POWER SYSTEM INCIDENT REPORT TRIP OF KURRI TO ROTHBURY 132 KV LINE AND THE HYDRO ALUMINIUM POTLINES ON 24 OCTOBER 2010

PREPARED BY: ESOPP

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FINAL

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1 Introduction

On Sunday 24 October 2010 a power system incident took place within the Energy Australia network. At 0758 hrs on this day, the 95R Kurri to Rothbury 132 kV line tripped. The fault was caused by the failed overhead earth wire coming into contact with the C phase conductor of the line.

All three potlines of Hydro Aluminium tripped at the same time, interrupting approximately 300 MW of potline load. The Hydro Aluminium is supplied via Energy Australia's 132 kV network.

This report has been prepared under clause 4.8.15 of the National Electricity Rules to assess the adequacy of the provision and response of facilities and services and the appropriateness of actions taken to restore or maintain power system security.

Information for this report has been provided by Energy Australia and Hydro Aluminium. Additional information has been obtained from AEMO's Energy Management System and Market Management System.

All references to time in this report refer to Market time (Australian Eastern Standard Time).

2 Summary of Events

On 24 October 2010, the Kurri 132 kV substation was operating in the system normal configuration. Refer to Figure 1 for the network configuration in the vicinity of Kurri 132 kV substation and the connections to Hydro Aluminium, before the event took place. Note that all the transmission lines in Figure 1 belong to Energy Australia. All these transmission lines are treated as a part of the NEM transmission network.

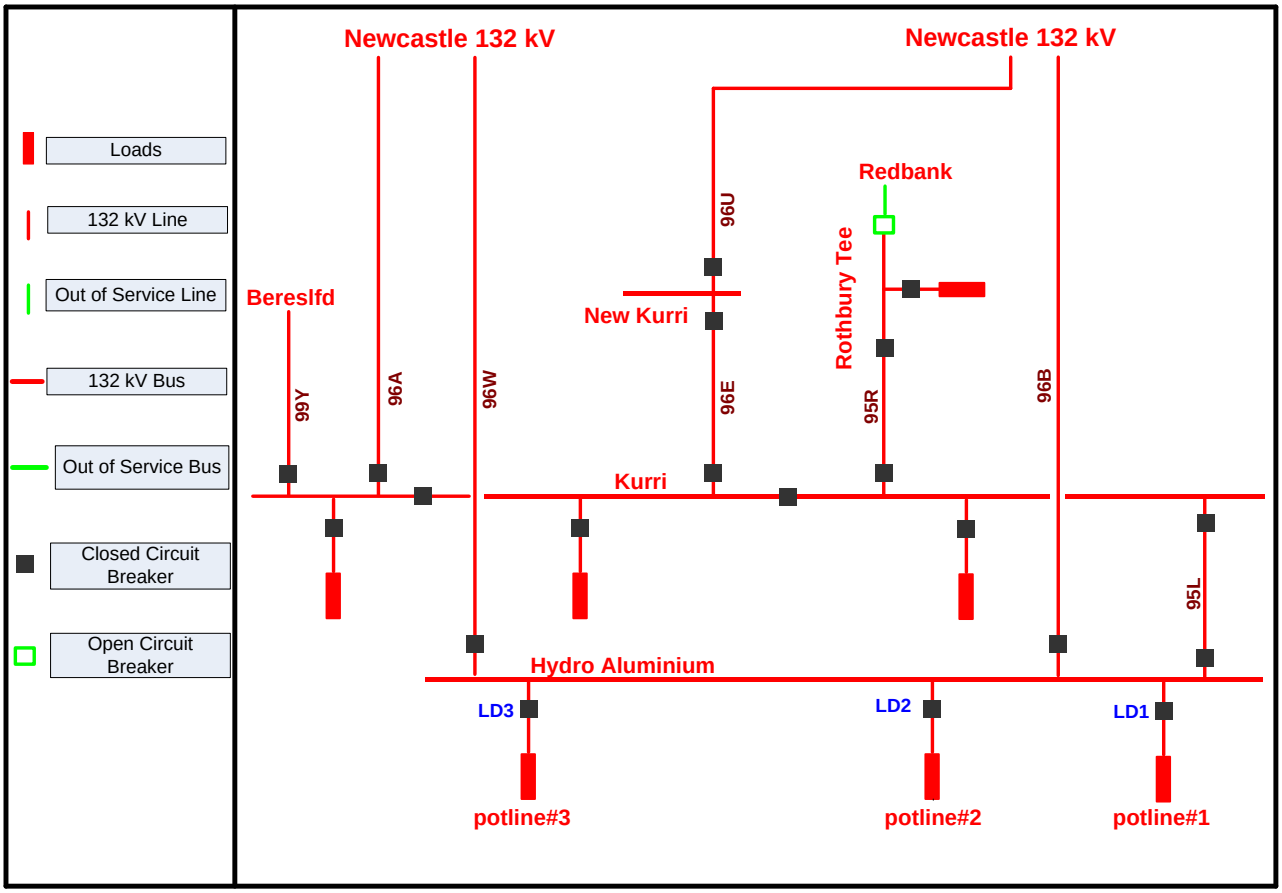

Figure 1 –Network in the vicinity of Energy Australia's Kurri substation switchyard before the event

At 0758 hrs, the protection systems of 95R Kurri – Rothbury 132 kV line operated for a phase to ground fault and the transmission line tripped. This fault was caused by the failure of an overhead earth wire which came into contact with the C phase conductor of the line. The fault recorder indicated that the distance to fault was approximately 190 meters from the Kurri substation.

Immediately after the trip of the 95R line, all three potlines of Hydro Aluminium tripped on the operation of their internal protections, interrupting approximately 300 MW of load.

Refer to Figure 2 for an overview of Kurri 132 kV substation and connections to Hydro Aluminium immediately after the event.

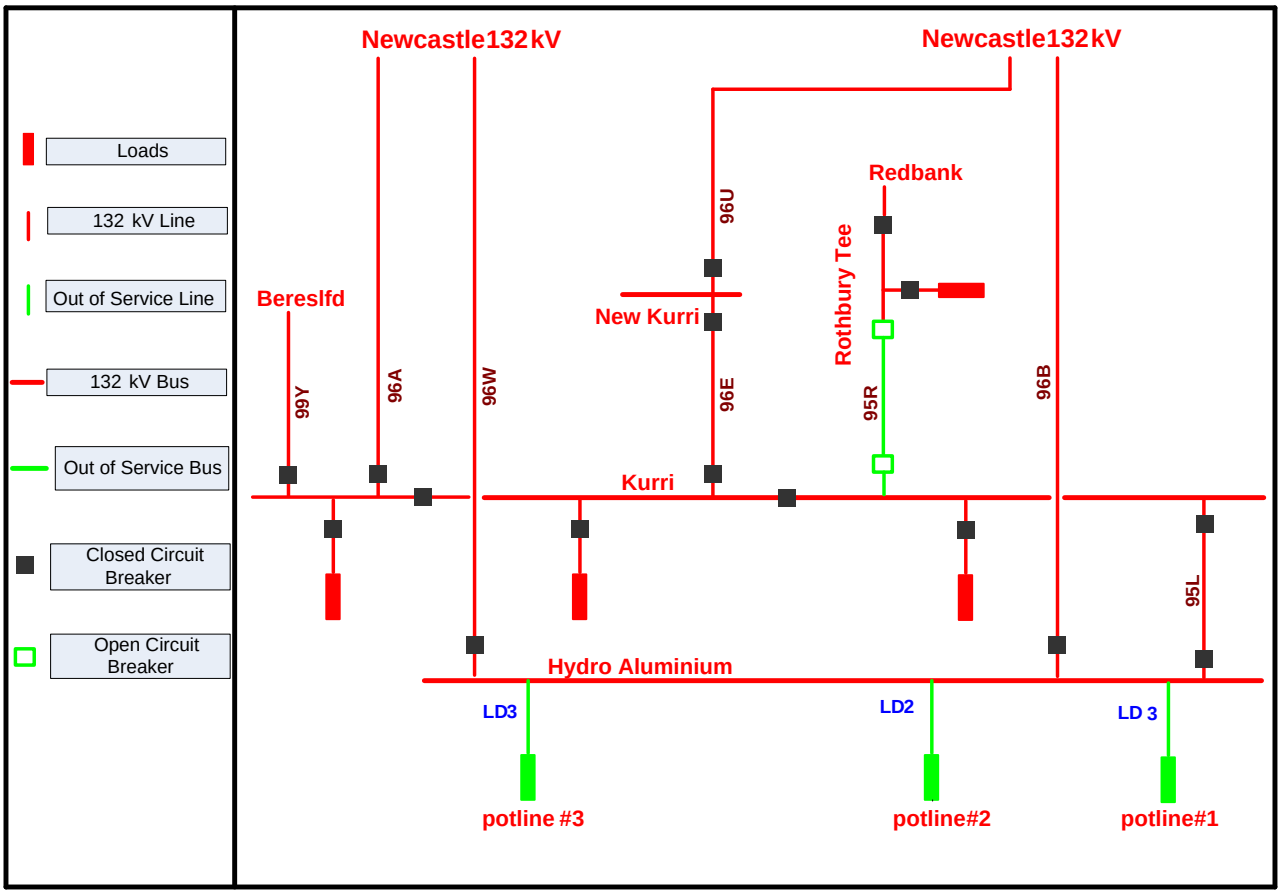

Figure 2 – Network in the vicinity of Energy Australia's Kurri substation switchyard after the event

The fault was successfully cleared within the required timeframes specified in the National Electricity Rules[1] (NER) by the operation of line protection systems (fault was cleared in approximately 80 milliseconds).

AEMO gave permission for Hydro Aluminium potlines to return to service from 0815 hrs.

Restoration times of the potlines were as follows:

Potline LD1: power was restored at 0816 hrs and full consumption was reached at 0824 hrs.

Potline LD2: power was restored at 0918 hrs and full consumption was reached at 0940 hrs.

Potline LD3: power was restored at 0839 hrs and full consumption was reached at 0900 hrs.

At 0915 hrs on 25 October 2010 AEMO declared the loss of Kurri to Rothbury 132 kV line and the three Hydro Aluminium potlines as a credible contingency and the Market Notices 33116 and 33117 were issued to inform participants.

The 95R line was returned to service at 1019 hrs on 4 November 2010.

[1] Refer to National Electricity Rules S5.1a.8

3 Power System Security

The power system remained in a secure operating state for the duration of the incident.

Power system frequency remained within the normal operating frequency band during the event.

Approximately 300 MW of Hydro Aluminium load was interrupted as a result of the line trip.

4 Conclusions

This power system incident involving the loss of approximately 300 MW of Hydro Aluminium potline load, coincident with a fault on Energy Australia's 95R Kurri to Rothbury 132 kV line, was efficiently managed by AEMO, Energy Australia, and Hydro Aluminium in accordance with the Rules.