L13, 700 Collins Street Docklands VIC 3008 Australia



Bushfire Mitigation Plan 2024-2025

AU-3008-OPS-PHA-EL-PLN-00001

11 June 2024



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1. Purpose

The purpose of this plan is to prepare and comply with the requirements to the Electricity Safety (Bushfire Mitigation) Regulation 2013. This plan sets out the vision and actions in order to meet this regulation and is to be reviewed annually and submitted to the ESV prior to the 30th of June each year.

2. Definitions

For the purposes of this document, the following terms and definitions apply:

Term	Definition/Abbreviations
Authorised Person	A person with sufficient technical knowledge or experience and authorised by the HV Authority to perform tasks that ascertain to the HV plant under their letter of authorisation
CFA	Country Fire Authority
DFDP	A period of time in which the CFA declare to be a fire danger period undersection 4 of the Country Fire Authority Act 1958
ESV	Energy Safe Victoria

3. Document approval

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Name / Originator	Title	Description	Date	Signature
Yuriy Odarenko	Senior Operations Engineer	Author	11/06/24	1 gareer
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Cesar Salvatierra	Executive Manager Operations	Authoriser	26/06/24	XVIII



4. Applicable Sites

Portland Wind Farm

The land on which the three stages of Portland Wind Farm are established consists of a combination of grassed pastures and sand dune scrub and is used where possible for low density sheep and cattle grazing. There are trees within the boundaries of the wind farm however there are none in close proximity of the turbines or substations and all overhead lines are kept clear according to Electricity Safety (Electric Line Clearance) Regulations 2020.

The farms associated overhead lines are located on both road reserve and public/private lands. The vegetation along the overhead lines is a mix of trees shrubs and low-lying grasses.

Pacific Hydro recognises that there are multiple electrical assets, not solely electric lines, located at the Portland Wind Farm where fire could originate from, including:

- The wind turbine nacelle,
- The (kiosk) Integrated Grid Connection Transformer and Switchgear adjacent to each wind turbine,
- The Cape Bridgewater (CBW), Cape Nelson North (CNN) and the Cape Nelson South (CNS) substations,
- The P3C and Cape Sir William Grant (CSWG) substations adjacent to the Alcoa Portland Aluminium Switchyard, and
- The 45km of (some single and double circuit) overhead line between the P3C, CBW, CNN, CNS and CSWG substations.

Challicum Hills Wind Farm

The land on which Challicum Hills Wind Farm and its associated overhead line is established consists of grassed pastures and is used predominantly for low density sheep and cattle grazing. There are trees within the boundaries of the wind farm however there are none in close proximity of the turbines or substations and all overhead lines are kept clear according to Electricity Safety (Electric Line Clearance) Regulations 2020.

Pacific Hydro recognises that there are multiple electrical assets, not solely electric lines, located at the Challicum Hills Wind Farm where fire could originate from, including:

- The wind turbine nacelle,
- The Integrated Grid Connection Transformer and Switchgear inside each wind turbine,
- The Challicum Hills Wind Farm (CHWF) Main Substation,
- The Buangor (BGR) Switchyard, and
- The 5km of dual circuit 66kV overhead line between the CHWF Substation and BGR Switchyard.

Crowlands Wind Farm

The overhead lines pass through private land, leased by Pacific Hydro, predominantly used for low density grazing, cropping and includes a combination of ground cover (grasses) and various



maturity tree species including native Eucalyptus (Red Stringybark, Yellow Box, River Red-gum, Blue Gum, etc). There are also areas directly adjacent to the line used for cropping.

Pacific Hydro recognises that there are multiple electrical assets, not solely electric lines, located at the Crowlands Wind Farm where fire could originate from, including:

- The wind turbine nacelle,
- The (kiosk) Integrated Grid Connection Transformer and Switchgear adjacent to each wind turbine,
- The Crowlands substations,
- The 15km of internal overhead lines between Substation and turbine clusters.

5. At-Risk Electric Lines

Portland Electric Lines

There is approximately 45km's of 66kV overhead line that runs between the CBW, CNN and CNS substations to the P3C substation at Cape Sir William Grant whose performance and compliance is helped with the implementation of both this plan and the Electric Line Clearance Management Plan. The overhead line assets are a combination of Pacific Hydro owned wood poles and shared Powercor owned wood poles, Steel Cross Arms, 66kV Insulators, Bare overhead conductor, Optical Fibre Cable and Ground Stays. Worley Power Services Pty Ltd has been engaged as the main Operations and Maintenance provider for the Wind Farm, including the electric line assets.

Challicum Hills Electric Lines

There is approximately 5km's of 66kV overhead line connecting the CHWF Main Substation to the Buangor Switchyard and is strictly managed by the Electric Line Clearance Management Plan. Worley Power Services Pty Ltd has been engaged as the main Operations and Maintenance provider for the Wind Farm, including the electric line assets.

Crowlands Electric Lines

The internal overhead electric lines owned by Pacific Hydro are located immediately to the north of the 220kV Crowlands terminal station. They consist of steel pole, single and double circuit lines with a combined approximately length of 15 km and require vegetation management processes to maintain the clearance space around them. Worley Power Services Pty Ltd has been engaged as the main Operations and Maintenance provider for the Wind Farm, including the electric line assets.

6. Electricity Safety (Bushfire Mitigation) Regulations 2023 (Statutory Rule Number 40/2023)

7. Regulation 6 - Prescribed particulars for the bushfire mitigation plans – specified operators

Specified operator legal entity

Pacific Hydro Pty Ltd (ACN 057 279 508) on behalf of

Pacific Hydro Portland Wind Farm Pty Ltd (ACN 103 162 474) with ESC Licence Code: EG - 04/2004 [PHPWF],

Pacific Hydro Challicum Hills Pty Ltd (ACN 101 989 744) with ESC Licence Code: EG – 01/2003 and

Pacific Hydro Crowlands Pty Ltd (ACN 620 640 486) with ESC Licence Code: EG_01/2003 [PHCH]



7.1 6(a) The name, address, and telephone number of the specified operator:

Mr. Cesar Salvatierra Executive Manager, Operations Pacific Hydro Pty Ltd ABN 31 057 279 508 Level 13, 700 Collins Street Docklands, Victoria, 3008 Phone: (03) 8621 6000 Email: <u>csalvatierra@pacificblue.com.au</u>

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Mr. Justin Johannesen



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7.8

In first instance to Worley Control Room Phone: 0400 317 129 Email: RMC.Sydney@Worley.com or 24/7 Remote Operations Centre Level 23, 111 Pacific Highway, North Sydney, NSW 2060, Australia Phone: 02 9888 5855



Email: <u>RMC.Sydney@Worley.com</u>

or Mr. Adrian Ciccocioppo Production Manager Pacific Hydro Pty Ltd ABN 31 057 279 508 Level 13, 700 Collins Street Docklands, Victoria, 3008 Phone: (03) 8621 6000 Mobile: 0438 093 517 Email: <u>aciccocioppo@pacificblue.com.au</u> or Powercor Control Room 1800 061 204

7.9 6(e) Policy

To mitigate as far as practicable the risk of fire starting from those at-risk assets that Pacific Hydro own.

7.10 6(f) Objective/s

This Plan in conjunction with the sites Electric Line Clearance Management Plan has been developed with the main objective to:

- identify possible ignition sources that could cause fire, and
- mitigate/reduce the likelihood and consequences of these through the implementation of effective preventative measures.

The plan is also intended to fulfil the Legislative and Regulatory requirements of the:

- Electricity Safety Act 1998, and
- Electricity Safety (Bushfire Mitigation) Regulations 2023 (Statutory Rule Number 40/2023).

7.11 6(g) Maps/ Description

The following table summarises the assets to which this plan applies:



Line (feeder) denomination	Voltage (kV)	Number of spans	Length (m)	Insulated Conductor (Y/N)	Conductor details	Number of poles	Pole material	Year of const-ruction
P3C to CBW	66	401	29700	Ν	Primary overhead conductor: Oxygen 19/4.75 AAC; Neon 19/3.75 AAC	1- 399	Wood Class II H5 CCA treated Blackbutt/Spotted Gum 12kN	2008
CNS to CNN	66	81	6081	Ν	Primary overhead conductor: Oxygen 19/4.75 AAC; Neon 19/3.75 AAC	1- 81	Wood Class II H5 CCA treated Blackbutt/Spotted Gum 12kN	2009
CHWF to BGR	66	44	4926	Ν	Primary overhead conductor: Oxygen 19/4.75 AAC	1- 41	Wood Class II H5 CCA treated Black Butt 12kN(2 Concrete)	2003
CRW fdr 1	33	13	2587	Ν	Primary overhead conductor: Nobelium 37/3.25 AAAC; Phosphorus 37/3.75 AAAC Overhead earthing conductor: ZTT 13.9mm UGOH termination conductor: Raychem 36KV OXSU-F; ABB 36KV Kabeldon; 33KV 3 core AI XLPE PVC HDPE 400mm2 Circular	1- 13	Galvanised Steel (600g/m ²) Class II Grade 250 plates and 300 for sections	2019
CRW fdr 2	33	7	2132	Ν	Primary overhead conductor: Nobelium 37/3.25 AAAC; Phosphorus 37/3.75 AAAC Overhead earthing conductor: ZTT 13.9mm UGOH termination conductor: Raychem 36KV OXSU-F; ABB 36KV Kabeldon; 33KV 3 core Al XLPE PVC HDPE 400mm2 Circular	14- 17	Galvanised Steel (600g/m ²) Class II Grade 250 plates and 300 for sections	2019
CRW fdr 3	33	1	242	Ν	Primary overhead conductor: Nobelium 37/3.25 AAAC; Phosphorus 37/3.75 AAAC Overhead earthing conductor: ZTT 13.9mm UGOH termination conductor: Raychem 36KV OXSU-F; ABB 36KV Kabeldon; 33KV 3 core Al XLPE PVC HDPE 400mm2 Circular	22- 23	Galvanised Steel (600g/m ²) Class II Grade 250 plates and 300 for sections	2019
CRW fdr 4	33	20	5180	Ν	Primary overhead conductor: Nobelium 37/3.25 AAAC; Phosphorus 37/3.75 AAAC	23- 43	Galvanised Steel (600g/m²) Class II Grade 250 plates	2019



	Overhead earthing conductor: ZTT 13.9mm UGOH termination conductor:	and 300 for sections	
	Raychem 36KV OXSU-F; ABB 36KV Kabeldon; 33KV 3 core Al XLPE PVC HDPE 400mm2 Circular		

Where the following is

P3C: Portland 3 Capes Substation

CBW: Cape Bridgewater Substation

CNN: Cape Nelson North Substation

CNS: Cape Nelson South Substation

CHWF: Challicum Hills Windfarm

BGR: Buangor Substation

CRW Fdr: Crowlands 33kV feeder

Refer to Appendices for the following maps of the land and location of at-risk electric lines

- Portland Wind Farm Overhead Line Site Layout
- Cape Bridgewater Site Layout showing the location of the electric lines, CBW substation and the wind turbines
- Cape Nelson South Site Layout showing the location of the electric lines, CNS substation and the wind turbines
- Cape Nelson North Site Layout showing the location of the electric lines, CNN substation and the wind turbines
- Cape Sir William Grant Site Layout showing the location of the electric lines, CSWG substation and the wind turbines
- Challicum Hills Wind Farm Overhead Line Site Layout (HBRA Classified)
- Crowlands Wind Farm showing the location of electric lines and poles Site Layout (HBRA)

7.12 6(h & i) Preventative Strategies

In line with this plans objectives, the strategies adopted for the prevention of fire ignition from overhead lines are detailed in this section.

Scheduled 36 month Electric Line inspection The reports stemming from these inspections identify, code and prioritise defect/s and their rectification timings (refer to example report Appendix I and Figure 1 below).



Condition of the assessed Item	Priority allocation	Need to be actioned within
The item is assessed to pose an immediate supply reliability, fire or public safety risk	Priority 1	24 hours
The item is assessed as not an immediate supply reliability, fire or public risk, however is likely to become one within 42days to 2 years	Priority 42	42 days
The item is assessed as not an immediate supply reliability, fire or public risk, however is likely to become one within 2 years to 3 years	Priority 2	32 weeks
This item is not a priority 1, 42 or 2 but may require attention before the next inspection (>36 months or 3 years)	Priority 3	> 3years

Figure 1 Asset Defect Priority Rating and Rectification Timings

Note: all time periods mentioned in the table are based on calendar days.

There can be 2-3 week delay between inspection and provision of report and associated recommendations.

If an asset is identified by as part of the inspection with deteriorating defects, however:

- they have not exceeded the criteria under sections (f) to (j) to trigger replacement, and/or
- the inspector expects that deterioration will cause the pole to have a 'limited life (L)' or to become 'unserviceable (U)', during the following scheduled inspection interval then an increased inspection/testing interval can either be:
 - specified as part of the scheduled inspection (and associated report), or
 - requested of the electric line specialised service provider by the responsible person for carrying out this plan,
 - to track further deterioration.

The priority that is assigned to a 'serviceable (S)', 'limited life' or 'unserviceable' pole is independent the assignment and should be linked back to the Inspectors assessment of the risk of failure within the timeframes referred to in Figure 1.

Any increased inspection interval will be calculated using previous deterioration information/rates, if available, from previous inspection results. If no historical deterioration information/rates are available, then the increased interval will default to annual, with the following:

• The Pacific Hydro Electric Line Management Clearance Plan details the annual vegetation inspection and clearance works for the overhead lines/spans. The reports stemming from these inspections identify, code and prioritise any applicable clearance work required around the electric lines. The rectification work and timing is programmed according to the codes/priorities stipulated in the reports (refer to example report Appendix H). The following table outlines the different inspection/reporting codes and definitions. The timeline summary of the latest the annual vegetation inspections and clearance works for the overhead lines/spans is presented below.



- For asset inspection and assessment, Pacific Hydro Asset Inspection Manual (at risk overhead lines) will be used. This manual contains information about electrical assets and the standard for observation and or tests to identify and assess the condition. The timeline summary of the latest the powerlines assets inspections within 36 months is presented below.
- Planned invasive inspections are to be conducted every 4 inspections (or 12 years). Below ground inspections of poles are conducted to determine the residual pole strength, identify drainage, moisture or rotting issues or the presence of termites. Drilling into wooden poles or NDT scan of wooden poles (Woodscan) is to be completed above ground and/or below in addition to the below ground inspection. The inspections are carried out by either the dig and drill method or where no-destructive testing is required than Woodscan (for wooden poles) may be used. The timeline summary of the latest poles inspections within 72 months is presented below. The list of outstanding maintenance items and list of outstanding tree clearing are supplied to ESV with the BMP.
- Visual Patrol of Electric Lines from the ground and (or) from drone utilising powered image stabilised binoculars and (or) digital SLR cameras for defects and potential failure points,
- Thermographic Patrols as required. This is an unplanned/non-routine task which will be largely dependent on the person responsible for carrying out the plan and if they deem necessary to carry out this action based on fault event logs and known Electric Line condition,
- Insulator washing as required. This is an unplanned/non-routine task which is dependent on the local conditions and subsequent impact of these on sections of the overhead lines, and,
- The auto reclose functionality is currently suppressed on the power lines and the lines are inspected prior to re-energising after faults.
- Any outstanding maintenance items will be rectified or reinspected prior rectification timings in latest powerline asset inspection report that mast be in accordance with Table 1 Asset Defect Priority Rating and Rectification Timings
- Current replacement/modification programs are:
 - to replace defective assets based on priority stated in latest powerline asset inspection reports;
 - install powerline vibration dampers if the defect is identified to be related to high powerline vibration;
 - if defect has signs of conductor ware against insulator, the connection is cleaned and is greased with silicone grease for electrical insulation and part lubrication.

Worley are currently contracted as the 'specialised service provider' to perform the scheduled 36 month electric line inspection to procedures in AU-100-OPS-MAN-00002 Pacific Hydro Asset Inspection Manual (at risk overhead lines) and annual electric line vegetation inspection with any subsequent vegetation cutting/removal to be conducted prior to 1st December or the Declared Fire Danger Period (DFDP), <u>http://www.cfa.vic.gov.au/warnings-restrictions/fire-restrictions-map/</u>).



The timeline summary of the latest powerline inspections and the works

Line (feeder) denomination	latest the annual vegetation inspections	latest the annual vegetation clearance works	the latest the powerlines assets inspections within 36 months	the latest poles inspections within 72 months
P3C to CBW	5/09/2024	Scheduled in the CMMS in October-November 2024	29/11/2022	08/02/2023
CNS to CNN	6/09/2024	Scheduled in the CMMS in October-November 2024	29/11/2022	08/02/2023
CHWF to BGR	6/08/2024	Scheduled in the CMMS in October-November 2024	20/11/2023	16/12/2020
CRW fdr 1	6/08/2024	Scheduled in the CMMS in October-November 2024	22/11/2023	22/11/2023
CRW fdr 2	6/08/2024	Scheduled in the CMMS in October-November 2024	22/11/2023	22/11/2023
CRW fdr 3	6/08/2024	Scheduled in the CMMS in October-November 2024	22/11/2023	22/11/2023
CRW fdr 4	6/08/2024	Scheduled in the CMMS in October-November 2024	22/11/2023	22/11/2023

7.13 6 (j) and (k) Qualifications, Experience and Competency of persons

Personnel completing asset inspection and clearance works will hold current qualifications and experience approved by ESV. This at a minimum shall be UET20621 – Certificate II in Asset Inspection and testing or equivalent for Asset inspectors. Further this, personnel carrying out inspections will be inducted into the Asset inspection manual (AU-100-OPS-MAN-00002) prior to performing the task.

Prior to the works starting one of the representatives responsible for carrying out this plan may be on site at the commencement of the inspections to observe/conduct appropriate inductions which may include such a request for records.

If any worker associated with the Electric Lines and 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.

Note: For other persons, referring to 6(k) of the Electricity Safety (Bushfire Mitigation) regulation will be required to meet the above or be under the control of an Authorised Person.

7.14 6 (I) Operation and Maintenance Plans

This section outlines the plans during certain event/periods.

• In the event of 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.

In such an event PHA should coordinate with the CFA and Local Council to provide support in matters relating to operation of the wind generation site that contain at risk electric lines referenced in this document 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 with the auto reclose suppressed.

• During a Total Fire Ban (TFB)

During a time of total fire ban the associated overhead lines will operate in accordance with normal operating practices (auto reclose suppressed) and the prohibition of hot work permits on the at-risk electric lines. There is emergency response protocols and plans in place for each site with the bushfire drill tanning in place.

• During the Fire Danger Period

The Wind Farm will be operated in accordance with normal operating practices (auto reclose suppressed) during the DFDP.

7.15 6 (m) Investigations, analysis and methodology

Electrical events/faults, if they influence risk of fire ignition from the sites at-risk electric lines or not, are recorded and reported using Pacific Hydro's 'Electrical Event Report' (Appendix J) form 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 'Defect Reporting Procedure' and associated electronic form (Appendix K&L) is utilised. This process may also instigate a Root Cause Analysis Report (Appendix M) if either:

- the Defect risk rating is extreme/high, and/or
- there have been multiple events of an identical/similar nature (common/systemic defect or fault), and/or
- a request is made from higher levels within the business.

This process helps to ensure that events/faults are properly reported, investigated and actions taken to reduce their likelihood of re-occurring.

Note:

Where assets are in are share arrangement with the network provider, reporting will be performed by a single party and will be the responsibility of the owner of the particular pole.

The major events that were sources for ignitions are presented on Table 1 which are all previous fire starts resulting from Pacific Hydro assets (current and historical).



Table 1 -	The maior	events	that we	ere sources	for	ianitions
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Type of Event	Failed/suspected	Year of Event	Event Frequency, Years/event	Action to mitigate risk of fire ignition from electric lines at risk
Conductor coming in contact with the wooden type poles	failed	2019	10	Powerline vibration sensors were introduced for the investigation of root cause analysis. Mitigations and preventative actions are being implemented to reduce the risk of such event.
Conductor coming in contact with the wooden type poles	failed	2020	6.5	Investigation to this matter continue. Mitigations and preventative actions are being implemented to reduce the risk of such event. One such proposed method could be the introduction of mechanical vibrational dampeners on the electric line where increased wear is observed.
Strain insulator failed with no fire	failed	2023,2024	7.5	Insulator type was changed to more historically reliable one and powerline vibration sensors were installed to monitor for any abnormal forces on the insulators.
Conductor tie	suspected	-	-	The conductor is inspected regularly with additional greasing to reduce friction against insulators

7.16 (n) Processes and Procedures

There are a number of processes and procedures adopted/relied upon to manage this plan including:

- Monitoring the implementation of the plan is performed predominantly through the following method:
 - the use and management of the computerised maintenance management system (CMMS) which records any required scheduled or unscheduled works including, but not limited to, the preventative works listed under section (h & i) of this plan. The specific measure is the closure of maintenance 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 December or before the DFDP each year, whichever is earlier.

This measure is referred to as the Bushfire Index and is calculated as follows:

Bushfire Index = Number of outstanding works ÷ Total works required

Works include all routine Electric Line maintenance and vegetation clearance scheduled and remedial works.

The current 'outstanding works' include:

PORTLAND WIND FARM

• There are no outstanding/overdue works for this site

CHALLICUM HILLS WIND FARM



- There are no outstanding/overdue works for this site
 CROWLANDS WIND FARM
- There are no outstanding/overdue works for this site

The 'works required' include:

PORTLAND WIND FARM

- Line Vegetation assessment
- Line Vegetation cutting/clearing
- 36 month Electric Line Inspection (next due: Nov 2025)
 CHALLICUM HILLS WIND FARM
- Line Vegetation assessment
- Line Vegetation cutting/clearing
- 36 month Electric Line Inspection (next due: Nov 2026)
 CROWLANDS WIND FARM
- Line Vegetation assessment
- Line Vegetation cutting/clearing
- 36 month Electric Line Inspection (next due: Dec 2026)

Therefore:

Bushfire Index = $0 \div 9 = 0.00$

Note that the performance/progress of all site maintenance tasks, including the above where applicable, is monitored and reported on monthly by the Australian Operations Department.

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

Key Performance Indicator (KPI)	Target	Result (previous year)
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.	0	1
Annual Number of Fire Starts.	0	0
Number of Stakeholder complaints/correspondence received in relation to the relevant Electric Lines as measured through Pacific Hydro's Communication and External Affairs department and the associated enquires line (1800 010 648) and email address (enquires@pacifichydro.com.au).	0	Ο
Lost Time Injuries (LTI's) or Medical Treatment Injuries (MTI's) with the cause identified to be directly related to the Electric Lines.	0	0
Future ELCMP submitted by 30th June each year	0	0
Financial Penalties (Penalty Units) received.	0	0

- Auditing the implementation of the plan is largely done in two ways:
 - as part of the annual review process prior to resubmission of this plan to ESV, as well as



 an audit prior to the DFDP will be undertaken by a representative responsible for carrying out this plan which includes:

a. that the qualifications and experience of personnel performing any scheduled inspection and/or clearance works adheres to both ESV's and this plans requirements,

b. associated report/s have been submitted to the persons responsible for carrying out this plan,

c. all inspection/s, report/s 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 (as further explained under section (vi). **Note that this task may be conducted by an independent third party, where requested by the persons responsible for carrying out this plan**. Additional inspections may take place throughout the year if in alignment with other scheduled/unscheduled line tasks (e.g., insulator washing, event/fault inspections etc), and

d. the inspections and recommendations/works from the report, if any, have an appropriate task/s entered into the CMMS and those task/s have been closed out following completion or the works.

If either of items a, b, or c in above list are believed to have not occurred then a representative responsible for carrying out this plan is to immediately contact the electric line specialised service provider of the reports and request the required information

If either of the remaining items in above list have not occurred then the representative responsible for carrying out this plan is to immediately perform the required work or contact their manager and request support to perform the work.

Person/s responsible for carrying out this plan may also take the opportunity to perform audits outside the above timeframe.

- Identification of any deficiencies in the plan or the plan's implementation can be done via:
 - the annual review process of this plan prior to resubmission to ESV,
 - Person/s carrying out this plan to provide feedback to their manager and/or the person/s responsible for the preparation of this plan when a deficiency is found. This will generally take the form of email correspondence,
 - Pacific Hydro's employee observation/conversation program which requires each employee and Full time Operations and Maintenance contractor to make 12 observations annually, which takes the form of electronic submissions, and/or
 - Review of site/asset risk registers.
- A change, or changes, to the plan and the plan's implementation if any deficiencies are identified under subparagraph (iii) 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 onto the webpages listed in the plan.

The annual review of this plan is performed by the person/s responsible for preparing the plan in conjunction with the other people listed under sections (a-d).



As well as incorporating any of the above changes the reviews intension is to, but is not limited to, re-aligning the plan to any updated Legislation, Regulations or Codes, industry practices and Electric Line configurations/locations.

- Monitor the effectiveness of inspections under the plan will be performed through the annual review of the performance measures listed under (n)(i) by the person/s responsible for preparing the plan.
- Auditing the effectiveness of any inspections carried out under the plan is performed through conducting a ground based visual audit following the completion of the 36-month Electric Line Inspection works. This will be performed by either:

Personnel who have:

- Knowledge of applicable Acts, Regulations and Codes associated with this plan,
- Knowledge of this plan and its auditing obligations,
- Knowledge of, and are familiar with, the Electric Lines subject to the audit

or,

- an independent third party.

The scope of the visual audit will cover a minimum of 10% of the Electric Lines previously inspected and take the form of a marked-up version of the inspection report. If any significant inaccuracies are noted then the audit scope will be expanded to include 100% of the Electric Lines. These inaccuracies will then be reported back to the electric line specialised service provider.

Person/s responsible for carrying out this plan will also take the opportunity to perform audits outside the above timeframe if other scheduled/unscheduled line works are expected and resourcing is available.

Performance of the electric line specialised service provider can be reviewed/audited through Pacific Hydro's procedure PHA.HSE.09.014 Contractor Performance Evaluation (Appendix N).

The status of 2023-2024 achievement of all cyclic asset replacement/modification programs is provided below table:

Cyclic asset replacement/modification program	Portland Wind Farm	Challicum Hills Wind Farm	Crowlands Wind Farm
Number of defective assets replaced	2	4	0
Number of powerline vibration dampers installed	0	6	0
Number of conductor ware locations greased	0	0	0

7.17 (o) Pacific Hydro Policy on Assistance Provided to Fire Control Authorities

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

8. Regulation 13 Exemptions Provided by the ESV

Under the regulation, the ESV may in writing provide exemption to the Electricity Safety (Bushfire Mitigation) Regulation for a specified operator or major electricity company.



Currently, Pacific Hydro Australia has not been granted any exemptions.

9. Section 83BA (3) (a) of the Act - Plan available for inspection

The latest ESV approved Bushfire Mitigation Plan is available for inspection on the responsible person's website at either of:

Site Name	Web link
Challicum Hills Wind Farm	https://www.pacificblue.com.au/our-energy-production/operating- sites/challicum-hills-wind-farm
<u>Cape Nelson North/Sir William</u> <u>Grant Wind Farm</u>	https://www.pacificblue.com.au/our-energy-production/operating- sites/cape-nelson-nth-sir-william-grant-wind-farm
Cape Bridgewater Wind Farm	https://www.pacificblue.com.au/our-energy-production/operating- sites/cape-bridgewater-wind-farm
Cape Nelson South Wind Farm	https://www.pacificblue.com.au/our-energy-production/operating- sites/cape-nelson-south-wind-farm
Crowlands Wind Farm	https://www.pacificblue.com.au/our-energy-production/operating- sites/crowlands-wind-farm

Any superseded versions of the plan located at the above websites will be overwritten by the Pacific Hydro 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 the responsible person's office, during normal business hours, located at:

Yuriy Odarenko

Level 13, 700 Collins Street

Docklands, Victoria, 3008

Any hardcopy superseded versions of the plan will be destroyed by the person responsible for preparing the plan.

10. Corporate Structure

Pacific Hydro Pty Ltd is a parent company of a group of subsidiary companies which own and operate renewable generation assets including powerlines. For the purpose of the Bushfire Mitigation Plan the below chart specify the relationship between the relevant corporate entities:





Other References and Supporting Documents

The table below lists all the documents that have been referenced within the plan:

Document Number	Document Title	
AU-100-OPS-MAN-00002	Asset inspection manual for at risk electric line	

11. Document History

Version	Date	Amended by	Comments
0	24/05/2022	Daniel Choi Senior Operations Engineer	Replaces legacy document PHA. OPS.08.006
1	16/09/2022	Yuriy Odarenko Senior Operations Engineer	Clarifications for Regulation 6
2	19/10/2022	Yuriy Odarenko Senior Operations Engineer	Corporate Structure clarification
3	11/03/2023	Yuriy Odarenko Senior Operations Engineer	New Pacific Blue Template was used

The following table lists the changes made to this document:



12. Appendices

- A. Portland Wind Farm Overhead Line Site Layout (Lines) (HBRA Classified)
- B. Cape Bridgewater Site Layout showing the location of the electric lines and poles (HBRA Classified)
- C. Cape Nelson South Site Layout showing the location of the electric lines and poles (HBRA Classified)
- D. Cape Nelson North Site Layout showing the location of the electric lines and poles (HBRA Classified)
- E. Cape Sir William Grant Site Layout showing the location of the electric lines and poles (HBRA Classified)
- F. Challicum Hills Wind Farm Overhead Line Site Layout (HBRA Classified)
- G. Crowlands Wind Farm Overhead Line Site Layout (HBRA Classified)
- H. Example Vegetation Inspection Report
- I. Example Asset Inspection Report
- J. PHA.OPS.09.036.1 Electrical Event Report
- K. PHA.OPS.09.002 Defect Reporting Procedure
- L. Defect Reporting Form
- M. PHA.OPS.09.010 Root Cause Analysis Report
- N. PHA.HSE.09.014 Contractor Performance Evaluation



Appendix A. Portland Wind Farm Overhead Line – Site Layout (HBRA Classified)



Кеу	Description
0	Wind turbine generator
2	Overhead power line
12	Overhead power line Challicum Hills and Crowlands
a.	Underground cable
8	Poles owned by Pacific Hydro
8	Poles owned and maintained by DNSP (Powercor)





Appendix B. Cape Bridgewater Site Layout showing the location of the electric lines and poles (HBRA Classified)





Appendix C. Cape Nelson South Site Layout showing the location of the electric lines and poles (HBRA Classified)



Appendix D. Cape Nelson North Site Layout showing the location of the electric lines and poles (HBRA Classified)





Appendix E. Cape Sir William Grant Site Layout showing the location of the electric lines and poles (HBRA Classified)











Appendix G. Crowlands Wind Farm Overhead Line – Site Layout (HBRA Classified)



Appendix H. Example Vegetation Inspection Report

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Challicum Hills Pre Fire Season Inspection 2024



Findings

The 66kV line was inspected on the 6th August 2024. All spans were inspected, and the codes have been updated to reflect their status. The data for these lines is within Appendix 1

There is 1 span that is coded "2025" that will require actioning before the 2024/2025 fire period is declared 3 spans have been coded 2026 which are regrowth from previous removals and should be actioned now whilst small and more economic to remove all other Spans will maintain the required clearance throughout the upcoming 2024/2025 fire season. details are listed in the tables below

Span	Work Required	Comments
Pole 3-4	2 trims	New Growth
Pole 34-35	6 removals	Regrowth from previous removals
Pole 35-36	25 Removals	Regrowth from previous removals
Pole 40B-41B	3 removals	New growth removal recommend to prevent issues in the
		future







Appendix 1

Span	Code	Span	Code
1A	NVS	23	NVS
1B	NVS	24	VS Mature Euc
2	NVS	25	NVS
3	NVS	26	NVS
4	2026 – location 1	27	NVS
5	NVS	28	NVS
6	NVS	29	NVS
7	NVS	30	NVS
8	NVS	31	NVS
9	NVS	32	NVS
10	VS Mature Tree	33	NVS
11	NVS	34	NVS
12	NVS	35	2026 – location 2
13	NVS	36	2026 – location 3
14	NVS	37	NVS
15	NVS	38	NVS
16	NVS	39A	NVS
17	NVS	39B	NVS
18	NVS	40A	2027
19	NVS	40B	2025 -location 4
20	NVS	41A	NVS
21	NVS	41B	NVS
22	NVS	ZS	NVS

Challicum Hills Location 1		
Pole Number	4	
Land Owner	V/line	
Photo 1		
Trims	2	
Removals		
Species	Eucalyptus	
Equipment Required	Ground Crew	
Current Code	26	

Challicum Hills Location 2				
Pole Number	35			
Land Owner	Private			
Photo 3				
Trims				
Removals	6			
Species	Eucalyptus			
Equipment Required	Ground Crew			
Current Coade	27			
Challicum Hills Location 3				
----------------------------	-------------	--	--	--
Pole Number	36			
Land Owner	Private			
Photo 4				
Trims				
Removals	25			
Species	Eucalyptus			
Equipment Required	Ground Crew			
Current Code	26			

Challicum Hills Location 4				
Pole Number	40B			
Land Owner	Private			
Photo 5				
Trims				
Removals	3			
Species	Acacia			
Equipment Required	Ground Crew			
Comments	2025			

Media summary



Photo 1





Photo 3

Photo 4





Appendix I. Example Asset Inspection Report (Page Left Blank)





Pages =4 (plus individual asset reports).

Our Reference: M.0151426.1.01

Date: Wednesday, 22 November 2023

Justin Johannesen Contract Manager – Pacific Hydro Worley 178 Normanby Road Southbank, VIC, 3006

Dear Justin,

Ref: CHALLICUM HILLS - POWER LINE ASSESSMENT 2023

Omexom wishes to thank you and Worley management for the opportunity to undertake this power line assessment at Challicum Hills Windfarm.

Forty-five (45) poles were visually inspected for defects during this assessment, and one (1) P3 defect was identified as per the attached maintenance at the end of the report.

Please note that we should reconsider a slightly later or earlier timeframe for the next visual inspection as all poles were in a crop, which makes access hard for the inspector. We would recommend an inspection in Q3 or mid to late December (early January) to avoid crop season.

The attached report contains Omexom's assessment and information about this project. The report includes:

- 1. General comments and observations;
- 2. Visual Inspection methodology; and
- 3. Maintenance reports;

Please do not hesitate to contact me with any questions or concerns.

Yours Sincerely,

Peter Bell Business Manager Omexom



OMEXOM Electrix Pty Ltd trading as 'Omexom' Unit 1/8 Weddel Court, Laverton North, Victoria, 3029, Australia www.omexom.com.au



GENERAL COMMENTS AND OBSERVATIONS

Forty-five (45) poles were visually inspected for defects during this assessment, and one (1) P3 defect was identified as per the attached maintenance report at the end of the report.

Access to power poles

Access to power lines is essential to improve the efficiency of inspections and is critical in the event of an outage.

In general, access to poles and tracks were acceptable, and no action is required other than annual maintenance and consideration of the timing (poles in crop).

Defect priority explained

- **P1** The item is assessed to pose an immediate supply/reliability, fire or public safety risk.
- **P32** The item is assessed as not to pose an immediate but impending supply, reliability, fire or public safety risk. This item should be addressed within 32 weeks of the assessment.
- **P3** The item is not a priority but requires attention (including monitoring) before the next cyclic inspection (at risk of becoming an issue within 3 to 5 years).
- **Note**: The defect priority categories above reflect Powercor's policy.



1. VISUAL INSPECTION METHODOLOGY

- 1. Inspection of each power pole asset including:
 - 1. Cross-arms;
 - Deterioration.
 - Crack, splits and hardware.
 - 2. Poles;
 - Damage; rust (steel and concrete).
 - Bowed, leaning and hardware.
 - 3. Insulators;
 - Cracks, tracking.
 - Loose hardware and stains.
 - 4. Conductors;
 - Corrosion, broken strands, ties.
 - Clearance issues; and deformity.
 - 5. Connectors;
 - Loose, broken, discoloured and conductor damage.
 - 6. Stays;
 - Wire damage; anchors.
 - wooden insulator damage and eyebolts.

7. Transformers;

- Oil stains; bushings.
- Droppers and fusing.
- 8. ABS and switches;
 - Insulators; switch and blade alignment; handles and earths.

9. Fusing and HV apparatus;

- Insulators; fuse conditions.
- Burn marks and tracking.
- 10. Earthing;
 - Connections and earth wires.
- 11. Vegetation;
 - Clearance items, species and location.
- 12. Design.
 - Assets that do not conform to current design standards.

POLE ASSESSMENT REPORT Challicum Hills November 2023





MAINTENANCE REPORT

Omexom ProjectName

Challicum Hills 2023



Omexom Project No

M.0151426.1.01

Inspection Details	Maintenance Item	Asset Orientation	Maintenance Description	Recommended Action	Priority	Rectified	Image 1	Image 2
CH4 -Paddock adjacent to Railway - 11/20/2023 - Mitchell Watson	Stay Wire		Stay wire is slack.	Tighten	P3 (Observation)	No		

Appendix J. PHA.OPS.09.036.1 Electrical Event Report (Page Left Blank)



Pacific	Hydro	logo	(small)
			(0

Electrical E	vent Report
---------------------	-------------

Report Number

Report Status

erious Electrical Inci- ny faults that are dee an electrical worl an operator of a an operator of a	dents med to be "serious electrical incidents" mu ker who becomes aware of a serious electri high voltage electrical installation who beco	st as soon as practicable	e be reported to Energy Safe Vic	
 y faults that are dee an electrical wori an operator of a an operator of a 	med to be "serious electrical incidents" mu ker who becomes aware of a serious electri high voltage electrical installation who beco	st as soon as practicabl	e be reported to Energy Safe Vic	town for
 an electrical wori an operator of a an operator of a 	ker who becomes aware of a serious electri high voltage electrical installation who beco			toria.
Installation	complex electrical installation who become	cal incident relating to omes aware of any serio s aware of any serious e	work carried out by that worker; ous electrical incident occurring v electrical incident occurring within	within that electrical installation n that complex electrical
porting Procedure t	to Energy Safe Victoria			
soon as it is safe to d rson who reported th the incident.	o so, contact Energy Safe by telephone on Te ne incident to Energy Safe Victoria then must	elephone: (03) 9203 9700 submit a written report	D. This should occur within 4 (four of the incident to Energy Safe Vi	r) hours of the incident. The ctoria within 20 business days
Short Description *				
Reported By *	Daniel Choi	Notification Date *	6/10/2020	
Site Name *	Please select a value	Serious Electrical	No	-
Event Number A	Auto Generated	Event Date & Time *	12 AM 💌 00	×
Weather at time				
orevent				
Brief Description				
of Fault *				
Supporting Attachments				
Suspected Cause				
of Fault				
L				
Event Location / Type				
Impact of Event -				
(operations /				
equipment)				

Name / Location /]	
No of CBs Open									
Production								7	
Production Belay/s Operated									
Kelay/s Operated									
/ Triggered									
Tripping Delay								_	
Indications									
144-sh									
Attachments									
		1						_	
Data Downloaded	Yes	Data Lo	ocation						
Externals									
Contacts									
contacts									
Power Pestored		12 44		Duration	hours				
Fower Restored		12 AM 🗾	00	Duration	nouro				
	Data			Whe		Dee			
	Date			who		Desc	ription		
Immediate									
Actions									
		7							
Future Actions									
Is Further Root Cau	se Required No			•					
Is Further Root Cau	se Required No								
Is Further Root Cau	se Required No			•					
Is Further Root Cau	se Required No			•					
Is Further Root Cau	se Required No	SAVE		SAVE AND SEN	D UPDATES	CANCEL			

Appendix K. PHA.OPS.09.002 Defect Reporting Procedure (Page Left Blank)



L13, 700 Collins Street Docklands VIC 3008 Australia



1138601 - Defect Reporting Procedure

PHA.OPS.09.002



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Document Control

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Controlled Document (Y or N)	Ν	Revision No	6
Document Status	Approved	Links to Related Documents	Link
Next Review Date	02.11.2024	Document Location	Nexo PHA Operations
PH Standard Element(s) and/or Sub- element(s)	Standard Element	Document Type	Procedure

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Initial Issued	01.10.2016	



3	3.12.2019	Major Updates to reflect updated NFDA
4	02.2020	Minor updates following improvements to Nintex Forms/Workflows. Format updates.
5	05.11.2021	Minor update to reflect latest NFDA and include the defect form for Outsourced assets
6	02.11.2022	General Review and update



1. Introduction

This procedure outlines the process to be followed when defects (or non-conformances) are found in Assets/systems (hardware or software) which are intended to continue operation.

Management of operational defects is important to ensure safe operation of the Assets and can support prevention of future similar/systemic defects.

Defects can vary in the Risk that they present to the safe operation of the Assets and hence the wider business. To help evaluate this risk we refer to the Risk Matrix in Appendix 1 which forms part of the board approved Enterprise Wide Risk Management Framework. It is important to be familiar with, and refer to, Pacific Blue's Risk Matrix when considering raising a Defect Report to help establish the Risk Rating the Defect poses to Pacific Blue's business.

The rationale around management of Defects/Risk associated with Defects is:

- The Higher the Risk Rating the Higher the level of Review/Approval required.
- The Risk is managed by those best placed to do so.

Examples of defects include: damage to mechanical equipment such as towers, blades, drive train components and hydraulics, damage to electrical equipment such as sensors, transformers, cabling, switchgear, etc. Minor defects such as paint scratches, minor corrosion of ancillary plant, leaks, etc. should not rate as a risk (on the assumption they are picked up early) and hence should be raised as a Task on the Computerised Maintenance Management System (CMMS), with the aim to be rectified in the earliest convenient time possible if needed.

2. Scope

The purpose of this procedure is to define the defect concept across PHA Operations, including clear guidelines to report them and to manage them in alignment with the Enterprise Risk Management Framework of PH Australia, and the Non-Financial Delegation of Authority Procedure (NFDA).

3. Definitions

Term	Definition/Abbreviations
Asset	A piece of fixed or mobile equipment of value
Defect	A defect is any fault in the design, function or qualitative characteristic of an item in operation which differs from the specification, the drawing or recognised standard of good workmanship for that item other than that classified as 'fair wear and tear' within manufacturer's limits and that effects operational functionality or performance.
EWRMF	Enterprise Wide Risk Management Framework



Significant Defects	Defects with a risk rating of High or Extreme according to PH EWRMF
Non- Significant Defects	Defects with a risk rating of Low or Medium according to PH EWRMF
Failure	A Failure is a substandard condition of a component or asset that causes the plant to breakdown or trip. Immediate repair is needed to restore the plant to operation
NFDA	Non-Financial Delegation of Authority
LCM	Lifecycle Cost Model
CMMS	Computerized Maintenance Management System
РНА	Pacific Blue Australia

4. References

PHA.OPS.07.005 Delegation of Authority – Non-Financial PHA.OPS.09.005 Maintenance Management Procedure Major Component Failure spreadsheet

5. Approvals Required to Operate Assets under Defects

As soon as a defect is identified on site in any of the assets within the PHA operating fleet, a thorough risk assessment should be conducted to thoroughly review the risk rating of the defect (Appendix A).

5.1 Outsourced assets:

Contractors need to conduct risk assessment with actions recommended for PHA approval.

5.2 In-housed assets:

Based on this risk review, a definition of "Significant" or "Non-Significant" event should then be allocated to the defect to facilitate its review in accordance to the current NFDA of PHA.

Depending if the defect can be defined as "Significant" or "Non-Significant", and also depending if the underlying asset impacted by the defect is Critical or Not Critical (NFDA Annex 1.1), different approvals levels will be required to operate the asset under the respective defect. Supervisors and Regional Managers are responsible for ensuring that the proper approval levels have been used when continue operating assets in the presence of high-risk defects.

6. Defect Reporting Procedure

6.1 Outsourced Assets:

1- Raise a Defect Reporting Form

Contractor should refer to the Risk Matrix to determine if the proposed Defect risk rating is low and hence dose Not require a Defect Report to be raised.

Otherwise, Defect Reporting Form (Appendix C or Contractors' equivalent Form) is required to be completed with as much information including any action/s that have been undertaken and contractors' engineering/HSE/Management review/endorsement. Contractors should provide the completed Defect Reporting Form to PHA Wind Contract Manger for review.

2- Wind Contract Manager Review

After received the Defect Reporting Form from Contractors, Wind Contract Manager needs to review and initiate the Defect Reporting as per section 6.2.

6.2 In-housed Assets:

The basic steps in the Pacific Blue initiated Defect Reporting process are shown below. It is structured to ensure a staged approval process which is graphically represented in Appendix B.

1- Raise a Defect Reporting Form

Initiator should refer to the Risk Matrix, to determine if the proposed Defect risk rating is Low and hence does NOT require a Defect Report to be raised.

Ensure the Defect Reporting Form is completed with as much information including any action/s that have been undertaken to date to minimise potential Rejection from subsequent reviewers

Recommendations from the originator on future action/s should also be included.

2- Supervisor (Regional Services Manager/Contract Manger) Review

Assess impacts, actions and the current unit status. Any additional supervisor actions/comments to be included.

Supervisor to review Risk Rating, the need for a Root Cause Analysis and approve.

Refer to NFDA procedure as to who can endorse/approve a change.

3- Engineer (Senior Asset Engineer) Review

As per their respective discipline's defect actions and future actions should be reviewed for soundness against engineering principles. Further support maybe sought through Subject Matter Experts (SME's) before rejecting/endorsing. The need for a Root Cause Analysis (RCA) should also be done. **Note** that under the Professional Engineers Registration Act 2019 that from July 2021 this engineering review stage may be defined under the definition of "professional engineering services" in which case it can only be performed by a registered professional engineer within their registered "area of engineering".

Refer to NFDA procedure as to who can endorse/approve a change.

4- Asset Manager (AM) and/or Production Manager (PM) Review

Subject to the Defect 'Classification' and if it is impacting a 'Critical' Asset this step will either require the Production Manager to provide 'Backup' or 'Joint' endorsement/approval.

Refer to NFDA procedure as to who can endorse/approve a change.

5- Executive Manager, Engineering Services (EMES) Review

Subject to the Defect being classified as both

- 1. Critical, and
- 2. Significant (Extreme and High 'Post' Risk ONLY)

this step will be directed to the EMES for review.

Refer to NFDA procedure as to who can endorse/approve a change.

6- Executive Manager, Operations (EMO) Review

Subject to the Defect continuing to be classified as both

- 1. Critical, and
- 2. Significant (Extreme and High 'Post' Risk ONLY)

this step will be directed to the EMO for review.

Refer to NFDA procedure as to who can endorse/approve a change.

7- Director of Development, Project and Operation (DDPO) Review

Subject to the Defect continuing to be classified as both

- 1. Critical, and
- 2. Significant (Extreme and High 'Post' Risk ONLY), and
- 3. The Risk Consequence is rated as 'Catastrophic',

this step will be directed to the **DDPO** for review.

Refer to NFDA procedure as to who can endorse/approve a change.

8- Chief Executive Officer (CEO) Review

Subject to the Defect continuing to be classified as both

- 1. Critical, and
- 2. Significant (Extreme and High 'Post' Risk ONLY), and
- 3. The Risk Consequence is rated as 'Catastrophic',

the defect information will be directed to the Corporate Office/CEO for review.

Refer to NFDA procedure as to who can endorse/approve a change.

9- Initiated

Once the Defect form has made it through the review stages it can be commenced.

<u>Note</u> that this review process may not cover all site/task specific documentation such as SWMS/JSA's, Permits, Instructions etc which may still need to be reviewed prior to the task.

10- Completed

Defect status is to be reviewed through scheduled meetings and remain active until all follow-on actions are completed and the defect is resolved.

The Defect form can then be edited to 'Mark As Completed'.

Appendix A – Risk Matrix

Table 1: Risk Likelihood Ra	atinas
-----------------------------	--------

Rating	Criteria
Frequent	Is expected to occur in most circumstances Risk has more than 75% chance of occurring Will occur within the next 6 months
Likely	Will probably occur in most circumstances Risk has 50-74% chance of occurring Will occur within 18 months
Possible	Might occur at some time Risk has 25-49% chance of occurring Will occur within 36 months
Unlikely	Could occur at some time Risk has less than 25% chance of occurring Will occur within 54 months
Rare	May occur only in exceptional circumstances Not likely to occur within next 5 years

Rating	Financial Impact	Operations	Development Construction	Legal Compliance	Reputation	Environment Community	Health & Safety
Catastrophic	 Negative Financial Impact is: EBITDA: > \$20M and/or EV: > \$200M 	 Significant reduction in group operations output: > 30% pa Serious damage to asset/s: > 6 months loss of service 	 Significant development / construction delays: > 12 months 	 Significant litigation or breach of regulation with damages / costs: \$10M Jailing of Director or Officer Court or Regulator imposed fine: \$1M Class action 	 Significant / irreparable damage to Pacific Hydro reputation Requires PHPL Board attention Loss of Social Licence to Operate and ability to extend existing project lifecycle 	 Significant environmental damage or long term impact resulting in costs: \$10M Significant breach of regulation with imposed fine: \$1M Significant breach leading to intrusive / restrictive regulation or moratorium Community outrage and/or significant media outcry with national / international coverage 	 Fatality Lost time injury (LTI) resulting in permanent disability
Major	Negative Financial Impact is: EBITDA: \$10M - \$20M and/or EV: \$100M - \$200M	 Major reduction in group operations output: 15% - 30% pa Major damage to asset/s: 1 - 6 months loss of service 	Major development / construction delays: 6 - 12 months	 Major litigation or breach of regulation with damages / costs: \$2M - \$10M Court or Regulator imposed fine: \$0.5M - \$1M 	 Major damage to Pacific Hydro reputation Requires CEO & CFO attention Social Licence to Operate under threat impacting ability to extend project lifecycle 	 Major environmental damage or long term impact resulting in costs: \$2M - \$10M Major breach of regulation with imposed fine: \$0.5M - \$1M High-profile community concerns and/or heightened media attention Increased calls for more intrusive regulation 	 Lost time injury (LTI) resulting in inability to work for > 30 days
Moderate	Negative Financial Impact is: EBITDA: \$2M - \$10M and/or EV: \$20M - \$100M	 Moderate reduction in group operations output: 3% - 15% pa Damage to asset/s with no loss of service Fines and penalties by regulators 	 Moderate development / construction delays: 3 - 6 months Fines and penalties by regulators and/or contractors 	 Moderate litigation or breach of regulation with damages / costs: \$0.5M - \$2M Court or Regulator imposed fine: \$0.1M - \$0.5M 	 Moderate damage to Pacific Hydro reputation Requires GM attention 	 Moderate environmental damage or long term impact resulting in costs: \$0.5M - \$2M Moderate breach of regulation with imposed fine: \$0.1M - \$0.5M Medium term community impact that attracts local and national media attention 	 Lost time injury (LTI) resulting in inability to work for 1 - 30 days
Minor	Negative Financial Impact is: EBITDA: \$1M - \$2M and/or EV: \$5M - \$20M	 Minor reduction in group operations output: 1% - 3% pa Censure by regulators 	 Minor development / construction delays: 1.3 months Censure by regulators 	 Minor litigation or breach of regulation with damages / costs: \$0.5M Court or Regulator imposed fine: \$0.1M 	 Minor damage to Pacific Hydro reputation Requires EM attention 	 Minor environmental damage or long term impact resulting in costs: \$0.5M Minor breach of regulation with imposed fine: \$0.1M Local community complaints that attracts local media attention 	 Medical treatment injury (MTI) or first aid treatment injury
Insignificant	Negative Financial Impact is: EBITDA: < \$1M and/or EV: < \$5M	 Negligible group operational impact No loss of service Normal repairs to asset/s 	 Negligible development / construction impact 	 Negligible (immaterial) legal issues, non- compliances and breaches of regulation / contracts 	 Negligible impact Reputation intact 	 No lasting detrimental effect on the environment Negligible community impact - short term inconvenience 	 No injury No review required

Table 2: Risk Consequence Ratings

Figure 1: Risk Assessment Matrix

Consequence	Catastrophic	Major	Moderate	Minor	Insignificant
Likelihood					
Frequent	Extreme	Extreme	Extreme	High	Medium
	25.00	24.00	22.00	19.00	11.00
Likely	Extreme	Extreme	High	High	Medium
	23.00	21.00	18.00	15.00	10.00
Possible	Extreme	High	High	Medium	Low
Possible	Extreme 20.00	High 17.00	High 14.00	Medium 9.00	Low 5.00
Possible Unlikely	Extreme 20.00 High	High 17.00 High	High 14.00 Medium	Medium 9.00 Low	Low 5.00 Low
Possible Unlikely	Extreme 20.00 High 16.00	High 17.00 High 13.00	High 14.00 Medium 8.00	Medium 9.00 Low 4.00	Low 5.00 Low 3.00
Possible Unlikely Rare	Extreme 20.00 High 16.00 High	High 17.00 High 13.00 Medium	High 14.00 Medium 8.00 Medium	Medium 9.00 Low 4.00 Low	Low 5.00 Low 3.00 Low

An example of determining the Level of Risk is provided below:

Risk	Likelihood	Consequence	Level of Risk
Risk 1	Frequent	Major	Extreme
Risk 2	Likely	Moderate	High
Risk 3	Possible	Minor	Medium
Risk 4	Unlikely	Insignificant	Low

Appendix B – Defect Reporting Workflow









Appendix C – Defect Reporting Form (for outsourced assets)

Part 1 Define Defect	Details				
Short Description:		Register No:			
Site:	Unit Number:	Defected Asset:			
Event Date:	Report Date:	CMMS Number:			
Current Status:					
Temporarily Operating: Operate	until 🗌 Shu	tdown			
Current Status Comments:					
Risk Assessment (Refer Appendix A):				
Pre/Inherent	Post/Residual				
Consequence	Consequence	э:			
Likelihood:	Likelihood:				
Risk Rating:	Risk Rating:				
Consequence Type:					
🗌 Health & Safety 🔤 E	nvironment & Community 🛛 🗌 F	inancial			
Operations D	evelopment Construction	Legal Compliance			
Reputation O	ther				
Consequence Description:					
Defect Classification:					
Mechanical Electrical	Software Procedure] Control			
Other					
Defect Cause:					
Design Manufactur	e 🗌 Installation 🗌 Environment] Human Factors			
Fatigue Corrosion	🗌 End of life 🛛 Inadequate Ma	intenance			
Other					

Defect Full Descrip	otion [.]		
warranty Detect:	_ res _ no		
Observed Defect	Frequency:		
	•••••		
		Root Cause Analysis	
••••••			
••••••			
		List of Attachments Supporting Defect Repo	ting:
•••••			
		Originator Details	
	Name	Signature	Date
Pari Z Aci	lions		
Initial Action	Date:	Responsible Name:	
Description:			
•			
•••••	•••••		



Further Actions	Target Date:	Responsible Name:	Completed Date:
Description:			
Part 3 Revi	ew and End	orsement	
Engineering Review	and Comments:		
•••••			
•••••			
Reviewer Name:		Signature	Date:
HSE Review and Co	mments:		
Reviewer Name:			Date:



Nanagement Endorsement:
lame: Date: Signature

Appendix D: Electronic Defect Reporting Form:

Links to the Defect Reporting Form are located at:

- Operations Dashboard under the 'Forms' field
- Operation and Maintenance Portals
 <u>http://nexo.pacifichydro.com.au/sites/ausops/Pages/RMS-Operations-and-Maintenance-Portal.aspx</u>

Appendix L. Defect Reporting Form (Page Left Blank)



Defect Reporting Form

New

Request	Number	

Request	Status



Defect Reporting Procedure PHA.OPS.09.002

Defect Details Attachments	Actions Reviewer Notes Histo	ory Pri	nt View				
Site *	Unit Number * Part	Number	Eve	nt Date 1		Report Date *	
Please select a value		Humber		in Date		6/10/2020	
	2 3 4						
Current Unit Status *	C Temporarily Operating Op	erate u	ntil:				
Current Status Comments							
Asset		•	F Other				
Consequence Pre *	Please select a value	•	Likelihood Pre*		Please select a value		r I
Consequence Post*	Please select a value	-	Likelihood Post *		Please select a value		r
Consequence Type *	Health and Safety Environment and Community Financial Operations	×	Critical				
Consequence Description							
Show Risk Matrix							
Risk Rating	Pre/Inherent	Post,	/Residual		Significant?		
Risk Rating Change (Justification)							
Classification	☐ Mechanical		Cause	□ Des	ign	Fatigue	
	Electrical			Г Mar	nufacture		
	☐ Software				dequate Maintenance	Installation	
	F Procedure			Env	ironment	F End of Life	
				T Hur	nan Factors	C Other	
	F Other			Г оре	erational		
Warranty Defect	Please select a value						
Observed Defect Frequency	Please select a 📕						
Full Description							
Computerised Maintenance Managem	ent System (CMMS) Task Number						
Root Cause Analysis	Employment Type	Name			ETA of RCA		
	Please select a value						
Est Rectification Man Hours							
Est Rectification Downtime Hours							

Appendix M. PHA.OPS.09.010 Root Cause Analysis Report

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Root Cause Analys	is (RCA)				
Site:	Unit No:	Report Date:	CMMS Task #:	(If applicab	le)
					,
Defect Depart Demost N		2020 42 00 00 DM)-//f	nnliaghla		
Defect Report Request Ni	umber (eg, DKF_01_01	_2020_12_00_00_PM):(if a	pplicable)		
Observed Problem Frequ	ency: (To be checked aga	inst all previous RCA's and De	efect Reports)		
First time 2-5	5-10	□ 10-15 □ 15-25			
Brief Description of Even	t/Problem: (If part of Def	ect Report then refer to Defect	Report Form)		
	、 •		• ,		
•			•••••••••••••••••••••••••••••••••••••••		
•					
Impact/s on People, Envi	ronment, Business:				
•					•••••
•					
Root Cause Summary: (inclu	ide RCA methodology used	1)			
Action/s to take: (If any)				Name:	Date:
•					
•					
•					
Analysis Members:					
				·····	<u></u>

Analysis Lead Member:		
Name:	. Signature	Date:

Appendix N. PHA.HSE.09.014 Contractor Performance Evaluation

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HSE Contractor Performance Evaluation						
Contractor:		Single Project / Annual Review:				
Job Reference:		Assessed by:				
Location:		Date of Evaluation:				
Safety Performance						
Did the contractor ha If YES, give details.	ive any work injuries on site during the p	period of the contract / last 1:	2 months?	YES / NO		
Was the contractor in If YES, give details.	nvolved in any safety, environmental or	other incidents?		YES / NO		

Safety Management and Standards								
Poor = 1 Satisfactory = 2 Good = 3 Very Good = 4 Excellent	= 5							
	1	2	3	4	5			
Rate the contractors ability to prevent injuries & achieve a goal of zero injuries and incidents								
Rate the adequacy of the contractor's safety management system								
Rate the adequacy of the contractor's safety auditing and inspections								
Rate the contractor's safety performance								
How good was the housekeeping and orderliness?								
Rate the safety attitude and cooperation of the contractor's supervisors.								
Rate the safety attitude and cooperation of the contractor's employees e.g. wearing PPE, barricading								
Rate the planning of safety during the contract. Was it positive and proactive? Toolbox Talks etc								
Rate the quality of the contractor risk assessments								

Approved by: John Smith

File Name: Post PHA.HSE.09.014 Contractor Performance Evaluation Uncontrolled hard copy, valid only at the time of printing -22/10/2014 Approval Date: Page 1



Comments on overall safety performance:							
Contrac	:t						
Poor = 1 Satisfactory = 2 Good = 3	Very G	ood = 4	Excellent = 5		1	1	
			1	2	3	4	5
How well were requirements understood, incl. safety							
How responsive was the contractor to requests?							
How easy was communication (fax, email, etc.)?							
Comments:							
HSE Work Perf	ormance						
Poor = 1 Satisfactory = 2 Good = 3	Very G	ood = 4	Evcellent = 5				
F(0) = 1 Satisfactory = 2 Good = 3	1 very 0	2		Δ		5	
Was all the work completed safely on time?	•	-				v	·
How prompt & complete was the HSE work documentation?							
Did the finished work meet the contract HSE specifications?							
How well was the contract HSE 'self-managed'?							
Comments on contract award:				1			
Note on consultation with the Project Manager add to the	Approved	d Contrac	ctor List.	Yes/I	0		
Overall would you like to use this contractor again?							
overall, would you like to use this contractor again:							
Recommend: a) Stay on Approved Contractors List		or					
b) Remove from Approved Contractors List							
c) Need for further Dialogue re safety issues							

Approved by: File Name: Post contract/Annual -evaluation-Form Uncontrolled hard copy, valid only at the time of printing -22/10/2014

Approval Date: Page 2

