basaltic plains and stony rises with some vegetation in the form of pastures, wind breaks and plantations of Blue Gums. The site is dissected by roads, fence lines and agricultural buildings.

The general area in which the transmission line and terminal station are located comprises largely agricultural land with very little remnant native vegetation and wind breaks. Access to the site office is via internal road off the MacArthur-Hawkesdale road. Access to the transmission lines is via internal farm roads.

6.3. Overhead Lines

This section provides a description of all overhead line assets within Macarthur wind farm including line pole structures and protection. It outlines operating facilities; the actions associated with the lines and provides detail of recommended maintenance practices.

Overhead line circuits within the wind farm comprise:

- 33 kV line CG1L (Collector Group 1 Line) from the transition compound at Pole 26 to the transition compound adjacent to Macarthur Substation
- 33 kV line CG6L (Collector Group 6 Line) from the transition compound at pole 19E to the transition compound adjacent to Macarthur Substation
- 132 kV line MWF1 (Macarthur wind farm 1 Line) from Macarthur Substation to Tarrone Terminal Station 132kV switchyard

- 132 kV line MWF2 (Macarthur wind farm 2 Line) from Macarthur Substation to Tarrone Terminal Station 132kV switchyard
- 132 kV line TRSL (Tarrone Substation Line) from Tarrone Terminal Station 132kV switchyard to the 500 kV/132 kV transformer bay; and
- 500 kV span at Tarrone Terminal Station between SP AusNet 500 kV gantry and AGL 500 kV/132 kV transformer bay gantry

There is a total of 103 Poles that support the overhead lines within Macarthur wind farm. Occasionally the gantry support poles withing the substations are included in inspections. However, these are not considered in scope for this bushfire mitigation plan.

In the sections that follow, descriptions and operating features of lines are described individually. Maintenance requirements are common for all lines and are presented in a single section.

6.4. 33kV Collector Group Lines

33kV overhead collector lines consist of 26 poles and run from the 33kV transition compound adjacent to Macarthur Substation to terminating transition compounds at Poles 19E and 26. Between the substation transition compound and location 19, both circuits are carried on a double circuit line approximately 4.5 km in length. From pole 19W to 26, CG6L continues a single circuit line of length 1.9 km. Both collector circuits provide connection for 35 turbines and use duplex Sulfur AAAC conductor (ie. 2 x Sulfur conductors per phase). The overall line route is shown in the appendices.

6.4.1. Line Pole Structures

Free standing monopoles of 25m height are used for all line structures and generally construction type is suspension with both circuits supported on a single pole. For all strain locations two monopoles are installed and are designated by the structure location and position. Each structure carries circuit nameplate and phase identification markers. Nameplates carry circuit designation CG1L or CG6L and the structure number. Where two circuits are supported by a single pole, nameplates are provided on both sides of the pole for the circuit directly above. Surge arresters are used at each line termination within the transition compound yards and mounted on structures 13E and 13W in the place of bridging insulators.

6.4.2. Line Protection

Collector protection is provided by Areva P141 relays (X Protection) and SEL 751 relays (Y Protection). These provide IDMT overcurrent and earth fault protection for lines as well as other wind farm protection functions (such as under and over frequency protection). The protection functions don't rely on the Optical Ground Wire (OPGW) communications path. No auto reclosing is provided collector circuits so that collector cables are not unduly stressed.

6.5. 132kV Lines to Tarrone Substation

The double circuit 132kV line from Macarthur Substation to Tarrone Terminal Station 132kV switchyard is 13.6 km long, with each circuit, designated MWF1 and MWF2, rated at 210 MVA and consisting of 73 poles (includes East and West poles).

The circuits are terminated at gantry structures at both substations and supported by steel or concrete poles at 63 locations. Steel poles are used from Macarthur substation to Pole 52, from Pole 26 to Tarrone Terminal Station and for Pole 46 on the Kangertong Rd road reserve. Concrete poles are used from Poles 27 to 45 and from 45 to 51.

Duplex Sulfur AAAC conductor is used for steel pole sections (i.e.. 2 x Sulfur conductors per phase) and simplex Sulfur AAAC conductor (1 per phase) for concrete pole sections. The overall line route is shown in the appendices.

6.5.1. Line Pole Structures

Free standing monopoles of 25m or 30m height are used for all line structures and generally construction type is suspension with both circuits supported on a single pole. For all steel angle and strain locations, two monopoles are installed in each location and are designated by the structure location and position. Each structure carries circuit nameplate and phase identification markers. Nameplates carry circuit designation MWF1 or MWF2 and the structure number. Where two circuits are supported by a single pole, nameplates are provided on both sides of the pole for the circuit directly above. Surge arresters with counters are used at each line termination within the substation switchyards.

6.5.2. Line Protection

Line protection is provided by GE L90 current differential relays (X Protection) and SEL 311L current differential relays (Y Protection). These rely on communications between the two substations, provided by the redundant OPGWs, being intact. On failure of communications, L90 relays switch to backup distance protection function at each end. Auto reclosing is provided on each line circuit and this can be enabled or disabled locally at the protection panel. All switching is 3 pole and reclosure is only for single phase faults, any three-phase fault will lockout without reclosure.

6.6. 132kV and 500kV Tarrone Substation Lines

A 132kV (approximately 300 meters long) single circuit line is run within Tarrone Terminal Station, from the 132kV switchyard to the 500kV/132kV transformer bay. It's terminated on gantries at both ends and supported between by 4 steel poles. Triplex Sulfur AAAC conductor is used (i.e. 3 x Sulfur conductors per phase) and the earth wire is Grape ACSR conductor. The 500kV overhead line consists of a single span (approximately 25 meters long) between AusNet Services and AGL 500kV gantries and its droppers. This span is owned by AGL and the point of common coupling is located at termination structure at AusNet Service Terminal Station. The conductor used is quad Orange ACSR (i.e. 4 x Orange conductors per phase). The earthwire used is Grape ACSR. The overall line route is shown in the appendices.

6.6.1. Line Pole Structures

Free standing 25 m monopoles are used for 132kV TRSL. Single suspension poles are used at all locations. Their arrangement is as for poles used for Macarthur wind farm 132kV lines. Each structure carries circuit nameplate and phase identification markers.

6.6.2. Line Protection

The short 132kV line is within the transformer differential protection zone and so is protected by transformer T60 (X Protection) and SEL 357E (Y Protection). The 500kV span is within AusNet Services connection zone and so is protected by AusNet Services. Protection operations for faults in either line will result in tripping of 132 kV circuit breakers and the AusNet Services 500 kV circuit breakers.

7. Prevention Strategies

Reg	Requirement
6 (h)	the preventative strategies and programs to be adopted by the specified operator to minimise the risk of the specified operator's at-risk electric lines starting fires.

7.1. Preventative Programs

The following components and defects are targeted by the preventative programs outlined below:

- Conductors;
- Poles;
- Insulators;
- Earth bonds;
- Split pins/shackles;
- Signage; and
- Vegetation.

The following preventative programs are adhered to, to minimise the risk of bushfire initiation at AGL Macarthur Assets:

- All conductor spans in all areas will be inspected on a 36 month (+/-1) frequency by drone inspection to identify any trees infringing the clearance space and any other obvious line defects, which may be a cause of the ignition of fire;
- All conductor spans in all areas will be inspected prior to the start of the fire season to identify any trees infringing the clearance space and any other obvious line defects, which may be a cause of the ignition of fire. Inspections may be carried at other times depending on location and prevailing weather conditions. The inspection will be carried out by either drone inspection and/or ground patrol, whichever is assessed to be the most appropriate in the circumstances (including weather, track conditions, timing and results of most recent 36 month inspection) during the Preparedness Reviews, as per section 12.1.2;
- Verification of the effectiveness of any inspections carried out under the plan is performed through conducting a ground based visual assessment following the completion of the 36-month Electric Line Inspection works; and
- The clearance space prescribed in the line clearance regulations will always be maintained clear of vegetation. In carrying out the work necessary to achieve this, the duties assigned to the responsible person in the electric line clearance plans will be observed.

7.2. Monitoring of Asset Condition and Vegetation

The procedures employed by AGL Macarthur meet the requirements of electric line clearance regulations and include:

- The pre-summer Verification program of all AGL Macarthur line assets for asset condition is conducted on an annual basis, with a further 36 month (+/- 1 month) inspection by an independent, competent, external contractor. AGL Macarthur monitors this program via regular verifications of the inspection. The last inspection was completed in September 2023. Refer to section 17.7 for previous inspection results;
- The pre-summer Verification program of all AGL Macarthur line assets for vegetation clearance is conducted by an independent, competent, external contractor on an annual basis. AGL Macarthur monitors this program via regular verifications of the inspection;

- Recurrent pruning and clearing will be conducted on a maximum 36-month cycle (where required) for hazardous fire areas, however, all reasonable efforts will be made to achieve an annual pruning and clearing cycle with the following objectives;
    - To maintain the clearance space during this period additional pruning and clearing will be required (regrowth space) and diseased and unstable vegetation in the area beyond this which is a hazard to the line (hazard space) must be removed or other remedial action taken
    - Establishing the appropriate regrowth space will enable pruning and clearing to be limited to the 36-month cycle (+/- 1 month), but as this is dependent on climatic conditions during the cycle pre-summer, clearing may be necessary at some locations outside the normal cycle
- The ongoing inspection program is scheduled using CMMS and undertaken by authorised competent employees and/or contractors.

There is currently no outstanding tree clearing to be completed to meet regulatory requirements.

7.3. Engineered Solutions

AGL Macarthur will investigate engineering solutions prior to any clearing activities. Alternative methods shall be used where the benefits outweigh those of conventional practices.

AGL undertake to provide uniform and consistent asset management strategies for undertaking corrective (reactive) and preventive (pro-active) actions committed to avoiding fire ignition caused by electrical assets and achieving compliance with relevant legislative and regulatory requirements.

Asset management strategies comprise major capital upgrades and consideration to underground infrastructure aimed at reducing risk and ongoing O&M costs with respect to overhead lines and easements (refer to the appendices).

7.4. Private Overhead Electric Lines

Macarthur wind farm, as a generator of electricity, does not have Private Overhead Electric Lines (POEL's) as defined by the relevant legislation. All Macarthur wind farm line assets are either used for the internal transmission of generated electricity or the supply of electricity to assets. Macarthur wind farm does not supply customers via POEL's.

7.5. Rapid Earth Fault Current Limiter Protection

The Victorian Government recently introduced enhanced powerline fault detection and suppression requirements to reduce the risk of bushfires caused by faults on the state's regional and rural powerline networks including Rapid Earth Fault Current Limiter (REFCL) protection.

These requirements have been added to the Electricity Safety (Bushfire Mitigation) Regulations 2023 (Regulations) and form part of a raft of measures that have been undertaken as part of the Victorian Government Powerline Bushfire Safety Program (PBSP).

AGL Macarthur Wind Farm is not affected by REFCL as the overhead lines do not form part of the transmission system.

7.6. Key Timings

Key timings for preventative strategies are as follows:

- The Bushfire Mitigation Plan will be completed and ready for submission to Energy Safe Victoria every 5 years;
- Macarthur Wind Farm annual Electric Line Clearance Management Plan will be completed prior to the 31st March each year and submitted to Energy Safe Victoria upon request;
- Inspection program dates are triggered by a computerised maintenance management system. Timing for rectification works is determined through a risk assessment process by the Operations Manager – Wind (VIC), Site Supervisor, eBOP Specialist and Senior Electrical Engineer based on the asset condition; and
- Desktop audit of plan and fire procedures shall occur prior to the fire season each year.

8. Inspection Programs

Reg	Requirement
6 (i)	a plan for inspection that ensures that all of the specified operator's at-risk electric lines are inspected at regular intervals of no longer than 37 months.

8.1. Methodology

The purpose of the inspection programs is to assess the condition of electricity distribution assets, record test results and observations, and log results for further evaluation and action. Inspection programs have been designed for the surveillance of identified causes of fire ignition. Inspections are completed by visual inspection from the ground and drone inspection.

8.2. Inspection Schedule

The following inspections are undertaken:

- All poles, cross arms, conductors, and hardware in all areas will be inspected on a 36 month (+/-1) frequency by drone inspection to identify any line defects, which may be a cause of the ignition of fire. The results are recorded in the Macarthur wind farm asset condition database;
- All conductor spans in all areas will be inspected annually prior to the start of the fire season to identify any trees infringing the clearance space and any other obvious line defects, which may be a cause of the ignition of fire. Inspections may be carried at other times depending on location and prevailing weather conditions;
- A vegetation line clearance verification of all Macarthur wind farm line assets is conducted annually by an appropriately qualified contractor with results recorded in the Macarthur wind farm asset condition database; and
- All issues or actions arising from any of these inspections are reported to the Operations Manager – Wind (VIC) and prioritised as below.

All issues or actions arising from any of these inspections are entered as jobs in the computerised maintenance management and prioritised below.

Where the 3rd party inspector uses a different priority system to AGL's, AGL's engineering team review, assess and reclassify to AGL's priority system ensuring the inspector's rectification timelines are maintained.

The inspection reports identify the number of assets inspected, number of defect items, defect description, location and remedial actions required. These reports are reviewed as part of the annual verification to ensure items have been completed in the required timeframe.

Priority/Code	Description
P1	• Requires immediate risk assessment and/or rectification within 24 hours
P2	• Requires risk assessment or rectification within 12 weeks
P3	• Requires risk assessment or rectification within six months
P4	• Requires risk assessment or rectification within 12 months
P5	• Recorded for opportunistic maintenance purposes and may not be addressed before the next inspection cycle

8.3. Pole Inspections

All poles are constructed of galvanised steel or concrete and will be rectified in the advent of failed inspection.

8.4. High Voltage Cross Arms

All pole cross arms are constructed of galvanised steel and will be rectified in the advent of failed inspection.

8.5. Personnel

This section outlines the process to be employed by all personnel, including contracted staff, carrying out asset inspections and tests carried out in a responsible manner and applies to all persons associated with this management plan.

All personnel, including contracted staff, must have satisfactorily completed the required competency-based training and their performance monitored on an annual basis.

Random verifications are completed on all work conducted by contractors during the currency of each task. Any non-compliance issues are communicated to the relevant contractor or employee and corrective actions are taken immediately. These are recorded for verification purposes.

9. Qualifications, Training and Competency

Reg	Requirement
6 (j)	details of the processes and procedures for ensuring that each person who is assigned to carry out the inspections referred to in paragraph (i) has satisfactorily completed a training course approved by Energy Safe Victoria and is competent to carry out such inspections.
6 (k)	details of the processes and procedures for ensuring that persons (other than persons referred to in paragraph (j)) who carry out or will carry out functions under the plan are competent to do so.

Workers shall only undertake work for which they have been trained, assessed, and deemed competent to enable them to safely perform work and all relevant contractors must have sufficient knowledge, training, qualifications, and experience to ensure that tree activities under their control are conducted in a safe and environmentally responsible manner.

AGL Macarthur engages contractors to perform inspections of at-risk electric assets and all work is carried out by suitably qualified and licensed personnel having experience in the types of work to be executed. Contractors executing vegetation management works must have a minimum of Certificate II in ESI Powerline Vegetation Control, Cert III Horticulture (Arboriculture), and hold appropriate certificates for both themselves and their equipment that legally entitles them to undertake the work as laid out in the VESI framework.

AGL Macarthur contractors who are suitably qualified will be considered as an “authorised person” or under the control of an authorised person under the Victorian High Voltage Code of practise on electrical safety for the work on or near high voltage electrical apparatus.

AGL Macarthur records all contractor training and qualifications in the ‘RAPID Global’ and ‘cm3’ contractor management application systems including ensuring routine refresher training in relevant modules are current and work can be undertaken in a safe competent manner. Training records will be available prior to commencement of works or made accessible via the individuals Australian ESI Skills Passport.

AGL Macarthur will have a representative responsible for carrying out this plan on site at the commencement of the inspections/clearance to observe/conduct appropriate inductions which may include such a request for records. If any worker associated with the work tasks covered under this plan are found to be performing works without required training/qualifications/experience or outside of their capabilities or the prescribed documentation, they are supposed to be working under then work will be immediately stopped and the associated personnel removed from the site.

9.1. Competency and Refresher Requirements

9.1.1. Asset Management

The following table outlines the Units of Competency required to be undertaken for the applicable Asset Management and Inspection roles for AGL Macarthur Wind Farm. All Mandatory (M) units of competency shall be completed to undertake the role.

Qualification and Core Competency and Refresher Standard		Competency Standard Unit	Asset Inspector	Asset Inspector Trainee
Qualification				
Certificate II in Asset Inspection		UET20621	M	
ESI safety rules for work on, near or in the vicinity of electrical apparatus		UETDRMP002	M	M
Prepare to work safely in the construction industry		CPCWHS1001	M	M
Refresher Requirements				
3 Yearly	Control traffic with stop-slow bat	RIIWHS205E	M	M
3 Yearly	Implement traffic management plan	RIIWHS302E	M	M
3 Yearly	Manual Handling		M	M
3 Yearly	VESI Environmental Framework		M	M
3 Yearly	VESI Safety Framework		M	M

1 Year	Cardiopulmonary Resuscitation (CPR)	HLTAID009	M	M
1 Year	First Aid in an ESI environment	UETDRMP010	M	M
1 Year	Safe Approach Distances		M	M
Other Requirements				
ESI Worker Card			M	M
Network Operator Induction			M	M

M – Mandatory; A – Additional (If worker requires for the works being performed)

9.1.2. Vegetation Management

The following table outlines the Units of Competency required to be undertaken for the applicable Vegetation role at AGL Hydro. All Mandatory (M) units of competency shall be completed to undertake the role.

9.1.2.1. Qualification and Competencies

Qualification and Core Competency Standard	Competency Standard Unit	Assessor	Cutter Working from EWP	Specialist Plant Operator	Tree Climber
Qualification					
Certificate II in ESI – Powerline Vegetation Control	UET20621	M	M	M	M
Apply ESI safety rules, codes of practice and procedures for work on or near electrical apparatus (Green Book / Blue book)	UETTDRRF01B	M	M	M	M
Elective Competency Standard Units					
Use climbing techniques to cut vegetation above ground near live electrical apparatus	UETTDRVC21A				M
Assess vegetation and recommend control measures in an ESI environment	UETTDRVC24A	M			
Use elevated platform to cut vegetation above ground level near live electrical apparatus	UETTDRVC25A		M		
Operate specialist equipment at ground level near live electrical apparatus	UETTDRVC31A			A	
Use specialised plant to cut vegetation above ground level near live electrical apparatus	UETTDRVC32A			M	
Apply pruning techniques to vegetation control near live electrical apparatus	UETTDRVC33A		M	M	M
Undertake release and rescue from a tree near live electrical apparatus	UETTDRVC34A				M
Fell small trees	AHCARB202A		A	A	A

Undertake standard climbing techniques	AHCARB204A				M
Apply chemicals under supervision	AHCCHM201A		A	A	A
Operate machinery and equipment	AHCMOM304A		A	M	A
Recognise plants	AHCPCM201A	M	A	A	A
Operate a mobile chipper/mulcher	FPIHAR2206B		A	A	A
Licence to operate a boom-type elevating work platform (boom length 11 metres or more)	TLILIC2005A		M		

M – Mandatory; A – Additional (If worker requires for the works being performed)

9.1.3. Line Workers & Cable Jointers

The following table outlines the Units of Competency required to be undertaken for the applicable line worker and cable jointer roles for AGL Macarthur Wind Farm. All Mandatory (M) units of competency shall be completed to undertake the role.

Qualification and Core Competency and Refresher Standard		**Competency Standard Unit**	**Line Worker**	**Cable Jointer**
Qualification				
Certificate III in ESI - Distribution Underground		UET30821		M
Certificate III in ESI - Distribution Overhead		UET30621	M	
ESI safety rules for work on, near or in the vicinity of electrical apparatus		UETDRMP002	M	M
Prepare to work safely in the construction industry		CPCWHS1001	M	M
Lineworker Licence - Cable Jointing				M
High Risk Work Licence - Boom-type Elevating Work Platform (WP)			M	
High Risk Work Licence - Dogging (DG)			M	
Lineworker Licence - Distribution			M	
Refresher Requirements				
3 Yearly	Control traffic with stop-slow bat	RIIWHS205E	M	M
3 Yearly	Implement traffic management plan	RIIWHS302E	M	M
3 Yearly	Manual Handling		M	M
3 Yearly	VESI Environmental Framework		M	M
3 Yearly	VESI Safety Framework		M	M
1 Year	Cardiopulmonary Resuscitation (CPR)	HLTAID009	M	M
1 Year	First Aid in an ESI environment	UETDRMP010	M	M

1 Year	Safe Approach Distances		M	M
1 Year	Perform cable pit/trench/excavation rescue	UETDRMP003		M
1 Year	Perform elevated work platform controlled descent escape	UETDRMP004		M
1 Year	Perform elevated work platform rescue	UETDRMP005		M
1 Year	Perform pole top rescue	UETDRMP006		M
1 Year	Perform rescue from a live low voltage panel	UETDRMP007		M
1 Year	Testing of connections to low voltage electricity networks	UETDRMP011	M	M
3 Yearly	Making LV Dead		M	
3 Yearly	Safe to Climb		M	
3 Yearly	Working on energised low voltage underground electrical apparatus	UETDRMP013		M
3 Yearly	Working on energised low voltage overhead electrical apparatus	UETDRMP012	M	
3 Yearly	Apply access authority procedures to work on or near electrical apparatus	UETDRMP001	M	M
Other Requirements				
ESI Worker Card			M	M
Network Operator Induction			M	M

9.1.4. Refresher Requirements

Frequency	Qualification and Core Competency Standard	Competency Standard Unit	Assessor	Cutter Working from EWP	Specialist Plant Operator	Tree Climber
3 Yearly	Apply ESI safety rules, codes of practice and procedures for work on or near electrical apparatus (Blue book)	UETTDRRF01B	M	M	M	M
3 Yearly	Apply access procedures to work on or near electrical network infrastructure (Receive Access Permit)	UETTDRRF09B	M	M	M	M
1 Year	Cardiopulmonary Resuscitation (CPR)	HLTAID001	M	M	M	M
1 Year	First Aid in an ESI environment	UETTDRRF10B	M	M	M	M
1 Year	EWP Controlled Descent Escape	UETTDRRF08B		M		
1 Year	EWP Rescue	UETTDRRF03B		M		
1 Year	Undertake release and rescue from a tree near live electrical apparatus	UETTDRVC34A				M

M – Mandatory; A – Additional (If worker requires for the works being performed)

10. Operations and Maintenance Plans

10.1. Event of a Fire

Reg	Requirement
6 (l)(i)	the operation and maintenance plans for the specified operator's at-risk electric lines — in the event of a fire

In the event of fire which prevents the safe operation of the HV overhead line, the line will be deenergised to minimise further ignition sources. Where the fire is in the area but presents minimal or no risk to the safe operation of the overhead line, the overhead line will continue to operate.

In the event of an emergency requirement e.g. bushfire the windfarm is designed to be shut down in different manners including:

- by individual turbine,
- by multiple turbines up to and including all turbines on the windfarm. or
- at the substation.

The shut down will mean the area(s) shut down will not generate/distribute electricity.
Shutting down/stopping some or all of the wind farm's operations is the responsibility of the Emergency Response Leader in consultation with:

- Emergency Services,
- AGL Distribution Centre (AGLDC), and
- Ausnet

The shut down may be initiated by AGL or upon request from the emergency services. The AGL Emergency Response Leader is to advise of any residual electrical risks onsite after shutdowns are implemented.

Further details are outlined in the AGL Macarthur WF Emergency Response Plan (MWF-HS-PLN-003) for bushfire response guidance, details of equipment onsite and emergency contact details. There were no fire starts in FY24 from at risk electric lines.

10.2. Days of Total Fire Ban and Fire Emergencies

Reg	Requirement
6 (l)(ii)	the operation and maintenance plans for the specified operator's at-risk electric lines — during a total fire ban day

On days of Total Fire Ban and emergencies, the AGL Dispatch Centre Generation Dispatcher will inform team leaders of the declaration days of total fire ban, verbally and in writing before 7:30 am. The Site Supervisor will organise to reschedule any planned works that may be considered by government fire service agencies, or under codes of practice, regulations, or statutory requirements, to pose a risk of fire ignition.

Where such tasks need to be performed to ensure the security and safety of the network all permits required by the government fire service agencies, or under codes of practice, regulations, or statutory requirements, will be obtained.

Records of events and instructions for days of Total Fire ban will be kept by AGL Macarthur for inspection by regulatory and government fire service agencies if required. The Site Supervisor and Operations Manager – Wind (VIC) will remain in close liaison with government fire service in the approach to the fire season to confirm season start date.

AGL Macarthur will have on call technicians available on standby if site access is required. Refer to section 10.1 regarding isolation of turbines and the site in the event of an emergency. The Emergency Response Leader will take direction from emergency services and consult with AGLDC to ensure risk is minimised and safety to personnel.

Protection functions will continue to operate as outlies in sections 6.4.2 and section 6.5.2 on Total Fire Ban days.

10.3. During the Fire Danger Period

Reg	Requirement
6 (l)(iii)	the operation and maintenance plans for the specified operator's at-risk electric lines — during a fire danger period

AGL Macarthur assets will be operated in accordance with normal operating practices during the declared fire danger periods. This includes review of all work requirements and permitting, including hot work permits, with consideration to impact of weather and environmental conditions to assess the risks and allow works to proceed. The fire danger rating will be observed on a daily basis to ensure risks are assessed and resourcing can be reviewed. If a Total Fire Ban is in place, the process for Total Fire Ban days will be followed as outlined in section 10.2.

The AGL Macarthur Emergency Response Plan (ERP), Wind MWF Site ERP v1, highlights the key roles and responsibilities of AGL Macarthur personnel and emergency services contacts for liaison between the two parties.

As part of the AGL Summer readiness program, AGL will review any asset maintenance and replacement work required to ensure the asset operates safely and reliably during the fire danger period. This extends to any vegetation management and emergency cutting identified prior to the fire danger period.

AGL Macarthur will have on call technicians available on standby if site access is required. Refer to section 10.1 regarding isolation of turbines and the site in the event of an emergency. The Emergency Response Leader will take direction from emergency services and consult with AGLDC to ensure risk is minimised and safety to personnel.

11. Investigations, Analysis and Methodology

Reg	Requirement
6 (m)	the investigations, analysis, and methodology to be adopted by the specified operator for the mitigation of the risk of fire ignition from its at-risk electric lines.

Electrical events/faults, if they influence risk of fire ignition from the sites at-risk electric lines or not, are recorded and reported using AGL Macarthur's "myHSE Event Report" which if considered to be a 'Serious Electrical Event', are reported separately to ESV and/or WorkSafe Victoria. For faults/incidents/defects requiring further internal investigation the 'Incident Reporting and Investigation Procedure' is followed.

11.1. Fire Reporting and Investigations

AGL Macarthur undertakes to report, investigate, and analyse all fire ignitions originating from its electric line assets.

11.1.1. Definitions

Fires are categorised under two definitions as follows:

- Fire: the ignition of combustible materials on the ground including trees and other vegetation possibly caused by AGL Macarthur's assets; and
- Significant Fire: a fire which causes injury or death, or significant damage to stock or property which includes trees, pasture and fencing possibly caused by AGL Macarthur's assets.

11.1.2. Fire Reporting Procedures

Should a fire occur, which may have been caused by AGL Macarthur assets it is to be reported by:

- A telephone report to the AGL Dispatch Center and Head of Wind
- An HSE incident raised in the AGL Macarthur HSE Management System (myHSE)

When reporting fires causing minimal damage, and where it is unlikely that there will be any media involvement, the Head of Wind, Operations Manager – Wind (VIC) and Site Supervisor must be provided with at least the following information:

1. Current status of the fire (ie. out, under control etc.)
2. Attendance of any other authority (Police, CFA)
3. Date and time of discovery
4. Pole number
5. Locality or line/spur name
6. Injured personnel
7. Material damage
8. Line voltage
9. Possible cause; and
10. Details of preliminary information from the initial site inspection.

In the event of a significant fire, or if media involvement is likely, the Head of Wind, Operations Manager – Wind (VIC) and Site Supervisor are to be provided with the following information, in addition to that above, as soon as possible:

1. Name of the person reporting the fire
2. Whether AGL Macarthur Employees are still on site; and
3. If the police attended the incident.

Fire Report information must be submitted within 48 hours of first notification of the incident. Sufficient detail is to be included to allow a full understanding of the incident (including weather, pole/cross arm materials, conductor materials, etc.).

11.1.3. Report to Energy Safe Victoria

If as the result of an incident, serious property damage, or a serious reduction in the level of public safety, has occurred or is likely to occur in Victoria, then all details of the incident must be reported to Energy Safe Victoria in accordance with Regulation 401 of the Electrical Safety (General) Regulations 2019.

11.1.4. Root Cause Analysis

For accidents that may potentially lead to a fire, AGL will record the incidents in the MyHSE system. According to AGL's OMS 5004 Root Cause Analysis process, incidents requiring RCA analysis will be analyzed using the 5-Why principle. The steps for a 5-Why RCA analysis are as follows:

Step 1: Identify the Incident/Problem

Step 2: Determine the Sequence of Events. Gather all Relevant Information

Step 3: Identify the Basic Causes (using the Fishbone Diagram)

Step 4: Use 5-Whys to identify the Root Causes. Use the Basic Causes from Step 3 and ask 'Why' 5 times.

Step 5: List the Actions to address the significant Basic Causes and Root Causes of the Problem

11.2. Response Review and Reporting

- Macarthur wind farm undertakes to respond as soon as practicable to all fires arising from their actions or asset. In the case of potential ignition sources from asset operations on days of total fire ban, Macarthur wind farm may open-off HV lines running through high-risk areas, dependent on weather conditions where a risk of ignition is identified such as unstable trees encroaching the power line. All employees and contractors employed by Macarthur wind farm are instructed to report all fires immediately.
- The Bushfire Mitigation Plan, Electric Line Clearance Management Plan, Bushfire Mitigation Manual, 500kV, 132 kV AND 33 kV Overhead Line Overhead and Maintenance Manual, and all subordinate documents will be reviewed on an annual basis or more frequently if required.
- All Macarthur wind farm procedures, documentation and asset readiness relating to bushfire mitigation, shall be reviewed each year in November prior to declaration of the fire season. All corrective actions identified shall be identified prior to the declaration of the fire danger period. A verification report and progress on corrective actions shall be forwarded to the Head of Wind prior to the declaration of the fire season.

11.3. Assistance from Fire Agencies for Fires near Electrical Assets

The following procedures apply when assistance is required from fire agencies for fires near electrical assets:

- Access to assets - for personal safety reasons no access to any high voltage source (e.g. switchyards, HV Lines, poles) by any fire authority or personnel is permitted without prior approval from the Site Supervisor of Macarthur wind farm
- Co-ordination of resources - each year Macarthur wind farm shall circulate the Macarthur wind farm preparedness and capability statement with local fire agencies that includes the role of each agency in the event of a fire endangering or affecting any HV assets
- Appointed contact persons — in the event of an incident affecting any Macarthur wind farm asset, the Site Supervisor shall notify the Operations Manager – Wind (VIC) or their delegate for allocation of resources; and
- Information exchange - Macarthur wind farm shall maintain a free exchange of information to all fire control agencies to enable a rapid, appropriate response to all incidents. The Operations Manager – Wind (VIC) will use this information exchange to best advantage to identify risks to and from Macarthur wind farm Assets and effectively apply lessons learnt from past events to manage future fire risk

12. Processes and Procedures

12.1. Implementation Monitoring

Reg	Requirement
6 (n)(i)	details of the processes and procedures by which the specified operator will— monitor the implementation of the bushfire mitigation plan

12.1.1. General

Monitoring the implementation of the plan is performed predominantly through the use and management of the AGL works management system which records any required scheduled or unscheduled works including, but not limited to, the preventative works listed in this plan.

AGL also track the completion of these items in the Summer Readiness program and tracking, which is used to validate the completion of each work item. The specific measure is the verification of work orders related to bushfire mitigation and line vegetation works which have a due date, or are required to be done, prior to the 1st of December or before the declared fire danger period each year, whichever is earlier.

12.1.2. Preparedness Reviews

AGL Macarthur will undertake annual reviews of its bushfire preparedness in relation to overhead line assets and generation structures. Plan reviews by Senior Leaders, and other nominated staff, will be held annually to validate; the plan, the efficiency of maintenance programs, program compliance, and program relevance.

Plan reviews by Senior Leaders, include:

- The Operation Manager - Wind (VIC);
- Wind High Voltage Operating Authority;
- Site Supervisor – Macarthur Wind Farm;
- Electrical Balance of Plant Specialist – Vic;
- Senior Electrical Engineer;
- HSE Advisors; and
- Other nominated personnel as deemed necessary

Note: A delegate may be nominated in the absence of one of the above Leader.

Plan reviews will include checks and assessments of the following:

- Planning and scheduling tasks
- Monitoring inspections carried out
- Line maintenance database
- Urgent work
- Poles and Line hardware
- Trees/vegetation
- Communication effectiveness with the fire service agencies
- Response to days of Total Fire Ban and high fire danger; and
- HV switching procedures

All issues or actions arising from any of these reviews are tracked as part of AGL's Summer Readiness program. The Operations Manager - Wind (VIC) oversees each plan review and coordinates follow-up action to verify the implementation of the corrective action and that the required work scopes are raised and tracked.

12.1.3. Plan Effectiveness and Monitoring

The results of plan reviews that identify deficiencies in the procedures or the plan implementation associated with the management of bushfire mitigation are added to the HSE management system and action register for further action and tracking. This register tracks the issue, responsible person, and progress status. The results of each plan review including the documented actions are advised to the Macarthur Leadership Team.

The change to a procedure or this plan will be implemented in a timely manner depending on the significance of the issue identified. All items identified will be incorporated into the next annual revision of the manual.

The following table provides an overview of works at MacArthur Wind Farm regarding the replacement and repair of damaged insulators, earth bonds, and shackle/pins on the overhead lines.

Year	OHL Insulator	OHL Earth bond	OHL Shackle/Pin
2023 August	16	26	5
2023 April	8		
2019	16		
2016	18		

12.1.4. Performance Indicators

Other performance measures which will be collated and reviewed annually prior to the resubmission of this plan to ESV include:

- Number of electrical events/faults that have occurred on the relevant Electric Lines with the cause identified to be directly related to their condition and/or compliance with the Regulations;
- Number of Stakeholder complaints/correspondence received in relation to the relevant Electric Lines as measured through AGL Macarthur's community and communications department;
- Lost Time Injuries (LTI's) or Medical Treatment Injuries (MTI's) with the cause identified to be directly related to the Electric Lines;
- Maintenance work completed on the relevant Electric Lines;
- Future Electric Line Clearance Plan; and
- Financial Penalties (Penalty Units) received.

12.2. Implementation Verification

Reg	Requirement
6 (n)(ii)	details of the processes and procedures by which the specified operator will— Verification the implementation of the plan

Verification of the implementation of the plan is largely done as part of the annual review process prior to resubmission of this plan to ESV and a review prior to the declared fire danger period which will be undertaken by a representative responsible for carrying out this plan which includes:

- that the qualifications and experience of personnel performing any scheduled inspection and/or clearance works adheres to both ESV's and this plans requirements
- associated report/s have been submitted to the persons responsible for carrying out this plan

- all inspections, reports, and subsequent recommendations from have been conducted in line with the scope/timing of recommendations and to the quality of this plan and the applicable Acts, Regulations, Codes and Standards; and
- the inspections and recommendations from the report, if any, have an appropriate task/s entered into the AGL Macarthur works management systems and those task/s have been closed out following completion or the works.

12.3. Implementation Deficiencies

Reg	Requirement
6 (n)(iii)	details of the processes and procedures by which the specified operator will— identify any deficiencies in the plan or the plan's implementation

Identification of any deficiencies in the plan or the plan's implementation is achieved through:

- the annual review process of this plan prior to resubmission to ESV;
- ESV audits of the plan;
- Persons carrying out this plan to provide feedback to their Leader and/or the person/s responsible for the preparation of this plan when a deficiency is found;
- AGL Macarthur's critical control checks and workplace safety and environment observation/conversation program which requires employees and leaders to have routine observation/conversation which are entered into the AGL Macarthur myHSE systems; and/or
- Review of site/asset risk registers.

12.4. Changes to the Plan's Implementation

Reg	Requirement
6 (n)(iv)	details of the processes and procedures by which the specified operator will— change the plan and the plan's implementation to rectify any deficiencies identified under subparagraph (iii)

Changes to the plan and the plan's implementation if any deficiencies are identified are performed during the annual review of this plan prior to resubmission to ESV.

If there are more critical changes required to important information, including but not limited to, contact details or applicable procedures/policies these will be performed as soon as possible and resubmitted to ESV. The updated plans will then be reloaded into AGL Macarthur's enterprise library and on the AGL Macarthur webpage listed in the plan.

The annual review of this plan is performed by the persons responsible for preparing the plan in conjunction with the other stakeholders and responsible persons listed in this plan. These include, but is not limited to, updating the plan for any new or revised Legislation, Regulations or Codes, industry practices and Electric Line configurations and/or locations.

12.5. Monitor Effectiveness of Inspections

Reg	Requirement
6 (n)(v)	details of the processes and procedures by which the specified operator will— monitor the effectiveness of inspections carried out under the plan

The effectiveness of inspections are monitored under the plan by the persons responsible for preparing the plan through the Bushfire Mitigation Plan annual review process and Summer Readiness review process. The effectiveness is monitored by:

- Review of the performance indicators outlined in Section 12.1.4; and
- Review of the monthly fire season inspection results to monitor the condition of the asset and both verify results and assess frequency of inspections completed by qualified personnel as per Section 9.1.

12.6. Verification of the Effectiveness of Inspections

Reg	Requirement
6 (n)(vi)	details of the processes and procedures by which the specified operator will— audit the effectiveness of inspections carried out under the plan

Verification of the effectiveness of any inspections carried out under the plan is performed through conducting a ground based visual assessment following the completion of the 36-month Electric Line Inspection works. This will be performed by personnel who have:

- Knowledge of applicable Acts, Regulations and Codes associated with this plan;
- Knowledge of this plan and its review and verification obligations;
- Knowledge and are familiar with, the Electric Lines subject to the review and verification; and
- A minimum of 3 years Electric Line management experience; or
- An independent 3rd Party.

13. Assistance Provided to Fire Control Authorities

Reg	Requirement
6 (o)	the policy of the specified operator 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.

13.1. Investigations of fires

AGL Macarthur will allow access to and assist fire control authorities in the investigation of fires at or near the relevant Electric Lines.

13.2. Liaison with Management Agencies

AGL Macarthur will liaise with Moyne Shire to ensure that fire mitigation strategies are in place prior to the declaration of fire season.

Macarthur wind farm shall maintain links with the CFA to ensure swift and effective, response to fire ignition within its area of responsibility. A fire response plan shall be circulated to the CFA prior to the fire season each year detailing what resources are available to fire attack agencies.

14. Public Awareness Program

Macarthur wind farm has no private electric supply lines connected to any of its overhead assets. Where Macarthur wind farm has overhead lines passing over private or public land it shall inform, and make aware, the land holders of their obligations regarding; ensuring limits of approach and clearance distances are maintained, allowing access for periodic inspections, and what actions will need to be undertaken if there is a non-compliance.

The following communications will achieve this:

- Macarthur wind farm shall inform land holders of inspection times, their rights, and the procedure for settlement of any grievances arising; and
- Plan available for inspection.

15. Plan available for inspection

As per Section 83BA (3) (a) of the Act, the latest ESV approved Bushfire Mitigation Plan is available on the AGL internet site at:

https://www.agl.com.au/about-agl/how-we-source-energy/renewable-energy/macarthur-wind-farm

Any superseded versions of the plan located at the above websites will be overwritten by the AGL Macarthur person responsible for preparing the plan once an updated version of the document has been approved/accepted by ESV.

A hardcopy of the ESV approved/accepted Bushfire Mitigation Plan mentioned above is available for inspection at AGL Macarthur's Site Administration office, during normal business hours. Any hardcopy superseded versions of the plan will be destroyed by the person responsible for preparing the plan.

16. Macarthur Assets

16.1. Macarthur Wind Farm Substation

16.2. Tarrone Substation

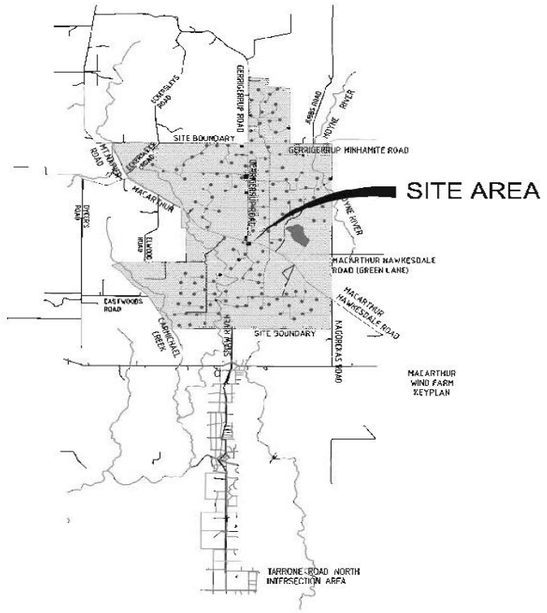
16.3. Tarrone Terminal Station

17. Appendices

17.1. Location Map – At-risk Electric Line Assets in Hazardous Bushfire Risk Area

MACARTHUR WIND FARM

CIVIL AND STRUCTURAL
SITE LAYOUT DRAWINGS



LOCALITY PLAN

NOT TO SCALE

DRAWING SETS

NUMBER SETS	DRAWINGS
0000	CIVIL & STRUCTURAL DRAWINGS COVER SHEET
0001–0999	CIVIL SITE LAYOUT DRAWINGS REFER DRAWING 3000 FOR DRAWING LIST
1000–1999	WTG HARDSTANDS DRAWINGS REFER DRAWING 1000 FOR DRAWING LIST
2000–4999	INTERNAL ROADS DRAWINGS REFER DRAWINGS 2000 FOR DRAWING LIST
5000–5999	PUBLIC ROAD INTERSECTIONS REFER DRAWING 5000 FOR DRAWING LIST
6000–6999	CATCHMENT PLAN DRAWINGS REFER DRAWING 7000 FOR DRAWING LIST
8000–8999	GENERAL SITE LAYOUT DRAWINGS REFER DRAWING 3000 FOR DRAWING LIST
9000–9999	STRUCTURAL DRAWINGS REFER DRAWING 9000 FOR DRAWING LIST

GENERAL CONSTRUCTION NOTES:

1. DO NOT SCALE FROM DRAWINGS.
2. ALL WORKS TO BE IN ACCORDANCE WITH CURRENT LOCAL AUTHORITY STANDARDS UNLESS OTHERWISE DIRECTED
3. EXISTING SERVICES SHOWN ARE INDICATIVE ONLY. THE CONTRACTOR SHALL VERIFY THE LEVEL AND POSITION OF ALL EXISTING SERVICES WITH RELEVANT AUTHORITIES PRIOR TO COMMENCING CONSTRUCTION.
4. FEATURE SURVEY INFORMATION HAS BEEN COMPILED BY OTHERS. WHERE PROPOSED WORKS TIE INTO EXISTING WORKS THE CONTRACTOR SHALL VERIFY THE FEATURE SURVEY INFORMATION PRIOR TO CONSTRUCTION
5. WHERE WORKS CARRIED OUT BY OTHERS AFFECT CONSTRUCTION OF THE PROPOSED WORKS, THE COMPATIBILITY WITH THE PROPOSED WORKS IS TO BE VERIFIED BY THE CONTRACTOR.
6. THE CONTRACTOR SHALL VERIFY SETOUT PEGS AND BENCH MARK LEVELS AND ADVISE THE SUPERINTENDENT OF ANY DISCREPANCY PRIOR TO COMMENCING CONSTRUCTION AND WHEN USED FOR SETOUT OR AUDITING.
7. THESE PLANS ARE TO BE READ IN CONJUNCTION WITH OTHER CONSULTANTS DRAWINGS.
8. VIC ROADS ROADWORK SIGNING CODE OF PRACTICE WHICH COMPLIES WITH AUSTRALIAN STANDARD 1742.3 2002 IS TO BE ADHERED TO DURING CONSTRUCTION WORKS.
9. SIGNAGE AND LINE MARKING TO BE AS PER CURRENT AS1742.1 AND AS1742.2 AND VIC ROADS TRAFFIC ENGINEERING MANUAL VOLUME 2 – SIGNS AND MARKINGS
10. THESE PLANS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATIONS

DRAWING SETS – CIVIL SITE LAYOUT

NUMBER SETS	DRAWINGS	AS BUILT PLANS
0000	CIVIL AND STRUCTURAL DRAWINGS COVER SHEET	AS BUILT
0001	GENERAL LAYOUT – SHEET 1 OF 2	AS BUILT
0002	GENERAL LAYOUT – SHEET 2 OF 2	AS BUILT
0003	GENERAL LAYOUT – SOUTHERN SECTION	AS BUILT
0004	GENERAL LAYOUT – WESTERN SECTION	AS BUILT
0005	GENERAL LAYOUT – EASTERN SECTION	AS BUILT
0006	GENERAL LAYOUT – NORTHERN SECTION	AS BUILT
0007	WIND TURBINE GENERATOR SUMMARY SHEET 1 OF 3	
0008	WIND TURBINE GENERATOR SUMMARY SHEET 2 OF 3	
0009	WIND TURBINE GENERATOR SUMMARY SHEET 3 OF 3	
0010	ELECTRICAL LAYOUT – SHEET 1 OF 2	AS BUILT
0011	ELECTRICAL LAYOUT – SHEET 2 OF 2	AS BUILT
0012	WTG FOOTING RISK SUMMARY SHEET 1 OF 3	
0013	WTG FOOTING RISK SUMMARY SHEET 2 OF 3	
0014	WTG FOOTING RISK SUMMARY SHEET 3 OF 3	

DRAWING SETS – CIVIL SITE LAYOUT

NUMBER SETS	DRAWINGS
6001	MAJOR CATCHMENT PLAN – Q100 EXTENT
6002	MAJOR CATCHMENT PLAN – Q20 EXTENT
6003	FULL CATCHMENT AREA FOR MOYNE AND SHAW RIVER
6004	WTG'S AT RISK OF INNUNDATION OR BUOYANCY ISSUES
6005	LOCALISED INTERNAL CATCHMENT PLAN – SHEET 1 OF 2
6006	LOCALISED INTERNAL CATCHMENT PLAN – SHEET 2 OF 2

DRAWING SETS – GENERAL SITE LAYOUT

NUMBER SETS	DRAWINGS	AS BUILT PLANS
~~8001~~	~~OWNER AGREED VEHICLE VESTAS VERSUS MICROSITED COORDINATES~~	
~~8002~~	~~OHL ROUTE OPTIONS & WTG LV10.5f vs LV10rev5 – WITH ROAD LAYOUT~~	
~~8003~~	~~OHL ROUTE OPTIONS & WTG LV10.5f vs LV10rev5 – WITH AERIAL PHOTO~~	
~~8004~~	~~OHL ROUTE COMPARISON – WITH ROAD LAYOUT~~	
~~8005~~	~~OHL ROUTE COMPARISON – WITH AERIAL PHOTO~~	
8006	SITE LAYOUT – SOUTHERN AREA	AS BUILT
8007	SITE LAYOUT – EASTERN AREA	AS BUILT
8008	SITE LAYOUT – WESTERN AREA	AS BUILT
8009	SITE LAYOUT – NORTHERN AREA	AS BUILT
~~8010~~	~~OHL ROUTE WITH AERIAL PHOTO – SHEET 1 OF 2~~	
~~8011~~	~~OHL ROUTE WITH AERIAL PHOTO – SHEET 2 OF 2~~	
8013	RESIDENTIAL LOCATIONS WITHIN A 2km RADIUS OF SITE BOUNDARY	
8014	OVERALL SITE PLAN	
8015	WTG CLEARANCE FROM TITLES & FENCELINES	

Rev	Amendments	By	Appr	Date
1	ISSUED FOR AS-BUILT READY	RDW	LD	23/10/12

Consultant: EXALLOS DIVISION SPECIALIST ENGINEERING SERVICES
CONSTRUCTION PROPERTY EQUIPMENT INFRASTRUCTURE MINING AND RESOURCES

North: AMG ZONE 54

Vestas MACARTHUR WIND FARM

Leighton Contractors Pty Limited
Incorporated in NSW
ACN 003 813 007
3 Queens Road
Melbourne Victoria 3004
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Telephone (03) 9228 7700
Facsimile (03) 9228 3000

Designed	LJD
Drafted	JFJ
Drawing Check	-
Team Leader	GNH
Proof Engineer	-
LCPL Des. Manager	-

MACARTHUR WIND FARM
CIVIL SITE LAYOUT
CIVIL & STRUCTURAL DRAWINGS
COVER SHEET

Scale: AS SHOWN
Client: AGL MERIDIAN
Drawing No.: D4159/MWF/RBG/C/D/0000/D
Rev No.: 1

PLOTTED: 23 October 2012 – 2:55 PM
Cad File No: P:\2009 JOBS\09688 *Macarthur Wind Farm\Drawings\Civil\EA-159-MWF-RBG-C-D-0001.dwg

17.2. Location Map – 33 kV Transmission Line – Line route

MACARTHUR
33kV ANGLE STRUCTURE COORDINATES

Structure No	Easting	Northing	Elevation	Line Angle
1W	604016.248	5786210.827	148.955	0
1E	604022.152	5786209.753	148.955	0
7W	604285.9862	5787694.947	154.8	-12
7E	604291.4738	5787694.614	154.8	-12
9W	604272.4481	5788151.598	162.11	-17
9E	604276.8719	5788152.422	162.11	-17
13W	603937.7463	5789108.527	161.85	21
13E	603942.1937	5789109.213	161.85	21
19W	603984.968	5790673.230	167.858	0
19E	603990.516	5790673.062	167.858	0
26 W	604042.650	5792490.570	172.81	0

CONDUCTOR:

DOUBLE CIRCUIT (POLE 1W/E TO POLE 19W/E)
CONDUCTOR- SULFUR AAAC 1120, ø33.8mm.

SINGLE CIRCUIT (POLE 19W/E TO POLE 26)
CONDUCTOR- SULFUR AAAC 1120, ø33.8mm.

OPGW:

PRYSMIAN 60H72_ 6006-ø16mm.

GERRIGERRUP MINHAMITE ROAD

GERRIGERRUP ROAD

MACARTHUR-HAWKESDALE ROAD

MOYNE FALLS HAWKESDALE

MACARTHUR SUBSTATION

N W E S

Rev	Amendments	By	Appr	Date
C-02	CONDUCTOR INFORMATION ADDED	NB	RL	12.06.2012
C-01	ISSUED FOR CONSTRUCTION	NB	BMC	23.06.2011
B-01	ISSUED FOR 60% REVIEW	NB	BMC	24.05.2011

Consultant: CONSOLIDATED POWER PROJECTS AUSTRALIA Pty Ltd

Vestas MACARTHUR WIND FARM

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Drafter	NB
Drawing Check	RL
Team Leader	DD
Proof Engineer	
LCPL Des. Manager	

MACARTHUR WIND FARM
MACARTHUR 33kV TRANSMISSION LINE
LINE ROUTE

Scale: NTS
Client: AGL MERIDIAN
Drawing No.: D4159-TRA-CPP-T-D-0020
Rev No.: C-02

17.3. Location Map – 132 kV Transmission Line – Line route

TARRONE-MACARTHUR
132kV DOUBLE CIRCUIT ANGLE and TWIN/SINGLE STRUCTURE COORDINATES

Structure No	Easting	Northing	Elevation	Line Angle	Pole Type	Conductor Configuration
Gantry	603100.54	5773673.31	78.99	0		
2W	603098.62	5773773.35	81.70	-90	Steel	Twin
2E	603102.52	5773777.23	81.70	-90		
5W	602705.38	5773775.21	78.66	90	Steel	Twin
5E	602709.28	5773779.09	78.66	90		
23W	602726.65	5778200.54	101.37	-35	Steel	Twin
23E	602731.89	5778202.20	101.37	-35		
25W	602589.21	5778396.70	102.74	32	Steel	Twin
25E	602594.41	5778398.50	102.74	32		
26W	602579.69	5778582.53	104.43	0	Steel	Twin/Single
26E	602585.18	5778582.81	104.43	0		
30	602531.39	5779590.04	110.99	12	Concrete	Single
36	602729.70	5780772.42	117.72	-9	Concrete	Single
39	602731.79	5781385.26	120.33	-14	Concrete	Single
41	602618.19	5781852.65	133.94	33	Concrete	Single
45	602924.47	5782716.48	129.04	-19	Concrete	Single
52W	602934.65	5784498.40	136.65	45	Steel	Single
52E	602939.72	5784496.27	136.65	45		
52aW	602999.60	5784563.01	138.31	0	Steel	Single/Twin
52aE	603003.47	5784559.10	138.31	0		
58W	603875.88	5785430.56	149.46	-35	Steel	Twin
58E	603880.74	5785428.00	149.46	-35		
61W	604005.67	5786145.73	148.91	-100	Steel	Twin
61E	604009.89	5786149.25	148.91	-100		
Gantry	603827.10	5786147.49	148.93	0		

132kV DOUBLE CIRCUIT

CONDUCTOR:

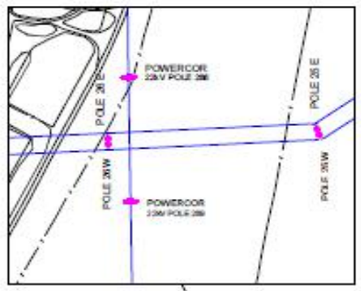
TWIN CONDUCTOR (POLE 1 TO POLE 26 W/E)
CONDUCTOR- SULFUR AAAC 1120, Ø33.8mm.

SINGLE CONDUCTOR (POLE 26W/E TO POLE 52 a W/E)
CONDUCTOR- SULFUR AAAC 1120, Ø33.8mm.

TWIN CONDUCTOR (POLE 52 a W/E TO POLE 63)
CONDUCTOR- SULFUR AAAC 1120, Ø33.8mm.

OPGW:

PRYSMIAN 60H72z_ 6006-Ø16mm.



132kV SINGLE CIRCUIT (TARRONE SUBSTATION)

CONDUCTOR:

TRIPLE CONDUCTOR
CONDUCTOR- SULFUR AAAC 1120, Ø33.8mm.

OPGW:

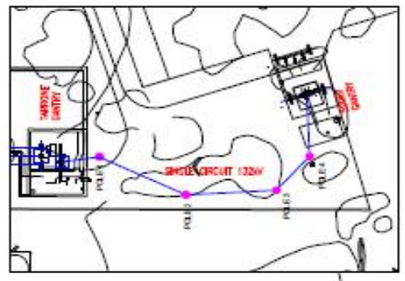
PRYSMIAN 60H72z_ 6006-Ø16mm.

EARTH WIRE:

GRAPE 30/7/ 2.50

TARRONE
132kV SINGLE CIRCUIT STRUCTURE COORDINATES

Structure No	Easting	Northing	Elevation	Line Angle	Pole Type	Conductor Configuration
1	603100.24	5773622.32	77.66	34	Steel	Triple
2	603063.78	5773545.90	76.62	-29	Steel	Triple
3	603068.15	5773466.23	77.12	-45	Steel	Triple
4	603100.62	5773437.03	78.19	-44	Steel	Triple



Rev	Amendments	By	Appr	Date
E-12	DWG UPDATED TO INCLUDE CONCRETE POLE DESIGN	NB	PW	12.06.2012
C-01	ISSUED FOR CONSTRUCTION	NB	BMC	01.06.2011
B-01	ISSUED FOR RISK REVIEW	NB	BMC	04.05.2011

Consultant: CONSOLIDATED POWER PROJECTS AUSTRALIA Pty Ltd

Vestas MACARTHUR WIND FARM

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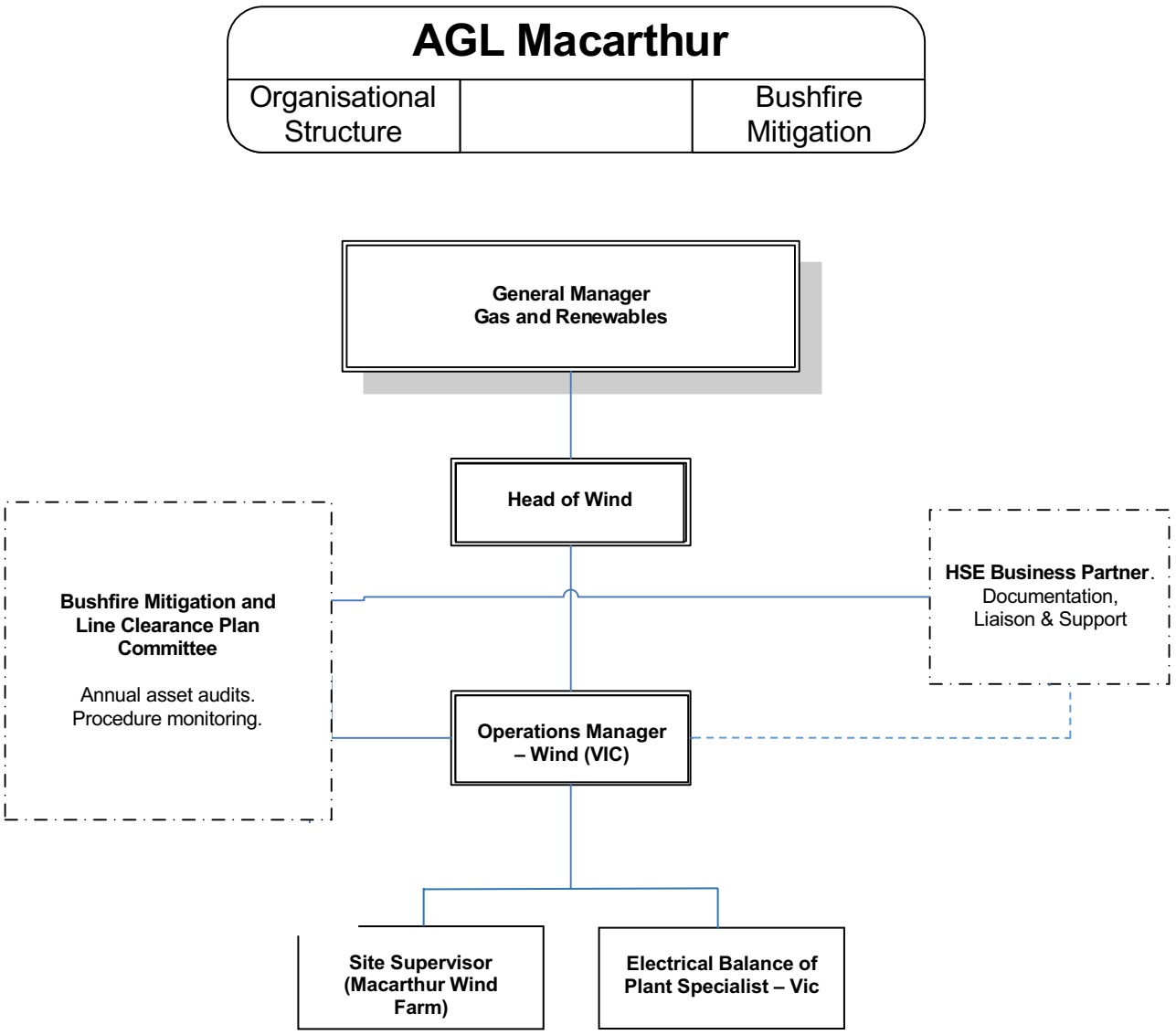
Team Leader	DD
Proof Engineer	
LCPL Des. Manager	

MACARTHUR WIND FARM
MACARTHUR 132kV TRANSMISSION LINE
LINE ROUTE

Scale: NTS
Client: AGL MERIDIAN
Drawing No.: D4159-TRB-CPP-T-D-0020
Rev No.: C-02

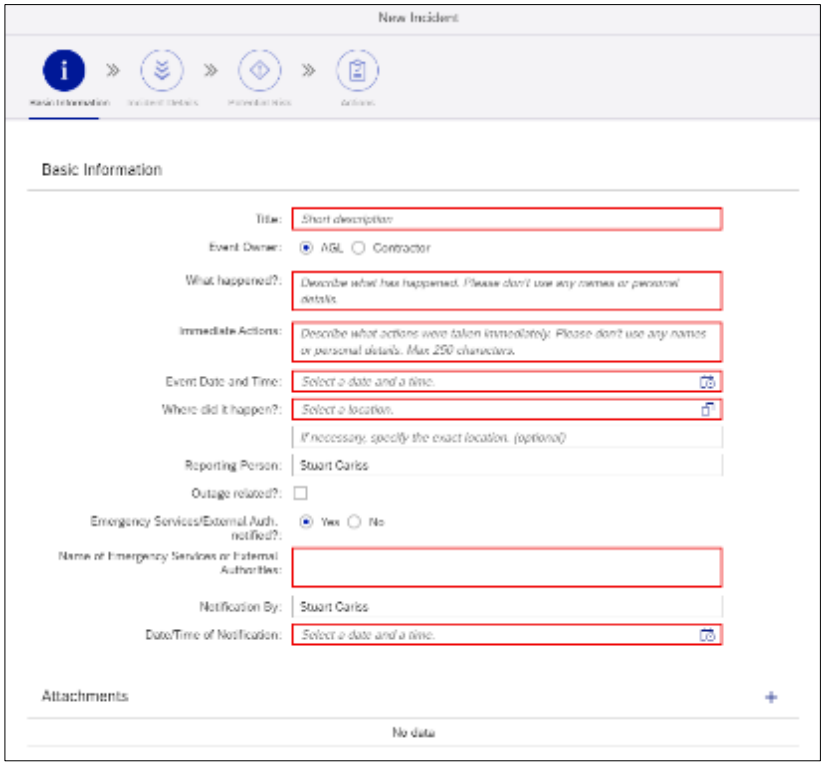
17.4. Reporting Organisational Structure

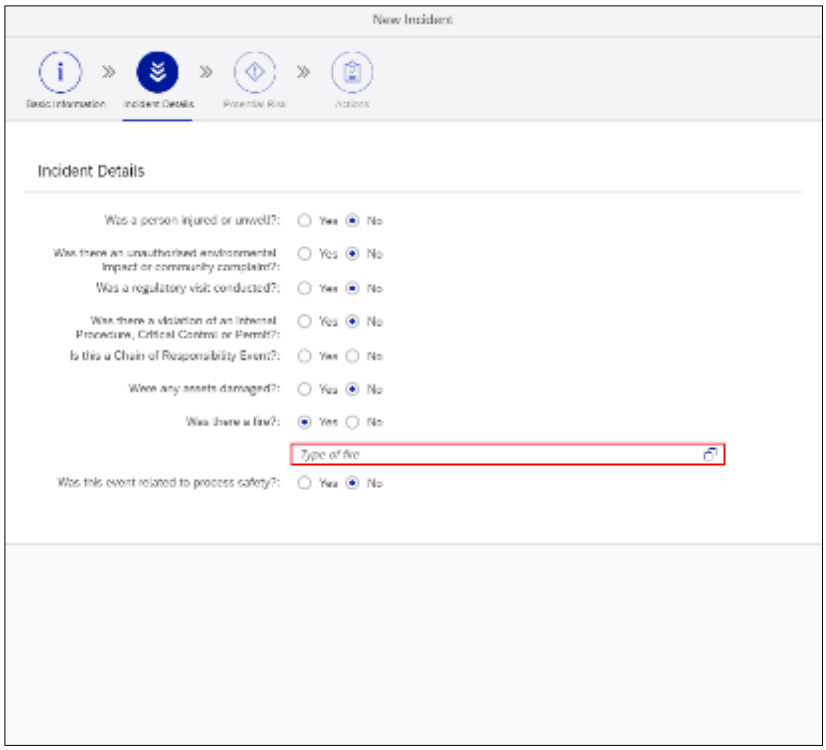


17.5. Incident Reporting

For faults/incidents/defects requiring further internal investigation including fire, the AGL Hydro 'Incident Reporting and Investigation Procedure' is followed. Incidents assessed as being a 'Serious Electrical Event' is considered a notifiable incident and reported separately to ESV and/or WorkSafe Victoria.

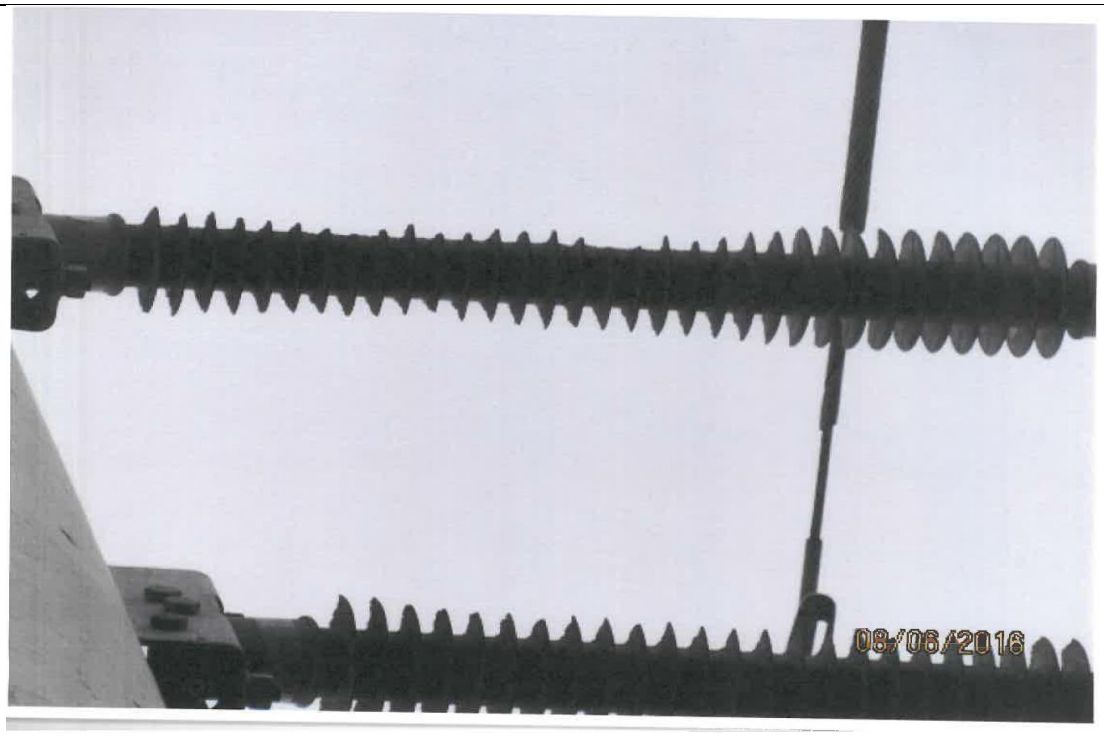
All electrical events/faults, that are either the direct cause of a fire ignition or influence risk of fire are recorded and reported using AGL Hydro 'myHSE' management system with an example depicted in the images below.





17.6. Engineered Solutions

Since the initial construction of Macarthur wind farm in 2013, the only engineered solution relating to bushfire mitigation and overhead lines and easements has been the replacement of 132kV polymer line insulators damaged by fauna. An engineering design was completed on all 140 line insulators resulting in insulators being replaced with ceramic insulators in 2016 (18of), 2019 (16of) and 2023 (8of). Inspection programs have been ongoing to understand the condition of the insulators and AGL are preparing a replacement program that inlcudes a further 9of priority polymer insulators.



Damaged insulators (major) replaced in 2016

Damaged insulators (minor) picked up through inspections identified and captured in the replacement program (2020).

17.7. Macarthur at-risk electric line register

The following is a copy of the condition assessment after the October-November 2024 inspections. The condition was assessed in accordance with the priority system outlined in section 8.2.

Macarthur 132kV overhead line condition - **MWSS to TRSS**- Updated with ENVERVEN Inspection November 2024

Pole No.	Pole type	Phase Insulator		Bridging post insulator		Comments	Action
		Line 1	Line 2				
63	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	
		Porcelain	Porcelain	-	-		
		Porcelain	Porcelain	-	-		
62	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	Split pin and shackles replaced 2023
		Porcelain	Porcelain	-	-		
		Porcelain	Porcelain	-	-		
61E	Steel	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only	
		Porcelain	Porcelain	-	Polymer		
		Porcelain	Porcelain	-	Polymer		
61W	Steel	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only	
		Porcelain	Porcelain	-	Polymer		
		Porcelain	Porcelain	-	Polymer		
60	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	Split pin and shackles replaced 2023
		Porcelain	Porcelain	-	-		
		Porcelain	Porcelain	-	-		
59	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	
		Porcelain	Porcelain	-	-		
		Porcelain	Porcelain	-	-		
58E	Steel	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only	
		Porcelain	Porcelain	-	Polymer		
		Porcelain	Porcelain	-	Polymer		
58W	Steel	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only	Earth bond minor damage repaired 2023
		Porcelain	Porcelain	-	Polymer		
		Porcelain	Porcelain	-	Polymer		
57	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	Earth bond minor damage repaired 2023
		Porcelain	Porcelain	-	-		
		Porcelain	Porcelain	-	-		
56	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	Remove Bird's Nest - removed for 30/11/2024
		Porcelain	Porcelain	-	-		
		Porcelain	Porcelain	-	-		
55	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	
		Porcelain	Porcelain	-	-		
		Porcelain	Porcelain	-	-		
54	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	
		Porcelain	Porcelain	-	-		
		Porcelain	Porcelain	-	-		
53	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	
		Porcelain	Porcelain	-	-		
		Porcelain	Porcelain	-	-		
52aE	Steel	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only	
		Porcelain	Porcelain	-	Polymer		
		Porcelain	Porcelain	-	Polymer		
52aW	Steel	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only	
		Porcelain	Porcelain	-	Polymer		
		Porcelain	Porcelain	-	Polymer		
52E	Steel	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only	
		Porcelain	Porcelain	-	Polymer		
		Porcelain	Porcelain	-	Polymer		
52W	Steel	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only	
		Porcelain	Porcelain	-	Polymer		
		Porcelain	Porcelain	-	Polymer		
51	Concrete	Porcelain	Porcelain	-	-	Standoff type insulator, all replaced with porcelain	Earth bond minor damage repaired 2023
		Porcelain	Porcelain	-	-		
		Porcelain	Porcelain	-	-		
50	Concrete	Porcelain	Porcelain	-	-	Standoff type insulator, all replaced with porcelain	
		Porcelain	Porcelain	-	-		
		Porcelain	Porcelain	-	-		
49	Concrete	Porcelain	Porcelain	-	-	Standoff type insulator, all replaced with porcelain	Earth bond minor damage repaired 2023
		Porcelain	Porcelain	-	-		
		Porcelain	Porcelain	-	-		
48	Concrete	Porcelain	Porcelain	-	-	Standoff type insulator, top four replaced with porcelain	2 x Insulators replaced 2023 and minor earth bond damage repaired 2023
		Porcelain	Porcelain	-	-		
		Porcelain	Porcelain	-	-		
47	Concrete	Porcelain	Porcelain	-	-	Standoff type insulator, top two replaced with porcelain	4 x Insulators replaced 2023
		Porcelain	Porcelain	-	-		
		Porcelain	Porcelain	-	-		
46	Steel	Porcelain	Porcelain	-	-	Strain type insulator	Earth bond medium damage repaired 2023
		Porcelain	Porcelain	-	-		
		Porcelain	Porcelain	-	-		
45	Concrete	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only	
		Porcelain	Porcelain	-	Polymer		
		Porcelain	Porcelain	-	Polymer		

Standoff Insulators	
Minor	53
Moderate	9
Severe	0
Normal -Polym.	-

Strain	
Minor	16
Moderate	0
Severe	0

Earth Bond	
Minor	0
Moderate	0
Severe	

Shackles	
Minor	0
Moderate	0
Severe	0

Question for Vestas

Macarthur 132kV overhead line condition - **MWSS to TRSS**- Updated with ENVERVEN Inspection November 2024								
Pole No.	Pole type	Phase Insulator		Bridging post insulator		Comments	Action	Standoff Insulators
44	Concrete	Porcelain	Porcelain	-	-	Standoff type insulator	All Insulators replaced 2023	
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
43	Concrete	Polymer	Polymer	-	-	Standoff type insulator	Monitor	
		Polymer	Polymer	-	-			
		Polymer	Polymer	-	-			
42	Concrete	Porcelain	Porcelain	Polymer	Polymer	Strain type insulator with bridging post insulators	Monitor Insulator damage	
		Porcelain	Porcelain	Polymer	Polymer			
		Porcelain	Porcelain	Polymer	Polymer			
41	Concrete	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only		
		Porcelain	Porcelain	-	Polymer			
		Porcelain	Porcelain	-	Polymer			
40	Concrete	Porcelain	Porcelain	Polymer	Polymer	Strain type insulator with bridging post insulators		
		Porcelain	Porcelain	Polymer	Polymer			
		Porcelain	Porcelain	Polymer	Polymer			
39	Concrete	Porcelain	Porcelain	-	-	Strain type insulator		
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
38	Concrete	Porcelain	Porcelain	-	-	Standoff type insulator	All Insulators replaced and earth bond repaired 2023	
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
37	Concrete	Porcelain	Porcelain	-	-	Standoff type insulator	Replace P32 with porcelain, Monitor P3. - Replaced 30/11/2024	
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
36	Concrete	Porcelain	Porcelain	-	-	Strain type insulator	Remove Bird's Nest - Removed 30/11/2024	
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
35	Concrete	Polymer	Polymer	-	-	Standoff type insulator	Monitor Insulator damage	
		Polymer	Polymer	-	-			
		Polymer	Polymer	-	-			
34	Concrete	Polymer	Polymer	-	-	Standoff type insulator		
		Polymer	Polymer	-	-			
		Polymer	Polymer	-	-			
33	Concrete	Polymer	Polymer	-	-	Standoff type insulator	Monitor Insulator damage	
		Polymer	Polymer	-	-			
		Polymer	Polymer	-	-			
32	Concrete	Polymer	Polymer	-	-	Standoff type insulator		
		Polymer	Polymer	-	-			
		Polymer	Polymer	-	-			
31	Concrete	Polymer	Polymer	-	-	Standoff type insulator	Monitor	
		Polymer	Polymer	-	-			
		Polymer	Polymer	-	-			
30	Concrete	Porcelain	Porcelain	-	-	Strain type insulator		
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
29	Concrete	Polymer	Polymer	-	-	Standoff type insulator	Monitor	
		Polymer	Polymer	-	-			
		Polymer	Polymer	-	-			
28	Concrete	Polymer	Polymer	-	-	Standoff type insulator	Monitor	
		Polymer	Polymer	-	-			
		Polymer	Polymer	-	-			
27	Concrete	Porcelain	Porcelain	-	-	Standoff type insulator	Replace with Porcelain, Line 1 & 2. Replace all 3 phases. Replaced 30/11/24	
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
26E	Steel	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only		
		Porcelain	Porcelain	-	Polymer			
		Porcelain	Porcelain	-	Polymer			
26W	Steel	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only		
		Porcelain	Porcelain	-	Polymer			
		Porcelain	Porcelain	-	Polymer			
25E	Steel	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only		
		Porcelain	Porcelain	-	Polymer			
		Porcelain	Porcelain	-	Polymer			
25W	Steel	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only		
		Porcelain	Porcelain	-	Polymer			
		Porcelain	Porcelain	-	Polymer			
24	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	Monitor	
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			

Macarthur 132kV overhead line condition - **MWSS to TRSS**- Updated with ENVERVEN Inspection November 2024								
Pole No.	Pole type	Phase Insulator		Bridging post insulator		Comments	Action	Standoff Insulators
23E	Steel	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only	Visual Inspection of Damage to Transmission line cable lug and marks on bridging lug (while offline). Repair if required - Inspected 30/11/2024 Zinfra	
		Porcelain	Porcelain	-	Polymer			
		Porcelain	Porcelain	-	Polymer			
23W	Steel	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only		
		Porcelain	Porcelain	-	Polymer			
		Porcelain	Porcelain	-	Polymer			
22	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	Monitor	
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
21	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	Split pin and shackles replaced 2023	
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
20	Steel	Porcelain	Porcelain	-	-	Hanging type insulator		
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
19	Steel	Porcelain	Porcelain	-	-	Hanging type insulator		
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
18	Steel	Porcelain	Porcelain	-	-	Hanging type insulator		
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
17	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	Split pin and shackles replaced 2023	
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
16	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	Earth bond minor damage repaired 2023	
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
15	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	Monitor	
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
14	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	Monitor	
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
13	Steel	Porcelain	Porcelain	-	-	Hanging type insulator		
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
12	Steel	Porcelain	Porcelain	-	-	Hanging type insulator		
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
11	Steel	Porcelain	Porcelain	-	-	Hanging type insulator		
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
10	Steel	Porcelain	Porcelain	-	-	Hanging type insulator		
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
9	Steel	Porcelain	Porcelain	-	-	Hanging type insulator		
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
8	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	Monitor	
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
7	Steel	Porcelain	Porcelain	-	-	Hanging type insulator		
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
6	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	Split pin and shackles replaced 2023	
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
5E	Steel	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only		
		Porcelain	Porcelain	-	Polymer			
		Porcelain	Porcelain	-	Polymer			
5W	Steel	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only		
		Porcelain	Porcelain	-	Polymer			
		Porcelain	Porcelain	-	Polymer			
4	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	Monitor	
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
3	Steel	Porcelain	Porcelain	-	-	Hanging type insulator	Monitor	
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
2E	Steel	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only		
		Porcelain	Porcelain	-	Polymer			
		Porcelain	Porcelain	-	Polymer			
2W	Steel	Porcelain	Porcelain	-	Polymer	Strain type insulator with bridging post insulators, one side only		
		Porcelain	Porcelain	-	Polymer			
		Porcelain	Porcelain	-	Polymer			
1	Steel	Porcelain	Porcelain	-	-	Hanging type insulator		
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			

Macarthur 132kV overhead line condition - **TRSS to K1**- Based on Vestas ariel drone inspection July 2022. Spreadsheet update 15/10/24 Updated from Enerven 2024 report.

Pole No.	Pole type	Line 1	Line 2	Earth Bond	Shackles	Report Comments
TRSL 1	Steel	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			Earths replaced 2023
TRSL 2	Steel	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			Earths adjusted 2023
TRSL 3	Steel	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			Earths adjusted 2023
TRSL 4	Steel	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			Earths replaced 2023

Standoff Insulators	
P1	
P2	2
P3	0
P4	0
P5	

Earth Bond	
P1	0
P2	0
P3	0
P4	
P5	

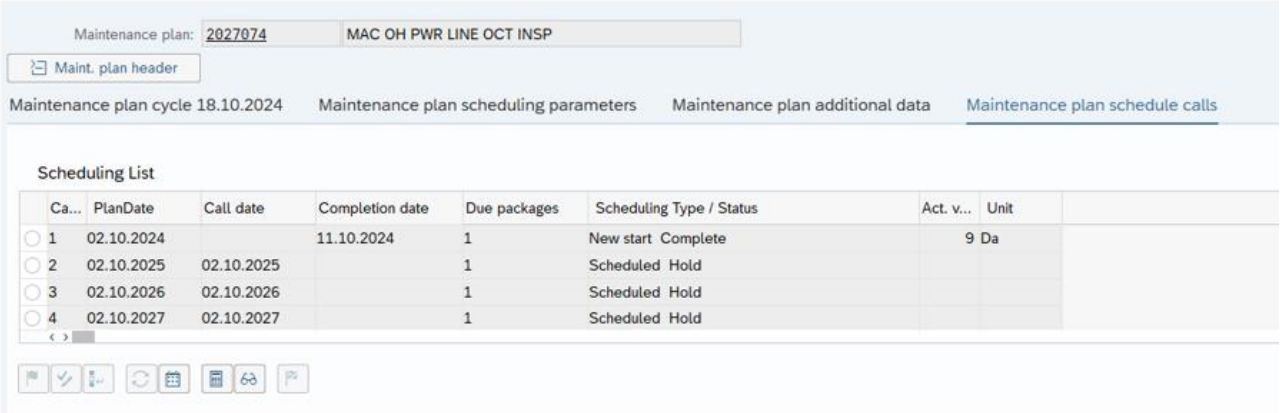
Macarthur 33kV overhead line condition - **CG1 AND CG6 Line**- Based on Vestas ariel drone inspection July 2022. Spreadsheet update 15/10/24. Last Updated Yanni 17/10/2024 with OMEXOM Report

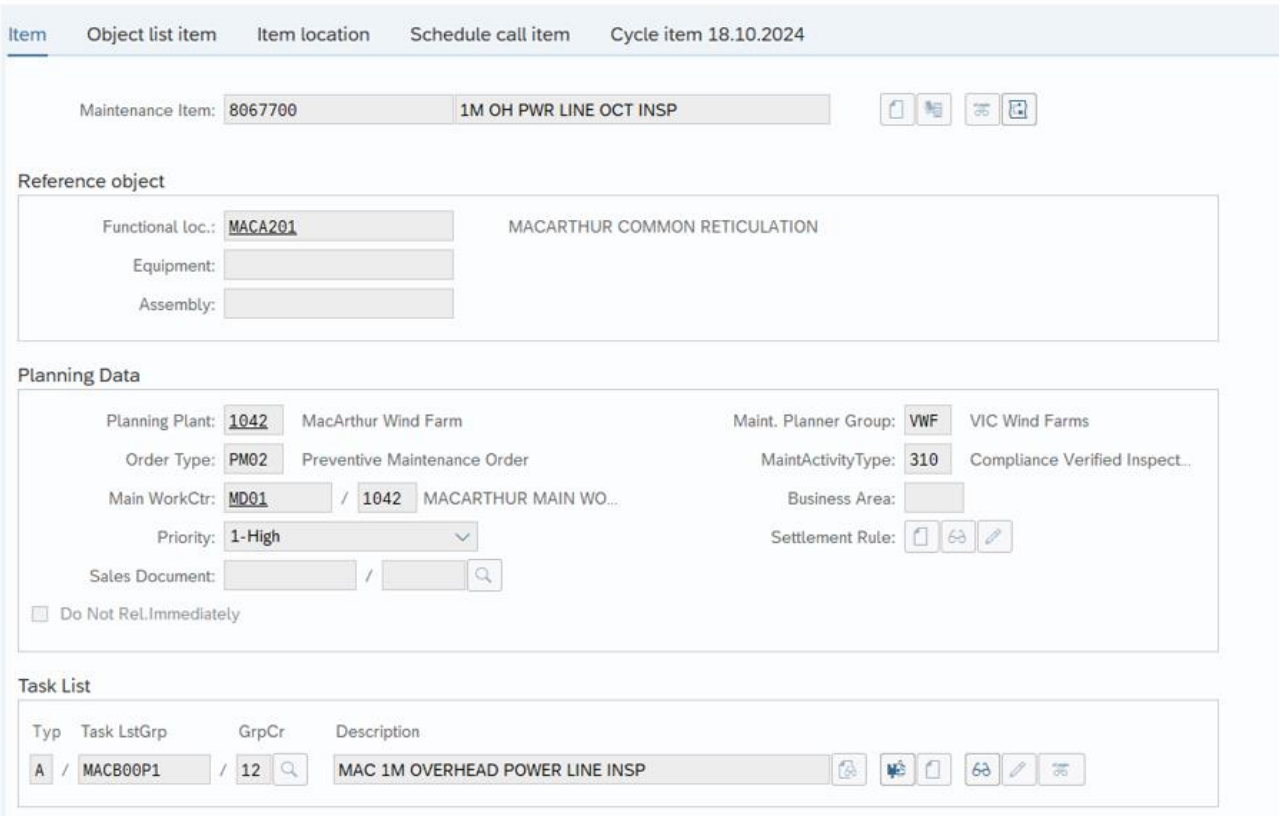
Pole No.	Pole type	Line 1	Line 2	Earth Bond	Shackles	Report Comments
CG1	Concrete	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			
CG2	Concrete	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			
CG3	Concrete	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			
CG4	Concrete	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			
CG5	Concrete	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			Source: OMEXOM 9/2023 - Corrosion At Top Nut & Bolt Arrangement
CG6	Concrete	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			
CG7	Concrete	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			
CG8	Concrete	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			
CG9	Concrete	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			
CG10	Concrete	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			
CG11	Concrete	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			
CG12	Concrete	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			
CG13	Concrete	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			Earth Bonds x 2 replaced 2023
CG14	Concrete	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			
CG15	Concrete	Polymer	Polymer			
		Polymer	Polymer			Missing ID Tag
		Polymer	Polymer			
CG16	Concrete	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			Monitor
CG17	Concrete	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			Missing ID Tag
CG18	Concrete	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			

CG19	Concrete	Polymer	Polymer			Source: OMEXOM 9/2023 - P23 - - Dirty Insulator Surface - Bird Droppings- Cleaned 30/11/2024
		Polymer	Polymer			
		Polymer	Polymer			
CG20	Concrete	Polymer	Polymer			Missing ID Tag
		Polymer	Polymer			
		Polymer	Polymer			
CG21	Concrete	Polymer	Polymer			Missing ID Tag
		Polymer	Polymer			
		Polymer	Polymer			
CG22	Concrete	Polymer	Polymer			Monitor
		Polymer	Polymer			
		Polymer	Polymer			
CG23	Concrete	Polymer	Polymer			Source: OMEXOM 9/2023 - Corrosion At Top Nut&Bolt Arrangement
		Polymer	Polymer			
		Polymer	Polymer			
CG24	Concrete	Polymer	Polymer			
		Polymer	Polymer			
		Polymer	Polymer			
CG25	Concrete	Polymer	Polymer			Earth Bonds replaced 2023
		Polymer	Polymer			
		Polymer	Polymer			
CG26	Concrete	Polymer	Polymer			Earth Bonds replaced 2023
		Polymer	Polymer			
		Polymer	Polymer			
CG Yards	Concrete	Polymer	Polymer			Large amount of weeds present in stringer yards (sprayed, not removed)
		Polymer	Polymer			
		Polymer	Polymer			
CG 6 Yards	Concrete	Polymer	Polymer			A piece of wire hanging on the level mechanism of the disconnector
		Polymer	Polymer			
		Polymer	Polymer			

17.8. Works and Verification Schedule

The following images are extracts from the Macarthur overhead line routine works and verification inspection schedule.





agl Join the change

Wind
Operations and Maintenance

Macarthur Wind Farm Monthly Bushfire Season 33kV OHL Inspection MWSS to CG 1 & 6 Yard | Overhead Line Inspection Checklist

1 Scope

This document contains the checklist used to complete 33kV OHL Inspection MWSS to CG 1 & 6 overhead line inspection. This inspection is completed each month in the bushfire season.

Note: This checklist does not contain safety instructions. Please make sure you refer to the correct safety procedures.

1.1 Purpose

The purpose of this checklist is to inspect the 33kV OHL Inspection MWSS to CG 1 & 6 overhead line to ensure it is working correctly.

2.5 Checklist Information

Where	MWF	Who	J Barry
Supporting Documents	N/A	All additional work recorded in SAP	☑

33kV OHL Inspection MWSS to CG 1 & 6 Yard Overhead Line Inspection Checklist

Date	23/9/24	Start Time	08 00	Finish Time	15 30

33kV OHL Inspection MWSS to CG 1 & 6 Yard Overhead Line Inspection Checklist

Step	Description+	Accept	Reject	N/A	Initials
MWF-1E					
1	Check MWF-1E Tower structure	☑	☐	☐	
2	Check MWF-1E Jumper Connectors	☑	☐	☐	
3	Check MWF-1E Conductor	☑	☐	☐	
4	Check MWF-1E Foundation	☑	☐	☐	
5	Check MWF-1E Vibration Dampers	☑	☐	☐	
6	Check MWF-1E Hardware	☑	☐	☐	
7	Check MWF-1E Post Insulator	☑	☐	☐	
8	Check MWF-1E Insulator	☑	☐	☐	
9	Check MWF-1E Earth Bond Pole top	☑	☐	☐	
10	Check MWF-1E Earth Bond Pole Bottom	☑	☐	☐	
11	Check MWF-1E Duplex conductor spacer	☑	☐	☐	
12	Check MWF-1E OPGW Pole Clamps	☑	☐	☐	
13	Check MWF-1E Line Sag	☑	☐	☐	
14	Check MWF-1E Trees	☑	☐	☐	

Step	Description+	Accept	Reject	N/A	Initials
15	Check MWF-1E I D Tag	☑	☐	☐	
16	Check MWF-1E Danger Tag	☑	☐	☐	
17	Check MWF-1E Fenced	☑	☐	☐	
MWF-1W					
18	Check MWF-1W Tower structure	☑	☐	☐	
19	Check MWF-1W Jumper Connectors	☑	☐	☐	
20	Check MWF-1W Conductor	☑	☐	☐	
21	Check MWF-1W Foundation	☑	☐	☐	
22	Check MWF-1W Vibration Dampers	☑	☐	☐	
23	Check MWF-1W Hardware	☑	☐	☐	
24	Check MWF-1W Post Insulator	☑	☐	☐	
25	Check MWF-1W Insulator	☑	☐	☐	
26	Check MWF-1W Earth Bond Pole top	☑	☐	☐	
27	Check MWF-1W Earth Bond Pole Bottom	☑	☐	☐	
28	Check MWF-1W Duplex conductor spacer	☑	☐	☐	
29	Check MWF-1W OPGW Pole Clamps	☑	☐	☐	

Step	Description+	Accept	Reject	N/A	Initials
545	Check MWF-26 Hardware	☑	☐	☐	
546	Check MWF-26 Post Insulator	☑	☐	☐	
547	Check MWF-26 Insulator	☑	☐	☐	
548	Check MWF-26 Earth Bond Pole top	☑	☐	☐	
549	Check MWF-26 Earth Bond Pole Bottom	☑	☐	☐	
550	Check MWF-26 Duplex conductor spacer	☑	☐	☐	
551	Check MWF-26 OPGW Pole Clamps	☑	☐	☐	
552	Check MWF-26 Line Sag	☑	☐	☐	
553	Check MWF-26 Trees	☑	☐	☐	
554	Check MWF-26 Road Crossing	☑	☐	☐	
555	Check MWF-26 I D Tag	☑	☐	☐	
556	Check MWF-26 Danger Tag	☑	☐	☐	
557	Check MWF-26 Fenced	☑	☐	☐	

Additional Comments/Observations
See photos.

Issues

Checklist	
Issues	No new issues

The following is a copy of the outstanding rectification works as per the condition assessment in section 17.7 and the priority coding system. These outstanding repairs are being monitored.

Macarthur 132kV overhead line condition - **MWSS to TRSS** - Updated with ENVERVEN Inspection November 2024

Pole No.	Pole type	Phase Insulator		Bridging post insulator		Report Comments	Comments	Action
		Line 1	Line 2					
43	Concrete	Polymer	Polymer	-	-	Source: OMEXOM 9/2023 - P3 - Polymer Pole Insulator eroded from bird chewing.	Standoff type insulator	Monitor
		Polymer	Polymer	-	-			
		Polymer	Polymer	-	-			
42	Concrete	Porcelain	Porcelain	Polymer	Polymer		Strain type insulator with bridging post insulators	Monitor Insulator damage
		Porcelain	Porcelain	Polymer	Polymer			
		Porcelain	Porcelain	Polymer	Polymer			
35	Concrete	Polymer	Polymer	-	-		Standoff type insulator	Monitor Insulator damage
		Polymer	Polymer	-	-			
		Polymer	Polymer	-	-			
33	Concrete	Polymer	Polymer	-	-		Standoff type insulator	Monitor Insulator damage
		Polymer	Polymer	-	-			
		Polymer	Polymer	-	-			
31	Concrete	Polymer	Polymer	-	-	Source: OMEXOM 9/2023 - P3 - Polymer Pole insulator eroded from bird chewing.	Standoff type insulator	Monitor
		Polymer	Polymer	-	-			
		Polymer	Polymer	-	-			
29	Concrete	Polymer	Polymer	-	-	Source: OMEXOM 9/2023 - P3 - Polymer pole insulator, Eroded from bird chewing.	Standoff type insulator	Monitor
		Polymer	Polymer	-	-			
		Polymer	Polymer	-	-			
28	Concrete	Polymer	Polymer	-	-	Source: OMEXOM 9/2023 - P3 - Polymer Pole insulators, Eroded from Bird Chewing	Standoff type insulator	Monitor
		Polymer	Polymer	-	-			
		Polymer	Polymer	-	-			
24	Steel	Porcelain	Porcelain	-	-	Source: OMEXOM 9/2023 - P3 - Old Birds nest on conductor.	Hanging type insulator	Monitor
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
22	Steel	Porcelain	Porcelain	-	-	Source: OMEXOM 9/2023 - P3 - Mud Build up on conductor. Remains from bird nest?	Hanging type insulator	Monitor
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
15	Steel	Porcelain	Porcelain	-	-	Source: OMEXOM 9/2023 - P3 - Corrosion Evident on insulator support.	Hanging type insulator	Monitor
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
14	Steel	Porcelain	Porcelain	-	-	Source: OMEXOM 9/2023 - P3 - CELVIS Pin Loose, Corrosion Evident.	Hanging type insulator	Monitor
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
8	Steel	Porcelain	Porcelain	-	-	Source: OMEXOM 9/2023 - P3 - Stick stuck in conductor , Corrosion Evident on Nut and Bolt Arrangement	Hanging type insulator	Monitor
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
4	Steel	Porcelain	Porcelain	-	-	Source: OMEXOM 9/2023 - P3- - CLEVIS Pin ineffective on nut and bolt arrangement, Corrosion.	Hanging type insulator	Monitor
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			
3	Steel	Porcelain	Porcelain	-	-	Source: OMEXOM 9/2023 - P3- Corrosion Evident on Nut&Bolt Arrangement	Hanging type insulator	Monitor
		Porcelain	Porcelain	-	-			
		Porcelain	Porcelain	-	-			

Macarthur 33kV overhead line condition - **CG1 AND CG6 Line**- Based on Vestas ariel drone inspection July 2022. Spreadsheet update 15/10/24. Last Updated Yanni 17/10/2024 with OMEXOM Report

Pole No.	Pole type	Line 1	Line 2	Earth Bond	Shackles	Report Comments	Insulators
CG5	Concrete	Polymer	Polymer			Source: OMEXOM 9/2023 - Corrosion At Top Nut & Bolt Arrangement	
		Polymer	Polymer				
		Polymer	Polymer				
CG15	Concrete	Polymer	Polymer			Missing ID Tag	
		Polymer	Polymer				
		Polymer	Polymer				
CG16	Concrete	Polymer	Polymer			Monitor	
		Polymer	Polymer				
		Polymer	Polymer				
CG17	Concrete	Polymer	Polymer			Missing ID Tag	
		Polymer	Polymer				
		Polymer	Polymer				
CG20	Concrete	Polymer	Polymer			Missing ID Tag	
		Polymer	Polymer				
		Polymer	Polymer				
CG21	Concrete	Polymer	Polymer			Missing ID Tag	
		Polymer	Polymer				
		Polymer	Polymer				
CG22	Concrete	Polymer	Polymer			Monitor	
		Polymer	Polymer				
		Polymer	Polymer				
CG23	Concrete	Polymer	Polymer			Source: OMEXOM 9/2023 - Corrosion At Top Nut&Bolt Arrangement	
		Polymer	Polymer				
		Polymer	Polymer				
CG Yards	Concrete	Polymer	Polymer			Large amount of weeds present in stringer yards (sprayed, not removed)	
		Polymer	Polymer				
		Polymer	Polymer				
CG 6 Yards	Concrete	Polymer	Polymer			A piece of wire hanging on the level mechanism of the disconnector	
		Polymer	Polymer				
		Polymer	Polymer				

17.9. Bushfire risk rating

The following is an extract from the MWF Site Sustainability Risk Register and indicates the risk of Bushfire at MWF is low.

Macarthur Wind Farm																						
Area description				Description of risk		Additional criteria	Intrinsic Risk						Controls in Place	Residual Risk								
No.	Location Operation (MAN) Main Process (SAL)	Area Product Line (MAN) Sub-Process (SAL)	Choose Subject Assessment Area	Choose risk category	Describe the risk	Is the identified risk in compliance with legal or other external expectations?	F) Frequency Exposure of Env./person (s) to the	L) Likelihood Of the occurence of the hazard	p) Possibility to avoid or limit the hazard	Probability of Occurence	Severity of Harm	Risk level	Measures in place	F) Frequency Exposure of Env./person (s) to the	L) Likelihood Of the occurence of the hazard	p) Possibility to avoid or limit the hazard	Probability of Occurence	Severity of Harm	Risk level
23	ANZ	Service	Safety	Fire and explosion	Bush fire engulfs wind farm site		2	2	3	2	5	10	Emergency Management Plan Meteorological Equipment on site Local Emergency response orevs available (external e.g. CFA) Emergency drills Firefighting equipment •Fire extinguishers (in buildings and vehicles) Attendance to site risk assessed during highest potential fire days Fuel load reduction strategies in place for site Bush fire management plan	2	2	1	2	2	4

18. Referenced Documents / Procedures

Document Number	Document Title
AGL-HSE-STD-003	AGL Contractor HSE Management Standard
AGL-HSE-SDM-003	AGL Contractor HSE Management Methodology
AGL-HSE-STD-004.1	AGL HSE Hazard and Risk Management Standard
AGL-HSE-SDM-004.1	AGL HSE Hazard and Risk Management Standard Methodology
AGL-HSE-SDM-004.2	AGL Permit to Work Standard Methodology
AGL-HSE-FMK-001.1	AGL Safe System of Work
AGL-HSE-STD-011.1	AGL HSE Incident Near Miss and Hazard Management Standard
AGL-HSE-PRO-011.1.2	AGL HSE Corporate Reporting Procedure
AGL-HSE-SDM-003	AGL Contractor HSE Management Methodology
MWF-HS-PLN-003	AGL Macarthur Emergency Response Plan (ERP)
MWF-HS-PLN-004	AGL Macarthur Electric Line Clearance Management Plan
WIND-GN-PRO-001	Wind Controlled Documents Preparation & Authorisation Procedure
WIND-HS-MAN-002	Electricity Safety Management Plan (ESMP) Manual
WIND-HS-MAN-001	Authorisations Manual
WIND-HS-PRO-012	Safe Systems of Work Procedures
RNW-GN-CON-001	Renewables Document Numbering Convention