

## STATEMENT OF CHRISTOPHER JOHN ARNOLD

I, Christopher John ARNOLD of [REDACTED] Arana Hills in the State of Queensland, state on oath as follows:

### POSITION AND QUALIFICATIONS

1. I am the Executive General Manager, Network Performance for ENERGEX Limited (ENERGEX).
2. In this role I am responsible for the asset management function within ENERGEX. This includes accountability for Network Standards, Network Maintenance Strategies and Plans and Capital Strategies and Plans. The role also includes accountability for Corporate Safety, Environmental Management, Network Property Acquisition, Network Data, Network Demand and Risk Management.
3. From 4 January to 17 January 2011 I was the acting CEO of ENERGEX while the CEO, Mr Terry Effeney was overseas.
4. I have a Bachelor of Engineering (Electrical) from the Darling Downs Institute of Advanced Education and a Post Graduate Diploma in Business Management from Deakin University.

I am also:

- (a) a Corporate member of the Institute of Engineers Australia;
- (b) a Chartered Professional Engineer;
- (c) a Registered Professional Engineer, Queensland; and
- (d) a Graduate member of the Australian Institute of Company Directors.

### ENERGEX'S BUSINESS

5. ENERGEX is a Government Owned Corporation (GOC) established under the *Government Owned Corporations Act 1993* (Qld). It is an electricity entity as defined in the *Electricity Act 1994* (Qld).<sup>1</sup>
6. ENERGEX is responsible for the electricity distribution network throughout South East Queensland, including the regions of Brisbane, Ipswich, Gympie and the Lockyer Valley which were affected by the flood events. A map of ENERGEX's coverage is attached and marked CJA-1.

### ENERGEX'S NETWORK

7. ENERGEX supplies electricity to a population of more than 2.8 million people. It owns the electrical distribution infrastructure required to supply electricity to these customers. It employs approximately 3,800 employees.
8. ENERGEX is responsible for the distribution portion of the network between the power station and the customer.
9. It takes supply of electricity from Powerlink Queensland at various Connection Points throughout the network and distributes this via a Sub-Transmission Network and Distribution Network to customers in South East Queensland.

<sup>1</sup> Section 21, *Electricity Act 1994*

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10. Zone Substations and Distribution Substations then convert the voltages as necessary to minimise network losses and meet customers' voltage requirements.

11. Explanations of the key features of the ENERGEX electricity network are as follows:

- (a) **Transmission Network:** This is the electricity supply network which transmits power from an electricity generator to Bulk Supply Substations. The transmission network is controlled by Powerlink Queensland (**Powerlink**). ENERGEX is not responsible for this part of the network.
- (b) **Connection Point:** This is an agreed point of supply between ENERGEX and Powerlink. A Connection Point is generally located at a Powerlink Transmission Substation and converts the electricity from 275kV to 132kV, 110kV or 33kV.
- (c) **Bulk Supply Substation:** These assets are usually jointly owned by ENERGEX and Powerlink. The equipment provides control and voltage transformation from the Transmission Network to the Sub-Transmission Network. It is also referred to as a Bulk Supply Point.
- (d) **Sub-Transmission Network:** This is the term used to describe the electricity supply network which operates and supplies Zone Substations or customer connection points at nominal voltages of 132kV or 110kV and 33kV. There are 132kV or 110kV Feeders that supply power from a Powerlink Transmission Substation to a Bulk Supply Substation and 33kV Feeders that supply power from a Bulk Supply Substation to a Zone Substation.
- (e) **Zone Substation:** This is an asset owned by ENERGEX which provides control and voltage transformation from the Sub-Transmission or Transmission Network to the Distribution Network.
- (f) **Distribution Network:** This is the term used to describe ENERGEX's electricity supply network. It supplies power from the Zone Substations to Transformers or customer connection points via 11kV Feeders (or where so designated, a 33kV Feeder).

The Feeders can be overhead lines, underground cables or a combination of both. There can be up to ten or more 11kV Feeders connected to each Zone Substation which transmit electricity to pole or pad mount Transformers.

There is also a network of Feeders in each suburb which supply power to Transformers. Each Feeder has a number of Transformers connected to it. One 11kV Feeder supplies power to between 200 and approximately 4000 customers. In the case of CBD or major customers the situation will be different and one feeder might supply a single customer.

- (g) **Distribution Substation/Transformer:** This is an ENERGEX asset that provides control and voltage transformation from the Distribution Network to the Low Voltage (415/240 V) Network. Generally, a transformer will typically supply 100 to 200 customers with electricity.
- (h) **Low Voltage Network:** Customers are supplied with power to a primary fuse via low voltage service on the Low Voltage Network with the closest point of interruption being the Primary Fuse, which is generally mounted at the property boundary.



12. A diagram demonstrating how the elements of the ENERGEX electricity network deliver supply to the customer is attached and marked **CJA-2**.

### **ENERGEX'S OBJECTIVES DURING THE FLOOD EVENTS**

13. On Monday 10 January 2011, the catastrophic events in Toowoomba and the Lockyer Valley compounded what was already a significant flood in the Upper Brisbane Valley resulting in wide spread flooding throughout South East Queensland. Further rainfall in the Brisbane Valley resulted in a major flood of the Brisbane River (**flood events**).
14. The flood waters caused widespread damage and presented an imposing and unprecedented threat to the safe supply of electricity throughout South East Queensland.
15. As a result, ENERGEX's paramount priority at all times during the flood events was to ensure it took whatever steps were necessary to protect the safety of the community and ENERGEX workers.
16. Once it was safe to do so, ENERGEX's objective was to restore power to the community as quickly as possible.

### **SAFETY OBJECTIVES**

#### **Pre-emptive Disconnection of Supply**

17. During the flood events power supply was disconnected by ENERGEX to:
- (a) approximately 10 major commercial and industrial substations in the CBD in preparation for the rising water;
  - (b) around 120 feeder systems throughout Brisbane and Ipswich.
18. ENERGEX also removed as much equipment from the substations as possible in order to minimise damage to those substations which were at risk from the flood water.
19. The decision to pre-emptively disconnect supply was driven by two factors:
- (a) the need to prioritise the safety of people above all other factors; and
  - (b) to assist in the timely reconnection of supply by reducing the potential for damage to assets.
20. In the 1974 flood event my understanding is that there was at least one electricity related fatality. Irrespective of the number, such a flood event poses a high risk to the public if electricity lines in the vicinity of water are left live. ENERGEX's primary and overarching objective during the flood events was to ensure this did not happen.
21. Water provides a path for electricity. As a result, when electrical equipment is submerged short circuits will occur. This has the potential to damage equipment so it becomes unserviceable and, in some cases, cause the equipment to fail explosively risking injury to staff or other people nearby
22. It is also important from a reconnection perspective that power is disconnected to allow sufficient time for ENERGEX crews to remove critical plant prior to inundation.
23. This allows a quicker re-connection process because critical parts of the assets (for example, relays, batteries and other critical items) do not become damaged by water and can be reinserted once the water subsides.



### Implementation of Decision to Pre-emptively Disconnect Supply

24. On 11 January 2011 the predicted flood levels for the Brisbane River were revised upwards throughout the day.
25. ENERGEX primarily relied upon the Brisbane City Council (BCC) Local Disaster Centre Situation Reports and maps provided by BCC's Spatial Information Services to assess the areas of the ENERGEX Distribution Network at risk of inundation from the flood waters. These reports were released by the BCC on a regular basis. ENERGEX overlaid the BCC flood information onto its own maps of the electrical network.
26. The Bureau of Meteorology (BoM) also provided information regarding flood heights. ENERGEX used this information to corroborate the predictions it had received from the BCC to assist in determining which ENERGEX assets needed to be pre-emptively disconnected from supply.
27. ENERGEX prepared plans on the basis that disconnection of supply might become necessary in some areas. The objective was to switch power off **before** the inundation of ENERGEX assets occurred.
28. On the afternoon of Tuesday 11 January 2011 the information ENERGEX received from the BCC was that:

*'Based on the likely Wivenhoe release strategy (6,400 m<sup>3</sup>/s this evening 8:00pm), the predicted peak flood height at the Brisbane City Gauge is between 5 m AHD and 5.5 m AHD, (10,500 m<sup>3</sup>/s). The timing of this predicted peak is 3AM Thursday morning 13/01/11. This flood event will be similar to the 1974 flood.'*

A copy of this information is attached and marked **CJA-3**.

29. On the basis of these predictions, ENERGEX's Corporate Emergency Response team made the decision to pre-emptively interrupt supply to potentially impacted areas. The decision was made in accordance with ENERGEX's right under section 40E of the *Electricity Act 1994* (Qld) and clause 12.2 of the Standard Connection Contract contained in the Electricity Industry Code made under the *Electricity Act 1994* (Qld).
30. ENERGEX then implemented its plans to start evacuating equipment and isolating supply from the Brisbane CBD and other areas on the evening of 11 January 2011. A media release went to the public at 5.00pm on 11 January 2011 indicating interruptions would start from 7.00am the following morning. A copy of this media release is attached and marked **CJA-4**.
31. The decision was also communicated by ENERGEX on 12 January 2011 to the relevant stakeholders at the first meeting of the State Disaster Management Group (SDMG) that ENERGEX was invited to attend. I was in attendance at this meeting. At the SDMG meeting, the Police and BCC advised ENERGEX that they would coordinate evacuation and needed time prior to disconnection to do so.
32. On behalf of ENERGEX, I advised the SDMG meeting in words to the effect that:
  - (a) ENERGEX would provide notice of disconnection where feasible but if water was coming into a building substation then ENERGEX would have no choice but to switch off power immediately; and



- (b) any undue delays in disconnecting power would cause excessive damage to ENERGEX equipment resulting in cost and extensive delays in restoration.
- 33. Agreement was reached at the SDMG for the shutdowns to proceed and the process (including a priority plan for disconnection) commenced soon afterwards on Wednesday morning.

#### **The Lockyer Valley**

- 34. The Lockyer Valley flash flooding event was an extreme event which occurred without warning.
- 35. ENERGEX was not able to pre-emptively disconnect supply in relation to the Lockyer Valley event because water inundated the Lockyer Valley area with no warning and great force. As a result, switches controlling a number of 33kV and 11kV feeders automatically tripped.
- 36. Where automatic switches are tripped (as opposed to being pre-emptively disconnected) the time it takes to repair the equipment and reconnect supply can be greater.
- 37. Importantly, however, the automatic switches worked as they should in an emergency situation. There were no electricity related injuries or deaths in the Lockyer Valley as a result of the devastating flash flooding in that area. This result is attributable to all of the automatic switches operating in accordance with their design.

#### **Central Business District**

- 38. CBD substations and buildings that were required to be shut down were generally located below ground level and were subject to inundation.
- 39. In addition there were many transformer sites that supply individual buildings or street shops and offices that were also shut down due to the risk of water ingress or inspection after the flooding. Some supply was also interrupted to buildings where that supply connected to a flooded building.

#### **Milton**

- 40. Around noon on Wednesday 12 January 2011, flood waters impacted on Suncorp Stadium at the Castlemaine Street side. The supply sub-station at that location became submerged by the flood waters. When the flood waters reached the 11kV terminals of the Ring Main Unit (RMU), there was an explosive electrical fault. ENERGEX did not have time to pre-emptively disconnect this substation, as its resources were already committed to other competing priorities at that time.
- 41. The flood waters also damaged the low voltage switchboard supplied by the distribution substation, rendering the power supply and fire protection system on the Castlemaine street side of the stadium out of service.
- 42. The incident demonstrates why pre-emptive supply disconnection is far preferable where this can be achieved. However, it also demonstrates that, although not the preferred position, ENERGEX's automatic safety switches operated as they should in terms of shutting off supply to the sub-station.

#### **Ipswich and Brisbane Suburbs**

- 43. The majority of premises pre-emptively disconnected were in the Ipswich and Brisbane suburbs. The customers disconnected were disconnected on the basis of flood

predictions of 5.5 m or above late on Tuesday 11 January. All electricity assets likely to be inundated (or those connected to assets likely to be inundated) were disconnected.

## **ENERGEX ASSETS AND INFRASTRUCTURE**

44. One of the key challenges for ENERGEX arose because the flood events seriously damaged a significant amount of ENERGEX's electricity assets in South East Queensland.

### **Western Region – Withcott and Lockyer Valley**

45. The worst of the damage affected the ENERGEX network in the Lockyer Valley which is largely an overhead system.
46. The most significant damage to ENERGEX assets in this region occurred in the areas of Murphy's Creek, Helidon, Grantham, Lake Clarendon, Spring Creek and Carpendale.
47. Due to the velocity of the water, some lines crossing or near watercourses went under water or were washed away. Ground-mounted switchgear and transformers were also inundated.
48. The initial impact of the water surge on the afternoon of Monday 10 January 2011 affected the main feeder lines in the region outlined in the table below. This resulted in approximately 5,000 customers in this area losing power.
49. In total, in the Lockyer Valley region alone approximately:
- (a) 31 poles had to be replaced;
  - (b) 18 transformers had to be replaced; and
  - (c) 36km of 11kV line and 650m of 415V electrical lines had to be reinstalled.

### **Zone substation impacts**

50. ENERGEX's zone sub-stations provide control and voltage to the Distribution Network. Damage to a zone substation means that up to approximately 20,000 customers who receive electricity through that zone substation will be affected.
51. ENERGEX records indicate that some twenty-five zone substations throughout South East Queensland lost supply during the flood resulting in a peak of approximately 150,000 customers without supply.
52. The majority of substations were impacted by the loss of incoming 33kV supply rather than inundation or damage.
53. Ten zone substations (affecting approximately 53,000 customers) in the Tennyson Bulk Supply Zone were interrupted for several hours late on Wednesday 12 January 2011 as a result of manual interruption of the Powerlink Queensland bulk supply at Rocklea.
54. Supply to eight substations, was directly attributable to flood damage to incoming supply circuits or significant damage on all outgoing circuits.
55. Although separate to the flood events, three other substations (Marburg, Bethania and Karrabin) were also interrupted for short periods during storms or other network events on either Monday 17 January 2011, Tuesday 18 January 2011 and Wednesday 19 January 2011.



### Central Business District Distribution Substations

56. Two types of CBD distribution substations were affected during the flood events:
- those that supplied the immediate building itself; and
  - major substations that connect a number of main feeder routes within the CBD supply network.
57. Many CBD distribution substations are located below ground level and were subject to inundation by flood water.
58. In addition, there were many transformer sites that supply individual buildings or street shops and offices in the CBD that had to be shut down due to the risk of inundation by flood water or where these sites connected to inundated substations. For the reasons explained above, ENERGEX made a decision to pre-emptively interrupt supply at those locations.
59. Other buildings experienced loss-of-supply faults on the 'customer side' of the supply transformers.

### Impacts on the ENERGEX Distribution Network (including Brisbane, Ipswich and the Lockyer Valley)

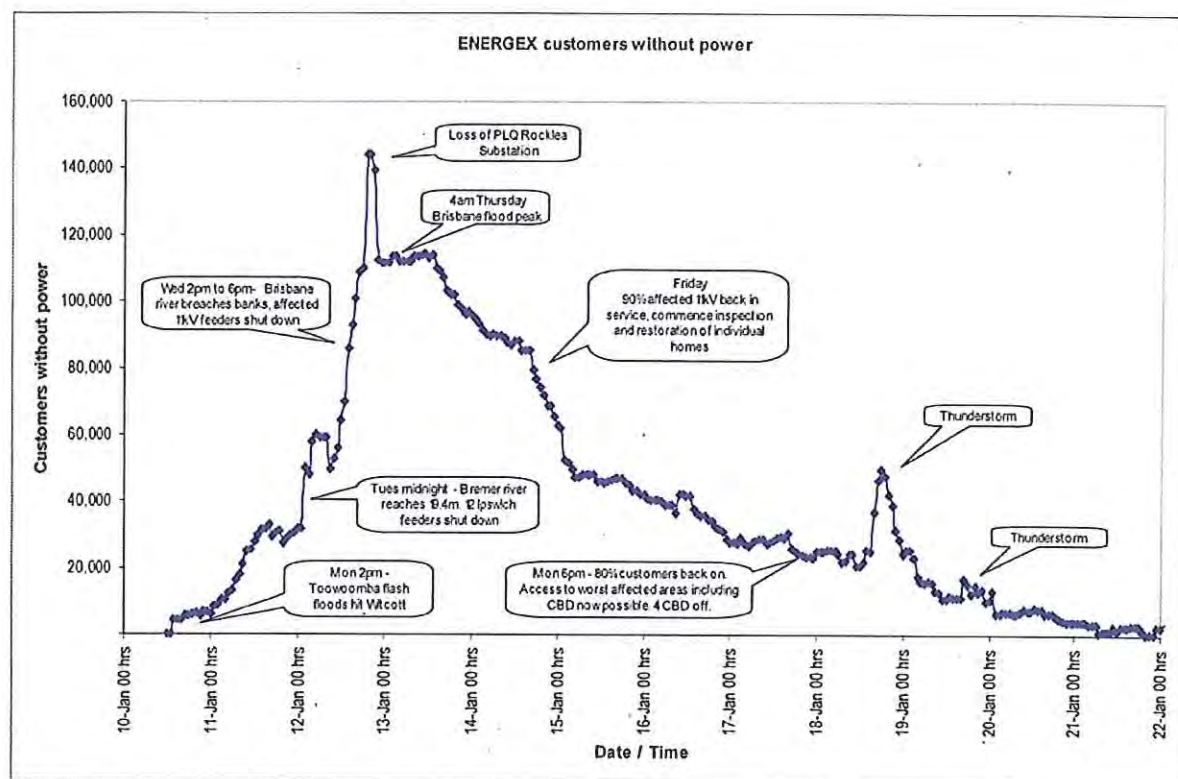
60. In addition to the damage done to sub-stations, other parts of the ENERGEX distribution network suffered widespread damage. Specifically, as at 1 February 2011:
- Ninety-five poles had to be replaced, most in the western region (including both the Lockyer Valley and the Brisbane Valley).
  - A total of 101 pad-mounted and ground distribution transformers had to be removed and replaced, with the removed units being returned to Banyo for refurbishment.
  - Ninety-eight kilometres of overhead line required replacement.
  - Numerous low voltage pillars and other apparatus were cleaned and returned to service.
  - High Voltage and Low Voltage switchgear from a number of pad-mounted subs required extensive repairs and replacement.
  - As at 1 February 2011, 3,645 water-damaged electricity meters have been replaced with current-standard electronic units.
61. The table below contains a summary of the total items replaced due to flood damage as at 1 February 2011:

Equipment	Number
Distribution Transformers	101
Switch Fuse gear	55
Substation relays	55
Watt hour meters	3645

Poles	95
Overhead Cable	98 km

## ENERGEX OUTAGE AND RECONNECTION DATA

62. The flood events resulted in interruption of supply to over 300,000 customers in Ipswich and Brisbane. However supply was able to be restored to approximately 90% of the high voltage feeders (at the substations) by the end of 15 January 2011.
63. The chart below represents ENERGEX's estimate of the customers without supply throughout the flood events. There may be some minor discrepancies between the data displayed in this chart and estimates provided by ENERGEX in media releases during the flood events itself. Any differences in the data result from the fact that these flood events were unique within the ENERGEX network in terms of the widespread nature of outages and the challenges involved in reporting and updating any changes to outages in 'real time'.



64. Tables setting out the location and relevant substations and the outage and restoration dates for all ENERGEX sub-stations in South East Queensland are attached and marked CJA-5. This data relates to network restoration (rather than customer restoration). It is difficult to give precise customer restoration times as there are a number of different variables relating to when individual customers were restored (including for example whether their premises was flood affected and therefore unable to be safely reconnected).

## PREPARATION FOR THE FLOOD EVENTS

65. Despite the challenges it faced, ENERGEX was well prepared for the flood events and the emergency that followed as a result of its:



- (a) Summer Preparedness Plan;
  - (b) Flood Risk Management Plan (produced in preparation for the 2010/11 summer);
  - (c) Business Continuity Plans; and
  - (d) the development of relevant work practices and instructions as the flood event evolved.
66. The early preparation and initiation of these plans and practices allowed ENERGEX to prioritise safety as well as continue on a 'business as usual basis' throughout the flood events, notwithstanding the devastation caused by the flood waters.

#### SUMMER PREPAREDNESS PLAN

67. ENERGEX undertakes detailed preparation and planning for each summer season in South East Queensland prior to 31 August each year. The preparation is recorded in its Summer Preparedness Plan in accordance with the requirements under the Electricity Industry Code pursuant to the *Electricity Act 1994* (Qld).
68. In planning for the 2010/2011 summer season ENERGEX focussed on the following four key areas:
- (a) significantly increasing the capacity and security of the network to meet high summer energy and peak demand;
  - (b) improvements to the resilience of the network in times of severe weather;
  - (c) improvements to ENERGEX's operational response to network emergencies;
  - (d) ensuring the provision of timely and accurate communications with customers and media in relation to network emergencies.
69. In particular, the planning undertaken at items (b) to (d) above meant ENERGEX was well equipped to manage its emergency response to the flood events.
70. The planning undertaken and the outcome achieved when the flood events occurred is outlined below:
- (a) ENERGEX reviewed its Corporate Emergency Management Plan (CEMP) and conducted simulations of the processes provided by it.
 

The CEMP was central to ENERGEX's management of the flood crisis and because of the summer preparedness planning the CEMP was activated quickly and effectively on 11 January 2011 (a further explanation of the activation of the CEMP is outlined below).

The simulation to test the CEMP was conducted in the early part of summer with 2 exercises held on 28 and 29 September 2010. There were also other tests conducted at regular intervals including in relation to standby roles and trials of systems.
  - (b) ENERGEX obtained access to a range of weather forecasting services to assist it in preparing for weather events.
 

ENERGEX received forecasting data from the Bureau of Meteorology (BoM). Together with the flood maps provided by the Brisbane City Council in January

2011, this data assisted ENERGEX to make measured decisions on the potential impact of the flood events and prepare the necessary organisational response.

- (c) Training schedules for all emergency related activities were prepared in advance of the 2010/2011 summer season to ensure that ENERGEX personnel were instructed about safe driving and working conditions during a potential flood event.
- (d) ENERGEX ensured that the Control and Contact Centres were able to be relocated to disaster recovery sites.

ENERGEX maintains a fully operational Control Centre at Victoria Park and Contact Centre at Warry Street in Spring Hill. It ensures that there is infrastructure at the disaster recovery sites that mean alternate Control and Contact Centres can be up and running quickly.

A closure of the Newstead site subsequently became necessary during the flood events. The summer preparedness planning meant that this was able to be achieved smoothly.

- (e) Maintained its minimum capability to respond to up to 100,000 customer calls per hour via its processes in the Contact Centre.

The Contact Centre was able to manage the increased call volume during the flood events without the need to rely on additional staffing of the Contact Centre external to ENERGEX.

- (f) ENERGEX ensured it had a proactive, multi-faceted communications strategy.

This preparation was invaluable during the flood events where communicating with customers, industry stakeholders, Government and staff was essential to protect the safety of the community and minimise damage to assets and disconnect and reconnect assets.

## FLOOD RISK MANAGEMENT PLANS

- 71. As part of the ongoing and proactive Summer Preparedness Program ENERGEX developed a Flood Risk Management Plan 2010/2011 (**the Flood Plan**) during 2010 when it became aware of the incoming La Nina weather system. The Flood Plan applied to Brisbane and Ipswich. A copy of the Flood Plan is attached and marked **CJA-6**.
- 72. A Gympie specific Flood Plan had been in operation since 1995/96 because the Mary River in Gympie is prone to flooding.

### Flood Plan

- 73. The Flood Plan was developed in 2010 as part of ENERGEX's Summer Preparedness Plan. During the flood events the Flood Plan assisted ENERGEX to:
  - (a) identify which assets were at risk of inundation;
  - (b) develop asset management procedures based on this risk;
  - (c) coordinate its network operations response;
  - (d) liaise effectively with other stakeholders; and



- (e) determine how and what information needed to be provided to customers related to flood risks and public safety.
74. The Flood Plan also contains a detailed plan for ENERGEX's communication internally, with Emergency Services (including the Police, SES and local disaster coordinators) and with the public during a flood event.
75. The key objectives of ENERGEX Flood Plan are:
- (a) Safety at all times to public, employees and other emergency services employees.
  - (b) A coordinated response to an emergency.
  - (c) Speedy restoration of adequate supply to customers.
  - (d) Timely restoration of the network to normal operating conditions.
  - (e) Resumption of normal operations as quickly as possible.
76. The Flood Plan was activated on Sunday 9 January 2011. The implementation of the plan changed frequently over the following 48 hour period particularly when ENERGEX issued a Purple Alert on Tuesday 11 January 2011.
77. During the flood events the Flood Plan requires information to be readily available about 11kV Feeder switching locations. This information (together with flood maps provided by the Brisbane City Council) assisted ENERGEX to make decisions about where and when to interrupt supply.
78. The Flood Plan requires ENERGEX to consider the following when contemplating disconnections:
- (a) What is the earliest stage to interrupt supply to maximise safety and plant protection yet at the same time minimising inconvenience to customers?
  - (b) Selection of the appropriate isolation points to minimise the extent of the interruptions and avoid interrupting supply to unaffected homes and businesses.
79. In preparation for the next summer season, ENERGEX intends to have the Flood Plan endorsed as part of its Summer Preparedness Plan and to have high level information about the plan publicly available to allow customers to plan their own Business Continuity Plans or Disaster Recovery Plans.

### Gympie Flood Plan

80. The Gympie Flood Plan details the emergency response to be implemented when the Mary River reaches the 6 to 11 metre mark at Kidd Bridge in Gympie. A copy of the Gympie Flood Plan is attached and marked **CJA-7**.
81. On 8 January 2011, the Mary River rose to flood levels which prompted ENERGEX to issue a media release on 8 January 2011 advising Gympie customers that ENERGEX may cut off power supply to affected areas in Gympie due to flooding.
82. From this point, ENERGEX enacted the Gympie Flood Plan and placed crews on standby ready to respond to a flood in Gympie.
83. Crews were able to refer to the Gympie Flood Field Book (attached to the Gympie Flood Plan) for information relating to disconnection and reconnection of premises. The Field

Book was also used as a guide for crews to determine which assets needed to be disconnected depending on the height of the Mary River.

84. The Gympie Flood Plan worked well during the January floods. An internal ENERGEX review has been conducted and refinements are being made to this Plan.

#### **BUSINESS CONTINUITY PLANS**

85. ENERGEX's Business Continuity Plan (BCP) is drafted in accordance with the guidelines for Business Continuity Management contained in Australian Standard HB292. It is comprised of the following:
- (a) Tier 1 – CEMP. This plan co-ordinates business continuity for the whole of ENERGEX. It is used for events that affect the entire organisation and drives the activation of the Tier 2 plans.
  - (b) Tier 2 – Plans at the Tier 2 level are group or location based and maintain critical business functions of ENERGEX.
  - (c) Tier 3 – This level of plan ensures the provision of critical resources to critical business functions identified in Tier 2 plans.
86. All three tiers were activated during the flood events.

#### **Tier 1 – Corporate Emergency Management Plan**

87. ENERGEX held its initial meeting regarding the emerging flood situation at 8.15am on Tuesday 11 January 2011. A decision was made to activate the CEMP and initiate a Purple Alert at this meeting.
88. As a result the CEMP team took responsibility for providing corporate level support to the management of the flood event and dealt with the strategic issues including the political impact and customer communication.
89. A Purple Alert is ENERGEX's highest level of alert under the CEMP. Under the CEMP Manual a flood can be a trigger for a Purple Alert if it is forecast to have a significant impact on the distribution network. The information ENERGEX had about the flood events meant that this was likely.
90. ENERGEX maintained a Corporate Emergency Response Log during the flood events which provided a central registry of key decision making issues which could be referred back to at any time. The Log was commenced at the first meeting at 8.15am on 11 January 2011.

#### **Closure of Newstead**

91. At a CEMP meeting at 11.15am on 11 January 2011 a decision was made to relocate the Newstead site including the Control Room to Victoria Park and the Contact Centre and Central Dispatch to Warry Street. Other critical functions were maintained through the suite of pre-existing BCPs.
92. The closure was largely due to access concerns as the waters rose in the car park at Newstead. The Newstead site remained evacuated until 17 January with the return of office staff. The Control Room, Contact Centre and Central Dispatch returned Newstead on 22 January 2011.



### Further CEMP Meetings

93. From 11 January 2011 throughout the flood events the focus of the CEMP team was to:
- (a) pre-emptively disconnect supply to ensure safety was a priority and limit damage to ENERGEX assets; and
  - (b) manage and plan for restoration to ensure that reconnections occurred as efficiently and as soon as possible.

### DEVELOPMENT OF WORK INSTRUCTIONS

94. On the evening of Sunday 9 January 2011, when a major flood event appeared likely, the Storm room activated the ENERGEX Flood Risk Management Plan. The next day priority was given to the development of standard procedures to deal with flood affected equipment.
95. ENERGEX's main priority during the flood was protecting the safety of its workers and the community. All ENERGEX workers were faced with unusual working conditions during the flood event. The main purpose of developing these work procedures was to ensure that ENERGEX workers could carry out the work safely and that the risk to the community posed by the combination of flood water damaged items and electricity was minimised.
96. The procedures developed included:
- (a) Work Practice WP-1133: Installation Reconnection After Natural Disaster which provided guidelines for the reconnection of installations affected by structural damage, rainwater or flood inundation.
  - (b) Work Practice WP-1134: Re-energisation of Flood Affected Distribution Equipment which provided direction for re-energising underground assets which have been inundated by flood water.
  - (c) Work Practice WP-1135: Re-instating Pole Mounted Plant.
  - (d) Network Ops Standards: Process for managing LV in the CBD following flooding which was prepared to ensure the LV network in the CBD was not energised unless it was safe to do so.
  - (e) Network Operations Emergency Work Procedure – Restoration of Electricity Supply Following Flooding which was prepared to ensure that the electricity network was safely and appropriately re-energised following the flood event.
97. These procedures were invaluable during the flood response and contributed to the efficient and safe restoration of power to customers.

### 98. COMMUNICATION WITH KEY STAKEHOLDERS

#### Corporate Emergency Management Plan

99. Once a Purple Alert was activated on 11 January 2011 under the ENERGEX BCP communication with key stakeholders was guided by the CEMP.
100. The CEMP recognises that one of the most important aspects of crisis management is communication. During an event all communications are managed by a Communications Team Leader who is assisted by:

- (a) a customer contact group and community communications;
  - (b) staff and internal communications;
  - (c) media communications;
  - (d) government communications.
101. From 11 January 2011 the Corporate Communications team operated from the same site as the Control Room at Victoria Park. The close proximity of the Corporate Communications team to the Control Centre greatly assisted in the flow of information from ENERGEX to the public and other relevant stakeholders.
102. ENERGEX was also guided by its Flood Plan in ensuring that it communicated effectively with all relevant stakeholders.

### **Corporate Communications Strategy**

103. During the flood event ENERGEX committed to ensuring that the public was well informed about issues affecting supply of electricity to their homes and businesses and to ensure safety in relation to electricity.
104. ENERGEX's Corporate Communications team (guided by the CEMP) managed all communications during the flood event. At all times communication specialists were on-call on rotating 12 hour shifts which allowed ENERGEX to provide 24 hour media updates.
105. ENERGEX's Corporate Communications based on data from ENERGEX's recording systems, between 11 January 2011 and 25 January 2011 was comprised of:
- (a) 4,874 media mentions including in the press, television, radio and online.
  - (b) 54 media releases.
  - (c) 3 Courier Mail advertisements.
  - (d) 974 Australia Traffic Network radio spots.
  - (e) 2,331 Twitter followers and 270 Twitter messages.
  - (f) New flood information website.
  - (g) Deployment of the mobile communication centre.
  - (h) Delivery of the community flyer.

### *Television, Radio, Press and Online*

106. ENERGEX kept its customers regularly informed of the status of the disconnection and reconnection process and provided important health and safety messages through television, radio, press and online reporting on a 24 hour basis.
107. Mr Mike Swanston was the leading ENERGEX spokesperson during the flood event. Mr Swanston is a senior employee at ENERGEX with a detailed technical knowledge of the ENERGEX network.

### *Media Releases*



108. A central part of ENERGEX's corporate communications strategy involved regular media releases. The releases were used by all media channels to obtain accurate and timely information for the public. The media releases were also accessible by any member of the public on the ENERGEX website.
109. ENERGEX also issued regular 'ENERGEX Flood Fast Facts'. This type of media release provided a snapshot of the situation as it related to ENERGEX in short and simple language. Examples of some of the key ENERGEX media releases during the flood events are attached and marked **CJA-8**.

#### *Social Media*

110. During the flood events ENERGEX's Twitter followers increased from approximately 800 followers to approximately 2,331 individuals. ENERGEX provided 270 Twitter messages on power restoration and safety during the flood event to its Twitter followers. Some examples of the Twitter messages sent to followers are contained at **CJA-9**.
111. ENERGEX also coordinated with the Queensland Police Service media to post message on the QPS Facebook page. A copy of the Facebook message is contained at **CJA-10**.

#### *Website*

112. During the flood events ENERGEX developed a new flood information page on its website. A copy of the information page is attached and marked **CJA-11**. It provided centralised information including:
- (a) important safety information;
  - (b) information for electrical contractors;
  - (c) restoration updates as detailed at street level.
113. The ENERGEX website experienced a significant increase in usage during the flood events and was one of the most accessed websites in Australia at the time.
114. The increased traffic to the ENERGEX website caused it to fail for a short period of time during the flood events. The failure was predominantly due to an error in an embedded code. ENERGEX had a backup plan in place which was activated and operated as intended. The embedded code error has subsequently been rectified by ENERGEX's IT supplier.

#### *Community Flyer*

115. During the flood events ENERGEX issued a 'Power Restoration Update' to its customers. A copy of the flyer is attached and marked **CJA-12**.

#### **Staff**

116. Multiple staff bulletins were issued during the flood events to inform:
- (a) office staff of restoration progress (including plans for return to Newstead); and
  - (b) field staff of the restoration progress and to provide alerts on safety and health risks associated with flood hazards.
117. ENERGEX also set up an event information intranet page that staff could access.



## Contact Centre

118. The Contact Centre was an essential component of ENERGEX's communication strategy during the flood events.
119. Following the closure of the Newstead site on 11 January 2011, the Contact Centre operated from its disaster recovery location at Warry Street in accordance with its Tier 2 and Tier 3 BCPs. As part of the ENERGEX Summer Preparedness Plan 2010/2011 the Contact Centre was able to respond to up to 100,000 customer calls per hour and was fully operational from its disaster recovery site.
120. The ENERGEX Contact Centre is structured to allow it to answer the high volume of calls that it did during the flood events. When a customer telephones the Contact Centre:
- (a) the customer is:
    - (i) recognised by the system and receives a specific outage message based on location (usually down to street level) through the interactive voice response system; or
    - (ii) not recognised by the system and is asked to key in their postcode and receives a more generic outage message (based on suburb).
  - (b) if the system does not provide the information the customer is seeking, the customer can select to speak with a customer service representative;
  - (c) where the options at (a) and (b) are operating at capacity the customer call is diverted to a 'Telstra Cloud'. When a call is sent to this location the customer receives a message explaining that ENERGEX is currently receiving a large number of calls, it is aware of power outages in particular areas and asks the customer to telephone back shortly;
  - (d) if the Contact Centre requires additional support it can rely on Ergon Energy Contact Centre staff or other trained external staff (these arrangements are tested at least annually).
121. During the flood events the Contact Centre operated efficiently and there was no need to divert calls to Ergon Energy or rely on external staff.

## ENERGEX's Communication strategy in Withcott and the Lockyer Valley

122. In July 2009 ENERGEX introduced a forward command/communications facility in response to a recognised need to develop a mobile response centre to assist in severe weather cleanups.
123. During the flood events ENERGEX's communication strategy was global to ensure that the public and all stakeholders received relevant information. However, because of the special circumstances in the Lockyer Valley, ENERGEX took the additional step of deploying its 'Forward Command Centre' caravan into this region to provide face to face communication with the community in that region.
124. The centre became a 'one-stop-shop' for information in the Lockyer Valley community and provided a range of computer based data, safety advice, basic amenities, a hub for ENERGEX crews working locally and emergency mobile power generation.
125. Other emergency services were able to use the facility as an operations base which meant the mobile response centre was a gathering point for all involved.



126. ENERGEX also attended the Local Disaster Management Group meetings to provide regular updates on progress of electricity restoration activities.
127. **RECOVERY AND RESTORATION**
128. Over 12,000 homes and businesses in South East Queensland were affected by the floodwaters in a physical way (ie the premises suffered at least some inundation by water).
129. ENERGEX's focus on safety required that all installations affected by the flood waters were inspected before re-energising the premises. To achieve this, an efficient process for inspection of a customer's premises and reconnection of supply was critical.

#### **Process for restoration priorities**

130. The restoration of power supply to homes and businesses was driven by a central process, as outlined in the Flood Plan. ENERGEX took the following steps to restore supply throughout its network in a consistent and logical way.

**Step 1** - Open switches to isolate segments of the high voltage network that were damaged, washed away or affected by floodwaters (including ground-mounted transformers).

**Step 2**- Isolate the low voltage output of any transformers feeding areas suspected of supplying an area that was affected by floodwaters

**Step 3** - Restore supply to unaffected segments of the high voltage network, therefore restoring supply to customers who were well clear of floodwater.

**Step 4** - Commence patrols of the low voltage network, isolating any affected premises at the primary fuse and issue a defect notice (Form 3) to the occupant. Approximately 12, 000 homes received defect notices during this stage.

**Step 5** - After inspection and isolation, restore supply to the low voltage sections area-by-area by closing the local distribution transformer low voltage output switch, thereby restoring supply to more unaffected premises in the local area.

**Step 6** - Repair damaged plant and equipment, and re-energise when safe.

**Step 7** - Following inspection and repair by a qualified person (and the submitting of a Form 2), restore the primary fuse to the individual premises one-by-one.

#### **Specific issues regarding the operation of the network in the flood events**

##### *Feeders*

131. The 11 kV feeders in the ENERGEX network can be overhead lines, underground cables or a combination of both. Generally supplying between 200 and 4000 homes in urban areas, or two or three CBD buildings, these feeders form the backbone of the ENERGEX supply network, and include automatic switches that detect a fault on the line. When a Feeder has a fault, it is designed to automatically disconnect the line from the power.
132. In a flood event, for example, if ENERGEX had not already pre-emptively disconnected a Feeder, disconnection should occur automatically when the flood waters touch energised equipment. However, it is still safer to avoid the situation where the flood waters reach the live asset by switching it off first, if this can be achieved. This is not only safer but it also improves the ability to recover the equipment and quickly restore supply afterwards.



133. Once a Feeder is disconnected from the network, there will be customers who are remote from the flood waters but still lose power. This occurs because those customers receive power from a Transformer connected to the Feeder which has been affected by water. For example, in the CBD a number of Transformers that were isolated from the network were not directly affected by flood water, and the interruption resulted from the fact that the remote feed-in points were affected by water.
134. During the flood events ENERGEX inspected the affected Feeders, then opened a switch along the line disconnecting the affected section. The healthy part of the feeder was then re-energised, restoring power to homes in unaffected areas.
135. Sometimes, this isolation is not possible as either the isolation points are inaccessible due to floodwaters, or the 'front end' of the line is affected, meaning supply cannot be restored to homes further down the line despite the fact they are clear of floodwater.
136. The role of Feeders, a description of how the switches can be closed and opened and how this affects customers is attached and marked **CJA-13**. This illustration is provided by using the Sherwood 11kV feeder as an example.

#### *Transformers*

137. During a flood event it is common for a number of houses connected to a Distribution Transformer to be inundated with water. In this situation ENERGEX will disconnect the power to the Transformer. All customers connected to that Transformer will lose power even though not all of the customers have been affected by flood waters.
138. This is rectified once the flood waters subside and ENERGEX inspects the damage. If premises went underwater, the primary fuse for the premises is removed, isolating power to the individual premises. Once all premises connected to the Transformer have been inspected, ENERGEX will reconnect the Transformer which supplies power to the houses which were not underwater and did not have their fuse removed.
139. ENERGEX then advises the customers still without power of the need to get their premises inspected by a qualified electrician. Once this is done, the electrician advises ENERGEX and the primary fuse is replaced, restoring power to the premises.

#### **Coordination with Master Electrician's Association**

140. As set out above, if ENERGEX considered that the electrical safety at a customer's premises had been affected by water it issued that customer with a Form 3 Disconnection Notice, typically left at the premises. The effect of a Form 3 was that the customer was disconnected from the distribution network because it was not safe to re-connect supply to the premises in these circumstances.
141. To be reconnected to the network, customers were required to arrange for a qualified electrician to inspect the premises and issue a Form 2 Reconnection Notice, typically issued electronically to ENERGEX. Once the Form 2 was issued ENERGEX could then safely reconnect the customer to the ENERGEX distribution network.
142. During the flood events ENERGEX was regularly asked by customers for information about retaining a qualified electrician. In order to assist customers, many of whom were experiencing distress, ENERGEX coordinated with the Master Electricians Association (MEA) the leading peak body for the electrical and communications industry in Australia to develop a plan for the restoration of electrical supply.



- 143. Under the plan with the MEA, ENERGEX advised customers through the media and at site level that electricians could be found in the Yellow Pages, local newspaper classifieds or by contacting the MEA.
- 144. When ENERGEX disconnected numerous premises in a particular area, it informed the MEA of this so that the MEA could arrange to have electricians available in the area for customers in need of services.
- 145. ENERGEX also reached agreement with the MEA that MEA electricians would charge a recommended fee of \$200 for a mandatory basic inspection service to customers. This fee did not cover the cost of any required additional work or subsequent safety inspections.
- 146. By coordinating with the MEA ENERGEX was able to offer assist customers with a seamless reconnection process. Other electricians who were not MEA members were able to work through the arrangements put in place by the MEA.

#### **Field response and resource utilisation**

- 147. Local knowledge and accountability for an area was a big advantage in prioritising restoration efforts.
- 148. The allocation of senior staff to local geographic areas to direct local restoration efforts and act as local liaison with other authorities also proved very effective.
- 149. The impact on staff home lives and personal impacts in very challenging conditions required a focussed HR response.

#### **Deployment of ENERGEX generators in the community**

- 150. ENERGEX provided up to 40 generators (26 from ENERGEX's own fleet plus 14 from local hire companies) ranging in size from 30 kVA to 1000 kVA during the flood events.
- 151. These proved to be extremely useful, particularly to get electricity supply back onto Fernvale township and the Rocklea markets.

#### **ENERGEX's Response in Withcott and the Lockyer Valley**

- 152. The extent of the devastation in the Lockyer Valley meant ENERGEX had to take a different approach to recovery and restoration which took into account the difficult conditions.

#### *Approach to Restoration in the Lockyer Valley*

- 153. Because of the extent of the damage in the Lockyer Valley ENERGEX crews were required to rebuild whole sections of the network and clean, repair or replace numerous assets that had either been swept away or inundated by the flood waters that swept through the Lockyer Valley on Monday 10 January 2011.
- 154. Further disconnections of supply occurred on 11 January 2011 as a result of further flooding in the area.
- 155. ENERGEX deployed generators where critical to establish temporary supply.
- 156. Part of the Lockyer valley was classified as 'red zones' following the flood events. Red zones were areas where ENERGEX could not gain access due to the water levels and



damage to bridges although ENERGEX did have some crews isolated in these locations and utilised them from these locations where possible.

157. As access was gained to these red zones, the area was taken off the list to allow jobs to be sent out for repairs. At the peak there was over 460 jobs assigned to areas in the red zones.
158. Up to 80 ENERGEX crews worked extended hours, typically 12 hours each day for two weeks to safely restore power to the homes and businesses in the Lockyer Valley. A senior ENERGEX manager was allocated responsibility for managing restoration to the area.
159. Restoration works were completed and supply restored, to those customers who were ready for connection, within approximately one week on the initiating flood event. A schedule outlining the outage and restoration dates and times of ENERGEX assets located in and around Spring Bluff, Murphy's Creek, Helidon, Withcott, Postman's Ridge and Grantham is attached and marked **CJA-14**.
160. ENERGEX crews then set about restoring supply to those connections where further works were required on the customer's installation to enable safe reconnection of supply. This typically consisted of irrigation pumps located along the various creek banks and those houses severely damaged. Some houses still remain disconnected due to the extent of the damage to the property.
161. There is no doubt that the restoration process was lengthy for some customers in this region due to the nature and extent of the damage and access difficulties to ENERGEX assets. However, ENERGEX staff worked closely with the Lockyer Valley Regional Council, Department of Main Roads and the Local Disaster Management Group to gain access and prioritise restoration works.

#### *Safety*

162. During the restoration process, safety was ENERGEX's first priority.
163. There were no electricity related injuries to ENERGEX staff, emergency services staff or members of the community.

#### *Ongoing work in the Lockyer Valley*

164. The only outstanding ENERGEX flood related work in the region is reinstating lines where temporary solutions were put in place or to restore supply to individual premises as these become able to be reconnected. ENERGEX crews are completing these tasks now.
165. ENERGEX also recently completed a post flood helicopter patrol of ENERGEX assets impacted by the floods, to identify any previously unidentified issues and to determine any ENERGEX assets at risk due to the revised location of creek banks and washouts. A list of helicopter patrols conducted during and after the flood event are attached and marked **CJA-15**.
166. Any work identified from this patrol has been prioritised and included in ENERGEX's works program for completion over the coming months. An ongoing effort will also be required to recover those ENERGEX assets stranded or washed away by the flood waters. These outstanding works have not resulted in delays to customers being reconnected, where the houses were in a state that they were able to be reconnected.

#### *Relocation of ENERGEX Assets in the Lockyer Valley*



167. Due to the extent of the damage to ENERGEX 11kV low voltage assets and the significant changes in creek alignments, in some cases, ENERGEX has been unable to reinstate the poles and wires in their original locations. Alternate routes and locations have been used to reinstate supply. Some new lines have been established where possible in more accessible locations away from immediate impact zones. Where possible, creek crossings have been avoided.

#### OPPORTUNITIES FOR IMPROVEMENT

168. ENERGEX is taking full advantage of the opportunity to improve its processes by conducting a full review of the flood events in order to identify any improvements it can make to its current systems and processes.
169. Where the review identifies the matters affecting ENERGEX's preparation for Summer 2011/2012 these matters will be factored into ENERGEX's internal planning processes including their Network Management Plan, the Summer Preparedness Plan and the Flood Risk Management Plan.
170. ENERGEX has already identified a number of areas where there is an opportunity for improvement. Some of these opportunities relate to ENERGEX's internal processes while others relate to issues affecting the wider community.

#### Location of CBD electricity distribution assets

171. A number of the ENERGEX distribution substations in the CBD are positioned below Q100 flood levels (for example in the basement of high rise offices). As a result, there is a significant risk of inundation by flood waters for these assets. Accordingly this also means that if a flood occurs supply must be pre-emptively interrupted to these locations.
172. At present ENERGEX does not have any statutory power to **require** that a substation installed in customers' premises be installed above the Q100 Flood Level.
173. ENERGEX's position is that consideration should be given to amending the appropriate legislation to give ENERGEX greater powers to obtain suitable locations for electricity assets, in consideration of flood levels, access and other design factors.

#### Flood Exposure of ENERGEX assets

174. A number of ENERGEX's substations were exposed to flood waters. These sub-stations are large pieces of infrastructure and obviously, there are considerable costs and logistical issues involved in re-locating these assets to areas not prone to flooding.
175. Since 1974 ENERGEX has relied upon the so-called "Q100" flood level supplied by Local Authorities to site or relocate the electrical assets in these substations and help mitigate against flood options. Despite this, some sub-stations built above the Q100 flood levels (for example Milton) were still inundated during the flood events.
176. ENERGEX is investigating the flood exposure of these existing major substations and any flood-mitigation options.
177. ENERGEX is also investigating the flood exposure of underground distribution assets and considering modifying standards to encourage the installation of pad mount transformers above relevant flood levels wherever possible.
178. ENERGEX understands that work is being done by the BCC and other Councils to revise the Q100 flood levels following the flood events. ENERGEX intends to work with the BCC on this issue and factor this into its review of flood exposure of ENERGEX assets.



## Planning and Preparation

179. The preparation ENERGEX undertook prior to the flood events was invaluable. ENERGEX has identified ways in which planning and preparation could be improved if an event like this happens again.
180. ENERGEX proposes to take a number of steps prior to the next wet season to ensure it and other stakeholders are prepared for another flood event.

### *Contact with CBD*

181. ENERGEX will review the availability of contact data with all relevant CBD and near CBD sites. ENERGEX's database should include both the contact details and substation/switching access point for each CBD site.
182. Using this database it will make contact with building owners and operators in the CBD and other 'at risk' areas near the CBD to discuss exposure to floods and assist those owners and operators with the development of BCPs in relation to electricity supply.

### *Review of flood maps and contingency switching providers*

183. ENERGEX intends to review the flood maps and contingency switching priorities related to various floods levels or dam release volumes to allow ENERGEX to prepare for isolation of unaffected areas in the event of another flood event in the 2011/12 wet season.
184. The purpose of this review is to minimise the extent of outages by ensuring that ENERGEX has up to date knowledge of potential flood impact overlaid onto the ENERGEX network. This will allow ENERGEX to optimise the network switching in advance and disconnect power **only** to those that need to be isolated.

### *Review of Emergency Communication and Co-ordination Processes*

185. Review the emergency communication and co-ordination processes with building owners and operators for pre-emptive switching and work with the relevant stakeholders (including but not limited to the State Government, local councils, Police and Emergency Services) as broader communication protocols are also required. Improved communication will enable ENERGEX to get a better understanding as to what assets will need to be switched off for floods of specific heights and being able to communicate this to various stakeholders.
186. This will assist ENERGEX to keep stakeholders even better informed about what is occurring.

## Response and Restoration

187. ENERGEX's response, recovery and restoration worked well. However, ENERGEX also recognises there are aspects of its response which could be improved.
188. To this end ENERGEX intends to:
- (a) examine plans for the use of flood warning information to better inform network switching arrangements and flood communications in areas other than the Brisbane CBD; and
  - (a) confirm the arrangements put in place during the flood events for co-operation with private electricians to effect repairs to premises as occurred during the flood events.



- (a) develop a process to more accurately track the connection status of individual premises, for timely response to customers.
- (a) feed information on the planning, priorities and targets for field staff involved in restoration activities through to the operators of the Power Outage Console, so that estimated restoration times better reflect restoration activities
- (a) review opportunities for an even more effective deployment of mobile generators by:
  - (i) identifying generator connection locations for key sites and maintaining these details in a database; and
  - (ii) updating the Flood Plan to include generator deployment (including the possibility pre-emptive distribution of generators).

SWORN UNDER OATH by CHRISTOPHER JOHN ARNOLD on 5 APRIL 2011  
at BRISBANE

Deponent \_\_\_\_\_

in the presence of: \_\_\_\_\_  
Solicitor/Commissioner for  
Declarations/Justice of the Peace



# ATTACHMENT CJA-4



11 January, 2011



# media release

## **ENERGEX to switch off some Brisbane CBD power**

ENERGEX crews will start switching off electricity to many parts of Brisbane's CBD from 7 am tomorrow (Wednesday 12 January 2011) for safety reasons.

The electricity sub-stations are mainly in buildings close to the Brisbane River which is expected to reach near record levels during the next few days.

The ENERGEX crews will inspect the sub-stations after tomorrow afternoon's peak high tide to assess the amount of damage and to determine the re-energisation timetable.

Other areas in Brisbane and Ipswich are also being closely monitored by ENERGEX to determine whether or not electricity will be turned off.

These areas are primarily those identified by Brisbane City Council flood mapping along the Brisbane and Bremer Rivers and their tributaries.

The outages could impact approximately 100,000 customers with restoration times dependent on the rate that floodwaters recede and the amount of damage caused to electrical equipment.

Similar safety plans were implemented by ENERGEX earlier this week in Gympie.

More information about flood prone areas can be found on the Brisbane City Council and Ipswich City Council websites.

ENERGEX is also urging people with medical conditions that rely on electrical-powered equipment, as well as refrigerated medications, to keep in close contact with their medical practitioner and seek advice.

At 5pm there were 22,000 homes and businesses without supply in South East Queensland.

ENERGEX spokesman, Mike Swanston, said safety was the key issue during extreme weather and thanked South East Queenslanders for their patience while crews were working in trying conditions to get supplies back on.

"No one should never underestimate the old adage that power and water don't mix, and as water continues to rise ENERGEX will be taking a safety first approach under these extreme weather conditions," Mr Swanston said.

"Similarly, as the weather worsens over night, power interruptions caused by winds blowing tree branches onto powerlines and other extreme conditions are expected to continue.

"But we ask customers to remain patient as our crews work around the clock in the in heavy rains and high winds."

ENERGEX is also asking any customers who see damaged or threatened power infrastructure to stay well clear and to call ENERGEX's priority line on 13 19 62.

The public is also being urged to keep out of flood waters near any electrical equipment and stay away from fallen powerlines.

For media inquiries: Office Hours (07) 3407 4420 or After Hours (07) 3407 5191



# ATTACHMENT CJA-5

This table is a list of events on certain high voltage feeders impacted over the flood period. The first column gives the operational designation of the ENERGEX zone substation. The localities supplied by for each substation are provided in the subsequent list. The second column is the operational designation of each affected feeder. The third column is the time feeder was turned off, with the fourth column the time the feeder was turned back on. The table is sorted by the ON time.

Substation	Feeder Operational Name	Date/Time Off	Date/Time ON
SSHDN	HDN2	10/01/11 17:09	10/01/11 18:58
SSHDN	HDN1	10/01/11 15:06	10/01/11 19:46
SSYDA	YDA1B	10/01/11 21:53	10/01/11 22:40
SSMTB	MTB15A	10/01/11 22:42	10/01/11 22:44
SSLBH	LBH5A	10/01/11 21:53	10/01/11 22:59
SSQPT	F446	11/01/11 00:00	11/01/11 01:18
SSMTB	MTB3A	11/01/11 04:04	11/01/11 04:23
SSBVL	BVLNCM1	11/01/11 04:17	11/01/11 04:29
SSLGV	LGV5B	11/01/11 04:48	11/01/11 04:49
SSGTN	GTN12A	10/01/11 16:43	11/01/11 09:18
SSMTB	MTB15B	11/01/11 08:52	11/01/11 10:23
SSRCN	RCN6A	11/01/11 09:04	11/01/11 10:32
SSMLY	MLY3	11/01/11 11:29	11/01/11 11:54
SSBLB	BLBNFM6	11/01/11 12:37	11/01/11 12:38
SSNMK	NMK5	11/01/11 09:15	11/01/11 13:07
SSMBG	MBG1	11/01/11 08:45	11/01/11 14:31
SSMFN	MFN3A	11/01/11 11:40	11/01/11 15:41
SSMFN	MFN3A	11/01/11 11:40	11/01/11 15:42
SSKCY	KCY1	11/01/11 00:49	11/01/11 16:34
SSKCY	KCY2	11/01/11 00:49	11/01/11 16:34
SSKCY	KCY3	11/01/11 00:49	11/01/11 16:34
SSKCY	KCY4	11/01/11 00:49	11/01/11 16:34
SSDRA	DRA6	11/01/11 11:35	11/01/11 17:05
SSLBH	LBH5A	11/01/11 17:42	11/01/11 17:44
SSTCB	TCB1	11/01/11 16:23	11/01/11 18:16
SSLTN	LTN2	11/01/11 17:08	11/01/11 19:14
SST16	NBR8	11/01/11 17:39	11/01/11 20:48
SSNIP	NIP3A	12/01/11 01:53	12/01/11 03:08
SSIPS	IPS15B	11/01/11 23:29	12/01/11 03:23
SSWED	WED6A	12/01/11 04:05	12/01/11 05:35
SSRBK	EBV1	12/01/11 06:12	12/01/11 06:14
SSEBV	EBV2	12/01/11 06:12	12/01/11 06:15
SSRBK	MWMRBK11	12/01/11 01:06	12/01/11 06:17
SST162	BDB36	11/01/11 23:07	12/01/11 08:36
SSESK	ESK3A	10/01/11 14:17	12/01/11 10:13
SST160	SMR10A	12/01/11 07:45	12/01/11 10:15
SSWED	WED3A	12/01/11 09:41	12/01/11 10:41
SST160	SMR15A	12/01/11 07:45	12/01/11 10:45
SSKMR	KMR19A	12/01/11 08:15	12/01/11 11:44
SSWCL	WCL13A	12/01/11 11:10	12/01/11 12:11
SSDRA	DRA9	12/01/11 03:00	12/01/11 12:47
SSTRP	TRP1	12/01/11 12:53	12/01/11 13:29
SSTRP	TRP2	12/01/11 12:53	12/01/11 13:29



Substation	Feeder Operational Name	Date/Time Off	Date/Time ON
SSALY	ALY5	12/01/11 18:16	12/01/11 21:26
SSALY	ALY6	12/01/11 18:16	12/01/11 21:26
SSALY	ALY7	12/01/11 18:16	12/01/11 21:26
SSALY	ALY8	12/01/11 18:16	12/01/11 21:26
SSALY	ALY9	12/01/11 18:16	12/01/11 21:26
SSALY	ALYMRK4	12/01/11 18:16	12/01/11 21:26
SSHPK	HPK10	12/01/11 18:16	12/01/11 21:26
SSHPK	HPK11	12/01/11 18:16	12/01/11 21:26
SSHPK	HPK2	12/01/11 18:16	12/01/11 21:26
SSHPK	HPK3	12/01/11 18:16	12/01/11 21:26
SSHPK	HPK5	12/01/11 18:16	12/01/11 21:26
SSHPK	HPK6	12/01/11 18:16	12/01/11 21:26
SSHPK	HPK8A	12/01/11 18:16	12/01/11 21:26
SSHPK	HPK8B	12/01/11 18:16	12/01/11 21:26
SSHPK	HPK9	12/01/11 18:16	12/01/11 21:26
SSHPK	HPKRHG4	12/01/11 18:16	12/01/11 21:26
SSHPK	HPKRHG7	12/01/11 18:16	12/01/11 21:26
SSIDY	IDY14	12/01/11 18:16	12/01/11 21:26
SSIDY	IDY15	12/01/11 18:16	12/01/11 21:26
SSIDY	IDY2	12/01/11 18:16	12/01/11 21:26
SSIDY	IDY5	12/01/11 18:16	12/01/11 21:26
SSIDY	IDY6	12/01/11 18:16	12/01/11 21:26
SSIDY	IDY9	12/01/11 18:16	12/01/11 21:26
SSMGL	MGL5	12/01/11 18:16	12/01/11 21:26
SSMGL	MGL8	12/01/11 18:16	12/01/11 21:26
SSMRK	MRK10	12/01/11 18:16	12/01/11 21:26
SSMRK	MRK6	12/01/11 18:16	12/01/11 21:26
SSMRK	MRK8	12/01/11 18:16	12/01/11 21:26
SSSTL	QUBSTL6	12/01/11 18:16	12/01/11 21:26
SSSTL	QUCSTL8	12/01/11 18:16	12/01/11 21:26
SSSTL	QUVSTL10	12/01/11 18:16	12/01/11 21:26
SSSTL	QUVSTL11	12/01/11 18:16	12/01/11 21:26
SSSTL	QUVSTL12	12/01/11 18:16	12/01/11 21:26
SSSTL	QUVSTL13	12/01/11 18:16	12/01/11 21:26
SSSTL	QUVSTL7	12/01/11 18:16	12/01/11 21:26
SSSTL	QUVSTL9	12/01/11 18:16	12/01/11 21:26
SSSHW	SHW3	12/01/11 18:16	12/01/11 21:26
SSSHW	SHW5	12/01/11 18:16	12/01/11 21:26
SSSTL	STL3	12/01/11 18:16	12/01/11 21:26
SSSTL	STLTRG4	12/01/11 18:16	12/01/11 21:26
SSTRG	TRG10	12/01/11 18:16	12/01/11 21:26
SSTRG	TRG3	12/01/11 18:16	12/01/11 21:26
SSIDY	IDY11	12/01/11 18:16	12/01/11 21:26
SST160	SMR9A	12/01/11 13:37	12/01/11 21:45
SSMLS	MLS04	12/01/11 13:15	12/01/11 22:45
SSHTN	HTN22B	12/01/11 11:53	12/01/11 23:25
SSBHL	BHL4A	12/01/11 13:06	12/01/11 23:26
SSSTL	STL5	12/01/11 16:15	12/01/11 23:45
SSESK	ESK5A	12/01/11 21:09	13/01/11 00:09
SSLBS	LBS12A	12/01/11 13:22	13/01/11 01:13
SSNIP	NIP10A	12/01/11 01:21	13/01/11 07:52



Substation	Feeder Operational Name	Date/Time Off	Date/Time ON
SSCPR	CPRGBP3	12/01/11 16:30	14/01/11 10:30
SSINA	INA7A	12/01/11 13:30	14/01/11 10:31
SSMDH	MDHSWB10	12/01/11 20:35	14/01/11 11:02
SSCPK	CPK7	11/01/11 23:39	14/01/11 13:12
SSWED	SBTWED11	12/01/11 10:15	14/01/11 14:45
SSCST	CSTQEC29	12/01/11 11:11	14/01/11 15:06
SSWED	WED15B	12/01/11 12:15	14/01/11 16:15
SSWED	WED18A	12/01/11 14:15	14/01/11 16:15
SSBMG	BMG18A	12/01/11 10:22	14/01/11 17:00
SSRLA	RLA4	12/01/11 14:00	14/01/11 17:07
SSMGL	MGL2	12/01/11 04:26	14/01/11 17:15
SSMST	CTCMST29	12/01/11 14:45	14/01/11 17:33
SSMST	CTCMST29	12/01/11 14:45	14/01/11 17:33
SSMST	CTCMST29	12/01/11 14:45	14/01/11 17:33
SSMST	CTCMST29	12/01/11 14:45	14/01/11 17:33
SST162	BDB25	11/01/11 23:07	14/01/11 17:53
SSMCW	MCW4	12/01/11 07:39	14/01/11 18:22
SSCPD	CDP1	11/01/11 07:28	14/01/11 18:23
SSCPD	CPD2	11/01/11 07:28	14/01/11 18:23
SSEDK	F1129	12/01/11 11:15	14/01/11 23:45
SSEDK	EDKRLA3	12/01/11 11:24	15/01/11 00:07
SSEDK	EDKRLA3	12/01/11 11:24	15/01/11 00:07
SSRLA	EDKRLA3	12/01/11 11:24	15/01/11 00:07
SSWED	WED22A	12/01/11 11:14	15/01/11 08:45
SSWED	PMBWED4	12/01/11 13:45	15/01/11 11:45
SSWED	WED4B	12/01/11 13:45	15/01/11 11:45
SSMCW	MCW7	11/01/11 21:03	15/01/11 14:59
SSTRP	TRP3	11/01/11 13:00	15/01/11 15:09
SSMBG	MBG4	11/01/11 07:44	15/01/11 15:45
SSWED	WED16A	12/01/11 13:45	15/01/11 16:15
SSOXL	OXL4A	12/01/11 13:28	15/01/11 16:29
SSRBK	RBK12A	11/01/11 23:49	15/01/11 17:12
SSJDL	JDL3	12/01/11 12:15	15/01/11 19:45
SSJDL	JDL4	12/01/11 12:15	15/01/11 20:15
SSJDL	JDL6	12/01/11 12:15	15/01/11 20:58
SSJDL	JDL7	12/01/11 12:15	15/01/11 23:00
SSJDL	JDL5	12/01/11 12:15	15/01/11 23:05
SSWED	WED21A	12/01/11 13:45	16/01/11 09:45
SST162	BDB37	11/01/11 23:07	16/01/11 10:34
SSOXL	OXL10A	12/01/11 13:28	16/01/11 12:30
SSNSD	ENSNSD27	12/01/11 16:05	16/01/11 13:51
SSENS	ENSNSD27	12/01/11 16:05	16/01/11 13:51
SSRLA	RLA6	12/01/11 11:25	16/01/11 14:17
SST162	BDB23	11/01/11 23:07	16/01/11 17:10
SSOXL	OXL11A	11/01/11 15:53	16/01/11 17:21
SSOXL	TTF81	12/01/11 13:26	16/01/11 19:39
SSWED	WED17A	12/01/11 10:45	17/01/11 00:15
SSMLT	MLT15A	12/01/11 13:45	17/01/11 03:45
SSVPK	VPK19A	12/01/11 14:30	17/01/11 07:00
SSVPK	VPK2A	12/01/11 14:30	17/01/11 07:00
SSOXL	OXL5A	12/01/11 13:15	17/01/11 15:15



A list of councils, zone substations, and suburbs with power outages during the flood period.

COUNCIL	ZONE SUBSTATION	SUBURB SUPPLIED
BRISBANE CITY COUNCIL	SSAFD	ARCHERFIELD ROCKLEA
	SSAGE	PADDINGTON THE GAP
	SSAHL	EVERTON PARK FERNY GROVE
	SSALY	ANNERLEY DUTTON PARK FAIRFIELD GREENSLOPES SOUTH BRISBANE WOOLLOONGABBA YERONGA
	SSARG	ACACIA RIDGE
	SSAST	BRISBANE
	SSBBS	BELMONT BURBANK CAPALABA WEST CHANDLER MACKENZIE MANSFIELD ROCHEDALE WISHART
	SSBHL	BALD HILLS BRACKEN RIDGE
	SSBLB	BALMORAL BULIMBA HAWTHORNE MORNINGSIDE NORMAN PARK
	SSCFD	ALBION BOWEN HILLS CLAYFIELD WINDSOR
	SSCHL	CANNON HILL
	SSCPC	ELLEN GROVE FOREST LAKE
	SSCPL	ACACIA RIDGE DURACK WILLAWONG
	SSCPR	COORPAROO EAST BRISBANE GREENSLOPES WOOLLOONGABBA
	SSCSE	KEDRON
	SSCST	BRISBANE
	SSDRA	DARRA RICHLANDS SUMNER

	WACOL
SSEMP	BURBANK EIGHT MILE PLAINS ROCHEDALE
SSENG	ASHGROVE ENOGGERA GAYTHORNE MITCHELTON
SSGAP	THE GAP
SSGBG	GEEBUNG
SSGLY	KEPERRA MITCHELTON
SSHPE	HOLLAND PARK
SSHPK	ANNERLEY COORPAROO GREENSLOPES HOLLAND PARK HOLLAND PARK WEST TARRAGINDI
SSTHN	ALBION ASCOT EAGLE FARM HAMILTON NEWSTEAD PINKENBA
SSHWD	DOOLANDELLA FOREST LAKE HEATHWOOD PALLARA
SSIDY	CHAPEL HILL INDOOROOPILLY TARINGA TOOWONG
SSINA	DURACK FOREST LAKE INALA OXLEY RICHLANDS
SSJDL	JAMBOREE HEIGHTS JINDALEE KENMORE MT OMMANEY OXLEY SEVENTEEN MILE ROCKS SINNAMON PARK WESTLAKE
SSKMR	BROOKFIELD CHAPEL HILL FIG TREE POCKET KENMORE KENMORE HILLS MT COOTTHA PINJARRA HILLS PULLENVALE



	UPPER BROOKFIELD
SSKRN	LUTWYCHE
SSLBS	HEMMANT LYTTON
SSMCW	KARANA DOWNS KHOLO MOUNT CROSBY
SSMDH	PINKENBA
SSMGL	ANSTEAD BELLBOWRIE MOGGILL PINJARRA HILLS WESTLAKE
SSMLS	BRISBANE EAST BRISBANE FORTITUDE VALLEY NEW FARM NEWSTEAD
SSMLT	AUCHENFLOWER BRISBANE MILTON PADDINGTON SPRING HILL
SSMRE	MURARRIE TINGALPA
SSMRK	ANNERLEY MOOROOKA TARRAGINDI TENNYSON YEERONGPILLY YERONGA
SSMST	BRISBANE
SSNIP	KHOLO
SSNMK	ASHGROVE
SSNSD	BOWEN HILLS FORTITUDE VALLEY HERSTON NEW FARM NEWSTEAD WINDSOR
SSOXL	ARCHERFIELD CORINDA DURACK INALA OXLEY ROCKLEA SEVENTEEN MILE ROCKS
SSQPT	CANNON HILL
SSRCN	KURABY RUNCORN STRETTON
SSRLA	ARCHERFIELD COOPERS PLAINS MOOROOKA

	ROCKLEA SALISBURY TARRAGINDI YEERONGPILLY
SSSBK	COOPERS PLAINS EIGHT MILE PLAINS MACGREGOR ROBERTSON SUNNYBANK
SSSBY	MOOROOKA NATHAN SALISBURY TARRAGINDI
SSSFD	EVERTON PARK MCDOWALL STAFFORD STAFFORD HEIGHTS
SSSGT	BRACKEN RIDGE
SSSHW	CHELMER CORINDA FIG TREE POCKET GRACEVILLE INDOOROOPILLY ROCKLEA SHERWOOD TENNYSON
SSSRD	CARINA CARINDALE
SSSTL	ST LUCIA
SST160	DARRA JAMBOREE HEIGHTS MIDDLE PARK MT OMMANEY RIVERHILLS SEVENTEEN MILE ROCKS SINNAMON PARK SUMNER WESTLAKE
SST161	ACACIA RIDGE ALGESTER LARAPINTA PALLARA WILLAWONG
SST162	KARANA DOWNS
SSTRG	INDOOROOPILLY ST LUCIA TARINGA TOOWONG
SSTWG	AUCHENFLOWER BARDON INDOOROOPILLY PADDINGTON TARINGA TOOWONG



	SSUMG	UPPER MT GRAVATT
	SSVPK	FORTITUDE VALLEY HERSTON
	SSWCL	BELBOWRIE DARRA MOGGILL RIVERHILLS SUMNER WACOL
	SSWED	EAST BRISBANE HIGHGATE HILL SOUTH BRISBANE WEST END
	SSWNM	LYTTON PORT OF BRISBANE WYNNUM WYNNUM WEST
	SSWRD	COORPAROO EAST BRISBANE KANGAROO POINT NORMAN PARK
	SSWSO	WACOL
	SSZMR	ASPLEY GEEBUNG ZILLMERE
GOLD COAST CITY COUNCIL	SSARL	ARUNDEL  COOMBABAH LABRADOR
	SSCMA	COOMERA UPPER COOMERA WILLOW VALE
	SSCRB	CURRUMBIN VALLEY CURRUMBIN WATERS TALLEBUDGERA VALLEY
	SSHIS	HOPE ISLAND
	SSHWL	COOMBABAH RUNAWAY BAY
	SSLDR	LABRADOR
	SSMGP	BONOGIN MUDGEERABA
	SSMTB	ADVANCETOWN CLAGIRABA GUANABA LOWER BEECHMONT MAUDSLAND MOUNT NATHAN
	SSPBH	PALM BEACH
	SSPPE	JACOBS WELL
	SSSMF	CEDAR CREEK
	SSSPO	ASHMORE SOUTHPORT
	SST108	CEDAR CREEK LUSCOMBE

		YATALA
	SST128	TALLAI
	SST75	ADVANCETOWN CLAGIRABA LOWER BEECHMONT NERANG
	SST81	COOMERA HELENSVALE OXENFORD UPPER COOMERA WONGAWALLAN
GYMPIE REGIONAL COUNCIL	SSAMR	AMAMOR  BOLLIER COLES CREEK DAGUN IMBIL KANDANGA KYBONG TRAVESTON TUCHEKOI
	SSBMT	BOLLIER CARTERS RIDGE IMBIL TUCHEKOI
	SSGYS	CEDAR POCKET EAST DEEP CREEK GREENS CREEK GYMPIE KYBONG MOTHAR MOUNTAIN NEUSA VALE TANDUR TRAVESTON WOLVI WOONDUM
	SSIBL	BELLA CREEK BOLLIER BORUMBA DAM BROOLOO IMBIL MOY POCKET UPPER KANDANGA
	SSKWH	MOY POCKET
	SST8	ANDERLEIGH CANINA COONDOO DOWNSFIELD FISHERMANS POCKET GLASTONBURY GOOMBOORIAN GREENS CREEK GYMPIE KIA ORA



		MARYS CREEK NAHRUNDA NEERDIE PIE CREEK ROSS CREEK SCRUBBY CREEK SOUTHSIDE THE PALMS VETERAN WIDGEE CROSSING NTH WIDGEE CROSSING STH WOLVI
	SSTCB	COOLOOLA COVE INSKIP RAINBOW BEACH TIN CAN BAY
IPSWICH CITY COUNCIL	SSABY	AMBERLEY  PURGA WILLOWBANK
	SSBVL	BASIN POCKET BLACKSTONE BOOVAL BUNDAMBA EAST IPSWICH NORTH BOOVAL SILKSTONE
	SSCPC	CAMIRA CAROLE PARK
	SSCPK	BELLBIRD PARK CAMIRA CAROLE PARK GAILES GOODNA SPRINGFIELD
	SSFDS	GOOLMAN PURGA
	SSGGR	GRANDCHESTER
	SSIPS	AMBERLEY CHURCHILL LEICHHARDT ONE MILE RACEVIEW WEST IPSWICH WULKURAKA YAMANTO
	SSKBN	AMBERLEY BLACKSOIL BRASSALL HAIGSLEA IRONBARK KARRABIN LEICHHARDT MUIRLEA

	PINE MOUNTAIN ROSEWOOD SADLIERS CROSSING THAGOONA WALLOON WULKURAKA
SSLLY	GRANDCHESTER MT MORT
SSMBG	ASHWELL HAIGSLEA MARBURG MT MARROW NORTH ROSEWOOD ROSEWOOD TALLEGALLA THAGOONA THE BLUFF WALLOON
SSMCW	CHUWAR MUIRLEA
SSNIP	BRASSALL CHUWAR EAST IPSWICH MOORES POCKET MUIRLEA NORTH IPSWICH PINE MOUNTAIN TIVOLI WOODEND
SSRBK	COLLINGWOOD PARK GOODNA REDBANK RIVERVIEW
SSRST	IPSWICH WEST IPSWICH
SSRWD	AMBERLEY ASHWELL CALVERT EBENEZER LANEFIELD LOWER MOUNT WALKER MOUNT FORBES MT MORT ROSEWOOD TALLEGALLA THAGOONA THE BLUFF WALLOON WILLOWBANK
SST162	BARELLAN POINT BUNDAMBA CHUWAR DINMORE EBBW VALE



		KARALEE NEW CHUM NORTH BOOVAL NORTH TIVOLI RIVERVIEW TIVOLI
	SST80	BELLBIRD PARK COLLINGWOOD PARK REDBANK PLAINS
	SSWSO	CAROLE PARK GAILES
LOCKYER VALLEY REGIONAL COUNCIL	SSCMY	CHURCHABLE
	SSCPD	BLANCHVIEW CARPENDALE DERRYMORE FLAGSTONE CREEK HELIDON HELIDON SPA IREDALE LAIDLEY NORTH LILYDALE POSTMANS RIDGE ROCKMOUNT SILVER RIDGE STOCKYARD UPPER FLAGSTONE VERADILLA
	SSGGR	GLENORE GROVE HATTON VALE LAKE CLARENDON MORTON VALE REGENCY DOWNS SUMMERHOLM
	SSGTN	ADARE COLLEGE VIEW GATTON GRANTHAM LAKE CLARENDON LAWES LOWER TENTHILL PLACID HILLS RINGWOOD VERADILLA WINWILL
	SSHDN	CARPENDALE GRANTHAM HELIDON HELIDON SPA POSTMANS RIDGE VERADILLA
	SSLLY	BLENHEIM LAIDLEY LAIDLEY NORTH

		LAIDLEY SOUTH MOUNT BERRYMAN PLAINLAND SUMMERHOLM
	SSMSV	BLACK DUCK CREEK EAST HALDON JUNCTION VIEW MT SYLVIA
	SSSPC	CHURCHABLE
	SST29	BALLARD BLANCHVIEW HELIDON SPA IREDALE LOCKYER MURPHYS CREEK POSTMANS RIDGE SILVER RIDGE SPRING BLUFF UPPER LOCKYER WITHCOTT
	SST78	HATTON VALE KENTVILLE LOCKROSE
	SSTHL	CAFFEY FORDSDALE INGOLDSBY MA MA CREEK MT WHITESTONE ROPELEY UPPER TENTHILL
LOGAN CITY COUNCIL	SSBDT	CEDAR VALE MUNDOOLUN VERESDALE WOODHILL
	SSBPN	BROWNS PLAINS REGENTS PARK
	SSBTA	BAHRS SCRUB BEENLEIGH BETHANIA BUCCAN EDENS LANDING HOLMVIEW WATERFORD
	SSCNB	CARBROOK CORNUBIA
	SSCPC	BROWNS PLAINS
	SSEMP	PRIESTDALE ROCHEDALE SOUTH
	SSH22	KINGSTON LOGAN CENTRAL WOODRIDGE
	SSJBB	CEDAR GROVE CEDAR VALE CHAMBERS FLAT



		JIMBOOMBA LOGAN VILLAGE MUNDOOLUN MUNRUBEN NORTH MACLEAN SOUTH MACLEAN STOCKLEIGH WOODHILL
	SSKSN	MARSDEN
	SSLGV	LOGAN VILLAGE
	SSNMC	GREENBANK
	SSNSW	ROCHEDALE SOUTH SLACKS CREEK
	SSRLB	CARBROOK
	SST108	BANNOCKBURN BEENLEIGH BELIVAH MOUNT WARREN PARK WOLFFDENE
	SSWRG	SLACKS CREEK SPRINGWOOD WOODRIDGE
MORETON BAY REGIONAL COUNCIL	SSACR	ALBANY CREEK  EATONS HILL
	SSAHL	ARANA HILLS BUNYA EVERTON HILLS FERNY HILLS
	SSBWH	BOOROOBIN
	SSCBW	BELLMERE CABOOLTURE CABOOLTURE SOUTH DAYBORO ELIMBAH KING SCRUB MOODLU MOORINA OCEAN VIEW ROCKSBERG UPPER CABOOLTURE WAMURAN WAMURAN BASIN
	SSDBY	DECEPTION BAY
	SSKCY	MT DELANEY NEURUM STONY CREEK WOODFORD
	SSKLG	KALLANGUR MURRUMBA DOWNS PETRIE
	SSLTN	ARMSTRONG CREEK DAYBORO JOYNER

		KING SCRUB KURWONGBAH LACEYS CREEK LAWNTON MT PLEASANT OCEAN VIEW PETRIE RUSH CREEK SAMSONVALE STRATHPINE WHITESIDE
	SSMFN	MORAYFIELD
	SSNRA	MOORINA NARANGBA
	SSSMF	ARMSTRONG CREEK CASHMERE CEDAR CREEK CLEAR MOUNTAIN CLOSEBURN DAYBORO KOBBLE CREEK LACEYS CREEK MOUNT NEBO MOUNT SAMSON MT GLORIOUS SAMSONVALE STRATHPINE
	SSSPE	BRENDALE
	SST108	CEDAR CREEK
	SSTPT	NINGI
	SSWFD	BRACALBA CEDARTON D'AGUILAR ELIMBAH MOUNT MEE STANMORE STONY CREEK WAMURAN WOODFORD
REDLAND CITY COUNCIL	SSBKD	ALEXANDRA HILLS  WELLINGTON POINT
	SSRBY	CLEVELAND ORMISTON
	SSRLB	REDLAND BAY
	SSSIS	DUNWICH
SCENIC RIM REGIONAL COUNCIL	SSABY	MUTDAPILLY
	SSBDT	ALLENVIEW BEAUDESERT BIDDADDABA BIRNAM BOYLAND CAINBABLE



	CANUNGRA CRYNA GLENEAGLE ILBOGAN KERRY NINDOOINBAH SARABAH TABRAGALBA VERESDALE SCRUB WONGLEPONG
SSBNH	MOOGERAH
SSBTN	BEAUDESERT BROMELTON GLENEAGLE
SSFDS	ANTHONY COLEYVILLE HARRISVILLE LIMESTONE RIDGES MILBONG MILORA MUNBILLA PEAK CROSSING ROADVALE WOOLOOMAN
SSIPL	BARNEY VIEW CANUNGRA CHINGHEE CREEK CHRISTMAS CREEK DARLINGTON HILLVIEW INNISPLAIN JOSEPHVILLE KNAPP CREEK KOORALBYN LAMINGTON LARAVALLE MAROON MT LINDESAY OAKY CREEK PALEN CREEK RATHDOWNEY RUNNING CREEK TABOOBA TAMROOKUM CREEK
SSJBB	ALLENVIEW KAGARU UNDULLAH
SSKBR	ARATULA CLUMBER COULSON KALBAR KENTS LAGOON MOOGERAH MT EDWARDS

		MUNBILLA ROADVALE SILVERDALE WYARALONG
	SSMTB	BEECHMONT BINNA BURRA CANUNGRA EAGLE HEIGHTS FERNY GLEN FLYING FOX ILLINBAH MOUNT TAMBORINE NORTH TAMBORINE PINE CREEK SARABAH WITHEREN
	SSRWD	ARATULA COLEYVILLE MERRYVALE MOORANG MOUNT WALKER MT WALKER WEST MUTDAPILLY ROSEVALE TAROME
	SST108	TAMBORINE
	SST75	BEECHMONT
SOMERSET REGIONAL COUNCIL	SSCMY	BUARABA  COOMINYA
	SSESK	BIARRA CEDAR GROVE (QLD) COAL CREEK ESK GALLANANI GLEN ESK MOOMBRA MOUNT HALLEN MURRUMBA OTTABA REDBANK CREEK TOOGOLAWAH WIVENHOE POCKET
	SSGTN	CLARENDON
	SSKBN	BORALLON FAIRNEY VIEW GLAMORGAN VALE WANORA
	SSKCY	GREGORS CREEK HARLIN HAZELDEAN JIMNA KILCOY MOUNT ARCHER



	MOUNT KILCOY ROYSTON SANDY CREEK SHEEP STATION CREEK VILLENEUVE WINYA WOOLMAR
SSLWD	CLARENDON FERNVALE LOWOOD PATRICK ESTATE VERNOR WIVENHOE POCKET
SSMBG	FAIRNEY VIEW FERNVALE GLAMORGAN VALE LARK HILL LOWOOD MINDEN VERNOR WANORA
SSMCW	LAKE MANCHESTER
SSMRB	GLEN ESK
SSSPC	ATKINSONS DAM BUARABA BUARABA CREEK CLARENDON COOMINYA
SST78	MT TARAMPA
SST8	SANDY CREEK
SSTGW	AVOCA AVOCA VALE BIARRA COLINTON COOEEIMBARDI CRESSBROOK EMU CREEK ESKDALE FULHAM GREGORS CREEK HARLIN IVORY CREEK LINVILLE LOWER CRESSBROOK MOORE MT STANLEY NURINDA TOOGOLAWAH
SSTRP	BRIGHTVIEW CLARENDON COOLANA COOMINYA GLAMORGAN VALE LOWOOD

		MINDEN MT TARAMPA PATRICK ESTATE PRENZLAU RIFLE RANGE TARAMPA
	SSWHO	BRYDEN DUNDAS FAIRNEY VIEW FERNVALE SPLIT YARD CREEK VERNOR WIVENHOE WIVENHOE POCKET
SUNSHINE COAST REGIONAL COUNCIL	SSAHD	BLI BLI  MAROOCHYDORE MUDJIMBA PACIFIC PARADISE TWIN WATERS
	SSAMR	COORAN
	SSBMT	BELLI PARK BLACK MOUNTAIN BOREEN POINT COORAN COOROY COOTHARABA FEDERAL GHEERULLA KIN KIN PINBARREN POMONA RIDGEWOOD
	SSBWH	CROHAMHURST GLASSHOUSE MOUNTAINS MALENY PEACHESTER
	SSCLD	BEERWAH BELLS CREEK CALOUNDRA WEST COOCHIN CREEK GOLDEN BEACH
	SSCLM	COOLUM BEACH PEREGIAN BEACH YAROOMBA
	SSIBL	GHEERULLA
	SSKWH	BELLI PARK CAMBROON CONONDALE COOLABINE GHEERULLA KENILWORTH MAPLETON



	OBI OBI
SSLBH	GLENVIEW LANDSBOROUGH MERIDAN PLAINS MOOLOOLAH VALLEY PALMVIEW
SSMLB	BUDERIM CHEVALLUM FOREST GLEN ILKLEY MONS MOUNTAIN CREEK SIPPY DOWNS TANAWHA
SSMLY	CONONDALE CURRAMORE ELAMAN CREEK MALENY REESVILLE WITTA
SSNVL	CASTAWAYS BEACH MARCUS BEACH NOOSA HEADS NOOSA NORTH SHORE NOOSAVILLE PEREGIAN BEACH SUNRISE BEACH SUNSHINE BEACH
SSPGN	DOONAN MARCUS BEACH PEREGIAN BEACH WEYBA DOWNS
SSPWC	BURNSIDE EUDLO ILKLEY MONTVILLE TOWEN MOUNTAIN WOOMBYE
SST16	BURNSIDE COOLOOLABIN IMAGE FLAT KIAMBA KULANGOOR NAMBOUR YANDINA
SST70	BELLI PARK COOLOOLABIN COOROY EERWAH VALE RIDGEWOOD
SST8	KIN KIN
SSTWT	TEWANTIN VERRIERDALE
SSWFD	COMMISSIONERS FLAT

	PEACHESTER
SSWMD	MARCOOLA MUDJIMBA
SSYDA	BRIDGES COOLOOLABIN EERWAH VALE EUMUNDI KIAMBA MAROOCHY RIVER NINDERRY NORTH ARM YANDINA



# ATTACHMENT CJA-6

# ENERGEX FLOOD RISK MANAGEMENT PLAN



2010/11



Document Amendment History

<b>Issue No.</b>	<b>Date</b>	<b>Comments</b>
1	Dec 2010	First Draft
2	Jan 2011	Second Draft
3		

<b>1</b>	<b>INTRODUCTION</b>	<b>4</b>
<b>1.1</b>	<b>Overview</b>	<b>4</b>
<b>1.2</b>	<b>Scope</b>	<b>5</b>
<b>1.3</b>	<b>Availability of Plan</b>	<b>5</b>
<b>2</b>	<b>IDENTIFICATION AND RECORDING OF HIGH FLOOD RISK AREAS</b>	<b>5</b>
<b>2.1</b>	<b>Asset Management Information Facilities</b>	<b>5</b>
	Ellipse and NFM Equipment Register	5
	Geographical Information System	5
<b>3</b>	<b>NETWORK OPERATIONS FLOOD RESPONSE</b>	<b>6</b>
<b>3.1</b>	<b>Introduction</b>	<b>6</b>
<b>3.2</b>	<b>Operating Procedures</b>	<b>6</b>
<b>3.3</b>	<b>Asset and Hub Manager Response to Floods</b>	<b>7</b>
<b>3.4</b>	<b>Operational Response to Floods</b>	<b>8</b>
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# 1 INTRODUCTION

## 1.1 Overview

ENERGEX is committed to the achievement of best practice asset management strategies to ensure the safe and reliable operation of its network. A key component of this strategy is to manage its assets in a manner that minimises the associated risk to its assets and customer supply reliability during times of major flood events.

ENERGEX has obligations under the Queensland Industry Code (The Code) to produce annual plans to manage the network and prepare for the summer storm season. These plans are:

- Network Management Plan
- Summer Preparedness Plan

The Flood Risk Management Plan is a companion to these plans and targets specific issues and initiatives relating to major flood events.

Terry Effenev  
Chief Executive Officer

Chris Arnold  
Executive General Manager Network  
Performance

## **1.2 Scope**

The Flood Risk Management Plan covers the following major areas:

- Identification of electricity assets which may be affected by a major flood
- Asset maintenance procedures,
- Network Operations Response to Major Floods,
- Liaison with other organisations regarding flood related issues,
- Information to be provided to customers related to flood risk and public safety

## **1.3 Availability of Plan**

The Flood Risk Management Plan will be available to ENERGEX internal staff, contractors, local Councils and Emergency Management Queensland.

## **2 IDENTIFICATION AND RECORDING OF HIGH FLOOD RISK AREAS**

To identify major flood risk areas, ENERGEX will utilise information supplied by the local councils and Emergency Queensland. Major floods are considered to be higher than 1 in 20 year events.

The major flood risk areas will be overlayed into ENERGEX's Geographical Information System and network maps can be produced which identify network assets which may be affected in a major flood.

The equipment which will be affected by a major flood event include:

- Bulk and zone substations
- C&I substations
- Overhead lines
- Padmount and ground transformers
- Underground pillars

### **2.1 Asset Management Information Facilities**

In order to maintain an up-to-date record of its asset information and their characteristics, ENERGEX has in place the following management tools:

#### **Ellipse and NFM Equipment Register**

ENERGEX maintains an equipment register in an enterprise computer system. The equipment register stores technical information about the power assets and allows tracking of the various transferable assets such as transformers.

#### **Geographical Information System**

ENERGEX also uses a Geographical Information System (GIS) which records, stores and enables the retrieval of relevant information about its electricity assets. This includes



the physical location and layout of the assets, and types and lengths of overhead lines. The GIS system has a layer which provides the high bushfire risk areas in South East Queensland.

### **3 NETWORK OPERATIONS FLOOD RESPONSE**

#### **3.1 Introduction**

Each natural disaster (floods, bushfire and storms) can present different problems to the Network which require different solutions. The main processes to follow during an emergency are to ensure:

- a) Safety at all times - members of the public, staff of emergency services, and employees.
- b) A coordinated response to the emergency.
- c) Speedy restoration of adequate supply to customers.
- d) Timely restoration of the network to its normal operating condition.
- e) Resumption of normal operations as quickly as possible.

#### **3.2 Operating Procedures**

##### **3.2.1 Flood Warnings**

Network Control Centre will need to monitor the flood event using information from the Bureau of Meteorology and local Councils. When flood warnings are given on rivers and creeks in the ENERGEX network, the Network Control Shift Manager is to alert the Asset Managers and Hub Managers of the flood warning.

The Hub Manager is to advise the Hub Resource Coordinator to commence river height monitoring using the BoM website, Floodwise system and/or SES information and commence making preparations for the flood response.

The Flood Warning Centre websites for information relating to flood heights provided by BoM are:

- <http://www.bom.gov.au>
- <http://www.bom.gov.au/hydro/flood/qld/>

Network Operations will have access to the Brisbane City Council *Floodwise* system which has a number of rainfall stations and river and creek gauges across South East Queensland. *Floodwise* can also provide information on roads and areas in BCC which are in flood.

##### **3.2.2 Flood Maps**

Reference should be made to the following flood level maps of South East Queensland:

Brisbane – FloodWise (<http://www.brisbane.qld.gov.au/community-support/emergency-management/flooding/flood-flag-map/index.htm>)

Other Areas - Refer to local authorities

### **3.2.3 Level of Emergency and Organisation Structure**

A major prolonged flood that would affect many parts of South East Queensland would be declared a Level 3 emergency.

### **3.2.4 Communications with Emergency Services**

It is vital during a major flood event that close contact be made with all emergency services, in particular Police, SES and local disaster coordinators.

The key organisations and contacts are:

State Counter Disaster Operations – Kedron Park:

BCC Local Disaster Coordination – 266 George St, Brisbane

Gold Coast City Council

Ipswich Council

Lockyer Council

Gympie Council

### **3.2.5 Advice to the Public**

Close liaison should be maintained with media organisations. The public should be told to treat all electrical equipment as *live* unless advised to the contrary, and to stay clear.

## **3.3 Asset and Hub Manager Response to Floods**

During a major flood event, the Asset and Hub Manager with staff are to:

- ♦ Ensure all items on Flood Operational Plans are being carried out and the resources are available to deal with the threat of flood. Arrange external resources such as contractors, helicopters, boats etc.
- ♦ Liaise with Counter Disaster representatives, to communicate with local Counter Disaster Groups, State Emergency Services (SES) and other Emergency Services as is necessary. SES are to be provided with telephone number for direct contact.
- ♦ Ensure communication lines are in place between Corporate Communications, Control Centre, and Hub depots.
- ♦ Communicate with Control Centre on the state of the network belonging to that Hub.



- ♦ Monitor river heights using data from BOM and forecast future resource requirements.
- ♦ Arrange for vehicles and equipment to be positioned to suit anticipated river levels.
- ♦ Ensure that premises are isolated in a timely manner before water reaches wiring or switchboards.
- ♦ Arrange for disconnects and reconnects and removal of meters.
- ♦ Arrange for street patrols to identify areas of disconnect if energised circuits are within required clearances to flood waters.

### **3.4 Operational Response to Floods**

#### **Network Operation**

When a major flood event is predicted for the Brisbane River (above 3.0 metres at the City Gauge) the Control Centre should be relocated to the back-up Victoria Park Network Operations Centre. The Storm Room should also be relocated to Victoria Park and Central Dispatch and Contact Centre to Warry St, Spring Hill.

#### **Bulk and Zone Substations**

Operational plans (short term) are being developed for bulk and zone substations which is affected by a major flood event. The operational plans should incorporate the following considerations:

- (i) Switching should commence immediately to transfer as much load as possible from the substations which will be affected by flooding to other substations.
- (ii) Each affected substation should be brought down to the minimum necessary number of transformers and feeder circuits.
- (iii) An (SES) boat may be required in the vicinity of each substation where ENERGEX staff are working to ensure staff are not trapped by the flood waters.
- (iv) Capacitor banks should be disconnected when the flood level is at the base of the capacitor banks and expected to rise further. Before re-energisation, the capacitor banks should be hosed and dried out and insulation tested.
- (v) Field crews should be organised to remove from site all withdrawable spare CBs, capacitor CBs, the CBs of the transformers that have been switched out, and the CBs of any feeders that have been deloaded. Where removal from site is not possible, withdrawable CBs should be left connected to the bus.
- (vi) Field crews should remove from site all withdrawable protection relays which are not in service at the substations. Relays must be tagged before



they are removed from their service position so as to expedite later reconnection. Refer to the Flood Field book.

- (vii) All DC links from batteries should be disconnected to avoid DC shocks.
- (viii) Substations should be de-energised as soon as water begins to enter the substation yard and expected to rise further. This will give field crews time to remove the remaining withdrawable protection relays and other equipment.
- (ix) Transformers that will be covered by water should have the breather removed and plugged, but only after the transformer has been de-energised and allowed to cool.
- (x) The SACS units should be powered down and all circuit boards, PCs, VDUs, etc removed from site after the substations are de-energised.
- (xi) All DC supply should be isolated from the main supply fuses. Minor DC supplies (SACS and communications) should be removed if possible, along with chargers.

#### Longer Term Operational Plan

Consideration should be given to relocation of critical substation assets above the Q200 level or installing permanent or temporary bunding around key substation equipment such as capacitor banks and neutral earthing resistors or reactors.

Consideration should also be given to sealing wall and floor penetrations in substation buildings to withstand a major flood event.

#### **CBD Substations**

An Operational Plan is being developed for C&I substations in CBD areas which may be impacted by a flood event. The Operational Plan should follow a disconnection and recovery strategy.

In the Brisbane CBD, the substations which were impacted on the Jan 2011 flood event (where flood waters reached 4.6 metres on the City Gauge) are given in Appendix B, Table 2.2.

#### **Padmounted Transformers**

Power should be disconnected when the flood level is 300 mm below the HV cable terminations and expected to rise further.

Flood affected transformers should be hosed, dried and insulation tested prior to re-energisation.

#### **Ground Transformers**

Power should be disconnected when the flood level is at the base of ground transformers and expected to rise further (above 300 mm). Transformers with



breathers should have the breathers removed and plugged to prevent the ingress of water.

### Ring Main Units

Power should be disconnected when the flood level is at the base of ring main units and expected to rise further (above 300 mm).

### Overhead Network

All overhead lines and apparatus from HV through to LV (including services) must be de-energised before the clearances from flood water are encroached.

Nominal System Voltage (kV)	Minor Flood Level – No Masts (m)	Minor Flood Level – Masts	Major Flood Level – Large Catchments <sup>1</sup> (m)	Major Flood Level – Small Catchments <sup>2</sup> (m)
Up to and including 33	5.0	Highest mast + 2.5 m or 7.1 m assuming 4.6 m mast	4.0	3.0
Above 33 – up to and including 132	5.5	Highest mast + 3.0 m or 7.6 m assuming 4.6 m mast	4.5	3.5

Notes:

(1) It is assumed in large catchments, the rivers will remain at major flood for a number of days and there will be craft or emergency vessels in the waterway

(2) It assumed that for small catchments, the creek rise and fall in short time (hours) and there will be no vessel or craft in the waterway

**Table 3.1 – Clearances Over Waterways for Uninsulated Energised Crossings**

### Individual Premises

Power should be disconnected before switchboards are flooded and meters removed. Flooded gas supplies should be shut off at the meter.

On flood affected premises, switchboards and wiring should be inspected individually and an insulation resistance test performed.

Solar PV systems should be considered as "live" during sunlight hours. The PV systems should be disconnected if the equipment is at risk of flooding. Any flood affected wiring, switches and inverter should also be treated as "live".

### **Pillars**

Power should be disconnected when the flood level is at the base of pillars and expected to rise further. It is likely that the padmounted transformer supplying the pillar will be disconnected before the flood level reaches the base of pillars.

Flood affected pillars should be inspected individually and hosed out if necessary.

Without IPCs, a minimum insulation resistance of 100 M $\Omega$  at 2.5kV for 1 minute between each phase and phase to neutral should be achieved before re-energisation.

With IPCs, a minimum insulation resistance of 5 M $\Omega$  at 2.5kV for 1 minute between each phase and phase to neutral should be achieved before re-energisation.

### **Mary River Floods**

A detailed Disaster Management Plan for a flood of the Mary River affecting the Gympie area can be accessed from the intranet at the following location:  
*GympieFlood.doc*

### **Strategic Deployment of Generators**

ENERGEX has a fleet of generators available in the emergency flood event. These consist of:

- 5 x 11 kV 1250 KVA generators
- 40 x 240 volt 300 kVA and 500 kVA generators

Smaller generators (in range 30 kVA to 120 kVA) are available from local hire companies.

Generators will generally be dispatched on a priority basis and approved by senior management. Where there is a major flood and access to communities are likely to be inaccessible, generators should be dispatched to strategic locations during the flood event. Communities which may be islanded in a major event are:

- Belbowrie
- Karana Downs
- Moggill/Pullenvale

## **4 RESTORATION OF ENERGEX ASSETS**

The restoration of ENERGEX assets should be undertaken in accordance with standard business emergency processes plus the additional flood process documentation:

### System Operation



EWP110113b – Restoration of Electricity Supply Following Flooding  
EWP1101 - Process for Managing LV in the CBD Following Flooding

#### Work Practice

WP – 1134 Re-energisation of Flood Affected Distribution Equipment  
WP – 1133 Installation Reconnection After Natural Disaster  
WP – 1135 Reinstating Pole Mounted Equipment

## **5 RISK ASSESSMENT OF ENERGEX ASSETS**

In Appendix A, a risk assessment has been conducted on ENERGEX assets which may be affected by a 1 in 100 year flood event. The assets which have been investigated include:

1. Overhead line crossing waterways
2. Bulk and Zone Substations
3. C&I Substations

## **6 REVIEW AND REPORTING**

ENERGEX will undertake a review of the Flood Risk Management plan on an annual basis. Operational Plans will be continually developed for key critical infrastructures such as zone substations.

ENERGEX will prepare reports for the Executive on a needs basis for aspects of flood preparedness such as;

- Upgrades of overhead line crossing of waterways
- Specific projects for critical infrastructure to address flood risk, and
- Liaisons with other emergency organisations to address flood risk

Details of the maintenance, reliability and safety aspects of ENERGEX's electricity network are reported in the Network Management Plan.

## APPENDIX A – KEY CONTACTS LIST

### DISASTER MANAGEMENT

State Counter Disaster Operations – Kedron Park:

SCDO Contact –  
ENERGEX Contact – CEO and Group Manager Corporate  
Communications

BCC Local Disaster Coordination – 266 George St, Brisbane

BCC Contact –

Flood Information Centre – 505 St Paul's Terrace, Fortitude Valley Q 4006

Ph: [REDACTED]

Email: [REDACTED]

Gold Coast City Council

Ipswich Council

Lockyer Council

Gympie Council



## APPENDIX B - RISK ASSESSMENT OF ENERGEX ASSETS AFFECTED BY 1 IN 100 YEAR FLOOD EVENT

### OVERHEAD LINES

A list of overhead lines that could potentially encroach the minimum clearances in a Major Flood is given below.

Crossing Number	Voltage	Water Crossing Location	Major Flood Water Rise (m)	Distance between Flood Rise and Water Crossing (km)	Measured Line Clearance Over Waterway (m)
WD37	LV	22 MacDonald Rd, Wivenhoe Pocket	16	1.6	15.3
ND14	LV	Morayfield Rd, Caboolture	9.5	1.1	9.97
SD157	LV	Sinnamon Rd, Jindalee	10	2.1	9.8
ND26	11kV	Gympie Rd, Petrie	8.17	0.6	7.43
ND15	11kV	Dux St, Caboolture	9.5	2.8	10.38

**Table A.1 – Water crossings that Potentially Encroach Minimum Clearances during a Major Flood**

### BULK AND ZONE SUBSTATIONS

A list of substations that are potentially below Q100 flood level is given below.

Hub	Sub	Name	Depot
Central West	SSOXL	Oxley	Oxley Depot
Central West	SSJDL	Jindalee	Oxley Depot
Central West	SSMLT	Milton	Taringa Depot
Metro North	SSMDH	Meeandah	Geebung Depot
Metro North	SSMTN	Myrletown	Geebung Depot
Metro North	SSBRD	Brendale	Redcliffe Depot
Metro South	SSBLN	Beenleigh	Beenleigh Depot
Metro South	SSQR46	Qrail	Beenleigh Depot
Metro South	SSAFD	Archerfield	Greenslopes Depot
South Coast	SSPBH	Palm Beach	Burleigh Depot
South Coast	SSUPC	Upper Coomera	Labrador Depot
South Coast	SST81	Cades County	Labrador Depot
Western	SSMTC	Mt Crosby	Ipswich Depot

**Table 2.2.1 – Zone/Bulk Substations Potentially Below Q100 Flood Level**

Zone Substations which were flood affected in the 2011 event.

Hub	Sub	Name	Depot
Central West	SSOXL	Oxley	Oxley Depot
Central West	SSJDL	Jindalee	Oxley Depot
Central West	SSMLT	Milton	Taringa Depot
Metro South	SSAFD	Archerfield	Greenslopes Depot
Western	SSMTC	Mt Crosby	Ipswich Depot

**Table 2.2.1 – Zone Substations Affected by 2011 Flood Event**

Sub	Depot	Building / Street
SSFLW	Brisbane CBD	Fletcher Watts, 126 Margaret St
SSAMM	Brisbane CBD	42 Albert St
SSAMS	Brisbane CBD	53 Albert St
SSWAC	Brisbane CBD	Cnr Queens and Wharf St
SSBFB	Brisbane CBD	Beaufort Hotel, 39 Edward St
SSEGE	Brisbane CBD	Old Dalgetys Bld, 77 Eagle St
	Brisbane CBD	Royal Globe Assurance, 359 Queen St
SSRGA		
SSQEA	Brisbane CBD	Queens Plaza, 226 Edward St
SSRSD	Brisbane CBD	Riverside Centre, 123 Eagle St
SG7126	Brisbane CBD	435 Queen St
SG503	Brisbane CBD	370 Queen St
SG2703	Brisbane CBD	355 Queen St
SG2467	Brisbane CBD	APA House

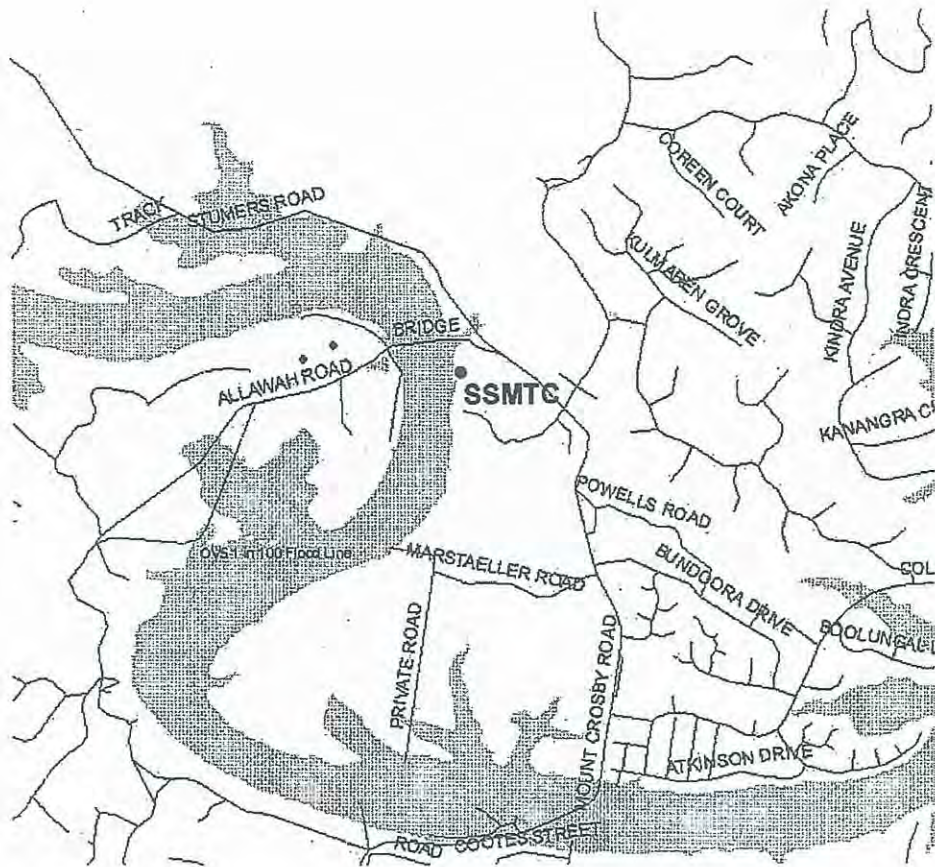
**Table 2.2.2 – C&I Substations Affected by Flood Waters in 2011 Flood Event**

## KEY ZONE SUBSTATIONS

(i) SSMTC - Mt Crosby

Access to SSMTC would be affected, as all roads would be cut. The only access may be by helicopter. It is unlikely that the substation would flood, but if it did occur, electricity supply should be able to be maintained via Mount Crosby West (SSMCW).





(ii) SSAFD – Archerfield

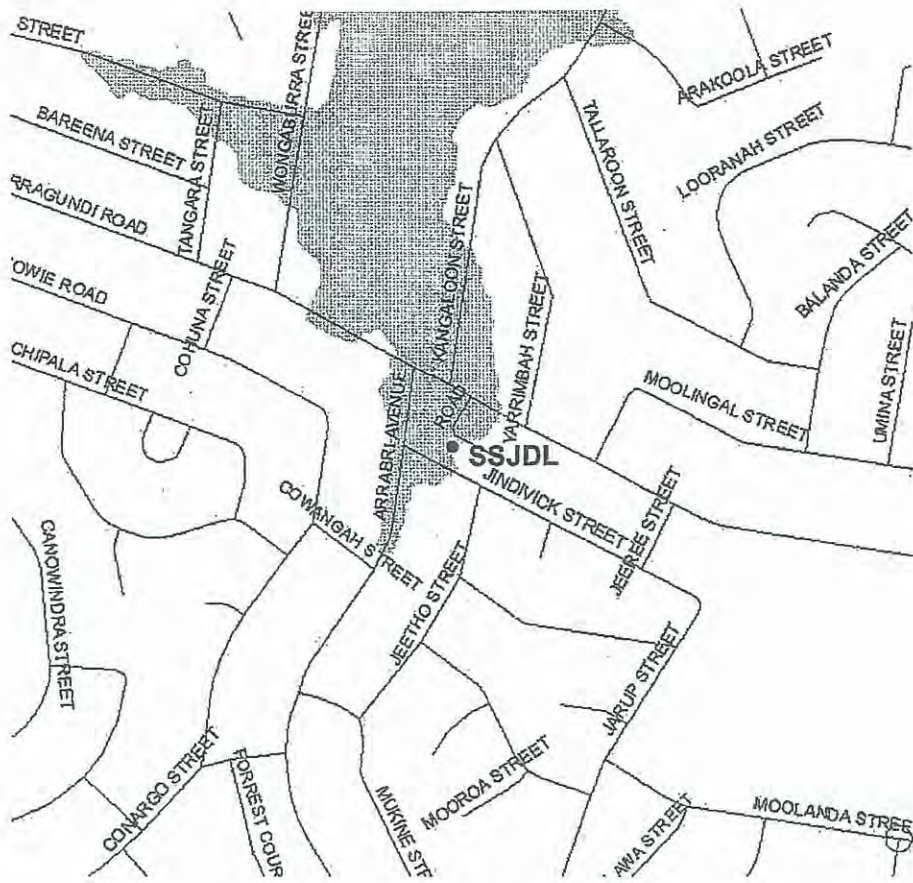
Archerfield substation would be completely submersed, and only minimal load can be supplied from 11kV ties into Coopers Plains, Sunnybank and Rocklea (which itself will be affected by rotational load shedding). However, if Archerfield substation is flooded so will most of its load so the loss of this substation should not cause any noticeable inconvenience.



(iii) SSJDL – Jindalee

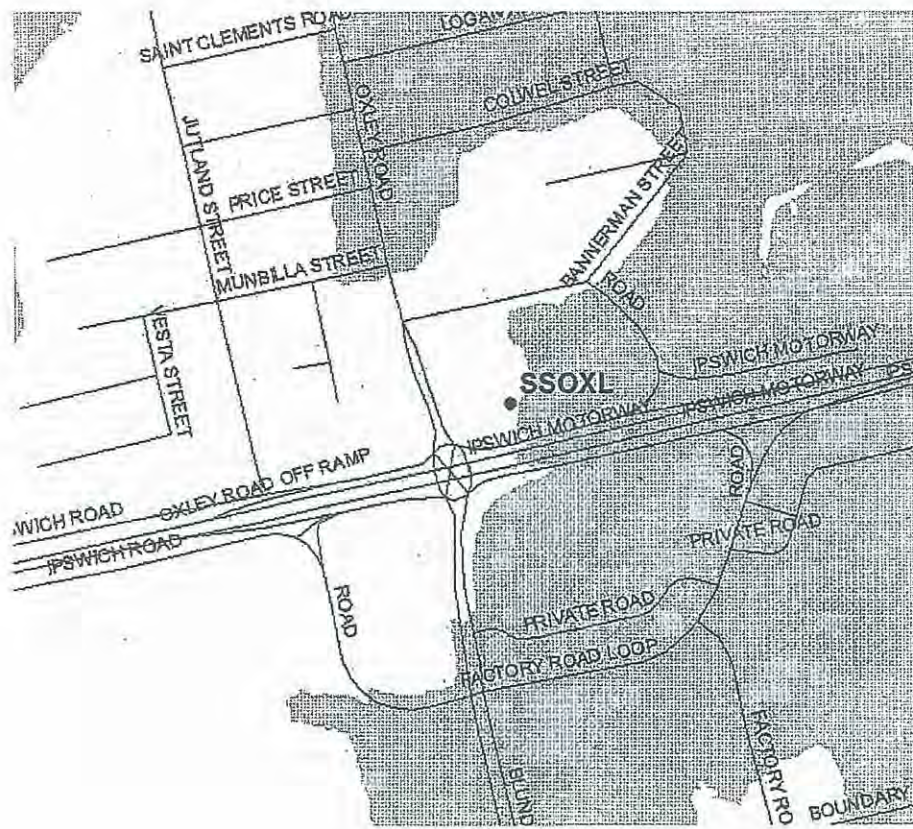
Jindalee substation will be flooded, and it is expected that approximately two-thirds of its load will be affected by flooding. A small amount of load can be supplied by 11kV ties into Darra and Sherwood (which itself will be affected by rotational load shedding).





(iv) SSOXL – Oxley

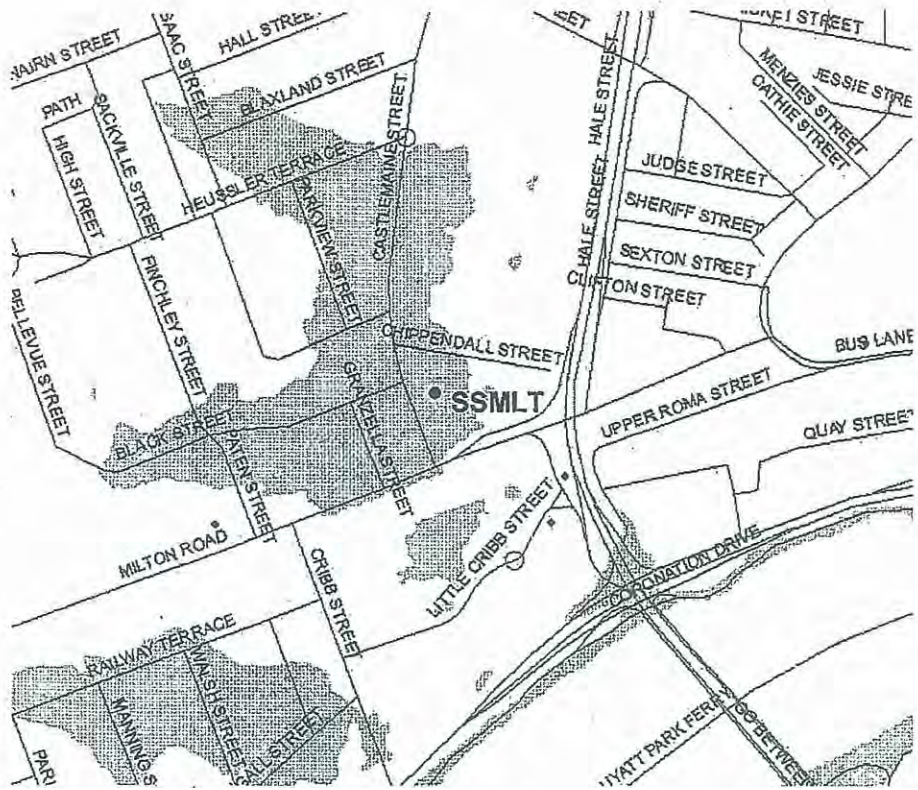
Like the case with Jindalee substation, it is expected that the load on Oxley substation will only be one-third of the normal load due to flooding in the area. A small amount of the remaining load can be supplied by 11kV ties into Inala and Darra substations.



(v) SSMLT – Milton

Access to SSMLT would be affected, but rear entrance via Milton Road/Hale St may be possible. It is likely only the cable basement of SSMLT would flood.





(vi) SSMTN – Myrtle town

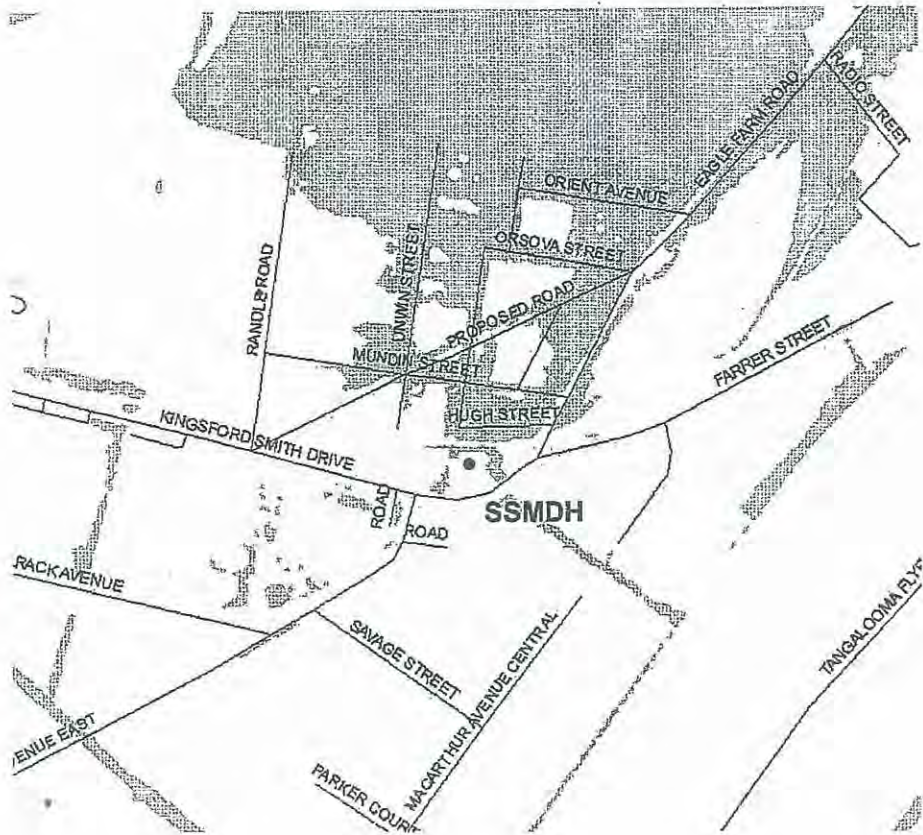
Access to SSMTN would be affected, as all roads would be cut. The only access may be by helicopter. It is expected that approximately X of the substation load will be affected by floods. A small amount of load can be supplied by 11kV ties into X substation.



(vii) SSMDH – Meeandah

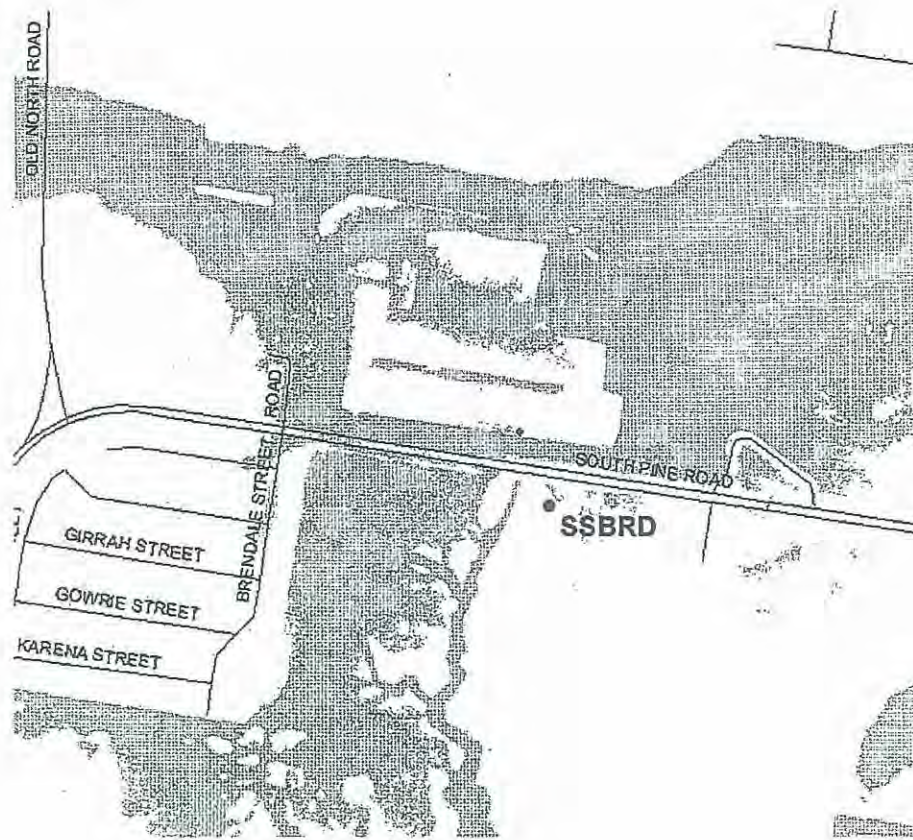
Access to SSMDH would be possible via Kingsford Smith Drive. It is unlikely that the substation would be completely flooded, and if this is not the case, SSMDH load may be partially supplied by SSXXX.





(viii) SSBRD – Brendale

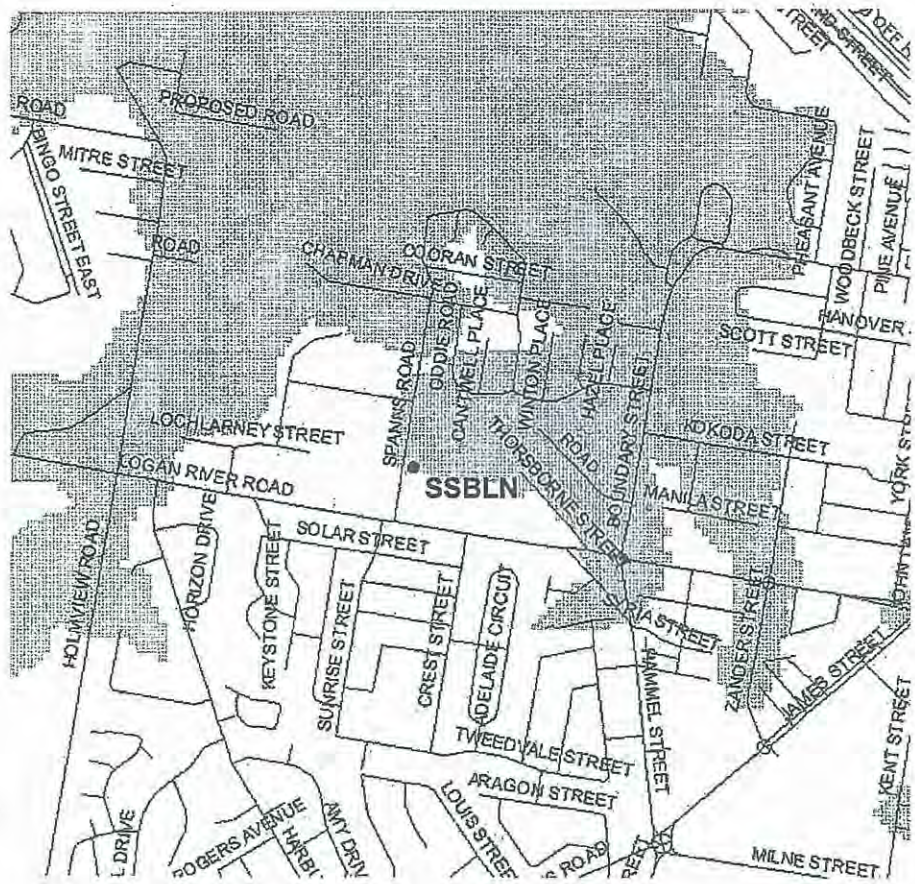
Access to SSMDH would be possible in the case of a Q100 flood. It is unlikely that the substation would be completely flooded.



(ix) SSBLN – Beenleigh

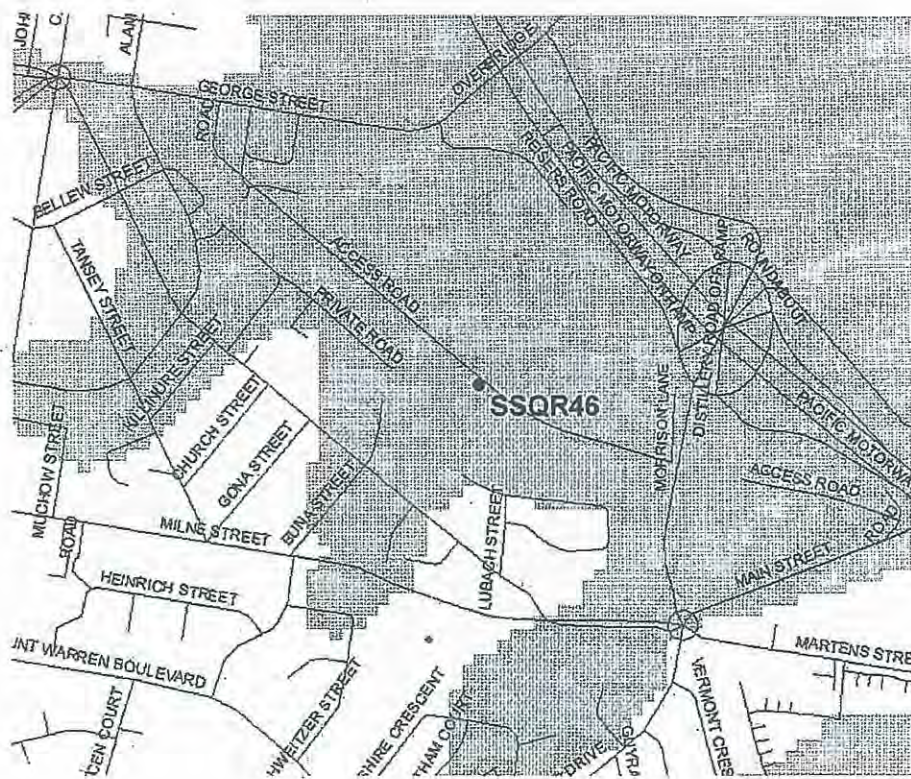
Access to SSBLN may not be possible via Logan River Road during a Q100 flood, however, the site may be reached via other routes. It is likely that the pole storage site would be flooded.





(x) SSQR46 – Queensland Rail

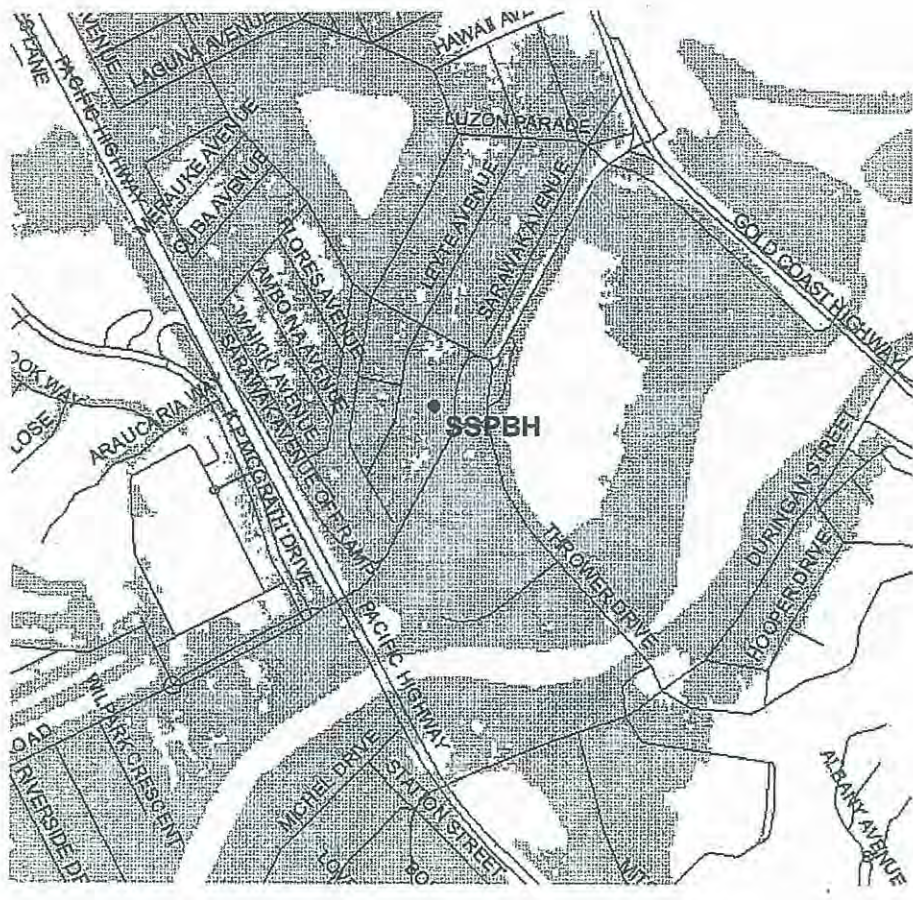
QR46 would be completely submersed, however, so would most of its loadj, hence the loss of this substation should not cause any noticeable inconvenience.



(xi) SSPBH – Palm Beach

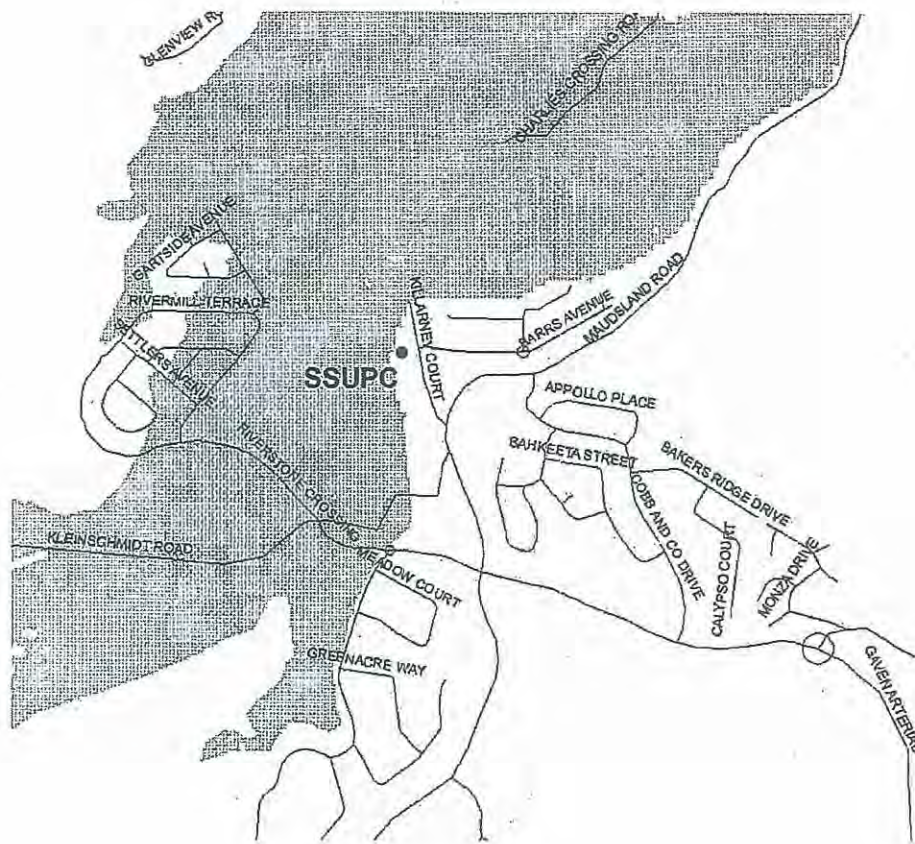
Access to SSPBH would be affected, as all roads would be cut. The only access may be by helicopter. However, it is expected that nearly all of the substation load will be affected by floods so the loss of this substation should not cause any noticeable inconvenience.





(xii) SSUPC – Upper Coomera

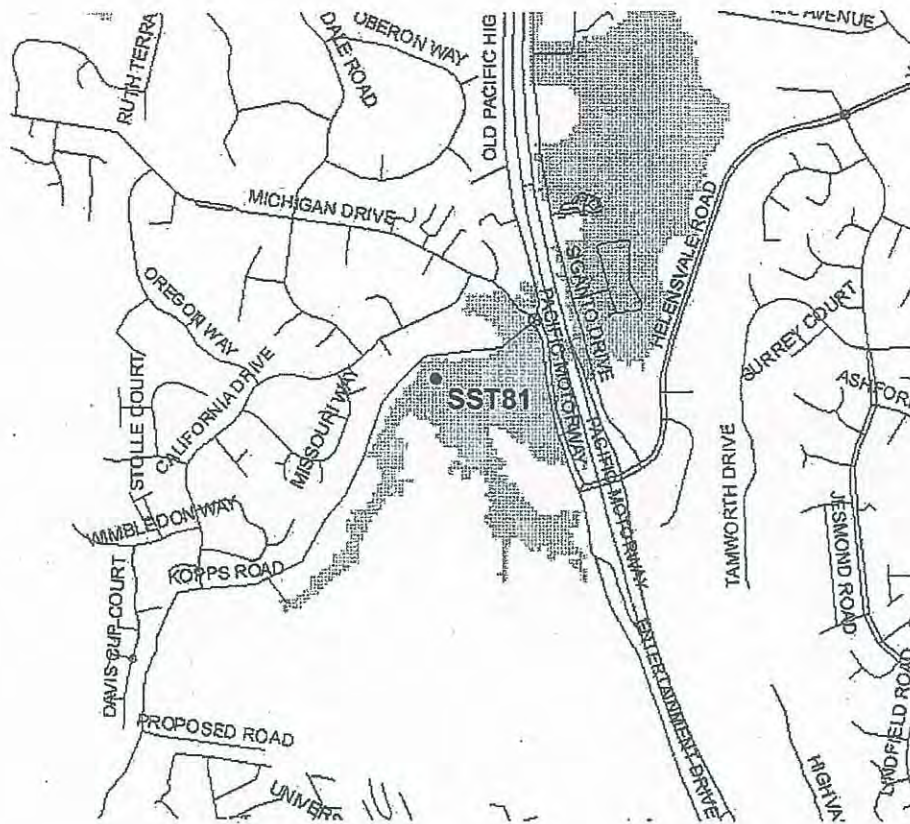
Access to SSUPC would be possible during a Q100 flood. It is unlikely that the substation would be completely flooded, and if this is not the case, SSUPC load may be partially supplied by SSXXX.



(xiii) SST81 – Cades County

Access to SST81 may not be possible via the Pacific Motorway exit during a Q100 flood. It is likely that the substation would be flooded, and if this is the case, SSUPC load may be partially supplied by **SSXXX**.





**Note:** In addition to the above, there may exist pockets of land not flooded but isolated due to flooding in the surrounding areas. In such cases it may not be possible to supply the area as all 11kV feeds into the area may be under water.

Brisbane City has a detailed Disaster Management Plan. Their Flood Management Plan can be accessed from the intranet at the following location: *BCC.doc*.

# ATTACHMENT CJA-7





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## **NORTH COAST FIELD SERVICES**

## **GYMPIE FLOOD PLAN**

Author: Wayne Hewitt  
Document number: GYM001  
Revision number: 14  
Print date: 23/12/2010

**Book No:**

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## INTRODUCTION

This Flood Plan details the emergency operating system to be implemented when the Mary River reaches the 6 to 11 metre mark at Kidd Bridge, Gympie.

ENERGEX's systems and equipment are under threat of damage due to floodwaters when the Mary River crosses Kidd Bridge at a height of 11 metres. Rising water levels from the Mary Valley catchment are normally fairly predictable with sufficient lead time to respond.

ENERGEX's response at the various river heights has been documented from information captured from previous floods.

Information will be received from the Bureau of Meteorology, SES and Cooloola Counter Disaster Group regarding river heights and rainfall received, as well as local knowledge.

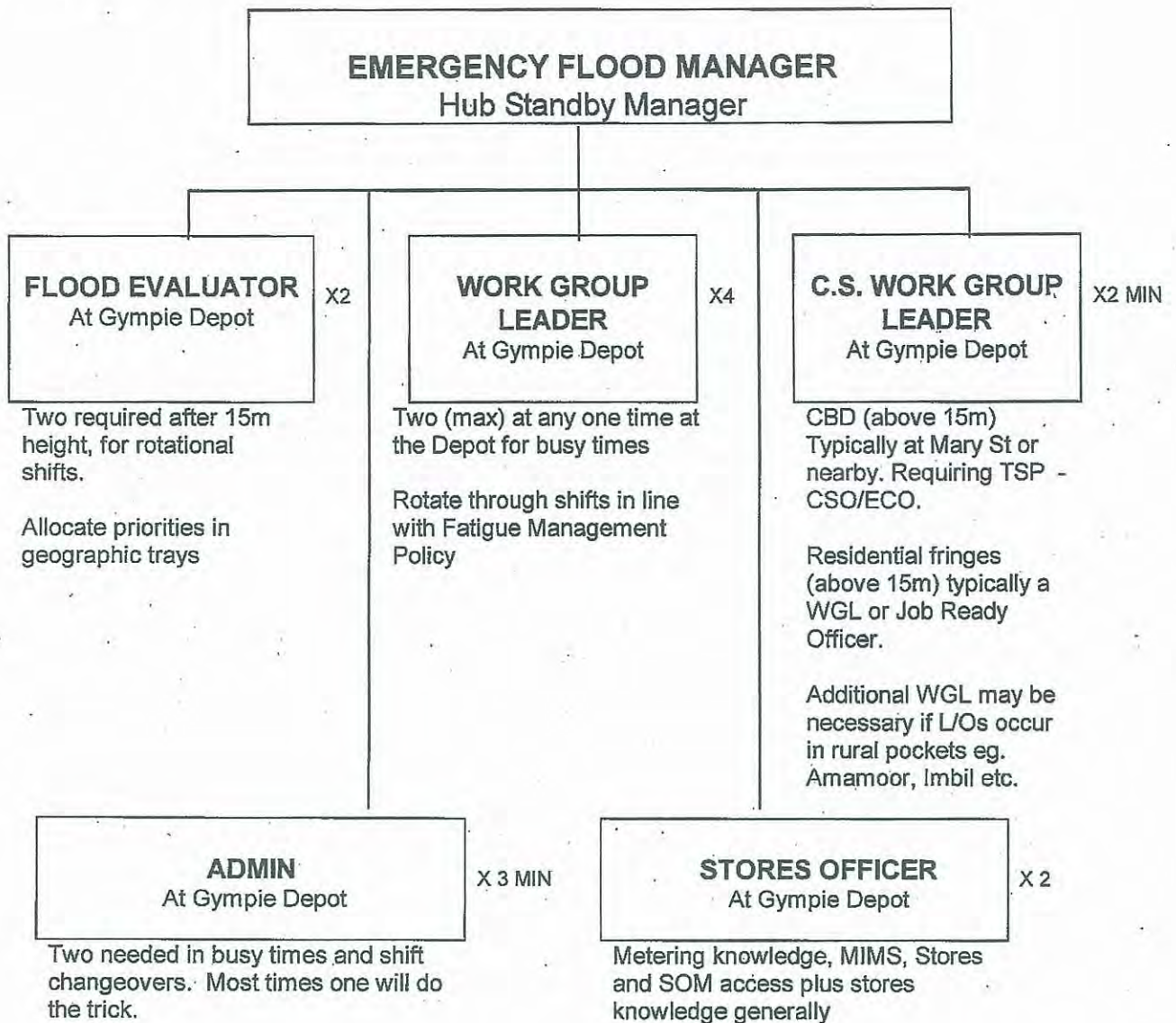
The GYMPIE FLOOD FIELD BOOK is an attachment to this document providing information relating to disconnecting and reconnecting premises, and lists areas that need to be disconnected according to the rising river height.

North Coast Control, Maroochy Storm Room, Gympie Depot and ENERGEX Corporate Communications will be operational in full or part for the duration of the flooding until all networks are returned to normal status.

This plan is to be revised annually prior to the storm season, each September.



## STRUCTURE



## ASSUMPTION

- Storm / flood related Network problems exist elsewhere in North Coast and Maroochydore Hub will be on L2 status at almost all times while Gympie Depot is in flood response mode.
- All non-Gympie centre losses of supply, wires down and area troubles to be coordinated from Maroochydore Hub Storm Room.
- Hub manager/Flood evaluator to liaise with Evaluation/despatch team for SCM, related losses of supply, local wires down and area troubles.
- Maroochydore Hub to coordinate all SSAMR and SSTCB losses of supply, remote Wires Down and Area Troubles.
- Disconnects and meter removals** – Meter / premise disconnection to be issued through despatch utilising tough books, all details of meter readings and Form 3 numbers are to be entered at completion of each task.

**Reconnects** – as above



## RESPONSIBILITIES

### EMERGENCY FLOOD MANAGER

- ♦ Advise Despatcher that Flood Plan has been invoked and depot is now manned
- ♦ Ensure all points in the Flood Plan are being carried out and the resources are available to deal with the threat of flood. Arrange external issues such as contractors, helicopters, boats etc.
- ♦ Liaise with Counter Disaster rep from North Coast Asset Management to communicate with Gympie Regional Council Counter Disaster Group, SES and other Emergency Services as is necessary. Emergency Services are to be provided with telephone number for direct contact. Phone numbers to be decided at Flood Response 11-13 metres. Counter Disaster representative will be required to attend meetings as required with local Counter Disaster Group usually at the Council Chambers, Mary Street.
- ♦ Ensure communication lines are in place between Corporate Communications, NCC, Gympie Depot, (Corporate Comms) will do the high level communicating to radio stations / media. Supply information for media release to Corporate Communications to enable drafting and release.
- ♦ Liaise with Evaluation/Despatch for the issuing of Service Orders for Disconnection for safety and meter removals, review resource levels are adequate for volume of work
- ♦ Overview operations at Gympie Depot including actions required throughout the Gympie Flood Field Book.
- ♦ Overall management of fatigue levels (18 hours maximum) – allocate FATMAN responsibility

### FLOOD EVALUATOR

- ♦ Communicate with North Coast Control Operations Controller on the overall state of the network
- ♦ Monitor river heights using data from BOM and forecast future resource requirements
- ♦ Ensure Work Group Leader and Flood Manager are aware of the state of the Network
- ♦ Monitor jobs in SCM
- ♦ Ensure Gympie Flood Field Book actions are completed and noted.
- ♦ Assist in allocating work to crews
- ♦ Arrange for vehicles and equipment to be positioned to suit anticipated river levels
- ♦ Communicate with Maroochy Hub, ie: incoming jobs and completed jobs levels
- ♦ Document supply interruptions:
  - Feeder outages
  - LV Switchings
  - ensure meter removals are recorded



## WORK GROUP LEADER

- ♦ Team with Manager and Evaluator. Ensure competency of staff matches requirements and the mix is right for the areas that will become isolated. Manager vehicle deployment, relief arrangements and accommodation.
  - ♦ Establish crew using Adventex/Fatman input form (Form 1315), manage fatigue of Gympie office and field staff – feed into FATMAN
  - ♦ Document staff ON and OFF times to ensure suitable rest breaks
  - ♦ TMR communication - assisted by Communications Department
  - ♦ Arrange food for staff in conjunction with office staff – Red Cross food van.
  - ♦ Despatch Field books to work crews, brief them on contents and how books are to be used. Note who books are assigned to.
  - ♦ Assign and register hand held TMR's to crews and ensure correct operation.  
**Note:** These radios are stored in flood cupboard and should be charged for use. Hand held to hand held should be programmed to SIMPLEX 1, 2, 3 or 4. Best to use SIMPLEX 3 or 4 as they are ENERGEX ONLY channels.
  - ♦ To ensure that premises are isolated in a timely manner before water reaches wiring or switchboards
  - ♦ To ensure field crews notify depot of disconnects and reconnects  
**Note:** There is provision in the Field Flood Book to record details, eg. meter nos. and premises etc
- Provide space for storage of removed meters at Gympie depot and other required locations
- ♦ Patrol streets to identify areas of disconnect if energised circuits are within 3 metres of flood waters, where watercraft may come into contact with **LIVE MAINS**

- ♦ Liaise with Work Group Leader with regard to staff requirements ie: meals, rest breaks etc

## ADMINISTRATION

- ♦ Provide a list of employees and phone numbers
- ♦ Register staff ON and OFF times in FATMAN, provide reports on 2 hr warnings for fatigue end cycles
- ♦ Contact service stations to arrange meals at Gympie, Monkland and Southside. Utilise Red Cross food van where possible.
- ♦ Fuel for vehicles at Monkland and Southside
- ♦ Arrange accommodation for staff as required in appropriate locations
- ♦ Record helicopter times of use
- ♦ Bookmark Bureau of Meteorology web page for information relating to flood heights  
<http://www.bom.gov.au>  
<http://www.bom.gov.au/hydro/flood/qld/>  
<http://www.bom.gov.au/hydro/flood/qld/brochures/mary/mary.shtml>  
[http://www.bom.gov.au/cgi-bin/wrap\\_fwo.pl?IDQ60287.html#Mary](http://www.bom.gov.au/cgi-bin/wrap_fwo.pl?IDQ60287.html#Mary)

BOM Flood forecasts are updated up to six times per day throughout the flood event



## STORES

- ♦ Ensure early ordering of meters.
- ♦ Materials such as poles, cables & transformers may have to be transported to various locations.
- ♦ Assist in storage of removed meters.

## FLOOD RESPONSE

### FLOOD WARNING

BOM will issue an email to the Network Control Shift Manager (Vic Park) advising of a Flood warning for the Mary River (note this normally gives between 21 and 27 hours notice of a pending flood of 12m or greater in Gympie)

Shift Manager (Vic Park) to alert the North Coast Field Services Manager and North Coast Asset Manager to the flood warning:

North Coast Field Services Manager to advise Flood Evaluator to commence river height monitoring using BOM data/website/SES information and commence making preparations for our flood response.

North Coast Field Services Manager to liaise with Energex event manager at 12m mark to assess if "orange alert" level 2 event notification is required.

Flood response times will differ with the level of increase of rising flood water, reviews may be required at 15 minute intervals

BOM provide forecasting of flood levels when requested Ph 32398768 or 32398781.

### 6.00 METRES

Automated BOM alert triggers Net Ops Shift Manager to issue a Blue alert for "Flood warning – Mary River"

Triggers the North Coast Field Services Manager to allocate a person(s) to fulfil the duties of the Flood Evaluator to monitor flood data information from BOM and to make preparations to deal with a potential flood situation and establish the Flood Plan Organisation Structure

### 6.00 - 12.00 METRES

1. Refer to "Flood Field Book" for details of disconnects of supply points (including customers, streets, sewerage pumps, streetlights, transformers etc.) throughout the flood levels indicated below.
2. Advise other Emergency Services of ENERGEX contact phone numbers:

Depot Phones: .....)  
 North Coast Control: .....)  
 Public Relations: .....)  
 Cooloola Shire Council:.....)  
 State Emergency Services: .....)  
 Police: .....)  
 Bureau of Meteorology: .....)

**Appendix 1 lists contact numbers  
for Emergency Services**

**Appendix 2 lists Emergency  
Services phone numbers**



3. Continue monitoring of BOM Flood Data website and maintain contact with SES for checks of hourly river gauge readings at Kidd Bridge. SES Phone No. 5482 1590  
 Note: SES readings start after Kidd Bridge is flooded at 11m.

**Note:** Roads to Gympie will be cut at about 15 metres.

## 12.00 - 13.00 METRES

Review resource requirements and positioning in possible isolated areas (at 14 metres) of Monkland, Southside and Gympie central.

- MONKLAND** - 2 x 4 wheel drive vehicles  
 - 6 staff - primary fuse removals/meters/HV switching  
 - 2 CSO/ECO plus vehicles
- SOUTHSIDE** - 1 x 4 wheel drive vehicle  
 - 1 x EPV  
 - 6 staff - primary fuse removals / meters / HV-switching  
 - 2 CSO/ECO vehicles
- GYMPIE** -
- CBD - TSP - ECO/CSO
  - Monkland - TSP - ECO/CSO
  - River Road
  - Cross Street
  - Bruce Hwy (North)
- One Mile Area - ECO/CSO  
 - Primary & Meter removals
- Brisbane Road - ECO/CSO  
 Phoenix Street - TSP  
 Hilton Road  
 Hyne Street

4. Review Personal levels for Gympie Depot to support field staff:

1 x Work Group Leader  
 1 x Field Coordinator  
 1 x Storeperson for meter removal collection

**Bruce Highway will be closed at 13.8 Metres at Cobb Gully which is just south of the Caltex Service station. At this stage accommodation needs to be reviewed and secured.**

5. Communication:

- Engage additional phone (stored in Flood Cupboard) to phone line 54820707.
- 2nd TMR to switch from TMR to UHF for communication with helicopter when required.
- Contact for Communications Manager is via standby roster at Net Ops.

6. Admin to provide list of employees and home phone numbers.

7. Continue monitoring of BOM Flood Data website and maintain contact with SES for checks of hourly river gauge readings at Kidd Bridge. SES Phone No. **5482 1590**  
Note: SES readings start after Kidd Bridge is flooded at 11m.

**Note:** Roads to Gympie will be cut at about 15 metres.

### **13.00 - 14.00 METRES**

**The Bruce Highway will flood at approximately 14 metres, at Cobbs Gully south of Kybong Block Works. Additional resources must be en-route with spare clothes and accommodation booked.**



#### **14.00 - 15.00 METRES**

Refer to Cooloola Shire Council Local Disaster Management Plan (detail CBD plan)

**ENERGEX Corporate Communications will contact radio stations advising Electricity Supply may be disconnected in Gympie CBD if flood waters continue to rise.**

##### CBD Mary Street

Flood Manager, Flood Evaluator and Work Group Leader to carefully consider the need to de-energise Gympie CBD.

Transformers to be de-energised:

SP10717 Reef Street

SP10234 Monkland Street

SC738463 Cullinanes Plaza

A police presence can be arranged via Counter Disaster Group if required.

##### Staff for Disconnects for safety

- 3 TSP

- 6 ECO or CSO

(Consider resourcing from other North Coast Work Groups first, including other local LOBs).

#### **15.00 METRES +**

**Note:** Major routes will be cut after 15m isolating Gympie, Monkland and Southside.

**Dispatch vehicles, personnel and relief resources to Monkland and Southside – ensure accommodation is available.**

Access may be available via Kin Kin to Gympie

Access may be available via Mary Valley Highway

(Check with SES on road closures)

##### Vehicles

4 x 4 required for access in most area's.

Access to Rainbow Beach and Tin Can Bay - consider via Teewah Beach (at low tide) or Wide Bay Board via Maryborough Coastal Road.

#### **16.00 METRES +**

**Flood water will reach the 132kV at Jimbour Road, The Palms, at approximately 21metres. Residents traverse beneath the line in boats. Control to arrange de-energisation of 132kV at T8 and Woolooga.**

## 17.00 METRES - AERIAL PATROL

Refer to Cooloolo Shire Council Local Disaster Management Plan (detail CBD plan)

The following are the feeders NCC suspect or were confirmed to be interrupted by flood waters. These should be marked for aerial inspection at a river height (Kidd Bridge) of 18.00 metres. The feedback from this inspection would enable more accurate switching decisions to be made.

### 1. IBL2 - 15.3 mtrs

Aerial patrol required on IBL2. The cause of previous outages was trees on mains. The area could not be accessed due to floodwaters.

### 2. AMR3 - 17.3 mtrs

This feeder went under water in various places between ABS X7094 Goomong Road & PMR X24362 Bergins Pkt Road. Helicopter flew over the feeder at 1700 (20.0 mtrs) and found sections under or near to being under water.

### 3. F339 - 9.4 mtrs

This feeder should be checked between P1444 and Mary River pumping station. The rest of this feeder has 11kV under it and was not affected.

**Note:** When F339 tripped at 19.4 mtrs ABS X12796 was opened and SSAMR re-energised. The section past ABS X12796 was not tried as there was no value in checking this area at that stage.

### 4. AMR2 - 21.9 mtrs

This feeder was reclosed successfully at 1904 on 10.2.99 (19.8 mtrs). A helicopter found all the feeder above floodwater.

### 5. GYM 8B - 20.5 mtrs PMR X 24360

The section of this feeder past ABS X21247 Bells Bridge was isolated and feeder restored. All supply restored at 0855 on 11/2/99 (16.5 mtrs).

### 6. GYM 8A - 21.9 mtrs

This feeder had sections isolated because of flood waters. Trees caused the outage to the rest of the feeder and could not be accessed due to floodwater.

**Note:** We believe that an aerial inspection of the above feeders and trouble spots at (18 mtrs) would allow switching on GYM9, AMR3, GYM8B and AMR2 which would limit the areas to be interrupted in future floods.



## TOOL LIST FOR DISCONNECTS AND RECONNECTS

For use when importing Cust Service type field staff:

- ♦ Fuse extraction stick
- ♦ 6ft step ladder - mainly for Mary Street
- ♦ Megger
- ♦ Sealing pliers
- ♦ Cordless drill
- ♦ Mobile phone or portable TMR
- ♦ Torch with spare batteries
- ♦ Marking pens

### STORES

#### Meters

Type: Normal Dom (5079) / Relays / Time clocks / Dual Rate / Plug Ins / Polyphase

Qty: 500 / 250 / 500 / 1500 / 50 / 150

#### Transformers

Type: Storeman to check current stocks.

Qty: 10kVa (2), Single phase 25kVa (2), Three phase 25kVa (2), 63kVa (2), 100kVa (1), 315kVa (1). 33/415 transformer needs to be around Toolara Forest area.  
Contact Banyo Store

#### Fuses

Type: Storeman to check current stocks – primary fuses and EDO fuses mainly.

## MEDIA RELEASES

### ENERGEX CORPORATE COMMUNICATIONS RESPONSE DURING A FLOOD

ENERGEX Corporate Communications has in place standard response procedures for any emergency and these encompass a flood situation at Gympie.

(Please note during a storm or other major network incident originating in the Brisbane area, the Corporate Communications Team and Duty Officer are automatically paged).

Corporate Communications has a Duty Officer who is on call 24 hours a day and can be contacted on 07 3407 4420 or after hours on 07 3407 5191.

The on duty Corporate Communications Officer then implements the following procedure:

1. Provides immediate media advice if required (in consultation with the appropriate local contact for information).
2. Contacts the relevant person for information and to discuss media liaison.
3. Advises via the Group Manager or Media Manager the CEO and / or Board through the Company Secretary if necessary and / or other key stakeholders, including the Ministerial media staff if required.
4. Assesses the need to proactively contact the media urgently (if not already responded to a media request or provided urgent advice).
5. Provides regular updates to the media as required (these are given by fax and/or live/recorded interviews).
6. Provides copies of media releases as required to:
  - the CEO
  - Contact Centre, Control Centre
  - other stakeholders as required, eg. the GM Network, Asset Performance; GM Energy Delivery and GM Customer Services
7. Updates the Internet Web page
8. Calls in additional Corporate Communications team members if required, particularly if the issue is ongoing
9. Advises the media of contact details for the next day.

**Please note:** The media have been provided on many occasions with the Corporate Communications 24 hour number. – 3407 4420 (business hours) and 3407 5191.



## **DISCONNECTION OF POWER**

If floodwaters enter your premises ensure ELECTRICITY is switched OFF at your switchboard.

Contact ENERGEX if you are evacuating your premises and ELECTRICITY is still connected.

PHONE 131962 (Unless advised otherwise by Corp Communications)

## **SAFETY**

Power should be disconnected before switchboards or wiring is flooded

In locations where Emergency Services groups or public are operating watercraft in flooded streets than a minimum clearance of 3.0m to conductors.

It is essential that boats in floodwaters are used **ONLY** for emergency purposes.

## **AREAS WITHOUT ELECTRICITY**

Corporate Communications to provide media with regular updates, outages and restoration predictions.

## **RESTORATION OF SUPPLY**

ENERGEX advise that when flood waters have receded below all electrical equipment that customers are required to obtain the services of an Electrical Contractor.

For safety reasons, the contractor needs to clean, test and dry all electrical equipment **prior** to ENERGEX reconnecting power.

Once tests are carried out please contact ENERGEX to arrange power to be restored.

PHONE: 131962 (Unless advised otherwise by Corp Communications)

## **USE OF HELICOPTERS AND BOATS**

### **STORES, TRANSPORT AND FAULT FINDING**

In the event of breakdowns caused by storms, trees in mains etc, the following procedure would be adopted for getting crossarms, cable and fitting gear etc from Gympie store.

#### **BOATS - contact SES if boats are required**

Advice from Operating Standards Engineer ENERGEX regards operating switch gear, ie. air brakes and EDO's from boat or standing in water should be no problem provided all procedures and practices are followed, eg look for hazards, wear insulating gloves etc.

#### **Note:**

1. A detailed risk assessment shall be carried out before proceeding
2. Ensure boat is secure prior to operating electrical apparatus

### **HELICOPTER**

Weather permitting, the use of a helicopter for fault finding and supply restoration during floods is desirable.

Helicopters to be sourced through Standby Contracts Coord – Control Centre

Normally the helicopter will load and take off from the Gympie High School.

**Ensure the helicopter can communicate with depot UHF and set TMR to UHF.**

### **SUPPLIES FOR GYMPIE DEPOT AND FIELD STAFF**

This section relates to food, bedding and fuel supplies for the field staff and depot staff.

#### **FOOD - FIELD STAFF**

The onus is on the field staff to radio if you are hungry so the Flood Coordinator / Supervisor can organise food and a pick up point.

#### **FUEL SUPPLIES**

**Vehicles must be refuelled before travelling to remote areas.**

### **ACCOMMODATION**

Advise crews brought in from other areas to bring additional clothes. During the February '99 floods crews were flown in and ended up staying 3 days. Administration to organise accommodation at motels.



**FLOOD HEIGHTS RECORDS**

	<u>AHD</u>	<u>DECK LEVELS</u>
KIDD BRIDGE (SOUTHSIDE)	R.L. 46.87	10 METRES
INGLEWOOD BRIDGE (BRUCE HIGHWAY)	R.L. 49.9	13 METRES
PENGELLY'S (MONKLAND/ONE MILE)	R.L. 52.4	15 METRES
NORMANBY BRIDGE (MARY VALLEY)	R.L. 52.8	15 METRES
SIX MILE (BRUCE HIGHWAY)	R.L. 52.8	15.5 METRES

BRUCE HIGHWAY - COBBS GULLY SOUTH OF GYMPIE BRICKWORKS KYBONG CUT AT 14 METRES FLOOD HEIGHT.

FLOOD MAP GEOGRAPHICS RECORDED RL 50 = 13 METRE FLOOD AND RL 55 = 18 METRE FLOOD AT SCALE 1:500

**1999 FLOOD PEAKED AT 21.9 METRES**

**1992 FLOOD PEAKED AT 21.4 METRES**

**1989 FLOOD PEAKED AT 19.63 METRES**

**1974 FLOOD PEAKED AT 20.73 METRES (68') R.L. 56.6**

**1955 FLOOD PEAKED AT 21.5 METRES (70'3") R.L. 58.4**

**1893 FLOOD PEAKED AT 25.5 METRES (83'6") R.L. 62.4**

**MAILING LIST**

**VOLUME 1**

- ♦ Network Control Manager, Control Centre, Level 3

**VOLUME 2**

- ♦ North Coast Field Services Manager

**VOLUME 3**

- ♦ North Coast Control

**VOLUME 4**

- ♦ Maroochydore Storm / Emergency Room Coordinator

**VOLUME 5**

- ♦ Gympie Counter Disaster Coordinator

**VOLUME 6**

- ♦ Cooloolá Counter Disaster Flood Sub-Plan  
C.S.C. CEO

**VOLUME 7**

- ♦ Corporate Communications Manager

**VOLUME 8**

- ♦ Gympie Flood Board

**VOLUME 9**

- ♦ Gympie Flood Cupboard

**VOLUME 10**

- ♦ Asset Manager North Coast



**APPENDIX 1**

**PHONE NUMBERS FOR EMERGENCY SERVICES GROUP**

The following phone numbers are to be given to Emergency Services when they require "Information" and also the latest "State of the Network" info:

For information on state of ENERGEX Network, contact

ENERGEX 13 12 53

For operational issues relating to dangerous situations such as life threatening or wires down or wires in water, they would need to telephone: 13 19 62

ENERGEX North Coast Control Room in Howard Street, Nambour – Phone: [REDACTED] (Priority No.)

The public wanting to advise of disconnects or reconnects would need to phone: 13 12 53

For LIFE THREATENING SITUATIONS - Phone: 000

**This number is to be used by Emergency Services Groups ONLY in case of EXTREME EMERGENCY, not for general public use.**

## **APPENDIX 3**

### **LIST OF LOCAL PERSONNEL**

For a list of local staff, refer to MATES on the ENERGEX intranet site.

Details of any resources not appearing in MATES should be requested via the Storm Room Manager at Control Centre.



## APPENDIX 4

## ELECTRICAL CONTRACTORS FLOOD LIST AS AT FEBRUARY 08

NAME	ADDRESS	PHONE NUMBERS
Abacus Air and Electrical		
A C Connections		
A E Electrical		
AJ's Electrics		
B & J Morgan Electrical		
Bailey's Electrical		
Fred Blomer Electrician		
Gary Brennan		
Brisbane Electrical		
John Buckley		
Electrical Contracting Construction and Maintenance Services		
Eillison Electrical		
Eric Betts		
Leo Fewtrell		
Glen Williams		
P T & L C Griffiths		
Groves Electrical		
Gympie Electrical		
Mary Valley Electrical		
Ray Morgan		
P & N Electrical		
A & C M Parker		
P H E		
Deens Electrical		
Bonnick Electrical Contractors		

# ATTACHMENT CJA-8



11 January 2011



# media release

positive energy

## ENERGEX flood fast facts – 4pm

- Current outages: 18,945
- Worst affected areas: Brisbane Valley, Lockyer Valley, Gympie, Mary Valley and Brisbane's inner southern suburbs.
- Access issues are still hampering ENERGEX crews.
- Safety: ENERGEX is asking people to have a qualified electrician inspect homes and electrical appliances that may have been water damaged.
- ENERGEX thanks the people of South East Queensland for their patience during power outages.
- ENERGEX also recommends people have fresh and spare batteries for their torches and radios.
- It is also recommended that mobile phones and laptop PCs should be kept fully charged where possible.
- Live power outage information can be found at [www.energex.com.au/myarea](http://www.energex.com.au/myarea) then follow the "unplanned interruptions" link.

**ENDS**

***For media inquiries: Office Hours (07) 3664 4420 or After Hours (07) 3664 5191***

12 January 2011



# media alert

positive energy

## FOR URGENT RELEASE

### **ENERGEX confirms more than 100,000 without power**

ENERGEX is continuing to switch off power to areas in the South East as areas become inundated by floodwaters.

Due to the scale of this flood crisis, ENERGEX are disconnecting suburbs as necessary for safety reasons. The situation is being continually monitored in conjunction with disaster management groups.

Please look at the flood maps provided by your local council on their website. If they show you are in a flood prone area then there will be a high probability your power will be disconnected.

Those people not in low lying or flood prone area may still be impacted by power interruptions because of the web-like structure of our network.

Power restoration times are dependent on the rate that floodwaters recede and the extent of damage to electrical equipment.

ENERGEX is urging people with medical conditions who rely on electrical-powered equipment, as well as refrigerated medications, to keep in close contact with their medical practitioner and seek advice.

ENERGEX has released a list of suburbs affected by power interruptions as at 3pm:

**Please note: surrounding suburbs may also be affected due to the web-like structure of the network**

Albion  
Arana Hills  
Archerfield  
Auchenflower  
Bald Hills  
Bellbowrie  
Bowen Hills  
Brisbane CBD  
Bulimba  
Coopers Plains  
Coorparoo  
Corinda  
East Brisbane  
Fairfield



Fig Tree Pocket  
Fortitude Valley  
Graceville  
Hemnant  
Herston  
Highgate Hill  
Indooroopilly  
Jamboree Heights  
Kenmore  
Middle Park  
Milton  
Moggill  
Moorooka  
Mt Ommaney  
New Farm  
Newstead  
Oxley  
Pinkenba  
River Hills  
Rocklea  
Seventeen Mile Rocks  
Sherwood  
Sinnamon Park  
South Brisbane  
St Lucia  
Sumner  
Taringa  
Tennyson  
Tingalpa  
Wacol  
West End  
Westlake  
Willawong  
Windsor  
Yeerongpilly

ENERGEX is also asking any customers who see damaged or threatened electricity infrastructure to keep themselves and others well clear and to call ENERGEX's priority line on 13 19 62.

ENERGEX thanks customers for their patience and understanding during this natural disaster.

**ENDS**

***For media inquiries: Office Hours (07) 3664 4420 or After Hours (07) 3664 5191***

13 January 2011



# media alert

positive energy

## **ENERGEX recovery and rebuild operation in full swing**

As floodwaters begin to recede in the Brisbane and Ipswich areas and weather conditions ease across South East Queensland, ENERGEX's recovery and rebuild operation is in full swing.

Better weather and lower floodwaters are allowing our crews to gain access to infrastructure to inspect equipment. Where possible, ENERGEX is working to restore power to homes and businesses that have not been affected by floodwaters.

More than 400 ENERGEX crews are mobilised across the south east corner on road and in the air, making every effort to restore power as quickly and as safely as possible.

Crews are currently working to restore 105,000 homes and business across the south east. In the last three days crews have worked around the clock to restore power to more than 140,000 customers.

ENERGEX appreciates the patience of all South East Queenslanders as this enormous recovery effort continues with restoration times dependent on the rate that floodwaters recede and the extent of damage to electrical equipment.

Power to 66,000 customers in the Brisbane area and 30,000 customers in the Ipswich area are currently being restored. Work to restore supply continues to be dependant on how fast floodwaters recede and the extent of damage to equipment.

The Lockyer Valley and Brisbane Valley areas remain a priority with 8,000 homes and business with out power. Up to eight helicopters carrying ENERGEX crews are surveying damage to the network. Crews on the ground are working to overcome access issues including flooded roads, fields and impassable access tracks.

In the Gympie and Mary Valley area crews are working to restore 700 customers. Since the weekend, ENERGEX crews have been able to restore power to more than 7,500 homes and businesses in this area.

ENERGEX continues to urge all property owners whose premises have been inundated by floodwaters to ensure they are inspected by a licensed electrician before using or reconnecting electricity.

Buildings that have suffered floodwater inundation may have significant damage to the electrical circuitry and appliances and could present potential safety risks.

It is not worth risking a life for the sake of an electrical inspection.

Electricians can be found in the Yellow Pages, local newspaper classifieds or by contacting the Master Electricians Association 1300 889 198 or at [www.masterelectricians.com.au](http://www.masterelectricians.com.au).



We thank customers for their patience and understanding during this natural disaster.

**ENDS**

***For media inquiries: Office Hours (07) 3664 4420 or After Hours (07) 3664 5191***

14 January 2011



# media release

positive energy

## **ENERGEX flood fast facts – 7.30pm**

- Homes and business restored since Monday 222,600
- Current outages: 36,109
- Brisbane 24,405
- Ipswich 7,876
- Lockyer Valley 1,269
- Brisbane Valley 1,823
- Gympie/Sunshine Coast 645
- Safety: ENERGENX is asking people to have a qualified electrician inspect homes and electrical appliances that may have been water damaged
- ENERGENX thanks the people of South East Queensland for their patience during power outages
- Power outage information can be found at [www.energex.com.au](http://www.energex.com.au)

**ENDS**

***For media inquiries: Office Hours (07) 3664 4420 or After Hours (07) 3664 5191***



15 January 2011 – 3.45am



positive energy

# media release

## ENERGEX restores power to more than 18,000 overnight

In the last 12 hours, ENERGEX has restored power to more than 18,000 homes and businesses across flood affected areas of South East Queensland, with nearly 230,000 restored since Monday.

- **TOTAL outages for South East Queensland 28,750**
  - Brisbane 18,967
  - Ipswich 6,641
  - Lockyer Valley 1,228
  - Brisbane Valley 1,823
  - Gympie/Sunshine Coast 0 (all restored)

More than 250 ENERGEX crews will continue to work from first light this morning to restore power to several thousand more homes and businesses today as floodwaters recede further and access to isolated areas becomes more possible.

Some properties not directly affected by flood waters may still be impacted by power interruptions because of the web-like structure of the electricity network - the electrical equipment supplying power to a property may have been affected.

ENERGEX is urging all property owners whose premises have been inundated by floodwaters to ensure they are inspected by a licensed electrician before using or reconnecting electricity. Buildings that have suffered floodwater inundation may have significant damage to the electrical circuitry and appliances and could present potential safety risks.

As flood waters recede and properties become accessible ENERGEX electrical officers will inspect homes, and in some cases electricity may be disconnected. In this case a notice will be left on the property switch board and the owner will be required to have the premises checked by a licensed electrician before ENERGEX can restore power. To find a local electrician to inspect homes, people can contact Master Electricians on 1300 889 198.

ENERGEX is also urging people to be careful when using electrical equipment around water when cleaning up their homes or businesses and if electrical equipment or appliances have been in contact with water, make sure they are either checked by an electrician or thrown away.

ENERGEX thanks the people of South East Queensland for their patience during power outages during and following the floods.

Power outage information can be found at [www.energex.com.au](http://www.energex.com.au).

**ENDS**

***For media inquiries: Office Hours (07) 3664 4420 or After Hours (07) 3664 5191***

# ATTACHMENT CJA-9





[ENERGEX](#) ENERGEX Limited

@

@[trishjb](#) sorry Tarragindi is one of those suburbs that won't be able to come back on yet. no restoration time sorry

[12 Jan Favorite Reply Delete](#)

»



[ENERGEX](#) ENERGEX Limited

@

@[balanceshift](#) sorry Tarragindi is one of those suburbs that won't be able to come back on yet. no restoration time sorry

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»



[ENERGEX](#) ENERGEX Limited

4 of 9 subs impacted by Powerlink Sub outage r back. Remaining Rocklea, Salisb, Moorooka, Annerley, HolPark r unable I'm sorry

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»



[ENERGEX](#) ENERGEX Limited

update on Tennyson Sub outage: Sherwd, Indooro, Taringa, StLucia subs are back on. Unable to restore any further at this stage.

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»



[ENERGEX](#) ENERGEX Limited

@

@[Jeebs](#) if pwr is back on it's most likely because it was safe to do so. if that situation changes pwr situation might change, hard to say

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»



[ENERGEX](#) ENERGEX Limited

@

@[jkington](#) power is getting progressively restored. if ur outage is part of the Powerlink Sub outage it shouldn't be too far away

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»



[ENERGEX](#) ENERGEX Limited

@

@[mixamus](#) great to hear. hope you're all safe

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»



[ENERGEN](#) ENERGEN Limited

@

@[mickykitsune](#) we're hoping to progressively get the pwr back over next hour

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»



[ENERGEN](#) ENERGEN Limited

SEQ ur patience is appreciated. It is impossible to get pwr back on until water recedes. At this stage flood levels are still rising.

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»



[ENERGEN](#) ENERGEN Limited

Power out to many areas which may not be low-lying areas but are fed by subs that are in low-lying areas. Thanks for ur patience SEQ

[12 Jan Favorite Reply Delete](#)

»



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ENERGEN thanks SEQ residents for their patience. For latest outage updates <http://bit.ly/hR1g9i> [#qldfloods](#) [#thebigwet](#)

[12 Jan Favorite Reply Delete](#)

»



[ENERGEN](#) ENERGEN Limited

ENERGEN monitoring Brisbane CBD as flood waters continue to rise. <http://bit.ly/18Cmib> [#qldfloods](#) [#thebigwet](#)

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»



[ENERGEN](#) ENERGEN Limited

Full website up and running. Check for regular updates <http://bit.ly/18Cmib>

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»



[ENERGEN](#) ENERGEN Limited

9453 customers without power in Brisbane West region. Check website for updates <http://bit.ly/8oW3IT>



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[ENERGEX](#) ENERGETX Limited

686 customers without power in Brisbane Sth region. Check website for updates

<http://bit.ly/8oW3IT>

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»



[ENERGEX](#) ENERGETX Limited

1423 customers without power in Brisbane Nth region. Check website for updates

<http://bit.ly/8oW3IT>

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»



[ENERGEX](#) ENERGETX Limited

@

@[skulzy87](#) only Brisbane CBD will be affected at this stage. no other suburbs listed yet. Ipswich had some power cut tonight

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»



[ENERGEX](#) ENERGETX Limited

516 customers without power in Brisbane Nth region. Check website for updates

<http://bit.ly/8oW3IT>

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# ATTACHMENT CJA-10





Search



Queensland Police Service's Notes

Notes About Queensland Police Service

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Queensland Police Service's Notes

Report

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### Energex is urging people to be mindful of electrical hazards when washing out properties. #thebigwet #qldfloods

by Queensland Police Service on Saturday, January 15, 2011 at 10:37am

Wiring behind walls, power switches and appliances still plugged into the wall may still be liv presents an obvious risk of electrocution.

To minimise electrical risks while cleaning homes and businesses people should switch off th switch in the meterbox while wearing dry gloves. If they don't know how to do this call a lice electrician or Master Electricians for advice.

Do not hose or wet inside or around the building's meterbox or switchboard.

Similarly, once finished cleaning allow the premise to dry completely before switching it back it means staying with friends or family for the night.

Any electrical appliances that were wet during the floods should be either checked by a licen contractor or photographed for insurance reasons and discarded.

Share

20 people like this.



**Melissa Fulton** Are you being strict on electririans having to have contractors to test houses.. as there is heaps of trademen waiting but dont have contractors to sign off houses!!

January 15 at 10:39am · 2 people



**Jessie Badger** Master Electricians Australia are coordinating the effort in conjunction with the government to restore power to flood affected homes. Your electricity provider (Energex/Ergon) can only legally reconnect the power if an electrical contractor has performed an electrical safety test. Master Electricians Australia has a hotline available for those that need to find an electrician - 1300 889 198.

January 15 at 11:06am



**Kara Pope** Yeah its gone everywhere dude:(

January 15 at 11:12am



**Melissa Fulton** I have an electrician but no contractors, what can he do??

January 15 at 11:16am



**Gwynneth Jacob** Got this from Energex web site "Each premise which has been partially or fully inundated by water needs to be certified by a licensed electrician (call Master Electricians 1300 889 198)." hope it helps

January 15 at 11:39am



**Pauline Roberts** But does it still need to be checked, if it was partially covered, but power stayed on???? That happened here.

January 15 at 4:05pm

Facebook © 2011 · English (US)

Chat (Offline)

# ATTACHMENT CJA-11





## flood safety

Flooding following storms can have major impacts on the electricity network and your home. While it is not always easy to be prepared for flooding, here are some important tips to stay safe.

### flood planning

Contact your local council to find out if you are in a flood-prone location. If you are in a flood-prone location:

- consider relocating your switchboard and any wiring in your home that may currently be below previous flood levels
- discuss and agree on an evacuation plan
- identify possessions, equipment and fittings that are not located above possible flood levels and move if practical
- familiarise yourself with flood warning classifications and where to access information during a flood
- keep a list of emergency phone numbers on display, also store these numbers in all mobile phones.



### before a flood

- Clean gutters and downpipes so water can drain away as quickly as possible.
- Secure loose items around your property and garden, anything that could blow around such as garden furniture and toys.
- Where possible, move any electrical equipment to higher ground.
- Turn off and unplug any electrical appliances that may become inundated with water.
- Charge your laptop computer so you can check power outage information at [www.energex.com.au](http://www.energex.com.au)
- Place important documents, personal effects and vital medical supplies in a waterproof case or bag and move to a safe and easily accessible place in case you have to evacuate.
- Secure any item that may become buoyant in your yard (gas bottles, drums, timber etc).
- Monitor Bureau of Meteorology forecasts and warnings via website <http://www.bom.gov.au> or listen to your local emergency radio station.
- Register online** for early severe weather warning alerts.

### during a flood

- Consider what action you may need to take if power supplies are disconnected. Remember to turn off power at the main switch in your switchboard.
- Do not operate electrical appliances or switches while standing in water or when you have bare feet.
- Don't connect portable generators to the electrical wiring of your house or office unless a licensed electrician has installed a changeover switch. Appliances can be plugged directly into the generator but always read the manufacturer's instructions carefully.
- Stay tuned to local radio for current weather advice and warnings.
- Always follow instructions and directions from local authorities and be ready to evacuate if necessary.
- If moving around your area in boats, be aware of reduced powerline height clearances. Flood waters will make you closer to the powerlines and power poles can also lean from the force of flood waters.

### after a flood

- Before entering your property make sure it is safe to do so.
- Unplug all electrical appliances affected by water and have them inspected by a licensed electrical contractor before use.
- Have a licensed electrical contractor check or isolate any parts of your electrical installation that have been affected by water - especially if the switchboard has been

submerged or if your safety switch has tripped.

- Take extra care around your switchboard. If you are in any doubt about your switchboard's safety, stay clear and call your licensed electrical contractor.
- Take care when cleaning up as fallen powerlines hidden in branches, debris or water can be extremely dangerous. Don't take chances. If you find a fallen powerline, keep well away, warn others and call ENERGEX on 13 19 62 or Triple Zero (000).

#### **flooding & electrical equipment**


Flooding following storms can have major impacts on the electricity network and your home.

While flooding brings with it many obvious hazards, the hidden danger of live electricity mixing with water is something people often don't consider, but something we must all be aware of. Severe storms often cause damage to the overhead power network, with major floods damaging underground power equipment such as transformers, and pillars.

If floodwaters rise to the level of electrical equipment, stay well away to avoid the risk of electric shock. Appliances affected by water can be extremely dangerous, and in some cases they can even be fatal, so it is important that the affected item is either thrown away or checked by an authorised electrician before it is used again.

#### **State Emergency Service (SES)**

Call 132 500 from anywhere in Queensland for emergency SES assistance in a flood or storm.

 [Back to storm safety information](#)

#### **Disclaimer**

This is not an exhaustive list of all safety matters that need to be considered. Whilst care is taken in the preparation of this material, ENERGEX does not guarantee the accuracy and completeness of information.

ENERGEX will not be responsible for any loss, damage or costs incurred as a result of any errors omissions or misrepresentations in relation to the material in this document or for any possible actions ensuing from information contained above.



# ATTACHMENT CJA-12

# ENERGEX

## Power Restoration Update



positive energy

Important information  
about your electricity  
restoration



Last week's floods resulted in the loss of electricity supply to more than 260,000 South East Queensland homes and businesses.

Since Monday ENERGEX crews have been working around the clock to restore power.

In the worst affected areas the electricity network will need to be repaired or even rebuilt. This is a resource intensive process which will take time.

### **Please call 13 62 62:**

- if your home was not affected by flood water, but you are still without power
- for power restoration updates.

### **Power restoration update**

We are aiming to have power to those homes that can be safely re-connected by Thursday afternoon.

In some areas where the electricity network has been badly damaged the restoration of power could take longer – in some cases it may be weeks.

We apologise to customers who are experiencing extended periods without power and thank you for your understanding and patience. Every effort is being made to get power back on in South East Queensland as soon as possible.

### **Contact ENERGEX**

Loss of supply: 13 62 62

Emergency: 13 19 62

Website: [energex.com.au](http://energex.com.au)

Follow us on [twitter.com/energex](https://twitter.com/energex)



## Important information about your electricity restoration

For outage information please visit [energex.com.au/myarea](http://energex.com.au/myarea)

### ENERGEX re-connection process

#### Properties that were not affected by flood waters

If your home was not affected by flood waters you do not need to do anything. ENERGEX crews will restore power to your property as soon as possible. Many premises that were not directly affected by flood waters have lost power because part of the electricity network that supplies that property was damaged.

#### Properties that were affected by flood waters

Two separate inspections must occur on a flood affected property before re-energisation. These inspections can occur in any order.

1. ENERGEX conducts the inspection of the network source attachment point (where ENERGEX's mains connect to your property), meter box and meters to the property. If a safety risk is identified (including signs of water inundation) or the property owner is not on site, ENERGEX will place a form in the meter box. The property owner will need to arrange an electrician to inspect the property.
2. A licensed electrician inspects and tests household wiring.

Residents have the option of organising their own licensed electrician to inspect the property, either before or after ENERGEX has conducted the initial electrical safety assessment. Electricians can be found in the Yellow Pages, local newspaper classifieds or by contacting the Master Electricians Association on 1300 889 198.

If the property is electrically safe, the electrician will leave a form in the meter box and will contact ENERGEX. An ENERGEX crew will reconnect power to the property as soon as practicable.

If the property is not electrically safe, the property owner will be required to arrange for repairs to be made before ENERGEX can reconnect it back to the grid.



NOTE: The Master Electricians have set a recommended price of \$200 to provide the mandatory basic safety inspection service. Property owners have the option of seeking reimbursement through property insurance and disaster relief payments or meeting the full cost.

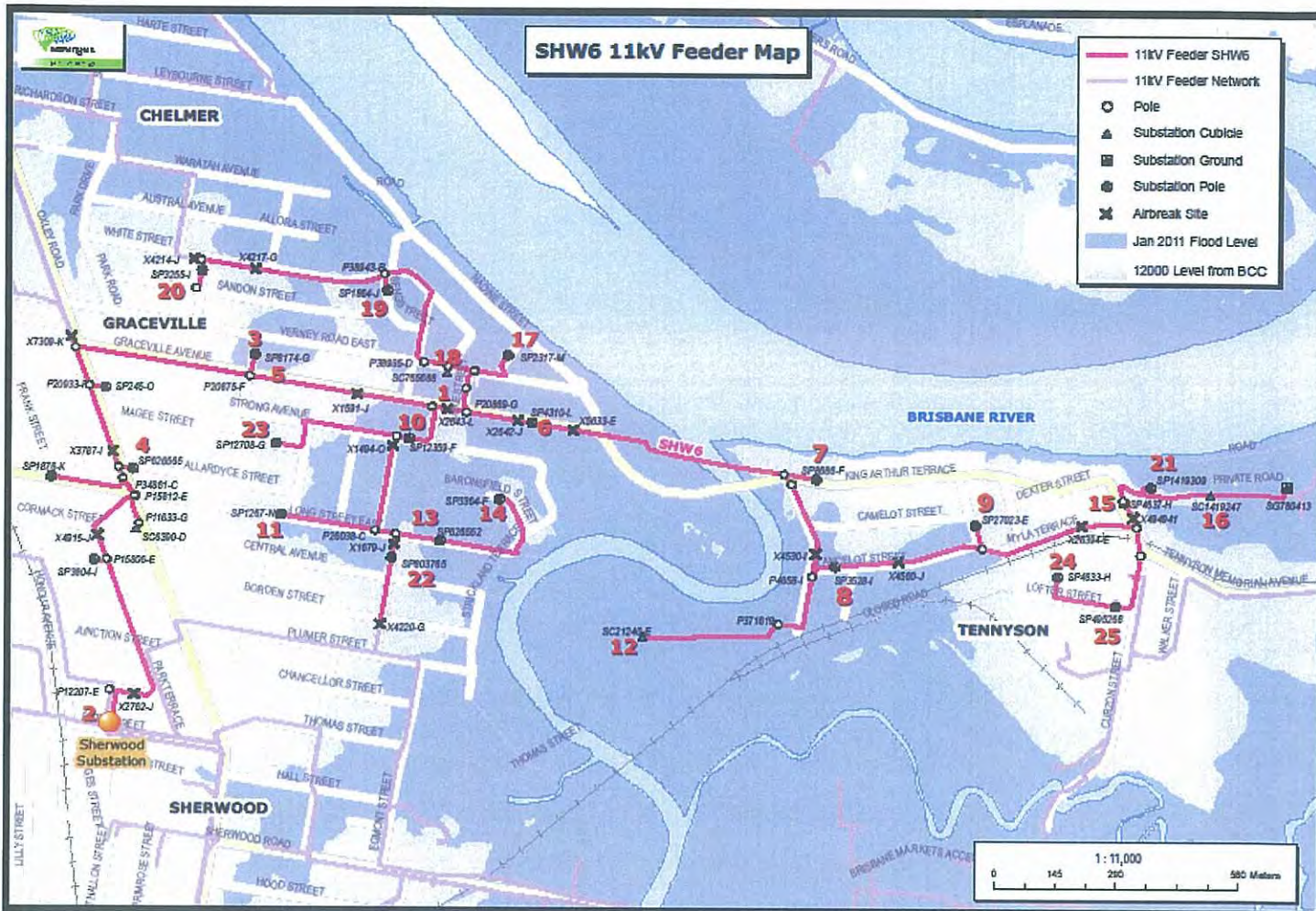


# ATTACHMENT CJA-13



## EXPLANATION OF SHERWOOD 11kv FEEDER

- The map below is a geographic sketch of the 11kV feeder “Sherwood #6”, with the operational designation of SHW6. The explanation below is to be read in accordance with this map. The map has been marked with numbers (1 to 25) to identify certain ENERGEX equipment discussed below.



### Description of the Feeder

- SHW6 starts at the ENERGEX Sherwood substation (operational designation SSSHW) located in Bute Street, Sherwood (map point 2). It traverses through parts of Sherwood, Graceville, and Tennyson. The route of SHW6 is shown on the map.
- Marked on the map are the 11,000 / 415 volt transformers<sup>2</sup> that supply the local homes and business. These transformers can be either ground mounted or pole mounted. On the map the transformers are denoted with a triangle shape. The number besides each transformer is their operational designation (e.g. SP12708-G).
- Marked on the map with an “X” are the 11kV voltage switches. Most of these switches are normally closed (e.g. X2643-L, site number 1). Some switches, however, are normally open (e.g. X4214-J, site number 20). The switches which are normally open are used for

<sup>2</sup> The low voltage supply from distribution transformers is 415 volt when measured phase to phase (three phase) and 240 volt when measure phase to neutral (single phase). Most domestic customers take only a single phase supply.



alternate supply from adjacent high voltage feeders. Altering the location of the open and closed switches alters the power flow around the network. These 11kV volt switches are also used to isolate parts of the network for emergency repairs and day to day routine maintenance.

5. The ENERGEX network map has been overlaid with two flood levels. The “worst case” flood level as advised by the Brisbane City Council<sup>3</sup> and the actual flood level<sup>4</sup>. As can be seen, a significant proportion of SHW6 was inside both the worst case forecast and actual flood boundaries.

#### **Disconnection and Restoration Process (simplified account)**

6. At approximately 9:41am on 12 January 2011, the 11kV switch X2643-L (Graceville Avenue, marked as point 1 on the map) was opened. This disconnected power for all transformers downstream of this isolator (i.e. map points 6, 7, 8, 9, 12, 15, 16, 17, 18, 19, 20, 21, 24, & 25).
7. At 11.00pm on 12 January 2011, the 11kV switch X1591-J (Graceville Avenue, map point 5) was opened. This disconnected power for all transformers downstream of this isolator (i.e. map points 10, 11, 13, 14, 22, & 23). This further disconnection was necessitated due to rising flood waters in these areas.
8. During the course of the remainder of the evening of 12 January 2011 and into the early hours of the 13 January 2011, further disconnection was performed on the low voltage network by opening the low voltage isolators on transformers at map points 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, & 25.
9. All of these points supply electricity to customers that were considered to be within the worst case flood level.
10. At 6:01am on 15 January 2011 after floodwaters had somewhat receded, the 11kV switch X1591-J (Graceville Avenue) was closed. This energised all transformers downstream of this isolator (i.e. map points 10, 11, 13, 14, 22, & 23). Crews then proceeded to inspect the low voltage network and restore supply where possible.
  1. About 10:21am on 16 January 2011, the 11kV switch X4530-I was opened and the switch X2643-L (Graceville Avenue) was closed. This energised all transformers downstream of this isolator up to X4530-I (i.e. map points 6, 7, 17, 18, 19 & 20). Crews then proceeded to inspect the low voltage network in these areas and restore supply where possible.
  2. Over the course of the next few days; ENERGEX crews visually inspected the network, often going house to house. ENERGEX crews inspected and/or restored electricity supply to the remaining sites by closing switch X4530-I and progressively closing low voltage isolators on all of the transformers.

<sup>3</sup> SITREP#012 includes statement that “As of 1945hrs (11/1), all flood preparation estimates are now being based on a 12000 cumex level”

<sup>4</sup> Brisbane City Council surveyed flood extend (post-flood).



<b>Map Point</b>	<b>ENERGEX Plant ID</b>	<b>Description</b>
1	X2643-L	11,000 volt switch
2	SSSHW	Sherwood Substation
3	SP8174-G	11,000 volt / 415 volt transformer
4	SP626565	11,000 volt / 415 volt transformer
5	X1591-J	11,000 volt switch
6	SP4310-L	11,000 volt / 415 volt transformer
7	SP8686-F	11,000 volt / 415 volt transformer
8	SP3528-I	11,000 volt / 415 volt transformer
9	SP27023-E	11,000 volt / 415 volt transformer
10	SP12359-F	11,000 volt / 415 volt transformer
11	SP1267-N	11,000 volt / 415 volt transformer
12	SC21240-E	11,000 volt / 415 volt transformer
13	SP626552	11,000 volt / 415 volt transformer
14	SP3364-F	11,000 volt / 415 volt transformer
15	SP4637-H	11,000 volt / 415 volt transformer
16	SC1419247	11,000 volt / 415 volt transformer
17	SP2317-M	11,000 volt / 415 volt transformer
18	SC765688	11,000 volt / 415 volt transformer
19	SP1864-J	11,000 volt / 415 volt transformer
20	SP3255-I	11,000 volt / 415 volt transformer
21	SP1419309	11,000 volt / 415 volt transformer
22	SP803765	11,000 volt / 415 volt transformer
23	SP12708-G	11,000 volt / 415 volt transformer
24	SP4633-H	11,000 volt / 415 volt transformer
25	SP495268	11,000 volt / 415 volt transformer

**Table 1 – Cross reference of map points and associated ENERGEX equipment**

## ATTACHMENT CJA-14



Outage Date	Brief Description	Fault Description	Action taken Description	Majority Restored date	Majority Restored %	Total Restoration Date
10/01/2011 13:55	L/O X182754/RE1 Six Mile Creek Rd, Postmans Ridge PRG2B	L/O due to major damage to feeder during flash flooding in Murph's Creek	major damage due to flooding lengthy repairs	14/01/2011 10:21	25	17/01/2011 18:20
10/01/2011 13:56	L/O X68777-A/RE1 Ashlands Dr, Helidon Spa PRG2A	L/O due to major damage to feeder caused by floods	Repair damage when access available	16/01/2011 16:02	90	17/01/2011 11:57
10/01/2011 15:06	L/O HDN1 SSHDN/RE1012	Extreme water event on Lockyer Creek caused several poles wires and equipment at several places to collapse into the swollen creek, locking out CB1012 at HDN	Isolated several sections, breaking away fault areas, restored some supply. Remainder to stay off until waters recede and/or crews become available.	10/01/2011 22:41	20	18/01/2011 19:37
10/01/2011 15:06	L/O HDN1 SSHDN/RE1012	Extreme water event on Lockyer Creek caused several poles wires and equipment at several places to collapse into the swollen creek, locking out CB1012 at HDN	Isolated several sections, breaking away fault areas, restored some supply. Remainder to stay off until waters recede and/or crews become available.	10/01/2011 22:41	20	18/01/2011 19:37
10/01/2011 15:28	A/T SP2644-D HDN2	0-20110103988 lv poles washed away in flash flood. Refer to report 242203 for outage details	S.Robinson Made Safe. Isolated SP2644, transformer replaced 17/01/11			17/01/2011 11:58
10/01/2011 16:43	Emergency Interruption HV GTN12A	Lockout due to floods	flood repairs	11/01/2011 9:18	10	21/01/2011 13:47
10/01/2011 17:09	L/O HDN2 SSHDN/RE1022	Floods	Isolate and repair after floods	10/01/2011 18:58	50	18/01/2011 21:41
10/01/2011 20:15	A/T SP1939-C HDN2	0-20110104246 – SO_HIST(); TCST: Pole to Building; P/F:A;ID:cust reports powerlines down on property which also supply. Supply restored to transformer on 15/1/2011 12:37 see report 242203 for outage details	Other – ENERGEX – Ross Moody LV OHM gone in creek. Replumb LV OHM. New LV over creek Req.			15/01/2011 12:37
11/01/2011 7:28	Loss of Substation/Transformer SSCPD	Floods	Floods	14/01/2011 18:23	100	15/01/2011 11:21
11/01/2011 7:28	Loss of Substation/ Transformer SSCPD	Floods	Floods	14/01/2011 18:23	100	15/01/2011 11:21
11/01/2011 7:28	Loss of Substation/ Transformer SSCPD	Floods	Floods	14/01/2011 18:23	100	15/01/2011 11:21

# ATTACHMENT CJA-15



## Helicopter Patrols for ENERGEX

Note: It is not possible to ascertain from the records which flights were in direct support of the Lockyer Valley verses flights for the surrounding area. The vast majority of flights were for the access to remote sites in ENERGEX's western area of supply.

Date	FLIGHT DETAILS VH INY		CLIENT	Flight		
	FROM	TO		START	STOP	RUN
01/10/2011	YCAB	YCAB	EGX	14:30	16:40	2:10
01/11/2011	YCAB	YCAB	EGX	14:38	15:08	0:30
01/11/2011	YCAB	KILCOY	EGX	15:30	17:13	1:43
01/11/2011	KILCOY	YCAB	EGX	17:13	17:43	0:30
01/12/2011	YCAB	YTWB	EGX	8:55	11:32	2:37
01/12/2011	YTWB	HELI	EGX	12:05	13:25	1:20
01/12/2011	HELI	YCAB	EGX	14:40	17:00	2:20
13/1/2011	YCAB	YCAB	EGX	9:22	9:50	0:28
13/1/2011	YCAB	YRED	EGX	10:20	10:44	0:24
13/1/2011	YRED	YCAB	EGX	11:10	11:34	0:24
13/1/2011	YCAB	YAF	EGX	11:45	14:10	2:25
13/1/2011	YAF	YCAB	EGX	15:35	17:18	1:43
14/1/2011	YCAB	ELSEY	EGX	9:07	11:37	2:30
16/1/2011	YCAB	KCY2	EGX	8:41	9:03	0:22
16/1/2011	KCY2	CONANDALE	EGX	9:43	10:08	0:25
16/1/2011	CONANDALE	KCY2	EGX	10:35	11:15	0:40
16/1/2011	KCY2	TGW3	EGX	12:05	12:30	0:25
17/1/2011	YCAB	TGW3	EGX	8:13	8:42	0:29
17/1/2011	TGW3	TGW3	EGX	8:53	9:30	0:37
17/1/2011	TGW3	TGW3	EGX	9:58	11:25	1:27
19/1/2011	YCAB	RV	EGX	9:40	10:12	0:32
19/1/2011	RV	LOWOOD	EGX	11:15	12:43	1:28
19/1/2011	LOWOOD	FERNVALE	EGX	14:35	16:12	1:37
19/1/2011	FERNVALE	RV	EGX	17:07	17:25	0:18
20/1/2011	YCAB	LOWOOD	EGX	8:25	9:00	0:35
20/1/2011	LOWOOD	LOWOOD	EGX	10:30	12:15	1:45
20/1/2011	LOWOOD	LOWOOD	EGX	13:58	14:59	1:01
20/1/2011	LOWOOD	LOWOOD	EGX	15:30	16:35	1:05
21/1/2011	ELSEY	YCAB	EGX	6:10	6:30	0:20
21/1/2011	YCAB	FERNVALE	EGX	7:57	8:32	0:35
21/1/2011	FERNVALE	FERNVALE	EGX	9:05	10:02	0:57
21/1/2011	FERNVALE	FERNVALE	EGX	10:22	10:45	0:23
21/1/2011	FERNVALE	DARRA	EGX	11:19	11:45	0:26
21/1/2011	DARRA	DARRA	EGX	12:01	14:50	2:49
21/1/2011	DARRA	DARRA	EGX	15:05	15:12	0:07
21/1/2011	DARRA	DARRA	EGX	15:25	18:19	2:54
23/1/2011	YCAB	FERNVALE	EGX	7:47	8:40	0:53
23/1/2011	FERNVALE	FERNVALE	EGX	12:05	13:25	1:20
23/1/2011	FERNVALE	YCAB	EGX	13:48	14:22	0:34

23/1/2011	FERNVALE	FERNVALE	EGX	13:05	13:35	0:30
23/1/2011	FERNVALE	YCAB	EGX	13:48	14:25	0:37



Date	FLIGHT DETAILS VH LTX		CLIENT	Flight		
	FROM	TO		START	STOP	RUN
01/11/2011	YCAB	YTWG	EGX	15:40	17:00	1:20
01/11/2011	YTWG	GATTON	EGX	17:55	18:18	0:23
01/11/2011	GATTON	POSTMANS	EGX	18:45	18:58	0:13
01/12/2011	GATTON	RV	EGX	5:38	6:08	0:30
01/12/2011	RV	MT CRSBY	EGX	6:08	6:44	0:36
01/12/2011	MURPHY CR	MT CRSBY	EGX	8:00	8:27	0:27
01/12/2011	TOOGOO	YBAF	EGX	9:38	9:50	0:12
01/12/2011	POSTMANS	TENNIS CN	EGX	10:14	11:18	1:04
01/12/2011	TENNIS CN	LOWOOD	EGX	12:58	13:24	0:26
01/12/2011	PATROL	YBAF	EGX	13:41	14:28	0:47
01/12/2011	YCAB	LOWOOD	EGX	15:25	17:40	2:15
01/12/2011	YCAB	YCAB	EGX	17:40	18:09	0:29
13/1/2011	YCAB	YCAB	EGX	8:58	9:25	0:27
13/1/2011	YCAB	YCAB	EGX	9:25	11:50	2:25
13/1/2011	YCAB	YBAF	EGX	11:50	12:50	1:00
13/1/2011	YBAF	YCAB	EGX	13:38	16:00	2:22
13/1/2011	YCAB	YCAB	EGX	16:20	17:21	1:01
14/1/2011	YCAB	YGAS	EGX	6:55	7:27	0:32
14/1/2011	YGAS	YCAB	EGX	7:50	9:17	1:27
14/1/2011	YCAB	MURPHY CR	EGX	9:38	10:17	0:39
14/1/2011	MURPHY CR	TOOGOO	EGX	10:40	11:42	1:02
14/1/2011	TOOGOO	POSTMANS	EGX	12:15	13:31	1:16
14/1/2011	POSTMANS	YCAB	EGX	14:28	15:59	1:31
18/1/2011	YCAB	PATROL	EGX	12:32	13:35	1:03
18/1/2011	PATROL	YCAB	EGX	13:28	14:57	1:29
18/1/2011	YCAB	YCAB	EGX	15:45	16:25	0:40
20/1/2011	ELSEY	EMU BRG	EGX	7:20	7:44	0:24
20/1/2011	EMU BRG	TOOGOO	EGX	7:55	8:32	0:37
20/1/2011	TOOGOO	LINVILLE	EGX	8:50	9:37	0:47
20/1/2011	LINVILLE	LINVILLE	EGX	9:48	11:13	1:25
20/1/2011	LINVILLE	LINVILLE	EGX	11:28	12:49	1:21
20/1/2011	LINVILLE	TOOGOO	EGX	13:20	15:32	2:12
20/1/2011	TOOGOO	LINVILLE	EGX	16:28	16:38	0:10
20/1/2011	LINVILLE	YCAB	EGX	16:38	17:24	0:46

Date	FLIGHT DETAILS VH MDE		CLIENT	Flight		
	FROM	TO		START	STOP	RUN
19/1/2011	YCAB	YBAF	EGX	9:50	10:32	0:42
19/1/2011	YBAF	RV	EGX	11:02	11:18	0:16
19/1/2011	RV	WORK SITE	EGX	12:18	12:50	0:32
19/1/2011	YCAB		EGX	15:20	16:20	1:00
19/1/2011	0	YCAB	EGX	16:20	16:57	0:37
20/1/2011	YCAB	YBAF	EGX	9:52	10:22	0:30
20/1/2011	YBAF	WIVENHOE	EGX	11:09	11:40	0:31
20/1/2011	WIVENHOE	WIVENHOE	EGX	12:36	12:45	0:09
20/1/2011	WIVENHOE	WIVENHOE	EGX	12:45	13:02	0:17
20/1/2011	WIVENHOE	YTWG	EGX	14:02	14:26	0:24
20/1/2011	YTWG	LINVILLE	EGX	14:26	15:34	1:08
20/1/2011	LINVILLE	YCAB	EGX	16:40	17:20	0:40
21/1/2011	YCAB	LWD1	EGX	8:00	9:05	1:05
21/1/2011	LWD1	LWD1	EGX	10:25	10:55	0:30
21/1/2011	LWD1	LWD1	EGX	11:15	11:35	0:20
21/1/2011	LWD1	YCAB	EGX	17:15	18:05	0:50
22/1/2011	YCAB	FERNVALE	EGX	8:10	9:02	0:52
22/1/2011	FERNVALE	FERNVALE	EGX	9:09	9:47	0:38
22/1/2011	FERNVALE	FERNVALE	EGX	11:37	12:15	0:38
22/1/2011	FERNVALE	FERNVALE	EGX	12:53	13:13	0:20
22/1/2011	FERNVALE	LWD1	EGX	13:20	13:44	0:24
22/1/2011	LWD1	LWD1	EGX	14:20	14:37	0:17
22/1/2011	LWD1	LWD1	EGX	15:05	16:06	1:01
22/1/2011	LWD1	LWD1	EGX	18:07	18:42	0:35



Date	FLIGHT DETAILS VH VJR		CLIENT	Flight		RUN
	FROM	TO		START	STOP	
01/10/2011	YCAB	ELSEY	EGX	11:30	11:42	0:12
01/10/2011	ELSEY	ELSEY	EGX	12:40	13:32	0:52
01/10/2011	ELSEY	MINOR	EGX	14:20	16:43	2:23
01/10/2011	MINOR	YCAB	EGX	17:55	17:59	0:04
01/11/2011	YCAB	YCAB	EGX	10:25	11:50	1:25
01/11/2011	YCAB	YCAB	EGX	12:55	15:02	2:07
01/11/2011	YCAB	MINOR	EGX	15:31	18:20	2:49
01/12/2011	YCAB	WOODFORD	EGX	8:15	9:15	1:00
01/12/2011	WOODFORD	KILCOY	EGX	9:17	9:23	0:06
01/12/2011	KILCOY	YTWG	EGX	9:25	11:24	1:59
01/12/2011	YTWG	YTWG	EGX	11:34	12:05	0:31
01/12/2011	YTWG	YTWG	EGX	12:10	13:24	1:14
01/12/2011	YTWG	YTWG	EGX	13:24	14:45	1:21
01/12/2011	YTWG	YTWG	EGX	14:46	15:03	0:17
01/12/2011	YTWG	YTWG	EGX	15:10	15:30	0:20
01/12/2011	YTWG	YCAB	EGX	15:31	18:00	2:29
13/1/2011	YCAB	YCAB	EGX	9:14	10:45	1:31
13/1/2011	YCAB	YTWG	EGX	13:54	15:02	1:08
13/1/2011	YTWG	KILCOY	EGX	15:18	18:09	2:51
14/1/2011	YCAB	YTWG	EGX	9:04	12:00	2:56
14/1/2011	YTWG	YCAB	EGX	12:06	14:42	2:36
14/1/2011	YCAB	RV	EGX	14:55	17:25	2:30
16/1/2011	YCAB	MT CRSBY	EGX	16:36	18:44	2:08
17/1/2011	YCAB	RV	EGX	14:24	17:22	2:58
18/1/2011	YCAB	EGX PAD	EGX	9:28	10:40	1:12
18/1/2011	EGX PAD	YCAB	EGX	10:55	11:22	0:27
18/1/2011	YCAB	YKIL	EGX	11:32	12:16	0:44
18/1/2011	YKIL	YCAB	EGX	13:12	13:35	0:23
18/1/2011	YCAB	YCAB	EGX	15:55	16:30	0:35
19/1/2011	YCAB	RV	EGX	9:10	9:40	0:30
19/1/2011	RV		EGX	9:40	12:35	2:55
19/1/2011	0	YTWB	EGX	12:35	13:04	0:29
19/1/2011	YTWB		EGX	13:58	15:55	1:57
19/1/2011	0	YCAB	EGX	15:55	16:25	0:30
20/1/2011	YCAB	ELSEY	EGX	6:43	7:27	0:44
20/1/2011	ELSEY	LWD1	EGX	8:25	9:02	0:37
20/1/2011	LWD1	LWD1	EGX	11:40	12:25	0:45
20/1/2011	LWD1	LWD1	EGX	12:10	13:22	1:12
20/1/2011	LWD1	YCAB	EGX	15:55	16:37	0:42
21/1/2011	YCAB	DANS MATE	EGX	6:35	7:00	0:25
21/1/2011	DANS MATE	LINVILLE	EGX	10:00	14:45	4:45
21/1/2011	LINVILLE	YCAB	EGX	15:46	16:20	0:34