REVIEW OF POWER SYSTEM RECLASSIFICATION EVENTS 1 MAY 2016 TO 31 OCTOBER 2016

FOR THE NATIONAL ELECTRICITY MARKET

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AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

IMPORTANT NOTICE

Purpose

AEMO has prepared this document to review power system reclassification events in the National Electricity Market for the period 1 May 2016 to 31 October 2016.

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1. INTRODUCTION

This report sets out AEMO's reasons for re-classifying *non-credible contingency events* to *credible contingency events* in the winter period from 1 May 2016 to 31 October 2016 (**reporting period**) under clause 4.2.3A(i) of the National Electricity Rules (NER).

AEMO is required to issue this report every six months and it includes:

1. An explanation of how AEMO applied the criteria established under clause 4.2.3B for each reclassification decision.
2. AEMO's analysis of re-classification trends during the relevant period and its appraisal of the appropriateness and effectiveness of the relevant criteria applied in each reclassification decision.

In this document, a word or phrase that is italicised has the same meaning as given in the NER.

2. OVERVIEW

In the reporting period, two of 166 events that AEMO reclassified highlighted where improvements could be made in AEMO's reclassification process. These are discussed in section 6 of this report. For all other 164 events from 1 May 2016 to 31 October 2016, AEMO applied the reclassification criteria correctly. AEMO reclassified *non-credible contingency events* as *credible contingency events* based on the reclassification criteria contained in AEMO's Power System Security Guidelines SO_OP_3715[1] for bushfires, lightning or other reasons. In each case, AEMO notified *Market Participants*, via Market Notices[2], of the reasons for reclassifying these *non-credible contingency events*.

The number of reclassification events has decreased compared with the previous winter period.

The black system event in South Australia on 28 September 2016 falls within the scope of this report. Details of this event and a discussion of reclassifications for the event are provided in section 6.1. All discussion, however, is derived from the fourth and final Report[3], published in March 2017. Please refer to this document for more information on the black system event.

[1] AEMO Power System Security Guidelines. Power system operating procedures are available at: http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Security-and-reliability/Power-system-operation.

[2] A Market Notice is an email notification issued in real time by AEMO to market participants. Market Notices are also published on AEMO's website at: https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Market-notices-and-events.

[3] Black System South Australia 28 September 2016 Report, available: http://www.aemo.com.au/-/media/Files/Electricity/NEM/Market_Notices_and_Events/Power_System_Incident_Reports/2017/Integrated-Final-Report-SA-Black-System-28-September-2016.pdf

3. AEMO'S ROLE

The *power system* is operated such that it will remain in a *satisfactory operating state*[4] for the loss of single elements in the *transmission network*. These events are defined as *credible contingency events*[5] and include:

- Unexpected loss of a single *transmission line*, *transformer* or reactive *plant*.
- Unexpected loss of a single *generating unit*.

AEMO considers the occurrence of these events to be reasonably possible and will ensure contingency plans are in place to minimise impact on the *power system* following a *credible contingency event*.

A *non-credible contingency event* is a *contingency event* other than a *credible contingency event*. Examples include:

- Three phase electrical faults.
- The trip of any busbar in the *transmission network*.
- The trip of more than one *transmission element*.
- The trip of *transmission plant* in a manner not considered likely (e.g. a *transmission line* that trips at one end only).
- The trip of multiple *generating units*.
- The trip of more than one *load* block in a *region* where the combined *load* lost exceeds what would normally be considered a *credible contingency event* in that *region*.

AEMO does not normally operate the *power system* such that it will remain in a *satisfactory operating state* following a *non-credible contingency event*, as the likelihood of this occurrence is low.

AEMO may reclassify a *non-credible contingency event* as a *credible contingency event* if the risk of its impacting the *power system* is increased due to *abnormal conditions*. *Abnormal conditions* may include severe weather conditions, lightning and bushfires.[6]

4. RECLASSIFICATION CRITERIA

AEMO has developed criteria for determining if a *non-credible contingency event* should be reclassified as a *credible contingency event* (**reclassification criteria**). The reclassification criteria are specified in AEMO's Power System Security Guidelines SO_OP_3715. The reclassification criteria apply to:

- Bushfires.
- Lightning.
- Other events (pollution, protection and control issues, advice from participants).

AEMO completed a review of the reclassification criteria for lightning and bushfires in March 2016 and July 2016, respectively as required by clause 4.2.3B(b), which stipulates that they must be reviewed every two years.

The bushfire reclassification criteria were not varied as a result of the review, but the lightning reclassification criteria were. This was achieved by removing pairs of *transmission lines* from the 'Vulnerable Transmission Lines' list[7] after three years (previously five years) if those lines had not tripped again due to lightning in the three years since the initial trip. This change was implemented retrospectively for lines already on the list.

[4] Refer to clause 4.2.2 of the NER.
[5] Refer to clause 4.2.3 of the NER.
[6] See clause 4.2.3A(a) of the NER.
[7] See Table 5 in Section 11.4.2 of SO_OP_3715 Power System Security Guidelines.

The following section analyses how AEMO reclassified *non-credible contingency events* using the reclassification criteria for the reporting period.

5. RECLASSIFICATION EVENTS 1 MAY 2016 TO 31 OCTOBER 2016

AEMO reclassified 166 events during the reporting period. Table 1 summarises these events. Refer to Appendix A for a complete list of events.

Table 1 Reclassification events for period 1 May 2016 to 31 October 2016

Criteria	Number of Reclassification Events	Incidence of contingency occurring during reclassification
Bushfires	1	0
Lightning	162	1
Other	3	0
Total for Period	**166**	**1**

In one of the lightning events, the contingency event occurred while reclassified. Table 2 details that event.

Table 2 Occurrence of an event while reclassified as credible

Start MN	Start Reclassification	Reclassified Equipment	Region	Reason	Date contingency occurred	Comments
52932	01/05/2016 02:00	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	01/05/2016	Both lines tripped due to lightning after AEMO reclassified the event as credible

AEMO correctly reclassified one event due to bushfires in the reporting period, using the criteria specified in Section 11.3 of SO_OP_3715.

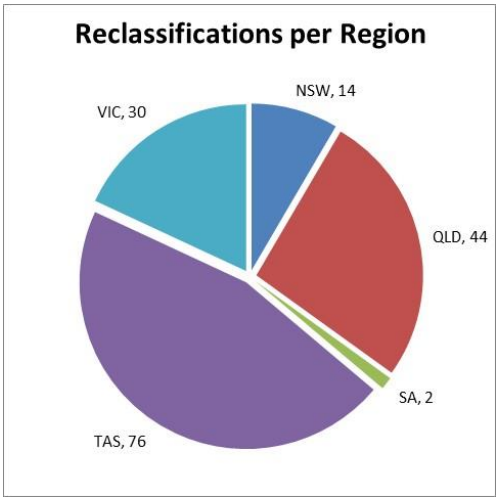
AEMO correctly reclassified 162 events due to lightning using the criteria specified in Section 11.4 of SO_OP_3715.

During the reporting period, there were three reclassifications for other reasons using the reclassification criteria specified in Section 11.5 and 11.6 of SO_OP_3715. These events were reclassified due to severe weather conditions, advice from participants, or because *non-credible contingency events* had occurred and AEMO considered there was a risk of reoccurrence.

5.1 Reclassification trends

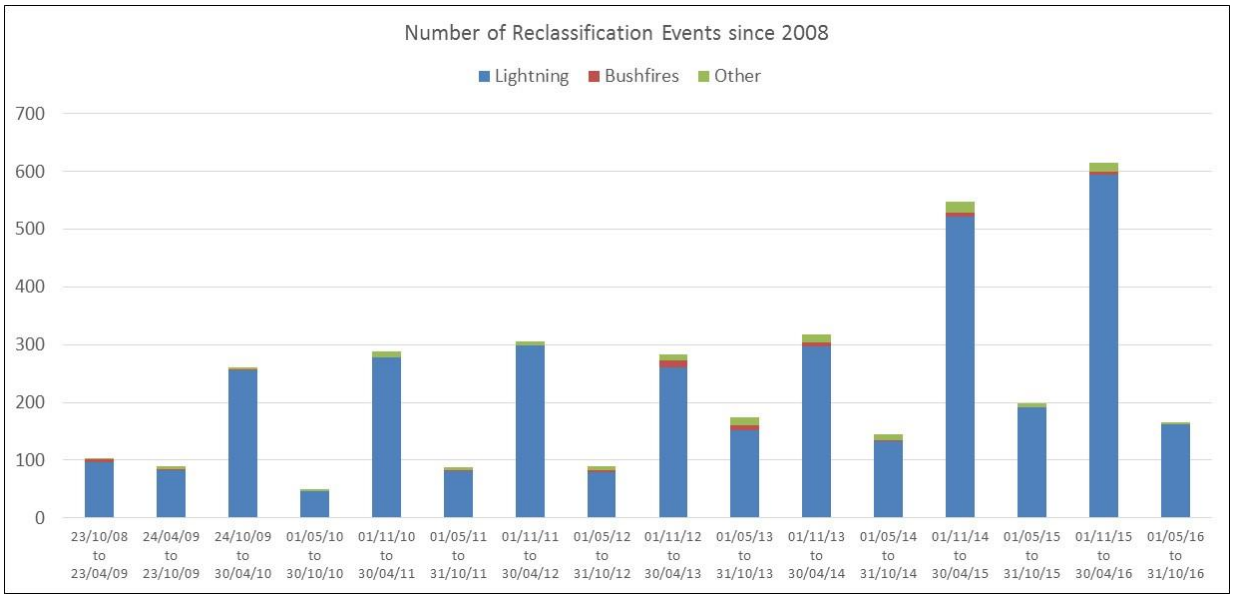
Figure 1 shows the number of reclassification events per region for the reporting period.

Figure 1 Reclassifications per region 1 May 2016 to 31 October 2016



The historical trend of reclassification events is shown in Figure 2. The number of reclassification events has decreased during this reporting period, compared to the previous winter period (1 May to 31 October 2015). The number of reclassifications due to lightning was down 15% overall from 191 reclassifications in the previous winter, to 162 for the period of this report. For NSW, in particular, this number decreased from 49 to 13 between the two periods. The number of transmission lines in NSW included on the 'Vulnerable Transmission Lines' list remained the same throughout the two periods.

Figure 2 Historical reclassification events



6. NON-CREDIBLE CONTINGENCY EVENTS 1 MAY 2016 TO 31 OCTOBER 2016

There were 14 *non-credible contingency events* during the reporting period. AEMO subsequently reclassified two of these events as *credible contingency events*. These are discussed in sections 6.1 and 6.2. Appendix B lists all *non-credible contingency events* during the reporting period, and AEMO's assessment in determining whether to reclassify each as credible. The rows highlighted blue in Appendix B correspond to the reclassification events highlighted blue in Appendix A.

Further comment and explanation of AEMO's decision about whether or not to reclassify certain non-credible contingency events after they had occurred, is provided in section 6.1.

6.1 Black System Event in South Australia

The black system event occurred at 1618 hrs on 28 September 2016. Extreme weather conditions ultimately brought down three *transmission lines* and caused five system faults on the *transmission network* between 16:16:46 hrs and 16:18:13 hrs. As explained in the final Report, the cause of the faults immediately before the black system event can be attributed to tornadoes, which were not forecast.

As a result of tornado damage to the *transmission network*, there were six *voltage* dips in a two-minute period. This then saw *generation* from nine wind farms north of Adelaide reduce their output by 456 MW in less than seven seconds. This energy was then drawn from the Heywood Interconnector, tripping it almost immediately along with approximately 900 MW of supply from Victoria. The remaining *generation* in SA was not able to meet the demand. Consequently, system *frequency* collapsed more rapidly than under-*frequency* load shedding (UFLS) could act and the SA system went black. AEMO had expected that wind turbines would reduce output as wind speeds increased above 90 km/hr. Based on prior experience, however, it had been anticipated that this would occur gradually with the expected loss of output being accommodated by the spare capacity of the Heywood interconnector.

6.1.1 Shortcomings of the reclassification process

The loss of multiple *transmission lines* was not reclassified as a *credible contingency event* before the black system event. AEMO received no advice from ElectraNet that the forecast wind speeds presented an abnormal threat to its *transmission network*. Further, the *NEM* has a history of successfully withstanding storms with wind speeds gusting to 120 – 140 km/hr without a major incident. That ElectraNet did not advise AEMO of additional risks to the SA *transmission network* was, therefore, not inconsistent with the historical performance of the *NEM*. As such, AEMO had neither the justification, nor the authority, to reclassify the loss of multiple transmission circuits as a single *credible contingency event*.

Nonetheless, the final Report identified shortcomings in AEMO's reclassification process. At 0830 hrs on 28 September, AEMO assessed the risks posed to the SA *transmission network* using the latest Bureau of Meteorology (BOM) weather forecasts. At that time, the maximum predicted wind gusts were 120 km/hr, and based on this AEMO decided not to reclassify the loss of multiple *transmission lines*. Updated forecasts issued by the BOM from 1257 hrs predicted wind gusts of up to 140 km/hr. These forecasts did not trigger a review of the 0830 hr risk assessment; the final Report suggests that AEMO should have re-assessed the risks at this point. However, even if AEMO had reassessed the risks based on the updated BOM forecasts, in all likelihood, the reassessment would not have resulted in any reclassification.

6.1.2 Reclassification following the event

Following the restoration of the SA *power system*, on 3 October, AEMO reclassified the loss of multiple wind *generating units* considered high risk (based on the observed behaviour on 28 September 2016) as a *single credible contingency*. Constraint set S-SA_MUL_GEN_RECLASS was created and invoked to guard against a repeat of the fault ride-through behaviour seen immediately before the black system.

AEMO removed wind farms from the reclassification after they supplied AEMO with information about taking action to ensure the cause of the generating unit trips had been addressed and AEMO had accepted the changes as adequate. The reclassification was cancelled on 24 December.

6.2 Trip of Both Farrell-Reece 220 kV Transmission Lines

At 0602 hrs on 31 July 2016, the Farrell-Reece No. 1 and No. 2 lines tripped simultaneously resulting in the loss of 239 MW of *generation* from the Reece Power Station. Lightning was reported in the area and the loss of two other lines in the Farrell/Sheffield area due to lightning was reclassified earlier that morning. As such, the lines were placed on the 'Vulnerable Transmission Lines' list following the incident and on 9 August 2016 AEMO's Power System Security Guidelines were updated to reflect this change.

The Farrell-Reece lines were previously included in the 'Vulnerable Transmission Lines' list but were removed (in March 2016) following the review referred to in section 4. The lines were removed as it was thought they had not tripped due to lightning within the previous three years, in accordance with the (new) reclassification criteria. AEMO later concluded that the lines should not have been removed from the list as AEMO had failed to take into account a trip due to lightning that occurred on 2 August 2015.

However, even if the lines had been considered vulnerable on 31 July 2016, it is unlikely that AEMO would have reclassified the loss of both lines as a single *credible contingency event*[8]. This is because very few lightning strikes occurred in the vicinity of those lines. Further, both reclassifications for the two other lines were cancelled before the event at 0545 hrs on the same day.

7. EVENTS RECLASSIFIED IN PREVIOUS REPORTING PERIOD

Table 3 shows four *non-credible contingency events* reclassified as *credible contingency events* in the previous reporting period of 1 November 2015 to 30 April 2016. These reclassifications were cancelled because AEMO's assessment showed no increased risk of the associated *non-credible contingency event* occurring.

Table 3 Events reclassified in previous reporting period but cancelled in this reporting period

Start MN	Start reclassification	End reclassification	Reclassified equipment	Region	Reason
52811	14/04/2016 15:45	03/06/2016 16:35	Jeeralang B2 and Jeeralang No. 1 220kV bus	VIC	Other
52858	23/04/2016 21:00	23/06/2016 09:30	South East Substation No1 and No2 275kV SVCs	SA	Other
51596	29/01/2016 02:55	22/07/2016 12:40	Trip of Barron Gorge-Kamerunga 7143 and 7184 132 kV lines	QLD	Other
50503	12/11/2015 10:35	15/08/2016 11:00	Trip of Horsham-Red Cliffs 220 kV line and Murraylink	VIC	Other

8. MARKET IMPACT OF RECLASSIFICATION CONSTRAINTS

When AEMO reclassifies an event as a *credible contingency event*, the *power system* must be operated so it stays in a *satisfactory operating state* should the reclassified *credible* contingency *event* occur. One

[8] Refer to Reviewable Operating Incident Report on this event, available: https://www.aemo.com.au/-/media/Files/Electricity/NEM/Market_Notices_and_Events/Power_System_Incident_Reports/2016/Trip-of-both-FA-RE-lines-on-31-July-2016-Report.pdf

way to ensure this happens is to invoke constraint equations to manage the *power system* during the reclassification.

Appendix C lists the binding constraint equations during reclassification events over the reporting period.

There were 26 reclassified events that resulted in binding constraint equations.

9. CONCLUSION

AEMO concluded that, during this reporting period:

1. In two events there were shortcomings in the reclassification process, however, there would have been no change in the outcome.
2. In all other events, AEMO correctly applied the reclassification criteria.
3. AEMO notified *Market Participants* of the reasons for reclassifying *non-credible contingency events*.
4. The number of reclassification events has decreased compared with the previous winter period.

APPENDIX A. RECLASSIFICATION EVENTS 1 MAY 2016 TO 31 OCTOBER 2016

Please note the below definitions:

GPATS – The Global Positioning and Tracking System (GPATS) is used to provide detection and location of cloud to ground lightning strikes. GPATS delivers 'live' data with a refresh rate of 1 second and provides full coverage of the transmission system.

INDJI – Indji Watch (INDJI) is a system that monitors live information feeds on hazards such as bushfires and displays their positions relative to the locations of transmission assets.

Table 4 Reclassification events 1 May 2016 to 31 October 2016

Start MN	Start Date	Actual End Date	End MN	Reclassified Equipment	Region	Reason	Source
52927	01/05/2016 01:20	01/05/2016 05:55	52945	Farrell Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
52930	01/05/2016 01:50	01/05/2016 03:55	52937	Burnie Sheffield No. 2 110kV line and Paloona Sheffield 110kV line	TAS	Lightning	GPATS
52932	01/05/2016 02:00	01/05/2016 07:05	52966	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS Event occurred whilst reclassified
52931	01/05/2016 02:05	01/05/2016 07:05	52965	Farrell-Sheffield No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
52933	01/05/2016 02:10	01/05/2016 05:40	52941	Glenrowan-Dederang No. 1 and No. 3 220kV lines	VIC	Lightning	GPATS
52934	01/05/2016 02:20	01/05/2016 05:40	52942	Eildon-Mt Beauty No. 1 and No. 2 220kV lines	VIC	Lightning	GPATS
52936	01/05/2016 02:55	01/05/2016 05:40	52943	Rowville Yallourn No. 5 and No. 6 220kV lines	VIC	Lightning	GPATS
52940	01/05/2016 04:45	01/05/2016 07:05	52963	Burnie Sheffield No. 2 110kV line and Paloona Sheffield 110kV line	TAS	Lightning	GPATS
52944	01/05/2016 05:50	01/05/2016 07:30	52969	Glenrowan-Dederang No. 1 and No. 3 220kV lines	VIC	Lightning	GPATS
52946	01/05/2016 06:15	01/05/2016 07:55	52979	Liapootah-Waddamana Tee Palmerston No. 1 and No. 2 220 kV Lines	TAS	Lightning	GPATS
52952	01/05/2016 06:50	01/05/2016 08:50	53015	Norwood-Scottsdale-Derby 110kV Line and Norwood-Scottsdale 110kV Line	TAS	Lightning	GPATS
52953	01/05/2016 06:50	01/05/2016 08:15	52994	Chapel St-Liapootah No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
52995	01/05/2016 09:00	01/05/2016 10:50	53014	Burnie Sheffield No. 2 110kV line and Paloona Sheffield 110kV line	TAS	Lightning	GPATS
52999	01/05/2016 09:50	01/05/2016 10:50	53013	Farrell-Sheffield No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS

Start MN	Start Date	Actual End Date	End MN	Reclassified Equipment	Region	Reason	Source
53012	01/05/2016 10:25	01/05/2016 11:40	53016	Norwood-Scottsdale-Derby 110kV Line and Norwood-Scottsdale 110kV Line	TAS	Lightning	GPATS
53032	01/05/2016 14:25	01/05/2016 17:10	53034	Coffs Harbour to Raleigh (9W3) and Boambee South to Nambucca (9W7) 132 kV lines	NSW	Lightning	GPATS
53031	01/05/2016 14:25	01/05/2016 17:10	53033	Coffs Harbour to Raleigh (9W3) and Coffs Harbour to Boambee Sth (9W8) 132kV Lines	NSW	Lightning	GPATS
53041	02/05/2016 22:30	02/05/2016 23:50	53042	Tarong-Chincilla 7183 and 7168 132 kV Lines	QLD	Lightning	GPATS
53047	03/05/2016 18:05	03/05/2016 19:25	53049	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
53048	03/05/2016 18:50	03/05/2016 19:25	53050	Farrell-Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
53051	03/05/2016 22:10	03/05/2016 23:20	53052	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
53053	03/05/2016 23:45	04/05/2016 01:00	53068	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
53055	04/05/2016 00:00	04/05/2016 01:00	53069	Farrell-Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
53073	04/05/2016 13:35	04/05/2016 17:00	53074	Collinsville-Mackay tee Proserpine 7125 and 7126 132kV Lines	QLD	Lightning	GPATS
53088	06/05/2016 00:05	06/05/2016 02:00	53092	Farrell-Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
53089	06/05/2016 00:30	06/05/2016 02:00	53091	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS;#INJI
53114	09/05/2016 12:30	09/05/2016 13:30	53116	Rowville-Yallourn No. 5 and No. 6 220kV lines	VIC	Lightning	GPATS
53115	09/05/2016 13:50	09/05/2016 14:30	53117	Eildon-Mt Beauty No. 1 and No. 2 220kV lines	VIC	Lightning	GPATS
53119	10/05/2016 14:15	10/05/2016 15:45	53120	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
53121	10/05/2016 15:45	10/05/2016 16:25	53122	Farrell Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
53123	10/05/2016 20:20	11/05/2016 01:05	53125	Rowville Yallourn No. 5 and No. 6 220kV lines	VIC	Lightning	GPATS
53124	11/05/2016 00:10	11/05/2016 01:05	53126	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
53253	15/05/2016 10:30	15/05/2016 12:15	53255	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
53254	15/05/2016 11:00	15/05/2016 12:15	53256	Farrell-Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
53326	16/05/2016 19:10	16/05/2016 21:50	53329	Burnie-Sheffield No.2 110 kV Line and Sheffield-Paloona-Ulverstone 110 kV Line	TAS	Lightning	GPATS
53327	16/05/2016 19:55	16/05/2016 21:50	53330	Norwood-Scottsdale-Derby 110kV Line and Norwood-Scottsdale 110kV Line	TAS	Lightning	GPATS

Start MN	Start Date	Actual End Date	End MN	Reclassified Equipment	Region	Reason	Source
53328	16/05/2016 21:00	16/05/2016 21:50	53331	Farrell-Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
53332	16/05/2016 22:30	17/05/2016 05:35	53383	Burnie-Sheffield No.2 110 kV Line and Sheffield-Paloona-Ulverstone 110 kV Line	TAS	Lightning	GPATS
53333	16/05/2016 22:50	16/05/2016 23:45	53336	Eildon-Mt Beauty No. 1 and No. 2 220kV lines	VIC	Lightning	GPATS
53334	16/05/2016 23:35	17/05/2016 05:35	53382	Norwood-Scottsdale-Derby 110kV Line and Norwood-Scottsdale 110kV Line	TAS	Lightning	GPATS
53335	16/05/2016 23:45	17/05/2016 03:00	53358	Rowville Yallourn No. 5 and No. 6 220kV lines	VIC	Lightning	GPATS
53337	17/05/2016 00:35	17/05/2016 05:35	53339	Farrell Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
53410	19/05/2016 10:10	19/05/2016 10:40	53423	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
53411	19/05/2016 10:15	19/05/2016 10:40	53424	Farrell Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
53412	19/05/2016 10:15	19/05/2016 10:40	53425	Farrell-Sheffield No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
53419	19/05/2016 10:40	19/05/2016 11:30	53426	Chapel St-Liapootah No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
53427	19/05/2016 12:10	19/05/2016 12:55	53428	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
53432	19/05/2016 22:10	19/05/2016 23:10	53433	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
53557	29/05/2016 10:15	29/05/2016 13:15	53558	Mudgeeraba Terranora 757 and 758 110 kV Lines	QLD	Bushfires	INJI
53562	30/05/2016 01:20	30/05/2016 03:45	53563	Ross to Chalumbin 857 & 858 275 kV Transmission Lines	QLD	Lightning	GPATS
53587	03/06/2016 15:10	03/06/2016 17:00	53601	Bouldercombe-Rockhampton 7108 and Bouldercombe-Egan's Hill 7221 132 kV Lines	QLD	Lightning	GPATS
53604	03/06/2016 19:50	04/06/2016 01:20	53615	Collinsville-Stoney Creek 7306 and Collinsville-Newlands 7121 132 kV Lines	QLD	Lightning	GPATS
53605	03/06/2016 19:50	03/06/2016 23:45	53612	Moranbah Goonyella 7369 and 7370 132kV lines	QLD	Lightning	GPATS
53606	03/06/2016 20:20	03/06/2016 23:55	53613	Kemmis Moranbah tee Burton Downs 7117 132kV line and Nebo Moranbah tee Coppabella 7118 132kV line	QLD	Lightning	GPATS
53607	03/06/2016 21:30	04/06/2016 01:50	53616	Collinsville-Mackay tee Proserpine 7125 and 7126 132kV Lines	QLD	Lightning	GPATS
53614	04/06/2016 00:05	04/06/2016 02:35	53617	Bouldercombe-Rockhampton 7108 and Bouldercombe-Egan's Hill 7221 132 kV Lines	QLD	Lightning	GPATS
53888	11/06/2016 17:15	14/06/2016 10:55	53964	Wagga substation 132kV B bus, the No2 and the No3 330/132kV transformers	NSW	Other	TNSP
53991	19/06/2016 03:00	19/06/2016 06:50	53995	Ross to Chalumbin 857 & 858 275 kV Transmission Lines	QLD	Lightning	GPATS
53992	19/06/2016 03:35	19/06/2016 10:15	53998	Collinsville-Mackay tee Proserpine 7125 and 7126 132kV Lines	QLD	Lightning	GPATS

Start MN	Start Date	Actual End Date	End MN	Reclassified Equipment	Region	Reason	Source
53993	19/06/2016 03:35	19/06/2016 06:50	53997	Collinsville-Stoney Creek 7306 and Collinsville – Newlands 7121 132 kV Lines	QLD	Lightning	GPATS
53994	19/06/2016 04:45	19/06/2016 06:50	53996	Kemmis Moranbah tee Burton Downs 7117 132kV line and Nebo Moranbah tee Coppabella 7118 132kV line	QLD	Lightning	GPATS
54023	22/06/2016 09:15	22/06/2016 10:30	54025	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
54061	23/06/2016 02:45	23/06/2016 03:40	54062	Farrell Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
54075	23/06/2016 07:15	23/06/2016 09:35	54079	Burnie-Sheffield No.2 110 kV and Sheffield-Paloona-Ulverstone 110 kV Lines	TAS	Lightning	GPATS
54119	23/06/2016 22:50	24/06/2016 00:30	54122	Glenrowan-Dederang No. 1 and No. 3 220kV lines	VIC	Lightning	GPATS
54120	23/06/2016 23:05	24/06/2016 00:30	54123	Eildon-Mt Beauty No. 1 and No. 2 220kV lines	VIC	Lightning	GPATS
54126	24/06/2016 14:25	24/06/2016 15:00	54127	Rowville-Yallourn No. 5 and No. 6 220kV lines	VIC	Lightning	GPATS
54223	05/07/2016 18:45	05/07/2016 20:30	54224	Rowville-Yallourn No. 5 and No. 6 220kV lines	VIC	Lightning	GPATS
54415	12/07/2016 08:05	12/07/2016 09:30	54429	Burnie Sheffield No. 2 110kV line and Paloona Sheffield 110kV line	TAS	Lightning	GPATS
54416	12/07/2016 08:45	12/07/2016 10:25	54431	Farrell-Sheffield No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
54454	12/07/2016 08:45	12/07/2016 10:25	54456	Norwood-Scottsdale-Derby 110kV Line and Norwood-Scottsdale 110kV Line	TAS	Lightning	GPATS
54436	12/07/2016 13:30	12/07/2016 14:15	54439	Dederang-Glenrowan No. 1 and No. 3 220 kV Lines	VIC	Lightning	GPATS
54441	12/07/2016 14:50	12/07/2016 16:50	54453	Dederang-Glenrowan No. 1 and No. 3 220 kV Lines	VIC	Lightning	GPATS
54459	12/07/2016 19:30	12/07/2016 22:10	54465	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
54461	12/07/2016 20:35	12/07/2016 22:10	54464	Farrell-Sheffield No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
54462	12/07/2016 21:00	12/07/2016 22:10	54463	Farrell-Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
54471	13/07/2016 11:30	13/07/2016 13:10	54473	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
54524	16/07/2016 15:10	16/07/2016 17:45	54525	Bouldercombe-Rockhampton 7108 and Bouldercombe-Egans Hill 7221 132 kV Lines	QLD	Lightning	GPATS
54530	16/07/2016 21:10	16/07/2016 22:50	54531	Bouldercombe-Rockhampton 7108 and Bouldercombe-Egans Hill 7221 132 kV Lines	QLD	Lightning	GPATS
54574	21/07/2016 21:55	21/07/2016 22:35	54575	Rowville Yallourn No. 5 and No. 6 220kV lines	VIC	Lightning	GPATS
54577	22/07/2016 01:00	22/07/2016 03:35	54582	Farrell-Sheffield No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
54576	22/07/2016 01:00	22/07/2016 02:25	54580	Farrell-Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
54578	22/07/2016 01:20	22/07/2016 03:35	54583	Burnie-Sheffield No. 2 and the Sheffield-Paloona-Ulverstone 110 kV Lines	TAS	Lightning	GPATS

Start MN	Start Date	Actual End Date	End MN	Reclassified Equipment	Region	Reason	Source
54579	22/07/2016 02:10	22/07/2016 05:10	54585	Norwood-Scottsdale-Derby 110kV Line and Norwood-Scottsdale 110kV Line	TAS	Lightning	GPATS
54581	22/07/2016 02:25	22/07/2016 03:45	54584	Liapootah-Waddamana Tee Palmerston No 1 and No 2 220 kV Lines	TAS	Lightning	GPATS
54586	22/07/2016 07:40	22/07/2016 09:00	54587	Eildon-Mt Beauty No. 1 and No. 2 220kV lines	VIC	Lightning	GPATS
54592	22/07/2016 12:15	22/07/2016 12:45	54594	Farrell-Sheffield No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
54602	23/07/2016 12:10	23/07/2016 12:45	54603	Farrell-Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
54605	23/07/2016 14:50	23/07/2016 15:30	54606	Rowville-Yallourn No. 5 and No. 6 220kV lines	VIC	Lightning	GPATS
54614	25/07/2016 18:50	25/07/2016 19:50	54615	Rowville-Yallourn No. 5 and No. 6 220kV lines	VIC	Lightning	GPATS
54633	31/07/2016 04:10	31/07/2016 05:45	54636	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
54634	31/07/2016 05:00	31/07/2016 05:45	54637	Farrell-Sheffield No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
54649	02/08/2016 19:30	03/08/2016 02:30	54653	Coffs Harbour to Raleigh (9W3) and Coffs Harbour to Boambee Sth (9W8) 132kV Lines	NSW	Lightning	GPATS;#INJI
54650	02/08/2016 19:40	03/08/2016 02:30	54654	Coffs Harbour to Raleigh (9W3) and Boambee South to Nambucca (9W7) 132 kV lines	NSW	Lightning	GPATS;#INJI
54651	02/08/2016 20:00	03/08/2016 00:30	54652	Tarong-Chincilla 7183 and 7168 132 kV Lines	QLD	Lightning	GPATS;#INJI
54656	03/08/2016 11:05	03/08/2016 16:30	54661	Coffs Harbour to Raleigh (9W3) and Coffs Harbour to Boambee Sth (9W8) 132kV Lines	NSW	Lightning	GPATS
54657	03/08/2016 11:05	03/08/2016 16:30	54662	Coffs Harbour to Raleigh (9W3) and Boambee South to Nambucca (9W7) 132 kV lines	NSW	Lightning	GPATS
54711	12/08/2016 14:00	12/08/2016 16:30	54715	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
54722	13/08/2016 18:50	13/08/2016 19:50	54724	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
54723	13/08/2016 19:05	13/08/2016 19:55	54725	Farrell Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
54726	14/08/2016 02:40	14/08/2016 03:20	54727	Norwood-Scottsdale-Derby 110kV Line and Norwood-Scottsdale 110kV Line	TAS	Lightning	GPATS
54881	09/09/2016 06:30	09/09/2016 10:25	54884	Dederang-Glenrowan No. 1 and No. 3 220 kV Lines	VIC	Lightning	GPATS
54887	10/09/2016 16:40	10/09/2016 19:40	54890	Tarong-Chincilla 7183 and 7168 132 kV Lines	QLD	Lightning	GPATS
54911	14/09/2016 08:25	14/09/2016 10:30	54912	Dederang-Glenrowan No. 1 and No. 3 220 kV Lines	VIC	Lightning	GPATS
54916	14/09/2016 22:20	14/09/2016 23:20	54917	Dederang-Glenrowan No. 1 and No. 3 220 kV Lines	VIC	Lightning	GPATS
54927	17/09/2016 16:50	17/09/2016 17:50	54928	Chapel St-Liapootah No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
54971	25/09/2016 12:00	25/09/2016 14:30	54972	Coffs Harbour to Raleigh (9W3) and Coffs Harbour to Boambee Sth (9W8) 132kV Lines	NSW	Lightning	GPATS

Start MN	Start Date	Actual End Date	End MN	Reclassified Equipment	Region	Reason	Source
55040	29/09/2016 16:40	30/09/2016 00:00	55052	Collinsville-Mackay tee Proserpine 7125 and 7126 132kV Lines	QLD	Lightning	GPATS
55042	29/09/2016 16:40	30/09/2016 00:00	55054	Collinsville-Stoney Creek 7306 and Collinsville – Newlands 7121 132 kV Lines	QLD	Lightning	GPATS
55041	29/09/2016 16:40	30/09/2016 00:00	55053	Moranbah-Goonyella 7369 and 7370 132kV lines	QLD	Lightning	GPATS
55043	29/09/2016 17:05	30/09/2016 00:00	55055	Bouldercombe-Rockhampton 7108 and Bouldercombe-Egans Hill 7221 132 kV Lines	QLD	Lightning	GPATS
55056	30/09/2016 00:15	30/09/2016 03:25	55061	Tarong-Chincilla 7183 and 7168 132 kV Lines	QLD	Lightning	GPATS
55057	30/09/2016 01:20	30/09/2016 05:30	55065	Bouldercombe-Rockhampton 7108 and Bouldercombe-Egans Hill 7221 132 kV Lines	QLD	Lightning	GPATS
55060	30/09/2016 03:20	30/09/2016 09:30	55067	Collinsville-Mackay tee Proserpine 7125 and 7126 132kV Lines	QLD	Lightning	GPATS
55082	01/10/2016 01:20	01/10/2016 03:00	55084	Chalumbin Woree 876 and 877 275kV lines	QLD	Lightning	GPATS
55120	02/10/2016 19:00	02/10/2016 20:40	55121	Dederang-Glenrowan No. 1 and No. 3 220 kV Lines	VIC	Lightning	GPATS
55144	03/10/2016 17:25	03/10/2016 17:55	55145	Collinsville-Mackay tee Proserpine 7125 and 7126 132kV Lines	QLD	Lightning	GPATS
55146	03/10/2016 18:05	03/10/2016 21:05	55153	Chalumbin-Woree 876 and 877 275kV lines	QLD	Lightning	GPATS
55147	03/10/2016 18:05	03/10/2016 21:05	55154	Chalumbin-Turkinje 7165 and 7166 132 kV Lines	QLD	Lightning	GPATS
55148	03/10/2016 19:55	03/10/2016 20:40	55151	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
55161	03/10/2016 23:45	24/12/2016 14:35	56434	Simultaneous trip of generating units: Bluff WF, Hallet Hill WF, Hallet WF, North Brown Hill WF	SA	Other	Event actually occurred
55216	04/10/2016 17:10	04/10/2016 19:00	55220	Farrell Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
55223	04/10/2016 19:25	04/10/2016 20:40	55224	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
55291	09/10/2016 20:25	09/10/2016 21:15	55295	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
55296	09/10/2016 22:40	10/10/2016 01:25	55301	Dederang-Glenrowan No. 1 and No. 3 220 kV Lines	VIC	Lightning	GPATS
55299	09/10/2016 23:55	10/10/2016 00:35	55300	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
55303	10/10/2016 02:30	10/10/2016 04:00	55305	Dederang-Glenrowan No. 1 and No. 3 220 kV Lines	VIC	Lightning	GPATS
55306	10/10/2016 04:55	10/10/2016 05:35	55309	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
55314	10/10/2016 08:45	10/10/2016 10:00	55318	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS

Start MN	Start Date	Actual End Date	End MN	Reclassified Equipment	Region	Reason	Source
55315	10/10/2016 09:00	10/10/2016 10:00	55317	Farrell Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
55316	10/10/2016 09:05	10/10/2016 10:05	55319	Farrell-Sheffield No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
55325	10/10/2016 16:25	10/10/2016 17:20	55326	Farrell-Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
55324	10/10/2016 16:25	10/10/2016 17:20	55327	Farrell-John Butters 220kV line & Farrell-Rosebery Tee Queenstown-Newton 110kV line	TAS	Lightning	GPATS
55359	12/10/2016 18:00	12/10/2016 21:50	55361	Collinsville-Stoney Creek 7306 and Collinsville – Newlands 7121 132 kV Lines	QLD	Lightning	GPATS
55362	12/10/2016 22:10	12/10/2016 23:40	55363	Collinsville-Mackay tee Proserpine 7125 and 7126 132kV Lines	QLD	Lightning	GPATS
55367	13/10/2016 13:20	13/10/2016 17:20	55369	Collinsville-Mackay tee Proserpine 7125 and 7126 132kV Lines	QLD	Lightning	GPATS
55370	13/10/2016 18:00	13/10/2016 21:55	55372	Collinsville-Stoney Ck 7306 and Collinsville-Newlands 7121 132 kV Lines	QLD	Lightning	GPATS
55371	13/10/2016 18:20	13/10/2016 21:55	55373	Collinsville-Mackay tee Proserpine 7125 and 7126 132kV Lines	QLD	Lightning	GPATS
55390	14/10/2016 15:30	14/10/2016 19:55	55391	Bouldercombe-Rockhampton 7108 and Bouldercombe-Egans Hill 7221 132 kV Lines	QLD	Lightning	GPATS
55399	16/10/2016 16:20	16/10/2016 22:00	55401	Dederang-Glenrowan No. 1 and No. 3 220 kV Lines	VIC	Lightning	GPATS
55402	17/10/2016 14:00	17/10/2016 15:45	55404	Chinchilla-Columboola 7349 and 7350 132 kV Lines	QLD	Lightning	GPATS
55403	17/10/2016 14:45	17/10/2016 17:20	55405	Tarong-Chincilla 7183 and 7168 132 kV Lines	QLD	Lightning	GPATS
55408	18/10/2016 10:00	18/10/2016 10:55	55410	Farrell Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
55411	18/10/2016 11:30	18/10/2016 13:15	55412	Farrell Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
55416	18/10/2016 16:00	18/10/2016 18:55	55421	Norwood-Scottsdale-Derby 110kV Line and Norwood-Scottsdale 110kV Line	TAS	Lightning	GPATS
55417	18/10/2016 16:25	18/10/2016 18:50	55420	Dederang-Glenrowan No. 1 and No. 3 220 kV Lines	VIC	Lightning	GPATS
55422	18/10/2016 19:30	18/10/2016 20:20	55423	Collinsville-Stoney Creek 7306 and Collinsville – Newlands 7121 132 kV Lines	QLD	Lightning	GPATS
55435	20/10/2016 12:50	20/10/2016 21:50	55447	Tarong-Chincilla 7183 and 7168 132 kV Lines	QLD	Lightning	GPATS
55436	20/10/2016 14:25	20/10/2016 21:50	55446	Chinchilla-Columboola 7349 and 7350 132 kV Lines	QLD	Lightning	GPATS
55444	20/10/2016 20:05	20/10/2016 23:05	55448	Brinkworth-Templers West, Davenport-Mt Lock and Davenport-Belalie 275 kV Lines	SA	Other	INJI
55449	21/10/2016 01:40	21/10/2016 03:30	55451	Farrell-Sheffield No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
55454	21/10/2016 16:55	21/10/2016 21:00	55455	Dederang-Glenrowan No. 1 and No. 3 220 kV Lines	VIC	Lightning	GPATS
55481	27/10/2016 19:35	27/10/2016 22:10	55482	Tarong-Chincilla 7183 and 7168 132 kV Lines	QLD	Lightning	GPATS

Start MN	Start Date	Actual End Date	End MN	Reclassified Equipment	Region	Reason	Source
55484	28/10/2016 14:55	28/10/2016 16:05	55485	Tarong-Chincilla 7183 and 7168 132 kV Lines	QLD	Lightning	GPATS
55486	28/10/2016 17:15	29/10/2016 01:30	55492	Tarong-Chincilla 7183 and 7168 132 kV Lines	QLD	Lightning	GPATS
55488	28/10/2016 18:00	28/10/2016 23:05	55490	Coffs Harbour to Raleigh (9W3) and Coffs Harbour to Boambee Sth (9W8) 132kV Lines	NSW	Lightning	GPATS
55487	28/10/2016 18:00	28/10/2016 23:05	55491	Coffs Harbour to Raleigh (9W3) and Boambee South to Nambucca (9W7) 132 kV lines	NSW	Lightning	GPATS
55489	28/10/2016 19:20	29/10/2016 01:30	55493	Chinchilla-Columboola 7349 and 7350 132 kV Lines	QLD	Lightning	GPATS
55501	30/10/2016 03:10	30/10/2016 05:00	55502	Dederang-Glenrowan No. 1 and No. 3 220 kV Lines	VIC	Lightning	GPATS
55503	30/10/2016 07:25	30/10/2016 08:30	55504	Farrell Reece No. 1 and No. 2 220kV lines	TAS	Lightning	GPATS
55505	30/10/2016 08:35	30/10/2016 09:55	55506	Norwood-Scottsdale-Derby 110kV Line and Norwood-Scottsdale 110kV Line	TAS	Lightning	GPATS
55509	30/10/2016 16:15	30/10/2016 18:30	55510	Dederang-Glenrowan No. 1 and No. 3 220 kV Lines	VIC	Lightning	GPATS
55523	31/10/2016 12:25	31/10/2016 14:20	55524	Coffs Harbour to Raleigh (9W3) and Coffs Harbour to Boambee Sth (9W8) 132kV Lines	NSW	Lightning	GPATS
55522	31/10/2016 12:25	31/10/2016 14:20	55525	Coffs Harbour to Raleigh (9W3) and Boambee South to Nambucca (9W7) 132 kV lines	NSW	Lightning	GPATS
55527	31/10/2016 14:45	31/10/2016 19:20	55528	Coffs Harbour to Raleigh (9W3) and Coffs Harbour to Boambee Sth (9W8) 132kV Lines	NSW	Lightning	GPATS
55526	31/10/2016 14:45	31/10/2016 19:20	55529	Coffs Harbour to Raleigh (9W3) and Boambee South to Nambucca (9W7) 132 kV lines	NSW	Lightning	GPATS

APPENDIX B. NON-CREDIBLE CONTINGENCY EVENTS 1 MAY 2016 TO 31 OCTOBER 2016

Table 5 Non-credible contingency events 1 May 2016 to 31 October 2016

Date of contingency	Description	Region	Reason	Was the contingency then reclassified?	Comments
01/05/2016 04:33	Trip of Hazelwood Power Station to Jeeralang No. 1 220 kV Line, and Hazelwood Unit 1 Generator Transformer	VIC	Lightning	No	ENGIE advised that the trip was due to a close-in lightning strike at the Hazelwood Power Station which caused damage to an auxiliary power transformer, the trip of the No. 1 Hazelwood to Jeeralang Line and the Unit 1 Generator Transformer. AEMO did not reclassify the event as it would be some weeks before the *generating unit* would be returned to service pending an assessment of the condition of the generator *transformer*. This event left the station with one auxiliary power transformer, the loss of which was not considered a *credible contingency event*. ENGIE advised that if auxiliary power was lost, all *generation* could be taken offline safely within 30 minutes. Given this timeframe, the loss of all *generating units* did not pose a risk to system *frequency* stability. In order to guarantee the reliability of supply in the Victorian *region,* however, AEMO LOR1 and LOR2 for Victoria. With the above taken into consideration, AEMO decided not to reclassify the loss of all Hazelwood Power Station units following the loss of auxiliary power supply as a single *credible contingency event*.
24/05/2016 11:16	Tuggerah substation 330kV circuit breakers 212A and 2M2A opened simultaneously	NSW	Other	No	TransGrid advised that the event was caused by a faulty protection relay which was subsequently replaced. AEMO did not reclassify this event as the cause was identified and isolated, thus reoccurrence was unlikely.
26/05/2016 09:14	Trip of South East to Tailem Bend No. 1 275 kV Line and South East No. 1 SVC	SA	Other	No	ElectraNet advised that the trip was due to a protection mal-operation caused by damaged protection wiring. After the line and SVC were returned to service, AEMO did not reclassify this event as the damaged wiring was identified and replaced, thus the event was unlikely to reoccur.
30/05/2016 14:13	Trip of Jeeralang Terminal Station No. 2 Busbar	VIC	Other	No	AusNet advised that the cause of the trip was an inadvertent inter-trip signal sent from Unit A1 at the Jeeralang A Power Station. A 6.6 kV fault triggered the operation of upstream differential protection on the generator transformer which issued the inter-trip signal to the 220 kV Busbar CB at the Jeeralang Terminal Station. The No. 2 busbar returned to service within an hour. As the cause of the event was identified and rectified, AEMO was satisfied that reoccurrence was unlikely and therefore did not reclassify the event.

Date of contingency	Description	Region	Reason	Was the contingency then reclassified?	Comments
07/06/2016 16:39	Trip of Richmond Terminal Station No. 2 and No. 4 Busbars	VIC	Other	No	AusNet Services advised that the cause of the event was the failure of a CT associated with a bus tie CB. Following the return to service of the No. 2 220 kV bus at 2214 on the 7th June 2016, this event was not reclassified as AEMO was satisfied that reoccurrence of this event was unlikely as the cause had been identified and isolated. AusNet Services subsequently replaced all similar CTs within the Richmond Terminal Station.
08/06/2016 01:41	Trip of Yallourn No. 2 220 kV Busbar	VIC	Other	No	AusNet Services advised that the Yallourn Power Station Switchyard No. 2 220 kV Busbar was tripped by protection. One phase of the Yallourn Generating Unit No. 3 220 kV CB did not open correctly in response to a trip signal from the power station. This triggered the CB fail protection, tripping the Yallourn Power Station Switchyard No. 2 220 kV busbar (a correct outcome for the fault). As the cause of the event had been identified and the faulty CB isolated, AEMO was satisfied that it was unlikely to reoccur and therefore the event was not reclassified.
11/06/2016 10:32	Trip of Wagga Substation 132 kV B busbar, and the No. 2 and No. 3 330/132 kV transformers	NSW	Other	Yes	TransGrid advised that Transformer No. 2 B CB experienced an internal flashover which caused protection to trip the 132 kV B Busbar, No. 2 and No. 3 Transformer. The CB was isolated following the event, pending replacement. AEMO reclassified the event as the cause was initially unknown. After the cause of the trip had been identified and isolated, AEMO was satisfied that the trip of the 132 kV B Busbar no longer constituted a *credible contingency event* and the reclassification was cancelled at 1055 on the 14th June 2016.
16/06/2016 11:31	Trip of Loy Yang Power Station Switchyard No. 1 and No. 3 500 kV Busbar, Hazelwood to Loy Yang No. 2 500 kV Line, Loy Yang No. 1 500/220 kV Transformer, and Loy Yang Power Station A Generating Units 1 and 3.	VIC	Other	No	AusNet Services advised that the Loy Yang Power Station Switchyard No. 1 and No. 3 500 kV Busbars were tripped by protection. A CB did not open correctly during a planned trip test of the Loy Yang Power Station A Generating Unit 3. The CB was isolated pending further investigation, whilst the No. 1 and No. 3 500 kV Busbars and the Hazelwood to Loy Yang No. 2 500 kV Line were returned to service. Generating Units 1 and 3 were returned to service in due course. As the cause of the event was known and had been isolated AEMO was satisfied that it was unlikely to reoccur and therefore the event was not reclassified.
14/07/2016 02:27	Trip of Chalumbin to Woree Line at Woree end only	QLD	Other	No	Powerlink advised the trip was due to faulty protection relay operation. AEMO did not reclassify the event because the cause was identified and rectified.

Date of contingency	Description	Region	Reason	Was the contingency then reclassified?	Comments
31/07/2016 06:02	Trip of Farrell to Reece No. 1 and No. 2 220 kV lines	TAS	Lightning	No	Lightning was reported in the area at the time of the trip and the loss of nearby lines was reclassified earlier in the morning. The trip caused 239 MW of generation to be lost from the Reece Power Station. After the lines were returned to service at 0606 on the 31st of July 2016, AEMO decided not to reclassify the simultaneous loss of both lines as a single credible contingency event as no further lightning activity was reported in the area and the Reece generation had not been restored. Although the Farrell to Reece lines should have been on the 'Vulnerable Transmission Lines' list at the time of the incident, it is unlikely that AEMO would have reclassified this contingency event prior to its occurrence, as in this case there were very few lightning strikes in the vicinity of the Farrell-Reece lines.
18/09/2016 20:59	Opening of H13 Ross 4 Transformer at 132 kV connection only	QLD	Other	No	Powerlink advised that the cause of the event had been identified and that it was unlikely to reoccur. AEMO did not reclassify the event as the cause was identified and rectified.
28/09/2016 16:24	South Australian System Black	SA	Other	Yes	The SA black system event occurred at 16:18 on 28 September 2016. Following this event the simultaneous loss of multiple wind farms was reclassified as a single *credible contingency event* on 3 October and constraint set S-SA_MUL_GEN_RECLASS was created and invoked to protect the system from a repeat event.
21/10/2016 14:34	Trip of Townsville South No. 2 Busbar	QLD	Other	No	Powerlink advised the trip was due to a faulty piece of equipment associated with a capacitor bank. AEMO did not reclassify the event as the cause was identified and isolated.
28/10/2016 07:33	Trip of Canberra to Williamsdale No. 3C 330 kV Line and Williamsdale No. 1 Transformer	NSW	Other	No	TransGrid advised that the cause of the event was a faulty relay on the Canberra to Williamsdale No. 3 330 kV Line which was replaced. As the cause of the event had been identified and rectified, AEMO was satisfied it was unlikely to reoccur and therefore the event was not reclassified.

APPENDIX C. MARKET IMPACT OF RECLASSIFICATION CONSTRAINTS 1 MAY 2016 TO 31 OCTOBER 2016

Table 6 Reclassification constraints that bound over the reporting period

Reclassification Start time	Reclassification End time	Reclassified Equipment	Constraint	Number of Dispatch Intervals binding
01/05/2016 01:20	01/05/2016 05:55	Farrell-Reece No. 1 and No. 2 220kV lines	F_T+FARE_N-2_TG_R60	54
			F_T+FARE_N-2_TG_R6_1	55
			F_T+FARE_N-2_RREG	11
01/05/2016 02:05	01/05/2016 07:05	Farrell-Sheffield No. 1 and No. 2 220kV lines	F_T+FASH_N-2_TG_R60	10
			F_T+FASH_N-2_TG_R6_1	7
			F_T+FASH_N-2_RREG	35
			T>T_FASH_1_N-2	2
01/05/2016 06:15	01/05/2016 07:55	Liapootah-Waddamana Tee Palmerston No. 1 and No. 2 220 kV Lines	T>T_NIL_LIPM_N-2_2B	19
01/05/2016 09:50	01/05/2016 10:50	Farrell-Sheffield No. 1 and No. 2 220kV lines	T_T_FASH_5_N-2	11
			F_T+FASH_N-2_RREG	11
			F_T+FASH_N-2_TG_R60	2
			F_T+FASH_N-2_TG_R6_1	1
03/05/2016 18:50	03/05/2016 19:25	Farrell-Reece No. 1 and No. 2 220kV lines	F_T+FARE_N-2_RREG	7
			F_T+FARE_N-2_TG_R60	7
			F_T+FARE_N-2_TG_R6_1	7
			F_T+FARE_N-2_TG_R5	6
			F_T+FARE_N-2_TG_R6_2	2
04/05/2016 00:00	04/05/2016 01:00	Farrell-Reece No. 1 and No. 2 220kV lines	F_T+FARE_N-2_TG_R60	12
			F_T+FARE_N-2_RREG	7
			F_T+FARE_N-2_TG_R6_1	9
06/05/2016 00:05	06/05/2016 02:00	Farrell-Reece No. 1 and No. 2 220kV lines	F_T+FARE_N-2_TG_R60	17
			F_T+FARE_N-2_RREG	15

Reclassification Start time	Reclassification End time	Reclassified Equipment	Constraint	Number of Dispatch Intervals binding
			F_T+FARE_N-2_TG_R6_1	7
10/05/2016 15:45	10/05/2016 16:25	Farrell-Reece No. 1 and No. 2 220kV lines	F_T+FARE_N-2_TG_R60	7
			F_T+FARE_N-2_TG_R6_1	6
			F_T+FARE_N-2_TG_R5	6
15/05/2016 11:00	15/05/2016 12:15	Farrell-Reece No. 1 and No. 2 220kV lines	F_T+FARE_N-2_TG_R60	15
			F_T+FARE_N-2_TG_R6_1	15
			F_T+FARE_N-2_RREG	15
16/05/2016 21:00	16/05/2016 21:50	Farrell-Reece No. 1 and No. 2 220kV lines	F_T+FARE_N-2_TG_R6_1	10
			F_T+FARE_N-2_TG_R60	10
			F_T+FARE_N-2_TG_R5	2
17/05/2016 00:35	17/05/2016 05:35	Farrell-Reece No. 1 and No. 2 220kV lines	F_T+FARE_N-2_TG_R6_1	60
			F_T+FARE_N-2_RREG	5
			F_T+FARE_N-2_TG_R60	59
19/05/2016 10:15	19/05/2016 10:40	Farrell-Reece No. 1 and No. 2 220kV lines	F_T+FARE_N-2_TG_R6_1	3
			F_T+FARE_N-2_TG_R60	2
			F_T+FARE_N-2_TG_R5	2
			F_T+FARE_N-2_TG_R6_3	1
			F_T+FARE_N-2_TG_R6_2	1
19/05/2016 10:15	19/05/2016 10:40	Farrell-Sheffield No. 1 and No. 2 220kV lines	F_T+FASH_N-2_RREG	7
			F_T+FASH_N-2_TG_R60	7
			F_T+FASH_N-2_TG_R6_1	7
			F_T+FASH_N-2_TG_R5	7
			T_FASH_MAXGEN_1	7
			T>T_FASH_1_N-2	3
			F_T+FASH_N-2_TG_R6_2	3
			F_T+FASH_N-2_TG_R6_3	2

Reclassification Start time	Reclassification End time	Reclassified Equipment	Constraint	Number of Dispatch Intervals binding
			F_T+FASH_N-2_TG_R6_4	2
19/05/2016 10:40	19/05/2016 11:30	Chapel St-Liapootah No. 1 and No. 2 220kV lines	T^T_NIL_LICS_N-2_DS	2
23/06/2016 02:45	23/06/2016 03:40	Farrell-Reece No. 1 and No. 2 220kV lines	F_T+FARE_N-2_RREG	11
12/07/2016 08:45	12/07/2016 10:25	Farrell-Sheffield No. 1 and No. 2 220kV lines	F_T+FASH_N-2_TG_R6_1	7
			F_T+FASH_N-2_RREG	20
			T_FASH_MAXGEN_1	19
			T>T_FASH_1_N-2	1
			F_T++FASH_N-2_TG_R6	13
			F_T++FASH_N-2_TG_R5	4
			F_T++FASH_N-2_TG_R60	3
12/07/2016 21:00	12/07/2016 22:10	Farrell-Reece No. 1 and No. 2 220kV lines	F_T++FARE_N-2_TG_R60	5
			F_T++FARE_N-2_TG_R6	1
12/07/2016 20:35	12/07/2016 22:10	Farrell-Sheffield No. 1 and No. 2 220kV lines	T_FASH_MAXGEN_1	13
			F_T++FASH_N-2_TG_R6	19
			F_T++FASH_N-2_TG_R60	14
			T>T_FASH_1_N-2	6
			F_T++FASH_N-2_TG_R5	3
			F_T+FASH_N-2_RREG	7
22/07/2016 01:00	22/07/2016 03:35	Farrell-Sheffield No. 1 and No. 2 220kV lines	T_FASH_MAXGEN_1	29
			F_T+FASH_N-2_RREG	31
			T>T_FASH_1_N-2	1
22/07/2016 12:15	22/07/2016 12:45	Farrell-Sheffield No. 1 and No. 2 220kV lines	F_T++FASH_N-2_TG_R5	5
			F_T+FASH_N-2_RREG	5
			F_T++FASH_N-2_TG_R60	5
			T>T_FASH_1_N-2	6
			F_T++FASH_N-2_TG_R6	5

Reclassification Start time	Reclassification End time	Reclassified Equipment	Constraint	Number of Dispatch Intervals binding
23/07/2016 14:50	23/07/2016 15:30	Rowville-Yallourn No. 5 and No. 6 220kV lines	V>V_NIL_ROYP56_R2_1	1
31/07/2016 05:00	31/07/2016 05:45	Farrell-Sheffield No. 1 and No. 2 220kV lines	F_T+FASH_N-2_RREG	8
			T_FASH_MAXGEN_1	5
			T>T_FASH_1_N-2	4
10/10/2016 09:05	10/10/2016 10:05	Farrell-Sheffield No. 1 and No. 2 220kV lines	F_T++FASH_N-2_TG_R5	12
			F_T++FASH_N-2_TG_R6	12
			T_FASH_MAXGEN_1	5
			T>T_FASH_1_N-2	7
			F_T+FASH_N-2_RREG	2
18/10/2016 10:00	18/10/2016 10:55	Farrell-Reece No. 1 and No. 2 220kV lines	F_T++FARE_N-2_TG_R60	1
21/10/2016 01:40	21/10/2016 03:30	Farrell-Sheffield No. 1 and No. 2 220kV lines	T_FASH_MAXGEN_1	21
30/10/2016 07:25	30/10/2016 08:30	Farrell-Reece No. 1 and No. 2 220kV lines	F_T++FARE_N-2_TG_R6	8
			F_T++FARE_N-2_TG_R5	1