

POWER SYSTEM OPERATING INCIDENT REPORT TRIP OF KAREEYA NO.2 132 KV BUSBAR ON 8 JUNE 2011

PREPARED BY: Electricity System Operations Planning and Performance

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FINAL

Disclaimer

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Abbreviations and Symbols

Abbreviation	Term
AEMO	Australian Energy Market Operator Ltd
CB	Circuit Breaker
EST	Eastern Standard Time
kV	kilovolt
MW	megawatt
MWh	megawatt hour (also MW-h)
NEM	National Electricity Market
NER	National Electricity Rules

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1 Introduction

At 1000 hrs on 8 June 2011 the No.2 132 kV busbar at Kareeya power station in Queensland tripped, disconnecting the No.2 and No.4 generating units at Kareeya power station and off-loading the Kareeya – Cardwell and Kareeya – Chalumbin 132 kV transmission lines at the Kareeya end. Planned maintenance work on protection systems at the Kareeya 132 kV switchyard was being performed at the time of the incident.

This report has been prepared under clause 4.8.15 of the National Electricity Rules (NER) 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.

This report is largely based upon information provided by Powerlink. Data from AEMO’s Energy Management System has also been used in analysing the incident.

All references to time in this report are National Electricity Market time (Eastern Standard Time).

2 Pre-Contingent System Conditions

The status of the power system prior to the incident is shown in Figure 1. For clarity, only equipment relevant to this incident has been included in the diagram. Note that the No.5 generating unit at Kareeya power station was not in service at the time.

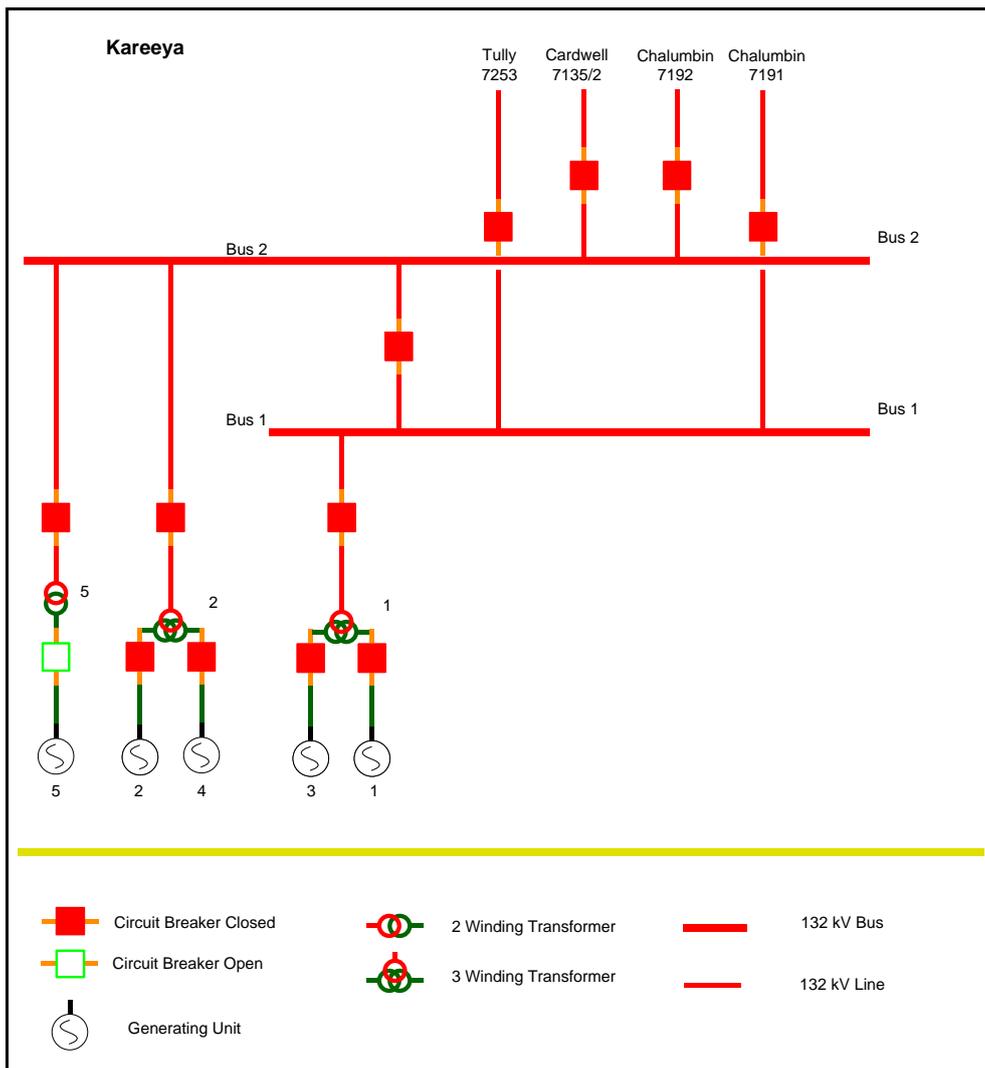


Figure 1 – Status of Kareeya power station prior to the incident

3 Summary of Events

At 1000 hrs on 8 June 2011 the Kareeya No.2 132 kV busbar tripped. This incident occurred during planned maintenance work on protection systems at the Kareeya 132 kV switchyard.

The trip resulted in the off-loading of the 7135/2 Kareeya – Cardwell and 7192 Kareeya – Chalumbin 132 kV lines at the Kareeya end, and the loss of approximately 44 MW of generation following the disconnection of the Kareeya No.2 and No.4 generating units. The Kareeya No.5 generating unit was not in service at the time of this incident.

The status of the power system immediately after the incident is shown in Figure 2.

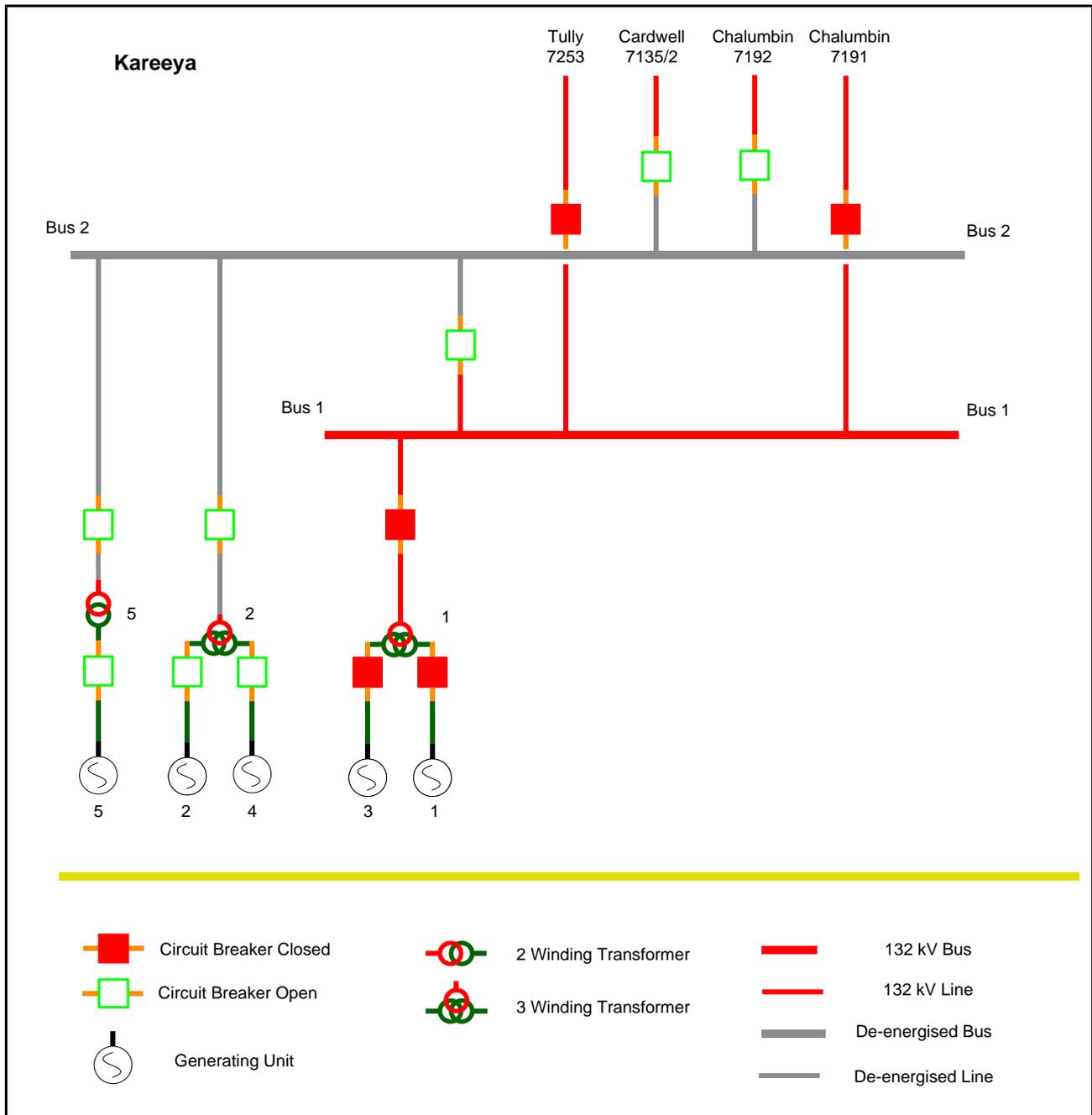


Figure 2 - Status of Kareeya power station immediately after the incident

4 Immediate Actions Taken

Powerlink investigated the incident and found that the circuit breakers connected to the Kareeya No.2 132 kV busbar tripped due to the unexpected operation of the busbar multi-trip relay. The operation of the busbar multi-trip relay was attributed to an error while following correct work practices adopted during planned maintenance work on busbar protection systems at the Kareeya 132 kV switchyard. A high voltage fault was not present and there was no initiation of protection systems at the time of the incident.

At 1006 hrs Powerlink returned the Kareeya No.2 132 kV busbar to service. At 1007 hrs Powerlink returned the 7135/2 Kareeya – Cardwell and 7192 Kareeya – Chalumbin 132 kV lines to service. Kareeya generating units No.2 and No.4 were returned to service at 1042 hrs and 1051 hrs respectively.

The work on protection systems at Kareeya resumed after correct work practices had been re-emphasised to the relevant staff.

At 1810 hrs AEMO issued Electricity Market Notice No.35417 to notify market participants of the trip of the Kareeya No.2 132 kV busbar as a non-credible contingency event, and to advise that it would not reclassify the loss of that busbar as a credible contingency event based on its assessment that there was no above normal risk of trip during the protection systems work.

5 Follow-up Actions

There were no follow-up actions required.

6 Power System Security Assessment

The power system voltages and frequencies remained within the normal operating bands and the power system remained in a secure operating state throughout the incident.

7 Conclusions

The Kareeya No.2 132 kV busbar trip was attributed to an error while following correct work practices adopted during planned maintenance work on protection systems at the Kareeya 132 kV switchyard.

AEMO is satisfied that Powerlink has taken appropriate actions to mitigate the risk of a similar incident occurring in the future.

AEMO correctly applied the criteria published in section 11 of its Power System Security Guidelines¹ in assessing that the circumstances of this incident did not warrant reclassifying the trip of Kareeya No. 2 busbar as a credible contingency event.

8 Recommendations

There are no recommendations arising from this incident.

¹ The AEMO operating procedure SO_OP 3715 Power System Security Guidelines is available at:

<http://www.aemo.com.au/electricityops/3715.html>