PRELIMINARY REPORT – LOAD SHEDDING IN TASMANIA ON 20 DECEMBER 2016

A PRELIMINARY OPERATING INCIDENT REPORT FOR THE NATIONAL ELECTRICITY MARKET – INFORMATION AS AT 0900 HRS, THURSDAY 22 DECEMBER 2016.

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AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

IMPORTANT NOTICE

Purpose

AEMO has prepared this report in accordance with clause 4.8.15(c) of the National Electricity Rules, using information available as at the date of publication, unless otherwise specified.

Disclaimer

AEMO has been provided with preliminary data by Registered Participants as to the performance of some equipment leading up to, during, and after the non-credible contingency event in accordance with clauses 3.14 and 4.8.15 of the Rules. In addition, AEMO has collated information from its own systems. The information provided by Registered Participants and collated from AEMO's own systems is preliminary information only. Any analysis and conclusions in these findings are also preliminary in nature.

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1. OVERVIEW

At 0932 hrs on 20 December 2016 an outage of both Sheffield to George Town (SH-GT) 220kV transmission lines in Tasmania resulted in the loss of approximately 217 MW of generation and 170 MW of load in Tasmania.

The simultaneous outage of both SH-GT lines was the result of incorrect operation of protection relays during planned work by TasNetworks on a communications bearer.

AEMO gave permission to restore all load in Tasmania at 0949 hrs, 17 minutes after the event.

There was no impact on other NEM regions as a result of this event.

2. PRE-EVENT CONDITIONS

Immediately prior to the event all transmission equipment in Tasmania was in service and the power system in Tasmania was in a secure operating state. The operational demand in Tasmania immediately prior to the event was approximately 1052MW. Generation in Tasmania was 1210MW with 145MW transfer from Tasmania to Victoria on the Basslink interconnector. Of the 1210 MW of generation 217 MW was supplied by the generating units connected to the Sheffield substation.

Table 1 shows the contingency raise frequency control ancillary services (FCAS) enabled in Tasmania

Table 1: Contingency FCAS

Service	Enabled (MW)
Fast raise	16.55
Slow raise	40.55
Delayed raise	97

3. EVENT

At 0932 hrs both of the Sheffield to George Town 220kV transmission lines tripped simultaneously. The loss of these two lines caused the Sheffield to Palmerston 220kV transmission line to overload. At 0939 hrs the back-up network control system protection scheme (NCSPS)[1] operated and tripped the generating units at Lemonthyme/Wilmot, Cethana, Fisher and Devils Gate, a loss of 217 MW of generation. This action relieved the overload on the Sheffield-Palmerston line.

The loss of generation resulted in a low frequency in Tasmania. The frequency fell below 49Hz resulting in operation of the under frequency load shed (UFLS) scheme. Around 170MW of load was shed as a result of the UFLS operation. Although further analysis is required, information to date is that the UFLS operated as expected.

The simultaneous trip of both SH-GT transmission lines was a non-credible contingency. There was no actual fault on the lines. TasNetworks has advised AEMO that the lines tripped as a result of a communications system error.

Basslink operated as expected and reduced the flow from Tasmania to Victoria.

[1] The NCSPS is a control scheme designed to trip generating units in response to overloading of transmission lines.

4. RESTORATION

The restoration sequence is shown in Table 2.

Table 2: Restoration sequence

Time	Action
0940 hrs	Constraint set T-X_GTSH[2] invoked
0949 hrs	AEMO gave permission to restore all load in Tasmania
1042 hrs	TasNetworks advised AEMO that trip of the SH-GT lines resulted from a communications system error during work on a communications bearer.
1042 hrs	AEMO gave permission to restore both SH-GT lines
1045 hrs	All load restored
1050 hrs	Both SH-GT lines returned to service
1100 hrs	Constraint set T-X_GTSH revoked.

5. RECLASSIFICATION

After any non-credible contingency event AEMO is required to assess whether or not to reclassify the contingency as a credible contingency. Based on advice from TasNetworks that the cause of the non-credible contingency had been identified and that it was unlikely to reoccur AEMO did not reclassify the loss of both SH-GT lines as a credible contingency event.

6. NEXT STEPS

AEMO will conduct an investigation into the cause of the event and how each component of the power system in Tasmania responded as a result of this event. A full report will be published in 2017 after AEMO has collected and analysed all available data.

[2] Outage of both SH-GT lines.