



**Queensland Floods Commission of
Inquiry**

**Submission on Flood Preparedness
by the Ipswich City Council**

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1.0 Executive Summary

1.1 The Ipswich City Council (**Council**) highlights the following key issues in this submission being:

- (a) that the Council has sought in this submission to provide to the Commissioner a detailed document which is primarily prepared for the purpose of assisting the Commissioner when formulating relevant recommendations in terms of clause 3 of the Commissions of Inquiry Order (No. 1) 2011;
- (b) section 4.0 of this submission provides a summary of the flood event as it affected the City of Ipswich;
- (c) the issue of flood preparedness by the Council is then addressed in section 8.0 of this submission;
- (d) details of the notice that the Council received about the scale of the flood event and about the emergency response by the Council are set out in section 9.0 of this submission;
- (e) particulars about the establishment by the Council of the evacuation centres and the recovery actions taken by the Council are respectively set out in sections 10.0 and 11.0 of this submission; and
- (f) the Council has, in the time available, identified a range of learnings arising from the 2011 flood event. These are both of a systemic and operational nature. Details of these matters are summarised in section 13.0 of this submission where a range of issues, suggestions and proposals are highlighted for the Commissioner. However, the Council would note that many of these matters have not, in the available time, been fully investigated, costed or extensively evaluated in terms of their practical feasibility.

2.0 Introduction

- 2.1 The Commission has called for written submissions relating to issues of flood preparedness relevant to next summer's wet season (particularly dam operations, early warning systems and responses).
- 2.2 Clause 3 of the Commissions of Inquiry Order (No.1) 2011 directs the Commissioner to make recommendations which the Commissioner considers appropriate, feasible and cost effective to improve:
- (a) the preparation and planning for future flood threats and risk, in particular, the prevention of the loss of life;
 - (b) the emergency response in natural disaster events; and
 - (c) any legislative changes needed to better protect life and property in natural disaster events.
- 2.3 Clause 3 contemplates an interim report being made by the Commissioner on 1 August 2011 on matters associated with flood preparedness to enable early recommendations to be implemented before next summer's wet season.
- 2.4 The Council provides this written submission primarily for the purpose of assisting the Commissioner in formulating relevant recommendations. In order to identify possible recommendations, the Council has structured the submission to identify how the Council responded to the January 2011 flood (**the flood event**) with a view to then identifying areas where there was an appropriate response and areas where lessons were learnt which may then assist the Commissioner in formulating recommendations for flood preparedness for next summer's wet season.
- 2.5 Given the short time since the flood event, the matters raised in this submission are necessarily of a preliminary nature. The Council has, since the conclusion of the flood event, been primarily focused on recovery actions and that phase is still continuing. However, the Council while still in this recovery phase has taken time to reflect on the events surrounding the flood event and has identified in this submission a range of learnings at both the systemic and operational levels which could improve Council preparedness for a similar future disaster event.
- 2.6 Part of this analysis necessarily involves an examination, not only of the role of the Council, but also of the role of other agencies. Nothing in this submission should be interpreted as the Council identifying fault or being in any way critical of the response of any other agency to the

flood event. The analysis of the response of both the Council and other agencies is undertaken simply for the purpose of assisting in the preparation and planning for a future flood event. It needs to be remembered that the flood event involved a unique combination of unusual circumstances including:

- (a) a context where almost the whole of Queensland was, or had recently been, subjected to natural disaster events;
- (b) where emergency agencies were already stretched;
- (c) where the flood event on Tuesday 11 January 2011 escalated dramatically in a matter of hours; and
- (d) where the nature and extent of the flood event may have been exacerbated or contributed to by an element, namely the release of waters from the Wivenhoe Dam.

2.7 The Council does not presently know the extent to which factor 2.6(d) above aggravated the flood event within the Ipswich region and the Council will rely on expert hydrological advice to assist its understanding of the relevance of that factor as regards the flood event and its implications for the Council's planning for a future flood event.

2.8 Within the Council local government area, there was one loss of life. A separate section of this submission deals with the circumstances in which that life was lost.

2.9 The Council would like to place on record its appreciation for the outstanding efforts and the long hours that were invested in dealing with the flood event by a range of Council staff, community and support organisations and volunteers. Additionally, the Mayor and the Councillors were instrumental in helping to provide information and assistance to the community as well as then supporting the wider efforts of the Council during the response and initial recovery phases.

3.0 Background about Ipswich City Council

- 3.1 Ipswich is Queensland's oldest provincial City, located approximately 40 kilometres south-west of the Brisbane CBD and adjoining the Brisbane, Lockyer and Fassifern valleys. Ipswich has a range of smaller townships within the western and rural areas of the City. The Bremer River and its tributaries flow through much of the City and surrounding region. The junction of the Brisbane and Bremer Rivers falls within the City boundary, at Riverview/Karalee to the north-east of the City. When a flooding event occurs within the City boundaries, regard must be had to the inundation levels of both the Bremer and Brisbane Rivers.
- 3.2 The Ipswich region is administered locally by the Ipswich City Council. The Council operates within the local government framework established by the Queensland Government through the Local Government Act 2009 and comprises a Mayor and 10 Divisional Councillors.
- 3.3 The Ipswich City local government area is bounded by the Somerset Region to the north, Brisbane City to the north-east, Logan City to the south-east, Scenic Rim Region to the south and Lockyer Valley Region to the west.
- 3.4 The City has a population of approximately 170,000 and covers an area of 1,090 square kilometres. It has transitioned in recent decades from a region focused on mining, agriculture and related industry, to a City with a focus on manufacturing, technology, education, defence, aerospace and business services. The Council manages a net asset base in excess of \$2 billion.
- 3.5 Ipswich is positioned as part of the solution for housing and population growth in South-East Queensland. The Queensland Government SEQ Regional Plan 2009-2031 (**SEQRP**) identifies Ipswich as a major area for future urban development due, in part, to the City's abundant space for residential development. The City also has approximately 40% of south-east Queensland's available industrial land. The SEQRP anticipates that the population of Ipswich will grow to 435,000 by the year 2031.

4.0 The Flood Event

- 4.1 This section of the submission addresses the nature and impact of the flood event within the Council area.

Nature of the Flood Event

- 4.2 Each flood event is unique and exhibits its own features and characteristics. The 2011 flood event had different characteristics from the 1974 flood event. Such differences included (but were not limited to) the:

- (a) nature of the rainfall event;
- (b) spatial distribution of rainfall across the catchment;
- (c) interaction of flood flows throughout the catchment; and
- (d) attenuation of flood flows through the Wivenhoe Dam and discharge of flood flows from the Wivenhoe Dam.

As a result, some areas affected by flooding in the 1974 flood event were not affected during the 2011 flood event.

- 4.3 Features of the flood event which were atypical of flood events that have generally been experienced in Ipswich include:

- (a) that there was a long build-up of rainfall events leading to wet antecedent conditions that were marked by a number of minor flood events in the Brisbane and Bremer Rivers as a result of flooding within individual catchments flowing into those rivers;
- (b) localised flooding from rainfall in the Bremer catchment primarily occurred west of North Ipswich, with there being relatively minor localised flooding from rainfall in the southern and eastern parts of the catchment;
- (c) controlled outflow releases of water from the Wivenhoe Dam at unprecedented volumes;
- (d) unprecedented severe flooding of the Brisbane River, between its junction with the Bremer River and below Wivenhoe Dam, arising from the record breaking rainfall in the Lockyer Creek catchment;

- (e) major flooding in local catchments along the Brisbane River, such as Bundamba Creek and Woogaroo Creek (which are both well known areas for localised flooding) did not occur as a result of rain falling in the local catchment (and then flowing downstream) but occurred as the result of flooding in an upstream direction from the Brisbane River; and
- (f) within the inundation areas, very little riverine flooding was experienced in the Bremer River west of One Mile Creek. However, localised flooding did occur in relevant local catchments.

4.4 In this regard, the previous flood experience of Ipswich is of some, though limited, value in assessing responses to the flood event. Caution needs to be exercised in terms of future planning based only on the 2011 flood event, as the probability of the unique combination of circumstances pertaining to this event recurring and in particular the likelihood of such extensive releases from the Wivenhoe Dam, (a matter beyond the control of the Council), is hopefully remote.

4.5 At this stage, the Council has not yet obtained detailed professional hydrological advice on the causes of the flood event. However, as noted in paragraph 4.3, it seems clear on the available evidence that the flood event had its own peculiarities and potentially was quite different from other flood events that have affected the City. Certainly, the 2011 flood is a different flood event to the 1974 flood. Included at Schedule 1 of this submission is a map which compares the inundation levels of the 1974 and the 2011 flood events. We have also included at Schedule 2 a map of the catchments within the Ipswich City Council area.

4.6 It is relevant to note that for Ipswich there are two important river systems which impact the City. Firstly, there is the Bremer River system which has its own history of flooding. Secondly, there is the Brisbane River. The impact of a Brisbane River flood is two-fold. Firstly, it is the direct cause of flooding in the southern areas of the City such as the suburbs of Redbank and Goodna. Secondly, a Brisbane River flood can act as a "barrier" to the Bremer River (and other creeks such as Goodna Creek) entering the Brisbane River at the junction of those waterways with the Brisbane River. As a result waters from the Bremer River are then unable to enter the Brisbane River and are forced back up the Bremer River. This exacerbates the flood experience in that river and in the creeks, such as Bundamba Creek, that feed into the Bremer River near to its junction with the Brisbane River. In a practical sense, the challenge that the Council has is the challenge of monitoring the flooding peak levels in both the Bremer River and Brisbane River systems during a significant flood event of the Ipswich City area. This was the case for the flood event as there were two separate flood peaks in the Bremer and Brisbane Rivers which each needed to be closely monitored.

4.7 For the purposes of this preliminary submission the following discussion provides a high level overview of the impact of the flood event within the Ipswich City Council area being:

- (a) nearly one third of the Ipswich City area of 1,090 square kilometres experienced some level of inundation during the flood event. This inundation was concentrated in particular locations adjacent to the Bremer River between the Ipswich CBD and the Bremer River's junction with the Brisbane River at Riverview/Karalee to the north east of the City and in areas adjacent to the Brisbane River, such as Goodna and Redbank. The suburbs of North Booval, Barellan Point, North Ipswich, Moores Pocket, Tivoli, East Ipswich, Bundamba, Basin Pocket, Karalee, Redbank and Goodna were most affected in addition to an area in the eastern end of the Ipswich CBD;
- (b) notably, the impacts of the flood event on many of the creeks within the southern catchments of the Bremer and Brisbane Rivers, for example Six Mile Creek, Bundamba Creek and Deebing Creek were significantly less than was experienced in 1974. The flooding of the Bremer River to the south and west of One Mile and the Ipswich CBD was also less than 1974 levels. On the other hand, the impact of the flooding in the areas to the north east of the Ipswich CBD and in areas adjacent to the Brisbane River, was in many instances, similar to that experienced in the 1974 event;
- (c) it is estimated that approximately 8,600 properties (residential and business) were impacted by the flood event, with approximately 1,200 homes being significantly affected and 188 businesses directly impacted;
- (d) approximately 760 roads and 20 bridges sustained some level of damage;
- (e) a number of the Council's public assets and open space infrastructure were significantly impacted. In particular, these included the Council's maintenance depots at Riverview and Kholo Gardens, the Colleges Crossing Recreation Reserve, the Ipswich Pound, the Bundamba Swimming Centre and various other sporting facilities and parkland reserves;
- (f) the preliminary estimate of the cost to the Council of restoring public assets and infrastructure and undertaking necessary counter disaster work as a result of the flood event is in the order of \$115 million;
- (g) four local schools - Ipswich State High School, Bundamba State School, Brassall State School and East Ipswich State School were impacted by the flood waters;

- (h) a number of medical centres were impacted but as the Ipswich Hospital is located on high ground its services were unaffected by the flood event, except insofar as hospital staff were isolated and unable to attend at work for a short period; and
- (i) there was one loss of life within the Council area which occurred at Karrabin.

4.8 On 22 February 2011 the Council provided a submission to the State Department of Local Government and Planning relating to the "Restoration of Essential Public Assets" under the National Disaster Relief and Recovery Arrangements (**NDRRA Submission**). The NDRRA Submission detailed a claim by Council for \$115.5 million as at 15 February 2011, comprising \$3.1 million in emergent works and \$112.4 million in other restoration works. Attached at Schedule 8 to this submission is a copy of the Council's NDRRA Submission.

Essential Services

4.9 The following discussion provides an overview of the impact of the flood event on essential services being:

(a) Water

- (i) for the majority of the Ipswich area, there was no adverse impact on the provision of potable water services to residents and businesses during the flood event. For a short period of time there was interruption of water supply to some Marburg residents. A boiled water notice was also issued for the Marburg area and some water discolouration was experienced at Karalee. However these issues were readily addressed.
- (ii) sewerage services were substantially impacted by flood water inundation, with 29 pump stations being flooded. The Bundamba and Goodna waste water treatment plants were also affected. These pump stations and treatment plants are assets of Queensland Urban Utilities. The flooding of this infrastructure had a significant impact on the provision of sewerage services to Ipswich and significant effort was required to bring the pump stations and treatment plants back on line. Whilst this was occurring primary treatment of sewerage was still able to be undertaken.

(b) Communications

- (i) no major issues were experienced with the provision of telephony services. Key equipment within the Telstra Ipswich exchange was not

impacted by the flood waters. Impacts generally related to power failures, but all key sites had necessary generator support.

(c) Power

- (i) Energex services the Ipswich City Council area. During the flood event, electricity supply was cut to large areas of Ipswich, including approximately 4,000 properties in areas that were unaffected by flood waters. Approximately 1,200 inundated properties were directly affected by the loss of power.
- (ii) unaffected areas had power restored reasonably quickly. There were some matters identified by the Ipswich Local Disaster Management Group (**Ipswich LDMG**) regarding its liaison with Energex and the prioritisation of the restoration of power to areas that were unaffected by the flood event. These matters are addressed in more detail in paragraphs 9.61 - 9.68 of this submission.
- (iii) restoration of power to the inundated areas occurred at a slower pace as these properties required pre-reconnection premises inspections. Three weeks after the flood event approximately 900 properties, centred primarily in the Goodna and North Booval areas, were still to be reconnected to electrical supply. This represents a substantial proportion of the inundated properties.

5.0 Disaster Management - The Legislative Framework

- 5.1 The applicable State legislation in terms of the flood event was the Disaster Management Act 2003 (**the Act**)¹. The Act was recently extensively amended by the Disaster Management and Other Legislation Amendment Act 2010². This Act was assented to on 14 October 2010 with the majority of provisions commencing on 1 November 2010. The Act creates a Disaster Management Structure. This structure consists of a State Disaster Management Group³, a District Disaster Management Group⁴, Temporary District Groups⁵ and Local Disaster Management Groups⁶.
- 5.2 Schedule 3 of this submission contains a brief overview of the operation of the Act.
- 5.3 Schedule 4 provides a summary of the commonly used activation level terminology and the related triggers. These activation levels are referred to in various sections of this submission.

¹ Reprint No. 2D.

² Act No. 40 of 2010.

³ s.17.

⁴ s.22.

⁵ s.28A introduced by the 2010 amendments.

⁶ s.29.

6.0 The Ipswich City Local Government Disaster Management Plan

- 6.1 The Ipswich City Local Government Disaster Management Plan (**IDMP**) was developed during 2005 and 2006. The IDMP was based on the Council's previous Counter Disaster Management Plan (May 2000), the Council's previous Disaster Risk Assessments and the conduct of counter-terrorism risk management workshops. A Council project known as the Community Capacity Building Project also helped resolve gaps in the draft IDMP by the development of new sub-plans and associated registers and a range of Community Disaster Preparedness activities.
- 6.2 The process to develop the IDMP also involved a series of interviews with both senior Council staff and a range of external agencies including representatives of the Bureau of Meteorology, State Emergency Service, Queensland Fire and Rescue Service, Ipswich Police and Emergency Management Queensland. The Council was assisted in finalising the IDMP by GHD Pty Ltd.
- 6.3 On 6 November 2006, the Works Committee of the Council approved a report by the Deputy Works Manager, that subject to ratification by the Ipswich LDMG and the Executive Officer of that group that, Council would approve and adopt the IDMP. On 15 November 2006, Council received and approved the Report of the Works Committee dated 6 November 2006. It is understood that the IDMP was one of the first Local Disaster Management Plans that had been developed by any local government in Queensland. The IDMP then became a precedent which was considered and relied upon by a number of other local governments.
- 6.4 Since its adoption in 2006, the Ipswich LDMG has operated under the auspices of the IDMP and in accordance with the Act. Pursuant to the terms of the IDMP, annual reviews of the plan have been undertaken. Since 2006, the IDMP and the annexures to the IDMP have also been updated from time to time.
- 6.5 When the IDMP was last reviewed in 2010, it was understood that the 2010 amendments to the Act were expected to be introduced by the end of 2010. The intention was that a more detailed review of the IDMP would then be undertaken by the Council. The Council had, prior to the flood event, already successfully applied for and been granted specific funding to enable a detailed review of the IDMP to be undertaken.
- 6.6 However, before this further review could be undertaken the flood event occurred. The 2011 flood was the most severe event that has been coordinated under the IDMP. The experiences of the Council and the Ipswich LDMG during the 2011 flood event have provided a range of new insights which will be considered as part of the planned review process. A number of the key learnings are set out in section 13.0 of this submission.

7.0 The Ipswich City Local Government Disaster Management Group

7.1 Pursuant to clause 01.06 of the IDMP the membership of the Ipswich City Local Disaster Management Group (**Ipswich LDMG**) is as follows:

- (a) Representative - 2 Councillors of the Ipswich City Council;
- (b) Officer-in-Charge - Queensland Police Service (Ipswich);
- (c) Chief Operating Officer (Engineering Services) - Ipswich City Council;
- (d) Local Controller - State Emergency Service (Ipswich);
- (e) Area Director (South East District Office) - Counter Disaster & Rescue Services
- (f) Area Director - Queensland Fire and Rescue Service (Ipswich);
- (g) Area Manager - Queensland Ambulance Service (Ipswich);
- (h) Deputy Director of Clinical Services - Ipswich Hospital;
- (i) District Inspector - Queensland Fire and Rescue Service - Rural Fire Division.

7.2 As a result of the 2010 amendments to the Act, s.33 of the Act is now less prescriptive in terms of the prescribed membership of a Local Disaster Management Group. It is expected, having regard to the 2010 amendments to the Act and the benefits of observing the LDMG in operation during the flood event, that the ongoing composition of the Ipswich LDMG is a matter which will be considered by the Council when it is undertaking its review of the current IDMP. For example, it has been suggested that it might be appropriate in the future to include business representatives as members of the Ipswich LDMG. There may also be value in essential utility providers being represented on the Ipswich LDMG.

8.0 Flood Preparedness

8.1 In this section of the submission Council will address:

- (a) the measures taken by the Council by way of flood preparedness prior to the flood event;
- (b) the conditions that were experienced within the Council area catchment in the lead up to the flood event;
- (c) the development of the flood event; and
- (d) the information received and issued by the Council in relation to the developing flood event, including the notice received by the Council regarding the scale of the flood event.

Flood preparedness

8.2 Section 02.02.03 of the IDMP acknowledges the risk of flood in the Council area as follows:

"With the existence of 2 major water courses, the Bremer and Brisbane Rivers, through the area there is a significant potential for devastation by flooding. Western, Warrill, Purga, Franklin Vale and Bundamba Creeks are the major tributaries of the Bremer River and they together with the Bremer River can result in flash flooding of residential areas ...

Significant floods have occurred in the Bremer River at Ipswich on 31 occasions, exceeding the town gauge reading of 7.00m (Minor Flood), 25 events exceeding the town gauge reading of 9.00m (Moderate Flood) and 20 events exceeding the town gauge reading of 11.70m (Major Flood). The largest flood in Ipswich occurred in February 1893 (town gauge reading of 24.5 metres) closely followed by the January 1974 flood with a gauge reading of 20.7 metres. Note the David Trumpy Bridge deck level is 24.9 metres."

8.3 Annexure N to the IDMP is the Council's Flood Operation Procedures Manual (**Manual**). The Manual summarises the potential development of flooding in the Council area and the information relied upon and monitored by the Council to predict flooding as follows:

"Flooding in the City of Ipswich can occur from runoff caused by cyclonic rain, rain depressions or intense rain cells in the headwaters and or lower reaches of one or more of the following streams:

- (a) Local Systems: Woogaroo Creek, Goodna Creek, Six Mile Creek, Bundamba Creek, Black Snake Creek, Deebing Creek and Sandy Creek (Camira).
- (b) Major Systems: Purga Creek, Warrill Creek, Bremer River, Brisbane River, Western Creek and Franklin Vale Creek.

- (c) Flooding from the local systems can be considered to be instantaneous, i.e. only affording one (1) to three (3) hours warning.
- (d) Flooding from the major systems can be considered long term, i.e. the flood peak taking six (6) to twelve (12) hours to reach the City.

The prediction of flooding from the local system is very much a case of having an awareness for the wetness of the catchment and monitoring the intensity, duration and volume of catchment rainfall. This information is available from the Council's Enviromon system and Bureau of Meteorology's web site.

Hydrologic and hydraulics models were developed as part of the following studies for the Ipswich river/creeks system in recent years in order to improve knowledge of the catchments and flood prediction. There have been a number of developments relating to the outcome of these models within Brisbane River, which have resulted for review of these hydrologic/hydraulic models. This review was undertaken during the financial years 2005-06 & 2006-07 and to be finalised.

- (a) Ipswich Rivers Flood Study Phase 1 and Phase 2, SKM (2000)
- (b) Ipswich Rivers Flood Study Phase 3, Halliburton (2002)
- (c) ICC's Natural Disaster Risk Management Study, Fisher Stewart (2002)
- (d) IRT's Bremer River Catchment Flood Risk Management Study, QRMC (2004)

The prediction of flooding from the major systems involves having the same awareness and knowledge of the catchment as for the local systems. This information is also available from the Council's Enviromon system and Bureau of Meteorology's web site. These floods also require close liaison with the Bureau of Meteorology in order to obtain flood heights at key monitoring stations located well upstream of Ipswich and an indication of predicted rainfall in the catchment."

8.4 As noted in the Manual, the prediction of flooding from the major systems involves having awareness and knowledge of the catchment and the condition of the local systems. This information is obtained by Council from a number of sources, including the Council's Enviromon system, the Bureau of Meteorology's (BOM) website, liaison with BOM and information provided by Seqwater.

8.5 A description of each of these sources of information is set out below.

- (a) **Enviromon system** - the Enviromon system is a system that reports on gauge height reading for the river/creek systems of catchments within the Council area. The system issues alerts at certain specified gauge readings. The information monitored by the Enviromon system is effectively the same information that BOM is receiving from the gauge readings. Data from field units is transmitted via common frequencies that are received by BOM, Seqwater and other users. BOM is

able to receive all data received by the Council. A BOM radio repeater assists in ensuring data receipt. BOM also has a process to remotely access and transfer data directly from the Council Enviromon server and the Council Enviromon server acts as a fallback for BOM for this information.

- (b) **BOM web site** - the Council uses the RADAR monitoring system via BOM web services and has secure access through SEQDMAG Weather HQ Meteorological information for the SEQ Disaster Management Advisory Group. The Council uses the available (multiple) RADAR sites to assist in rainfall analysis and storm forecasts.
- (c) **BOM liaison** - liaison with BOM is primarily through receipt of regular emails and faxes to the Council which provide information regarding rainfall and gauge heights in various areas relevant to the Council's catchments as well as telephone contact.
- (d) **Council hydrologic/hydraulics models** - the Council has developed 150 "pre cooked" maps based on certain hydraulic/hydrologic models developed through studies of the Ipswich river/creek systems, some of which are set out in the Manual. This suite of maps allows Council to use input data such as rainfall and gauge height levels to produce potential inundation maps that estimate the potential inundation effect in specific localities throughout the Council area. These maps are referred to for guidance only and are not based on any particular flood event.
- (e) **Seqwater** - the Council also receives reports from Seqwater regarding the Somerset and Wivenhoe Dams, including recent rainfall in the catchments, the Dam levels, Dam releases and the expected impact of Dam releases.

8.6 Although the Council relies upon these various sources of information to predict a potential flood event and its likely impact within the Council area, the Council must rely upon the information provided by BOM and Seqwater as the authoritative sources of information regarding a developing flood event, Dam releases and the likely impact within the Council area.

Development of the flood event

8.7 There had been heavy rainfall in the Council area catchment in the period commencing September 2010 through to December 2010 and there had also been a number of minor to moderate flood events during this period. December 2010 demonstrated a La Niña weather pattern and was Queensland's wettest December on record.

- 8.8 In the lead up to Christmas 2010, the Council was in a heightened state of awareness having regard to the wetness of the catchment and recent local minor flood events. On 15 December 2010 a number of officers of the Council attended the South East Queensland Flood Planning Workshop conducted by Emergency Management Queensland. The workshop was held to inform participants of the potential flood risk for the 2010/2011 wet season and to seek to enhance the participants' preparedness in terms of response, recovery and ongoing disaster management.
- 8.9 This heightened state of awareness led the Council to take a number of precautionary steps including reviewing aspects of its flood preparedness, ensuring access to hydraulic/hydrology expertise and calibrating the Environmon system. During August/September 2010 calibration and testing of all of the relevant Council gauges was completed.
- 8.10 The conditions around the end of December 2010 were such that at a meeting of the Ipswich LDMG held on 23 December 2010, the alert status was set in the Lean Forward Position. This meeting was held because of the recent heavy rainfall and the monitoring of the local gauges which indicated that if there were further heavy downpours there could be flooding issues around the Bundamba and Woogarook Creek areas. The Ipswich LDMG remained in Lean Forward Position and held further meetings on 27 December 2010 and 28 December 2010. On 28 December 2010, as conditions eased and water levels started to recede, the status of the Ipswich LDMG moved from Lean Forward to Alert and it was agreed that any further meetings would be held on an "as needs basis". The water level at the Ipswich gauge of the Bremer River had moved from 2.65 metres on 23 December 2010 to 8.5 metres on 28 December 2010 and by 2 January 2011 had returned to normal levels of around 2 metres.
- 8.11 In terms of context, it is important to understand that while the Manual identifies the different flood categories as: Minor Flood 7.00m; Moderate Flood 9.00m and Major Flood 11.70m, practically speaking, the impact of any flooding which is below 14.0 metres at the Ipswich gauge is mainly focused around managing low-lying Council assets, monitoring and managing roads and river crossings and assessing and managing a risk of inundation to a relatively small number of properties. When the gauge level within the Ipswich City area is predicted to be above 14.0 metres (at the Ipswich gauge) the flood event presents a much larger risk of inundation to properties and gives rise to other issues such as the management of evacuations and the accommodation of residents.
- 8.12 As a result of further rainfall that occurred over the Christmas/New Year period, the Acting Chairman of the Ipswich LDMG activated the Coordination Centre on 7 January 2011. The Coordination Centre was set up at Level 2 of the Hayden Centre, 37 South Street, Ipswich (**Hayden Centre**). The Coordination Centre was prepared so that it was ready for operation,

which involved ensuring that all communication systems were in place and arranging a back-up power system. The Coordination Centre was set up relying on the information that had been received by the Council from BOM and as a result of the Council's own hydrology/hydraulic monitoring.

9.0 Notice to Council about the Scale of the Flood Event and the Emergency Response by Council

Notice of the scale of the flood event

9.1 Schedule 5 is a table which identifies the following information for the period from 10 January 2011 to the time when the Bremer River was recorded by BOM as having peaked at 19.4 metres at around 1 pm on 12 January 2011 being:

- (a) the water level of the Brisbane River according to the reading at the Moggill gauge;
- (b) the water level of the Bremer River according to the reading at the Ipswich gauge;
- (c) the BOM predicted height for the two peaks of the Brisbane River at the Moggill gauge;
- (d) the BOM predicted height for the peak of the Bremer River;
- (e) a summary of the other BOM and Seqwater information received during that time; and
- (f) the date and time of the Ipswich LDMG meetings that occurred during that period and the relevant alert status.

9.2 The information received from BOM led to the first meeting of the Ipswich LDMG in relation to the flood event at 8:30 am on Monday 10 January 2011. At that time the key indicators in respect of the potential flood event were:

- (a) the extreme weather warnings that had been received by the Council from BOM;
- (b) 200 mm of rain expected that day in the Ipswich area;
- (c) 100 mm of rain that had been received in the last 24 hours around the Colleges Crossing area; and
- (d) the height of the Bremer River at the Ipswich gauge was 5.5 metres and it was predicted by BOM to peak at 8.3 metres.

9.3 At this time the Council was identifying specific areas that were at risk of inundation for the purpose of Council officers and relevant Councillors conducting door to door visits to residents in those areas. Based on the available and forecast information it was expected at this time that a relatively small number of houses/business premises might be affected by the potential flood event and that evacuations could be self managed without setting up an evacuation

centre. The primary focus of the Council activities was on the protection of Council infrastructure, managing road, creek and river crossings and preparedness for a minor (7.0 metres) to moderate (9.0 metres) flood.

- 9.4 Up until 8:00 am on Tuesday 11 January 2011, the BOM predicted height of the Bremer River was under 14.0 metres (predicted to peak at 12.7 metres) but at that meeting the LDMG was advised that the BOM prediction for the peak of the Bremer River had been revised to 14.7 metres. The Ipswich LDMG was in Lean Forward status and while the Council was reviewing the likely number of houses/business premises that might be affected based on the newly advised flood levels from BOM, it was at that time predicted that possibly 80 houses/business premises could be affected by the flood event. A process was put in place to start notifying residents in the potentially affected areas and consideration was given to issuing a warning message for residents within the Ipswich area using the State Emergency Alert System, STATESystem.
- 9.5 In terms of the impact on the scale of a flood event, the Council's modelling for the Bremer River suggests that:
- (a) an increase in predicted flood height from 12 metres to 15 metres increases the number of properties potentially affected by over 50 per cent;
 - (b) a further increase in predicted flood height from 12 metres to 16 metres increases the number of properties potentially affected by approximately 90 per cent; and
 - (c) a further increase in predicted flood height from 12 metres to 18 metres increases the number of properties potentially affected by over 175 per cent.
- 9.6 By around 9:30 am on Tuesday 11 January 2011, the BOM prediction for the Bremer River had been revised to 16.0 metres and that peak was expected to be achieved during Wednesday 12 January 2011. From 10:00 am the State Disaster Declaration had also been made and was in place. The Ipswich LDMG resolved to draft an Emergency Alert System message and this message was then processed for approval through the District Disaster Coordinator and Emergency Management Queensland. At this time, it was realised that it would not be practical for the Council to use its Call Centre or personal visits to then alert residents to the flood event threat. It was considered by the Ipswich LDMG that the State Emergency Alert System was the most effective means of warning residents in addition to the BOM and media reports of the developing flood event.
- 9.7 There were no further BOM predictions for the Bremer River flood peak until a call was made by a Council officer to BOM at 3:00 pm on 11 January and the BOM advice at that time was

that the peak of the Bremer River would be 18.0 metres. There was subsequent formal advice from BOM by email at 3.24 pm on Tuesday 11 January 2011 to the effect that the Bremer River peak would be 22.0 metres and that this peak would be achieved during Wednesday 12 January 2011.

9.8 Once the prediction reached 18.0 - 19.0 metres there were potentially over 6,500 properties within the Ipswich Council area that needed to be assessed to identify if occupants should be contacted and warned of potential inundation and evacuation. This development re-affirmed the Ipswich LDMG's decision to use the State Emergency Alert System to notify residents of the flood event threat.

9.9 Some other relevant events that occurred during this period include:

- (a) the Ipswich LDMG moved to Stand Up Level 1 at 8:00 am on Tuesday 11 January 2011 and Stand Up Level 2 at 2:00 pm on Tuesday 11 January 2011.
- (b) following receipt of the BOM prediction of 16 metres at around 9:30 am on Tuesday 11 January 2011 the Ipswich LDMG gave instructions to the relevant Council officers to identify potential evacuation centres and a decision was made to open the first evacuation centre at the Ipswich Showgrounds. Key agencies were contacted and notified of the Stand Up position for the evacuation centre. The issue of evacuation centres is addressed more fully in Section 10.0 of this submission;
- (c) the EAS message was sent via the STATESystem at around 3.24 pm on Tuesday 11 January 2011. A copy of the EAS message is attached at Schedule 6;
- (d) The Council issued 2 media releases and these are attached at Schedule 7;
- (e) on Tuesday 11 January 2011 at approximately 11:00 am the Council website went offline as a result of the high number of hits that it was experiencing. One of the Council's Information Technology staff immediately took steps to develop for the Council a new web page which had links to particular flood information which was then updated over time. This work was completed by approximately 1:30 pm on 11 January 2011 meaning that the Council's website was only down for approximately 2 1/2 hours. Subsequently, on Friday 14 January 2011 the Council reverted to its standard web page after the passing of the critical stage of the flood event. The Council had shortly before the flood event identified that there was a software problem with the mapping component of PDOnline which made it difficult to bring up maps from links on its website. During the course of the flood event, this issue arose but was rectified on or around Thursday 13 January 2011. A

detailed software fix to the PDOnline application was successfully installed by Council in late February 2011;

- (f) After the Ipswich LDMG meeting at 8:00 am on Tuesday 11 January 2011 the Council's Call Centre known as the Integrated Customer Contact Centre (INCC), moved to 24/7 mode and thereafter coordinated the Council's inbound and outbound customer services functions for the duration of the flood event. During normal business hours on Tuesday 11 January 2011 over 3,800 calls were received representing a call load which was 450% higher than normal volumes. The INCC also dealt with a further 1,300 calls after 5:00 pm that day. The INCC because of its effectiveness during the flood event, was then used by the Townsville City Council during the subsequent Cyclone Yasi event.

Issues arising and lessons learned in relation the notice of the scale of the flood event

- 9.10 As noted above, the prediction of flooding from the major river systems within the Ipswich Council area involves having awareness and knowledge of the catchment and the condition of the local systems. This information is obtained from a number of sources, including the Council's Enviromon system, the BOM web site, reports from BOM, liaison with BOM and the information received from Seqwater.
- 9.11 In the lead up to Christmas 2010, as a result of the Council's careful monitoring of this information, its participation in the EMQ workshop and local minor flood events, the Council was in a heightened state of awareness because of the wetness of the catchment and the potential flood risk. In response to this risk the Council took a number of proactive and ultimately effective steps to prepare for a potential flood event during the end of 2010 into early 2011.
- 9.12 There are several communication issues that have been identified following the flood event. Perhaps the issue of most concern is the fact that on Tuesday 11 January 2011 there was a very rapid escalation in the advice being received from BOM about the severity of the potential flood event. In the course of several hours, the flood event went from a manageable situation potentially affecting a small number of properties to a dramatic event potentially affecting over 6,500 properties. This and other lessons learnt which are relevant to flood preparedness and response are addressed in section 13.0 of this submission.

Road Closures

Introduction

- 9.13 The supervision of road closures and road openings during the flood event was the responsibility of two senior and experienced officers within the Council's Engineering Services Department.
- 9.14 Another Council officer had responsibility for the management and coordination of traffic signals.
- 9.15 The procedure for identifying potential road closures during the flood event was based on a combination of:
- (a) reliance on the information being received from flood gauges in the City's creeks and rivers as to where the flood event was occurring, at what rate and at what level;
 - (b) reliance on information being received by the Council and the Ipswich LDMG from members of the public or other agencies, for example the Queensland Police Service; and
 - (c) local experience and knowledge on the part of the relevant Council officers.
- 9.16 As to the "local knowledge" component, one of the officers has been employed by the Council for 25 years and had extensive knowledge about the known flood locations throughout the Ipswich City area and the sequencing by which roads would be cut off, having regard to where, and at what level a particular flood event is occurring.
- 9.17 However, it is important to appreciate that:
- (a) in a fast rising flood event as transpired during the January 2011 event, it is not always physically possible, within the relevant timeframes and with the resources available, to close all roads before they are flooded;
 - (b) in the case of a flash flooding of a creek or river as a result of local inundation, it is often not possible to close a road before the flooding of that road occurs; and
 - (c) for many citizens, a barrier restricting access to a flooded roadway will not always be a sufficient deterrent.
- 9.18 Further discussion of the issue described in paragraph 9.17(c) is set out below as ultimately, no road barrier can protect citizens from their own poor judgment or inappropriate risk taking.

- 9.19 Another relevant consideration in terms of the management of road closures and re-openings is that the community's expectations as to road management issues can be quite unrealistic. The community's expectation is often that road closures and openings will be instantaneous. That is, until such time as a road is actually flooded, it should not be closed. Even when a road is flooded, many citizens will protest at the closure of a road, because in their view, the flooding is "not serious enough". Conversely, immediately after a flood peak has passed, the community expectation is that the road will immediately be reopened. This is often not possible in practice. Before a road can be safely reopened it needs to be inspected and, even if the road surface has not otherwise been damaged, flood debris needs to first be removed and often the road surface needs to be cleared of mud and other residue.
- 9.20 For the Council, achieving a balance between community expectations and community safety in this area can be a difficult exercise. If roads are closed prematurely, people can become isolated. Families can become separated and in the lead up to a flood event, the separation of children from their parents, or of one spouse from the other can lead to a highly stressful situation and lead to risk taking. On the other hand, if the closure is left to the last minute, the Council simply will not have the resources to attend every site. Moreover, in a flood event, the priority for such resources has to be on protecting householders and their properties. There is an expectation that the community will be alert to warnings about the dangers that are inherent in attempting to drive across flooded roadways, creeks or bridges.
- 9.21 In the Council's experience these warnings are, in many cases not followed. Many citizens have misplaced confidence in their ability to traverse a flooded causeway. Their ability to do so safely depends on a number of factors including the:
- (a) speed of the water;
 - (b) depth of the water; and
 - (c) type of vehicle.
- 9.22 In the Council's experience it is, unfortunately, a far too common occurrence that citizens will simply ignore or avoid road barriers, either by driving around them, or by attempting to "rat run" through back roads in order to avoid the barrier. The only real means of preventing this behaviour is to have police officers stationed at each location and the available resources simply do not permit this option.
- 9.23 The Council believes that consideration should be had to the following matters:

- (a) continuing the current strategies for educating the public that driving across flooded causeways is a very risky exercise that should not be undertaken; and
- (b) consideration should be given by the State to making disobedience of a flood road barrier a traffic offence.

Road Closures in connection with the Flood Event

- 9.24 The Engineering Services Department officers responsible for road closures are based at the Council Riverview depot and road signage equipment is stored at that depot and at another Council depot at Rosewood.
- 9.25 However, from Monday 10 January 2011 the relevant officers were based in the Level 1 operations room in the Hayden Centre, working in close conjunction with the local disaster coordinator (LDC) and were directing road closure operations from that location. The information flow between the LDC and the Engineering Department officers was two way. In some instances, the LDC notified the Engineering Department officers of roads which, on the information that was received by the LDC, required closure. However, in most cases, based on information being received and analysed, the relevant Council officers would take the decision regarding road closure and inform the Ipswich LDMG of the relevant details through the LDC, usually by email or text, though in some cases verbally. This enabled the LDC, on a regular basis, to make updated information about road closures publically available.
- 9.26 The road closure operations were also undertaken in close cooperation with the Queensland Police Service. The Council understands that until such time as a State of Emergency is declared, the decision making in relation to road closures is the responsibility of the Council. Following the declaration of a State of Emergency, which occurred during the flood event at 10:00 am on Tuesday 11 January 2011, decision making about road closures becomes a Queensland Police Service matter. However, at an operational level, the Council officers continued as the decision makers in relation to road closures, with relevant Queensland Police Service approvals.
- 9.27 These arrangements were generally effective although on occasions, due to limited resources and competing demands, there were difficulties or delays in the Council obtaining Queensland Police Service approval for some closures.
- 9.28 As to the issue of approval for road closures and openings, the Council considers that, in terms of future planning, it would be beneficial during a State of Emergency event, for the Queensland Police Service to nominate a Police Officer as a single point of contact (perhaps

with a backup officer) who could then closely liaise with the Council in relation to road closures and road openings.

- 9.29 Another issue which arose during the flood event was the isolation and flooding of the Council's Riverview depot. Not all of the Council's road closure barriers and signage within that depot could be physically retrieved prior to it being flooded and as a result some of the Council's road barriers and signage were unavailable for use during the flood event.
- 9.30 Subsequent to the flood event, Ipswich City Council has fully restocked its signage and barriers. However, this equipment is still located at the Riverview depot. This ongoing operational risk will be addressed as part of the Council's longer term strategic planning for the future relocation of these Council assets to a flood free location.
- 9.31 Following the flood event, the reopening of affected roads proceeded without incident. This exercise was again undertaken in conjunction with the Queensland Police Service, but the reopening of roads generally followed the retreat of the flood waters and subject to inspection, clearing the causeways of debris and damage assessment, they were then reopened as soon as it was feasible to do so.
- 9.32 From around Thursday 13 January 2011, the Council officers involved with giving effect to the road closures and road re-openings during the flood event were seconded to the Recovery Task Force to assist with the work of the task force. This involved continuing with the exercise of road openings and also involved assisting with the coordination of the collection, removal and disposal of flood waste and debris. During this period the Engineering Services Department also commenced initial assessments of the damaged roads, bridges and culverts and coordinated the carrying out of initial repair works.

Issues Arising and Lessons Learned in Relation to Road Closures and Re-Openings

- 9.33 As a result of its experience with the flood event, the Council has given preliminary consideration to a number of matters in terms of its forward planning with regard to the issue of road closures and re-openings. Three matters have been discussed being:
- (a) the issues which arise following non-compliance by road users with road barriers. This is seen by the Council as a significant, though difficult and sensitive issue;
 - (b) strategies for improved communication between the Council and the Queensland Police Service regarding coordination of road closures and re-openings, particularly following the making of a State of Emergency declaration; and

- (c) as part of its longer term infrastructure planning, the relocation by the Council of its road closure "hardware" to flood free sites.

9.34 Further to those matters, the Council will also give consideration to the following matters as regards the ongoing management of road closures being:

- (a) rather than relying solely on "street" intelligence from other agencies and the public and Council's own experience as to the location of likely flood affected sites, developing a capability for the Council to better monitor critical road crossings, creeks and culverts from a central location through, for example, the use of closed circuit television or, alternatively, more sophisticated flood level measuring gauges located in or proximate to causeways which are programmed to provide relevant information to a central control location;
- (b) developing a capability whereby the placement of flood barriers can be operated remotely by the Council from a central location or automatically by an on-site electronic switch which is triggered when flood waters reach a certain pre-ordained position, similar to a railway crossing boom gate. Or, as an alternative option, flashing lights on the road areas as drivers approach a flooded causeway which can be triggered automatically and operate as an additional warning to motorists.

9.35 Such initiatives involving the application of cameras and other technologies are achievable, but are also expensive. Unfortunately this type of equipment is also prone to vandalism. So a careful cost-benefit analysis will be required to be undertaken by Council as to the feasibility of such proposals or suggestions.

9.36 Two final matters to which consideration may also be given by Council are:

- (a) the Council currently has no documented road closure plan. Closures are currently effected on an "as needs" basis. Whilst this approach has not historically given rise to any particular issues, the Council believes that there may be benefits in developing and publishing an operations plan for road closures and re-openings, particularly in respect of those roads and bridges which are regularly subjected to flood impacts; and
- (b) the utility in decentralising some of the Council's road closure hardware and, in particular, storing barriers and signage in locations that have a closer proximity to regular or notoriously flood prone sites and potential flash flooding sites, to enable barriers to be quickly recovered from those locations and erected upon the occurrence of a flooding or flash flooding event.

- 9.37 As a result of its experience arising from the January 2011 flood event, the Council is committed to undertaking a review of its road closure and reopening procedures before next summer's wet season and identifying any short term initiatives which should be implemented by way of improvement to its current practices and procedures prior to next summer's wet season.

Protection of Council's Assets and Infrastructure

- 9.38 The damage to Council public assets and infrastructure as a result of the flood event primarily involved damage to:
- (a) roads and bridges;
 - (b) the Council's Riverview and Kholo Garden depots and the Ipswich Pound;
 - (c) the Colleges Crossing Recreation Reserve;
 - (d) various areas of open space and parkland infrastructure; and
 - (e) various sporting facilities.
- 9.39 The following observations will help inform the future protection of the Council's public assets in any future flood event.

Roads and Bridges

- 9.40 For the Council, both roads and bridges represent expensive infrastructure. Furthermore, depending upon the nature of the particular asset, the construction of roads and bridges may be supported by State and, in some instances, Federal funding. It is not economically feasible to "flood proof" all of the Council's roads and bridges.
- 9.41 However, it is self evident that the flooding of strategic roads or bridges can cause significant dislocation during a severe flood event. Residents become separated from their homes, emergency and support services and personnel are unable to travel to where they are needed and evacuees are unable to access evacuation centres.
- 9.42 In the short term the Council's current focus is on remediation of flood affected roads, bridges and associated culverts and road drainage. The estimated cost of such remediation is in the order of \$43 million.
- 9.43 In terms of its forward planning for the construction of roads and bridges the Council will in conjunction with other levels of government seek in the longer term and in so far as is

reasonable and economically feasible, to maximise the "flood proofing" of any new infrastructure.

- 9.44 In terms of road pavement design, the Council will also explore the feasibility of deep lift asphalt pavement in areas that are particularly susceptible to flood events. This pavement is more durable and resistant to the impacts of flood inundation than customary road pavement, because it does not absorb water as a normal gravel pavement does and may represent a viable option in terms of road design in flood affected areas.

Council Depots and the Ipswich Pound

- 9.45 The cost of restoring these assets is estimated to be in the order of \$9.5 million. The Riverview and Kholo depots are the Council's principal storage depots. These are major Council facilities. In the short term, the depots and the Ipswich Pound will be repaired and restored.
- 9.46 In anticipation of the flood event, machinery, equipment and materials were removed by Council officers from these depots to flood proof locations. However, some materials were lost. In the case of the Ipswich Pound, the animals at the Pound were evacuated to the Ipswich Showgrounds. This was an extremely successful and effective operation. In addition, some equipment from the Pound was relocated to flood proof areas. However, there were some equipment losses.
- 9.47 These are each large facilities and the relocation of any of these major Council assets will be a significant exercise. However, prior to the flood event, the Council, as part of its strategic plan, had proposed the future consolidation of these important facilities into a Council "super depot" to be located in a flood free location.
- 9.48 This initiative is a major economic and commercial exercise and is a "work in progress" which will progressed as quickly as it is financially viable for the Council to do so.

Colleges Crossing Recreation Reserve

- 9.49 Colleges Crossing, on the Brisbane River near Mount Crosby, is a popular swimming and recreation area. It also experiences regular impact from flooding events and, for that reason, the Council assets at Colleges Crossing are designed so that they can be readily dismantled and removed.
- 9.50 On the afternoon and evening of Sunday 9 January 2011, with water levels in the Brisbane River rising, the caretaker at Colleges Crossing was moved off site to another location and the caretaker's assets and the contents of a maintenance shed were removed to other Council locations.

- 9.51 On Monday 10 January 2011, the caretaker's residence and the Colleges Crossing kiosk were dismantled and removed.
- 9.52 The Council was proactive in undertaking these activities and the caretaker's residence, the kiosk were relocated by lunch time on Monday 10 January 2011.
- 9.53 As it transpired, the flood waters through Mount Crosby would have totally destroyed these assets had they not been removed. The recreation reserve nevertheless experienced damage to other park facilities in the order of \$7 million.
- 9.54 However, in terms of future planning, there is little that can be done to further protect recreation facilities that are located in such flood prone areas. The decision for the Council involves a balancing of the public benefit in investing in such facilities against the risk of damage to those assets. In the case of Colleges Crossing to minimise damage and mitigate its losses, the Council has constructed its infrastructure in a way that the critical facilities are portable, can be dismantled and removed on relatively short notice and can then be reinstated following the flood event.
- 9.55 To the extent that the balance of the recreation reserve suffers damage in such an event, this is a feature of the reserve being located where it is and very little further can be done to mitigate such losses arising as a result of a major flood event.

Open Space, Parkland and Sports Facilities

- 9.56 Within the Ipswich area, many sporting facilities and parklands are located in areas that are prone to flooding. The Council considers this to be a sensible use of the City's available land. Such areas are inappropriate for residential housing or for industrial or manufacturing facilities. However, the land would, otherwise, be sterile and it therefore makes good sense that such land be utilised for parklands and sporting related activities.
- 9.57 The flood event nevertheless caused significant damage to these facilities. In the case of parklands, a range of park infrastructure including huts, ablution facilities, BBQ facilities, playgrounds and the like were destroyed. In the case of sports fields, a range of infrastructure including canteens, club houses, swimming pools, tennis and netball facilities and the like, were either damaged or destroyed.
- 9.58 It is not possible to fully flood proof these locations and, as already noted, it makes good sense that these types of facilities be located in these areas. These areas are ideal for such facilities and potentially it may be many years before they are again severely flooded.

- 9.59 However, in terms of forward planning and as part of its response to the 2011 flood event, the challenge for Council is to have a strong focus during the restoration of these spaces, not on flood proofing the land, but on mitigating against the damage that may be caused by a serious flooding event. This will be achieved so far as is reasonably possible by constructing the facilities in a way which minimises the likely damage and which maximises the removability of key assets from the flood zone, in a similar fashion as has previously been undertaken with regard to the Council's facilities at Colleges Crossing.
- 9.60 The Council, in its future planning for these areas, will consider, within the bounds of cost effectiveness, how portable facilities can be constructed and installed so that they can be relocated out of the flood zone prior to a flood event. Such forward planning will help enable those facilities to be reinstated following the flood event, instead of the Council having to bear the expense of a total rebuild.

Interaction with Energex

- 9.61 The provision of power is a critical essential service for residents and businesses within the Ipswich City area. During the flood event a number of Energex sub-stations and transformers were flooded, with the result that power was lost not only to the residences and businesses that were inundated, but also to some 4,000 properties which were not flooded. The loss of power to these properties was a significant issue. It not only impacted services to those properties it also severely impacted communications within the City.
- 9.62 In relation to forward planning, it is desirable, insofar as it is reasonably practicable, that energy infrastructure be located in flood free areas so that in a flood event, power can be maintained to those parts of the City that are not flood affected.

Liaison with Ipswich City Council and the Ipswich LDMG

- 9.63 An Energex representative attended the Ipswich LDMG meetings and updated each meeting on the current status regarding power supply and restoration. The experience of the Council is that, for the duration of the flood event, Energex's resources were severely strained as they sought to manage a large range of issues across South Eastern Queensland. As a result, Energex seemed to be focused on its own issues and was not overly receptive to direction from, or consultation with, the Ipswich LDMG and the Council.
- 9.64 In making these observations, the Council is extremely mindful of the enormous pressure that the flood event placed on Energex's resources and is seeking to be constructive in terms of possible learnings for the management of a future event.

9.65 The most significant issues related to the ability of the Ipswich LDMG and the Council to obtain reliable and timely information from Energex as to:

- (a) when power would be cut off;
- (b) the areas to which power would be cut off;
- (c) when power would be restored; and
- (d) the areas to which power would be restored.

9.66 The importance of such information is self-evident. Examples of issues that were experienced by the Ipswich LDMG or the Council included:

- (a) in response to an enquiry by the Council as to which areas of the City did and did not have power, an Energex representative invited the Council officer to look at the Energex website;
- (b) an Energex representative told a Council officer that as soon as the flood waters in Brisbane receded Energex crews would be redirected from Ipswich to Brisbane and in particular to the Brisbane CBD because the restoration of power to the Brisbane CBD was Energex's highest priority;
- (c) Energex was slow to respond to a request by the Ipswich LDMG to reinstate power to the Ipswich Iceworks, Polar Ice. In circumstances where many thousands of homes were without power and it was to be some time before power would be restored to those homes, the Ipswich LDMG considered the production and supply of ice to be an essential service and strongly requested Energex to restore power to the part of the City where the Iceworks are located. Energex did not respond immediately to this request and the Iceworks was unable to resume production until the weekend following the flood event, some three or so days after the passing of the flood peak;
- (d) the Australian Defence Force Amberley had a large generator capacity that was available for deployment to the Council. There was little purpose in the Council arranging for the transportation and installation of large generators to areas of the City where the restoration of power was imminent. However, Energex was unable or unwilling to provide timely information to the Council as to the program for the restoration of power, which compromised the Council's ability to obtain maximum benefit from the available ADF generator capacity.

9.67 These are examples of some of the difficulties or frustrations that were experienced by the Ipswich LDMG or the Council in terms of its interactions with Energex during the flood event. As noted elsewhere in this submission, information as to the loss and restoration of power was very relevant as the community operates around the availability of power to households and businesses. It was also highly relevant to the likely extent and length of operation of the evacuation centres, as many evacuees did not return to their homes until power was restored. It was also a priority issue for nursing homes and aged care facilities, as such facilities are also unlikely to allow the return of residents until power has been restored. It was also relevant to the scheduling and resourcing of labour-intensive operations such as traffic light management.

9.68 In terms of planning for future serious flood events, the Council considers that it is important to establish a clear understanding of the division of the roles, responsibilities and authorities between the Ipswich LDMG, the LDC and Energex. There needs to be a clear understanding as to whether Energex, as the relevant power utility, is amenable to direction under the Act from the Ipswich LDMG or the LDC or, alternatively, ought be permitted to conduct its operations independently of any such directions.

Again, this may call into consideration the power of the chairperson of the State group or of the relevant District Disaster Coordinator under s.75 of the Act to duly authorise the Ipswich LDMG to exercise declared disaster powers in a disaster situation. If there was a better understanding of these issues, the Council would be better placed to develop appropriate plans and strategies around the management of this essential resource in any future serious flood event.

10.0 Evacuation Centres

- 10.1 The Ipswich City Council Disaster Management Plan includes, in section 7, various sub-operational plans including an:
- (a) evacuation plan; and
 - (b) evacuation centre management plan.
- 10.2 These plans primarily focus on schools and the Ipswich Showgrounds as sites for potential evacuation centres. However, the identification of evacuation centres must be events based. It is self evident that a school situated in a flood prone area could well be appropriate as an evacuation centre in the case of a bush fire, but may be inappropriate in the case of a flood.
- 10.3 A considerable number of Council staff and Councillors were involved in different aspects relating to the establishment, management, operation and standing down of evacuation centres during the flood event. Evacuation centre operation was probably the highest order of priority for the Ipswich LDMG and the Council from the time when the potential gravity of the flood event was fully appreciated (following the receipt of the BOM forecast of a Bremer River flood peak of 16.0 metres at 9:30 am on Tuesday 11 January 2011) until the passing of the flood peak on the afternoon of Wednesday 12 January 2011 and the commencement of the recovery activities on Thursday 13 January 2011.
- 10.4 This section of the submission provides an overview of the Council's experience in establishing and managing evacuation centres during the flood event and describes at a high level the type of issues that were experienced by the Council. A number of these issues may again be of relevance to the Council when it is managing similar events in the future.

Evacuation Centres Overview

- 10.5 The Council established five evacuation centres. These centres had capacity for approximately 1,400 people and, over the course of the flood event, these centres accommodated approximately 1,250 people. The Ipswich Showgrounds was the largest of these centres. Each of the centres were opened on 11 January 2011 and all of the centres, other than the Showgrounds, closed by Saturday 15 January 2011.
- 10.6 In addition to these "official" centres, the Council has information about the operation of six unofficial, or "organic" evacuation centres that developed during the flood event, the most significant of which was established at Karalee State School. The Karalee/ Barellan Point areas experienced significant flooding and were essentially isolated during the flood event. The Council is also aware that small organic centres were also established at Goodna State

School, Redbank School of Arts and Saint Augustine College. The creation of these "organic" centres, particularly by church and community groups, is perhaps inevitable in such a disaster event and it is likely there were some other small organic centres of which the Council was, and still remains, unaware. These centres accommodated another 700 evacuees and fed approximately 300 more persons, with the result that over the course of the flood event approximately 2,000 evacuees were accommodated at all of the known evacuation centres.

- 10.7 The table below sets out the individual details, to the best of the Council's knowledge, of the location, opening and closing dates of each evacuation centre and relevant occupation details of each of the evacuation centres. These figures may not include persons who attended evacuation centre sites but who were then accommodated in their own caravans or tents.

Ipswich Evacuation Centre Statistics

Official

	Location	Opened	Closed	Max Capacity	Number Sleeping	Number Feeding
1.	Ipswich Showgrounds	11.1	28.1	690	600	600
2.	Ipswich Boys' Grammar School	11.1	14.1	170	180	180
3.	Ipswich Girls' Grammar School	11.1	15.1	200	200	200
4.	St Josephs Primary School North Ipswich	11.1	14.1	140	100	100
5.	Ipswich Regional Community Church (Ripley)	11.1	14.1	160	170	170
TOTAL				1360	1250	1250

Organic

	Location	Opened	Closed	Max Capacity	Number Sleeping	Number Feeding
1.	Leichhardt Avon Community Hall/Ipswich Golf Club	11.1	14.1	250	150	290
2.	Karalee State School	11.1	21.1	370	300	300
3.	Shiloh Church Goodna	10.1	20.1	70	120	200
4.	Riverview Community Centre	11.1	23.1	50	60	300
5.	Redbank State School	11.1	17.1	60	60	100

	Location	Opened	Closed	Max Capacity	Number Sleeping	Number Feeding
6.	Christian Outreach Redbank Plains	11.1	14.1	60	60	60
				710	680	1040

- 10.8 Attached at Schedule 9 to this submission are two maps. The first is a map of the whole Ipswich City Council area identifying the location of each evacuation centre and the second is a map of the Ipswich City Council urban area with the evacuation centres highlighted.

Establishment of the Evacuation Centres

- 10.9 The necessity for the establishment of the evacuation centres emerged rapidly on the morning of Tuesday 11 January 2011 and, as a result, the centres were required to be established quickly on very short notice. This led to some initial "teething" issues, as are detailed below. However, in the context of the flood event, the evacuation centres functioned very effectively.
- 10.10 It was appreciated by the Ipswich LDMG at out of session meetings held in the weeks prior to the flood event that a need for evacuation centres may arise. On 28 December 2010, the Ipswich LDMG was placed in an Alert status. This is an early preparedness status. At that time heavy rains had been experienced in Ipswich and were forecast into early January 2011. However, as at 28 December 2010, Ipswich had only experienced some minor localised flooding and road closures. There had been no call for evacuation procedures and there was no imminent expectation of, or requirement for, evacuation centre facilities to be established.
- 10.11 The Ipswich LDMG met twice on Monday 10 January 2011 and was placed in a "Lean Forward" status. The projected Bremer River flood peak of 12.5 metres at the time of the Ipswich LDMG meeting at 3:15pm on Monday 10 January 2011 (which was revised to 12.7 metres at around 5:00 pm that day), had the potential to cause some minor property flooding to approximately 80 properties. However, flooding of this magnitude did not give rise to any evacuation concerns.
- 10.12 At some time on Monday 10 January 2011, an "organic" evacuation centre was established at the Shiloh Church at Goodna, accepting evacuees from the Gailles Caravan Park. The establishment of this organic centre was not known to the Council until Wednesday 12 January 2011. This submission addresses more fully in sections 10.59 - 10.63 the potential learnings in relation to the future management and support of organic centres.
- 10.13 At the Ipswich LDMG meeting at 8:00 am on Tuesday 11 January 2011 BOM had revised the predicted Bremer River flood peak to 14.7 metres. At this meeting the Ipswich LDMG status transitioned to "Stand Up". A peak of 14.7 metres would potentially impact 200-300 homes,

but, based on the Council's mapping information, a 14.7 metre flood peak would not give rise to any expectation of evacuations. Whilst the prospect of evacuation centres was discussed at this meeting, no evacuation centres had been established and, on the basis on the available information, it was still not anticipated they would be required. However, the Council call centre had received some calls concerning possible evacuation and the position was being closely monitored by the Ipswich LDMG and the LDC. Immediately following this meeting, the LDC placed the relevant Council officers on alert so that arrangements for centres could be quickly activated if there was a further change in position.

10.14 This further change occurred at around 9:30 am on Tuesday 11 January 2011 when BOM issued a further revised flood peak for the Bremer River of 16.0 metres during Wednesday 12 January 2011. Shortly following the release of this information, at 10:00 am on Tuesday 11 January 2011, the Ipswich LDMG gave a direction to Council staff to identify sites for the opening of evacuation centres based on the revised projected flood heights and to implement steps to open such centres. The LDC also requested that a list of evacuation centre requirements be prepared.

10.15 At 10:00 am on Tuesday 11 January 2011, a formal State Disaster Declaration was made by the Premier.

10.16 Following the direction from the LDC, four potential evacuation centre sites were identified being:

- (a) Ipswich Showgrounds;
- (b) Ipswich Regional Community Church at Ripley;
- (c) St Joseph's Primary School at North Ipswich; and
- (d) Dinmore State School.

The Ipswich Showgrounds was selected as the first site to be established. The Showgrounds is well placed as an evacuation centre. It comprises a large area, is on high ground, is accessible, is located close to the Ipswich Hospital and is on the same power grid as the hospital so it will only lose power as a last resort. It also has the capacity to accommodate vehicles, caravans and tents. It has some shower and ablution facilities and also has available facilities to accommodate pets brought to the evacuation centre by evacuees.

10.17 Subsequently, Ipswich Grammar School and Ipswich Girls' Grammar School offered the Council their facilities as evacuation centres. These offers were accepted by the Council as it

was school holidays and the school dormitory facilities represented an excellent evacuation facility.

- 10.18 The Council also assessed, by reference to the hydrology and spatial mapping information available to it, that St Joseph's Primary School and the Ipswich Regional Community Church at Ripley should also be established as evacuation centre sites. During the course of Tuesday 11 January 2011 the LDC issued directions for evacuation centres to be opened at each of these locations. The Dinmore State School was assessed to be a less feasible option and consideration of that location as a potential evacuation centre did not progress any further.
- 10.19 Council officers developed a list of evacuation centre requirements which was emailed to the LDC at 12:50 pm on Tuesday 11 January 2011. *These requirements addressed human resources (registration, provision of food, security, traffic control and provision of first aid/medical support) as well as physical resources (for example, provision of cold rooms, ablution blocks, beds, blankets and a large range of other requirements).*
- 10.20 The LDC provided this list of resources required to establish the first evacuation centre at Ipswich Showgrounds to the District Disaster Coordinator (DDC) at 1:20 pm on Tuesday 11 January 2011 and at 1:30 pm that day the DDC approved the resources as requested and the activation of the Red Cross to manage the proposed evacuation centre at Ipswich Showgrounds.
- 10.21 At the same time, the Council's Environmental Health Officers (EHO) had commenced a site audit of the Ipswich Showgrounds in anticipation of the receipt of evacuees. On attending the Showgrounds, the EHO officers observed evacuees were already arriving, notwithstanding that the Showgrounds had not, at that stage, been fully prepared and resourced to receive evacuees.
- 10.22 In the absence of Red Cross resources to manage the centre, Council staff were immediately deployed to the Ipswich Showgrounds to oversee the receipt of evacuees and to establish the centre. The Council also deployed two Council staff to each of the Grammar schools to assist with the receipt of evacuees at those centres. The Council's proposal was to utilise the Showgrounds as a registration point for evacuees and to then bus evacuees, as appropriate, to the Grammar Schools and to the other evacuation centres as required. However, as a result of public broadcasting of the location of evacuation sites, many evacuees simply turned up directly at the Grammar Schools and at the evacuation centres at St Joseph's School and Ripley whilst those centres were being established during the afternoon and evening of Tuesday 11 January 2011.
- 10.23 The orderly establishment of the evacuation centres was significantly impacted by two key events:

- (a) firstly, as a result of the change in projected flood heights, between the time of the Ipswich LDMG meeting at 8:00 am on 11 January 2011 and the BOM forecast at 9:30 am that day the Council had to transition from a situation at 8:00 am on Tuesday 11 January 2011, when it was anticipated that no evacuation centres would be required, to a position later that morning where it was apparent that several centres would be required as a matter of urgency; and
- (b) because of the multi-faceted nature of the flood event being experienced in central and southern Queensland, demand for support from disaster and relief agencies such as the Red Cross was very high and the ability of those agencies to provide timely support, and the required level of support, was severely tested.

- 10.24 In addition, the Council was limited in terms of its own resources due firstly to some staff still being on annual leave and some staff being flood bound. From the afternoon of Tuesday 11 January 2011 Council staff and Councillors took responsibility for the on-site management of the evacuation centres. The Council had not anticipated that the management of the evacuation centres would be its responsibility (this normally being a Red Cross responsibility). However, the management of the centres was undertaken by Council staff and Councillors on the basis of a network based on common sense, hard work, goodwill and best endeavours.
- 10.25 From Wednesday 12 January 2011, Council officers who were closely involved in the management of the evacuation centres attended Ipswich LDMG meetings to provide update reports on the current position regarding the various evacuation centres.

Evacuation Centre Issues

Selection of Evacuation Centres

- 10.26 One of the issues that needs to be considered when evacuation centres are being established and their availability is made public, is the fact that during a significant flood event there will be a strong likelihood that areas of the City will become physically isolated. For example, once the Ipswich Motorway is flood affected, it will be difficult for some residents from Goodna and Redbank to then travel or make their way to the Ipswich CBD, the Ipswich Showgrounds or the Ipswich Hospital. Similarly, the closure of the David Trumpy Bridge will mean that residents at North Ipswich will not be able to access the Ipswich CBD, the Ipswich Hospital or the Ipswich Showgrounds. This potential physical isolation factor needs to be built into the Council's formal planning processes when it is identifying possible evacuation centres. This same factor is also relevant to the timing of public announcements in respect of the availability of evacuation centres and is relevant to the warnings that may be given to residents who may need, during a flood event, intensive medical assistance. In short, for residents who

need to be in an evacuation centre that is near to the Ipswich Hospital and who are located in North Ipswich, Redbank or Goodna, they will require sufficient notice to enable them to travel to a relevant evacuation centre before their residential locality is physically isolated. Otherwise, emergency relief may only be available through the use of helicopter transportation.

Security

- 10.27 For the safety and security of evacuees, relief workers, Council workers and volunteers, evacuation centres, particularly the larger centres, require a permanent security presence and, preferably, a permanent police presence. There was no permanent police presence at the Ipswich evacuation centres on the evening of Tuesday 11 January 2011.
- 10.28 An evacuation centre brings together people of different ages, ranging from babies and young children to the very elderly, different levels of health, ranging from the very active to the infirm and from varying socio-economic, ethnic and racial backgrounds in a very close knit environment infected with trauma, anxiety and discomfort. This environment is inherently unstable and can quickly lead to unrest. For example, on the arrival of food at the Ipswich Showgrounds in the early hours of Wednesday 12 January 2011, there were genuine concerns about the orderly distribution of such food. Furthermore, at the Ipswich Showgrounds evacuation centre there were incidents of drug use, attempts to break into vehicles and other anti-social behaviour.
- 10.29 As it transpired, despite these concerns, no significant disturbances occurred, but it was not until well into the early hours of the morning on Wednesday 12 January 2011 (approximately 3:00 am) that the Ipswich Showgrounds centre settled down. A visible police presence at the centre would have been of significant assistance.
- 10.30 Whilst recognising that police resources will be severely stretched at the time of such disaster events and that there are competing demands in terms of policing priorities, the Council believes that future operational plans for large evacuation centres must include provision for a permanent police and security presence and that protocols should be established with the Queensland Police Service for the provision of such support to evacuation centres in the event of a major evacuation.

Evacuee Emergency Kits

- 10.31 Many evacuees arrived at evacuation centres empty handed. In the case of a flood event, there is ordinarily sufficient time for evacuees to properly prepare for their evacuation. In some cases it might then be a period of days before the evacuees can return home. The public should be educated to attend at an evacuation centre with a personal emergency kit that contains key documents, medication, a mobile telephone, personal hygiene requirements, a credit card and the such like. Ideally, if evacuees were able to bring their own stretcher bed, sleeping bag, blanket, pillow and some food and water, this can then significantly relieve the initial pressure on evacuation centres.
- 10.32 The Council considers that public education and media reinforcement of the desirability of evacuees presenting with such a personal evacuation emergency kit would greatly facilitate the efficient operation of evacuation centres in the future.

Evacuation of the Aged, High Care and Special Needs Evacuees

- 10.33 The support of the aged, high care and special needs evacuees presented significant challenges for the evacuation centres. A threshold issue was the complex dynamic which arises when special needs evacuees are located with able bodied evacuees. It is self-evident that the needs of able bodied and special needs evacuees are very different and the mixing of these categories of evacuees within an evacuation centre can give rise to a suite of issues. The Council sought to accommodate this issue by establishing the Ipswich Showgrounds as a receiving point for all evacuees and having transport available to then transfer evacuees to other centres. In the case of high care and special needs evacuees, the Ipswich Regional Community Centre at Ripley was identified as the preferred centre because it is a large facility with air conditioning. However, this initiative was somewhat compromised as many evacuees went directly to evacuation centres, rather than being processed through the Ipswich Showgrounds centre.
- 10.34 Challenges experienced at the evacuation centres included:
- (a) a large number of residents from a hostel suffering mental health conditions arrived at Ipswich Grammar School, where families were also being housed. These residents were left at the school without sufficient care staff to support their special needs;
 - (b) a large number of frail aged residents from various nursing facilities arrived at the Ipswich Showgrounds, for transfer to the Ripley evacuation centre, without appropriate care staff, medication and prescriptions;

- (c) of the approximately 170 evacuees located at Ripley, approximately 140 were in the aged, infirm or special needs category. However, in at least one instance, the nursing home which delivered the evacuees to the centre did not provide or arrange for any carers to support those evacuees at the centre;
- (d) the bedding delivered to Ripley at around 2:00 am on Wednesday 12 January 2011 comprised self inflating 3 inch mattresses which caused extreme discomfort to some of the aged and infirm who were unable or unwilling to lie on these mattresses;
- (e) because the Ripley centre did not have showers, portable shower facilities were requested through the District Disaster Coordination avenues and the Council also sought to procure shower facilities by its own initiative. However, as it appeared that no such facilities were available in Queensland, the necessary facilities were required to be shipped from interstate and it was not until Friday 14 January 2011 that showers were received and installed on the site at Ripley. As a result of the absence of showers at Ripley there was an increased risk of infection and personal hygiene issues which exacerbated the discomfort of both the residents and the volunteers caring for the residents at that centre; and
- (f) the failure of a number of nursing homes and aged care facilities to provide carers, or sufficient carers to support the residents taken to evacuation centres had the consequence of transferring responsibility for the care of those residents from the nursing home or aged care facility to the Council team that was co-ordinating the management of the evacuation centres and to the volunteers assisting at those evacuation centres. This placed an enormous burden on the Council officers, agencies and volunteers at the centres who, despite working with exceptional goodwill to address the special needs of these evacuees and to make conditions as comfortable as possible, were not trained to provide such care.

10.35 The Council wishes to emphasise in these submissions, that it acknowledges and is extremely appreciative of the volunteer and carer support provided at all of the evacuation centres for the care of evacuees and in particular, of the aged and infirmed and those with special needs. The response and support from the carers who were present and from church, community and other volunteers supporting the facilities was quite extraordinary.

10.36 The Council considers that special evacuation requirements should be developed for aged care facilities, special needs hostels and nursing homes. These requirements may include that:

- (a) each facility should have its own disaster recovery plan and evacuation operations plan for implementation in a flood (or other crisis) event;

- (b) upon evacuation, sufficient carers should be required to attend with the evacuees to take responsibility for and provide continuing care to the evacuees;
- (c) upon evacuation, evacuees should attend with all medications and prescriptions and any other special needs requirements (for example oxygen masks, walkers and the like);
- (d) where possible, specific evacuation centres should be identified which will best accommodate the special requirements of any special needs evacuees (for example to have available showers, appropriate bedding and the like).

10.37 In terms of longer term policy development, relevant considerations may include:

- (a) that all aged care, special needs and nursing home facilities should be required to install backup power, as many of the evacuations of residents and patients from these facilities arose because of the loss of electricity, not because of flooding issues. Such evacuations would have been avoided if these facilities had access to backup power supplies; and
- (b) from a planning approval and development perspective, consideration may need to be given as to whether the development of such facilities should be permitted within flood prone areas or in areas that may be prone to prolonged isolation in the event of a flood.

10.38 The implementation of such longer term initiatives should avoid, or minimise the need for the evacuation of aged, high care and special needs residents in a flood event, which would significantly lessen the complexities that are experienced during a flood event.

Provision of Essential Resources - Food, Water, Bedding

10.39 The Council, through the LDC, placed an order with the DDC for bedding, water and other physical resources at about 1:20 pm on Tuesday 11 January 2011. The DDC approved activation of this resource request at 1:30 pm. However, despite this prompt activation, the response to the request was slow and unpredictable. This appears to have arisen, at least in part, because:

- (a) resources were thinly stretched due to the magnitude of the flood events across southern Queensland; and
- (b) there was a lack of clarity as to who was responsible to respond to and meet the request.

10.40 In the event:

- (a) a truckload delivery of mattresses was received at Ipswich Showgrounds at around 6:30 pm on Tuesday 11 January 2011, which was then diverted to St Josephs School at North Ipswich as that centre was at risk of being cut off by flood waters;
- (b) a further truckload delivery of mattresses was received at Ipswich Showgrounds at around 10:00 pm that evening;
- (c) bedding (in the form of mattresses) was received at the Ipswich Regional Community Church, Ripley at around 2:00 am on Wednesday 12 January 2011;
- (d) a further shipment of bedding arrived at Ipswich Showgrounds at around 4:00 am on Wednesday 12 January 2011; and
- (e) stretcher beds did not arrive at Ripley until around 5:00 pm on Wednesday 12 January 2011.

10.41 In the case of food, whilst the Salvation Army and Meals on Wheels volunteers provided wonderful assistance with the provision and distribution of food, as a matter of logistics there was a lack of clarity in terms of the arrangements for the provision of food. Following the decision to establish the evacuation centres, the Council engaged in negotiations with a national food chain for the purchase of food. Ironically, another national food chain's premises at Ipswich were flood affected and very substantial quantities of food were destroyed. With some foresight, the food which was wasted could have been secured and made available for supply to the evacuation centres. In addition to the food secured by the Council, the Salvation Army made arrangements with a number of fast food chains who generously donated food which was then distributed across the evacuation centres on the night of Tuesday 11 January 2011. This food supply was also supplemented by community donations.

10.42 However, there was, on the first night of the evacuations a lack of available resources, including food, at the evacuation centres and in particular at the Ipswich Showgrounds. This was relieved upon the arrival of a Woolworths' truck with ordered food and water supplies at the Showgrounds at around 2:00 am on Wednesday 12 January 2011.

10.43 The Council considers that a number of matters need to be addressed in relation to the provisioning of evacuation centres:

- (a) firstly, one agency needs to have overall responsibility for the logistics of provisioning evacuation centres with essentials such as food, water and bedding to ensure there is no confusion amongst agencies as to where that responsibility lies.

The Council considers that it is the agency that is best placed to perform this role, as it has the requisite local knowledge of contractors and suppliers that is critical to the provision of logistical support;

- (b) secondly, procurement and standing offer arrangements should be agreed and in place with major suppliers to ensure that there is the immediate provision of essential supplies, including food in an emergency situation; and
- (c) thirdly, in the case of non-perishable resources such as beds, mattresses and blankets, the Council will, as part of its future response to these events, secure a supply of resources to be available as a "backup" for immediate deployment to evacuation centres if on some future occasion such resources are not available on a timely basis through other channels.

Management of Evacuation Centres - Red Cross

- 10.44 Under current arrangements with the State, the Red Cross has responsibility for the operation of the evacuation facilities. The Council does not question those arrangements. However, in the face of the multi-faceted event that was experienced across southern Queensland during January 2011, the expectation on the part of the Council that those arrangements would be given effect did create some practical difficulties.
- 10.45 Upon making the decision to establish the evacuation centres, the LDC followed the appropriate course of notifying the DDC who confirmed the activation of the Red Cross. However, this support did not arrive for some considerable time with the result that well intentioned and hard working, but untrained Council employees, with the support of volunteers, had to fill the breach.
- 10.46 In the case of the Ipswich Showgrounds evacuation centre, the relevant Red Cross team was at Brisbane Airport, bound for Rockhampton, but were then diverted to Ipswich when the request was actioned. Although there was ready road access still available between Brisbane and Ipswich on the afternoon of Tuesday 11 January 2011, this team apparently waited at Brisbane Airport for helicopter transfer to Ipswich and they did not arrive at Ipswich Showgrounds until around 10:00 pm that evening.
- 10.47 In the case of the Ipswich Regional Community Church at Ripley, the Red Cross team was sourced from Melbourne and arrived on the morning of Wednesday 12 January 2011.
- 10.48 Even upon their arrival, only eight Red Cross personnel were available. This was an insufficient number to manage the evacuation centres. The Red Cross staff were assigned to the Ipswich Showgrounds and Ripley centres, with a further 18 Red Cross personnel being

expected on the afternoon of Wednesday 12 January 2011. In the meantime, Council employees were required to supplement the management resources and to continue working with the Red Cross in managing and operating the evacuation centres.

- 10.49 The Council is in no way critical of these delays as it fully understands the resource constraints occasioned by the exceptional circumstances facing the State and all support agencies at this time. However, the short point, in terms of preparation for a similar future event, is that there needs to be clear and direct lines of communication with the Red Cross and, if operational support of evacuation centres is to be delayed or compromised for any reason, this needs to be made known immediately and backup arrangements put in place. The issue for the Council is not so much that it was required to provide operational support for the evacuation centres, particularly over the first 24-48 hours of the event, but rather that it had not anticipated the requirement that it to provide that support and had not planned for it.

Evacuation of Pets

- 10.50 Some residents are reluctant, or refuse, to evacuate without their pets. This can create difficulties for emergency services in effecting evacuations. It is also problematic in the operation of evacuation centres, as it is generally inappropriate to co-locate pets and evacuees within the evacuation centre.
- 10.51 In the case of the Ipswich Showgrounds evacuation centre, being a Showgrounds, there are excellent facilities for the evacuation of pets. The Ipswich Pound was also flood effected and animals from the pound were also relocated to the Showgrounds. The Council had an animal management team in place at the Showgrounds to assist in caring for the pets. This was an important facility as it significantly reduced the anxiety of those evacuees who had arrived at the centre with their pets.
- 10.52 These arrangements worked well and the Council does not recommend that any changes be implemented in the case of future events.

Role of other Agencies

- 10.53 Evacuation centres were supported on site by a large range of agencies - the Red Cross, Lifeline, Salvation Army, Department of Communities, Meals on Wheels, Queensland Ambulance Service, Queensland Police Service, St Johns' Ambulance and others, as well as by church groups, community groups and volunteers. These groups all provided essential support.
- 10.54 The challenge for the management and operation of evacuation centres is the coordination of these services. For a Council with the resources of the Ipswich City Council, when faced with

a crisis of the magnitude of the flood event, it can ill afford, for its limited resources to become so committed to and involved in the management of evacuation centres.

- 10.55 For example, the Council's Strategic Supply Manager, responsible for contracts and procurements, was assisting in the provision of food and other supplies to the Ipswich Regional Community Church, Ripley, at around 11:30 pm on Tuesday 11 January 2011, when he was requested by the Council to remain at that facility to take responsibility for assisting community members and volunteers in the management of the issues being experienced with the elderly evacuees at the centre. The officer remained at the centre throughout the night and into the following morning, at a time when his procurement skills and experience would have been invaluable to the LDC in the Ipswich LDMG coordination centre helping manage procurement issues across the evacuation centres and procurement issues in relation to the pending flood recovery process.
- 10.56 The Council considers that an evacuation centre operations strategy needs to be developed which clearly identifies the roles of agencies so that there is clarity around those functions and responsibilities. As previously noted, the Council supports that the vesting of responsibility for the operational management of evacuation centres in the Red Cross. However, an operations plan needs to be developed, communicated and understood by all stakeholders as to their respective roles and responsibilities and also a back-up plan developed which addresses operational management if, for any reason, the primary plan is unable to be actioned, or there is to be a delay in doing so.
- 10.57 There are, in effect, three critical phases in relation to evacuation centres:
- (a) establishing the centre;
 - (b) operating the centre;
 - (c) standing down the centre.
- 10.58 An evacuation centre operations plan should identify leadership and responsibilities for each of these phases. For the reasons outlined in this submission, the Council considers that it is best placed to assume responsibility for the first (establishment) and third (stand down phases) but because of the skills involved and the impact on its resources, the Council is not the agency best placed to assume responsibility for the operational phase.

Organic Centres

- 10.59 As noted previously, organic centres developed at a number of locations. These centres tended to be community based. These evacuation centres whilst unplanned, provided an invaluable and highly important part of the overall evacuation response that occurred during the flood event.
- 10.60 In many instances, the Council did not become aware of the existence of the centres, which, apart from the Shiloh Church at Goodna, were established during the afternoon and evening of Tuesday 11 January 2011, until Wednesday 12 January 2011.
- 10.61 The most significant of the organic centres was at Karalee State School, which arose upon the isolation of Karalee and Barellan Point as a result of the flood event. The Council will, as part of its planning arising from the flood events, identify those communities susceptible to isolation and develop local community plans for the formal support of those communities, including the formal identification of future evacuation centres.
- 10.62 The Council coordinated with the organic centres in relation to their support and resource requirements and, in some instances, Council resources were deployed to assist in management of these centres.
- 10.63 As part of its development of an evacuation centre operations and management plan, the Council will consider strategies by which the creation of organic centres can be minimised and the means by which those centres which do arise can be effectively managed, resourced and supported.

Closing Evacuation Centres

- 10.64 Based on its experience of the flood events, the Council considers there are five primary reasons identified as to why people attend at evacuation centres:
- (a) because their home has been flooded;
 - (b) because their home is without power;
 - (c) because they are homeless;
 - (d) to be fed; and
 - (e) to have companionship.

- 10.65 The owners of the properties that were occupied as evacuation centres, whilst very supportive were understandably concerned that the evacuation centre facility be closed down as soon as was reasonably feasible, so that the facility could be restored to its usual purpose.
- 10.66 In the case of the official centres this was achieved by, in effect, transferring any remaining evacuees from the Grammar Schools, St Josephs Primary School and the Ipswich Regional Community Church, Ripley, to the Ipswich Showgrounds facility at the earliest reasonable opportunity. This enabled those four official evacuation centres to be closed by Saturday 15 January 2011.
- 10.67 However, in the case of the Showgrounds, the centre remained open for another two weeks until 28 January 2011.
- 10.68 The three primary reasons why people remained at the Ipswich Showgrounds evacuation centre for such a period were:
- (a) for those with flooded homes: because they had no where else to go;
 - (b) for those with homes where power had been disconnected: until the power had been restored; and
 - (c) community relief facilities such as the Community Recovery Centre and flood Distribution Centre, which were opened at the Showgrounds, attracted people to that location.
- 10.69 With a view to effecting the efficient wind down and closure of evacuation centres, the Council considers that:
- (a) a high priority following a flood event must be the reconnection of power to non-flood affected areas, so that evacuees can return home;
 - (b) a high priority following a flood event must be the reopening of roads so that evacuees can return home;
 - (c) a high priority following a flood event must be the identification of alternate housing for those evacuees who are unable to return home;
 - (d) support facilities for those affected by the flood event should be established at venues other than at an evacuation centre, or, where it makes good sense to co-locate those facilities with the evacuation centre, the facility should be relocated to another venue as soon as it is reasonably practicable to do so.

An Unusual Incident

- 10.70 On the evening of Wednesday 12 January 2011 a State employee attended at the Ipswich Regional Community Church, Ripley, to ascertain whether the "international standard" for setting up evacuation centres had been adhered to. This inspection included measuring the distances between beds within the evacuation centre, taking the temperature in portable fridges and similar such enquiries.
- 10.71 Notwithstanding that the Council recognises that the health and safety of evacuees is of the utmost importance, this seemed an unusual use of resources at a time when resources were so limited.

Conclusion

- 10.72 Whilst, for the reasons outlined in this section of these submissions, the establishment and management of the evacuation centres was a complex process and many issues had to be addressed, the Council is satisfied that these evacuation centres ran effectively and successfully. The Council is unaware of any serious adverse incidents concerning public well being or public or private property in connection with any of the evacuation centres.
- 10.73 That this is so is a credit to the extraordinary hard work and goodwill of all involved in the operation of these evacuation centres.
- 10.74 The major factors impacting on the difficulties experienced with the evacuation centres, particularly on the first night, were the urgency with which the centres needed to be established following the changed notification of the predicted Bremer River flood peak and the fact that support agency resources were already very strained, as a result of which such support was, in some instances, either delayed, unavailable or otherwise compromised.
- 10.75 With hindsight, the Council considers that it could have taken additional steps prior to Tuesday 11 January 2011 to prepare for the possibility that several evacuation centres may be required. These steps would have involved the identification of evacuation centre sites and the taking of preliminary steps in relation to the resourcing of such centres if required. However, there is a balance to be achieved. Council's experience during the flood event was that a very short time after the subject matter of evacuation centres was discussed within Council, there was an awareness of this issue within the community and people started arriving at the proposed centres. Establishing sites prematurely can give rise to misplaced fear or anxiety within the community and will encourage some people to attend at the potential centres at a point in time when they are not required to do so and when the evacuation centre is not ready to accept evacuees.

10.76 In terms of preparation for next summer's wet season and with the benefit of the lessons learned from the January 2011 flood event, the Council will be taking steps to:

- (a) revise the section of the IDMP in relation to evacuation centres;
- (b) produce a specific evacuation centre operations and management plan detailing the operational requirements for the efficient establishment and management of evacuation centres; and
- (c) undertake training of appropriate Councillors and Council staff so that, should a similar event occur where Red Cross support is delayed or unavailable, those officers and staff will be in a position to assume responsibility for the management of evacuation centre operations pending the arrival of such support.

11.0 Recovery Actions by Council

Recovery task force

- 11.1 During the afternoon of Wednesday 12 January 2011, the Bremer River flood peaked. Earlier that day, at the Ipswich LDMG meeting held at 8:00 am, the Ipswich LDMG had appointed the Chief Operating Officer of the Health, Parks and Recreation Department as the local recovery coordinator, to establish and lead a local recovery task force responsible for overseeing the Council's immediate and short term recovery response to the flood event. This decision was made prior to the flood peak as the Ipswich LDMG recognised the need for the recovery operations to be ready to commence immediately upon the flood waters starting to recede.
- 11.2 By the afternoon of Wednesday 12 January 2011, the recovery task force had established a recovery control room on level 4 of the Hayden Centre. The task force operated separately to, but in co-operation with, the Ipswich LDMG that operated from level 2 of the Hayden Centre.
- 11.3 The recovery task force met twice daily, at 8:30 am and at 3:00 pm. It also reported to and updated the Ipswich LDMG daily. From 12 January 2011, a senior member of the task force attended each Ipswich LDMG meeting.
- 11.4 Various Council officers were seconded to the task force, predominately from within the Health, Parks and Recreation Department, with key responsibilities being:
- (a) management of the task force control room, logistics and dispatch;
 - (b) management of field operations; and
 - (c) management of public health, environment and pollution issues.
- 11.5 The Council's City Planner was also seconded to the task force to assist with field intelligence, as he had access to detailed mapping information regarding the flood affected areas.
- 11.6 Other Council officers were also seconded to the task force to assist with media relations, procurement and the co-ordination of volunteers.
- 11.7 The task force worked closely with the other agencies, notably the Queensland Police Service, Emergency Management Queensland, the Australian Defence Force and the Queensland Fire and Rescue Service, whose representatives also attended the task force meetings.
- 11.8 Supplementing the specific work being undertaken by the task force were the Council's usual business departments, each of which was engaged in recovery activities within its specific area of responsibility. These response and recovery activities are briefly summarised below.

- 11.9 The focus of the local recovery task force was the clean up of the City and to deal with community safety and public health issues. The task force did not assume responsibility for the evacuation centres and was not directly involved in issues of economic recovery or in re-establishing residences or businesses.
- 11.10 On the afternoon of Wednesday 12 January 2011, task force members undertook a reconnaissance of the City to assess the impact of the flood event and to identify priority areas for the clean up operations.
- 11.11 An early priority for the task force was to agree to procurement arrangements with private contractors to assist with the clean up operations. There were two primary reasons lending urgency to this task. Firstly, the Council did not itself possess sufficient equipment of the type required (such as bobcats and front end loaders) for the clean up operations and contractor assistance was required to supplement the Council's own resources. Secondly, the task force believed that once the flood event affecting Brisbane had started to recede in the following days, there would be significant demand for such resources in Brisbane. This apprehension was well founded, with some contractors being offered premium rates to leave the Ipswich recovery efforts and divert their resources to Brisbane.
- 11.12 Generally, the recovery task force proceeded smoothly and effectively, with substantial resources being deployed and a vast amount of flood waste and debris being removed in the three week period following the flood event. This waste and debris was initially deposited in temporary facilities established around the City and was then transferred to permanent land fill facilities.
- 11.13 Worthy of particular comment is the extraordinary support provided to the Ipswich recovery and clean up effort by members of the Australian Defence Force.
- 11.14 Also worthy of comment is the significant involvement of volunteers, particularly on the weekend immediately following the flood event. Volunteer support centres were established by the task force so that volunteers could be coordinated and directed to specific areas of need. However, with this volunteer involvement came some management issues, notably:
- (a) the influx of volunteers gridlocked City streets, particularly over the course of the weekend immediately following the flood event, so that heavy machinery and trucks were unable to be moved throughout the City and suburbs in a timely manner, if at all. As a result of this, the task force directed that the Council clean up teams shift their operations from a day shift to a night shift, enabling rubbish and debris to be collected from the streets during the night when movement around the streets could occur more freely. This direction was given by the task force during

the afternoon on Saturday 15 January 2011 and the first night shift commenced that night. This arrangement remained in place for approximately two weeks to enable citizens and other services to move more freely throughout the City during daylight hours;

- (b) however, whilst this change in arrangements sensibly addressed the congestion issues caused by the massive influx of volunteer resources, the change of the clean-up crews from a day shift to a night shift gave rise to other logistical issues that needed to be considered and managed. These included lighting issues, additional workplace health and safety considerations and the availability of engineering support to deal with machinery breakdowns;
- (c) some volunteer groups operated on an entirely ad hoc basis, descending upon areas of the City and effecting clean-up in an uncoordinated and undirected fashion. This resulted in some inefficiencies in that organised volunteer clean-up crews might be directed to a particular area thought to be in need of resources only to find that other volunteers had already undertaken work in the area;
- (d) whilst the contribution of volunteers contributed significantly to the post-flood event clean up, strategies for the better management and coordination of volunteer resources is an issue that needs to be addressed in preparation for any similar disaster event.

11.15 By 31 January 2011 (approximately three weeks after the flood event), the immediate post-event recovery was substantially progressed. Much of the recovery work was undertaken under the direction of the recovery task force but, as previously noted, other aspects of the recovery were being managed by other departments within the Council and in particular the Engineering Services, Economic & Community Development and Finance and Corporate Services departments.

11.16 Other aspects of the Council's short term recovery and response in the period immediately following the flood event included:

(a) **Human/Social Recovery**

- (i) a number of community recovery centres were established and were supported by assistance from the State Department of Communities;
- (ii) counsellors were made available at evacuation and recovery centres to support trauma affected residents as well as Council staff and others who had experienced trauma as a result of the flood event;
- (iii) volunteer lawyers were located at the Ipswich Showgrounds recovery centre to provide pro bono legal assistance to community members;
- (iv) the Department of Employment, Economic Development and Innovation (DEEDI) Business Recovery van was located at the Ipswich Showgrounds recovery centre; and
- (v) the Department of Housing undertook housing requirement assessments with evacuees with a view to determining housing solutions.

(b) **Economic Recovery**

- (i) the Council undertook a number of initiatives to assist businesses whose records had been lost. The Council established a temporary business centre in the Ipswich City Square to provide affected businesses with access to computers, telephones and meeting rooms during the rebuilding phase and assisted with liaison with banks and finance providers and with the Insurance Council of Australia. The Council also commenced a number of events and campaigns to support the recovery of local businesses;

(c) **Infrastructure Recovery**

- (i) by early February 2011, only two of the 760 affected roads remained closed due to damage and initial impact assessment of infrastructure damage was well progressed with the initial impact assessment of all urban roads and bridges and most rural roads completed by mid February 2011;
- (ii) an initial impact assessment of Council owned buildings and properties was well progressed by mid February 2011; and

- (iii) by early February 2011, an initial damage assessment of all Council parks and reserves had been completed.

(d) **Environmental Recovery**

- (i) as previously noted, the post event recovery of flood and building debris, the clean-up of temporary stockpile sites and the removal of debris to permanent land fills had been largely completed by 31 January 2011;
- (ii) approximately 1,000 litres of chemicals and hazardous waste had been identified, collected and disposed of;
- (iii) septic tank pump outs had been completed, with approximately 20,000 litres disposed of;
- (iv) a first round of mosquito breeding control treatment had been undertaken; and
- (v) an assessment of the environmental impact to river banks and catchments had been commenced.

11.17 During the Council's recovery and response phase, a number of issues were identified as "lessons learned". These lessons will be of assistance in planning and preparedness for next summer's wet season. Regard will be had to these lessons in the Council's review of its disaster management operational plan over the course of the coming months. Certain matters are identified in section 13.0. However, whilst there are learnings from which improvements can be made, it is submitted that, overall, within the resources available to the Council, its response to the flood event and the immediate post-event recovery was well coordinated, well managed and effective. Within approximately three weeks of the flood event, the clean up of City businesses, residences and streets was largely completed and the demand from residents and businesses for urgent post-event support and counselling services, which immediately following the events had been intense, had dissipated. That this was achieved in such a relatively short period is testimony to the extraordinary commitment and effort of Council officers and staff and the support received by the Council from various governmental agencies and from the broader community.

11.18 However, the longer term recovery of the Ipswich area will take some considerable time and will be expensive. A significant number of businesses and residents directly impacted by the flood event will endure financial strain and hardship and the Council is committed to doing all that it can to minimise these impacts. There are also a large number of issues concerning the

remediation of City infrastructure and future planning to be considered, addressed and coordinated during the longer term recovery phase.

11.19 To that end, the recovery task force, its task having been completed, was disbanded with effect from 31 January 2011. It has been replaced with a long term Flood Recovery Working Group.

11.20 The Flood Recovery Working Group is constituted by the Mayor, the Deputy Mayor, the Chair of the Planning and Development Committee, the Chair of the City Works Committee, the Council's Chief Executive Officer and other Council officers. Five working "sub-groups" have been established:

- (a) Forward Planning;
- (b) Human and Social;
- (c) Economic;
- (d) Infrastructure; and
- (e) Environment.

The Flood Recovery Working Group has met weekly since 31 January 2011 for the purpose of identifying specific activities within each "sub-group" directed toward the City's recovery. This working group is also responsible for overseeing the development of the City's Flood Recovery Plan. In the submissions to be provided to the Commission in April 2011, the Council will update the Commission on the progress of the work of the Council's Flood Recovery Working Group and its associated streams.

12.0 Loss of Life

- 12.1 There was one loss of life within the Ipswich City Council area during the flood event. A motorist (whose name, in light of the proposed publication of submissions, is not identified in this submission) passed away at Campbells Gully on the Karrabin-Rosewood Road on 12 January 2011.
- 12.2 The Rosewood-Karrabin Road is a State controlled road. It connects Ipswich and Walloon, to the west of the Ipswich CBD. Campbells Gully is a small culvert located at a bend in the Karrabin-Rosewood Road, crossing Campbells Creek, which flows into the Bremer River to the south of the crossing.
- 12.3 As a State controlled road, the Rosewood-Karrabin Road and related road infrastructure falls within the responsibility of the Department of Transport and Main Roads. The Council has a Road Maintenance Performance Contract (RMPC) with the Department to undertake maintenance activity on the roadway.
- 12.4 The Council has very limited information regarding the circumstances of this incident. It is understood the fatality occurred when a single occupant vehicle left the roadway whilst crossing the culvert. Campbells Creek is carried under the culvert through three large storm water drains and it is understood that the vehicle came to rest in the creek bed on the south side of the culvert, adjacent to the storm water outlets.
- 12.5 The Council is presently unaware of the circumstances which caused the vehicle to leave the roadway. The Council is aware that during the course of the flood event the carriageway at Campbells Gully was subject to flooding.
- 12.6 This fatality is under investigation by "Task Force Galaxy" of the Queensland Police. The Council understands the matter is being prepared for the coronial investigation.
- 12.7 The Council extends its deepest sympathies to the family and friends of the motorist involved in this incident.

13.0 Lessons Learned

Introduction

- 13.1 The flood event has provided to the Council a range of learnings about the management of a rapidly developing natural disaster event as well as specific learnings in relation to managing a major flooding event within the Ipswich area. The 2011 flood event was clearly the third largest flooding event that has been experienced in Ipswich since European settlement of the area.
- 13.2 For the Council, learnings from the event fall into 2 broad categories:
- (a) systemic learnings; and
 - (b) operational learnings.
- 13.3 For the purposes of this submission, systemic learnings are those issues which, to be properly addressed, require:
- (a) a whole of Council response; or
 - (b) material input and cooperation from other local authorities, other levels of government or other agencies; or
 - (c) a combination of both a whole of Council response and input from other parties.
- 13.4 Operational learnings are issues where the management is relatively "self contained" and, subject to appropriate assessment and consideration, can be progressed by Council at an operational and Departmental level.
- 13.5 Many of these operational learnings have been identified and discussed earlier in this submission. The Council has adopted this approach as it was considered best to link the discussion of operational learnings with the discussion of the Council's experience in respect of particular issues. In this section of the submission, some of these operational learnings will again be briefly summarised as a matter of convenience. However, the Council also refers the Commission to the earlier, more detailed discussion of these operational issues.

Qualification

- 13.6 It is important to emphasise that the suggestions made in response to the learnings as detailed in this submission are necessarily provisional in nature. It is still only a little over two months since the flood event and the Council's focus in that period has primarily been on flood response and recovery.

- 13.7 The suggestions set out in this submission flag a range of potential responses to the many issues that have been identified by Council as it has reflected on its preparation for and response to the flood event. These suggestions represent potential actions and solutions that have been identified by Council, but which have not, in the available time, been fully investigated or costed, or evaluated in terms of their practical feasibility.
- 13.8 Furthermore, it will be self evident that the implementation of many of the suggested actions will be beyond the resources of the Council. They represent potential solutions which, if implemented, may be considered for adoption on a State-wide basis, or at least across a range of local government areas. With a few exceptions, primarily being those which are concerned with local disaster management and planning and Ipswich City assets and infrastructure issues, the suggested responses are not limited in their application to Ipswich City.
- 13.9 The Council is committed, over the coming months, to identifying and implementing those short term solutions which can and should be addressed in preparation for next summer's wet season. However, in relation to many of the longer term proposals, the Council is unable to presently commit to solutions that have not yet been fully investigated or costed. These solutions are raised by way of assistance to the Commission in relation to the matters upon which the Commission is required to inquire and report. The Council, for its part, is committed to continuing to explore further solutions both within Council and also in conjunction with other Government, local authority and agency stakeholders.

High Level Systemic Issues

- 13.10 In its consideration of the issues experienced during the 2011 flood event, three high level systemic issues stand out for Council being:
- (a) firstly, the lack of warning that the Ipswich LDMG received regarding the escalation of the flood event, with the consequence that Ipswich residents and businesses received little warning of the pending impacts of the flood event;
 - (b) secondly, the lack of relevance to many Ipswich residents and businesses of the published information as to river heights and the impact of this fact on the response of Ipswich residents and businesses to the warnings that were received; and
 - (c) thirdly, how to take full advantage of and institutionalise the lessons learned, so as to ensure that, with the passage of time, complacency does not arise and that the lessons learned are not forgotten (if it is another 37 years until the next major flood event in Ipswich).
- 13.11 Each of these high level systemic issues is briefly considered below.

Lack of flood warning

- 13.12 The background to this issue is addressed in section 9.0 of the submission. As has been detailed, there was a very rapid escalation on Tuesday 11 January 2011 in relation to the seriousness of the advice that was provided to Council by BOM particularly as to the severity of the potential flood event.
- 13.13 In the course of several hours, the flood event went from being a manageable situation potentially affecting only a few hundred properties to a critical event threatening 8,600 properties.
- 13.14 The Council considers it to be essential that, in connection with any future flood event, the Ipswich LDMG is provided with timely, accurate and reliable flood inundation information.
- 13.15 This is particularly critical in circumstances where a Brisbane River flood event may also impact on the Bremer River and the Ipswich area.
- 13.16 The Ipswich LDMG and the Council are reasonably well placed to understand and prepare for the impact of a Bremer River flood event. The 2011 flood event experience clearly demonstrates that the impacts on the Ipswich area from a Brisbane River flood event are a different set of impacts.
- 13.17 The Council considers that the lessons learned from the flood event should include providing a mechanism by which the Ipswich LDMG is provided with earlier, reliable and more fulsome warnings as to the impact of a future Brisbane River flood event on the City and people of Ipswich.

Relevance of flood warnings

- 13.18 A warning that the Bremer River is predicted to peak at 16.0 metres at the Bremer River gauge means little to most Ipswich residents and businesses in terms of how that event will impact them personally. A warning that the Brisbane River is predicted to peak at 17.0 metres at Moggill or at 5.0 metres at the Port Office gauge means even less to Ipswich residents. The preponderance of published media warnings of the flood event comprised warnings of this nature.
- 13.19 Colloquially, a warning that the flood event was predicted to be "not as bad as", "similar to", "worse than", "half a metre less than" or "half a metre more than" the 1974 flood event may have been more meaningful at least to residents who had experienced the 1974 event and others who had access to someone who had experienced that event. However, such

information was also of limited value and potentially misleading. As has been addressed in this submission, the 2011 flood event was quite different to the 1974 flood event.

- 13.20 Moreover, various parts of Ipswich City are affected differently by rises in different rivers and creeks, depending on the nature of the flood event. Publishing information about the likely height of the Bremer River is of little direct relevance to Ipswich residents who live adjacent to the Brisbane River. It is therefore important that information provided to the community regarding anticipated river heights and flood levels is information that is both meaningful and relevant to the particular community.
- 13.21 One of the learnings from the flood event is that there must be a more effective means of communicating the potential impact of the flood event to residents and businesses so that they can then take proper and timely precautions to mitigate that impact.
- 13.22 Council accepts that in practice this may be difficult to implement and achieve.
- 13.23 One suggestion is that in areas which are potentially susceptible to serious inundation that consideration might be given to the establishment of a network of flood sirens that could be activated as a last line of communication in particular localities. It is noted that such a system has been used in other jurisdictions to deal with bush fire threats.
- 13.24 Another suggestion is that in various localities of the City there should be flood level warning signage which may might be linked to a rating system of flood classification for the City.
- 13.25 A further suggestion has been the establishment of electronic warning signs in various localities throughout the City that could be used as a means of communicating key information to local residents such as the location of the nearest evacuation centre or even information on anticipated flood levels.
- 13.26 Whatever the solution may be, Council is concerned that, arising from the flood event, there needs to be a more effective means of communicating the potential impact of the event to the residents of the City so that those residents have a clear understanding of the nature of the relevant warning.

Institutionalising the lessons of the 2011 flood event

- 13.27 Council is mindful that following the flood event there will be a heightened awareness, both within Council and within the community, of the impact of the flood event. Council expects that this was also the case following the 1974 flood event. However, in the 37 years which have passed since that event, the City of Ipswich has undergone vast change and the lessons learned in 1974 have, in many instances, been either forgotten with the passage of time or superseded by subsequent events.
- 13.28 The concern for Council is that history not be repeated if it is another 37 years until the next major flood event. The challenge, not only for Ipswich City Council, but for the State, is to institutionalise the learnings from this flood event.
- 13.29 In the case of the Council, this submission has already noted that the IDMP will undergo review and updating and will be supplemented by a number of operational sub-plans which are both concise and action-based.
- 13.30 In the case of Ipswich, in accordance with section 507 of the Local Government Act 1993, the Ipswich City Council 2007-2012 Corporate Plan was adopted by Council in June 2007. This plan defines the Council's Vision for Ipswich and the high level goals, strategies and actions to be enacted over the five year period in achieving the vision.
- 13.31 In order to provide leadership, direction and good governance, the Corporate Plan is a rolling plan that is updated and approved by Council on an annual basis.
- 13.32 To institutionalise its disaster management planning and to keep the IDMP current, relevant and front of mind for the Council, the Council will consider as a potential initiative prescribing as an objective in the Corporate Plan that, on an annual basis, it will be a requirement for Council to revisit its disaster management plan and disaster recovery processes to ensure that the plan and processes remain current and of relevance.
- 13.33 Linking such processes to the Corporate Planning Process, which requires adoption by Council every year, will create a governance mechanism that will ensure that within Council there is accountability for the disaster management and recovery processes. This is a mechanism which will help ensure that the community and Council will not, over time, become desensitised to the lessons learned in the 2011 flood event and is a mechanism that will help to ensure that over time the IDMP remains of relevance.
- 13.34 However, whether it is by this means, or by some other means, the systemic challenge which now arises is to devise a process whereby local government, State Government and the

community remain prepared to address the challenges of a future flood event and to ensure that disaster management plans remain current, that they reflect best practice and that the lessons learned through this flood event remain relevant and are not lost with the passage of time.

Other Systemic and Operational Learnings from the Flood Event

13.35 Other high level systemic or operational learnings from the flood event will be considered in seven main areas being:

- (a) Issues relating to the IDMP;
- (b) Preparedness issues;
- (c) Emergency response issues;
- (d) Matters relating to the establishment and conduct of the evacuation centres;
- (e) Communication and warning issues;
- (f) Education issues; and
- (g) Response and recovery actions.

Each of these issues will now be separately considered. In each case, this submission identifies whether the learning in relation to the identified issue is in the nature of a systemic or operational response.

IDMP Issues

13.36 As noted above, prior to the flood event, the Council had determined that there was a need for a detailed review of the IDMP. Such a review was seen to be necessary because of the extensive nature of the 2010 amendments to the Act. Furthermore, the IDMP had been in place for four years and it was considered appropriate to undertake a more fundamental review of the document in light of developments that had occurred in terms of current disaster management thinking and emerging best practice.

13.37 Set out below are some of the key learnings in relation to the IDMP:

Operational Sub-plans - Systemic response

- (a) one of the important observations that has been made since the flood event is that the IDMP is, with all annexures now a large document (being contained in several arch lever folders). During an urgent crisis as occurred with the flood event, it is clear that in addition to the IDMP, there needs to be a range of supplementary operational documents which are both concise and action based. In a sense, the Council believes that any revised IDMP should be more user friendly and provide clear and specific guidance and almost a step by step approach to dealing with specific tasks. This may be best achieved by a series of subject focussed fact sheets. By way of example, it would have been of considerable assistance to have had a detailed checklist and a step by step guide on how to establish the evacuation centres. Whilst the IDMP clearly deals with a range of specific issues, what is required under the auspices of the IDMP is a kit dealing with these types of issues. The development of these step by step guidelines or kits will also help the Ipswich LDMG to better delegate tasks if there is an escalating crisis as occurred during the recent flood event;

LDMG Power of Direction - Systemic response

- (b) another important issue is that under the Act, the Ipswich LDMG did not have any powers of direction. As noted above, under the Act these powers are invested as of right in the District Disaster Coordinator. There is power under s.75 of the Act for the chairperson of the State group or a relevant District Disaster Coordinator to authorise a person to exercise declared disaster powers for a disaster situation. One of the observations that has been made since the recent flood event is that the Ipswich LDMG managed within its boundaries the vast majority of the issues that arose during the flood event. In practical terms, the actual oversight from the district disaster area level was in the circumstances quite limited. However, the Act as it is presently framed, invests all of the key statutory powers at the district level rather than at the local disaster management group level. Whilst there is provision in s.75 of the Act potentially for a delegation of the district level powers down to the Local Disaster Management Group level, in an escalating and emergency situation, this may then be very difficult to put in place. An option may be for there to be a standard set of delegations from the district level to the local level that can then be activated in a proper and lawful manner if the circumstances of the relevant disaster event clearly have to be primarily managed at the local area level rather than at the district level.

Community Specific Plans - Systemic response

- (c) the IDMP should also provide for the development of community specific plans. Such community specific plans will be particularly useful for areas within Ipswich that can become isolated, e.g. Karalee, Rosewood, Marburg and One Mile/Leichhardt. This will ensure that there will be a local response capability with knowledge of what has to be done. Because on Tuesday 11 January 2011 the scale of the Ipswich flood event escalated rapidly, it was necessary for a large number of decisions to be taken in a very short period of time. The IDMP needs to effectively cater for such an occurrence and the incorporation of community specific plans is an option that will be investigated by the Council during its review of the IDMP.

Human Resource Management - Operational response

- (d) other noted issues relate to the proper resourcing and staffing of the Ipswich LDMG once the IDMP is brought into action. The flood event and the immediate recovery actions proceeded for several days. This has highlighted a number of needs:
 - (i) for there to be sufficient trained Councillors and Council staff to take on key roles assisting the Ipswich LDMG and in discharging the functions of the LDC;
 - (ii) prior to the flood event, there were three persons within Council who were trained to act as the LDC. During key stages of the flood event, such persons often worked 14 hour shifts, being a 12 hour shift and an additional 2 hour handover. Realistically, for extended events at least four persons should be identified and be trained to act as the LDC under the IDMP. This will allow adequate rest periods and a full 24 hour break for LDCs to refresh themselves;
 - (iii) the need during extended events to have sufficient staff rostered possessing appropriate expertise and skills, particularly during the Christmas/New Year holiday season;
 - (iv) the recognition that if there is a local natural disaster event it is highly likely that a number of Council staff and their families will also be affected resulting in the practical problem of Council staff being physically isolated from the Coordination Centre because of road closures and other disaster event impacts. For a disaster event which has a life of more than two or three days, this is an issue that needs to be planned for; and

- (v) Council will look at training a broader range of Councillors and Council staff on disaster management response skills so that the burden of disaster management can be more evenly deployed across Council's resources.

Communication with other Agencies - Systemic response

- (e) in terms of the involvement and interaction between the Ipswich LDMG and other external agencies it was found that the most effective means of getting things done occurred when there were face to face meetings and when external representatives (including Ipswich LDMG agency representatives) were physically in attendance at the Coordination Centre.

Inconsistency Between Geographic Areas of Operation - Systemic response

- (f) another area of difficulty from a coordination perspective was that the Ipswich LDMG and the IDMP are defined in terms of their operation by the boundaries of the Ipswich City Council. However, other agencies had significantly different operational areas of coverage. Indeed, a number of the representatives of the State agencies that were dealing with the Ipswich LDMG were coordinating activities across several Local Disaster Management Groups and even across more than one district disaster area. In practice, this factor on occasions resulted in there being a divergence of focus and perspective between the Ipswich LDMG and the other third party agencies with whom the Ipswich LDMG was interacting.

Preparedness Issues

- 13.38 In Ipswich, as noted above, a significant amount of preparation was undertaken by the Ipswich LDMG and the Council in the lead up to the flood event. However, the seriousness of the flood event escalated dramatically on Tuesday 11 January 2011. In a sense, there is a material distinction between the Ipswich flood event and the Brisbane flood event because of the amount of notice that was available in each locality. Whereas Brisbane received one to two days notice of the event, providing a substantial "lead time" for many parts of the City, Ipswich received notice of only a few hours.
- 13.39 This submission has previously highlighted at paragraph 13.12 and thereafter the systemic concerns which Council considers must be addressed in relation to the provision of timely and reliable notice to the Ipswich LDMG about any the flood event. There are also some operational considerations.

Preparedness - Operational response

13.40 The key operational steps that Council will consider taking include:

- (a) maintaining an adequate stock of emergency bedding and other associated resources for immediate deployment to the evacuation centres. This response is further addressed at paragraph 10.43 of this submission;
- (b) *in the lead up to the summer storm period, a formalised annual audit by Council will be undertaken of the identified potential evacuation centres to ensure that the establishment of evacuation centres can occur in the most efficient manner. From such an audit information can then be identified by Council for inclusion in any public education campaign in the lead up to the summer season; and*
- (c) the Council will also now consider putting in place standing offer or purchasing arrangements to provide for the secure supply of food, water and necessary contractor services. This response is also further addressed at paragraph 10.43 of this submission.

Emergency Response Issues

Coordination Centre Communications - Operational response

13.41 The establishment of the coordination centre on level 2 of the Hayden Centre worked well in practice. The centre was self sufficient in that it had its own back-up power supply (if required) and the communications and computer technologies were constantly available and supported throughout the flood event. On the communications front, it is important that at each evacuation centre there are one or more designated mobile phones and recharging devices which are allocated to that centre and which are then passed over between supervising staff throughout the course of an event, to ensure continuity of communications between the Coordination Centre, the LDC and each evacuation centre.

Council Officer support to the Ipswich LDMG - Operational response

13.42 It is also important that there be sufficient support for the Ipswich LDMG by Council officers with appropriate skills and training throughout the course of the event and that Council rosters are maintained for that purpose. If an event was to continue for over several days or even weeks, the rosters would need to take into account the potential of fatigue at the individual and team level.

Helicopter Landing Site - Operational response

- 13.43 For each locality within the City, there should be an identified helicopter landing site. This could be located on a relevant school oval or other appropriate site. This is a critical issue as during the flood event, the flood waters did isolate various parts of the City for significant periods of time. In the event of a severe medical emergency, it may be that helicopter access will be the only means of providing effective emergency support. Of course, such a plan requires that there be appropriate helicopter support facilities available.

Police Presence Post Event - Operational response

- 13.44 Some reports were received by Council that during the early stages of inundation there were instances of looting and theft. In terms of maintaining a police presence, it would have been of assistance if police had been able to utilise small water craft to immediately monitor the situation in recently inundated areas.

Matters Relating to the Establishment and Conduct of the Evacuation Centres

- 13.45 As noted in section 10.0, several evacuation centres were established and given all of the circumstances, these centres operated effectively throughout the course of the flood event.
- 13.46 There were a considerable number of operational learnings in relation to the establishing, management and standing down of evacuation centres, as well as some learnings which Council considers will require a systemic response.

Pets - Operational response

- (a) that it was a very positive step to allow evacuees to bring their pets with them. This initiative lessened the temptation for residents to stay in their houses for too long because of concerns about the safety and welfare of their pets. Whilst the bringing of pets then had to be managed, the overall consensus is that this was a positive step that significantly helped overcome the problem of some residents remaining too long in their dwellings. However, protocols and rules need to be developed to govern the management of pets and animals at the evacuation centres. Obviously, from a health and safety point of view it is not appropriate for pets to be allowed into the actual evacuation centres and appropriate animal containment facilities need to be established in adjoining outside areas. This issue is addressed further at paragraphs 10.50 - 10.52 of this submission.

Security -Systemic response

- (b) there is a need for appropriate security arrangements to be immediately put in place at each evacuation centre. Council considers that for every major evacuation centre, there should be a constant police presence to ensure that any security issues are appropriately dealt with. Alternatively, private security providers could be engaged on a 24/7 basis although this is unlikely to be as effective as having a constant police presence. This issue is addressed further at paragraphs 10.27 - 10.30 of this submission.

Special Needs Evacuees - Operational and systemic responses

- (c) that the arrival at the evacuation centres of significant numbers of special needs residents, primarily from nursing homes was an issue that needs to be better managed. This issue is addressed in detail in section 10.33 - 10.38 of this submission. In addition to the matters already addressed, if the evacuation of a nursing home is required, it is also important that appropriate notice be provided to the Ipswich LDMG so that directions can be given regarding the relevant evacuation centre that should be utilised.

Local Knowledge - Operational response

- (d) it is also very important that, at the evacuation centres, the support team include people who have detailed local knowledge. During the flood event because of the severe demands across the whole of the State, some of the personnel provided by external agencies (including the Red Cross) had little or no familiarity with the Ipswich area. Those persons were necessarily reliant on the advice and information that could be provided by Councillors and Council staff who were supporting the disaster management activities. This issue is addressed further in paragraphs 10.53 - 10.58 of this submission.

Evacuation Packs - Operational response

- (e) it would have been of assistance for persons attending the evacuation centres to bring their own evacuation pack. This is an aspect that needs to be highlighted in any public education program and is addressed further in paragraphs 10.31 - 10.32 of this submission.
- (f) additional learnings in relation to Evacuation Centres include:
 - (i) the identification of appropriate evacuation centres, addressed in paragraph 10.26 - operational response;

- (ii) the provision of essential resources, addressed in paragraphs 10.39 - 10.43 - operational and systemic response;
- (iii) management of evacuation centres, addressed in paragraphs 10.44 - 10.49 - systemic response;
- (iv) organic centres, addressed in paragraphs 10.59 - 10.63 - operational response; and
- (v) closing evacuation centres, addressed in paragraphs 10.64 - 10.69 - operational and systemic response.

Communication and Warning Issues

Communication methods and content - Systemic and operation responses

- 13.47 There are several communication issues identified in connection with the flood event. As previously highlighted in this submission, a significant systemic issue to be addressed is the real challenge, particularly in a rapidly escalating event such as the flood event, to ensure that members of the community are provided with timely, accurate and reliable flood inundation information which is directly relevant to their particular locality.
- 13.48 Information about flood levels and communications about evacuation and other flood related issues need to use a range of communication channels. The Council will investigate broader use of internet, telephone, SMS and various social media facilities in facilitating the future dissemination of information both to particular individuals as well as, for example, people in a particular street or groups of individuals, for example, the residents of an aged care facility and the broader community.
- 13.49 As noted above, one of the communication challenges is to *urgently inform residents* when there is a significant escalation in estimated flood levels and predicted flood impacts. This is where the use of new technologies for example Facebook and SMS notifications could again be of significant assistance.
- 13.50 After the flood event, feedback from residents has been that they found it difficult at the peak of the crisis to access relevant "hotline numbers" and some internet sites were also unable to deal with the very large number of persons who were seeking to logon to relevant emergency information sites. This suggests that during a major natural disaster there needs to be either a wider range of hotline numbers and/or internet information sites or greater resourcing of those information contact points to ensure that residents, businesses and property owners can quickly obtain information that is accurate, timely and useful.

13.51 Another important communication issue concerns the need during a disaster to inform the community about where they can obtain key information and services such as:

- (a) the location of evacuation centres;
- (b) current and expected road closure points;
- (c) the full range of emergency and support services contact phone numbers;
- (d) where ongoing medical assistance can be obtained during the disaster event;
- (e) the locations in the City supplying pharmaceutical and medicinal products;
- (f) details of locations that are open and which have available supplies of food, water, petrol, diesel and other necessary products or goods; and
- (g) the location of available banking facilities. Because the recent flood event had impacts in the Ipswich area for a number of days and a number of ATMs were not operational because of electricity cuts, residents in some localities, who were in receipt of support cheques from State Government agencies, found it difficult to identify locations where the cheques could be banked and processed.

Council acknowledges that updating the community on all of the above issues could, in practice, be a very challenging exercise and require significant resources.

13.52 There is also a need for greater coordination of the information that is being provided about the natural disaster event to radio, television and other media outlets. Council has received feedback that during the flood event, particularly when power was lost, that a number of residents primarily relied on these channels of communication. A challenge in providing flood update information to the media is to have detailed local information published in a timely manner.

13.53 It is also important that the Ipswich LDMG provide appropriate information and updates to the Mayor and Councillors during the course of a disaster event. During the flood event, particularly on the afternoon of Tuesday 11 January 2011, Councillors received from their constituents numerous requests for information about a wide range of issues. It is important that the Council's elected officials are kept informed about critical and developing issues as they can provide another important avenue by which the Council can disseminate key information to community members during a disaster event.

Education Issues

Community Information - Systemic and operational responses

- 13.54 One of the key learnings from the flood event is that there needs to be further education steps both at a community level and within the Council.
- 13.55 At the community level, one of the important challenges is to ensure that all community members know of and remain aware of the relevant disaster risks. In the recent flood event, it was clear that a number long term residents within Ipswich who had been through the 1974 and other flood events had a much better understanding of what would happen and they were able to utilise that past knowledge to make appropriate decisions about protecting their belongings and then deciding when to evacuate. Because serious flood events in Ipswich have historically occurred some decades apart, this is a real challenge i.e. to ensure that any general community education program provides to residents information about what could happen and the steps that may need to be taken by residents to manage and mitigate the impact of the event.
- 13.56 Some specific areas of community education could include:
- (a) in the lead up to the summer season, publishing details of identified evacuation areas, providing reminders to the public as to what they should take with them if an evacuation is required together with relevant contact numbers and website information resource details.
 - (b) property owners also need more information about the potential risks that face their properties during flood events of different magnitudes. For example, at 10 metre, 12 metre, 14 metre, 16 metre, 18 metre, 20 metre plus events. Whilst people at the time of purchasing their property might be made aware that it is potentially flood affected, it is important that they understand the relevant inundation risks and the relationship of those risks to the size and severity of the expected flood event. One option may be to for each local government area to develop a series of flooding maps which show at various flood impact levels the expected extent of inundation. This could then lead to a form of categorisation of potential flood events and allow residents to then be informed where their particular locality sits in terms of such a flood classification system. Considerable resourcing may be needed to develop such a system across the whole of Queensland but if it could be done, it may then be possible for local governments to provide accurate information through online mapping and other resources to residents so that for each particular event, residents can be better informed as to their expected flood risks.

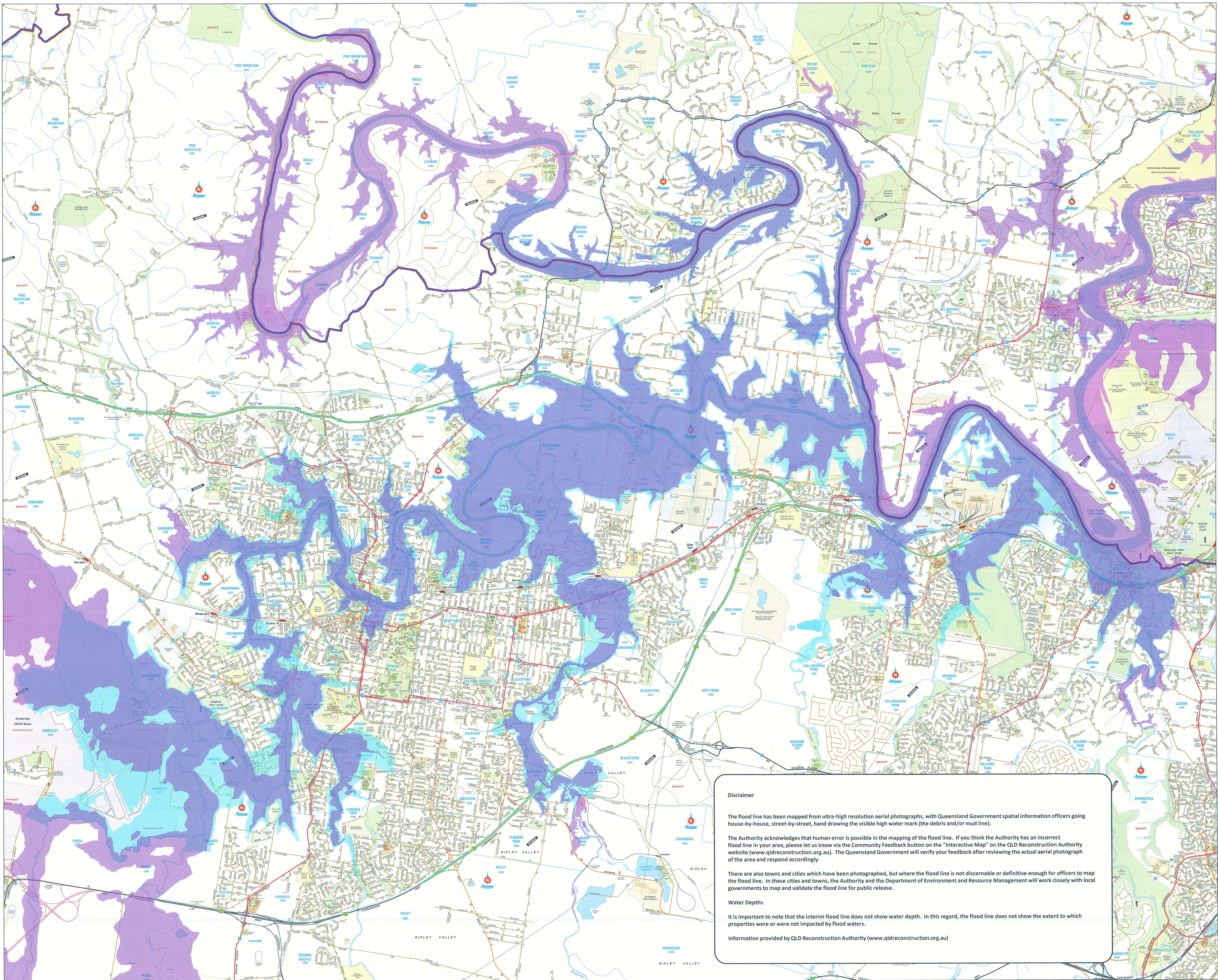
- (c) Paragraphs 9.21 - 9.23 of this submission address the importance of continuing public education of the risks inherent in driving across flooded causeways.

Response and Recovery Actions

Response and recover issues - Systemic and operational responses

- 13.57 The response and recovery phase in Ipswich City has progressed very well. However, there were a range of learnings, both systemic and operational:
- (a) responses to issues identified in connection with the management of road closures and re-openings are discussed in paragraphs 9.33 - 9.37 of this submission;
 - (b) responses to issues identified in connection with the management of Council's assets and infrastructure are discussed in paragraphs 9.38 - 9.60 of this submission;
 - (c) responses to issues identified in connection with the management of the LDMG's relationship with Energex are discussed in at paragraphs 9.63 - 9.68 of this submission; and
 - (d) responses to issues identified in connection with the management of volunteers during the recovery phase are discussed in paragraph 11.14 of this submission.

Schedule 1 - Flood Map of the Inundation within the Ipswich City Area



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Regional Flood Events
Historic 2011 vs 1974 Comparison

2010-2011 Interim Flood Line
Released 15th March 2011

LEGEND

- 1974 Flood Inundation Area
- 2010-2011 Interim Flood Line
- Overlapping Flood Inundation Area
- Ipswich Council Boundary

Disclaimer

The flood line has been mapped from ultra-high resolution aerial photographs, with Queensland Government spatial information officers going house-by-house, street-by-street, hand drawing the visible high water mark (the debris and/or mud line).

The Authority acknowledges that human error is possible in the mapping of the flood line. If you think the Authority has an incorrect flood line in your area, please let us know via the Community Feedback button on the "Interactive Map" on the QLD Reconstruction Authority website (www.qldreconstruction.org.au). The Queensland Government will verify your feedback after reviewing the actual aerial photograph of the area and respond accordingly.

There are also towns and cities which have been photographed, but where the flood line is not discernable or definitive enough for officers to map the flood line. In these cities and towns, the Authority and the Department of Environment and Resource Management will work closely with local governments to map and validate the flood line for public release.

Water Depths

It is important to note that the interim flood line does not show water depth. In this regard, the flood line does not show the extent to which properties were or were not impacted by flood waters.

Information provided by QLD Reconstruction Authority (www.qldreconstruction.org.au)

DISCLAIMER: Ipswich City Council Data
Data were used to produce this map. Ipswich City Council (ICC) makes no representation or warranty about the accuracy, reliability, completeness or suitability for any particular purpose and disclaimer of responsibility for all liability (including without limitation, liability for negligence, damages, loss, damage, injury, death or property damage) and shall not be liable for any loss or damage, including without limitation, liability for negligence, damages, loss, damage, injury, death or property damage, arising from the use of the data for any purpose or for any loss or damage, including without limitation, liability for negligence, damages, loss, damage, injury, death or property damage.

DISCLAIMER: Property Data
Data were used to produce this map. Ipswich City Council (ICC) and Department of Natural Resources and Water (DNRW) make no representation or warranty about the accuracy, reliability, completeness or suitability for any particular purpose and disclaimer of responsibility for all liability (including without limitation, liability for negligence, damages, loss, damage, injury, death or property damage) and shall not be liable for any loss or damage, including without limitation, liability for negligence, damages, loss, damage, injury, death or property damage, arising from the use of the data for any purpose or for any loss or damage, including without limitation, liability for negligence, damages, loss, damage, injury, death or property damage.

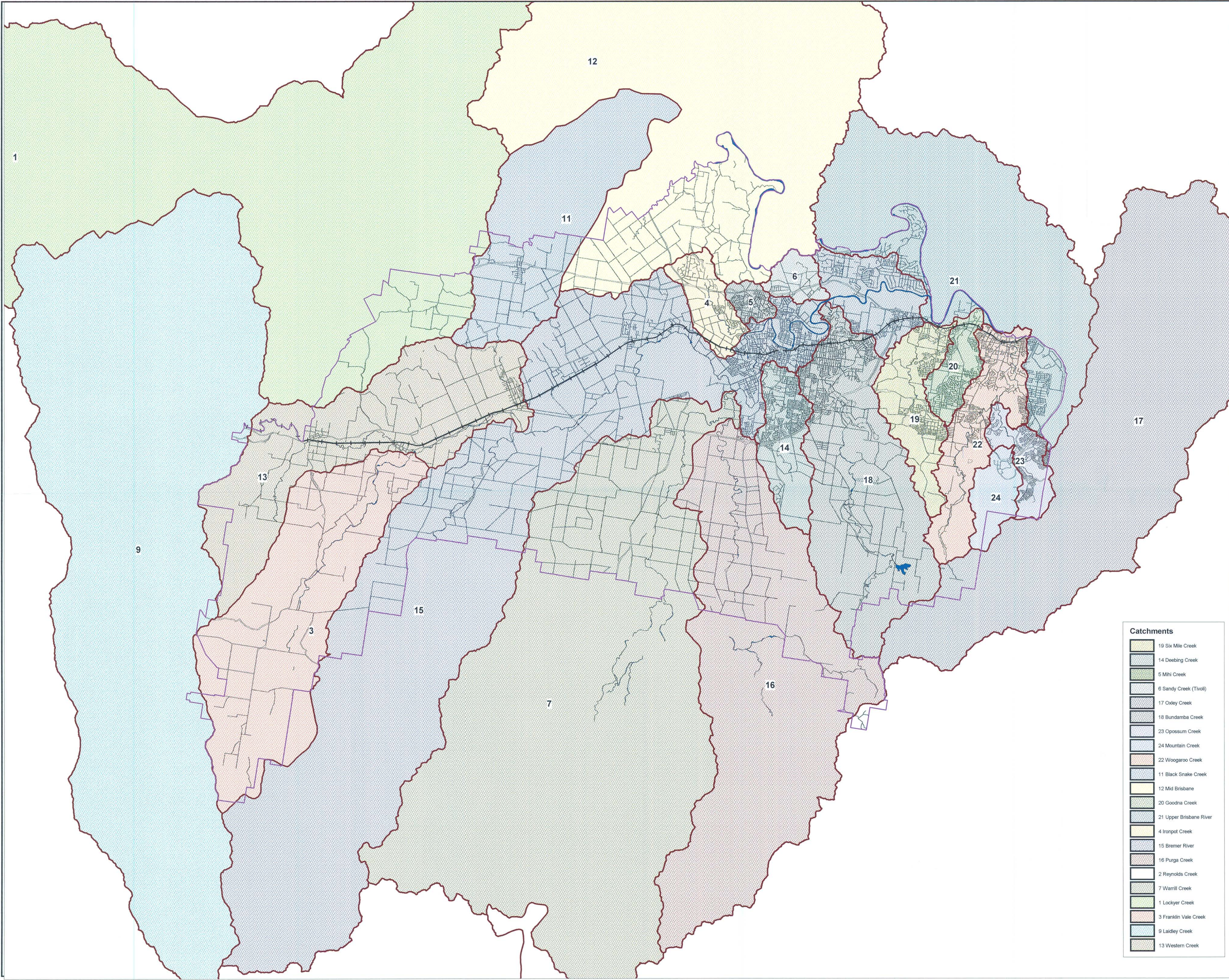
Map Grid: Geocentric Datum of Australia (G.D.A.)
Level Datum: Australian Height Datum (A.H.D.)
Printed Date: 23/03/2011

Reference Delta Job: 28886





Schedule 2 - Catchment Map



Catchments

- 19 Six Mile Creek
- 14 Deebing Creek
- 5 Mhl Creek
- 6 Sandy Creek (Tivoli)
- 17 Oxley Creek
- 18 Bundamba Creek
- 23 Opossum Creek
- 24 Mountain Creek
- 22 Woogaroo Creek
- 11 Black Snake Creek
- 12 Mid Brisbane
- 20 Goodna Creek
- 21 Upper Brisbane River
- 4 Ironpot Creek
- 15 Bremer River
- 16 Purga Creek
- 2 Reynolds Creek
- 7 Warrill Creek
- 1 Lockyer Creek
- 3 Franklin Vale Creek
- 9 Laidley Creek
- 13 Western Creek



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Ipswich Region River and Creek Catchment Extents

Catchment Areas

ID	Catchment	Area_sqkm
1	Lockyer Creek	1,108.97
2	Reynolds Creek	271.02
3	Franklin Vale Creek	137.80
4	Ironpot Creek	16.70
5	Mihl Creek	5.91
6	Sandy Creek (Tivoli)	8.70
7	Warrill Creek	456.39
8	Deebing Creek	25.98
9	Laidley Creek	484.86
10	Upper Warrill Creek	194.88
11	Black Snake Creek	96.02
12	Mid Brisbane	454.56
13	Western Creek	124.81
14	Deebing Creek	26.28
15	Bremer River	442.39
16	Purga Creek	227.03
17	Oxley Creek	257.85
18	Bundamba Creek	114.09
19	Six Mile Creek	30.95
20	Goodna Creek	14.10
21	Upper Brisbane River	169.18
23	Opossum Creek	14.59
24	Mountain Creek	13.98
22	Woogaroo Creek	40.28

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Map Grid : Geocentric Datum of Australia (G.D.A.)
Level Datum : Australian Height Datum (A.H.D.)
Printed Date : 22/02/2011



Reference Delta Job: 28886

Schedule 3 - Overview of the Disaster Management Act 2003

- 1.1 In this Schedule 3, we set out a high level overview of some of the key elements of the Disaster Management Act 2003.
- 1.2 The functions of the State Disaster Management Group is set in s.18 of the Act. The functions of the District Disaster Management Group (**District Group**) are stated in s.23 of the Act. These functions include:
- “(f) to ensure the community is aware of ways of mitigating the adverse effects of an event, and preparing for, responding to and recovering from a disaster;
 - (g) to coordinate the provision of the State resources and services provided to support local groups in the district;
 - (h) to identify resources that may be used for disaster operations in the district;
 - (i) to make plans for the allocation, and coordination of the use, of resources mentioned in paragraph (h);
 - (j) to establish and review communication systems in the group, and with and between local groups in the district, for use when a disaster happens;.....”
- 1.3 Under s.25A of the Act, the Chairperson of the district group is also the District Disaster Coordinator of the district group. By s.26A, the function of the District Disaster Coordinator is to coordinate disaster operations in the disaster district for the group. Section 15 f the Act defines the meaning of “disaster operations” as: “activities undertaken before, during or after an event happens to help reduce loss of human life, illness or injury to humans, property loss or damage, or damage to the environment, including, for example, activities to mitigate the adverse effects of the event.”
- 1.4 The functions of a Local Disaster Management Group are stated in s.30 of the Act to be:
- “30 Functions**
- A local group has the following functions for its area—
- (a) to ensure that disaster management and disaster operations in the area are consistent with the State group’s strategic policy framework for disaster management for the State;
 - (b) to develop effective disaster management and regularly review and assess the disaster management;
 - (c) to help the local government for its area to prepare a local disaster management plan;
 - (d) to identify and provide advice to the relevant district group about, support services required by the local group to facilitate disaster management and disaster operations in the area;

- (e) to ensure the community is aware of ways of mitigating the adverse effects of an event, and preparing for, responding to and recovering from a disaster;
- (f) to manage disaster operations in the area under policies and procedures decided by the State group;
- (g) to provide reports and make recommendations to the relevant district group about matters relating to disaster operations;
- (h) to identify, and coordinate the use of, resources that may be used for disaster operations in the area;
- (i) to establish and review communications systems in the group, and with the relevant district group and other local groups in the disaster district of the relevant district group, for use when a disaster happens;
- (j) to ensure information about a disaster in the area is promptly given to the relevant district group;
- (k) to perform other functions given to the group under this Act;
- (l) to perform a function incidental to a function mentioned in paragraphs (a) to (k)."

- 1.5 The membership of a Local Disaster Management Group (**the local group**) is stated in s.33. Membership of the local groups consists of persons appointed as members by the relevant local government and must consist of at least one person who is a Councillor of a local government. Section 33 was amended on 1 November 2010 to require that the membership also consist of at least one person nominated by the Chief Executive of the relevant Department. Section 34 of the Act provides for the appointment of a Chairperson and Deputy Chairperson of the local group. Section 34(2) requires a person appointed as Chairperson to be a Councillor of a local government.
- 1.6 Section 34A of the Act outlines the function of the Chairperson of a local group which includes ensuring, as far as practicable, that the group performs its functions under s.30 of the Act.
- 1.7 Section 35 of the Act provides that the Chairperson of the local group must, after consulting with the Chief Executive, appoint the Chief Executive Officer or an employee of the relevant local government as a local disaster co-ordinator of the group. Section 36 of the Act states the functions of a local disaster co-ordinator which include coordinating disaster operations for the local group and ensuring, as far as practicable, that any strategic decisions of the local group about disaster operations are implemented. The position and functions of a local disaster co-ordinator were created by the 1 November 2010 amendments.
- 1.8 There are differences in the functions of the district group as opposed to the local group. The district group has additional functions stated in s.23(d), (e), (g) and (i) of the Act. These

- functions are not reflected in the functions of the local group see s.30 of the Act. In particular, the district group has the specific function under s.23(g) to coordinate the provision of State resources and services provided to support local groups in the district.
- 1.9 The additional functions of a local group compared to a district group are found in s.30(c), (d) and (f) of the Act.
- 1.10 An amendment made on 1 November 2010 was to insert s.47 into the Act. Section 47 gives a District Disaster Coordinator the power to give a local group in the district a written direction about the performance of the group's functions if satisfied that it is necessary to give the direction to ensure the functions are performed appropriately. Prior to giving such a direction, the District Disaster Coordinator must consult with the Chairperson of the local group.
- 1.11 Section 57(1) of the Act requires a local government to prepare a Local Disaster Management Plan for disaster management in the local government area. Section 57(2) of the Act states that the plan must include certain provisions.
- 1.12 Section 58 of the Act requires the Local Disaster Management Plan to be consistent with the Disaster Management Guidelines. These Guidelines may be prepared by the Chief Executive of the relevant Department pursuant to s.63 of the Act. One such guideline issued by the Chief Executive was the Queensland Disaster Management Planning Guidelines for Local Government 2005. These Guidelines were supplemented by a document entitled "Operational Planning Guidelines for Local Disaster Management Groups" which was issued by the Department of Emergency Services in 2006.
- 1.13 Section 59(1) of the Act provides that a local government may review, or renew, its Local Disaster Management Plan when the local government considers it appropriate. Section 59(2) of the Act provides that the local government must review the effectiveness of the local plan at least once per year.
- 1.14 Part 4 of the Act provides for the making of a declaration of a disaster situation. Section 64 of the Act empowers a District Disaster Coordinator for a disaster district, with the approval of the Minister, to declare a disaster situation for the district. Section 69 of the Act provides a power for the Minister and the Premier to declare a disaster situation for the State or part of the State if they are satisfied of certain criteria. The duration of these declarations is determined by s.66 and s.71 of the Act.
- 1.15 Part 4, Division 2, Sub-Division 2 deals with the authorisation of persons to exercise declared disaster powers. Section 75 does not automatically authorise a member of a local group to exercise declared disaster powers. For the exercise of such power, a member of a local group

needs to be specifically authorised either by the Chairperson of the State group or a relevant District Disaster Coordinator for the disaster situation. For such a person to be authorised, the Chairperson or relevant District Disaster Coordinator must be satisfied that the person has the necessary expertise or experience to exercise the powers. The Schedule to the Act which contains the dictionary defines the term “declared disaster officer” to mean a person authorised under s.75(1) to exercise declared disaster powers for the disaster situation.

1.16 Sections 76 and 77 of the Act identify the nature and extent of the powers of a District Disaster Coordinator and a Declared Disaster Officer.

1.17 Part 5 of the Act deals with the functions of local governments. Section 80 of the Act identifies the functions of a local government under the Act to include the following:

“80 Functions of local government

(1) The functions of a local government under this Act are as follows—

- (a) to ensure it has a disaster response capability;
- (b) to approve its local disaster management plan prepared under part 3;
- (c) to ensure information about an event or a disaster in its area is promptly given to the district disaster coordinator for the disaster district in which its area is situated;
- (d) to perform other functions given to the local government under this Act.

(2) In this section—

disaster response capability, for a local government, means the ability to provide equipment and a suitable number of persons, using the resources available to the local government, to effectively deal with, or help another entity to deal with, an emergency situation or a disaster in the local government’s area.”

1.18 Part 6, Division 5 of the Act deals with agreements between the Department and each local government to define responsibilities of each party in respect to the State Emergency Service. Section 88A provides:

“The Chief Executive may enter into an agreement with the local government that sets out the responsibilities of each party in relation to the SES in the local government’s area.”

1.19 As a general observation, the significant amendments to the Act on 1 November 2010 directly impacted on the Council’s then current planning and management documentation and framework for a future disaster event. The time that elapsed between the commencement of these amendments on 1 November 2010 and the flood event was only a period of approximately two months including the Christmas break period.

- 1.20 The Explanatory Notes to the Disaster Management and Other Legislation Amendment Bill 2010 identifies that the Department of Community Safety had commissioned an independent review of the disaster management arrangements in Queensland to analyse the practice of disaster management in Queensland and to determine whether any policy or legislative changes were required. This independent report made a number of recommendations for policy and legislation changes to the disaster management framework. The Disaster Management and Other Legislative Amendment Bill 2010 sought to implement those recommendations that required legislative amendment. The Bill also included additional amendments identified by the Department of Community Safety and the Queensland Police Service to improve the operation of the disaster management arrangements in Queensland. Importantly, the amendments dealt with the reallocation of roles and the creation of new roles in disaster management groups. The amendments also sought to clarify the roles of the State and local governments in relation to state emergency services.

Schedule 4 - Activation Levels and Triggers

Level	Trigger
Alert	<ul style="list-style-type: none">• Awareness of a hazard that has the potential to affect the local government area
Lean Forward Level One	<ul style="list-style-type: none">• There is a likelihood that threat may affect local government area• The threat is not yet imminent
Lean Forward Level Two	<ul style="list-style-type: none">• Threat is quantified• Need for public awareness• LDMG is now to manage the event
Stand Up Level One	<ul style="list-style-type: none">• Threat is imminent• Community will be impacted• Requests for support received by LDMG agencies• Need for minor coordination in LDCC
Stand Up Level Two	<ul style="list-style-type: none">• Community impacted• Significant number of requests received by LDCC• The response requires coordination
Stand Down	<ul style="list-style-type: none">• No requirement for coordination response• Community has returned to normal function• Recovery taking place

Schedule 5 - Table of BOM and Seqwater Reports

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
10/01/2011 00:15	3.8	4.2					
10/01/2011 00:36				Minor	River level rises and moderate to major flooding continue in the Rosewood area. Further rises are expected downstream during the next 24 hours with at least minor flood levels expected in the Bremer River at Ipswich during Monday night and continuing into Tuesday.		
10/01/2011 01:00	3.9	4.3					
10/01/2011 01:14						<p><u>Rainfall</u> Very heavy rainfall has been recorded in the Upper Brisbane and Stanley Rivers in the last 12 hours with totals up 100 to 240mm. Totals for the last 24 hours range from 100 to 300mm. Rainfall of similar magnitudes is expected in the 12 to 24 hours around the downstream catchments as the system tracks south. A severe weather warning remains current for heavy rainfall in the dam catchment areas.</p> <p><u>Somerset Dam (Full Supply Level 99.00 m AHD)</u> The dam level is 102.22 m AHD and</p>	

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						<p>rising quickly (storing 157,000 ML above FSL). Peak inflow to the dam is estimated to be about 4,200 m³/s based on observed rainfall and could be as high as 5,000m³/s with additional forecast rainfall. Five sluice gates are open releasing about 1,100m³/s (95,000ML/d) into Wivenhoe Dam. At this stage the dam will reach at least 103.5 on Monday afternoon which will adversely impact areas around Kilcoy. Since the commencement of the event on 02/01/2011 approximately 115,000ML has been released from the dam into Wivenhoe, with an event total of the order of 520,000ML expected. This is expected to increase due to the forecast rain in the next 24 to 48 hours. At this stage, releases will continue until at least Thursday.</p> <p><u>Wivenhoe Dam (Full Supply Level 67.00 m AHD)</u> River levels upstream of the dam are rising quickly with significant inflow being generated from the intense heavy rainfall. Flows in the Brisbane River at Gregor's Ck have already reached 7,350m³/s and the river has just peaked at 23:00 on Sunday 9 January. The dam level is rising quickly, with the current level being</p>	

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						<p>69.60m AHD (storing 301,000ML). Estimated peak inflow to the dam just from the Upper Brisbane R alone may reach Tuesday morning. Given the rapid increase in inflow volumes, it will be necessary to increase the release from Wivenhoe during Monday morning.</p> <p>The objective for dam operations will be to minimise the impact of urban flooding in areas downstream of the dam and, at this stage, releases will be kept below 3,500m³/s and the combined flows in the lower Brisbane will be limited to 4,000m³/s if possible. Fernvale Bridge approaches and Mt Crosby Weir Bridge have been inundated and both bridges are now closed or are in the process of being closed. The current release rate from Wivenhoe Dam is 1,400m³/s (120,000ML/day). Gate opening will start to be increased during early Monday morning and the release is expected to increase to at least 2,600m³/s. Since the commencement of the event on 02/01/2011 approximately 240,000ML has been released from the dam, with an event total approaching 1,500,000ML without further rain and as much as 2,100,000ML with forecast rainfall of</p>	

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						<p>(both including Somerset outflow). At this stage, releases will continue until at least Sunday 16th January 2011.</p> <p><u>Impacts downstream of Wivenhoe Dam</u></p> <p>The projected Wivenhoe Dam releases combined with Lockyer flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Saturday 15 January in varying degrees. Water levels in the lower Brisbane R will be impacted by the combined flows of Lockyer Ck, Bremer River, local runoff and releases from Wivenhoe Dam. If the predicted rainfall eventuates in the downstream tributary catchments the resultant combined flows in the lower Brisbane may exceed the threshold of damaging discharge in the urban areas within the next 24 to 48 hours. Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the updated Wivenhoe operating strategy.</p>	
10/01/2011 02:00	4.0	4.4					

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
10/01/2011 03:00	4.1	4.6					
10/01/2011 04:00	4.2	4.7					
10/01/2011 05:00	4.3	4.9					
10/01/2011 06:00	4.4	5.1					
10/01/2011 06:30						<p><u>Rainfall</u></p> <p>Moderate to heavy rainfall has been recorded in the Upper Brisbane and Stanley Rivers in the last 12 hours with totals up to 90 mm. Totals for the last 24 hours range from 100 to 325mm. Mt Glorious recorded 100 mm in the last 12 hours. Rainfall of similar magnitudes is expected in the 12 to 24 hours around the downstream catchments as the system tracks south. A severe weather warning remains current for heavy rainfall in the dam catchment areas.</p> <p><u>Somerset Dam (Full Supply Level 99.00 m AHD)</u></p> <p>The dam level at 05:00 was 102.84 m AHD and rising (storing 193,000 ML above FSL). Peak inflow to the dam</p>	

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						<p>is estimated to be about 4,200 m³/s based on observed rainfall and could be as high as 5,000m³/s with additional forecast rainfall. Five sluice gates are open releasing about 1,100m³/s (95,000ML/d) into Wivenhoe Dam. At this stage the dam lake level will reach about 103.5 mAHd on Monday afternoon. Areas around Kilcoy will continue to be adversely affected. Since the commencement of the event on 02/01/2011 approximately 142,000ML has been released from the dam into Wivenhoe, with an event total of the order of 520,000ML expected. This is expected to increase due to the forecast rain in the next 24 to 48 hours. At this stage, releases will continue until at least Thursday.</p> <p><u>Wivenhoe Dam (Full Supply Level 67.00 m AHD)</u></p> <p>River levels upstream of the dam have peaked and are falling slowly with significant inflow being generated from the intense heavy rainfall. Flows in the Brisbane River at Gregor's Ck have peaked at 7,350m³/s at 23:00 on Sunday 9 January. This peak is bigger than January 1974 and February 1999 at</p>	

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						<p>this location. The dam level is rising quickly, with the current level being 70.77m AHD (storing 450,000 ML). Estimated peak inflow to the dam just from the Upper Brisbane R is around 8,800m³/s and, at this stage, the dam will reach at least 73.3 m AHD during Tuesday morning. Given the rapid increase in inflow volumes, it was necessary to start to increase the release from Wivenhoe during Monday morning. The objective for dam operations will be to minimise the impact of urban flooding in areas downstream of the dam and, at this stage, releases will be kept below 3,500m³/s and the combined flows in the lower Brisbane will be limited to 4,000m³/s if possible. This is significantly less than the current estimated combined predam peak inflow of 12,000 m³/s. Fernvale Bridge approaches and Mt Crosby Weir Bridge have been inundated and both bridges are now closed. The current release rate from Wivenhoe Dam is 1,753m³/s (150,000ML/day). Gate opening will continue to be increased during Monday and the release is expected to increase to at least 2,600m³/s in the next 12 to 24 hours.</p>	

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						<p>Since the commencement of the event on 02/01/2011 approximately 275,000ML has been released from the dam, with an event total approaching 1,600,000ML without further rain and as much as 2,100,000ML with forecast rainfall of (both including Somerset outflow). At this stage, releases will continue until at least Sunday 16th January 2011.</p> <p><u>Impacts downstream of Wivenhoe Dam</u></p> <p>The projected Wivenhoe Dam releases combined with Lockyer flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Saturday 15 January in varying degrees. Water levels in the lower Brisbane R will be impacted by the combined flows of Lockyer Ck, Bremer River, local runoff and releases from Wivenhoe Dam. If the predicted rainfall eventuates in the downstream tributary catchments the resultant combined flows in the lower Brisbane may exceed the threshold of</p>	

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						<p>damaging discharge in the urban areas within the next 24 to 48 hours. Currently the estimate peak flow in the lower Brisbane River will be the highest since Wivenhoe Dam was completed in 1984 but still well below the 1974 levels. Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the updated Wivenhoe operating strategy.</p> <p><u>Outlook</u></p> <p>Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.</p>	
10/01/2011 07:00	4.5	5.3		8.3	Phone call		
10/01/2011 08:00	4.5	5.5					
10/01/2011 08:30							LDMG Meeting 8:30 -

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
							9:05 Lean Forward
10/01/2011 09:00	4.7	5.7					
10/01/2011 09:08		5.7 rising					
10/01/2011 9:14	4.72 rising						
10/01/2011 10:00	4.8	5.9					
10/01/2011 10:28			8 (below minor)	9.5 (moderate)	River level rises and moderate flooding continue in the Rosewood area. Further rises are expected downstream during the next 24 hours with moderate flood levels of at least 10 metres expected in the Bremer River at Ipswich early on Tuesday.		
10/01/2011 11:00	4.9	6	Minor	10	see advice of 10:28		
10/01/2011 12:00	5.1	6.2					
10/01/2011 12:16						<u>Rainfall</u> Rainfall has continued in the dam catchments over the last 6 hours,	

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						<p>with approximate catchment averages as follows: North Pine (30mm); Wivenhoe Dam (20mm); Somerset Dam (40mm). A severe weather warning remains current for heavy rainfall in the dam catchment areas. The QPF issued by BOM at 10:00 estimates rainfalls for the 24 hours to 10:00 Tuesday as North Pine Dam (75mm to 150mm); Wivenhoe/Somerset Dam Catchments (50mm - 100mm).</p> <p><u>Somerset Dam (Full Supply Level 99.00 m AHD)</u></p> <p>The dam level is 103.11m AHD and rising (storing 210,000 ML above FSL). Peak inflow to the dam is estimated to be about 4,200 m³/s. Five sluice gates are open releasing about 1,100 m³/s (95,000ML/day) into Wivenhoe Dam. At this stage the dam lake level will reach about 103.5m AHD on Monday afternoon. Areas around Kilcoy will continue to be adversely affected. Since the commencement of the event on 02/01/2011 approximately 182,000ML has been released from the dam into Wivenhoe, with an event total of the order of 520,000ML expected. This is expected to</p>	

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						<p>increase due to the forecast rain in the next 24 to 48 hours. At this stage, releases will continue until at least Thursday 13 January 2011.</p> <p><u>Wivenhoe Dam (Full Supply Level 67.00 m AHD)</u></p> <p>The dam level is 71.95m AHD and rising quickly (storing 610,000 ML above FSL). Peak inflow to the dam is estimated to be about 8,800m³/s. Five radial gates are open releasing about 2000m³/s (170,000ML/day) into the Brisbane River. At this stage, the dam will reach about 73.5m AHD during Tuesday morning. Flows in the Brisbane River above the dam at Gregor's Creek peaked at 7,350m³/s and this peak is bigger than both the January 1974 and February 1999 flood events at this location. The objective for dam operations is to minimise the impact of urban flooding in areas downstream of the dam and the current aim is to keep river flows in the lower Brisbane River below 3,500m³/s if possible. This is significantly less than the current estimated combined pre-dam peak inflow of 12,000m³/s. Since the commencement of the event on 02/01/2011 approximately</p>	

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						<p>325,000ML has been released from the dam, with an event total approaching 1,600,000ML without further rain and as much as 2,100,000ML with forecast rainfall of (both including Somerset outflow). At this stage, releases will continue until at least Sunday 16 January 2011. The volume between the expected peak (73.5m AHD) and the level at which the safety of the dam becomes the primary objective in managing flood releases (74.0m AHD) is 75,000ML. The volume between the expected peak (73.5m AHD) and initiation of the first Fuse Plug is 330,000ML.</p> <p><u>Impacts downstream of Wivenhoe Dam</u></p> <p>The projected Wivenhoe Dam releases combined with Lockyer Creek flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Saturday 15 January in varying degrees. Water levels in the lower Brisbane River will be impacted by the combined flows of</p>	

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						<p>Lockyer Creek, Bremer River, local runoff and releases from Wivenhoe Dam. If the predicted rainfall eventuates in the downstream tributary catchments the resultant combined flows in the lower Brisbane may exceed the threshold of damaging discharge in the urban areas within the next 24 to 48 hours. Currently the estimate peak flow in the lower Brisbane River will be the highest since Wivenhoe Dam was completed in 1984 but still well below flows the 1974 levels. Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the updated Wivenhoe operating strategy.</p> <p><u>Outlook</u></p> <p>Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.</p>	
10/01/2011 13:00	5.2	6.4					
10/01/2011	5.4	6.5					

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
14:00							
10/01/2011 14:40		6.6 rising					
10/01/2011 14:58						<p><u>Rainfall</u></p> <p>Significant rainfall has fallen in the Wivenhoe Dam catchment over the last 3 hours, with falls exceeding 100mm. This rainfall will significantly increase inflows into the dam. A severe weather warning remains current for heavy rainfall in the dam catchment areas. The QPF issued by BOM at 10:00 estimates rainfalls for the 24 hours to 10:00 Tuesday as North Pine Dam (75mm to 150mm); Wivenhoe/Somerset Dam Catchments (50mm - 100mm). Potentially significant rain moving towards the dam catchments is currently evident on the BOM radar.</p> <p><u>Somerset Dam (Full Supply Level 99.00 m AHD)</u></p> <p>The dam level is 103.41 m AHD and rising. Peak inflow to the dam is estimated to be about 4,200 m³/s. Five sluice gates are open releasing about 1,100 m³/s (95,000 ML/day) into Wivenhoe Dam. At this stage the dam lake level will reach about 103.5m AHD on Monday afternoon.</p>	

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						<p>Areas around Kilcoy will continue to be adversely affected.</p> <p><u>Wivenhoe Dam (Full Supply Level 67.00 m AHD)</u></p> <p>The dam level is 72.41 m AHD and rising quickly. The rainfall experienced over the last 2 to 3 hours will result in significant further inflows into the dam and releases from the dam will need to be increased in accordance with Flood Mitigation procedures and to ensure that a fuse plug is not initiated. The initiation of a fuse plug will result in a rapid uncontrolled outflow from the dam of 2,000m³/s being added to the gate release outflow. Outflows into the Brisbane River from both Lockyer Creek and the Bremer River are also increasing. Five radial gates are currently open at the dam releasing about 2,000m³/s into the Brisbane River and this will</p> <p>need to be increased steadily to an outflow of 2,800m³/s over the next 9 hours (commencing at 1500). At this stage, the dam will reach about 73.8m AHD during Tuesday morning.</p> <p>The objective for dam operations is</p>	

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						<p>currently to minimise the impact of urban flooding in areas downstream of the dam and to keep river flows in the lower Brisbane River below 4,000m³/s if possible. This is significantly less than the current estimated combined pre-dam peak inflow of 12,000m³/s. Further rainfall occurs, dam releases may need to be increased further and this may result in river flows in the lower Brisbane River approaching or exceeding 5,000m³/s.</p> <p><u>Impacts downstream of Wivenhoe Dam</u></p> <p>The projected Wivenhoe Dam releases combined with Lockyer Creek flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Sunday 16 January in varying degrees. Water levels in the lower Brisbane River will be impacted by the combined flows of Lockyer Creek, Bremer River, local runoff and releases from Wivenhoe Dam.</p>	

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						<p><u>Outlook</u></p> <p>Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.</p>	
10/01/2011 14:59	5.52 rising						
10/01/2011 15:00	5.6	6.6	12	12.5			<p>LDMG Meeting</p> <p>Meeting opened 15:15</p> <p>Lean Forward</p>
10/01/2011 16:00	5.7	6.7					
10/01/2011 16:17:			12 (minor)	12.7 (major)	Rainfall during Monday will lead to renewed rises and a return to moderate flood levels along the Bremer River to Walloon. Levels over 5 metres are expected at Rosewood overnight. The Bremer River at Ipswich is expected to		

Date & Time	MOGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
					reach about 12.7 metres on Tuesday afternoon. Higher levels are possible.		
10/01/2011 17:00	5.8	6.8	12	12.7	see advice of 16:17		
10/01/2011 17:18	5.87 rising						
10/01/2011 17:27		6.85 steady					
10/01/2011 18:00	5.9	6.9					
10/01/2011 18:13:			12 (minor)	12.7 (major)	Rainfall during Monday will lead to renewed rises and a return to moderate flood levels along the Bremer River to Walloon.. Levels over 5 metres are expected at Rosewood overnight. The Bremer River at Ipswich is expected to reach about 12.7 metres on Tuesday afternoon. Higher levels are possible.		
10/01/2011 18:43						<u>Rainfall</u> Only minor rainfall has been experienced in the North Pine Dam and Somerset Dam catchments with a catchment averages of less than 20mm. However, significant rain has	

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						<p>fallen in the Wivenhoe Dam catchment over the last 6 hours, with isolated falls exceeding 100mm. This rainfall has significantly increase inflows into the dam. A severe weather warning remains current for heavy rainfall in the dam catchment areas. The QPF issued by BOM at 10:00 estimates rainfalls for the 24 hours to 10:00 Tuesday as North Pine Dam (25mm to 50mm, with isolated falls to 100mm); Wivenhoe/Somerset Dam Catchments (25mm to 50mm, with isolated falls to 100mm). Potentially significant rain moving towards the dam catchments is currently evident on the BOM radar.</p> <p><u>Somerset Dam (Full Supply Level 99.00 m AHD)</u></p> <p>The dam level is 103.46m AHD and rising slowly. Peak inflow to the dam is estimated to be about 4,200 m³/s. Total discharge into Wivenhoe Dam is currently 1700m³/s and this discharge will decrease slowly in the next 24 hours to be around 1200m³/s late Tuesday. The dam level will peak at 103.5m AHD in the next few hours, unless further significant rainfall is experienced. Areas around</p>	

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						<p>Kilcoy will continue to be adversely affected.</p> <p><u>Wivenhoe Dam (Full Supply Level 67.00 m AHD)</u></p> <p>The dam level is 72.92m AHD and rising quickly. Releases from the dam have been increased over the last 3 hours in accordance with Flood Mitigation procedures and to ensure that a fuse plug is not initiated. The initiation of a fuse plug will result in a rapid uncontrolled outflow from the dam of 2,000m³/s being added to the gate release outflow. Outflows into the Brisbane River from both Lockyer Creek and the Bremer River are also increasing. The flash flooding experienced in the upper areas of Lockyer Creek have been examined and are not expected to significantly increase Brisbane River flows above the current projection of 4000m³/s at Moggill.</p> <p>Five radial gates are currently open at the dam releasing about 2,400m³/s into the Brisbane River and this will need to be increased steadily to an outflow of 2,800m³/s. At this stage, the dam will reach</p>	

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						<p>about 73.8m AHD during Tuesday morning. The objective for dam operations is currently to minimise the impact of urban flooding in areas downstream of the dam and to keep river flows in the lower Brisbane River below 4,000m³/s if possible. This is significantly less than the current estimated combined pre-dam peak inflow of 12,000m³/s. If further rainfall occurs, dam releases may need to be increased further and this may result in river flows in the lower Brisbane River approaching or exceeding 5,000m³/s.</p> <p><u>Impacts downstream of Wivenhoe Dam</u></p> <p>The projected Wivenhoe Dam releases combined with Lockyer Creek flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Sunday 16 January in varying degrees. Water levels in the lower Brisbane River will be impacted by the combined flows of Lockyer Creek, Bremer River, local runoff and releases from Wivenhoe</p>	

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						<p>Dam.</p> <p><u>Outlook</u></p> <p>Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.</p>	
10/01/2011 19:00	6	7	12	12.7	see advice of 18:13		
10/01/2011 20:00	6.1	7.1					
10/01/2011 20:53	6.12 rising						
10/01/2011 20:56		7.2 rising					
10/01/2011 21:00	6.2	7.2					
10/01/2011 21:44			12 (minor)	12.7 (major)	Rainfall during Monday will lead to renewed rises and a return to moderate flood levels along the Bremer River to Walloon. Levels over 5 metres are expected at Rosewood		

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
					overnight. The Bremer River at Ipswich is expected to reach about 12.7 metres on Tuesday afternoon. Higher levels are possible.		
10/01/2011 22:00	6.3	7.4	12	12.7	see advice of 21:44		
10/01/2011 23:00	6.3	7.5					
10/01/2011 23:14	6.42 rising						
10/01/2011 23:17		7.6 rising					
10/01/2011 23:56						<u>Rainfall</u> Rainfall continues in the North Pine Dam, Somerset Dam and Wivenhoe Dam catchments with falls of generally less than 20mm since 18:00 today. However, some isolated falls in the Upper Brisbane River of up to 110 mm have been recorded at Monsildale in this time. This rainfall will increase inflows into the dam. A severe weather warning remains current for heavy rainfall in the dam catchment areas. The QPF issued by BOM at 16:00 estimates rainfalls for the 24 hours to 10:00 Tuesday as North Pine Dam (25mm to 50mm,	

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						<p>with isolated falls to 1 00mm); Wivenhoe/Somerset Dam Catchments (25mm to 50mm, with isolated falls to 100mm).</p> <p><u>Somerset Dam (Full Supply Level 99.00 m AHD)</u></p> <p>The dam level is 1 03.40m AHD and falling slowly. Peak inflow to the dam is estimated to be about 4,200m³/s. Total discharge into Wivenhoe Dam is currently 1700m³/s and this discharge will decrease slowly in the next 24 hours to be around 1200m³/s late Tuesday. The dam level peaked at 103.52m AHD at 19:00 on Monday 10 January 2011, unless further significant rainfall is experienced. Areas around Kilcoy will continue to be adversely affected.</p> <p><u>Wivenhoe Dam (Full Supply Level 67.00 m AHD)</u></p> <p>The dam level is 73.22m AHD and rising at about 50 mm/hour. Releases from the dam have been held at a rate of 2,750 m³/s since 19:30 hours. Outflows into the Brisbane River from both Lockyer Creek and the Bremer River are also increasing. The BoM has provided further advice about the</p>	

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						<p>flash flooding experienced in the upper areas of Lockyer Creek. The rainfall responsible for this event was not observed at any rainfall stations but it is considered to be very significant. Flood levels in the Lockyer Creek catchment will exceed maximum recorded levels in some stations in the upper catchment. This flow may result in increases in Brisbane River levels below the junction of Lockyer Creek.</p> <p>Five radial gates are currently open at the dam releasing about 2,750m³/s into the Brisbane River. At this stage, the dam will reach about 73.8m AHD during Tuesday afternoon. The objective for dam operations is currently to minimise the impact of urban flooding in areas downstream of the dam and to keep river flows in the lower Brisbane River below 4,000m³/s if possible. This is significantly less than the current estimated combined pre-dam peak inflow of 12,000m³/s. If further rainfall occurs, dam releases may need to be increased further and this may result in river flows in the lower Brisbane River approaching or exceeding 5,000m³/s.</p>	

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						<p><u>Impacts downstream of Wivenhoe Dam</u></p> <p>The projected Wivenhoe Dam releases combined with Lockyer Creek flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Sunday 16 January in varying degrees.</p> <p>Water levels in the lower Brisbane River will be impacted by the combined flows of Lockyer Creek, Bremer River, local runoff and releases from Wivenhoe Dam.</p> <p>The BoM will provide further information regarding the magnitude of the flash flood event occurring in Lockyer Creek early Tuesday morning. Consideration will be given to modifying the releases from Wivenhoe Dam to try to moderate the peak flows emanating from Lockyer Creek.</p> <p><u>Outlook</u></p> <p>Heavy rainfall continues throughout</p>	

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						South East Queensland and the situation could deteriorate over the next 24 hours. The flood operation centre will continue to monitor the situation and provide situation reports every six hours until the situation stabilizes.	
11/01/2011 00:00	6.5	7.7					
11/01/2011 00:07			12 (minor)	12.7 (major)	The rainfall during Monday will lead to renewed rises and a return to moderate flood levels along to Bremer River to Walloon. Levels between 5 and 6 metres are expected at Rosewood overnight. The Bremer River at Ipswich is expected to reach about 12.7 metres on Tuesday afternoon. Higher levels are possible.		
11/01/2011 01:00	6.6	8					
11/01/2011 02:00	6.8	8.2					
11/01/2011 03:00	7	8.5					
11/01/2011 03:29	7.07 rising						

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
11/01/2011 03:31		8.55 rising					
11/01/2011 04:00	7.1	8.7					
11/01/2011 04:07			12 (minor)	12.7 (major)	The Bremer River at Walloon has exceeded the moderate flood level. The Bremer River at Rosewood peaked at 5.8 metres around midnight Monday. The Bremer River at Ipswich is expected to reach about 12.7 metres on Tuesday afternoon .Higher levels are possible.		
11/01/2011 05:00	7.3	8.9					
11/01/2011 06:00	7.5	9.1	12	12.7	see advice of 04:07		
11/01/2011 06:12						<u>Rainfall</u> Rainfall continues in the North Pine Dam, Somerset Dam and Wivenhoe Dam catchments. Isolated falls in the Upper Brisbane River of up to 125 mm have been recorded with widespread falls of 40 to 70 mm in the Somerset Dam catchment. This rainfall will increase inflows into the dam. There has also been 20 to 60 mm in the Lockyer Creek catchment	

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						<p>in the last 12 hours with falls of up to 30 mm in the Bremer River. A <i>severe</i> weather warning remains current for <i>heavy</i> rainfall in the dam catchment areas. The QPF issued by BOM at 16:00 estimates rainfalls for the 24 hours to 10:00 Tuesday as North Pine Dam (25mm to 50mm, with isolated falls to 1 00mm); Wivenhoe/Somerset Dam Catchments (25mm to 50mm, with isolated falls to 100mm).</p> <p><u>Somerset Dam (Full Supply Level 99.00 m AHD)</u></p> <p>The dam level is 1 03.27m AHD and falling slowly. Peak inflow to the dam is estimated to be about 4,200 m³/s. Total discharge into Wivenhoe Dam is currently 1400 m³/s and this discharge will be decreased in the next few hours to be around 500 m³/s later on Tuesday. This is to ensure that the combined flood mitigation capacity in Somerset and Wivenhoe Dam is maximized. The dam level peaked at 103.52m AHD at 19:00 on Monday 10 January 2011, (unless further significant rainfall is experienced). Areas around Kilcoy will continue to be adversely affected.</p>	

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						<p><u>Wivenhoe Dam (Full Supply Level 67.00 m AHD)</u></p> <p>The dam level is 73.51 m AHD and rising at about 25 mm/hour. Releases from the dam <i>have</i> been held at a rate of 2,750 m³/s since 19:30 hours on Monday 10 January 2011. Outflows into the Brisbane River from both Lockyer Creek and the Bremer River are also increasing. The BoM has provided further advice about the flash flooding experienced in the upper areas of Lockyer Creek. The rainfall responsible for this <i>event</i> was not observed at any rainfall stations but it is considered to be extreme. Flood levels in the Lockyer Creek catchment will exceed maximum recorded levels in some stations in the upper catchment. This flow will <i>result in increases</i> in Brisbane River levels below the junction of Lockyer Creek.</p> <p>Five radial gates are currently open at the dam releasing about 2,750m³/s into the Brisbane River. At this stage, the dam will reach just over 74.0m AHD during Tuesday evening.</p>	

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						<p>Above EL 74.0m AHD the objective for dam operations is to maintain the security of the dam and minimise downstream flood flows if possible. If further rainfall occurs, dam releases may need to be increased further and this may result in river flows in the lower Brisbane River approaching or exceeding 5,000m³/s.</p> <p><u>Impacts downstream of Wivenhoe Dam</u></p> <p>The projected Wivenhoe Dam releases combined with Lockyer Creek flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Sunday 16 January in varying degrees. Water levels in the lower Brisbane River will be impacted by the combined flows of Lockyer Creek, Bremer River, local runoff and releases from Wivenhoe Dam. The BoM will provide further information regarding the magnitude of the flash flood event occurring in Lockyer Creek early Tuesday</p>	

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						<p>morning. Consideration was given to modifying the releases from Wivenhoe Dam to try to moderate the peak flows emanating from Lockyer Creek but the rainfall in the past 12 hours in the catchment above the dam makes this option not possible. Therefore instead of decreasing releases to accommodate the Lockyer Creek flows, the strategy will endeavour to maintain the current releases until Lockyer Creek peaks.</p> <p><u>Outlook</u></p> <p>Heavy rainfall continues throughout South East Queensland and the situation could deteriorate over the next 24 hours. The flood operation centre will continue to monitor the situation and provide situation reports every six hours until the situation stabilizes.</p>	
11/01/2011 06:45	7.62 rising						
11/01/2011 06:50		9.25 rising					
11/01/2011 07:00	7.6	9.3					
11/01/2011 08:00	7.8	9.4	21	14.7	BOM web site		LDMG Meeting

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
							8:05 - 9:05 Stand Up
11/01/2011 09:00	7.9	9.6					
11/01/2011 09:29			15 (moderate)	16 (major)	The Bremer River at Walloon has exceeded the moderate flood level. The Bremer River at Rosewood peaked at 5.8 metres around midnight Monday but renewed rises are expected as rainfall continues. The Bremer River at Ipswich is expected to reach about 16 metres during Wednesday. Higher levels are expected.		
11/01/2011 10:00	8.1	9.7	15	16	see advice of 09:29		
11/01/2011 11:00	8.4	10					
11/01/2011 12:00	8.7	10.4					
11/01/2011 13:00	9.1	10.8					
11/01/2011 14:00	9.7	11.3	15	16	Phone call at 13:56.		LDMG Meeting 14:00 -

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
							14:30 Stand Up
11/01/2011 15:00	10.2	11.9	19	18	Phone call at 15:13		
11/01/2011 15:14	10.22 rising						
11/01/2011 15:18		12.05 rising					
11/01/2011 15:24			22 (moderate)	22 (major)	The Bremer River at Walloon has exceeded the major flood level. The Bremer River at Rosewood is expected to reach at least 7.6 metres during the next few hours. The Bremer River at Ipswich is expected to reach about 22 metres during Wednesday. Higher levels are possible as rainfall continues.		
11/01/2011 16:00	10.7	12.4	22	22	see advice of 15:24		
11/01/2011 17:00	11.1	13.1					
11/01/2011 18:00	11.6	13.8				In the last twelve hours totals of up to 370mm have fallen in the area around Wivenhoe Dam. In the last hour, rainfalls between 15 and 30mm have been recorded in the same	LDMG Meeting Stand Up

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						<p>area. At 1600, the BoM advised that falls between 50 to 100mm are still forecast for the 24hrs to 1600 Wednesday 12 January 2011 for the North Pine and SomerseVWivenhoe catchments.</p> <p>At 1730 Wivenhoe Dam was 74.92m AHD and rising slowly and releasing about 6,700m³/s. The current expectation is that the dam will reach a steady state (outflow equals inflow) within the next 3 hours without further significant rainfall. At this time, release from the dam will be about 8,000 m³/s. If there is no further rainfall, it may be possible to then slowly reduce this release overnight. The dam is expected to peak below 75.5m AHD which is 100mmm below the first fuse plug initiation level.</p> <p>Note that the automatic recorder as indicated on the BoM website is affected by drawdown and is not reflecting the actual lake level and tendency.</p>	
11/01/2011 19:00	12	14.5					
11/01/2011	12.17 rising						

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
19:32							
11/01/2011 19:33		14.85 falling					
11/01/2011 20:00	12.5	15.2	21	21.5	Phone call at 20:00		
11/01/2011 20:06			21 (moderate)	21.5 (major)	The Bremer River at Walloon has exceeded the major flood level. The Bremer River at Rosewood has peaked at 7.5 metres around 5pm Tuesday. The Bremer River at Ipswich is expected to reach around 21.5 metres during Wednesday.		
11/01/2011 21:00	12.9	16					
11/01/2011 22:00	13.3	15.9					
11/01/2011 23:00	13.7	16.3					
11/01/2011 23:32	13.87 rising						
11/01/2011 23:36		16.55 rising					
12/01/2011 0:00	14.2	16.7					
12/01/2011 00:19			21 (moderate)	21.5 (major)	The Bremer River at Walloon has exceeded the major flood		

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
					level. The Bremer River at Rosewood has peaked at 7.5 metres around 5pm Tuesday. The Bremer River at Ipswich is expected to reach around 21.5 metres during Wednesday causing major flooding. This level is 0.8 metres higher than the 1974 flood peak at Ipswich.		
12/01/2011 01:00	14.6	17.6	21	21.5	Phone call at 0:24.		
12/01/2011 02:00	15	17.9					
12/01/2011 03:00	15.4	18.1					
12/01/2011 03:19		18.2 rising					
12/01/2011 03:20	15.37 rising						
12/01/2011 04:00	15.8	18.3	21	21.5	see advice of 12/01/2011 at 0:24		
12/01/2011 04:03			21 (moderate)	21.5 (major)	The Bremer River at Walloon has exceeded the major flood level. The Bremer River at Rosewood has peaked at 7.5 metres around 5pm Tuesday. The Bremer River at Ipswich is expected to reach around		

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
					21.5 metres during Wednesday causing major flooding. This level is 0.8 metres higher than the 1974 flood peak at Ipswich.		
12/01/2011 05:00	16.1	18.4					
12/01/2011 05:49						<p>No significant rain has fallen over the catchments in the past twelve hours. Less than 10 to 15 millimeters of rainfall is expected over the next 24-48 hours.</p> <p>Wivenhoe Dam peaked on the 11th January, Tuesday night at 19:00 at 74.97 mAHD with a corresponding discharge of 7,450 m³/s. The release have now been scaled back to 4,300m³/s at 05:00 am. Wivenhoe Dam is currently 74.77 m AHD and falling slowly. The releases from Wivenhoe Dam will be temporarily reduced to 2,500 m³/s to allow the peak of Lockyer Creek to enter the Brisbane River, after which they will be increased to maximum of 3,500 m³/s. This release will then be maintained to drain the flood storage component within the required 7 days.</p>	

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						Somerset Dam is at 105.10 mAHD and slowly rising. The dam is discharging 1,230 m ³ /s over the spillway. The dam is expected to peak this morning near its current level. Sluice gates will be utilised to assist the draining of the flood storage compartment commencing on Thursday. The combined flood event volume in Somerset and Wivenhoe Dams is estimated to be in excess of 2 million megalitres.	
12/01/2011 05:53	16.27 rising	18.6 rising					
12/01/2011 06:00	16.4	18.6					
12/01/2011 07:00	16.7	18.7					
12/01/2011 07:29		18.85 rising					
12/01/2011 07:34			20 (moderate)	20.5 (major)	Major flooding is easing along the Bremer River from Rosewood to Walloon. The Bremer River at Ipswich is expected to peak about 20.5 metres during Wednesday afternoon with major flooding. This is similar to the 1974 flood level.		
12/01/2011	16.72 rising						

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
07:38							
12/01/2011 07:57			20 (moderate)	20.5 (major)	Major flooding is easing along the Bremer River from Rosewood to Walloon. The Bremer River at Ipswich is expected to peak about 20.5 metres during Wednesday afternoon with major flooding. This is similar to the 1974 flood level.	<p><u>Rainfall</u></p> <p>No significant rain has fallen over the catchments in the past twelve hours. Less than 10 to 15 millimeters of rainfall is expected over the next 24-48 hours.</p> <p><u>Somerset/Wivenhoe</u></p> <p>Somerset Dam has peaked at 105.11 mAHD at 06:00 on 12 January 2011 and the dam is discharging 1,230 m³/s over the spillway. Sluice gates will be utilised to assist the draining of the flood storage compartment commencing later Wednesday.</p> <p>Wivenhoe Dam peaked at 74.97 mAHD at 19:00 on 11 January 2011 with a corresponding discharge of 7,450 m³/s. Wivenhoe Dam was 74.75 m AHD at 07:30 and generally falling slowly. The releases from Wivenhoe Dam have been temporarily reduced to 2,500 m³/s at 07:30 to allow the peak of Lockyer Creek to enter the Brisbane River. After the downstream peak in the lower Brisbane River has passed, releases will be increased to</p>	

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
						maximum of 3,500 m ³ /s. This release will then be maintained to drain the flood storage component within the required 7 days. The combined flood event volume in Somerset and Wivenhoe Dams is estimated to be in excess of 2 million megalitres.	
12/01/2011 08:00	16.9	18.9	20	20.5	see advice of 7:57		LDMG Meeting Stand Up
12/01/2011 09:00	17.2	19.0					
12/01/2011 10:00	17.4	19.1					
12/01/2011 11:00	17.5	19.2					
12/01/2011 11:20	17.42 rising						
12/01/2011 11:27		19.3 rising					
12/01/2011 11:57			20 (moderate)	20.5 (major)	Major flooding is easing along the Bremer River from Rosewood to Walloon. The Bremer River at Ipswich is expected to peak about 20.5 metres during Wednesday afternoon with major flooding. This is similar to the 1974 flood level.		

Date & Time	MOGGILL Actual Gauge	IPSWICH Actual Gauge	Predicted Height (BOM) Moggill	Predicted Height (BOM) Bremer	BOM Information and Source (Bremer)	SEQ Water Information Summary	LDMG Meeting & Status
12/01/2011 12:00	17.6	19.3	20	20.5	see advice of 12:00		
12/01/2011 13:00	17.8	19.4 flood peak as recorded by BOM					

Schedule 6 - EAS Message dated 11 January 2011

Tony Trace

From: [REDACTED]

Sent: Tuesday, 11 January 2011 4:20 PM

To: [REDACTED]

Subject: IPSWICH EMERGENCY ALERT

Importance: High

For your information. An Emergency Alert Message has been sent to residents of the Ipswich Local Government Area at the request of the the Ipswich Local Disaster Management Group. Message follows:

Ipswich EA Campaign

Voice:

This is a Flash Flood Warning from the Ipswich Local Disaster Management Group. The Brisbane River is likely to reach 18 to 19 metres in the early hours of Wednesday morning. Residents close to the River and associated tributaries, including Bremer River, Six Mile Creek, Bundamba Creek and all other Tributaries should monitor the situation overnight and take evacuation measures if required. The Ipswich Show Grounds has been declared the evacuation centre. You should warn neighbours and secure your belongings. For more information listen to local radios.

SMS:

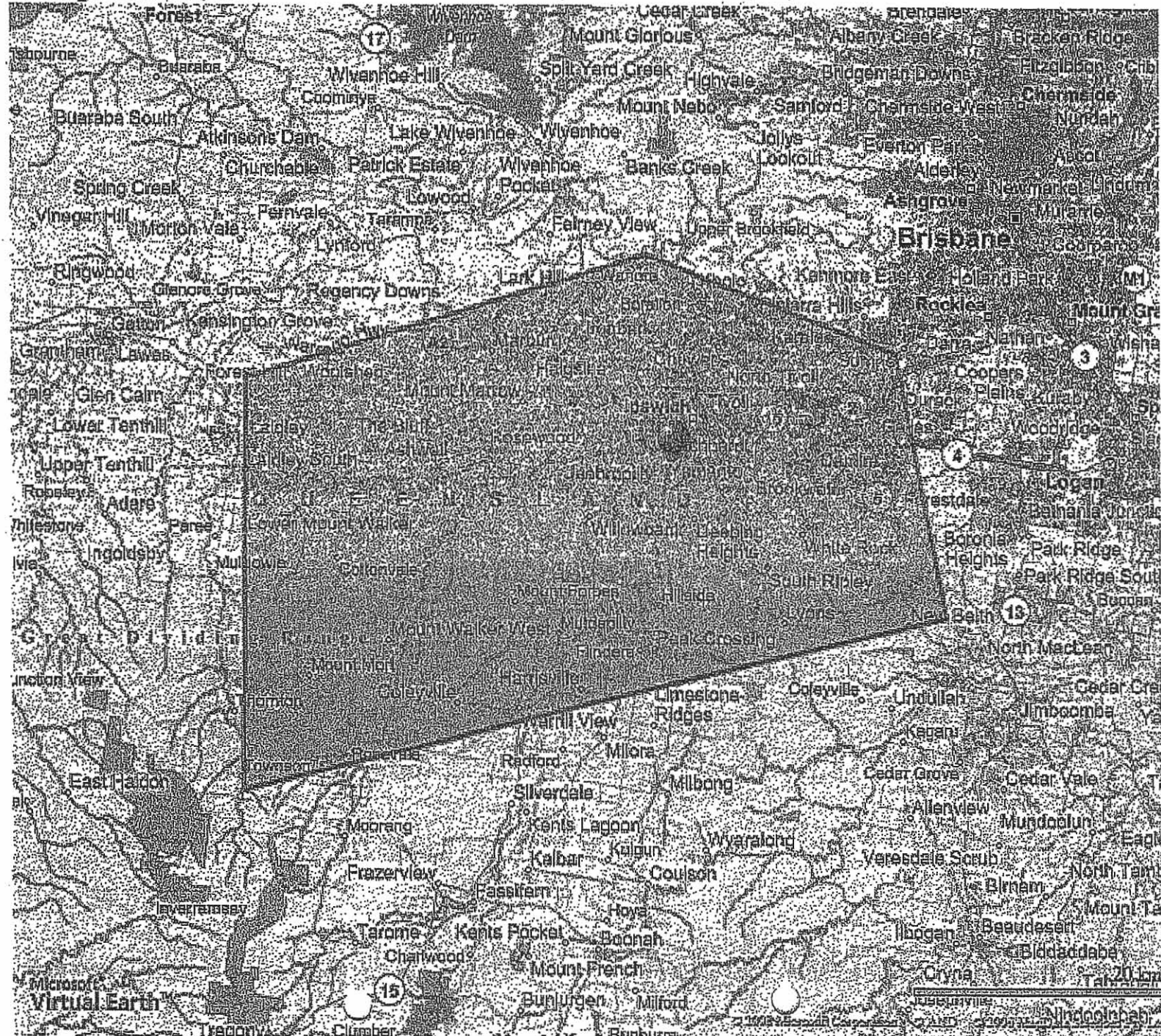
Flash Flood Warning-Brisbane River to reach 18-19m Wednesday AM. Residents close to River or associated tributaries monitor situ overnight & evacuate if required

When the polygon is drawn in the EA system it may take in parts of non affected areas and some of these may be within bordering Local Government Areas. The message is quiet specific but if you receive inquiries from non affected areas please relay necessary information to take action or alleviate concerns as required.

[REDACTED]
Regional Director
South Eastern Region
Emergency Management Queensland
State Emergency Service

Sent: Tuesday, 11 January 2011 14:21
To: SDCC
Cc: [REDACTED]
Subject: EMERGENCY ALERT REQUEST

22/02/2011





Campaign Summary Report

Message Id	11002091
Campaign Identifier	QLD EMQ Ipswich Floods
Campaign Status	Expired
Campaign Mode	ALL
Owner	akoneil
Jurisdiction	QLD
Created Date	11/1/2011 03:12 PM
Start Date	11/1/2011 03:26 PM
Campaign Duration	00:30:00
Campaign End Date	11/1/2011 04:01 PM

Text messages

Number of services impacted	211568
Number of delivered text messages	128858
Number of undelivered text messages	8885
Number of messages sent to gateway	211567
Number of rejected text messages	0
Number of deleted text messages	0
Number of expired text messages	68450
Number of unknown text messages	0
Text message campaign end date	11/1/2011 03:57 PM

Voice messages

Number of services impacted	151093
Voice Type	Female
Number of answered calls	13619
Number of busy lines	252
Number of no answers	617
Number of invalid calls	1741
Number of not dialled calls	134864
Number of answering machines	0
Number of fax lines	0
Voice message campaign end date	11/1/2011 03:59 PM

Schedule 7 - Media Releases issued on 11 January 2011

Media Release

10 January, 2011

IPSWICH RESIDENTS ADVISED TO PREPARE FOR FLOODING

THE most recent weather forecast, Wivenhoe Dam releases and computer modelling predicts a significant rise in the Brisbane and Bremer rivers tomorrow and Wednesday.

Ipswich Mayor Paul Pisasale said an estimated 20 properties could face inundation to liveable areas.

"By late tomorrow morning the Brisbane River at Colleges Crossing is expected to reach a height of 15 metres and cause up to five homes to be inundated at Karalee.

"This height of the Brisbane River will in turn cause water to push back up the Bremer River.

"We are well prepared and have identified properties to be affected.

"Council is now in the process of contacting residents to advise them of the potential flooding of their dwellings.

"While only a small number of homes will be affected it is no less distressing to residents and we will do all we can to assist.

"A number of known flood hot-spots will be closed to traffic, including King Edward Parade, Marsden Parade and Jacaranda Street."

Queensland Premier Anna Bligh phoned Cr Pisasale earlier today to offer whatever state government assistance was necessary.

"It is tremendous to know there is extra support if we need it, but at this stage we are as prepared as we can be.

"The SES has sandbags available for residents and businesses. Council crews are on standby to close roads and offer further assistance.

"On behalf of the city I also want to thank all members of emergency services and council officers for keeping the city well informed of possible flood levels.

"Our city is also fortunate to benefit from the flood protection provided by Wivenhoe Dam," Cr Pisasale said.

-ENDS-

Call Cr Paul Pisasale - [REDACTED] for further comment

[REDACTED] Ipswich City Council Media - [REDACTED]

Media Release

11 January, 2011

IPSWICH UNDER REVISED HIGHER FLOOD THREAT

FURTHER overnight rainfall has prompted emergency services to revise flood warnings for Ipswich residents.

Mayor Paul Pisasale has issued a warning to residents in low lying areas and adjacent to the Bremer River to monitor radio and television reports tonight and in the early hours of tomorrow morning.

"I'm told by the experts we are likely to see levels similar to the dreadful 1974 floods.

"At this stage the Bremer River in Ipswich is expected to reach 17.2 metres at between 11pm tonight and 1am tomorrow (Wednesday) which is nearly 2 metres below the 1974 level.

"River heights are expected to remain high for the next one to two days.

"Residents in flood prone areas should make immediate plans to self evacuate, and where possible stay with relatives and friends.

"Evacuation centres are being identified now and we will advise when and where as soon as we can.

"A suburb by suburb street listing will be available on the internet later today and for the media.

"I would ask for patience if residents are trying to contact our call centre. Additional staff are being rostered on and we are currently experiencing significant delays in answering calls.

"Again I ask all residents to keep listening to radio and TV broadcasts and to keep fully informed of flood levels," Cr Pisasale said.

-ENDS-

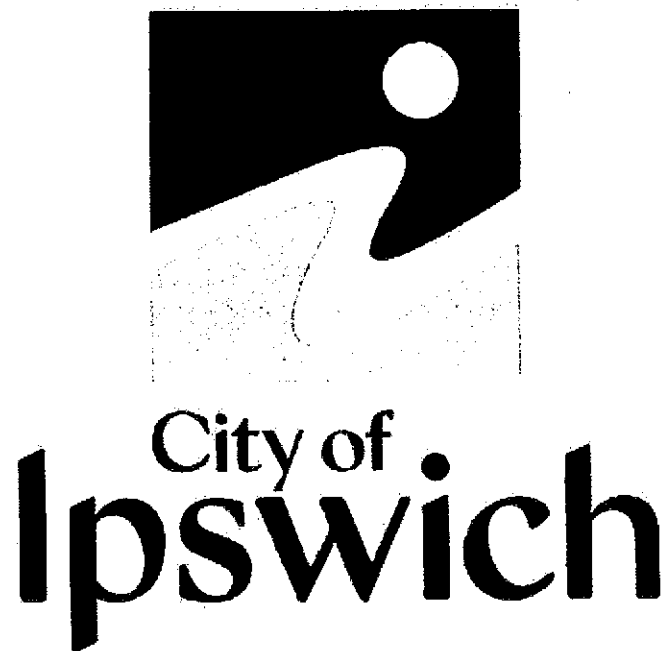
Call Cr Paul Pisasale - [REDACTED] for further comment

[REDACTED]

Schedule 8 - National Disaster Relief and Recovery Arrangements Submission

NDRRA Submission

Queensland Flooding and Tropical
Cyclones Tasha and Anthony,
November 2010 – February 2011



As at 15 February 2010

Your reference
Our reference
Contact Officer: **Dianne Smith**
Telephone: **07 3810 6999**



Ipswich City Council

45 Roderick St
PO Box 191
Ipswich QLD 4305
Australia

Tel: (07) 3810 6666
Fax: (07) 3810 6731
Email: council@ipswich.qld.gov.au
Web: www.ipswich.qld.gov.au

Mr Paul Low
Acting Director-General and Chief Executive Officer
Growth Management Queensland
Department of Local Government and Planning
PO Box 15009
City East QLD 4002

22 February 2011

Dear Mr Low

Re: **Queensland Flooding and Tropical Cyclones Tasha and Anthony,**
November 2010 – February 2011

Please find attached a submission from Ipswich City Council (ICC) relating to the Restoration of Essential Public Assets under the National Disaster Relief and Recovery Arrangements. The total claim is for \$115.457 million, comprising \$3.1 million in emergent works and \$112.357 million in other restoration works.

This claim covers road and drainage infrastructure, parks infrastructure and Council buildings.

In preparing this submission, ICC officers have engaged with officers from the Departments of Infrastructure and Planning and Transport and Main Roads with regard to content of this submission and the subsequent claim validation process.

ICC is intending to submit monthly claims in relation to this submission and will provide a cashflow estimate with the first claim. Claims will list individual works grouped in packages based on the ten Divisional areas within Ipswich.

With regard to outstanding works from the claim submitted for the Queensland Storms and Associated Flooding 16 - 22 November 2008 event (2008 event), your project number 10009-07-043 refers, a number of works remained uncompleted and have suffered subsequent damage during the Queensland Flooding and Tropical Cyclones Tasha and Anthony November 2010 – February 2011 event (2011 event). ICC will submit a final claim shortly (estimated value \$8,000) which will close off the 2008 event claim. The remaining works that suffered subsequent damage have been included in the 2011 event submission.

As you would appreciate, a program of restoration work of this magnitude is quite significant for ICC and delivering this in conjunction with business as usual activities will have an impact on Council's cashflow. Accordingly, I would request that you consider advancing 20% of the total submission value to assist Council in managing this issue.

If you have any questions or require any further information, please contact

[REDACTED] Finance Manager on [REDACTED]

[REDACTED]
~~Carl Wolff~~
CHIEF EXECUTIVE OFFICER

Natural Disaster Relief and Recovery Arrangements

Restoration of Essential Public Assets

Submission Checklist

To be completed and submitted with Council's NDRRA Submission

X	You have provided a Contact Officer for your submission: Name: Dianne Smith Position: Finance Manager Phone: 3810 6966 Email: desmith@ipswich.qld.gov.au
X	The costings provided are GST exclusive.
X	You have provided an indicative summary of all "Restoration of Essential Public Assets Grant Application" details including: <ul style="list-style-type: none"> • Emergent Works • Roads, Bridges and Drainage Restoration Works and • Park and Buildings Restoration Works
X	You have included a map identifying where damaged assets are located and in relation to sources of damage (ie. town road map).
X	The Grant Application is signed by the Estimator and Accountable Officer.
X	You have included an electronic copy of your submission with photos.
X	You have forwarded a hard copy of the submission to your local office of all other relevant agencies (ie. DTMR or DERM).

.....Carl Wulff.....
Name

.....Ipswich City Council.....
Council

.....
Signature - Chief Executive Officer

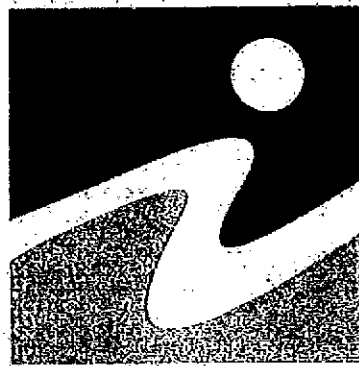
22. 7. 2011
Date

Return forms 1- 6 to your nearest Department of Infrastructure and Planning Regional Office as listed in the Program Guidelines



NDRRA Submission

Queensland Flooding and Tropical
Cyclones Tasha and Anthony,
November 2010 – February 2011



City of
Ipswich

As at 15 February 2010

Detailed Summary
Ipswich City Council's Restoration of Essential Public Assets Claim
Queensland Flooding and Tropical Cyclones Tasha and Anthony, November 2010 - February 2011

<u>Claim Detail</u>		<u>Total</u>
Restoration of Essential Public Assets		
Emergent Works		3,099,732
Other Restoration Works		
<u>Road, Bridges and Drainage Assets</u>		
Roads and Streets	37,166,384	
Gravel Roads	2,072,554	
Bridges	<u>3,020,870</u>	42,259,808
<u>Parks and Building Assets</u>		
Buildings and Major Open Space*	40,595,274	
Parks	12,090,313	
Mechanical	2,500,000	
Electrical	2,500,000	
Streetscape	<u>412,040</u>	58,097,628
<u>Other Estimates</u>		
<u>Engineering Services</u>		
Additional costs to 2008 Storm Damage	7,000,000	
Additional Stormwater Drainage sites - yet to be inspected	<u>5,000,000</u>	12,000,000
TOTAL Restoration of Essential Public Assets Cost		<u><u>115,457,168</u></u>

* - may include some Emergent Work costs. This has not been separated.

Estimator Signature



Date 22 Feb 11.

Accountable Officer Signature




Date 22/2/11

Restoration of Essential Public Assets

Emergent Works

Emergent Works

	Claimable	Labour to be confirmed	Commitments	TOTAL
	\$	\$	\$	\$
Parks Restoration	95,689	113,703	844,285	1,053,678
Roads Restoration	209,106	237,398	912,544	1,359,048
Other Restoration	78,638	277,776	330,593	687,006
GRAND TOTAL	383,433	628,877	2,087,423	3,099,732

Estimator Signature  Date 22 FEB 11

Accountable Officer Signature  Date 22/2/11

Restoration of Essential Public Assets

**Other Restoration Works
(Roads, Bridges and Drainage)**

Disaster Event - Queensland Flooding and Tropical Cyclone Tasha and Anthony

City Of Ipswich

Roads, Bridges & Storm Water

Estimated Infrastructure Costs - Roads and Streets (including pavement repairs, road drainage)

Street	Suburb	Division	Estimated Cost
Behms Road	Amberley	8	\$ 539,634
Dennis Street	Amberley	8	\$ 3,942
Behms Rd, Amberley	Amberley	8	\$ 9,623
Southern Amberley Road, Amberley	Amberley	8	\$ 8,826
Bassett Road	Ashwell	10	\$ 101,566
Urry Road	Ashwell	10	\$ 419,410
Reinke Road	Ashwell	10	\$ 355,384
Reinke Road, Ashwell	Ashwell	10	\$ 4,129
Bass Street	Barellan Point	5	\$ 7,194
Bendemeer Street	Barellan Point	5	\$ 4,208
Brisbane Crescent	Barellan Point	5	\$ 15,971
Burke Street	Barellan Point	5	\$ 9,300
Fawcner Crescent	Barellan Point	5	\$ 15,092
Phillip Crescent	Barellan Point	5	\$ 5,852
Riverside Avenue	Barellan Point	5	\$ 112,454
Riverside Court	Barellan Point	5	\$ 108,875
Third Avenue	Barellan Point	5	\$ 109,441
Tasman Court	Barellan Point	5	\$ 22,463
Burke & Tasman St, Karalee	Barellan Point	5	\$ 49,350
Fawcner Cres, Karalee (No.23-25)	Barellan Point	5	\$ 5,851
Fifth Av, Karalee (Cnr Riverside Av)	Barellan Point	5	\$ 9,519
Junction Rd, Karalee (Cnr Northy St)	Barellan Point	5	\$ 12,949
Riverside Av, Karalee (Cnr Islandview St)	Barellan Point	5	\$ 1,211
Riverside Av, Karalee (Near Fourth Av)	Barellan Point	5	\$ 19,074
Riverside Av, Karalee (No.118-120)	Barellan Point	5	\$ 7,970
Riverside Ct (No.3)	Barellan Point	5	\$ 2,947
Blackall Street	Basin Pocket	5	\$ 171,937
Bowers Street	Basin Pocket	5	\$ 163,160
Bremer Parade-West	Basin Pocket	5	\$ 242,438
Chermside Road	Basin Pocket	5	\$ 69,782
McGill Street	Basin Pocket	5	\$ 58,271
McLeod Street	Basin Pocket	5	\$ 605,015
Springall Street	Basin Pocket	5	\$ 202,367
Bremer Pde, Basin Pocket	Basin Pocket	5	\$ 1,967
Bremer Pde, Basin Pocket (No.28 - No.40)	Basin Pocket	5	\$ 10,648
Bremer Pde, Basin Pocket (No.4 - No.22)	Basin Pocket	5	\$ 13,901
Davidson St, Basin Pocket	Basin Pocket	5	\$ 1,172
Thomas Street, Blackstone	Blackstone	4	\$ 5,827
MacArtney Street, Booval	Booval	4	\$ 9,651
Ross Llewellyn Drive, Booval	Booval	4	\$ 3,878
Fernavale Rd, Brassall	Brassall	6	\$ 9,028
Hunter St, Brassall	Brassall	6	\$ 9,020
Mihl St, Brassall (No.12)	Brassall	6	\$ 11,396
Pine Mt Rd, Brassall (Stormwater Structure)	Brassall	6	\$ 7,437
Rowan Dr, Brassall (Open Channel)	Brassall	6	\$ 4,458

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Workshops St, Brassall (Near Tunstall)	Brassall	6	\$	2,154
Nelson Street	Bundamba	4	\$	211,920
Keith Street	Bundamba	4	\$	109,167
Hanlon Street	Bundamba	4	\$	332,161
Egerton Street	Bundamba	4	\$	719
Creek Street	Bundamba	4	\$	648,179
Cornish Street	Bundamba	4	\$	137,925
Andrew Street	Bundamba	4	\$	126,039
Coal Street	Bundamba	4	\$	524,443
Hart Street	Bundamba	4	\$	566,076
Herbert Street	Bundamba	4	\$	72,084
Kirk Street	Bundamba	4	\$	504,299
Mining Street	Bundamba	4	\$	432,359
River Road	Bundamba	4	\$	800,692
Short Street	Bundamba	4	\$	138,844
Vowles Street	Bundamba	4	\$	311,500
Wickham Street	Bundamba	4	\$	87,047
McCartney Street	Bundamba	4	\$	73,091
Ross Llewellyn Drive	Bundamba	4	\$	173,375
T L Cooney Avenue	Bundamba	4	\$	125,895
Videroni Street	Bundamba	4	\$	73,235
Bergins Hill Road	Bundamba	4	\$	202,655
Agnes Street	Bundamba	4	\$	198,411
Archer Street	Bundamba	4	\$	184,598
Andrew Street, Bundamba	Bundamba	4	\$	4,756
Archer Street, Bundamba	Bundamba	4	\$	33,872
Bognuda Street, Bundamba	Bundamba	4	\$	9,621
Cleary St, Nth Booval	Bundamba	4	\$	3,295
Cornish Street, Bundamba	Bundamba	4	\$	7,282
Egerton Street, Bundamba	Bundamba	4	\$	53,145
Hanlon Street Bundamba (Int. Andrew St)	Bundamba	4	\$	3,505
Hanlon Street Bundamba (No.5)	Bundamba	4	\$	2,294
Hart Street, Bundamba	Bundamba	4	\$	39,962
Keith Street, Bundamba	Bundamba	4	\$	60,630
White Street, Bundamba	Bundamba	4	\$	57,959
Cummings Road	Calvert	10	\$	8,201
Calvert Station Road	Calvert	10	\$	91,831
Gipps Street	Calvert	10	\$	1,341
Wilson Street	Calvert	10	\$	3,597
Newcastle Street	Calvert	10	\$	15,215
Hiddenvale Road	Calvert	10	\$	909,336
Calvert Station Rd, Calvert	Calvert	10	\$	20,104
Hidden Vale rd, Calvert	Calvert	10	\$	12,264
Kuss Road, Calvert	Calvert	10	\$	30,789
Newman St, Galle	Camira	2	\$	51,930
Balaclava Street	Churchill	8	\$	2,647
Perrt Street	Churchill	8	\$	58,159
Meyers Road	Churchill	8	\$	115,449
Lupton Street	Churchill	8	\$	173,001
Lobb Street	Churchill	8	\$	329,354
Galah St, Churchill	Churchill	8	\$	8,252
Berry St, Yamanto	Churchill	10	\$	3,417

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Berry St, Yamanto	Churchill	10	\$	21,984
Robin Street	Chuwar	5	\$	46,042
Roundabout Mt Crosby Brodzig Junction Rds	Chuwar	5	\$	18,311
Collingwood Drive, Collingwood Park	Collingwood Park	3	\$	33,351
Duncan St, Collingwood Pk	Collingwood Park	3	\$	52,817
Callaghan Street	East Ipswich	5	\$	64,027
Janice Street	East Ipswich	5	\$	1,583
Leslie Street	East Ipswich	5	\$	144,599
Nathan Street	East Ipswich	5	\$	371,210
Tarcoola Street	East Ipswich	5	\$	139,995
Trumper Street	East Ipswich	5	\$	579,117
Farr St, East Ipswich	East Ipswich	5	\$	2,451
Jacaranda St, East Ipswich	East Ipswich	5	\$	13,271
Janice St, East Ipswich	East Ipswich	5	\$	1,059
Tarcoola St, East Ipswich	East Ipswich	5	\$	22,734
Trumper St, East Ipswich	East Ipswich	5	\$	2,212
Briggs Rd, Flinders View	Flinders View	8	\$	6,891
Ash Street, Flinders View	Flinders View	9	\$	41,519
Fairview Avenue, Flinders View	Flinders View	9	\$	2,602
Queen Street	Goodna	2	\$	21,014
Rissman Court	Goodna	2	\$	16,902
Ryan Street	Goodna	2	\$	9,568
Smiths Road	Goodna	2	\$	181,181
Mill Street	Goodna	2	\$	1,594,478
Lower Albert st	Goodna	2	\$	156,990
Lower Cross Street	Goodna	2	\$	4,748
Lower James Street	Goodna	2	\$	61,420
Brisbane Terrace	Goodna	2	\$	315,096
Church Street	Goodna	2	\$	96,364
Clive Street	Goodna	2	\$	193,835
Cox Crescent	Goodna	2	\$	232,007
Edna Street	Goodna	2	\$	15,761
Alice Street	Goodna	2	\$	110,788
Bertha Street	Goodna	2	\$	3,640
Lowe Street	Goodna	2	\$	8,842
newman street	Goodna	2	\$	62,102
William Street	Goodna	2	\$	33,295
Woogaroo Street	Goodna	2	\$	474,281
Bridge Street	Goodna	2	\$	3,388
Enid Street	Goodna	2	\$	808,436
Lower Stuart Street	Goodna	2	\$	327
Lower William Street	Goodna	2	\$	541,041
Norfolk Street	Goodna	2	\$	785
parker street	Goodna	2	\$	173,908
peel st	Goodna	2	\$	201,777
Short Street	Goodna	2	\$	7,220
Spalding Crescent	Goodna	2	\$	150,028
James Street	Goodna	2	\$	13,280
Bergholz Lane	Goodna	2	\$	18,129
Stanley Street	Goodna	2	\$	79,832
Barram Street	Goodna	2	\$	53,927
Barram St, Goodna	Goodna	2	\$	718

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Brisbane Tce, Goodna (Near Lower Cross St)	Goodna	2	\$	24,806
Brisbane Tce, Goodna (Near Lower James St)	Goodna	2	\$	3,949
Edna St, Goodna	Goodna	2	\$	1,172
Evan St, Goodna	Goodna	2	\$	718
Lower Albert St, Goodna	Goodna	2	\$	16,703
Lower William St, Goodna	Goodna	2	\$	2,471
Mill St, Goodna	Goodna	2	\$	10,631
Parker St, Goodna	Goodna	2	\$	1,962
Wongaroo St, Goodna (Near Lower Albert St)	Goodna	2	\$	1,648
George	Goodna	2	\$	30,215
Jayard	Goodna	2	\$	151,448
Ipswich Street	Grandchester	10	\$	189,022
Grandchester Mount Mort Road	Grandchester	10	\$	309,056
Long Gully Road	Grandchester	10	\$	20,523
Gatton Street, Grandchester	Grandchester	10	\$	46,821
Grandchester Mount Mort Railway Crossing	Grandchester	10	\$	27,624
Grandchester Mount Mort Road (682 - 700)	Grandchester	10	\$	22,020
Grandchester Mount Mort Road (Hornbuckles - Hiddenvale)	Grandchester	10	\$	108,315
Ipswich Street, Grandchester	Grandchester	10	\$	35,565
School Road, Grandchester	Grandchester	10	\$	24,334
Bremer Street	Ipswich	7	\$	219,417
Wharf Street	Ipswich	7	\$	43,883
South Street	Ipswich	7	\$	20,143
Prasser Lane	Ipswich	7	\$	5,676
Olga Street	Ipswich	7	\$	22,301
Marsden Parade	Ipswich	7	\$	29,208
King Edward Parade	Ipswich	7	\$	4,604
Gordon Street	Ipswich	7	\$	30,625
Ellenborough Street	Ipswich	7	\$	55,861
East Street	Ipswich	7	\$	223,906
Waite Street	Ipswich	8	\$	153,350
Turley Street	Ipswich	8	\$	268,997
Parrot Street	Ipswich	8	\$	64,550
Lobley Street	Ipswich	8	\$	143,880
King Edward Parade Ipswich	Ipswich	5	\$	24,367
Parrott St, Ipswich	Ipswich	8	\$	3,268
Turley St, Ipswich	Ipswich	8	\$	1,345
Albatross Avenue	Karalee	5	\$	3,248
Arthur Summervilles Road	Karalee	5	\$	54,095
Elanora Way	Karalee	5	\$	382,416
Gascoyne Drive	Karalee	5	\$	44,537
Krait Street	Karalee	5	\$	25,765
Lyndon Way	Karalee	5	\$	33,863
Lyndon Way	Karalee	5	\$	87,388
Melbourne Street	Karalee	5	\$	7,122
Queensborough Parade	Karalee	5	\$	74,760
Queensborough Parade	Karalee	5	\$	16,196
Queensborough Parade	Karalee	5	\$	13,707
Ronan Lane	Karalee	5	\$	6,911
South Queensborough Parade	Karalee	5	\$	198,352
Stuart Court	Karalee	5	\$	4,316
Yarra Court	Karalee	5	\$	1,046


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Junction Road	Karalee	5	\$	58,559
Voyager Street	Karalee	5	\$	7,410
Marilyn Street	Karalee	5	\$	82,947
Junction Road	Karalee	5	\$	58,559
First Avenue	Karalee	5	\$	40,143
Albatross Ave, Karalee	Karalee	5	\$	718
Elanora Way, Karalee (No.113-117)	Karalee	5	\$	31,976
Elanora Way, Karalee (No.28-32)	Karalee	5	\$	7,893
Gascoyne Dy, Karalee (No.18-60)	Karalee	5	\$	5,985
Junction Road, Karalee	Karalee	5	\$	3,544
Lyndon Way, Karalee	Karalee	5	\$	5,049
Queensborough Pde, Karalee	Karalee	5	\$	8,346
South Queensborough Pde, Karalee	Karalee	5	\$	66,156
Stuart Court, Karalee	Karalee	5	\$	4,159
Harwoods Road	Karrabin	10	\$	14,421
Harwoods Road, Wallon	Karrabin	6	\$	23,733
Stevens Road	Lanefield	10	\$	269,487
Kuss Road	Lanefield	10	\$	29,048
Lane Road, Calvert	Lanefield	10	\$	14,974
Aspinall Street	Leichhardt	8	\$	89,792
Ernest Street	Leichhardt	8	\$	7,683
Denman Street	Leichhardt	8	\$	104,959
Chalk Street	Leichhardt	8	\$	144,225
Casey Street	Leichhardt	8	\$	575,865
Old Toowoomba Rd	Leichhardt	8	\$	13,669
Mt Walker West Rd, Lower Mt Walker	Lower Mount Walker	10	\$	100,693
Mt Walker West Rd, Lower Mt Walker (Sth Johs Rd)	Lower Mount Walker	10	\$	20,778
Roderick Street	Marburg	10	\$	3,957
Postmans Track	Marburg	10	\$	85,455
Moriarty Lane	Marburg	10	\$	1,043
Main Street	Marburg	10	\$	24,298
Haigslea-Malabar Rd	Marburg	10	\$	11,582
Edmond Street - West	Marburg	10	\$	22,481
Edmond Street	Marburg	10	\$	1,043
Edmond Street, Marburg No.47 - 57	Marburg	10	\$	5,113
Edmond Street, Marburg No.78 - 82	Marburg	10	\$	38,663
George Street, Marburg No.27 -29	Marburg	10	\$	681
George Street, Marburg No.9 - 12	Marburg	10	\$	19,563
Haigslea Malabar Road, Marburg	Marburg	10	\$	2,763
Louisa Street, Marburg	Marburg	10	\$	41,366
Queen Street, Marburg No.170	Marburg	10	\$	23,341
Queen Street, Marburg No.170	Marburg	10	\$	4,796
Moores Pocket Road	Moores Pocket	5	\$	330,663
Boundary St, Moores Pocket	Moores Pocket	5	\$	1,561
Laurel Ct, Moores Pocket	Moores Pocket	5	\$	42,437
Laurel Court	Moores Pocket	5	\$	45,484
Caledonian Road, Mount Marrow	Mount Marrow	10	\$	4,072
Grandchester Mount Mort Road (Franklyn - Meadow)	Mount Mort	10	\$	60,798
Grandchester Mount Mort Road (Franklyn Vale Intersection)	Mount Mort	10	\$	10,581
Grandchester Mount Mort Road (Nth Meadow Flat Road)	Mount Mort	10	\$	12,978
Grandchester Mount Mort Road, Mt Mort (Nth Coyne's rd)	Mount Mort	10	\$	12,336
Meadow Flat Road, Mount Mort	Mount Mort	10	\$	28,896

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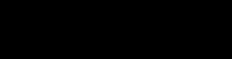
Oxford Street	North Booval	4	\$	13,351
Logan Street	North Booval	4	\$	29,495
Lamont Street	North Booval	4	\$	11,733
Janet Street	North Booval	4	\$	3,957
Helen Street	North Booval	4	\$	557,247
Gledson Street	North Booval	4	\$	751,773
David Street	North Booval	4	\$	1,206,578
Bridge Street	North Booval	4	\$	147,477
Bergin Street	North Booval	4	\$	131,075
Winifred Street	North Booval	4	\$	36,833
Selwyn Street	North Booval	4	\$	944,572
Roy Street	North Booval	4	\$	41,006
Christine St, Nth Booval	North Booval	4	\$	3,549
David St, Nth Booval (Near Diane St)	North Booval	4	\$	2,479
Helen St, Nth Booval	North Booval	4	\$	13,707
Nixon Drive, North Booval Footp. Gasset 894994	North Booval	4	\$	4,847
Merrell St, East Ipswich	North Booval	5	\$	8,252
Canning St	North Ipswich	5	\$	419,344
Fitzgibbon St	North Ipswich	5	\$	6,475
Flint Street	North Ipswich	5	\$	14,028
Lamington Parade	North Ipswich	5	\$	4,532
Lawrence St	North Ipswich	5	\$	527,933
Norma Brown St	North Ipswich	5	\$	228,558
Pelican St	North Ipswich	5	\$	64,202
Pine Street	North Ipswich	5	\$	364,204
Delacy Street	North Ipswich	6	\$	2,446
Kent St, Nth Ipswich	North Ipswich	5	\$	3,926
Delacy St, Nth Ipswich	North Ipswich	6	\$	12,671
Kay Street, Nth Ipswich	North Ipswich	6	\$	2,829
Pine St, North Ipswich	North Ipswich	6	\$	11,247
Battersby Street	One Mile	8	\$	6,101
Woodford Street	One Mile	8	\$	94,371
General Foch Street	One Mile	8	\$	21,927
Darcy Lane	One Mile	8	\$	29,121
Chubb Street	One Mile	8	\$	216,165
Cafferky Street	One Mile	8	\$	4,374
Old Toowoomba Road	One Mile	8	\$	387,201
Old Toowoomba Rd, One Mile Bridge, One Mile	One Mile	8	\$	386,865
Purga School Road	Peak Crossing	10	\$	100,291
Wairuna Court	Pine Mountain	6	\$	1,043
Wairuna Court, Pine Mountain (No.6)	Pine Mountain	6	\$	7,699
Jarraah Street	Raceview	9	\$	2,158
Briggs Road	Raceview	9	\$	396,193
Edward Street, Raceview	Raceview	9	\$	16,923
McAuliffe Street	Redbank	2	\$	149,701
Montgomery St, Redbank	Redbank	2	\$	7,635
Ripley Road, Ripley No.442	Ripley	9	\$	16,992
Duncan Street	Riverview	3	\$	122,138
Conway Street	Riverview	3	\$	1,393
Brisbane Road	Riverview	3	\$	33,632
Moggill Ferry Rd, Riverview	Riverview	4	\$	67,476
Old Toowoomba Rd, Three Mile Bridge Area	Riverview	4	\$	348,048

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Riverview Road, Riverview	Riverview	4	\$	18,216
Belmont Street	Rosewood	10	\$	19,424
Bassetts Lane	Rosewood	10	\$	239,740
Albert Street	Rosewood	10	\$	225,388
Edward Street	Rosewood	10	\$	115,823
William Street	Rosewood	10	\$	317,255
Reillys Road	Rosewood	10	\$	5,899
Railways Street	Rosewood	10	\$	173,375
Matthew Street	Rosewood	10	\$	101,076
Makepeace Street	Rosewood	10	\$	71,508
Just Street	Rosewood	10	\$	4,604
Albert Street, Rosewood	Rosewood	10	\$	2,325
Mill Lane, Rosewood	Rosewood	10	\$	1,094
Mill Street, Rosewood	Rosewood	10	\$	4,763
Nielsen Road, Rosewood	Rosewood	10	\$	2,396
O'Shea Street, Rosewood	Rosewood	10	\$	1,038
Railway Street, Rosewood (John St to Hospital Rd)	Rosewood	10	\$	17,982
Railway Street, Rosewood (No.43 to John St)	Rosewood	10	\$	2,056
Rosewood Thagoona Road, Rosewood	Rosewood	10	\$	19,417
Rosewood Thagoona Road, Thagoona	Rosewood	10	\$	49,204
School Street, Rosewood	Rosewood	10	\$	2,248
Urry Road, Rosewood	Rosewood	10	\$	2,871
Sealy St, Silkstone (No.1 Louise Ct)	Silkstone	7	\$	1,477
Sealy St, Silkstone (No.23-25)	Silkstone	7	\$	11,309
Roberston Rd, Eastern Heights	Silkstone	9	\$	20,320
Tallegalla Road	Tallegalla	10	\$	319,324
Minden Post Office Rd	Tallegalla	10	\$	6,061
Adelong Avenue, thagoona	Thagoona	10	\$	1,364
Amaroo Road, Thagoona	Thagoona	10	\$	919
McGeary Road, Thagoona (No.160 - 192)	Thagoona	10	\$	13,799
McGearys Road, Thagoona	Thagoona	10	\$	622
Thagoona Hagslea Road, Thagoona	Thagoona	10	\$	3,419
Daly Street	Tivoli	5	\$	3,093
Finimore Street	Tivoli	5	\$	863
George Street	Tivoli	5	\$	80,829
Hastie St	Tivoli	5	\$	3,597
Hill Street	Tivoli	5	\$	44,945
Kent Street	Tivoli	5	\$	33,517
Russian Square	Tivoli	5	\$	5,036
Wyndham Street	Tivoli	5	\$	7,662
Hastie St, Tivoli	Tivoli	5	\$	5,767
Mount Crosby Rd, Tivoli	Tivoli	5	\$	28,122
Tantivy St, North Ipswich	Tivoli	5	\$	9,066
Cyprus St, Tivoli	Tivoli	6	\$	4,260
Finimore St, Tivoli	Tivoli	6	\$	10,714
Hill St, Tivoli	Tivoli	6	\$	6,119
Tivoli Hill Rd, Tivoli (No.17-13A)	Tivoli	6	\$	15,491
Tivoli Hill Road, Tivoli (no.27)	Tivoli	6	\$	8,878
Wisteria Street	Walloon	10	\$	1,626
Taylors Road	Walloon	10	\$	7,626
Hagslea-Amberley Road	Walloon	10	\$	69,278
Blackwood Street, Walloon	Walloon	10	\$	1,710

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Brushbox Place, Walloon	Walloon	10	\$	1,313
Farrell Drive, Walloon	Walloon	10	\$	2,294
Haigslea Amberley Road, Walloon (Calvin to Bell)	Walloon	10	\$	3,739
Haigslea Amberley Road, Walloon (No.374-378)	Walloon	10	\$	4,261
Haigslea Thagoona Road, Walloon (Farrell to Taylors)	Walloon	10	\$	21,389
Kingsley Street, Walloon	Walloon	10	\$	4,436
Macadamia Court, Walloon	Walloon	10	\$	493
Sycamore Street, Walloon	Walloon	10	\$	1,007
Taylors Road, Walloon	Walloon	10	\$	24,148
Wisteria Street, Walloon	Walloon	10	\$	5,283
Tiger Street	West Ipswich	7	\$	5,945
Keogh Street	West Ipswich	7	\$	253,229
Hooper Street	West Ipswich	7	\$	8,633
Challinor Street	West Ipswich	7	\$	1,700
Woodend Road	Woodend	7	\$	317,255
Roseberry Parade	Woodend	7	\$	205,029
Martin Street	Woodend	7	\$	29,495
Elizabeth Street	Woodend	7	\$	35,970
Roseberry Parade, Woodend	Woodend	7	\$	118,712
Dixon Street	Wulkuraka	8	\$	1,980
Belrne Street	Wulkuraka	8	\$	431,985
Grace St, Wulkuraka (No.121-149)	Wulkuraka	6	\$	13,622
Oakland Road	Wulkuraka	8	\$	4,259
Grace Street	Wulkuraka	8	\$	569,391
Brady Street	Wulkuraka	8	\$	3,879
Midland Street	Yamanto	8	\$	23,366
Berry Street	Yamanto	8	\$	3,223
Ruthven Court	Yamanto	10	\$	62,588
Winston St, Yamanto	Yamanto	8	\$	13,810
Berry Street, Yamanto No.81	Yamanto	10	\$	30,582
Nuala Street, Yamanto	Yamanto	10	\$	3,697
Total			\$	37,166,384

Estimator Signature

Date

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Date

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Disaster Event - Queensland Flooding and Tropical Cyclone Tasha and Anthony
City Of Ipswich
Roads, Bridges & Storm Water
Estimated Infrastructure Costs - Gravel Roads (pavement only.)

Road	Suburb	Division	Estimated Cost	Photo Reference
Sth Amberley Rd	Amberley	10	\$ 7,450	
Bluff Rd	Ashwell	10	\$ 8,344	
Freeman	Ashwell	10	\$ 8,344	
Greet	Ashwell	10	\$ 11,920	
Perrins	Ashwell	10	\$ 4,768	
Stevens 271	Ashwell	10	\$ 4,768	
Stevens Rd	Ashwell	10	\$ 5,960	
Pouincradra St	Blacksoil	10	\$ 8,344	
Graham St	Blackstone	10	\$ 10,728	
Archery Rd	Calvert	10	\$ 5,960	
Bourkes Rd West	Calvert	10	\$ 7,152	
Bramwell Rd	Calvert	10	\$ 7,152	
Bramwell Rd	Calvert	10	\$ 7,152	
Cummings	Calvert	10	\$ 8,344	
Gilliver lane 20	Calvert	10	\$ 7,152	
Glpps	Calvert	10	\$ 14,304	
Grants	Calvert	10	\$ 5,960	
Hiddenvale Rd	Calvert	10	\$ 14,304	
Martin St	Calvert	10	\$ 5,960	
Neumann	Calvert	10	\$ 3,576	
Newcastle St	Calvert	10	\$ 1,341	
Sippels	Calvert	10	\$ 8,344	
Waters Rd	Calvert	10	\$ 8,344	
Waters Rd	Calvert	10	\$ 5,960	
Bergmans Rd	Ebenezer	10	\$ 4,768	
Lathropes	Ebenezer	10	\$ 4,768	
Lees Rd	Ebenezer	10	\$ 4,768	
Lees Rd	Ebenezer	10	\$ 3,576	
Paynes	Ebenezer	10	\$ 42,912	
Bakers	Grandchester	10	\$ 2,384	
Doonans	Grandchester	10	\$ 23,244	
Doonans 151	Grandchester	10	\$ 18,774	
Grandchester Mt Mort	Grandchester	10	\$ 14,900	
Grandchester Mt Mort	Grandchester	10	\$ 7,450	
Grandchester Mt Mort Rd	Grandchester	10	\$ 14,304	
Hornbuckles	Grandchester	10	\$ 20,562	
Hornbuckles Rd West	Grandchester	10	\$ 5,960	
Ipswich St	Grandchester	10	\$ 7,450	
Ipswich St	Grandchester	10	\$ 2,384	
Ipswich St	Grandchester	10	\$ 10,096	
Ipswich St 60	Grandchester	10	\$ 7,450	
Long Gully Rd	Grandchester	10	\$ 4,023	
Long Gully Rd	Grandchester	10	\$ 5,960	
Old Grandchester Rd	Grandchester	10	\$ 5,960	
Rafters	Grandchester	10	\$ 2,384	

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School Rd	Grandchester	10	\$	8,642
Stokes	Grandchester	10	\$	2,384
William 47	Grandchester	10	\$	7,450
Lining Rd 190	Haigslea	10	\$	7,450
Lining Rd 95	Haigslea	10	\$	2,384
Missigs	Haigslea	10	\$	3,576
Raysource Rd	Haigslea	10	\$	4,768
Schumanns	Haigslea	10	\$	11,920
Thagoona Haigslea 714	Haigslea	10	\$	7,450
Thagoona Haigslea 714	Haigslea	10	\$	4,768
Coramandel	Ironbark	10	\$	7,450
Coramandel	Ironbark	10	\$	7,450
Coramandel 181	Ironbark	10	\$	7,450
Coramandel 182	Ironbark	10	\$	8,344
Henry Rd	Ironbark	10	\$	7,450
Huth	Ironbark	10	\$	5,960
Ivan lane	Ironbark	10	\$	7,450
Ivan lane	Ironbark	10	\$	9,536
Schultz Rd	Ironbark	10	\$	5,960
Huth	Ironbark	10	\$	3,576
Bremer Rd	Jeebropilly	10	\$	7,450
Bodley Rd	Karrabin	10	\$	3,576
Ladewigs Rd	Karrabin	10	\$	2,980
Redhill Rd	Karrabin	10	\$	5,364
Spresser Rd	Karrabin	10	\$	4,768
Reillys	Lanefield	10	\$	11,920
Strong's Rd	Lanefield	10	\$	5,960
Waters Rd	Lanefield	10	\$	5,960
Johns Rd	Lower Mt Walker	10	\$	7,450
Johns Rd	Lower Mt Walker	10	\$	5,960
McCormack	Lower Mt Walker	10	\$	15,496
McKenna	Lower Mt Walker	10	\$	16,688
Bowden	Marburg	10	\$	7,450
Earls	Marburg	10	\$	894
Earls	Marburg	10	\$	5,960
Kennedy 22	Marburg	10	\$	7,450
Kennedy 22	Marburg	10	\$	7,450
Kickbuschs	Marburg	10	\$	9,536
Main St / 26 Owen	Marburg	10	\$	7,450
Marburg Fernvale Rd	Marburg	10	\$	33,972
Marburg Quarry Rd	Marburg	10	\$	7,450
Plepers Rd	Marburg	10	\$	3,576
Schubels Rd	Marburg	10	\$	4,768
Telrader	Marburg	10	\$	3,576
Brass Rd	Mt Forbes	10	\$	5,960
Dowden Rd	Mt Forbes	10	\$	7,450
Griffiths Rd	Mt Forbes	10	\$	5,364
Hartwigs Rd	Mt Forbes	10	\$	14,304
Hedricks Rd	Mt Forbes	10	\$	3,576
Jacobs Rd	Mt Forbes	10	\$	7,152
Jacobs Rd	Mt Forbes	10	\$	9,536
M Hines Rd	Mt Forbes	10	\$	5,960

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Murrmo Rd	Mt Forbes	10	\$	3,576	
Murrmo Rd	Mt Forbes	10	\$	16,688	
Tea tree Ave	Mt Forbes	10	\$	19,072	
Teves Rd	Mt Forbes	10	\$	7,450	
W Hedricks	Mt Forbes	10	\$	7,152	
Dances Rd	Mt Marrow	10	\$	8,344	
Mt Marrow Quarry	Mt Marrow	10	\$	7,450	
Mt Marrow Quarry Rd	Mt Marrow	10	\$	7,450	
Hoopers Rd	Mt Marrow	10	\$	4,768	
Schumanns	Mt Marrow	10	\$	8,344	
Thagooona Hagslea 444	Mt Marrow	10	\$	7,450	
Alpers	Mt Mort	10	\$	33,376	
Coynes	Mt Mort	10	\$	10,728	
Greys Plains RD	Mt Mort	10	\$	4,768	
Hodges	Mt Mort	10	\$	21,456	
Kings Rd	Mt Mort	10	\$	4,768	
MT Beau Brummell Rd	Mt Mort	10	\$	21,158	
Wensley Rd	Mt Mort	10	\$	3,576	
Mt Walker West	Mt Walker	10	\$	7,450	
Mt Walker West	Mt Walker	10	\$	7,450	
Stiits	Mt Walker	10	\$	7,152	
Hartwigs Rd	Mt Walker	10	\$	4,768	
Mt Flinders Rd	Peak Crossing	10	\$	9,536	
Borallon Station Rd	Pine Mt	10	\$	894	
Boyles Rd	Pine Mt	10	\$	9,536	
Evergreen Lane	Pine Mt	10	\$	596	
F Holts Rd	Pine Mt	10	\$	2,384	
H Bell Rd	Pine Mt	10	\$	8,046	
Paddy Smith Rd	Pine Mt	10	\$	2,384	
Pine Mt Quarry Rd	Pine Mt	10	\$	10,728	
Pine Mt Rd 918	Pine Mt	10	\$	7,450	
Pine Mt Rd 918	Pine Mt	10	\$	7,450	
Riverside Dr	Pine Mt	10	\$	54,832	
Shepard Rd	Pine Mt	10	\$	1,192	
Stokes Rd	Pine Mt	10	\$	8,344	
Velvert 113	Pine Mt	10	\$	7,450	
Carmichaels Rd	Purga	10	\$	39,336	
Chants Rd	Purga	10	\$	4,768	
Ellison Rd	Purga	10	\$	4,768	
Fords lane	Purga	10	\$	3,576	
Hughes Rd	Purga	10	\$	15,496	
Kerners Rd	Purga	10	\$	5,960	
Lubes Rd	Purga	10	\$	2,384	
Morgans Rd	Purga	10	\$	5,960	
O'Connell	Purga	10	\$	3,576	
Purga School Rd	Purga	10	\$	23,840	
Blackheath Rd	Redbank Plains	10	\$	3,576	
Collingwood Dr	Redbank Plains	10	\$	7,152	
School Rd	Redbank Plains	10	\$	14,304	
Storey St	Redbank Plains	10	\$	1,192	
Aulds Rd	Ripley	10	\$	7,450	
Barrams Rd	Ripley	10	\$	14,304	

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Poplar St	Wallon	10	\$	3,576	
Rohl Rd	Wallon	10	\$	3,576	
Seidels Rd	Wallon	10	\$	7,152	
Sharp lane 7	Wallon	10	\$	7,450	
Stocks lane	Wallon	10	\$	2,384	
Taylors	Wallon	10	\$	2,384	
Clarrie Halls Rd	Willowbank	10	\$	14,304	
O'Neills	Willowbank	10	\$	14,304	
O'Neills 50	Willowbank	10	\$	8,344	
Willowbank Dr 55	Willowbank	10	\$	38,740	
Willowbank Drive 52	Willowbank	10	\$	22,648	
Mit Scrub Rd	Woolshed	10	\$	19,072	
Grace	Wulkuracka	10	\$	5,960	
Jacaranda 69	Yamanto	10	\$	7,450	
		Total	\$	2,072,554	

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Disaster Event - Queensland Flooding and Tropical Cyclone Tasha and Anthony
City Of Ipswich
Roads, Bridges & Storm Water
Estimated Infrastructure Costs - Bridges based on Level 1 inspection)

Bridge Name	Name and Location of Road or Structure/Suburb	Suburb	Estimate Cost	Photo Reference
Hancocks Bridge	Kingsmill Road,	Brassall	\$ 144,000	
Henderson Road Culvert,	Henderson Road Culvert,	Rosewood	\$ 96,000	
Jones Phillips Bridge	Blackstone Road,	Silkstone	\$ 51,990	
Ironpot Creek Bridge	Sydney Street,	Brassall	\$ 169,200	5
Hiddenvale Road Bridge	Hiddenvale Road,	Calvert	\$ 24,000	
Cochrane Street, Camira	Cochrane Street,	Camira	\$ 72,000	
Lobb Street, Churchill	New One Mile Bridge	Churchill	\$ 571,800	2
Old Toowoomba Road	Three Mile Bridge	Churchill	\$ 292,680	1
Brisbane Terrace	Culvert at Goodna on Brisbane Terrace	Goodna	\$ 6,000	
Roseberry Parade Erosion	Roseberry Parade Erosion	Karalee	\$ 226,800	
Lee Bridge	Kuss Road,	Lanefield	\$ 25,200	
Franklyn Vale Road	Franklyn Vale Road Bridge	Mount Mort	\$ 24,000	
Greys Plains Road	Greys Plains Road	Mount Mort	\$ 24,000	
Schmidts Bridge	Grandchester Mount Mort Road,	Mount Mort	\$ 126,000	
Redbank Plains Road	Six Mile Creek culvert	Redbank Plains	\$ 420,000	
Strong's Road	Strong's Road,	Rosewood	\$ 31,200	
Grande Avenue, Springfield	Grande Avenue,	Springfield Lakes	\$ 24,000	
Germain Road, The Bluff	Germain Road,	The Bluff	\$ 192,000	
Further Inspections	Conduct Level 2 Inspections	27 Bridges	\$ 500,000	
Total			\$ 3,020,870	

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Restoration of Essential Public Assets

**Other Restoration Works
(Buildings and Park Assets)**

FLOOD EFFECTED BUILDINGS AND MAJOR OPEN SPACE INFRASTRUCTURE 2011

Building/ Park	Address	Suburb	Division	Type of Location	Cost Estimate (includes 20% Contingency and 12% overhead)	Photo Reference
Evan Marginson Park (Little Athletics)	6 Layard Street	GOODNA	2	Sports Field	\$ 49,700	
Evan Marginson Park (Netball Courts and Canteen)	6 Layard Street	GOODNA	2	Sports Court and Facility	\$ 82,000	
Goodna Pool	Brisbane Terrace	GOODNA	2	Pool	\$ 339,804	
Evan Marginson Park (Sports Field)	49 Woogaroo Street	GOODNA	2	Sports Field	\$ 580,800	
Richardson Park	135 Brisbane Terrace	GOODNA	2	Sports Clubs	\$ 750,800	
Pan Pacific Peace Gardens	1 McAuliffe Street	REDBANK	2	Reserve	\$ 864,723	
Evan Marginson Park (Rugby Union)	6 Layard Street	GOODNA	2	Sports Clubs	\$ 1,167,000	
Klppen Park	22-23 Enid Street	GOODNA	2	Sports Clubs	\$ 1,211,992	
Goodna Cultural & Arts Centre (Just Fitness)	6 Layard Street	GOODNA	2	Community Hall	\$ 1,561,824	
Goodna Bowling Club	6 Layard Street	GOODNA	2	Sports Clubs	\$ 1,627,296	
Redbank Collingwood Park Sports Complex	Chalk Street	REDBANK	2	Sports Clubs	\$ 1,825,520	
Bundamba Swimming Centre	256 Brisbane Road	BUNDAMBA	4	Pool	\$ 1,037,664	
Ipswich Knights	256 Brisbane Road	BUNDAMBA	4	Sports Clubs	\$ 3,101,472	17
Riverview Depot	4 Kenneth Street	RIVERVIEW	4	Depot	\$ 5,278,944	
Cribb Park	34 & 39 Pelican Street	NORTH IPSWICH	5	Park	\$ 97,538	
Blue Gum Reserve	52 Queensborough Parade	KARALEE	5	Park	\$ 132,000	
Tivoli Sporting Complex (Musketeers Sports Club)	69 Church Street	TIVOLI	5	Sports Clubs	\$ 549,414	
Colleges Crossing Recreation Reserve	408-492 Mount Crosby Road	CHUWAR	5	Reserve	\$ 6,860,486	15
Kholo Gardens Depot (Office)	243 Riverside Drive	PINE MOUNTAIN	6	Depot	\$ 308,000	
Woodend Park	133-143 Woodend Road	WOODEND	7	Sports Clubs	\$ 580,800	
Riverheart Flood Reconstruction Works	Bremer Street	IPSWICH	7		\$ 1,190,883	
Ipswich Pound	6 Hooper Street	WEST IPSWICH	7	Building	\$ 1,262,800	
Marsden Parade	53 Brisbane Street	IPSWICH	7	Building	\$ 4,103,828	16

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George Alder Tennis Centre	9 Ernest Street	LEICHHARDT	8	Sports Clubs	\$ 470,000	
George & Eileen Hastings Sports Centre	125A Clubb Street	LEICHHARDT	8	Sports Clubs	\$ 611,080	
Jim Finlmore Park	1C Old Toowoomba Rd	LEICHHARDT	8	Sports Clubs	\$ 1,026,034	
Industrial Sheds Turley Street	1 Turley Street	RACEVIEW	8	Community/ Business	\$ 3,922,872	
					\$ 40,595,274	

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FLOOD EFFECTED PARKS 2011 - Restoration Works

Park	Suburb	Division	Cost Estimate (Includes Contingency 20% and Overhead 12%)	Photo Reference
Gladstone Road Reserve (A)	SADDLERS CROSSING	1	\$ 13,707	
Thomas Walsby Park	KARALEE	1	\$ 17,295	
Batty Park	BRASSALL	1	\$ 21,986	
Catalina Park	BRASSALL	1	\$ 24,402	
Roseberry Parade Reserve	WOODEND	1	\$ 41,316	
Vi Jordan Park	BRASSALL	1	\$ 42,090	
Smith Park	WOODEND	1	\$ 43,484	
Suttons Park	BRASSALL	1	\$ 47,008	
Bob Gamble Park (Greiner Street)	IPSWICH	1	\$ 60,206	
Wallaby Ware Park	BRASSALL	1	\$ 72,017	
Springdale Park	BARELLAN POINT	1	\$ 74,660	↑
Woodend Nature Centre	WOODEND	1	\$ 75,372	
Shapcott Park	COALFALLS	1	\$ 163,720	
Blue Gum Reserve	KARALEE	1	\$ 1,075,022	
Joseph Brady Park	BARELLAN POINT	1	\$ 2,347,237	13
Riverside Park	KARALEE	1	\$ 2,370,689	
Warren Park	GOODNA	2	\$ 2,012	
City Centre Park/Mand	BASIN POCKET	2	\$ 2,244	
Nathan Street Park	EAST IPSWICH	2	\$ 2,244	
Conway Street Park	RIVERVIEW	2	\$ 2,804	
Goodna Off Leash Dog Area	Part of 62 Brisbane Terrace	2	\$ 3,844	
Goodna Off Leash Dog Park (Leased 3021 m2)	GOODNA	2	\$ 4,494	
Thomas Purnell Park	BUNDAMBA	2	\$ 6,141	
Alf Harris Park	GOODNA	2	\$ 7,524	
Noble Park	GAILES	2	\$ 11,273	
Rotary Park (Bundamba)	BUNDAMBA	2	\$ 13,552	
Bundamba Memorial Park	BUNDAMBA	2	\$ 13,860	
Small Family Park	RIVERVIEW	2	\$ 14,969	
Banjo Paterson Park	COLLINGWOOD PARK	2	\$ 15,228	
Fred Ferguson Park	GAILES	2	\$ 16,316	

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Park	Suburb	Division	Cost Estimate (Includes Contingency 20% and Overhead 12%)	Photo Reference
Jack Barkley Park	NORTH BOOVAL	2	\$ 17,139	
Jack Perrett Park	BASIN POCKET	2	\$ 17,261	
Fall Park	NORTH BOOVAL	2	\$ 21,870	
McLeod Street Park	BASIN POCKET	2	\$ 25,034	
Martin Coogan Park	GAILES	2	\$ 29,093	
Rossner - Glnney Park	NORTH BOOVAL	2	\$ 34,030	
M J Kinnane Park	NORTH BOOVAL	2	\$ 34,133	
Permaculture Park (Tarcoola Street)	EAST IPSWICH	2	\$ 37,911	
Knoblancho Park	GAILES	2	\$ 41,140	
Jamboree Park	COLLINGWOOD PARK	2	\$ 45,392	
The Family Park	BUNDAMBA	2	\$ 47,726	
Freeman Street Park	GOODNA	2	\$ 87,981	
Leslie Park (A)	GOODNA	2	\$ 95,846	
Goupong Park	COLLINGWOOD PARK	2	\$ 102,681	9
Evan Merginson Park	GOODNA	2	\$ 755,513	
Richardson Park	GOODNA	2	\$ 3,170,007	14
Christine & Ian Addison Park	RIVERVIEW	2		
Ipswich General Cemetery	IPSWICH	3	\$ 1,584	
David W Coultas Park	RACEVIEW	3	\$ 6,589	
Armstrong	ROSEWOOD	3	\$ 6,521	
ARIZAC	ROSEWOOD	3	\$ 12,488	
Wilcox Park	ONE MILE	3	\$ 12,712	1
Worley Park	RACEVIEW	3	\$ 13,161	
Palma Rosa Drive Park	WULKURAKA	3	\$ 19,212	
Baxter Oval (Oval No. 5)	AMBERLEY	3	\$ 33,924	
Leichhardt Park	ONE MILE	3	\$ 34,207	
Marburg Oval	MARBURG	3	\$ 37,861	
Ivor Marsden Memorial Sports Centre	AMBERLEY	3	\$ 38,457	
Deebing Creek Nature Reserve	FUNDERS VIEW	3	\$ 51,628	
Katherine Court Reserve	KARALEE	5	\$ 651,746	

\$ 12,090,313

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FLOOD EFFECTED MECHANICAL COMPONENTS 2011

Building/ Park	Address	Suburb	Division
Riverview Depot	4 Kenneth Street	Riverview	4
Ipswich Pound	6 Hooper Street	West Ipswich	7
TOTAL ESTIMATED COST	\$ 2,500,000		

Estimator Signature

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Date

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FLOOD EFFECTED ELECTRICAL COMPONENTS 2011

Building/ Park	Suburb	District
ALAN CUMMING PARK (LEN JOHNSON PARK)	NORTH IPSWICH	1
BATTYE PARK	BRASSALL	1
BLUE GUM RESERVE	KARALEE	1
BMX TRACK (WILLEY ST PARK)	IPSWICH	1
CATALINA PARK	BRASSALL	1
CRIBB PARK	NORTH IPSWICH	1
GLADSTONE ROAD RESERVE (B)	COALFALLS	1
J P HOGAN FIELD	TIVOOLI	1
MADSEN OVAL	NORTH IPSWICH	1
MORGAN PARK	NORTH IPSWICH	1
NOEL BALE PARK	SADLIERS CROSSING	1
PINE STREET RESERVE	NORTH IPSWICH	1
RIVERHEART PARKLANDS	IPSWICH	1
SHAPCOTT PARK	COALFALLS	1
STEPHENSON STREET PARK	SADLIERS CROSSING	1
SUTTONS PARK	BRASSALL	1

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SWAN STREET RESERVE (BRASSALL SCOUT)	BRASSALL	1
T C McDONALD FIELD	TIVOILI	1
TIVOLI SPORTING COMPLEX (MUSKETEERS SPORTS CLUB)	TIVOILI	1
VI JORDAN PARK	BRASSALL	1
WALLABY WARE PARK	BRASSALL	1
ALF HARRIS PARK	GOODNA	2
BUNDAMBA MEMORIAL PARK	BUNDAMBA	2
BUNDAMBA SWIM CENTRE	BUNDAMBA	2
CONWAY STREET PARK	RIVERVIEW	2
EVAN MARGINSON OVAL	GOODNA	2
GOODNA AQUATIC CENTRE	GOODNA	2
KIPPEN PARK (GOODNA SOCCER)	GOODNA	2
NATHAN STREET PARK	EAST IPSWICH	2
PAN PACIFIC PEACE GARDENS	REDBANK	2
REDBANK- COLLINGWOOD PARK SPORTS COMPLEX	REDBANK	2
SMALL FAMILY PARK	RIVERVIEW	2
TOFA MAMAO A SAMOA PARK (Delegated naming 5/11/04)	REDBANK	2
WARREN PARK	GOODNA	2
ANZAC	ROSEWOOD	3

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BAXTER OVAL (Oval No 5)	AMBERLEY	3
CALEDONIAN	THAGOONA	3
DAVID W COULTAS DOG PARK	RACEVIEW	3
DAVID W COULTAS PARK	RACEVIEW	3
GEORGE & EILEEN HASTINGS SPORTS CENTRE	ONE MILE	3
GEORGE ALDER TENNIS CENTRE	LEICHHARDT	3
IVOR MARSDEN MEMORIAL SPORTS CENTRE	AMBERLEY	3
JIM FINIMORE - FIELD LIGHTING	LEICHHARDT	3
JIM FINIMORE OVAL - TOUCH FOOTBALL CLUBHOUSE	LEICHHARDT	3
LEICHHARDT PARK	LEICHHARDT	3
MARBURG COMMUNITY	MARBURG	3
MARBURG OVAL	MARBURG	3
OLD TOOWOOMBA ROAD SPORT RESERVE	ONE MILE	3
PALMA ROSA DRIVE PARK	WULKURAKA	3
ROSEWOOD COMMUNITY PARK	ROSEWOOD	3
ROSEWOOD POOL	ROSEWOOD	3
ROSEWOOD SHOWGROUND	ROSEWOOD	3
TOM LENIHAN	ROSEWOOD	3
WORLEY PARK	RACEVIEW	3
TOTAL ESTIMATED COST	\$ 2,500,000	

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FLOOD EFFECTED STREETScape 2011

Park	Suburb	Division	Total	Photo Reference
Brisbane Terrace - bowls Club	GOODNA	2	\$ 2,640	
Queen Street - roundabout	GOODNA	2	\$ 6,600	
Woogaroo St	GOODNA	2	\$ 6,600	
Layard St - roundabout	GOODNA	2	\$ 7,920	
Cnr Parker & Alice St	GOODNA	2	\$ 7,920	
Church St	GOODNA	2	\$ 13,200	
Brisbane Terrace - Aquatic Centre	GOODNA	2	\$ 13,200	
Old Ipswich Road	Riverview	3	\$ 33,000	
Bundamba Pool Carpark	Bundamba	4	\$ 6,600	
Bergins hill Road - carpark	Bundamba	4	\$ 13,200	
Ellenborough Street	IPSWICH	7	\$ 5,280	
King Edward Parade	IPSWICH	7	\$ 72,600	19
Old Toowoomba Road - 3 Mile Creek	Leichhardt	8	\$ 10,560	
One Mile Bridge	Leichhardt	8	\$ 132,000	18
Queen Street - Entry Sign	Marburg	10	\$ 7,920	
Rosewood - Laidley Road & Rosewood - Warril View Road - entry signage	Rosewood	10	\$ 13,200	
Rosewood Laidley Road - entry signage & Grandchester Mt Mort Road - Tree Planting	Grandchester	10	\$ 39,600	20
Ipswich Motorway			\$ 20,000	
			\$ 412,040	

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Photos

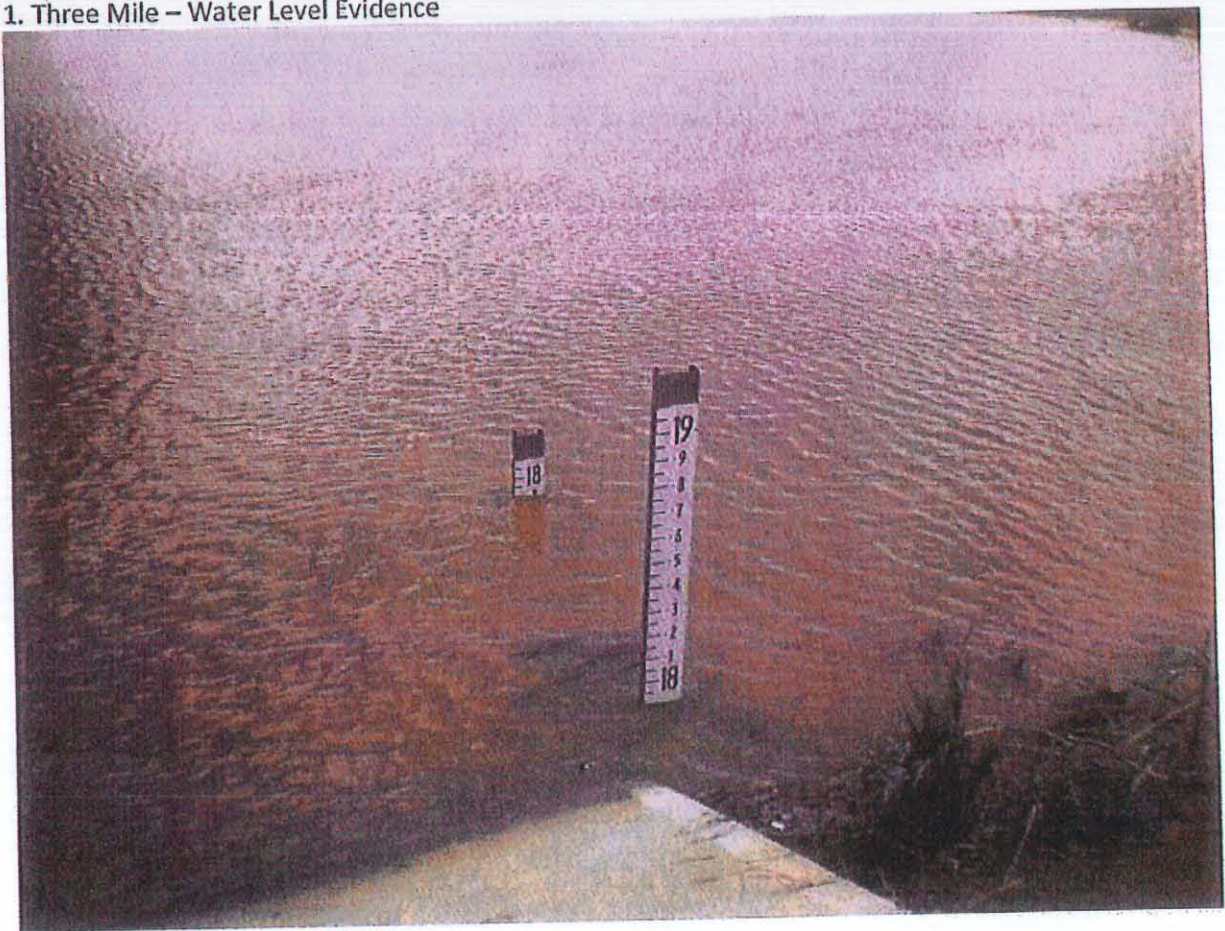
1. Three Mile Bridge – Footpath Damage



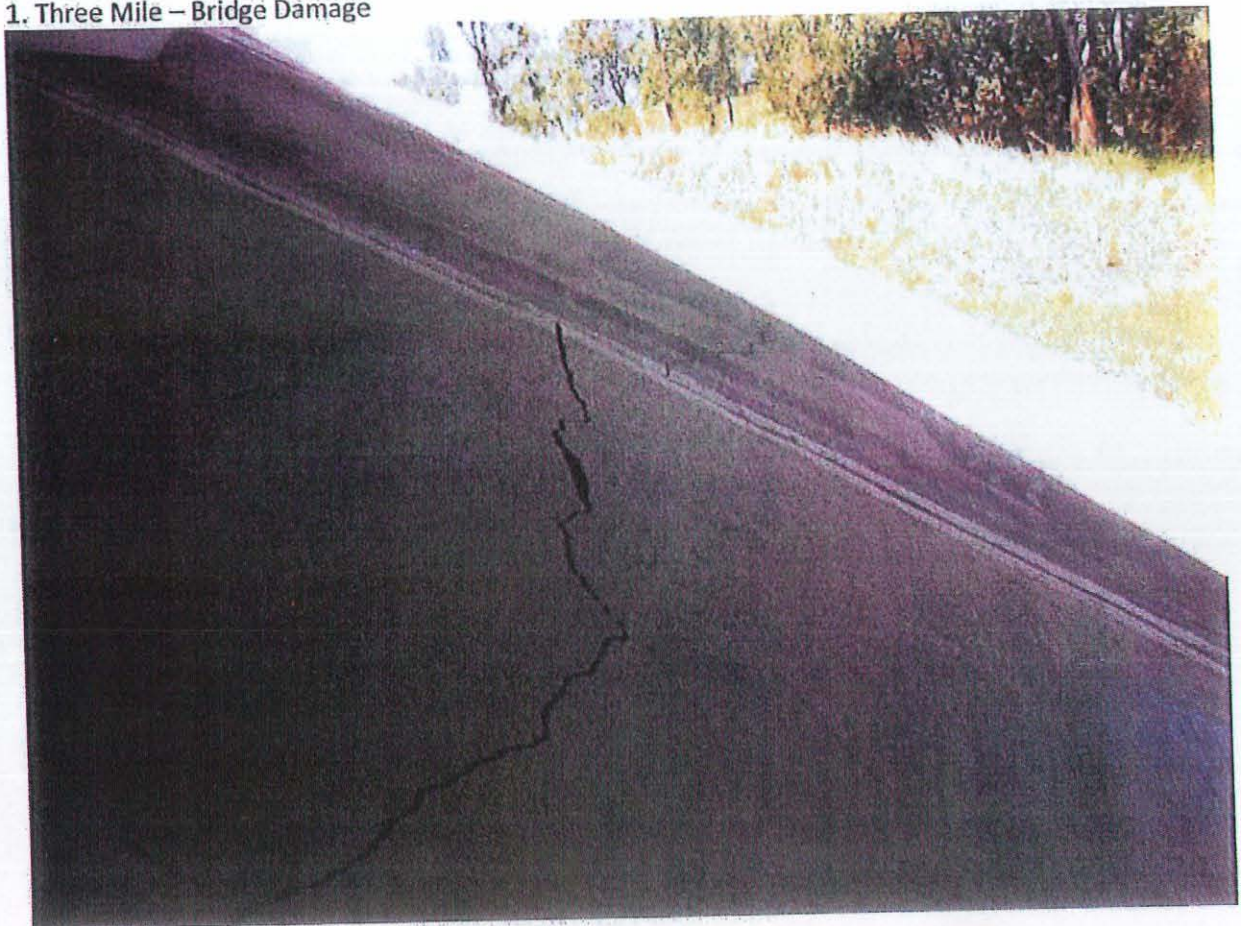
1. Three Mile Bridge – Footpath Damage



1. Three Mile – Water Level Evidence



1. Three Mile – Bridge Damage



1. Three Mile Bridge – Footpath Damage



1. Three Mile Bridge - Erosion



2. One Mile Bridge – Pavement Damage



2. One Mile – Initial Flooding



2. One Mile – Water Receded



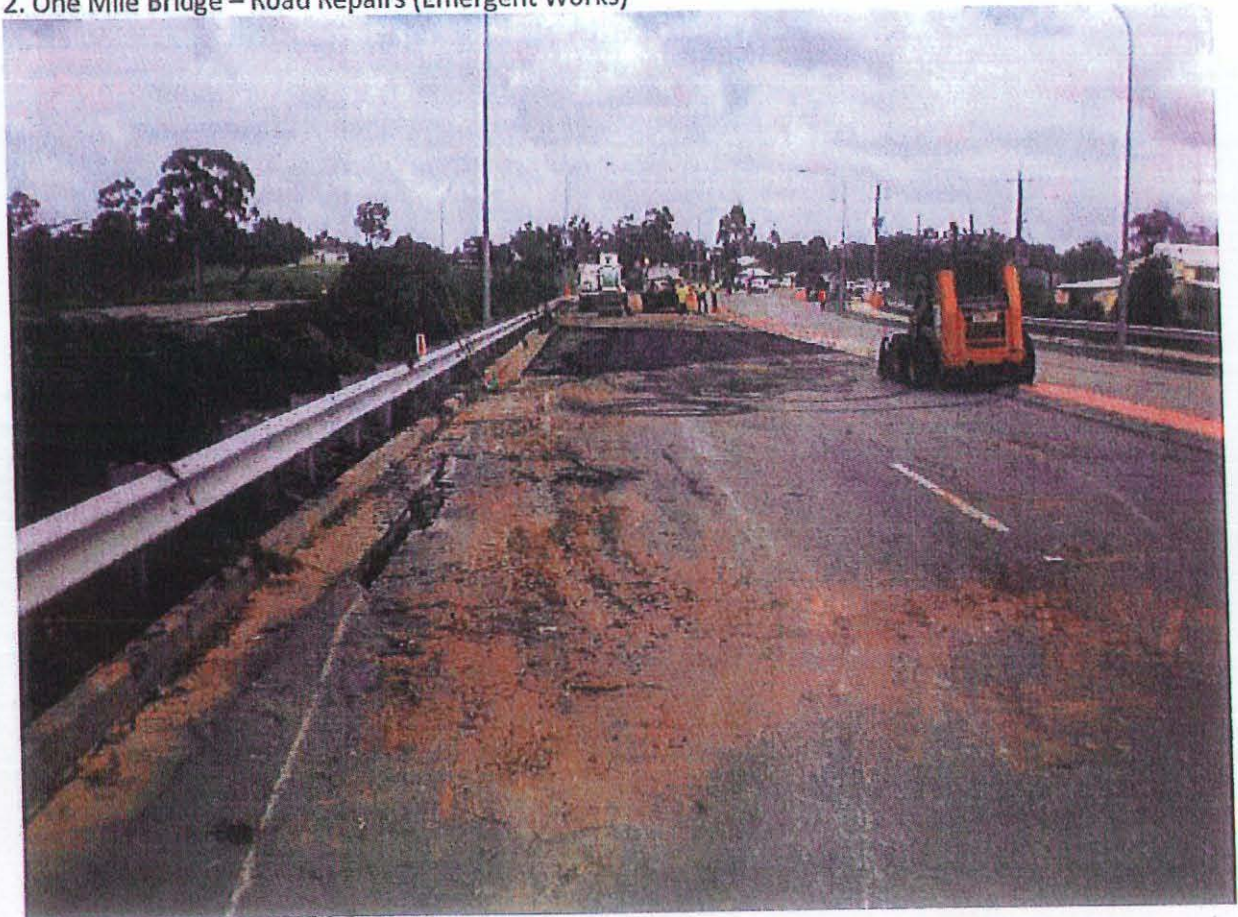
2. One Mile – Footpath and Landscaping Damage



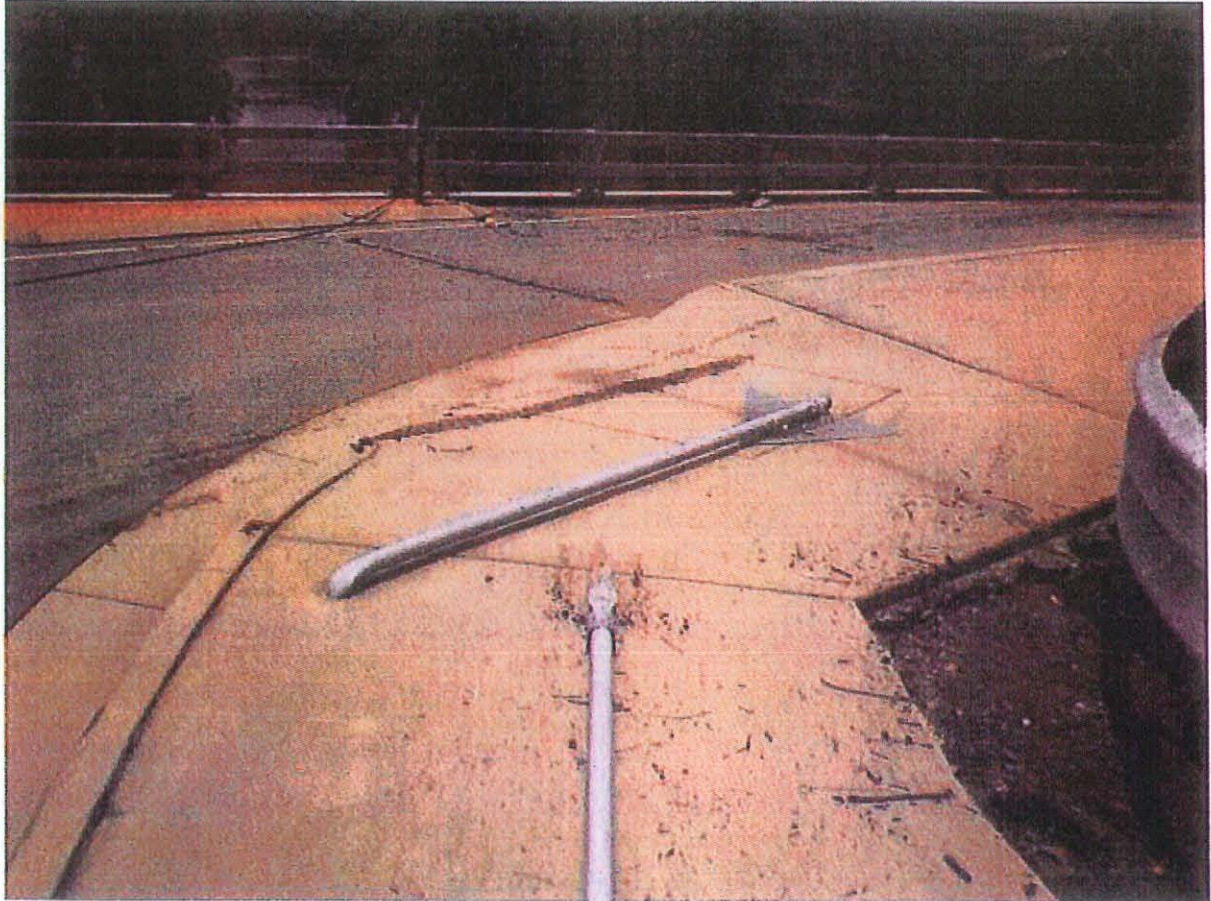
2. One Mile – Road Barrier Damage



2. One Mile Bridge – Road Repairs (Emergent Works)



2. Old One Mile Bridge/Lobb Street – Pavement Damage and Sign Damage



2. One Mile/Lobb Street – Sign Damage



2. One Mile – Bridge Damage



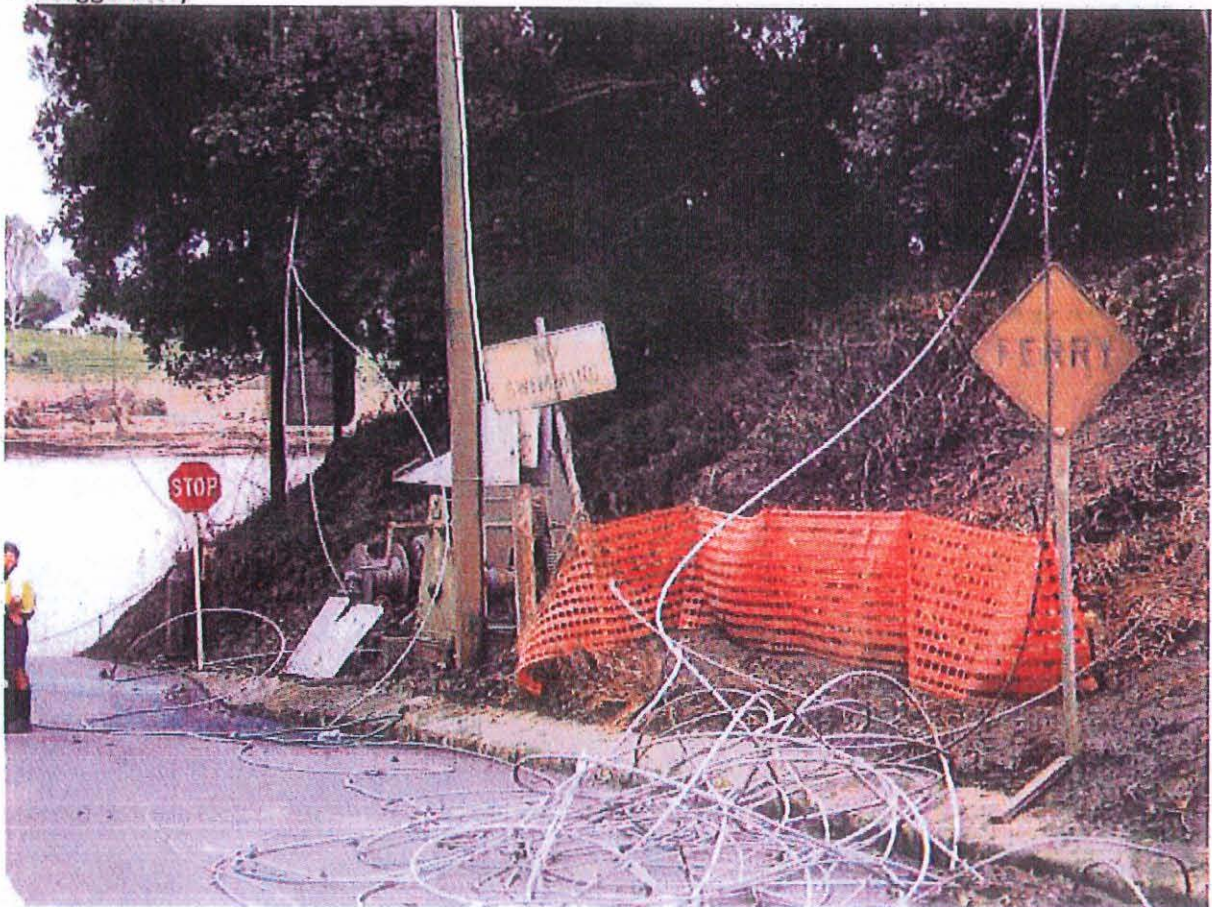
3. Tallegalla Road, Tallegalla – Road Barrier Damage



3. Tallegalla Road, Tallegalla – Cross Flow Channel Damage



4. Moggill Ferry



5. Sydney Street Bridge (Iron Pot Creek) – Pylon Damage/Erosion



5. Sydney Street Bridge (Iron Pot Creek) – Erosion



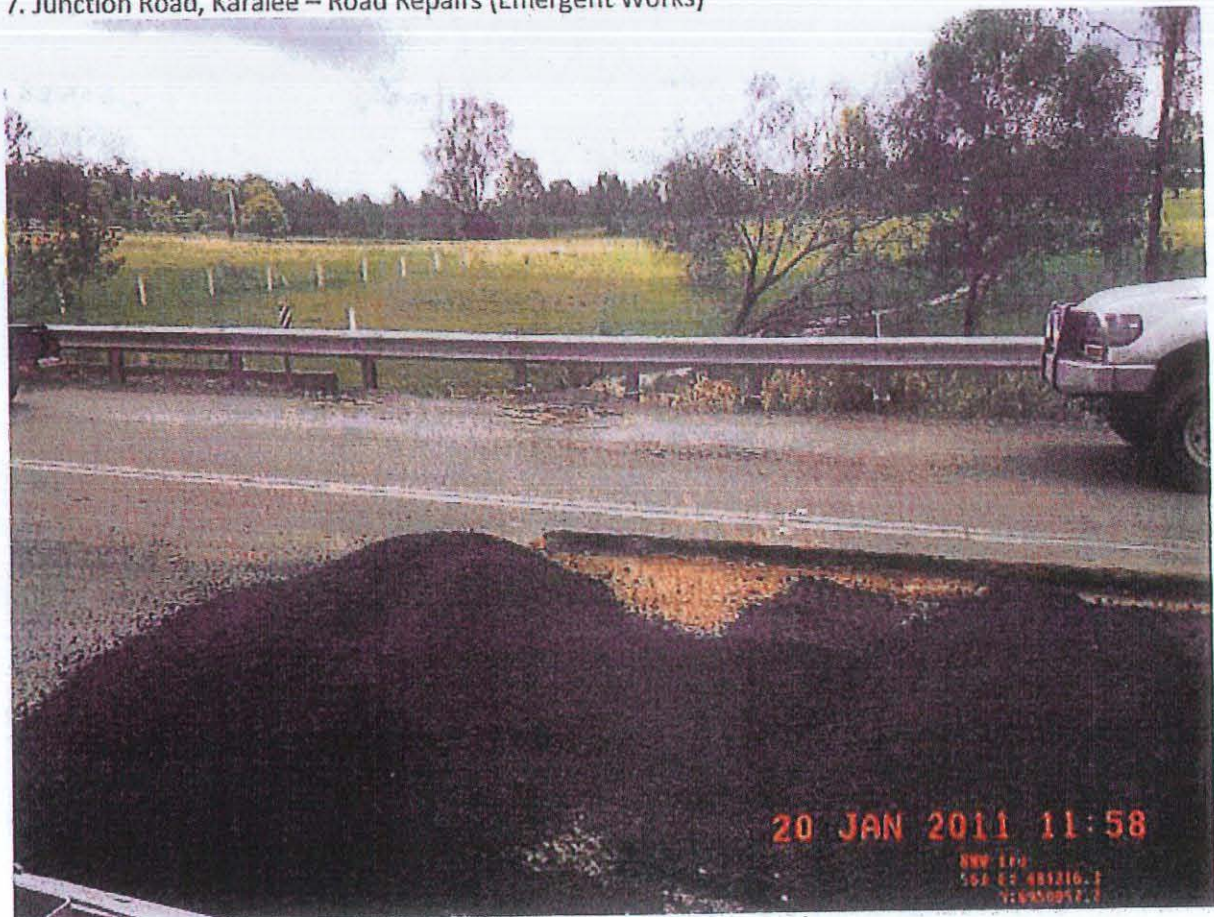
6. South Queensborough Parade – Headwall Damage



7. Junction Road, Karalee – Road Repairs (Emergent Works)



7. Junction Road, Karalee – Road Repairs (Emergent Works)



8. Hastie Street, Tivoli – Pot Hole



9. Hart Street, Bundamba – Gravel Road Washed Out



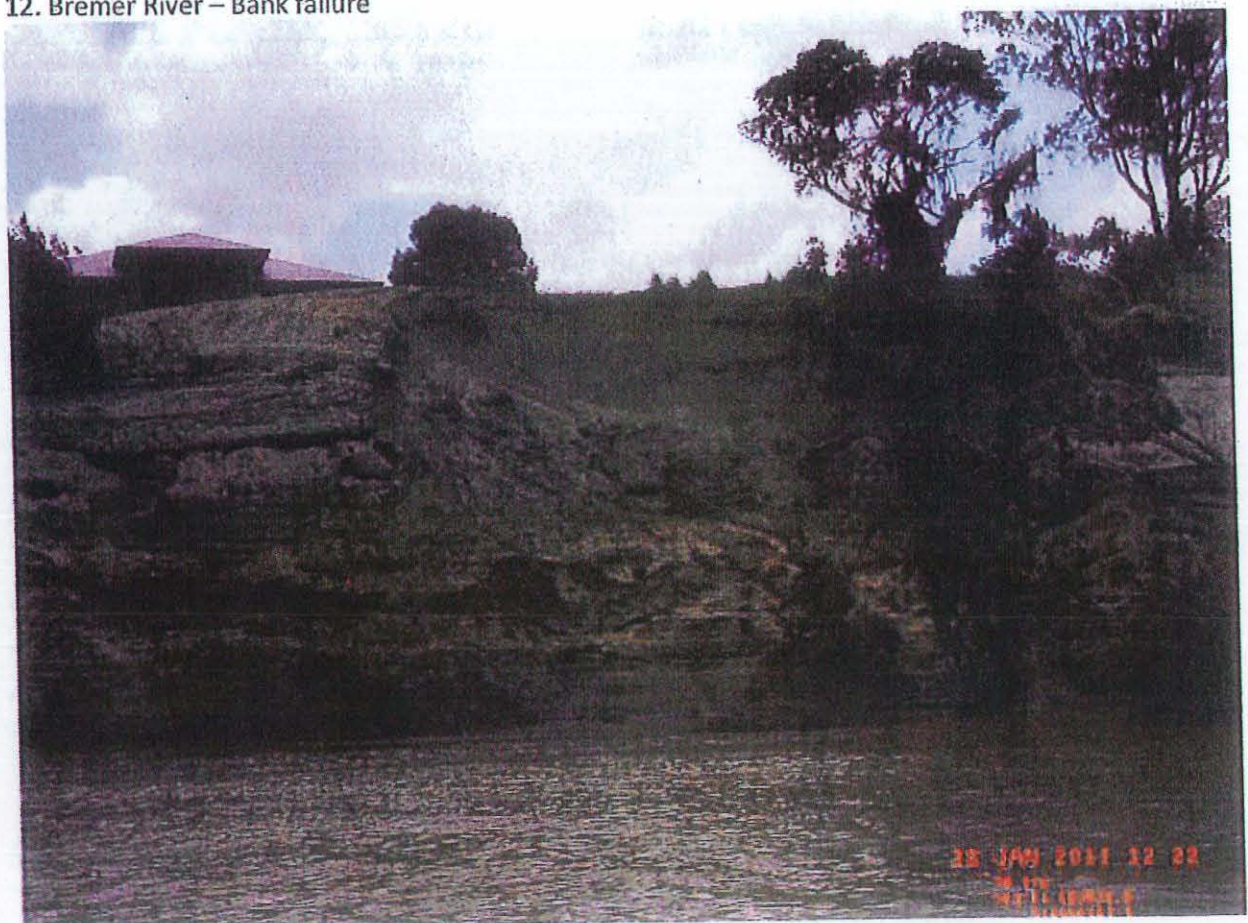
10. Helen Street, North Booval – Kerb Damage



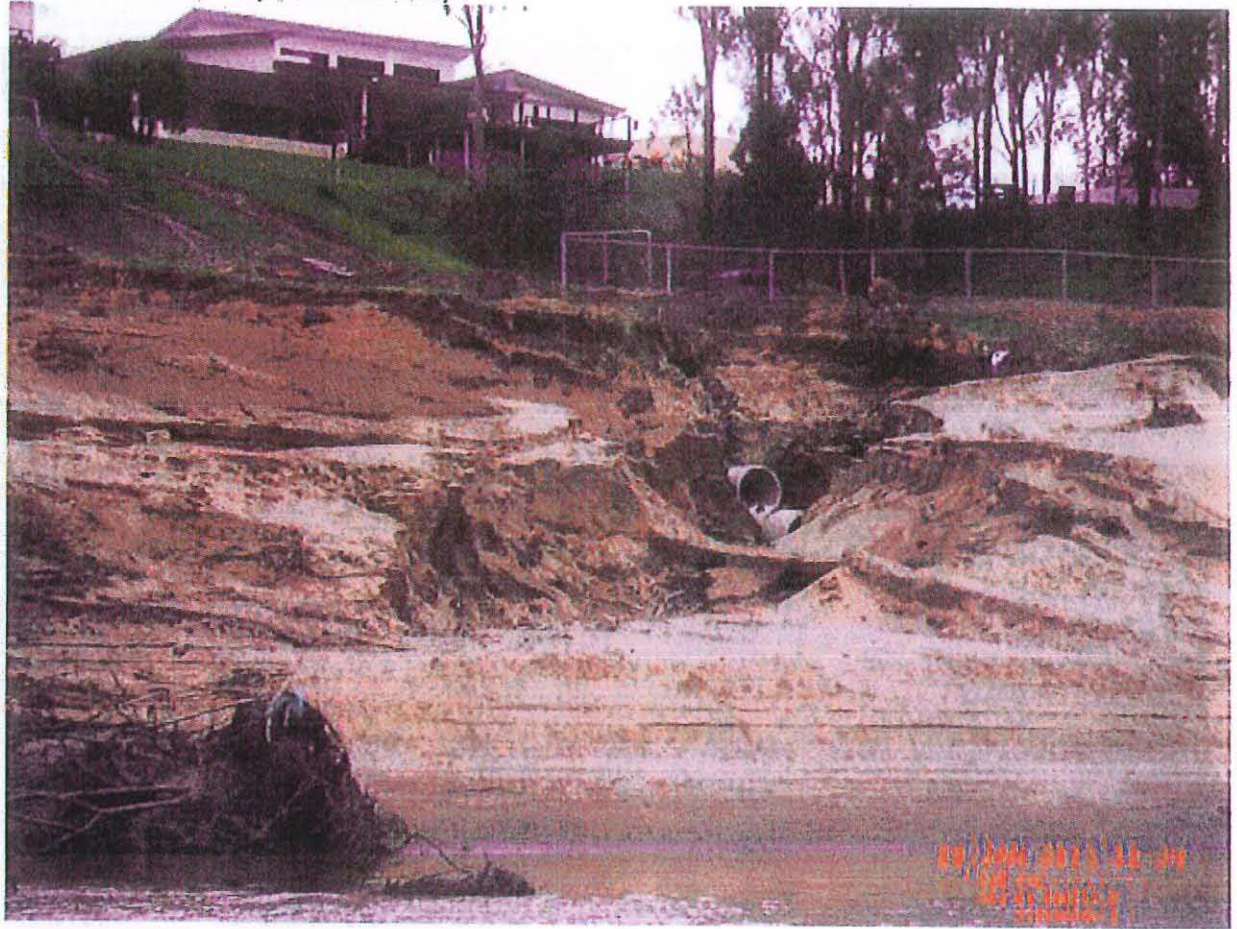
11. Riverside Avenue – Rubbish Collection



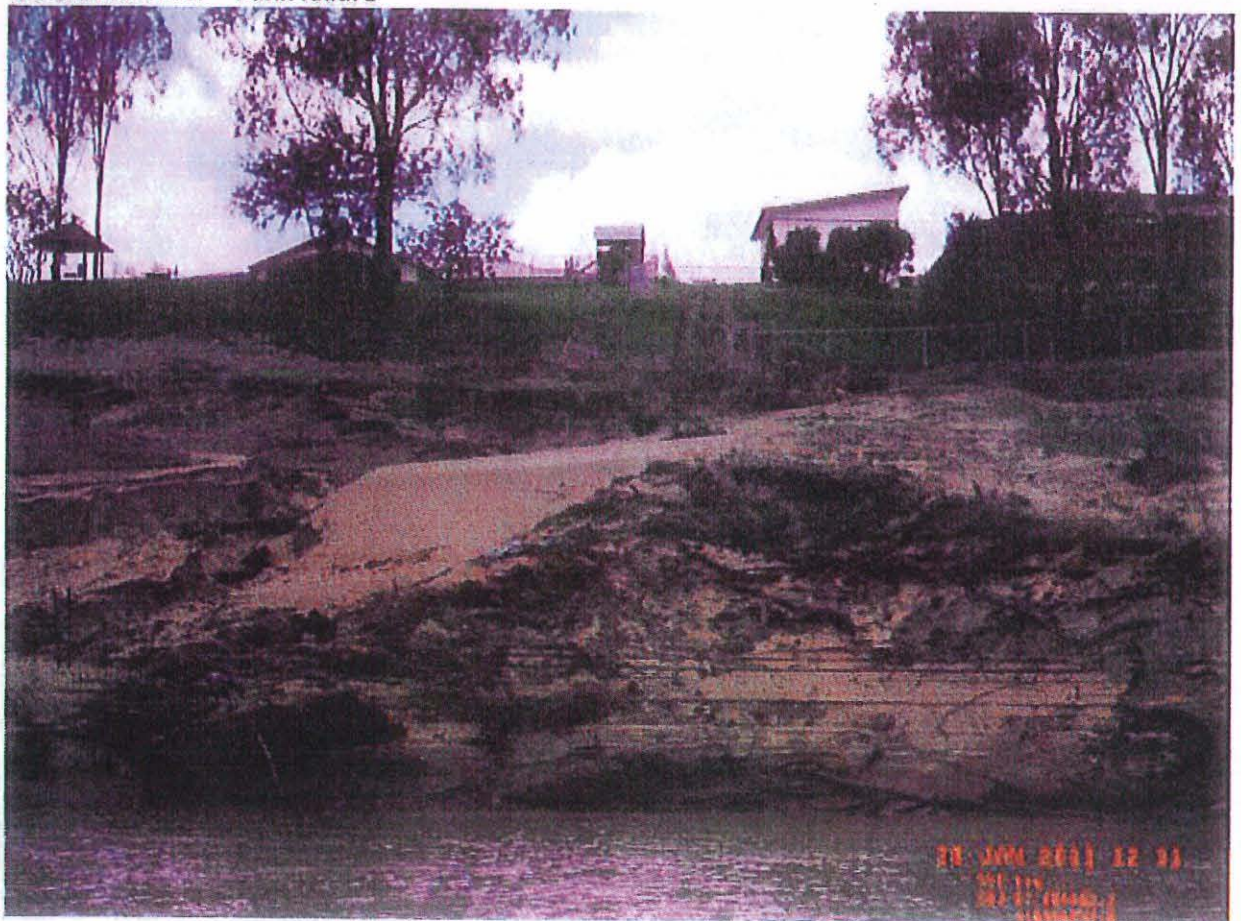
12. Bremer River – Bank failure



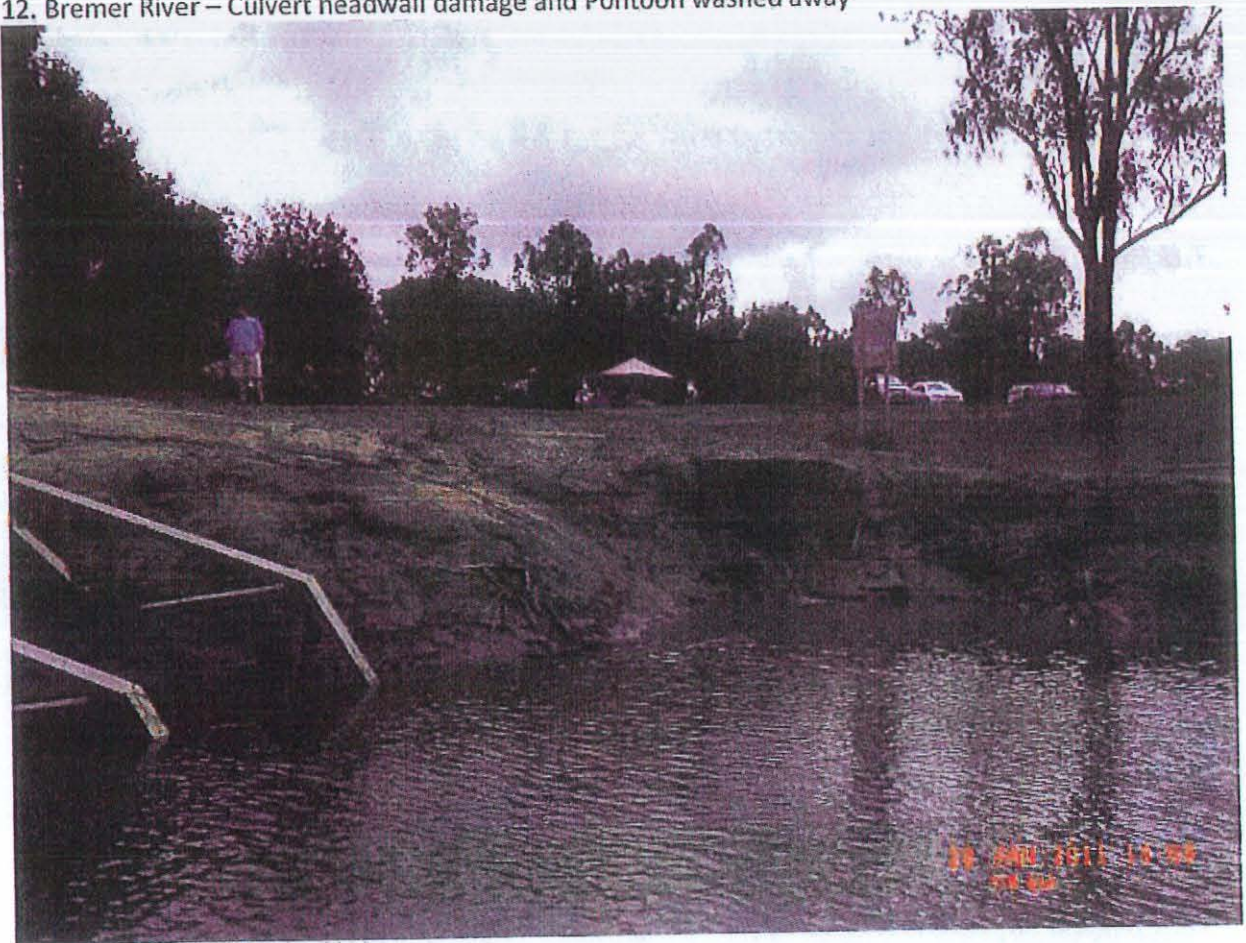
12. Bremer River – Pipe washed away



12. Bremer River – Bank failure



12. Bremer River – Culvert headwall damage and Pontoon washed away



13. Joseph Brady Park – Damage to Park



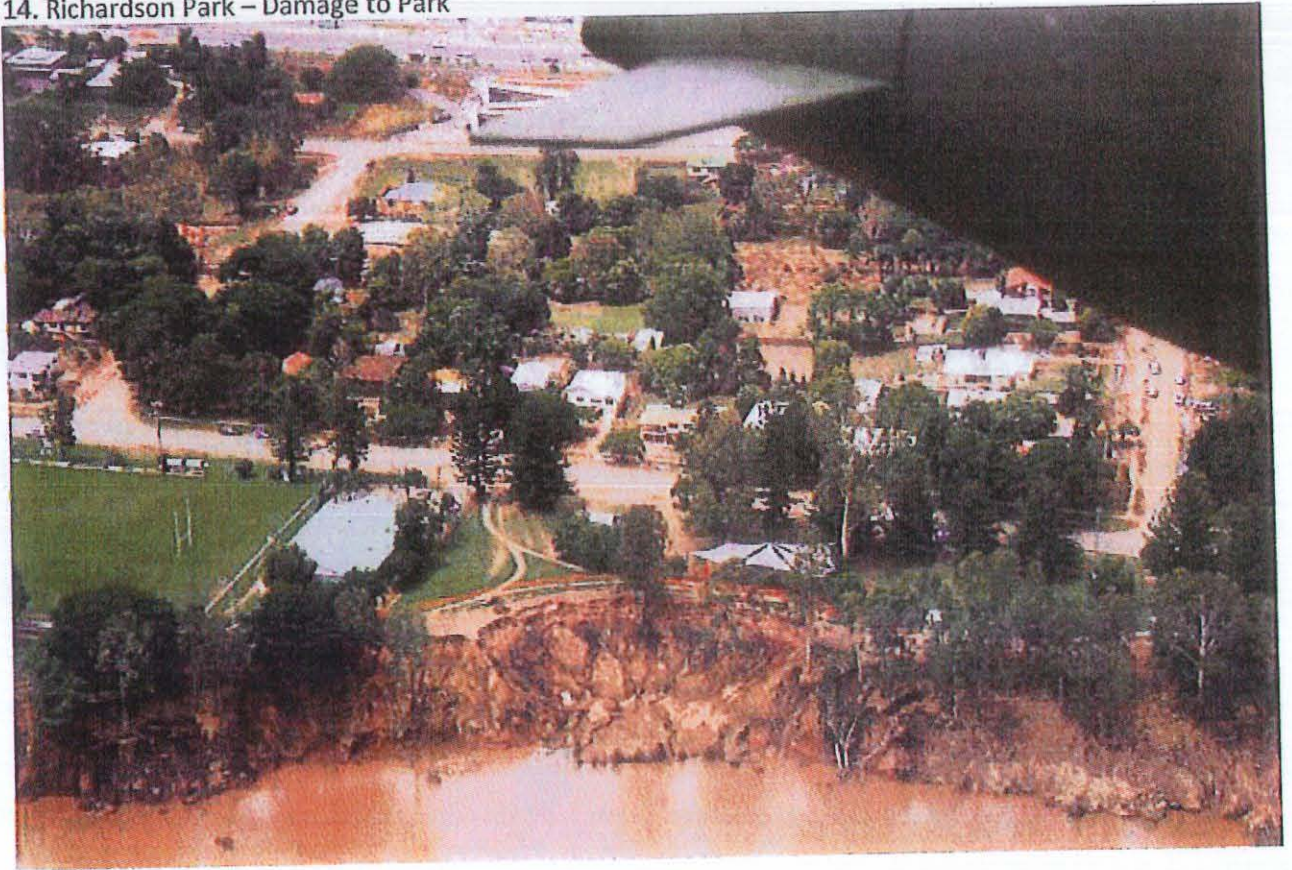
13. Joseph Brady Park – Damage to Park



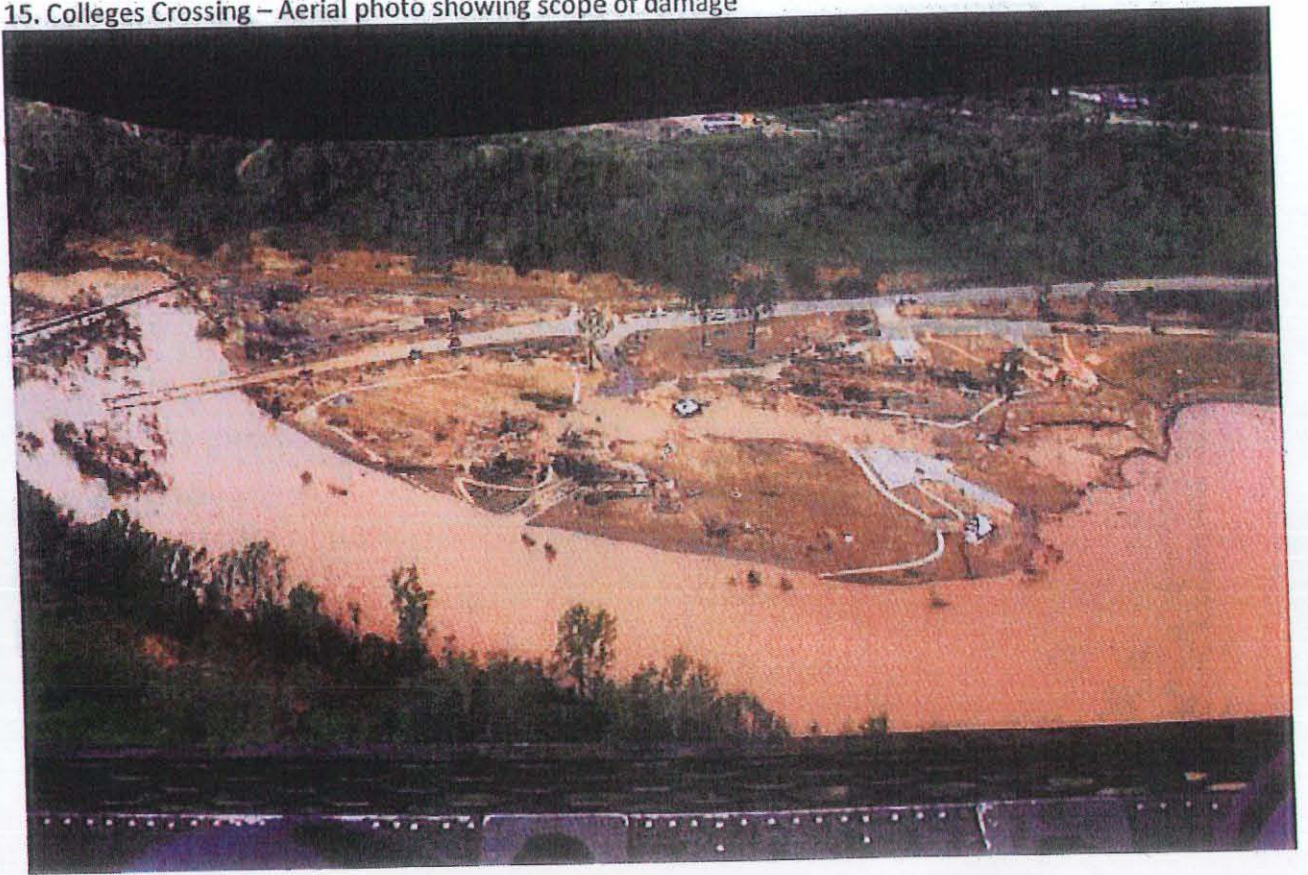
14. Richardson Park – Damage to Park



14. Richardson Park – Damage to Park



15. Colleges Crossing – Aerial photo showing scope of damage



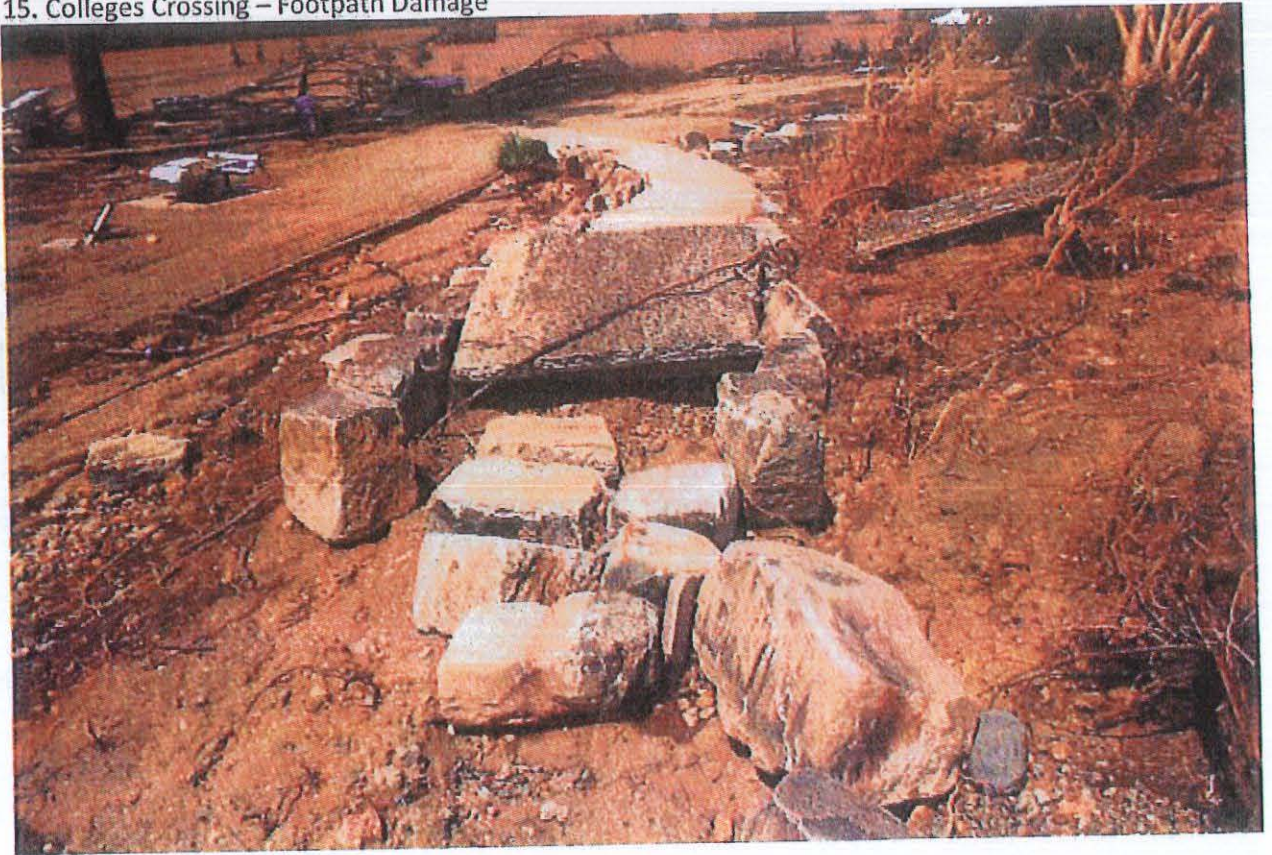
15. Colleges Crossing – Before Major flooding



15. Colleges Crossing – After Major flooding



15. Colleges Crossing – Footpath Damage



15. Colleges Crossing – Park Furniture Damage



15. Colleges Crossing – Structural Damage



15. Colleges Crossing – Parkland Damage



16. Marsden Parade – Building and Contents Damage – Waterline indication



16. Marsden Parade – Building and Contents Damage



17. Ipswich Knights Club House – Building Damage



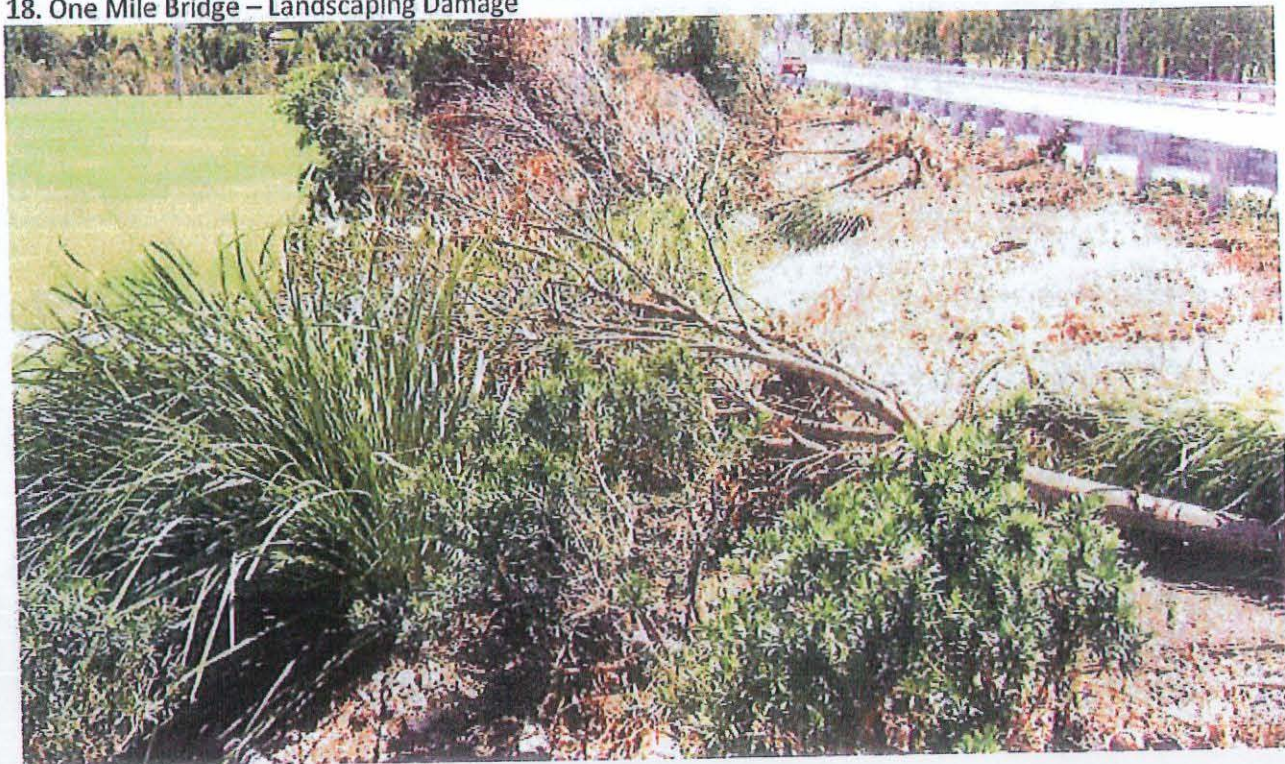
17. Ipswich Knights Club House – Building Damage



18. One Mile Bridge – Landscaping Damage



18. One Mile Bridge – Landscaping Damage



18. One Mile Bridge – Landscaping Damage



19. King Edward Parade – Landscaping Damage



20. Grandchester – Entry Signage Landscaping Damage



Maps

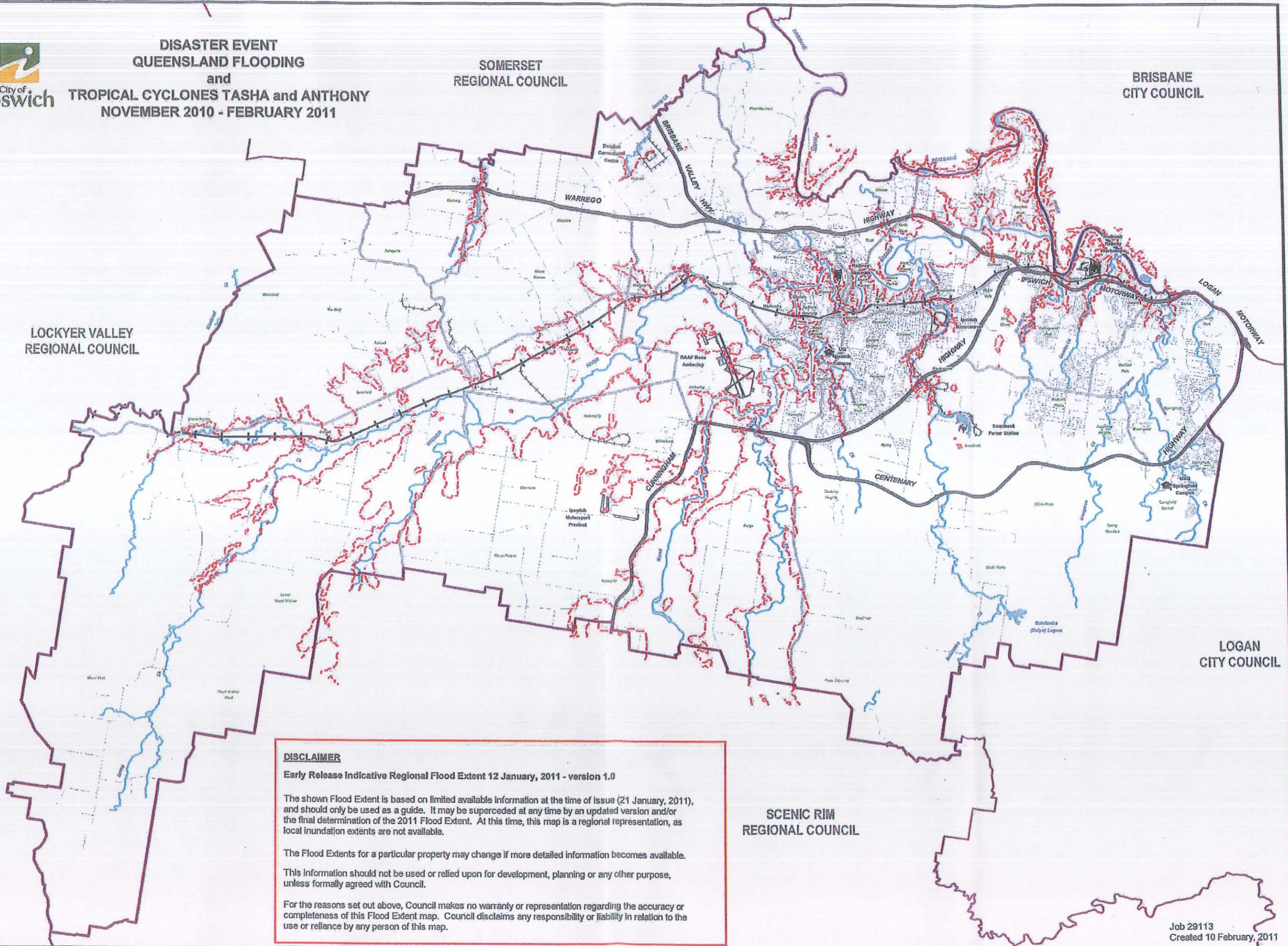


**DISASTER EVENT
QUEENSLAND FLOODING
and
TROPICAL CYCLONES TASHA and ANTHONY
NOVEMBER 2010 - FEBRUARY 2011**

**SOMERSET
REGIONAL COUNCIL**

**BRISBANE
CITY COUNCIL**

**LOCKYER VALLEY
REGIONAL COUNCIL**



DISCLAIMER

Early Release Indicative Regional Flood Extent 12 January, 2011 - version 1.0

The shown Flood Extent is based on limited available information at the time of issue (21 January, 2011), and should only be used as a guide. It may be superseded at any time by an updated version and/or the final determination of the 2011 Flood Extent. At this time, this map is a regional representation, as local inundation extents are not available.

The Flood Extents for a particular property may change if more detailed information becomes available.

This information should not be used or relied upon for development, planning or any other purpose, unless formally agreed with Council.

For the reasons set out above, Council makes no warranty or representation regarding the accuracy or completeness of this Flood Extent map. Council disclaims any responsibility or liability in relation to the use or reliance by any person of this map.

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REGIONAL COUNCIL**

**LOGAN
CITY COUNCIL**



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ASSET TYPE	EST. COST (\$M)	LEGEND
Bridges	3.0	
Roads and Streets (including pavement repairs, drainage)	37.0	
Gravel Roads (pavement only - drainage to follow)	2.0	
Program 23 Property (not yet assessed)	1.0	
2008 Storm Damage (rescoping of 16 sites underway)	7.0	
Additional storm damage sites	4.0	
Preliminary Total Cost	54.0	



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LEGEND
Asset Type (Est Cost \$M)
● Building & Major Open Space (\$ 40.6M)
■ Parks (\$ 11.5M)
▲ Streetscape (\$ 0.36M)

Schedule 9 - Maps of Ipswich City Council's Evacuation Centres

Ipswich Evacuation Centres

Legend

★

Official Evacuation Centres

▲

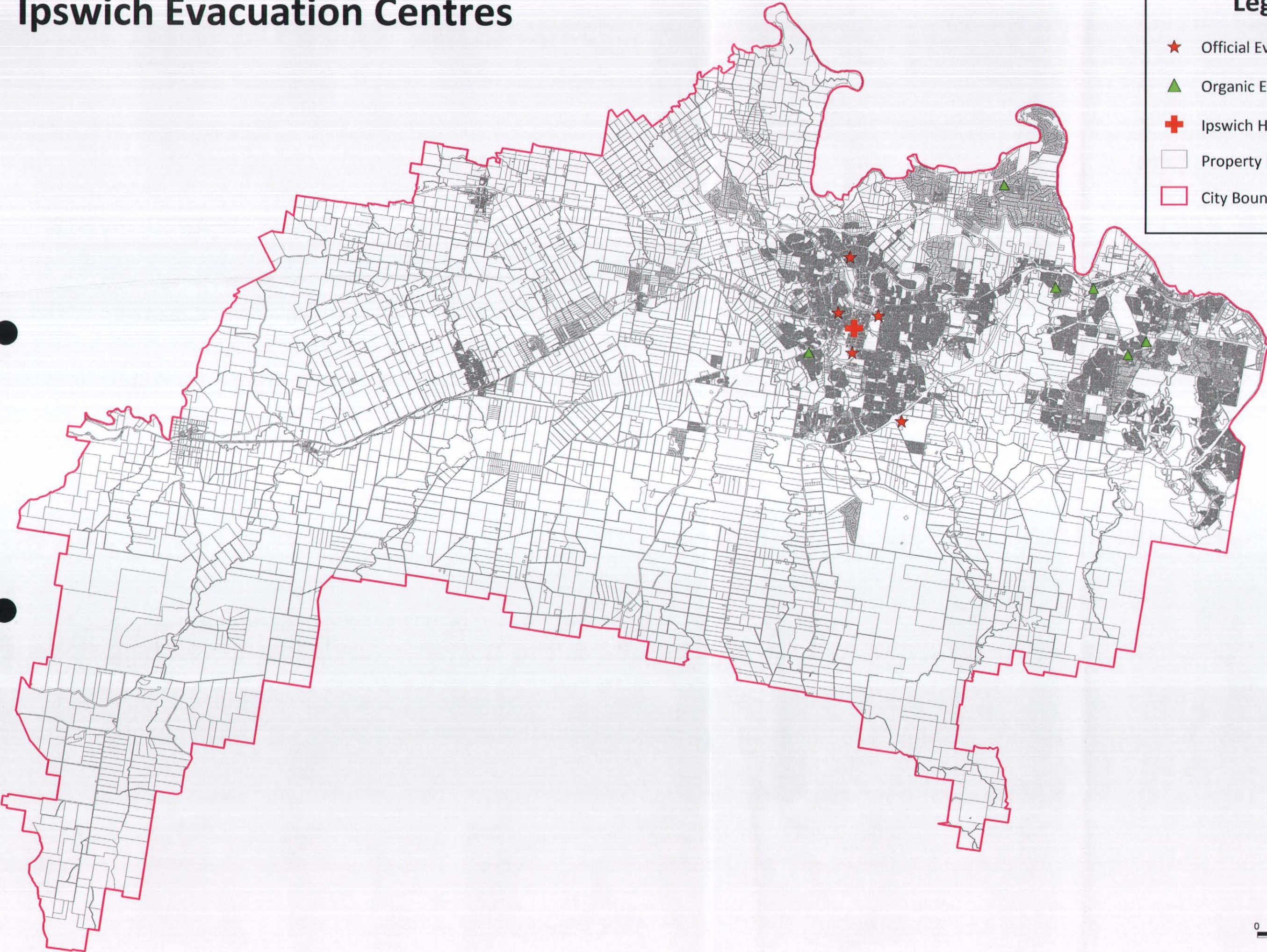
Organic Evacuation Centres

+

Ipswich Hospital

Property Boundaries

City Boundary



0 2.5 5
kilometres

Ipswich Evacuation Centres

Legend

- ★ Official Evacuation Centres
- ▲ Organic Evacuation Centres
- ✚ Ipswich Hospital
- Property Boundaries
- City Boundary

0 1 2
kilometres

