

**In the matter of the
Commissions Of Inquiry Act 1950**

Commission of Inquiry Order (No. 1) 2011

QUEENSLAND FLOODS COMMISSION OF INQUIRY

Witness Statement of Carl Christian Wulff

Chief Executive Officer

Ipswich City Council

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WITNESS STATEMENT OF CARL CHRISTIAN WULFF

This written statement is provided in response to a Requirement, dated 10 August 2011, to provide a written statement, under oath or affirmation, to the Queensland Floods Commission of Inquiry pursuant to section 5(1)(d) of the *Commissions of Inquiry Act 1950* (Qld).

I, Carl Christian Wulff, Chief Executive Officer of the Ipswich City Council (variously described throughout this statement as "ICC" or "Council"), 45 Roderick Street, Ipswich in the State of Queensland, state on oath as follows:

Introduction and Qualifications

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.
2. The City has a population of approximately 175,000 and covers an area of 1,090 square kilometres. 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* (Qld) and comprises a Mayor and 10 Divisional Councillors. The Council manages a net asset base in excess of \$2 billion.
3. On 4 July 2006 I commenced in the role as Chief Executive Officer of the Council.
4. As Chief Executive Officer I have various responsibilities under the *Local Government Act 2009 (Qld)*¹, including oversight of the Council's operations, and the Chief Operating Officers of the Council's 6 functional Departments² report to me. I in turn report to and am accountable to the Council. Council has delegated powers to me (and I have in turn delegated powers to

¹ Section 13(3) of the *Local Government Act 2009 (Qld)*

² The current Council Departments are Infrastructure Services, Works, Parks & Recreation, Community & Cultural Services, Planning & Development, Finance & Corporate Services and Health, Security & Regulatory Services. The Executive Secretariat, including the Office of Economic Development, Office of the Mayor and Internal Audit Branch are accountable to and report through me.

other Council officers) to make decisions on various matters within the scope of those delegations.

5. I have management responsibility for approximately 1300 employees and an annual budget of around \$500 million.
6. I am also a Director of a number of Council related entities: Ipswich City Enterprises, Ipswich City Enterprises Investments and Ipswich City Properties.
7. I hold the following qualifications:
 - Diploma of Engineering (Civil) - NSW Institute of Technology;
 - Bachelor of Engineering (Civil) - NSW Institute of Technology; and
 - Master of Business Administration - University of Wollongong.
8. I am also a member of a number of professional bodies and associations including the following:
 - Fellow of the Institute of Municipal Management.
 - Fellow of the Institute of Engineers Australia;
 - Fellow of the Institute of Public Works Engineering Australia;
 - Graduate of the Australian Institute of Company Directors; and
 - Member of the CEO Institute of Australia.
9. I have approximately 35 years experience, primarily in the public sector, initially as an Engineer, and, over the past 20 years, in public administration. Prior to my appointment as CEO of Ipswich City Council in 2006 my previous employment included:
 - 1976-1980: Senior Engineer, Fairfield City Council, NSW;
 - 1980-1981: Contracts Manager, Ackroyd Pty Ltd, NSW;
 - 1981-1983: Director, BRW Constructions Pty Ltd, NSW;
 - 1983-1985: District Engineer, Eurobodalla Shire Council, NSW;
 - 1985-1989: Division Engineer Wollongong City Council, NSW;

- 1989-1992: Manager Environmental Engineering, Wollongong City Council, NSW;
- 1992-1993: Manager Works, Wollongong City Council, NSW;
- 1993-2000: Deputy Chief Executive Officer, Wollongong City Council, NSW;
- 2000-2004: Group Manager City Services, City of Greater Dandenong, Victoria;
and
- 2004-2006: Chief Executive Officer, City of Greater Dandenong, Victoria.

Commission of Inquiry Requirement Notices dated 10 August 2011

10. The Commission of Inquiry has issued 3 Requirements dated 10 August 2011 to myself and to the Ipswich City Council Head of Planning & Development, Mr John Adams, to provide written statements. There is:
- (a) some overlap in the content of the Requirements issued to myself and Mr Adams;
 - (b) some matters raised in the Requirement directed to me (for example information regarding changes to Council's land planning processes in response to the flood event) which are better addressed by Mr Adams; and
 - (c) some matters raised in the Requirements directed to Mr Adams (for example details of Council infrastructure affected by flooding) which are better addressed by me.
11. Where there is overlap in the Requirements, to avoid duplication, the most appropriate person as between myself and Mr Adams will respond to the Requirement. Also, in the interests of efficiency and avoiding duplication I will, where appropriate, cross-reference my statement to the statement of Mr Adams. I will also, where appropriate, cross-reference my statement to earlier submissions made by Ipswich City Council to the Commission of Inquiry without repeating the detailed information contained in those earlier submissions.
12. A key area which I will address in this statement is the impact of the 2011 flood event on ICC's infrastructure. However, before addressing that matter, I will comment briefly on two matters being:
- (a) my role during the January 2011 event; and
 - (b) the status of Council's response to the recommendations contained in the Commission of Inquiry's Report issued on 1 August 2011.

My role during the January 2011 flood event

13. I was present in Ipswich throughout the duration of the January 2011 flood event. The Ipswich LDMG under the leadership of Mr Tony Trace as Local Disaster Coordinator was responsible for disaster management. I attended all LDMG meetings so that I was abreast of developments.
14. The immediate post event recovery was overseen by a local recovery task force lead by the Chief Operating Officer of the Health, Parks and Recreation Department, Mr [REDACTED]. Throughout the recovery operation I was kept updated by Mr [REDACTED].
15. The situation was very dynamic and I allowed the LDMG, the recovery task force and other Council officers to get on and perform their roles. My time was primarily spent in the field assessing first hand the impact of the event across the City and overseeing the logistical response. I kept in close contact with my Council team and intervened where it was appropriate to do so. I was also the primary interface between the executive and management teams and the Mayor and Councillors.

Queensland Floods Commission of Inquiry - Interim Report - ICC Response to Recommendations

16. Following the release of the Commission of Inquiry's Interim Report and flood preparedness recommendations on 1 August 2011, I instructed the Ipswich City Solicitor to identify the recommendations relevant to Council and to the City, and to convert these recommendations into an operational document so that Council can monitor progress against implementation of the recommendations before the next wet season.
17. Council has identified that 72 of the 175 recommendations contained in the Interim Report are of immediate relevance to Council:
 - (a) Chapter 2 - Dams -2 recommendations;
 - (b) Chapter 3 - Disaster Framework, preparation and planning - 5 recommendations;
 - (c) Chapter 4 - Forecast, warnings and information - 18 recommendations;
 - (d) Chapter 5 - Emergency Response - 46 recommendations; and
 - (e) Chapter 6 - Emergency Services - 1 recommendation.
18. These relevant recommendations have been reproduced in an operational matrix or spreadsheet which identifies, for each recommendation, the relevant ICC action, the ICC Department Head with responsibility for the action, the current status, the date of the last status update and the

date of completion (or implementation) of the recommendation. Attached to my statement and marked CCW-1 is a copy of the operational spreadsheet.

19. These recommendations are being implemented in conjunction with the work being undertaken the by the Ipswich City Local Flood Recovery Group (LFRG) and related recovery sub-groups, and the implementation of the ICC Community Recovery Plan. The role of and work being undertaken by the Ipswich City LFRG is detailed in the supplementary Ipswich Local Recovery Group and Disaster Preparedness Actions Plans submission provided to the Commission of Inquiry on 6 June 2011.
20. The ICC Department Heads responsible for implementing the respective actions detailed in the operational spreadsheet are also responsible for updating the status of the actions relevant to their areas of interest on a regular (fortnightly) basis.
21. The updated spreadsheets will be tabled fortnightly at a meeting of the executive and monthly through the LFRG (which includes Councillors as part of its composition). This will ensure that the implementation of the Commission's recommendations is appropriately monitored, progressed and resourced.
22. I expect that the significant majority of these recommendations will have either been implemented or substantially progressed by the time of commencement of the 2011/12 wet season. Some of the recommendations, either because of cost considerations, or because the implementation involves a whole of Government or multi-local government response may not be fully implemented by that time.
23. In around late October/early November 2011 I will provide the Commission with an update on the status of the implementation by Council of the Interim Report recommendations.
24. Recommendation 4.13 of the Commission of Inquiry's Interim Report provides that:

"Councils should ensure that residents and businesses can clearly understand the impact of predicted flood levels on their property..."
25. Recommendation 4.13 goes on to identify a number of methods by which this may be achieved.
26. ICC is currently considering implementing recommendation 4.13 through having a free of charge on-line flood mapping service publicly available on the Council's website. The objective of the service will be to provide information which will assist property owners, residents and business in understanding the impact of predicted flood levels on their property and in making informed decisions in the case of a future flood event. This service is a work in

progress that is currently under development. I expect to be in a position to provide the Commission with a supplementary statement setting out details of this service prior to the Commission's sittings in Ipswich on 18/19 October 2011.

Commission Requirement Notices - Flood Impact on Council Infrastructure

27. I turn now to address the issues raised by the Commission Requirement Notices. The Requirement directed to me dated 10 August 2011 asks that I provide a written statement as to a number of matters relating to Council infrastructure including:
- (a) the extent to which Council's infrastructure (for example sewers, roads and stormwater) was affected by flooding during the period 1 December 2010- 31 January 2011 [Requirement 4];
 - (b) details of the reconstruction of this infrastructure including costs and programs [Requirement 5]; and
 - (c) funding arrangements for repairs to damaged Council infrastructure [Requirement 6].
28. The Commission Requirements directed to Mr Adams include similar requests, being details of Council infrastructure (sewers, roads, stormwater etc) that was affected by flooding during the period 1 December 2010 to 31 January 2011 [first Adams notice, Requirement 8 and second Adams notice Requirement 1].
29. I will address these Council infrastructure issues in this next section of my statement.

Flood Impact on ICC Infrastructure - Overview

30. The 2011 flood event was the most costly natural disaster in the City's history.
31. The floods caused approximately \$120 million damage to City infrastructure comprising:
- (a) repair and reinstatement costs - \$113 million (approx);
 - (b) counter-disaster costs - \$4 million (approx);
 - (c) emergent costs - \$3 million (approx).
32. Counter-disaster costs are the direct costs incurred during and immediately following the flood event, for example running evacuation centres, closing and re-opening roads, cleaning up following the event, removing debris and the such like.

33. Emergent costs relate to the work undertaken in the month or two following the event to effect temporary repairs, make safe, and to return assets (for example roads and parks) to a functional state, albeit on a temporary basis, pending final repair and reinstatement.
34. The repair and reinstatement costs of \$113 million fall into two streams:
 - (a) roads, bridges and drains: approximately \$68 million; and
 - (b) open space and built environment: approximately \$45 million.
35. These costs do not include the losses sustained to businesses and individual properties throughout the Ipswich region.
36. The Council is committed to carrying out all flood related repair and reinstatement work at the earliest opportunity and intends to lodge progressive submissions and claims with the Queensland Reconstruction Authority applying for NDRRA (Natural Disaster Relief and Recovery Arrangements) funding for the costs of repair and reinstatement of all damaged assets, counter-disaster costs and emergent works costs. Some such claims have already been lodged. It is the responsibility of the Queensland Reconstruction Authority to assess claims for eligibility and to administer funding on behalf of the NDRRA.
37. The Council's reconstruction program is to some extent predicated on how quickly claims to the Queensland Reconstruction Authority are processed and paid, and delays in that process have at least the potential to slow down the program of works.
38. However, Council also recognises that some reinstatement works may not be eligible for NDRRA funding and has included a contingency fund in its 2011/12 capital works program to fund any works that are not eligible for NDRRA funding. Should that contingency fund be insufficient it may become necessary for Council to re-prioritise the "business as usual" capital works program to ensure that all reinstatement works are completed, as Council is committed to carrying out all flood related repair and reinstatement works in a timely fashion.
39. On 22 February 2011 the Council provided a preliminary NDRRA submission as at 15 February 2011 to the State Department of Local Government and Planning. A copy of the 15 February 2011 NDRRA submission was attached as Schedule 8 to the ICC's 23 March 2011 submission to the Commission of Inquiry (refer also to paragraph 4.8 of the ICC submission). An initial high level overview of the impact of the flood event within the ICC area including the impact on ICC infrastructure, is set out at paragraph 4.7 of that submission.
40. The 15 February 2011 NDRRA submission was not a formal submission for funding, but rather an initial assessment of the extent and type of damage sustained to ICC infrastructure,

and an indicative assessment of the likely repair costs. That initial assessment has been refined as the extent of damage and cost of rectification has become clearer, with some repair costs increasing, some costs decreasing, and for some of the damaged infrastructure, the scope of works has changed.

41. In February 2011 ICC received an advance of \$20.7 million from the NDRRA against the flood damage repair costs. However, to date, ICC has self-funded much of the cost and to the end of August 2011 has spent \$30.1 million and committed an additional \$14.3 million on flood related repairs and reinstatement with a resultant funding gap of \$9.4 million against money spent and a gap of \$23.7 million against money spent/committed.
42. The ICC 2011/12 budget documents, issued in June 2011, refer to Council having borrowed an additional \$28 million specifically to fund the carrying out of flood repair work. Council has not raised a flood levy and has covered the cost of this financing within the general rate.
43. In his 2011/12 budget speech delivered on 27 June 2011, the Ipswich City Mayor, Councillor Pisasale announced an average increase in the differential rate for category 1 residential owner occupiers for 2011/2012 of 3.52% (71 cents per week) of which flood recovery work accounted for a little over half (1.88% or 38 cents per week) of the increase.
44. The Mayor said that the additional 38 cents per week allowed Council to meet the costs associated with the borrowing of \$28 million specifically for flood repair work.
45. Council anticipates that a considerable amount of the flood related repair and reinstatement work to Council infrastructure will have been carried out by the end of 2011 and that most of the work will have been completed by mid-2012. The largest repair cost relates to the Colleges Crossing Recreation Reserve, with a cost of approximately \$12.5 million. It is expected that the last item of repair work to be completed will be the Colleges Crossing Recreation Reserve. This work is estimated to be completed by the end of 2012.
46. In the next section of my statement, I will address in more detail the extent of Council infrastructure affected by the flooding and provide details of the reconstruction of this infrastructure, including costs and programs.
47. The repair and reinstatement of all Council assets is being oversighted by a project control group. The project control group is serviced by Coffey Projects as a consultant. The Council officers on the project control group comprise myself, the Chief Financial Officer, the Chief Operating Officer for Works, Parks & Recreation and the Chief Operating Officer for Infrastructure Services.

Repairs and reinstatement of Roads, Bridges and Drains

48. The Council submission of 23 March 2011 (paragraph 4.7(d)) noted that approximately 760 roads and 20 bridges within the ICC area sustained some level of damage in the flood event. With the work that has been undertaken since March 2011, those figures can now be updated:
- (a) gravel roads: 220
 - (b) Inundated roads: 201
 - (c) non-inundated roads: 499 (total roads - in excess of 1,000)
 - (d) bridges: 19
 - (e) drainage assets: 202
49. Attached to my statement and marked **CCW-2** is a colour copy of the Ipswich Flood Disaster Recovery Master Schedule (version no. 14 dated 27 July 2011) for the Roads, Drainage and Bridges procurement package. AECOM is providing project management support to ICC in relation to the roads, drainage and bridges repairs and reinstatement work. As noted earlier in my statement the total cost of this work, including project management costs, is approximately \$68 million and the current projected completion dates are:
- (a) inundated roads - December 2011;
 - (b) non-inundated roads - September 2012;
 - (c) drainage - June 2012; and
 - (d) bridges - September 2012.
50. The Master Schedule identifies the works being divided into four procurement packages for roads, drainage, bridges and project management and technical support respectively.
51. The Master Schedule also identifies, as at the date of the Schedule, the work packages that are:
- (a) at the pre-tender stage (highlighted in red);
 - (b) currently out to tender or tenders closed (highlighted in blue);
 - (c) currently under construction (highlighted in orange); and
 - (d) works completed (highlighted in green).

52. For example, repair work in relation to gravel roads has been undertaken at 140 sites and has been completed at a cost of \$880,000. Asphalt pavement restoration, which is a major component of the repair work, is currently under construction. As at the date of the schedule, tenders for major drainage work and bridge restoration work had not closed, although the tender for major drainage restoration work has since closed.
53. This Master Schedule provides the status of these works packages as at the date of the schedule. It also includes details of the cost of the works that have been completed or are under construction, and the projected costs for the works that are still at the tender stage. If it is of assistance to the Commission I will update the position as to progress with these works at the time of the Ipswich sittings on 18/19 October 2011.
54. I have also annexed to my statement and marked CCW-3 a detailed breakdown of the repair and reinstatement work in relation to roads, drainage and bridges, showing in gantt chart format as at 19 August 2011 the location and status of each element of the works, identifying actual work completed and remaining work to be completed, the budgeted cost (where known) and the expected duration of the works. For those works that are still at the pre-tender or tender stage (for example major drainage and bridges) a zero cost is shown. This will then be upgraded as tenders are accepted and construction contracts are let.

Repairs and Reinstatement of Open Space and Built Environment

55. Annexed to my statement and marked CCW-4 is a schedule detailing the forecast total cost (exclusive of project management expenses) for the repair and reinstatement of flood damaged Council open space and built environment. These costs total \$39.6 million (approximately \$45 million inclusive of project management) comprising:
- (a) flood affected buildings and major open space infrastructure - \$36.5 million;
 - (b) flood affected parks - restoration work - \$1.6 million;
 - (c) flood affected mechanical and electrical components - \$1.3 million; and
 - (d) streetscape - \$200,000.
56. The repairs and reinstatement works comprise 2 stages. Immediately following the flood event in January 2011 emergent works had to be undertaken to make safe, clean up and where possible, have facilities operational or partly operational. These works were internally project managed by ICC and the cost of these works is largely included in items such as electrical and streetscape, and some initial works undertaken at facilities such as the Riverview Depot, the

Ipswich Pound, and at leisure facilities such as the Bundamba Swimming Centre, the Goodna Pool and various other sporting complexes.

57. In the second stage the more substantive repair and reinstatement works will be undertaken. Many of these works have been bundled into packages for tendering and project management purposes.
58. Annexed to my statement and marked CCW-5 is a colour copy of the Ipswich Flood Disaster Recovery - Open Space and Built Environment Master Schedule (version no. 18 dated 24 August 2011).
59. Council is being assisted in the project management of the repair and reinstatement of the open space and built environment assets by Coffey Projects. However, some elements of the work are being internally project managed by Council. On the Master Schedule (Exhibit CCW-5), the works being managed by Coffey Projects as Project Superintendent are those identified to the left hand side of the schedule, with a white background. The projects being 100% project managed by Council are those to the right hand side of the schedule, with a grey background.
60. The open space and built environment works program has been developed by the ICC Infrastructure Services team, in conjunction with Coffey Projects. The Infrastructure Services team meets weekly to overview and update the works program as required, and reports to the Project Management Office which comprises representatives of Coffey and the ICC Head of Infrastructure Delivery, Mr [REDACTED].
61. As with the roads, drainage and bridges master schedule, the open space and built environment master schedules identify, as at the date of the schedule, the works packages that are:
 - (a) in the pre-tender or design stage (highlighted in red and purple);
 - (b) currently out to tender (highlighted in blue);
 - (c) currently under construction (highlighted in orange); and
 - (d) project delivery completed (highlighted in green).
62. Many of the works packages have been and will be let to contractors pursuant to the Council's usual procurement procedures. However, some of the works are also being delivered under the Council's Community Jobs Program (CJP). For example the Pan Pacific Peace Gardens, a large Council park comprising board walks, pathways and gardens, and a number of the smaller parks are being repaired and reinstated by CJP teams. In these instances the repair cost is limited to the cost of materials.

63. Many of the open space facilities are parks and sporting facilities located in low lying areas. These facilities sustained very substantial damage in the flood event. In many cases support facilities such as kiosks, wet areas, change rooms, offices, sheds and the such like were destroyed and need to be demolished and replaced. However, because of the nature of the facility it has been possible through carrying out some initial emergent works to have the facility at least partly operational pending the completion of the more extensive reconstruction work.
64. It has been important to Council, as part of the community recovery, to have facilities such as swimming centres, tennis courts, netball courts, football fields, parks, BBQ facilities, playgrounds and the such like reinstated as soon as possible, even if in some cases this has been only on a partly operational basis.
65. However, in the case of the Ipswich Knights Sports Club, Goodna Bowling Club, Kippen Park Sports Club and the Goodna Cultural & Arts Centre (other than a gymnasium area) the facilities were destroyed and require a complete rebuild, and are not currently operational.
66. Annexed to my statement and marked **CCW-6** is a breakdown of the Master Program for the Open Space and Built Environment repair and reinstatement work in gantt chart format as at 25 August 2011 detailing the various works packages and other Council managed works, the current projected commencement and completion dates, and the expected duration for the works.
67. On the basis of current works schedules most of the work is expected to be completed by mid 2012, with the reinstatement and rebuilding of the Colleges Crossing Recreational Reserve, by far the largest individual project, presently scheduled for a December 2012 completion date.
68. If it is of assistance to the Commission I will be able to update the position as to progress with these works at the time of the Ipswich sittings on 18/19 October 2011.

Commission Requirement Notices - Flood Mitigation Infrastructure and Capacity Issues

69. The first Requirement notice directed to Mr Adams dated 10 August 2011 requires that Mr Adams provide a written statement as to a description of the measures used by Council to protect Council infrastructure (sewers, roads, stormwater etc) and to ensure such infrastructure functions during a defined flood event [Requirement 9].
70. The second Requirement notice directed to Mr Adams dated 10 August 2011 requires that Mr Adams provide a written statement as to:

- (a) details of any flood mitigation infrastructure (for example flood detention basins, stormwater culverts, backflow devices) in the Council's area including a description of the maintenance programs for such infrastructure [Requirement 2]; and
- (b) details of the stormwater design capacity and urban run-off capacity, sewerage design capacity and the most recent review of these capacities including details of any plans to upgrade [Requirement 3].

Although addressed to Mr Adams, these are essentially engineering rather than planning related enquiries and are best addressed by me. I do so in the following paragraphs of my statement.

A description of measures to protect Council infrastructure during a defined flood event [Mr Adams Requirement 9]

- 71. The Commission has asked that ICC comment on measures used by Council to protect Council infrastructure (sewers, roads, stormwater etc) and to ensure that such infrastructure functions during a flood event.
- 72. Sewers are now within the jurisdiction of Queensland Urban Utilities, and I exclude the protection of sewers from my comments.
- 73. In relation to Council infrastructure more generally, the issue of specific steps taken to protect infrastructure in the lead up to the January 2011 flood event has previously been addressed:
 - (a) at paragraphs 9.46-9.54 of Council's submission to the Commission dated 23 March 2011; and
 - (b) by Mr Tony Trace at paragraphs 79-81 of his statement to the Commission dated 6 April 2011.

I do not repeat those matters in this statement.

- 74. Council has in place proactive and regular inspection and maintenance programs for all Council infrastructure. Regular condition assessments of Council assets are conducted through the Works, Parks and Recreation Department and a proactive maintenance program is conducted through the City Maintenance division under the direction of the City Maintenance Manager.
- 75. City maintenance extends to maintenance activities in relation to roads, drainage and built infrastructure, parks, sports and vegetation, natural areas and urban forest.

76. Routine inspections and condition assessments are undertaken of infrastructure such as bridges, road pavement and drainage and where issues are identified, this can lead to maintenance activity, or, in some cases, remedial projects being included in rehabilitation budgets.
77. As discussed later in this statement in response to [Mr Adams - Requirement 2] some assets, for example the smaller detention basins, are not subject to a regular maintenance program other than regular mowing where appropriate. However these assets, like all Council infrastructure, are subject to a regular inspection regime and remedial work can and does arise out of such inspections.
78. In terms of more systemic measures to protect Council infrastructure during a defined flood event, it must be noted that a significant amount of Council's assets are historic in nature and are located within the defined flood zone. A large number of these assets are roads and footpaths and have been built some 30 - 40 years ago, or even longer in some cases. The most appropriate way to protect these assets is to ensure that stormwater systems are clear and clean. As I have noted, this is achieved through a regular maintenance program.
79. In the event of smaller rainfall events, the effect on these assets is minimised. However, in major events such as the January 2011 event, when these assets become totally inundated, Council's ability to protect the assets is limited by the fact that their age and style of construction make them vulnerable to the effects of inundation.
80. Cognisant of these factors, Council's approach to the restoration of these assets is to reconstruct them from materials which will enhance the resilience of the assets to withstand the effects of inundation in future events. For example, road pavements are being reconstructed out of full depth asphalt pavement rather than a granular base, which is subject to deterioration from inundation.
81. In the same way, Council's approach to constructing or reconstructing future assets located within an inundation zone will be to construct these from more resilient road materials which will better withstand the impact of future inundation.
82. There are, however, some assets which because of their location and the nature of their use will remain within the flood zone. These include parks and some sporting facilities, and buildings constructed within those parks and facilities. In the reconstruction and future construction of these types of buildings, and related facilities, the objective will be to maximise the use of materials which will be resilient to inundation so that the facilities can be

brought back into use as quickly as possible and at as low a cost as possible following a major event.

83. Council has demonstrated in the past an understanding of this concept in that two of the key buildings at Colleges Crossing (being the caretaker's residence and the kiosk) were designed and built in a way that they could be quickly dismantled and removed from the site, as occurred in advance of the January 2011 event. Council's approach to other buildings in parks wherever feasible and possible is to build them in the manner and style which may allow their relocation during a flood event.
84. In essence, the key intentions and objectives of Council in relation to protecting Council infrastructure during a defined flood event will be:
- (a) to build infrastructure that is relocatable;
 - (b) to build infrastructure from materials which are resilient to inundation and can be brought back into service quickly; and
 - (c) where the option exists, to build infrastructure so that it is located outside of or above the flood zone.
85. As to this last option, any new Council buildings have, since 2004, been subject to the requirements of the 2004 and 2006 Ipswich Planning Schemes respectively and, since April 2011, the provisions of the Temporary Local Planning Instrument 01/2011 Flooding Regulation.
86. The Ipswich City Planning Scheme also includes a level of requirements in areas such as engineering and building standards that must be adhered to. These standards apply to Council infrastructure.
87. Council is also actively involved in interaction with State and Federal authorities as to the impact that State and Federally funded and managed projects may have on Council infrastructure. That interaction is generally cooperative.
88. By way of illustration, in relation to the current Ipswich Motorway upgrade, a combined Federal and State government initiative, works were proposed to be carried out to a certain level as part of the planned design. However, in collaboration with Council officers, the design was enhanced to include provision of a pipe system from the motorway to the Brisbane River to assist in local up-stream flood mitigation. As beneficiary of the enhanced flood mitigation solution, Council was prepared to commit some funding to the cost of the enhanced solution.

89. Council is engaged in regular representation to and collaboration with State and Federal authorities with respect to infrastructure being developed as part of a State or Federal initiative so as to minimise the impact of that initiative on Council's infrastructure, and, wherever possible, to achieve an enhanced outcome for Council infrastructure.
90. I have discussed in paragraph 78 and following some systemic measures in relation to infrastructure protection during a defined flood event. Finally, in terms of this subject, there are examples of specific measures that have previously been taken by Council in relation to specific infrastructure. I have previously referred to the design of the kiosk and residential infrastructure at Colleges Crossing that enabled that infrastructure to be quickly deconstructed and relocated in advance of the flood event.
91. Another example concerns the collapsible fences at the Riverheart Parklands which can be dropped during a flood event to better protect the fence and to prevent rubbish and debris being caught up in the fence.

**Details of flood mitigation infrastructure and maintenance programs [Mr Adams Requirement 2]
Detention Basins**

92. There are currently 2 major detention basins within the Council area, located at Rosewood and Marburg. These detention basins perform a major flood mitigation role at their respective locations. Each is managed in accordance with the relevant operating manual, and is subject to a strict and regular maintenance and inspection regime and regular audit.
93. As each basin has also been assessed as a referable dam (Rosewood - category 1 and Marburg - category 2) they are also subject to the requirements of the *Water Act 2000* (Qld).
94. The Rosewood detention basin, located at Matthew Street, Rosewood near the Karrabin-Rosewood Road is intended to reduce the potential for flooding in the Rosewood town centre. An embankment approximately 10m high catches run-off from the steep local catchment of 1.4 km² below Perrys Knob. The basin is proportioned to pass the 100 year Average Recurrence Interval (ARI) flood without the spillway discharging.
95. The spillway consists of a rockfilled, concrete covered, gabion and mattress channel and cascade built over the embankment. The spillway crest is constructed about 200mm higher than the level to which the basin storage would rise during a 100 year ARI flood event, and 1.8m below the dam crest level. As designed, the dam crest flood was the probable maximum flood.
96. The Marburg detention basin on Black Snake Creek above the outskirts of the Marburg township is intended to reduce the potential for flooding properties in the Marburg town

centre. An embankment approximately 10m high intercepts run-off from the creek catchment of about 17 km² to the south. The basin is proportioned to pass the 100 year ARI flood without the spillway discharging.

97. The spillway consists of a rockfilled, concrete covered gabion and mattress channel and cascade built over the embankment. Its crest is nominally 2.5m below the embankment crest. The dam crest flood, which rises above the spillway crest to just reach but not overtop the embankment crest, is the 50,000 year ARI event.
98. Having regard to the summer 2010/2011 weather forecasts, in the period from around October 2010 ICC was engaged in close monitoring of the Rosewood and Marburg detention basins to ensure that there were no obstructions in the pipework. During the January 2011 flood event neither detention basin discharged its spillway. If the Commission requires additional information in relation to the Rosewood or Marburg detention basins, this can be provided.
99. In addition to these 2 major detention basins there are 97 other detention basins throughout the Council area which function as local flood mitigation devices within minor sub-catchments. Annexed to my statement and marked **CCW-7** is a schedule detailing the location of these detention basins.
100. These detention basins are an asset which only come into operation during an event. They are generally in the nature of depressions in public land which serve to retain, manage and control the run-off and overland flow of water through an area in a flood event. They are managed through a routine inspection regime. Maintenance work emanates from the inspection program as these are assets that do not typically require a specific maintenance regime, other than some fencing and mowing.
101. There are also a further 71 minor basins across the Ipswich area which serve a predominantly water quality role as bio-retention areas, rather than a flood mitigation role.

Levees

102. There are currently no levees within the ICC local government area. Following on from the January 2011 flood event Council has commissioned a high level study by Parsons Brinckerhoff to examine the feasibility of constructing levees to better protect critical locations across the City, including the Ipswich CBD. An initial report is expected by the end of this year. The purpose of the Parsons Brinckerhoff study is to assist Council in developing a clear direction on the potential of levees. Either they have no value as a flood protection strategy for the Ipswich area or they are worthy of further investigation in general or for specific locations.

If the PB report indicates a potential benefit in the construction of levees, it is likely that a more detailed investigation will be commissioned.

Stormwater culverts/stormwater run-off systems

103. My comments in relation to stormwater culverts and run-off are also relevant to the topic addressed below regarding details of stormwater design and urban run-off capacity.
104. Within the developed urban areas there are generally few if any stormwater culverts. Rather, these areas, depending on their age, are developed with an underground drainage system. I discuss these systems further below. Stormwater culverts tend to exist in more rural settings, for example areas of relatively flat land such as Rosewood, Grandchester and Walloon, and are used to convey water emanating in creeks and gullies from one side of the road to the other via a culvert under the roadway.
105. The adjacent road can be designed as a causeway or floodway, so that if the culvert is unable to meet capacity in a major event, excess water is discharged across the road rather than backing up and causing an upstream backwater effect.
106. Most stormwater systems are designed to a 1:5 year or 1:10 year flood event capacity. It is very unusual to design a stormwater system to a 1:100 year capacity as it is simply not economically feasible to do so.
107. Stormwater is typically catered for throughout the Ipswich urban area by underground drainage systems. In some cases the stormwater pipes have been in the ground for many decades. These drainage systems have a known capacity and are subject to a regular cleaning and maintenance program. In addition, where particular circumstances require, as was the case with the weather forecasts in the lead up to the 2010/2011 wet season, ICC's drainage maintenance crews had a particular focus on the maintenance of the stormwater systems and gross pollutant traps to ensure that these were clear of debris and obstructions, and functioning effectively.
108. The capacity of the stormwater system is "static" unless some action is taken to change the capacity. I address in more detail in paragraphs 114-126 below studies currently being undertaken by ICC in this regard.
109. As urban development occurs, the issues of stormwater capacity and urban run-off are addressed on an ongoing basis as part of the development approval process, so as to ensure capacity is at least maintained and, where feasible to do so, is enhanced.

110. In terms of more modern design, underground drainage systems are complemented by kerb and channel design which enables the road system itself to operate as an overland flow path in extreme weather events. Under modern design, as applied across the City of Ipswich, excess water in a major flood event which cannot be accommodated by the stormwater system is dispersed through use of the road system as an overland flow path.
111. However, Ipswich is an old city and some of the road systems were designed and laid out without regard to modern run-off and overland flow path practices, with the result that in some of the City's older areas excess stormwater in a major event flows through private property.
112. These stormwater system design shortcomings cannot be effectively "retrofitted" and the solution in Ipswich has been for the Council to acquire properties where it is feasible to do so and create an overland flow path. Whether or not to do so involves a cost-benefit assessment of the particular circumstances.

Review of stormwater design and urban run-off capacities [Mr Adams Requirement 3]

113. In relation to the issue of sewerage design capacity, this is now the responsibility of Queensland Urban Utilities and I am not in a position to address enquiries as to the sewerage design capacity or any recent review of those capacities.
114. In relation to stormwater design capacity and urban run-off capacity, as I have already noted, the system capacity is static and does not change unless some step is taken to effect that change. The issue of capacity, and potential changes to capacity, are typically addressed through a drainage or flood study. Such studies can be used to identify:
- (a) the existing system capacity;
 - (b) the required system capacity;
 - (c) the "gap" between current and required capacity;
 - (d) the options to address the capacity gap; and
 - (e) the costs to address the capacity gap.
115. ICC, through its Works, Parks & Recreation Department has and continues to invest a significant amount of funds in undertaking drainage and flood studies across the City. There are currently 27 such studies at various stages of progress. Most of these studies had commenced prior to the 2011 flood event as part of Council's ongoing program, and not in response to that event.

116. In some cases Council has obtained NDRRA funding for the study, but in many instances the studies are funded by Council. The studies are being undertaken by a range of professional consultants.
117. The current drainage and flood studies can be broken down into two categories:
- (a) Catchment studies; and
 - (b) Sub-catchment studies.
118. The results of these studies will provide Council with a range of measures that may be adopted or undertaken to assist with future stormwater and run-off design and flood mitigation. The potential mitigation measures generally fall into 2 categories:
- (a) "hard" measures, which involve enhancement to existing infrastructure; and
 - (b) "soft" measures, which can be reflected in planning outcomes.
119. Catchment studies span an entire creek system and/or suburb or locality. There are 10 catchment studies currently being undertaken. They are at various stages of progress. These are studies in relation to:
- Walloon
 - Thagoona
 - Rosewood
 - Marburg
 - Bundamba Creek
 - Deebing Creek
 - Six Mile Creek
 - Goodna Creek
 - Woogaroo Creek
 - Sandy Creek.
120. Recommendations arising from the catchment studies may require substantial amounts of capital investment to implement, and may take some years to be included in future capital

works programs. Flood models arising from these studies will be used to inform development control lines for the purposes of the Ipswich Planning Scheme and for development assessment purposes.

121. Annexure **CCW-8** to my statement is a coloured map identifying the location of the 10 catchment studies.
122. Annexure **CCW-9** to my statement is a report briefly summarising the current status of each catchment study.
123. Sub-catchment studies are smaller studies conducted over an area forming part of a larger catchment, usually a gully or overland flow path. The study areas typically represent historical drainage problem areas. There are 17 sub-catchment studies currently being undertaken. Once again these studies are at various stages of progress. The studies are in relation to:

Central Suburbs

- Edwards Street, Ipswich/Raceview
- Booval
- Kendall Street, Newtown/East Ipswich
- City East (Newtown, Ipswich Central, Woodend)
- Bourke Street, Brassall
- Rowan Drive, Brassall
- Pioneer Drive, Raceview
- Raceview East
- Jones Street, Blackstone
- Kerners Road, Yamanto
- Tristania Street, Yamanto

Eastern Suburbs

- Cashmere Drive, Redbank Plains
- Wilkie Avenue, Redbank Plains

- Duncan Street, Redbank Plains
- Highbury Drive, Redbank Plains
- Albert Street, Goodna
- Church Street, Goodna.

124. Recommendations arising from the sub-catchment studies may be relatively inexpensive to implement (involving the taking of easements and pipe and related infrastructure costs) and able to be included in short term capital works programs.
125. Annexure CCW-10 to my statement is 2 coloured maps identifying the location of the 17 sub-catchment studies, 11 being conducted in the Central Suburbs and 6 in the Eastern Suburbs.
126. Annexure CCW-11 to my statement is a report briefly summarising the current status of each sub-catchment study.
127. All catchment studies and some sub-catchment studies are assisted by a study advisory group (SAG) who provide technical input and local knowledge into the development and outcomes of the study. The SAG is a requirement of NDRRA funded studies, and ICC has extended this concept into the more complex non-NDRRA funded studies. The SAG typically comprises Council officers, the Chairperson of the City Works Committee, Divisional Councillors (representing the community) and representatives of external organisations such as DERM, EMQ and SES.
128. In addition to these 27 catchment and sub-catchment related studies, the Council has four other flood and drainage mitigation related studies in progress. Three of these ((a) - (c) below) are not flood or drainage studies, but studies for the purpose of informing Council policy and policy development. The four studies relate to:
- (a) Citywide policy development, that is, integrating all of the catchment studies, and overlaying this with the development of a related investment strategy and policy direction;
 - (b) flood risk management briefing paper;
 - (c) flood damage curves; and
 - (d) Springfield flood impact assessment.

Commission Requirement notices - planning issues

129. The Requirement directed to me dated 10 August 2011 requires that I provide a statement as to:

- (a) the details of any draft flood studies obtained or made available to the Council since March 2011 [Requirement 1];
- (b) any changes to the Council's draft planning processes, policies or other statutory instruments in response to the flood event [Requirement 2];
- (c) how information about flood risk for specific properties is made available and any processes for obtaining this information applicable to members of the public, insurance companies and potential developers and their representatives [Requirement 3]; and
- (d) any policies or other documents which require property owners to have an evacuation plan and/or route in the case of flooding [Requirement 7].

Draft flood studies obtained or made available to Council since March 2011 [Requirement 1]

130. Council has received the following 13 draft or interim reports since March 2011 in relation to the drainage and flood studies I have described in paragraphs 119-128 above:

- (a) Springfield Impact Statement - July 2011;
- (b) Rosewood Draft Catchment Study - July 2011 ;
- (c) Walloon - July 2011;
- (d) Six Mile Creek - August 2011;
- (e) Goodna Creek - August 2011;
- (f) Rowani Drive - August 2011;
- (g) Tristana Street - August 2011;
- (h) Kerners Road - July 2011;
- (i) Edward Street - July 2011;
- (j) Wilkie Avenue - June 2011;

- (k) Duncan Street - May 2011;
- (l) Highberry Drive - July 2011; and
- (m) Thagoona - May 2011.

How information about flood risk for specific properties is made available [Requirement 3]

131. With regard to Requirement 3, I have mentioned in paragraph 26 that Council has under consideration and development a proposed new on-line flood mapping system designed to assist residents and businesses in understanding the impact of predicted flood levels on their property.
132. Aside from this prospective on-line search capability, information about flood risk for specific properties was available to members of the public, insurance companies, prospective developers and their representatives at the time of the January 2011 flood event, and continues to be available today. Council provides information on flood risk through the following publicly available searches.
133. Firstly, a property inquiry can be made through PD Online on the Council webpage. An address or real property description can be used to identify the property the subject of the search for which information is required. The property inquiry provides information on zoning under the Planning Scheme, whether or not any applications have been recorded for that property, and development constraints, including whether or not the property is affected by the flood lines on map OV5 in the Planning Scheme. The information can be printed and viewed on a map. This is a free search that was available to be undertaken in January 2011.
134. This search continues to be available, and has been upgraded to also include the flood regulation line from the Temporary Local Planning Instrument 1/2011 - Flood Regulation.
135. Another search that can be undertaken at no cost on PD Online is a map identifying the 1 in 20 development line and the 1 in 100 flood line. This information is accessed by undertaking a map search on the Council website. This search was available in January 2011 and continues to be available. This information has also now been updated to include mapped flood regulation lines under the Temporary Local Planning Instrument.
136. A search of urban stormwater flow path areas is also available free of charge to the public through PD Online. This search was available in January 2011.
137. Information is also available to the public by ordering a Council flood search and paying the requisite fee. These flood searches have been available to the public since at least 2004. The

search application form is online on the Council website on the Property and Rates search page. This flood search can be combined with other types of search including planning and development property searches.

138. In terms of the flood search, there are two searches that can be undertaken. The first is a development control line flood search, which provides information on whether the property concerned is affected by the 1:20 development line or the 1:100 flood line. The search includes a map.

139. The second search is a 1974 flood search which provides information as to whether the property was affected by the 1974 flood and includes details of the 1974 flood levels if available. This is a flood levels search not a flood lines search, and does not include a map.

140. In terms of future searching for information about flood risk, in addition to the free online service to go live shortly, Council is progressing work to produce a consolidated single map which identifies each of the 1974 flood line, 2011 flood line, 1:20 development line (where applicable) and 1:100 flood line. I expect this "4 maps in 1" search to be available to the public by the end of this year. It will be able to be ordered online or over the counter and available to members of the public upon the payment of a search fee.

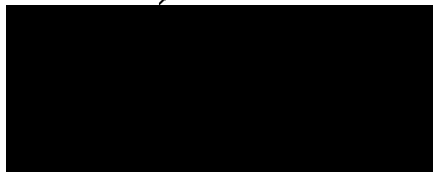
Commission Requirements 2 (changes to the Council's draft planning processes) and 7 (policies or other documents regarding evacuation plans)

141. Requirements 2 and 7 are largely planning related matters and are better addressed by the Council's head of the department of Planning and Development, Mr Adams.

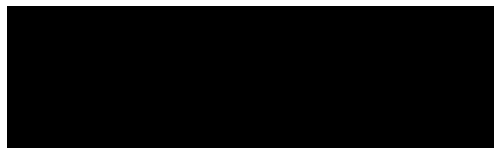
142. Mr Adams has addressed these matters in Topics 14 and 8 respectively of his statement to the Commission. I have read what Mr Adams has set out in his statement as to these matters and agree with his comments.

Affirmed

~~SWORN~~ this *2nd* day of September 2011 at Ipswich in the State of Queensland in the presence of:



Carl Christian Wulff (Deponent)



Daniel Best (Solicitor)