16 March 2012

The Honourable Anna Bligh MP
Premier and Minister for Reconstruction
Executive Building
100 George Street
BRISBANE QLD 4002

Dear Premier

In accordance with Commissions of Inquiry Order (No.1) 2011, as amended, I present the final report of the Queensland Floods Commission of Inquiry.

Yours sincerely

L. Holmes

Commissioner
Justice C E Holmes
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Chapter 2 Floodplain management

2.1 The steering committee of the Wivenhoe Dam and Somerset Dam Optimisation Study should consider whether it would be more effective for the floodplain management investigation to be removed from the Wivenhoe Dam and Somerset Dam Optimisation Study.

2.2 Brisbane City Council, Ipswich City Council and Somerset Regional Council and the Queensland Government should ensure that, as soon as practicable, a flood study of the Brisbane River catchment is completed in accordance with the process determined by them under recommendation 2.5 and 2.6. The study should:

- be comprehensive in terms of the methodologies applied and use different methodologies to corroborate results
- involve the collation, and creation where appropriate, of the following data:
  - rainfall data including historical and design data and radar
  - stream flow data
  - tide levels
  - inundation levels and extents
  - data on the operation of Wivenhoe and Somerset dams
  - river channel and floodplain characteristics including topography, bathymetry, development and survey data
- involve determining the correlation between any of the data sets above
- produce suitable hydrologic models run in a Monte Carlo framework, taking account of variability over the following factors:
  - spatial and temporal rainfall patterns
  - saturation of the catchment
  - initial water level in dams
  - effect of operating procedures
  - physical limitations on the operation of the dams
  - tidal conditions
  - closely occurring rainfall events
- validate hydrologic models to ensure they reproduce:
  - observed hydrograph attenuation
  - probability distributions of observed values for total flood volume and peak flow
  - timing of major tributary flows
  - observed flood behaviour under no dams conditions and current conditions
- produce a suitable hydraulic model or models that:
  - are able to determine flood heights, extents of inundation, velocities, rate of rise and duration of inundation for floods of different probabilities
• are able to deal with movement of sediment and changes in river beds during floods
• are able to assess historical changes to river bathymetry
• are able to be run in a short time to allow detailed calibration and assessment work
• characterise the backwater effect at the confluence of the Brisbane and Bremer rivers and other confluences as appropriate
• involve analysis of the joint probability of floods occurring in the Brisbane and Bremer rivers (and any other pair of rivers if considered appropriate)
• be iterative, and obtain a short-term estimate of the characteristics of floods of different probabilities in all significant locations in the catchment (at least Brisbane City, Ipswich City and at Wivenhoe Dam) in order to determine the priorities for the rest of the study.

2.3 Ipswich City Council should determine whether the results, models and maps produced by the Brisbane River flood study are sufficient for its floodplain management. If they are not, Ipswich City Council should ensure appropriate work is done by way of data collection and creation and hydrologic and hydraulic modelling for use in its floodplain management.

2.4 A recent flood study should be available for use in floodplain management for every urban area in Queensland. Where no recent study exists, one should be initiated.

2.5 The Queensland Government, in consultation with councils, should determine which urban areas in Queensland do not have access to flood information from a current flood study. The Queensland Government should rank those areas in order of priority in accordance with their need for updated flood information by reference to factors including:

a. population
b. sophistication of land use planning and emergency management measures already in place in those areas
c. currency of any flood risk information available to the council
d. approximate frequency of damaging floods in the area according to the historical record.

2.6 By reference to the order of priority determined in accordance with recommendation 2.5, the Queensland Government and councils should together ensure that the council responsible for each urban area in Queensland has access to current flood study information. This will include determining:

a. a process or processes by which the flood studies will be completed, including the involvement of the Queensland Government and relevant councils
b. how, and from whom, the necessary technical and financial resources will be obtained
c. a reasonable timeframe by which all flood studies required will be completed.

2.7 As far as is practicable, councils should maintain up-to-date flood information.

2.8 When commissioning a flood study, the body conducting the study should:

• check whether others, such as surrounding councils which are not involved in the study, dam operators, the Department of Environment and Resource Management, and the Bureau of Meteorology, are doing work that may assist the flood study or whether any significant scientific developments are expected in the near future, and decide whether to delay the study
• discuss the scope of work with the persons to perform the flood study as well as surrounding councils which are not involved in the study, dam operators, the Department of Environment and Resource Management, and the Bureau of Meteorology.

2.9 Elected representatives from councils should be informed of the results of each flood study relevant to the council’s region, and consider the ramifications of the study for land planning and emergency management.

2.10 Elected representatives from all agencies involved in a flood study should be informed of recommendations made for future work, and determine, on a risk basis, whether that further work is to be completed.
2.11 The Queensland Government and Commonwealth Government should ensure the existence and maintenance of a repository of data of the type used in flood studies. The database should include the types of data which the expert panel specified as needed for a comprehensive flood study. Councils, Queensland and Commonwealth Government agencies and dam operators should be able to deposit and obtain access to data.

2.12 Councils in floodplain areas should, resources allowing, develop comprehensive floodplain management plans that accord as closely as practicable with best practice principles.

2.13 For urban areas or areas where development is expected to occur:
   a. councils with the requisite resources should develop a flood map which shows ‘zones of risk’ (at least three) derived from information about the likelihood and behaviour of flooding
   b. councils without the requisite resources to produce a flood behaviour map should develop a flood map which shows the extent of floods of a range of likelihoods (at least three).

2.14 For non-urban areas or areas where limited development is expected to occur councils should consider, on a risk basis, what level of information about flood risk is required for the area, and undertake the highest ranked of the following options which is appropriate to that need and within the capacities (financial and technical) of the council:
   a. a map showing ‘zones of risk’ (at least three) derived from information about the likelihood and behaviour of flooding
   b. a map showing the extent of floods of a range of likelihoods (at least three)
   c. a flood map based on historic flood levels that have been subjected to a flood frequency analysis to estimate the annual exceedance probability of the selected historical flood
   d. a historic flood map without flood frequency analysis
   e. the Queensland Reconstruction Authority Interim Floodplain Assessment Overlay as a way to determine those areas for which further flood studies are required, or
   f. the Queensland Reconstruction Authority Interim Floodplain Assessment Overlay (preferably refined using local flood information) as a trigger for development assessment.

2.15 Councils should ensure that areas for which there has been no assessment of the likelihood of flooding are indicated on a map and that, as part of the development assessment process for these, there is at least some enquiry into whether a site proposed for development could be subject to flooding.

2.16 Councils and the Queensland Government should display on their websites all flood mapping they have commissioned or adopted.

2.17 Flood maps, and property specific flooding information intended for use by the general public, should be readily interpretable and should, where necessary, be accompanied by a comprehensible explanatory note.

2.18 Councils that do not currently do so should consider offering an online database which allows the public to conduct a search on a parcel of land to find development approvals relevant to that parcel of land.

2.19 The Queensland Government should consider implementing a mechanism by which prospective purchasers of property are alerted to the issue of flood risk. To that end, the Queensland Government should consider consulting the Real Estate Institute of Queensland and the Law Society of Queensland as to the appropriateness of amending standard contract conditions so as to include a ‘subject to flood search’ condition, or other means of achieving the same objective.

2.20 The Queensland Government should endeavour to ensure that Queensland conditions are appropriately considered in the National Flood Risk Advisory Group’s review of best practice principles.

2.21 In the event that the review does not adequately account for Queensland conditions, the Queensland Government should produce a document that provides appropriate guidelines for floodplain management in the Queensland context.

2.22 The Queensland Government should determine whether existing guidelines are sufficient for councils to understand best practice in the performance of flood studies and the production of flood maps. If a lack of current guidelines is identified, the government should create and circulate guidance material for councils.
Chapter 4 State planning instruments

4.1 The Queensland Government should:
   a. narrow the definition of ‘development commitment’ in State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide to ensure more development applications are assessed for compatibility with flood, and
   b. investigate whether the compensation provisions of the Sustainable Planning Act 2009 act as a deterrent to the inclusion of flood controls in a planning scheme and consider whether they ought be amended.

4.2 If, as part of a state interest review process, the Department of Local Government and Planning decides that no condition should be imposed requiring a council’s proposed planning scheme to incorporate the effect of the Department of Community Safety’s comments about State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide, it should advise the Department of Community Safety of the reasons for its decision.

4.3 The Department of Community Safety should put in place administrative arrangements which ensure it can readily ascertain whether its comments are being reflected in council planning schemes. If the Department of Community Safety becomes aware that its comments are not being adequately addressed, it should take steps to follow this up with the Department of Local Government and Planning.

4.4 The Queensland Government should ensure that the circumstances in which the Department of Community Safety is to consult the Department of Environment and Resource Management about a planning scheme’s flood modelling and flood mapping are clear.

4.5 The Queensland Government should change Temporary State Planning Policy 2/11: Planning for stronger more resilient floodplains to remove the possibility of councils’ using the interim floodplain assessment overlay mapping and Model Code as part of a permanent amendment to their existing planning scheme or as part of a new planning scheme.

4.6 Councils should consider using the limited development (constrained land) zone in their planning schemes for areas that have a very high flood risk.

4.7 The Queensland Government should consider amending the Sustainable Planning Act 2009 to require that consideration be given to the risk of flooding in the preparation or revision of a regional plan.

Chapter 5 Local planning instruments

5.1 The Queensland Government should draft model flood planning controls, using a similar format and structure to that in the Queensland Planning Provisions, that councils can adapt for local conditions. The Queensland Government should require these controls to be reflected in new planning schemes. This may be achieved by including the controls in either:
   • a state planning policy dealing with flood, with an accompanying amendment to the Sustainable Planning Act 2009, or
   • the Queensland Planning Provisions.

The Queensland Government should consult councils to determine which of the two state planning instruments is the more appropriate to include the model flood planning controls.

5.2 The Queensland Government should include in the model flood planning controls a requirement that councils have a flood overlay map in their planning schemes. The map should identify the areas of the council region:
   • that are known not to be affected by flood
   • that are affected by flood and on which councils impose planning controls (there may be subsets in each area to which different planning controls attach)
   • for which there is no flood information available to council.
5.3 If the Queensland Government does not include a requirement for such an overlay map in the model flood planning controls, councils should include a flood overlay map in their planning schemes. The map should identify the areas of a council region:

- that are known not to be affected by flood
- that are affected by flood and on which councils impose planning controls (there may be subsets in each area to which different planning controls attach)
- for which there is no flood information available to council.

5.4 The Queensland Government should include in the model flood planning controls a model flood overlay code that consolidates assessment criteria relating to flood.

5.5 If the Queensland Government does not include such a code in the model flood planning controls, councils should include in their planning schemes a flood overlay code that consolidates assessment criteria relating to flood.

5.6 The Queensland Government should include in the model flood planning controls a model planning scheme policy that:

- for development proposed on land susceptible to flooding, outlines what additional information an applicant should provide to the assessment manager as part of the development application, or
- for development proposed on land where the potential for flooding is unknown, requires an applicant to provide:
  - as part of the development application, information to enable an assessment of whether the subject land is susceptible to flooding, and
  - upon a determination the subject land is susceptible to flooding, more detailed information, to allow an assessment of the flood risk.

5.7 If the Queensland Government does not include such a policy in the model flood planning controls, councils should include in their planning schemes a planning scheme policy that:

- for development proposed on land susceptible to flooding, outlines what additional information an applicant should provide to the assessment manager as part of the development application, or
- for development proposed on land where potential for flooding is unknown requires an applicant to provide:
  - as part of the development application, information to enable an assessment of whether the subject land is susceptible to flooding, and
  - upon a determination the subject land is susceptible to flooding, more detailed information to allow an assessment of the flood risk.

5.8 The Queensland Government should consider amending the Sustainable Planning Act 2009 to expressly provide either a power to remake or a power to extend a temporary local planning instrument containing interim flood regulation for a further limited period. The power to remake or extend should:

a. permit the modification of the temporary local planning instrument to the extent required to ensure its provisions remain relevant, having regard to any requirement that may have been introduced or any information that may have become available while the original temporary local planning instrument was in force

b. be contingent on the Minister’s being satisfied that the circumstances listed in section 105 of the Sustainable Planning Act continue to exist and that there are proper grounds for the failure to make a permanent scheme amendment while the original temporary local planning instrument was in force.

5.9 The Queensland Government should consider allowing councils to amend a planning scheme to update existing flood mapping information by way of the minor amendment process, provided that adequate public consultation has occurred.
Chapter 6 Satellite planning systems

6.1 The Queensland Government should consider amending the Urban Land Development Authority Act 2007, the South Bank Corporation Act 1989, the State Development and Public Works Organisation Act 1971 as it governs state development areas, and other legislation which establishes alternative planning systems that operate independently of the Sustainable Planning Act 2009, to require that:

- any planning scheme, interim or otherwise, appropriately reflects any state planning policy with respect to flood
- flood risk be considered in the assessment of any development application.

6.2 The Coordinator-General should amend the guideline for preparing an ‘initial advice statement’ for a significant project under the State Development and Public Works Organisation Act 1971 so that it specifically requires an applicant to consider and provide information about the project’s flood risk.

Chapter 7 Development and flood considerations

7.1 The Queensland Government should consider extending the application of a state planning policy dealing with flood to the types of community infrastructure which are identified in the Sustainable Planning Regulation 2009 and which the community needs to continue functioning, notwithstanding flood.

7.2 The Queensland Government should draft assessment criteria to be included in the model flood planning controls that require community infrastructure (including the types of community infrastructure which are identified in the Sustainable Planning Regulation 2009 and which the community needs to continue functioning, notwithstanding flood) to be located and designed to function effectively during and immediately after a flood of a specified level of risk.

7.3 If the Queensland Government does not include such assessment criteria in model flood planning controls, councils should include assessment criteria in their planning schemes that require community infrastructure (including the types of community infrastructure which are identified in the Sustainable Planning Regulation 2009 and which the community needs to continue functioning, notwithstanding flood) to be located and designed to function effectively during and immediately after a flood of a specified level of risk.

7.4 The Queensland Government should draft assessment criteria to be included in the model flood planning controls that require the impact of flood on commercial property to be minimised.

7.5 If the Queensland Government does not include such assessment criteria in the model flood planning controls, councils should include assessment criteria in their planning schemes that require the impact of flood on commercial property to be minimised.

7.6 The Queensland Government should ensure that the criteria under the Environmental Protection Act 1994 that apply to the assessment of development applications for material change of use for environmentally relevant activities include consideration of the risk of flooding at the site on which the activity is proposed to occur.

7.7 The Department of Environment and Resource Management should amend its information sheet about applications for a material change of use for environmentally relevant activities so that applicants are prompted to include information (if any) about the risk of flooding at the site where the activity is proposed to occur.

7.8 The Department of Environment and Resource Management should amend the template assessment report used to assess applications for a material change of use for environmentally relevant activities so that it prompts departmental officers to give specific consideration, as part of the assessment process, to the risk of flooding at the site where the activity is proposed to occur.

7.9 The Department of Environment and Resource Management should ensure that, when applications for a material change of use for an environmentally relevant activity are approved by the department, the details of those activities, including their nature and location, are provided to the council within whose area the activity will be conducted.
7.10 Councils should ensure that, when applications for environmentally relevant activities are approved by a council, the details of those activities, including their nature and location, are provided to the Department of Environment and Resource Management.

7.11 The Queensland Government should draft assessment criteria to be included in the model flood planning controls that require that:

a. the manufacture or storage of bulk hazardous materials (as defined in State Planning Policy 1/03) take place above a certain flood level, determined following an appropriate risk based assessment, or

b. structures on land susceptible to flooding and used for the manufacture or storage of bulk hazardous materials (as defined in State Planning Policy 1/03) be designed to prevent the intrusion of floodwaters.

7.12 If the Queensland Government does not include such assessment criteria in the model flood planning controls, councils should include assessment criteria in their planning schemes that require that:

a. the manufacture or storage of bulk hazardous materials (as defined in State Planning Policy 1/03) take place above a certain flood level, determined following an appropriate risk based assessment, or

b. structures on land susceptible to flooding and used for the manufacture or storage of bulk hazardous materials (as defined in State Planning Policy 1/03) be designed to prevent the intrusion of floodwaters.

7.13 When approving applications for development which involve the manufacture or storage of hazardous materials, councils should not restrict the conditions imposed to ones which are solely reliant on human intervention to remove the materials in the event of flood.

7.14 The Queensland Government should review the code for development applications for prescribed tidal work in the Coastal Protection and Management Regulation 2003 to consider whether the design and construction standards should be made more stringent than the existing standards.

7.15 Councils (particularly Brisbane City Council) should consider including in their planning schemes more stringent standards for the design and construction of prescribed tidal work than those in the code for development applications for prescribed tidal work in the Coastal Protection and Management Regulation 2003.

7.16 The Queensland Government should consider drafting assessment criteria to be included in the model flood planning controls which require that works in a floodplain:

- do not reduce on-site flood storage capacity
- counteract any changes the works will cause to flood behaviour of all floods up to and including the applicable defined flood event by measures taken within the subject site (for example, use of compensatory works, detention basins or other engineering mechanisms)
- do not change the flood characteristics outside the subject site in ways that result in:
  - loss of flood storage
  - loss of changes to flow paths
  - acceleration or retardation of flows, or
  - any reduction in flood warning times elsewhere on the floodplain.

7.17 If the Queensland Government does not include such assessment criteria in the model flood planning controls, councils should consider including assessment criteria in their planning schemes which require that works in a floodplain:

- do not reduce on-site flood storage capacity
- counteract any changes the works will cause to flood behaviour of all floods up to and including the acceptable defined flood event by measures taken within the subject site (for example, use of compensatory works, detention basins or other engineering mechanisms), and
- do not change the flood characteristics outside the subject site in ways that result in:
  - loss of flood storage
  - loss of changes to flow paths
  - acceleration or retardation of flows, or
  - any reduction in flood warning times elsewhere on the floodplain.
7.18 The Queensland Government should consider amending the Sustainable Planning Regulation 2009 so that operational work or plumbing or drainage work (including maintenance and repair work) carried out by or on behalf of a public sector entity authorised under a state law to carry out the work is not exempt development under the Sustainable Planning Act 2009 if the development has the potential to reduce floodplain storage.

7.19 Levees should be regulated.

7.20 The Queensland Government should consult with councils to determine an effective method for the regulation of the construction of levees in Queensland. In particular, the Queensland Government should consider:

- requiring a development permit for the construction of a levee by designating levees as assessable development in the Sustainable Planning Regulation 2009, or
- requiring, by way of a state planning policy or mandatory provision in the Queensland Planning Provisions, that councils nominate the construction of a levee as assessable development in their planning schemes.

7.21 The Queensland Government should consult with councils to formulate a definition of ‘levee’ to identify what should be regulated.

7.22 There should be a consistent process for the determination of applications to build levees. That process should include:

- consulting landholders who may be affected by the proposed levee
- obtaining or commissioning appropriate hydrological and hydraulic studies to assess the impacts of the proposed levee.

7.23 There should be a common set of considerations in the decision whether to approve an application to build a levee, including:

- the impacts of the proposed levee on the catchment as a whole
- the benefits of the proposed levee to the individual or entity applying to build the levee and to any nearby community as a whole
- any adverse impacts on other landholders, including the risk of levee failure
- the implications of the proposed levee for land planning and emergency management procedures
- whether any structural, land planning or emergency management measures can be taken to mitigate the adverse impacts of the proposed levee.

7.24 The Queensland Government should draft assessment criteria to be included in the model flood planning controls that address:

- the prospect of isolation or hindered evacuation
- the impact of isolation or hindered evacuation.

7.25 If the Queensland Government does not include such assessment criteria in the model flood planning controls, councils should consider including assessment criteria in their planning schemes that address:

- the prospect of isolation or hindered evacuation
- the impact of isolation or hindered evacuation.

**Chapter 8 Development assessment in practice**

8.1 Councils should, resources allowing, maintain flood maps and overland flow path maps for use in development assessment. For urban areas these maps should be based on hydraulic modelling; the model should be designed to allow it to be easily updated as new information (such as information about further development) becomes available.

8.2 Councils should make their flood and overland flow maps and models available to applicants for development approvals, and to consultants engaged by applicants.
8.3 The Queensland Government should draft a model planning scheme policy to be included in the model flood planning controls that sets out the information to be provided in development applications in relation to stormwater and flooding. The policy should specify:

- the type of models and maps to be provided
- the substantive information required to be shown in the development application
- how the assumptions and methodologies used in preparing the models and maps should be presented
- the form in which the information on stormwater and flooding is to be presented in the application.

8.4 If the Queensland Government does not include such a policy in the model flood planning controls, councils should include a planning scheme policy in their planning schemes that sets out the information to be provided in development applications in relation to stormwater and flooding. The policy should specify:

- the type of models and maps to be provided
- the substantive information required to be shown in the development application
- how the assumptions and methodologies used in preparing the models and maps should be presented
- the form in which the information on stormwater and flooding is to be presented in the application.

8.5 Councils should review their assessment processes to ensure that:

- the person with primary responsibility for the assessment of the development application considers what expert input is required
- where a development application is subject to comment by a number of professionals, the responsibilities and accountability of each contributor are clear
- where flood-related information is referred to an expert for advice, the expert is required to comment on the extent of compliance by reference to each relevant assessment criteria and identify and explain any inability to comment.

8.6 Councils should take care when imposing conditions to ensure that each condition has purpose; standardised conditions should not be included where they have no application to the development in question.

8.7 Councils should not rely on a condition requiring an evacuation plan as the sole basis for approving a development susceptible to flooding.

8.8 Councils should consider providing advice to development applicants during pre-lodgement meetings, and at the time of receiving a development application, about the way in which the development will be assessed for flood risk and what flood information council will be relying on to make this assessment.

**Chapter 9 Building controls**

9.1 The proposed new part of the Queensland Development Code, Mandatory Part 3.5 ‘Construction of buildings in flood hazard areas’, should be amended so that the performance requirement relating to building design and construction (Performance Requirement P1) for building on a lot will only be triggered where the council has:

- designated part of its area as a natural hazard management area (flood) under section 13 of the Building Regulation 2006, and
- either:
  - declared a height to be the expected flood level under section 13 of the Building Regulation 2006, or
  - adopted a highest recorded flood level for the lot, and
- either:
  - declared a velocity to be the expected maximum velocity of flood water for the area in which the lot is located, or
  - designated the area in which the lot is located an inactive flow or backwater area.
9.2 The proposed new part of the Queensland Development Code, Mandatory Part 3.5 ‘Construction of buildings in flood hazard areas’, should be amended so that the performance requirements about utilities and sanitary drains (Performance Requirement P2 and P3) for building on a lot will only be triggered where the council has:

- designated part of its area as a natural hazard management area (flood) under section 13 of the Building Regulation 2006, and
- either:
  - declared a height to be the expected flood level under section 13 of the Building Regulation 2006, or
  - adopted a highest recorded flood level for the lot.

9.3 The Queensland Government should consider amending the ‘Limitation’ section of the proposed new part of the Queensland Development Code, Mandatory Part 3.5 ‘Construction of buildings in flood hazard areas’, to allow for the possible application of ‘acceptable solution A1’ to a building located on a lot if:

- it is reasonable to expect the part of the lot on which the building work is proposed to be subjected to a maximum velocity of less than 1.5 metres per second, or
- the part of the lot on which the building work is proposed is located in an inactive flow or backwater area.

Chapter 10 Essential services

10.1 The Queensland Government should consider including in the criteria in the Queensland Plumbing and Wastewater Code a requirement that the risk of leakage from private on-site sewerage systems during floods be minimised.

10.2 Authorities responsible for the construction of sewerage infrastructure should, when embarking on new works, undertake risk and cost/benefit assessments to determine the level at which electrical infrastructure that may be vulnerable to inundation should be placed.

10.3 Authorities responsible for the management of sewerage infrastructure should conduct a review of their existing infrastructure to identify electrical infrastructure that may be vulnerable to inundation and perform risk and cost/benefit assessments to determine if it should be relocated to a higher level.

10.4 Queensland Urban Utilities should make the results of its trials on the use of caps for overflow relief gully grates available to other authorities responsible for sewerage infrastructure. Consideration should be given by those authorities as to how the results can be used to improve the flood resilience of their sewerage networks.

10.5 If the Queensland Development Code is amended to include provisions requiring homeowners to install sewage reflux valves, the Queensland Government should develop and make available to homeowners appropriate guidance material to assist them in meeting their responsibilities to maintain reflux valves.

10.6 Queensland Urban Utilities, and other distributor-retailers and councils, that have identified a practice of stormwater drains being connected to sewerage infrastructure, should conduct a program of education to raise public awareness that this practice is illegal and impedes the operation of the sewerage infrastructure.

10.7 Councils and distributor-retailers should agree to protocols for the exchange of information about suspected illegal connections, the steps being taken to investigate them or the basis for concluding that no investigation is required, and the results of any investigations or enforcement actions.

10.8 The Department of Environment and Resource Management should review the Queensland Urban Drainage Manual to determine whether it requires updating or improvement, in particular, to reflect the current law and to take into account insights gained from the 2010/2011 floods.

10.9 All councils should, resources allowing, map the overland flow paths of their urban areas.

10.10 Councils should consider amending their planning schemes to include provisions directed to consideration of the flood resilience of basements as a factor in determining the appropriateness of a material change of use.
10.11 In assessing and determining development applications for material change of use in areas susceptible to flood, councils should consider whether the new developments locate essential services infrastructure above basement level, or, alternatively, whether essential services infrastructure located at basement level can be constructed so that it can continue to function during a flood.

10.12 SunWater and the Central Highlands Regional Council should determine the issues of ownership and responsibility for maintenance of the LN1 drain system in Emerald.

10.13 The Bundaberg Regional Council should investigate the adequacy of the drain and take reasonable steps to ensure the Moore Park area is effectively served.

10.14 All councils should periodically conduct risk assessments to identify areas at risk of backflow flooding. In respect of such areas, councils should consider how such risks can be lessened, including in that process consideration of the installation of backflow prevention devices. Backflow devices should not, however, be installed unless and until a full risk based assessment has been undertaken.

10.15 Councils should conduct education campaigns directed to ensuring that all residents and property owners in areas identified as being at risk of backflow flooding are aware of the circumstances in which backflow flooding can occur, the hazard it presents and what should be done if it occurs.

10.16 The Queensland Government should draft assessment criteria to be included in the model flood planning controls that require critical infrastructure in assessable substation developments is built to remain operational during and immediately after a flood of a particular magnitude. That magnitude should be determined by an appropriate risk assessment.

10.17 If the Queensland Government does not include such assessment criteria in the model flood planning controls, councils should include assessment criteria in their planning schemes that require critical infrastructure in assessable substation developments is built to remain operational during and immediately after a flood of a particular magnitude. That magnitude should be determined by an appropriate risk assessment.

10.18 The Queensland Government should consider measures to ensure that requirements are included in the designation of land for community infrastructure under the Sustainable Planning Act 2009 to ensure that critical infrastructure for operating works under the Electricity Act is built to remain operational during and immediately after a flood of a particular magnitude. That magnitude should be determined by an appropriate risk assessment.

10.19 Electricity distributors should consider installing connection points for generators to provide electricity supply to non-flooded areas that have had their supply cut during floods.

10.20 The Queensland Government should consider whether there should be a legislative requirement that customer dedicated assets be built at or above the applicable defined flood level and if so, the Queensland Government should consider which legislation should contain such a requirement.

10.21 The Queensland Government should consider implementing mandatory requirements to ensure that all conduits for the purpose of providing electrical supply below the applicable defined flood level are sealed to prevent floodwaters from entering them or flowing into them.

10.22 Carriers, councils and the Australian Communications and Media Authority should take into account the risk of flooding when considering the placement of telecommunications facilities.

10.23 Queensland Rail and QR National should continue to investigate opportunities for increasing the flood resilience of their networks, including raising the height of critical equipment.

Chapter 11 Buy-backs and land swaps

11.1 Councils should consider implementing a property buy-back program in areas that are particularly vulnerable to regular flooding, as part of a broader floodplain management strategy, where possible obtaining funding from the Natural Disaster Resilience Program for this purpose.
Chapter 12 Performance of private insurers

12.1 When a policy-holder makes a claim, the insurer should ascertain the policy-holder’s preferred method of contact and ensure that it is used (with other modes of communication if necessary) to keep the policyholder informed about the progress of the claim. However, important decisions regarding the claim – for example, determinations about the outcome of the claim and settlement sums – should always be confirmed in writing.

12.2 Insurers should review their existing systems and processes and implement any improvements necessary to ensure that accurate and complete records of conversations with policy-holders are made.

12.3 Letters notifying policy-holders that their claims have been denied should, at a minimum, state the information upon which the insurer has relied in making the decision. These letters should also advise policy-holders that copies of the information will be made available upon request (in accordance with clause 3.4.3 of the General Insurance Code of Practice) and indicate how policy-holders can make a request.

12.4 The Insurance Council of Australia should consider an amendment to Part 3 of the code which requires insurers to notify policy-holders of the information on which they relied in assessing claims.

12.5 The Insurance Council of Australia should amend clause 3.4.3 of the General Insurance Code of Practice so that it requires insurers to inform policy-holders of their right to request a review of an insurer’s decision to refuse to provide access to information on which it relied in assessing claims.

Chapter 13 Mining

13.1 Mine operators should obtain all public seasonal forecasts issued by the Bureau of Meteorology relevant to the regions in which their operations are located.

13.2 Any mine operator of a site at high risk of flood should obtain the best forecast information available (seasonal and short term) for the region in which the mine is located.

13.3 The Department of Environment and Resource Management should prepare a list of relevant considerations to be taken into account in performing a risk assessment to decide which sites to inspect. Bureau of Meteorology forecasts should be one consideration.

13.4 The Department of Environment and Resource Management should conduct risk assessments in time for site inspections, and the implementation of solutions to problems identified at inspections, to take place before 1 November of each year.

13.5 The Queensland Government should work collaboratively with the Commonwealth Government and mine operators to ensure co-ordinated and effective monitoring of salts, metals and other contaminants in marine environments that may be affected by mine discharges.

13.6 The Queensland Government should determine, as far as possible, the impact of mine discharges during the 2010/2011 wet season on freshwater and marine water quality and fauna and flora.

13.7 The Department of Environment and Resource Management should assist mine operators in their applications for amended environmental authorities to ensure, as far as possible, that each environmental authority contains a tailored version of Table 4 of the model conditions. The Department of Environment and Resource Management should provide to mining companies its monitoring data and its suggested values for Table 4 on the basis of an assessment of the catchment which takes into account the cumulative effect of different operators’ releases.

13.8 Unless the Department of Environment and Resource Management has decided not to permit discharges, it should assist each mine operator in its application for an environmental authority to ensure, as far as possible, that each authority includes provisions for discharges during times of heavy rainfall and flood.

13.9 The Queensland Government should legislate to clarify the purposes for which a transitional environmental program can be granted. In particular, if the government considers the transitional environmental program the appropriate regulatory mechanism to deal with the discharge of water from mines during flood, section 330 of the Environmental Protection Act 1994 should be clarified to make it clear that it extends to that use.
13.10 The Queensland Government should refine the criteria which must be considered in assessment of applications for relaxation of environmental authority conditions, by transitional environmental program or otherwise, in response to flood.

13.11 The Queensland Government should consider amending the *Environmental Protection Act 1994* so that it allows for the relaxation of environmental authority conditions, by transitional environmental program or otherwise, as to discharge of water:

• pre-emptively, in advance of rainfall or flooding events, or
• for all mines in a catchment that is flooding.

13.12 The Queensland Government should prepare a procedural guide for officers deciding whether to grant a relaxation of environmental authority conditions, by transitional environmental program or otherwise, with guidance as to:

• the meaning of each criterion
• examples of the types of things that may be relevant to each criterion
• the priority, if any, to be afforded to different criteria.

13.13 The Queensland Government should make public the procedural guide used by Department of Environment and Resource Management officers to decide whether to grant a transitional environmental program.

13.14 The Queensland Government should consider amending the *Environmental Protection Act 1994* to provide a definition of the term ‘emergency’ for the purposes of section 468 of that Act.

13.15 The Queensland Government should make public the procedural guide used by Department of Environment and Resource Management officers to decide whether to grant an emergency direction.

13.16 The Queensland Government should amend the *Environmental Protection Act 1994* so as to permit an emergency direction to be given orally where it is not practicable to provide the direction in writing, with provision for its subsequent confirmation in writing.

13.17 The Queensland Government should determine which of its agencies should take responsibility for the management of all existing and new abandoned mine sites in Queensland.

13.18 The Department of Employment, Economic Development and Innovation should assemble all information currently available to the abandoned mine land program into a single database. The Queensland Government should ensure, using whatever information is available, that the list of abandoned mines is as complete as possible. This should at least include a review of all information held by the Department of Environment and Resource Management and the Department of Employment, Economic Development and Innovation.

13.19 The Queensland Government should seek information about the size, features and condition of abandoned mines, including whether the mine or its surrounding environment were adversely affected by flood, from private landholders who have abandoned mines on their properties.

**Chapter 15 Emergency response and other interim report issues**

15.1 Councils should support and encourage business owners to develop private flood evacuation plans by providing the following to business owners in areas known to be affected by flood:

• information about the benefits of evacuation plans
• contact details of relevant council and emergency service personnel for inclusion in evacuation plans.

15.2 Councils should consider making available to business owners locality specific information that would assist them to develop evacuation plans for commercial premises, for example, any evacuation sub-plan created under Emergency Management Queensland’s disaster evacuation guidelines.
15.3 The fire service should ensure that station officers are familiar with the procedure for contacting management when requesting the calling in of additional staff; and, in particular, that they have available to them the names and current telephone numbers of the officers to be contacted in the first instance, with alternative contact details in the event that those officers prove unavailable.

15.4 The Queensland Fire and Rescue Service should require that each region records in writing the results of its risk assessment undertaken as part of its annual review of its special operations functional plan.

15.5 The Disaster Management Act 2003 should be amended to give the chief executive of the department administering the Act (or his or her delegate) the authority to appoint an officer of Emergency Management Queensland to direct SES operations in extraordinary circumstances.

15.6 Emergency Management Queensland, in consultation with councils, should develop a directive that makes clear the authority of an officer of that agency to command a major SES operation. This could be expected to occur when a deployment of additional SES members is made to a region because the response needed is beyond the capacity of its local units. The directive should make clear the powers of the officer and his or her reporting responsibilities to disaster managers in these circumstances. Emergency Management Queensland must also ensure that any officer who assumes such a role has adequate training and skills in the conduct of disaster operations.

15.7 Emergency Management Queensland should ensure its staff, SES members and disaster managers are familiar with the directive when it is developed.

15.8 Emergency Management Queensland, in consultation with councils, should develop clear directives about:

- the communication and reporting that should take place between the SES and disaster managers, including in relation to task allocation and completion, once disaster management groups have been activated
- the communication and reporting that should take place between the SES and disaster managers, including in relation to task allocation and completion, once disaster management groups have been activated
- the process for dealing with requests for assistance that exceed an SES unit’s capacity to respond them
- the process for seeking extra support for an SES unit that has been overwhelmed by a disaster (whether by way of Emergency Management Queensland or the disaster management arrangements or both)
- the role of SES liaison officers in communications with disaster managers about SES disaster operations
- the role of incident controllers, and their teams, relative to those SES (or Emergency Management Queensland) personnel charged with the command of SES operations.

15.9 Emergency Management Queensland should ensure its staff, SES members and disaster managers are familiar with the directives it develops in relation to these matters.

15.10 Emergency Management Queensland should develop and implement a new formula for the distribution of its recurrent SES subsidy, which takes into account relevant factors including the size of a local SES contingent and the population, area and natural hazard risk profile of the local government area concerned.

15.11 Emergency Management Queensland should pursue the execution of the ‘Local Arrangements’ with councils where a Memorandum of Agreement is in place. The contents of the arrangements should be reviewed and updated regularly.

15.12 Emergency Management Queensland should simplify the process by which SES members gain recognition for prior qualifications so that unnecessary duplication of training can be avoided.
Chapter 16 Operation of Wivenhoe and Somerset dams

16.1 The Crime and Misconduct Commission should investigate whether the conduct of Mr Tibaldi, Mr Ayre and Mr Malone relating to:

• preparation of documents surrounding the January 2011 flood event, including the 17 January 2011 brief to the Minister, the 2 March 2011 flood event report, and statements provided to the Commission
• oral testimony given to the Commission evidences offence/s against the Criminal Code, and/or official misconduct under the Crime and Misconduct Act 2001 committed by any, or all, of them.

16.2 Seqwater should ensure that proper support and oversight mechanisms are put in place around both the substantive and procedural aspects of drafting flood event reports. Seqwater should consider engaging consultants with expertise in the production of reports following significant events to advise on these mechanisms. Measures to be considered should include:

• ensuring appropriate systems are in place to ensure the recollections of flood engineers and other parties are recorded immediately after the event, perhaps by engaging an external party to interview the flood engineers and other parties
• ensuring that a methodology for writing the report is set out clearly in advance, in writing, and that the final report includes a statement of that methodology
• putting in place systems to ensure that members of senior management have sufficient understanding of both the methodology and process by which the report is prepared to allow themselves to be satisfied that these are appropriate.

16.3 The Department of Environment and Resource Management should ensure that an independent and appropriately qualified person immediately starts the task of reviewing the March flood event report to ensure that the review is completed before the start of the 2012/2013 wet season.

16.4 Seqwater should ensure that any future peer review process:

• is co-ordinated by someone independent of those who wrote the report
• entails the provision of all relevant information to the peer reviewers
• permits sufficient time for the review
• documents all contact between those whose actions are under review and the reviewers.

16.5 The Queensland Government should resolve the discrepancy in recorded peak river height for the January 2011 flood of the Brisbane River between the Brisbane City and Port Office gauges.

Chapter 17 Other dam issues

17.1 The steering committees of the Wivenhoe Dam and Somerset Dam Optimisation Study and the North Pine Dam Optimisation Study should consider removing the water supply security investigation from each study.

17.2 The steering committee of the North Pine Dam Optimisation Study should consider whether it would be beneficial for the floodplain management investigation to be removed from the North Pine Dam Optimisation Study.

17.3 The Queensland Government should ensure that, when it considers options for the operational strategies to be employed at Wivenhoe and Somerset dams, and North Pine Dam, it is presented with a wide range of options which prioritise differing objectives. The Queensland Government should determine the operational strategies by considering the implications of each option over a range of flood events for at least:

• inundation of urban and rural areas
• water supply security
• dam safety
• submerging of bridges
• bank slumping and erosion
• riparian fauna and flora.

17.4 Seqwater should, in creating the new Wivenhoe and North Pine flood mitigation manuals, comprehensively consider:
• the amount of discretion that is able to be exercised by the flood engineers and the senior flood engineers, and the description of the circumstances in which such discretion may be exercised
• the circumstances in which it might be appropriate to release water in advance of an impending flood on the basis of forecasts from the Bureau of Meteorology
• if strategies of the form of strategy W2 and W3 in Revision 7 are included in the revised manual, or any strategy defined as a ‘transition strategy’, when and how those strategies should be implemented
• if the concept of ‘urban inundation’ is relevant to the operation of the dam, how it should be defined, and if the definition involves diverse concepts, how those concepts can be related back to the strategies, so that flood engineers can reach a clear understanding of their objectives and primary considerations
• if the concept of ‘natural peak flow’ is relevant, how it should be defined.

17.5 The conditions for the use of a particular strategy in all flood mitigation manuals should reflect objective standards.

17.6 The Queensland Government should ensure that all flood mitigation manuals include the requirement that those operating the dam during flood events hold current registrations as professional engineers.

17.7 Seqwater should consider engaging a technical writer to develop completely new manuals after the operational strategies for Wivenhoe, Somerset and North Pine dams are set by the Queensland Government.

17.8 Seqwater should ensure a legal review of the Wivenhoe manual and the North Pine manual is completed before the manual is submitted for approval.

17.9 The Queensland Government should consider whether North Pine Dam should be operated as a flood mitigation dam when it considers possible operating strategies and full supply levels as part of the longer term review of the Manual of Operational Procedures for Flood Mitigation at North Pine Dam.

17.10 The Queensland Government should amend the Water Supply (Safety and Reliability) Act 2008 to designate the Minister as the person who must approve a flood mitigation manual.

17.11 The assessment of flood mitigation manuals should be completed by a person with appropriate expertise who has had no involvement in its development, at any stage, and who can be seen to be independent of all individuals who were so involved.

17.12 The Queensland Government should continue to assess and review the adequacy of work procedures DS 5.1 and 5.3, having regard to the need for flood mitigation manuals to reflect the will of the executive.

17.13 Prior to approving a flood mitigation manual, the Queensland Government should be satisfied that its terms are expressed in a manner that allows a determination of compliance with it to be made by reference to objective standards.

17.14 The Department of Environment and Resource Management should prepare formal work procedures for the review of flood event reports created under emergency action plans and flood mitigation manuals. These should include procedures for:
• making enquiries with the owners of referable dams that have catchments that have been subject to heavy rainfall (or where there is other reason to believe the emergency action plan has been triggered) as to whether the emergency action plans have been triggered
• reminding owners of referable dams that have had emergency action plans triggered of their obligation to submit a flood event report
• upon receipt of a flood event report, reviewing it, identifying any dam safety or other issues or areas where insufficient detail has been provided, raising those matters with the dam owner or other affected party and identifying appropriate remedial steps
• raising any issues identified in the report that are beyond the expertise of the Department of Environment and Resource Management, or are likely to be of particular interest to another body, with the appropriate body
• keeping a record of the process and results of the review of the flood event report
• fixing an appropriate timeline for the completion of each of the above steps: the time required may depend on specific circumstances, but must allow for any potential safety issues to be identified and remedied efficiently.

17.15 As part of the longer term review of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam the Queensland Government should consider whether the dam operators should be able to extend the drawdown of the lake beyond seven days in order to reduce downstream bank slumping.

17.16 CS Energy should supplement physical monitoring of Splityard Creek Dam with visual monitoring by installing surveillance cameras or similar devices.

17.17 CS Energy and Seqwater should agree upon and adhere to a formal communication protocol that requires CS Energy personnel to advise Seqwater, through the Flood Operations Centre, of water movements between Splityard Creek Dam and Wivenhoe Dam or Pryde Creek once a flood event is declared under the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam. The protocol should ensure that a direct line of communication is established between CS Energy personnel physically located at the power station and the Flood Operations Centre.

17.18 The protocol should make provision for the use of telephone and/or radio where communication by email is not possible. Where necessary, CS Energy and Seqwater should make additional radio equipment available to relevant personnel.

17.19 CS Energy should put in place contingency measures to ensure email and telephone communications at Wivenhoe Power Station are not entirely dependent on a network located off-site.

17.20 CS Energy should review its emergency action plan and business procedures to ensure they are wholly consistent and give appropriate consideration to flooding as a possible emergency event.

17.21 CS Energy should amend its business procedure to remove any ambiguity as to the establishment of communications with Seqwater and to acknowledge the formal communications protocol regarding releases.

17.22 The Queensland Government should consider whether to empower Seqwater, through the flood operations centre, to direct CS Energy to stop or delay releases from Splityard Creek Dam where a flood event is declared under the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam.

17.23 Seqwater should consider commissioning an investigation into the extent of cracking below the level of the upper gallery of Somerset Dam and the impact of any such cracking on the dam’s stability and, in turn, its operation.

17.24 Seqwater should ensure that the Somerset Dam gallery is not susceptible to flooding during overtopping events.

17.25 The Department of Transport and Main Roads, in conjunction with Brisbane City Council and Somerset Regional Council, should investigate options for the upgrade of Brisbane River crossings between Wivenhoe Dam and Colleges Crossing and undertake a cost-benefit analysis of these to determine the outcome which best serves the public interest.

17.26 As part of the longer term review of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam, the Queensland Government should consider the impact of possible upgrades of bridges downstream of Wivenhoe Dam on different operating strategies for the dam.

17.27 Wide Bay Water should, in addition to its usual wet season preparations and maintenance, undertake the following activities in advance of each wet season:
• conduct training for personnel on dam operation, including contingency plans for the situation in which one or more of the gates is inoperable
• hold meetings of key personnel of Wide Bay Water involved in the operation of the dam during floods, which:
  – in addition to any other matters, inform staff about the current status of the gates, dam operation strategies and contingency plans for the situation in which one or more of the gates is inoperable
  – are recorded in minutes which document the information provided and are made available to all operational staff.

17.28 The Department of Environment and Resource Management should require Wide Bay Water, in advance of every wet season, to provide details of its expectation as to the operability of the crest gates if a flood occurs, until such time as all gates have been demonstrated to work as designed.

17.29 Toowoomba Regional Council should engage external consultants to carry out failure impact assessments on the detention basins along East Creek.

17.30 Toowoomba Regional Council and the Department of Environment and Resource Management should continue to co-operate to assess the referable dam status of existing detention basins and any future detention basins constructed in the West Creek and East Creek catchment areas.

17.31 The Queensland Government should legislate to oblige each owner of a referable dam to have an emergency action plan approved by the appropriate Queensland Government agency. Such plans should be reviewed periodically.

17.32 The Queensland Government should, in consultation with the Department of Environment and Resource Management and Emergency Management Queensland, determine which agency is appropriate to review and approve emergency action plans for referable dams.

17.33 Prior to each wet season, the Department of Environment and Resource Management should audit the compliance of each owner of a referable dam with the obligation to have an emergency action plan approved by the Queensland Government.

17.34 The Department of Environment and Resource Management should prioritise dam safety audits according to risk. The risk assessment should be informed by criteria including:

• structure and materials used in construction
• age of the dam
• time since last inspection
• occurrence of a flood event since last audit and the size of that flood event
• population at risk if the dam were to fail
• experience and capability of dam owner
• dam owner compliance history
• time since last audit.

17.35 The Department of Environment and Resource Management and Emergency Management Queensland should ensure that each has copies of current emergency action plans for all dams in Queensland.

17.36 The Department of Environment and Resource Management should conduct periodic dam safety information and education sessions with emergency management personnel including those from Emergency Management Queensland, local and district disaster management groups and local councils. Priority should be given to sessions if the Bureau of Meteorology forecasts a wet season with a greater than 50 per cent chance of above median rainfall.
Preface

The Commission was set up fourteen months ago to enquire into seven matters arising out of the 2010/2011 floods, identified in the terms of reference as: preparation and planning for the floods by governments, agencies and the community; the adequacy of the response to the floods; management of essential services; the adequacy of forecasts and early warning systems; insurers’ performance of their responsibilities; the operation of dams; and land use planning to minimise flood impacts. It was a broad and daunting range of subject matter. Those questions had to be examined over a very large geographical area, because most of the state was affected; inquiries had to be made and hearings held in a variety of locations.

The Commission came under criticism towards the end of its term when it had to re-convene to examine whether the account of operational strategies to which the flood engineers responsible for Wivenhoe Dam had sworn in hearigns was in fact correct. Not all of the criticism was fair, or acknowledged the pressures under which the Commission was operating, in endeavouring to cover all of its terms of reference in a limited time. It would have been quite impracticable for the Commission to take all the evidence given on oath before it and check it for inconsistency against the mountain of documents received. Time simply did not allow that. And the Commission’s approach across the terms of reference has not been one of seeking to attribute blame; its brief was not to seek out wrong-doers but, as the Order in Council establishing it specifies, to make recommendations for the improvement of preparation and planning for future floods and emergency response in natural disasters, as well as for any legislative change needed. But the need to examine these particular allegations was made all the more acute by the fact that a commission of this kind is so dependent, given its time constraints, on truthful evidence.

As to how the floods were managed, there is no doubt that they took a state more accustomed to drought by surprise. Generally, though, Queenslanders can be relieved that governments at all levels were able to provide a prompt, if not perfect, response, which compares favourably with the apparent paralysis of government agencies and breakdown in order apparent on the Gulf coast after Hurricane Katrina struck New Orleans. In Queensland there was an already existing, coherent emergency management structure, although it had not yet been tested by disaster of these proportions. Although some councils struggled, there was no breakdown in order, and people came to the assistance of others.

There is certainly a good deal of room for improvement in planning for emergency response, as the many recommendations in this report and the interim report demonstrate. But this note of caution must be sounded: the disastrous floods which struck south-east Queensland in the week of 10 January 2011 were unprecedented, in many places completely unexpected, and struck at so many points at once that no government could be expected to have the capacity to respond seamlessly and immediately everywhere, and in all ways needed. A great deal can be done to improve readiness to deal with disaster generally, but it is impossible that any government could be permanently ready to come at once to the assistance of everyone needing help in a disaster of that scale and suddenness, unless it were to maintain a standing force of rescue personnel beyond the present capacity of society to fund.

Even a large dam such as Wivenhoe has a limited flood mitigation capacity when the volume of water entering it is significantly larger than its storage capacity. Its flood mitigation effect for Brisbane was further limited by the fact that floodwaters from other parts of the Brisbane River catchment entered the river downstream of the dam, through the Bremer River and the Lockyer Creek. The flooding in Brisbane and Ipswich could, as Mr Babister’s study has shown, have been reduced to some degree had the dam had its capacity reduced to 75 per cent prior to the December rains; but to appreciate what the magnitude of the rain would be and that it would fall in the dam area would have required a more than human capacity of prediction. What is concerning, though, is the apparent inertia of government when the possibility was raised.

The Commission has found non-compliance with the manual under which the dam was to be operated. What should not be overlooked is that the manual itself was ambiguous, unclear and difficult to use, and was not based on the best, most current research and information. The Commission has made a number of recommendations to ensure its thorough review, including of the operating strategies contained in it, based on comprehensive scientific investigations and modelling.

So far as insurance is concerned, the Commission’s terms of reference did not extend to what has emerged as the major complaint: the fact that many people thought they were insured for flood, but have found that the wording of their policies actually excludes their claims. It was sensible not to ask the Commission to enquire into the
problem of definition, because it has already been the subject of two other inquiries. But it meant that the field of what was to be addressed was limited to insurers’ performance where they were responsible for meeting claims. Despite the Commission’s efforts to encourage members of the public to provide their accounts, evidence has been scant, perhaps for reasons which are suggested in the relevant chapter. The Commission has not been prepared to make sweeping findings on limited evidence. Where ways of managing claims better have emerged from the evidence, recommendations have been made.

This report has dealt at considerable length with the land planning systems of the State and their application by councils. In land use planning, attention to flood risk has been ad hoc. The recommendations made are designed to insert into the land planning system uniform controls which will ensure that the risk of flood is consistently recognised and planning assessments made with regard to it. Queensland also lacks a coherent approach to floodplain management; a number of recommendations have been made relating to the need for current and comprehensive flood studies and flood mapping, particularly in urban areas.

One of the heartening aspects of the Commission’s work has been the many people who took the time and trouble, whether they were directly affected or not, to write submissions with considered and sincere ideas. Some will be unhappy that their views were not adopted; but I am genuinely grateful to all who contributed their efforts.

I want to thank counsel assisting and the staff of the Commission for their remarkable efforts, energy and esprit de corps over a testing year. Staff members in their twenties abandoned their social lives to work absurdly long hours, oblivious to weekends and public holidays; older Commission officers strained the affections of their families doing the same. Nothing could have been achieved without the hard work and steadiness of purpose of the four counsel assisting. And my thanks go also to the Deputy Commissioners for their good humour and patience through sittings close and far, under all sorts of conditions. Mr O’Sullivan, particularly, made himself available for community meetings around the state, in the towns he knows well from his long career.

It is hoped that this report and the interim report will serve as a detailed record for the future, of what happened in the floods and where things went wrong. The areas to which this report is directed are the longer term. Years of drought did not promote rigour in flood planning, whether in relation to disaster response, dam management or land use. Complacency about flood prevailed, at least in parts of the state, over many years. And there is a risk that the recommendations made here will be enthusiastically taken up in the short term, but, absent another flood disaster in the next few years, priorities will drift and the lessons will be forgotten.

T.S. Eliot captured that loss of memory in a few lines:2

I do not know much about gods; but I think that the river
Is a strong brown god—sullen, untamed and intractable,
Patient to some degree, at first recognised as a frontier;
Useful, untrustworthy, as a conveyor of commerce;
Then only a problem confronting the builder of bridges.
The problem once solved, the brown god is almost forgotten
By the dwellers in cities—ever, however, implacable.
Keeping his seasons and rages, destroyer, reminder
Of what men choose to forget.

C.E. Holmes
Commissioner

(Endnotes)

1 A Failure of Initiative: The Final Report of the Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina.
2 The Dry Salvages, from Four Quartets © Estate of T.S.Eliot and reprinted by permission of Faber and Faber Ltd.
1 Introduction

Prolonged and extensive rainfall over large areas of Queensland, coupled with already saturated catchments, led to flooding of historic proportions in Queensland in December 2010, stretching into January 2011.¹

Thirty-three people died in the 2010/2011 floods; three remain missing. More than 78 per cent of the state (an area bigger than France and Germany combined) was declared a disaster zone; over 2.5 million people were affected.² Some 29 000 homes and businesses suffered some form of inundation.³ The Queensland Reconstruction Authority has estimated that the cost of flooding events will be in excess of $5 billion.⁴

The scale of the disaster led to the establishment, on 17 January 2011, of the Commission of Inquiry into the Queensland floods of 2010/2011.

1.1 Report to government

The Queensland Government set the matters that the Commission must consider as part of its inquiries (the ‘terms of reference’⁵), and the timeframes in which the Commission must deliver its findings and recommendations to government.

In accordance with the order establishing it, the Commission provided the Queensland Government with an interim report on 1 August 2011. The order originally required the Commission to provide a final report to the Queensland Government by 17 January 2012. The date for the final report (this report) was first extended to 24 February 2012 because of the Commission’s extensive public hearing schedule and the volume of evidence to be considered; in late January that date was further extended to 16 March 2012 to allow the Commission to take further evidence in relation to the dam operation strategies applied at Wivenhoe Dam during the January 2011 flood event.

The Commission’s interim report focused on those matters that the Commission had identified as needing to be addressed before the 2011/2012 wet season. In particular, it dealt with preparation and
planning for floods and steps needed to ensure an emergency response that would prevent the loss of life and property. It also recommended that should the Bureau of Meteorology predict with confidence equal to or greater than 2010’s prediction another wet season of similar proportions, the full supply level of Wivenhoe Dam should be lowered to 75 per cent in the 2011/2012 wet season (a step which was in fact taken). In all cases, the Commission sought to identify recommendations that could realistically be put into effect in the short term, but it also made recommendations about work of such importance that it should be commenced, even if it could not be completed, before the next wet season.

Given the very short time available to it before the interim report was required to be provided to Government (six months) the Commission endeavoured to make that report as comprehensive as possible about the operation of dams, and emergency warnings, preparation, planning and response to floods, including some aspects of managing the supply of essential services during the 2010/2011 floods.

Some of these issues required further examination and are addressed in this final report. Because the issues of insurance and land planning were not matters which lent themselves to useful recommendations for the next wet season, the Commission deferred its consideration of those aspects of its terms of reference to this final report.

1.2 The Commission of Inquiry

The Commission was established under the*Commissions of Inquiry Act 1950* as an independent body with wide-ranging powers of investigation.

The Honourable Justice Catherine Holmes was appointed as Commissioner to lead the inquiry. Mr James (Jim) O’Sullivan AC and Mr Phillip Cummins were appointed as Deputy Commissioners to assist her.

Two barristers, Mr Peter Callaghan SC and Ms Elizabeth Wilson SC were first appointed as counsel assisting the Commission. Later, Ms Kerri Mellifont SC and Ms Nicole Kefford were also appointed as counsel assisting the Commission. Mr Mark Hinson SC provided advice on aspects of land planning legislation.

Staff of the Commission were drawn from fields of expertise relevant to the Commission’s work including the legal, policy, research and policing professions. Experts in certain fields were also engaged to provide advice on particular matters, including hydrology and town planning matters. A list of experts engaged is in Appendix 5.

1.3 The Commission’s work

The Commission’s findings and recommendations in this report and its interim report were the result of an examination of an enormous amount of information. This information was obtained through a variety of means, including written submissions, community meetings, material sought from organisations and individuals with particular knowledge, and public hearings. The Commission sought to ensure it was informed in a balanced way, receiving the views of the public and those of organisations which played a part in the preparation and response to the floods, across a range of perspectives from urban and regional areas.

More than 700 written submissions were received. They addressed the entire range of matters into which the Commission was to inquire.

At the outset of its investigations, the Commission held community consultation sessions in Grantham and Murphys Creek in the Lockyer Valley. No formal evidence was taken at these meetings; it was a useful way for the Commission to hear directly from members of the Lockyer Valley community what they regarded as the questions needing to be considered by the Commission.

The Commissioner and deputies visited the Lockyer Valley twice in January 2011, to see first hand the immediate effects of the devastating flash flooding that occurred there on 10 January 2011. The Commissioner and deputies also visited the Wivenhoe and Somerset dams to see them in operation.

Community meetings were held in 16 locations in central, southern and western Queensland. Led by Deputy Commissioner O’Sullivan, those meetings provided information about how community members could participate in the inquiry process. Through the community meetings, the Commission identified individuals and organisations in regional areas from whom it sought further information. Meetings were held before the interim report, and again after its delivery, when time permitted trips to those communities which could not be visited in the first round. In total, the Deputy Commissioner and Commission staff, including the Commission’s police investigators, travelled
some 4154 kilometres throughout Queensland in the course of holding community meetings.

Through the duration of the Commission, community meetings were held in:

- Jericho
- Alpha
- Chinchilla
- Condamine
- Surat
- Tara
- Rolleston
- Theodore
- Mundubbera
- Gayndah
- Gin Gin
- Taroom
- Charleville
- Roma
- Cunnamulla
- Warwick.

The Commission’s police investigators obtained information to inform its research by making contact with communities throughout Queensland which were directly affected by the 2010/2011 floods and travelling to regional areas to obtain statements from local people affected by flooding.

The Commission also used its powers under the Commissions of Inquiry Act 1950 to obtain statements and documents from members of the public, experts, public servants and members of non-government organisations. Some of those individuals were also called as witnesses in the Commission’s public hearings.

Public hearings were held around the state. The Commission sat for 68 days in total, and 6133 pages of transcripts of evidence were produced. Thirty-one days of hearings took place before the Commission’s interim report was delivered. In its second round of hearings, the Commission sat again in Brisbane, Ipswich and Emerald, this time focusing on land planning and insurance related issues. It also held hearings for the first time in Bundaberg, Maryborough and Gympie, where it examined, in addition to those issues, the emergency preparation for and response to the 2010/2011 floods. A third round of hearings was held over a ten day period in early February 2012 to examine allegations of misconduct on the part of flood operations engineers in the application and reporting of dam operation strategies for Wivenhoe Dam.

Details of the public hearings held over the entire period of the Commission are set out below:

- Brisbane (49 days)
- Toowoomba (5 days)
- Dalby (1 day)
- Goondiwindi (1 day)
- St George (1 day)
- Ipswich (3 days)
The hearings were held in a range of venues, from town halls to regional court houses. The total number of witnesses who gave evidence in the Commission's public hearings was 345: 176 people gave evidence in the first round of hearings held before the Commission's interim report, 142 people gave evidence in the second round, and 27 witnesses were called in the third round. (Some of those who gave evidence in the third round had also been called as witnesses in the first round of hearings).

The Commissioner presided at each of these public hearings, assisted by the two deputy Commissioners, with the exception of the last part of the public hearings, in which the conduct of Seqwater and its employees in the reporting of dam operation strategies was in issue. At the Commissioner's request, Deputy Commissioner Cummins stood aside on becoming aware that a company for which he had contracted to work after the Commission's close had been engaged by Seqwater to be part of a review committee examining technical work completed for the long term review of the Wivenhoe and North Pine dam manuals. While he remained a Deputy Commissioner, to avoid any possible perception of a conflict of interest, he did not take any further part in the Commission's work.

Hearings were open to the public and conducted within a legal framework: witnesses gave evidence and were cross examined, exhibits were tendered and transcripts prepared. Lifeline counsellors engaged by the Queensland Government were available to support witnesses before, during and after their appearances before the Commission.

There was no requirement for those involved to have legal representation, although some witnesses chose to seek permission from the Commission to be legally represented when they appeared at the hearings.

The Commission received a number of applications from individuals and entities seeking leave to appear as parties in the course of the inquiry. Those whose interests were likely to be affected in an individual, direct and immediate way by the Commission's findings or recommendations were given leave to appear, enabling them to challenge evidence by cross-examination. Appendix 2 sets out the parties who were granted leave to appear as a party to the proceedings before the Commission.

Those who unsuccessfully sought leave to appear on the basis of a more general interest in the matters subject of the inquiry were given other opportunities to put forward their views and information, by way of submission, formal statement or being called to give evidence.

In the course of its work the Commission has given effect to the principle of natural justice and has given notice to those whose conduct might be the subject of adverse findings in this and the interim report.

At all times the Commission ensured that its work was as open and accessible as possible to the general public. The Commission's website (www.floodcommission.qld.gov.au) provided information about the progress of the inquiry as well as email, postal and telephone contact details so that anyone, regardless of geographical location, could provide information or submissions to the Commission. The website also provided live streaming of the public hearings. Daily transcripts from the public hearings were placed on the website within 24 hours (and in most cases the same day), so that the public could be kept informed of the Commission's progress. The website proved a very popular source of information for people following the inquiry: for example, in the six months from September 2011 to February 2012, it received over 66,000 visits and nearly 280,000 page views.

Submissions made to the Commission and exhibits tendered as part of the public hearings were also published on the website, redacted of personal information that would breach an individual's privacy, or represent a risk to public safety. Closing submissions made by parties and counsel assisting the Commission on the matters explored in the third round of hearings will be placed on the website on publication of this report, redacted of any submissions adverse to a party's interests about which the Commission did not make a finding. The Commission's view is that it would be unfair to publish allegations damaging to reputation which were not in the event substantiated.

The Commission's interim report and this final report are also available on the Commission's website. The Commission has conducted its investigations, community meetings, public hearings and delivered its reports well within the budget allocated by the Queensland Government.
1.4 Structure of this report

The report begins with an examination of floodplain management (chapter 2), which is, in many respects, at the heart of the Commission’s inquiry. It covers the range of responses to flood risk that the Commission has investigated from its inception to this final report: emergency warnings, preparation, planning and response, dams, levees, and land use planning. This report proposes a fundamental shift in approach; the focus on just one flood, often the so-called ‘1 in 100 year’ flood, must now be abandoned. Floods come in all sizes; a proper approach to flood risk will consider them all.

The second part of the report (chapters 3–11) details the results of the Commission’s examination of how local and regional planning systems can best minimise the impact of floods.

This part of the report commences, in chapter 3, with a summary of the land planning framework and how it works, covering the Sustainable Planning Act 2009 (the legislation which in most cases governs land planning in Queensland), the instruments made under it, and how development is assessed. Bearing in mind that land planning is a complex area of the law, with a peculiar language of its own, the Commission has sought, to the extent possible, to use language intelligible to those not familiar with the intricacies of planning schemes.

Various aspects of state and local planning instruments are considered in chapters 4 and 5 respectively. Chapter 6, on ‘satellite’ legislation, explains how some pieces of planning legislation which are independent of the Sustainable Planning Act 2009 operate.

Some particular challenges which flood-susceptible land presents in planning are considered in chapter 7, including the problems of storing hazardous materials on a floodplain and isolation of properties by flooding of low-lying access routes. This chapter also addresses the issue of controls for the development of levees.

How the development assessment process works in practice where flooding is a consideration is detailed, with some particular case examples, in chapter 8.

Chapter 9 considers the role of building controls in minimising damage caused by flooding through the regulation of design and construction, and the implications of possible changes to the Queensland Development Code to regulate building in flood hazard areas.

Chapter 10 provides an overview of the damage caused by the 2010/2011 floods to sewerage, stormwater, electricity, telecommunications, and roads and rail infrastructure. It considers how damage to essential services infrastructure can be minimised in future floods, with a particular emphasis on planning and design measures.

Larger-scale measures to mitigate the impact of flooding are examined in chapter 11 Buybacks and land swaps, including the initiative to rebuild Grantham in the wake of the flash flooding disaster of 10 January 2011.

A significant term of reference not dealt with by the Commission in the interim report is the performance of private insurers in meeting their claims responsibilities. This is addressed in chapter 12.

The results of the Commission’s investigations into the Queensland Government’s response to flooding at active and abandoned mine sites are set out in chapter 13.

The Commission, in its interim report, made a number of recommendations designed to avoid a repetition of the number of flood-related deaths that occurred in the 2010/2011 floods. Chapter 14 of this final report discusses the circumstances of the flood related deaths, and sets out each finding or recommendation made by the Commission to address the systemic issues raised by those deaths.

Chapter 15 concerns a variety of matters raised, but not finally dealt with, in the Commission’s interim report: emergency communications; review of disaster management plans; the Queensland Fire and Rescue Service’s response to the events of 10 January 2011 and its risk assessment process; the structure and funding of the SES and local SES attempts at providing a warning to Grantham residents on 10 January; and whether the quarry at Grantham had any role in the Grantham flooding.

Chapter 16 examines the application and reporting of dam operating strategies for Wivenhoe Dam. In particular, this chapter examines allegations as to the versions given by Seqwater and its employees of the strategies under which the dam was operated between 7 January and 11 January 2011; conclusions are reached about what in fact occurred and recommendations are made accordingly.
Chapter 17 examines several different aspects of dam operations, including the functioning of some particular dams, the longer term review of the manual, bank slumping, cracks in Somerset Dam, bridges and crossings near dams, and some relevant dam functions of DERM.

The recommendations from this report are set out following the Commissioner’s preface. As was the case in the interim report, particular recommendations are also set out in the chapter to which they relate, preceded by a discussion of the facts and material relied on in making them. The recommendations made in the Commission’s interim report are set out in Appendix 3.

1.5 General observations

All topics in the Commission’s interim and final reports are related, in one way or another, to the concept of flood risk. That is a term capable of more than one meaning; although usually it embodies both likelihood of flooding and the consequences of flood when it comes. Sometimes, though, it relates only to likelihood. How it is used in this report depends on context. Where the Commission uses expressions such as ‘susceptible to flooding’, ‘vulnerable to flooding’ or ‘at risk of flooding’ it does not use them in any technical sense; they should be regarded as having their ordinary meaning.

This report does not attempt to catalogue every action taken in preparing for the 2010/2011 floods; it also does not attempt to exhaustively examine every development application or insurance claim. While the Commission did examine particular developments and particular insurance claims, and has set out the results of some of those investigations in this report, it does so by way of illustration of the issues being examined, as part of the Commission’s attempt to find a better way of preparing for and responding to floods in the future.

At all times, the Commission has been cognisant of the requirement in its terms of reference to make recommendations that are ‘appropriate, feasible and cost effective’ to improve the response to any future floods or other natural disasters. Where the Commission has identified a recommendation that has significant cost implications, the report details this in the relevant part, and frames the recommendation appropriately. However, in the time available to it, the Commission has not been in a position to exhaustively seek evidence on the cost of various alternatives. Instead, it has focussed on making recommendations about what might usefully be achieved.

The recommendations made by the Commission are focussed on flood-related matters, given the significance of the particular kind of natural disaster experienced in Queensland. However all levels of government, in considering their response to the recommendations, should consider how they might also be applied in other natural disasters.

(Endnotes)

1 A detailed description of the extent of flooding across Queensland is set out in the Commission’s interim report, chapter 1 Summary of weather and flood events.


5 The full terms of reference for the Commission is at Appendix 1.
2 Floodplain management

A floodplain is an area of land adjacent to a creek, river, estuary, lake, dam or artificial channel, which is subject to inundation by floodwater. Most cities and towns in Queensland are located on floodplains. There are ample benefits associated with making use of fertile floodplain lands, but they come with an obvious drawback: by definition, floodplain land is subject to flooding.

No recommendations made by this Commission, even if implemented by government, can control the forces of nature. At some time in the future, parts of Queensland will experience floods of a magnitude as great as, or greater than, those of the 2010/2011 wet season. Existing science cannot predict when they will happen, or how severe they will be.

Contemporary society does not countenance a fatalistic approach to such inevitabilities, even if their occurrence is unpredictable. There is an expectation that government will act to protect its citizens from disaster, and that all available science should be applied so that the nature and extent of the risk is known and appropriate action taken to ameliorate it.

With that in mind, government agencies need to engage in a process of floodplain management involving a combination of land planning and building controls, emergency management procedures, and structural mitigation measures such as levees and dams. This chapter addresses the preparatory steps government should take to enable the best possible decisions to be made about floodplain management measures. The implementation of particular floodplain management measures is considered in more detail elsewhere in this report and the Commission’s interim report.

The most useful scientific exercise currently available to underpin government’s response to flood risk is a flood study. A flood study is the scientific investigation of flooding in a particular area, usually the catchment of a river system. It may involve hydrologic and hydraulic investigations, and a statistical analysis of the frequency with which floods have occurred.

Any such process will be only as effective as the science that enables it, and the reliability of results will necessarily depend upon the quality of data. There is no single way of performing a flood study. It can be a simple exercise, or one that is as complex and detailed as resources will allow. The Commission did not attempt to codify the science and practice of flood studies. Rather, it convened a panel of experts and was informed by their consensus as to the status of some existing flood studies, the procedures that would ideally be involved in future studies, and the need to reform the way in which essential data is managed.

The experts’ consensus is a good blueprint, but it must be accepted that it is, for the most part, only governments who can afford to undertake major flood studies. As much as any government process, the management of a flood study will be subject to a range of influences. In this context, it was instructive for the Commission to examine the history of flood studies in Brisbane and Ipswich over the last 30 years. That examination reinforced the proposition that a flood study is a scientific exercise, and if the utility of its results is to be maintained
there is an ever present need for governments to stay abreast of scientific developments, and the possibilities they create for the refinement and expansion of existing knowledge.

Once completed, a flood study will be useful only if it can be understood by an audience that extends well beyond the scientific community. To that end, the results can be visually represented in the form of a flood map. A map that reflects the results of a comprehensive flood study is the most valuable form of flood map, and can usefully inform important public and commercial decisions. It can demonstrate not just the potential extent of a flood, but also the risk of its occurrence and the manner in which it might behave. There are, however, other types of flood maps that can also be useful to governments and individuals, depending on the information required and the resources available to provide it. The Commission has endorsed a hierarchy of flood maps that might be used by governments in Queensland, according to their circumstances: see 2.7.3 Assessment of mapping options.

At most, however, a flood map is a theoretical two-dimensional representation of what is likely to be a complex and dynamic situation involving countless variables. It cannot be assumed that human judgment about such matters will always be assisted by scientific understanding, or governed by common sense and logic.

For example, the Q100 figure, as represented on a flood map depicting it, is intended to convey the proposition that, in any given year, there is a 1 per cent chance that the area depicted will be inundated – to some extent – by floodwater. As the Commission discovered, many members of the public did not understand the term ‘Q100’ in that way. The very notion that a map depicting a Q100 line was an effective means of communicating the results of a flood study was challenged.

This example is just one illustration of why a government’s responsibility does not end with the procurement of a flood map. The complications involved in preparing for and responding to flood are such that it is desirable for governments to implement comprehensive floodplain management plans in accordance with principles which have already been developed for that purpose. By so doing, they might begin to meet the expectation that government protect its constituents from floods which are yet to be experienced, but which will inevitably occur.
2.1 Principles of floodplain management

Historically, governments have managed the risks associated with occupying the floodplain in a number of ways, from ad hoc decision-making based on past experience through to comprehensive planning and emergency response strategies. Approaches of the former kind are obviously unsatisfactory. Not only do they fail to ensure that a range of potential flood events is considered, they do not address other factors involved in mitigating the impact of flooding and responding to it.

In an attempt to develop a nationally consistent approach to floodplain management, the Standing Committee on Agriculture and Resource Management5 sought to develop a series of best practice guidelines. These guidelines are set out in its report number 73, Floodplain Management in Australia: best practice principles and guidelines (2000).6 The National Flood Risk Advisory Group is currently developing a new floodplain management manual that will supersede Floodplain Management in Australia. The Commission has been advised that a draft of the new manual is likely to be finalised by mid-2012. In the meantime, Floodplain Management in Australia is widely considered to set out the best practice principles for floodplain management.7

According to Floodplain Management in Australia, best practice requires the identification and implementation of an appropriate mix of four different kinds of floodplain management measures:

- land use planning controls (for example, zoning requirements to ensure compatibility between land use and flood risk)
- building controls (for example, minimum flood levels and flood-proofing)
- structural measures (for example, flood mitigation works such as the construction of levees)
- flood emergency measures (for example, flood warning, evacuation and recovery plans).

Determining precisely which measures are appropriate and how best to distribute resources among them can be a complicated process. With this in mind, Floodplain Management in Australia outlines a series of steps it considers should be undertaken. This process begins in earnest with the conduct of a flood study.8

Once a flood study has been completed, the relevant government agency (typically a council) will be in a position to conduct enquiries into the appropriate mix of flood mitigation measures. Where possible, this should be done by way of a formal floodplain management study and guided by appropriate flood mapping. The conclusions drawn from those enquiries can then be implemented in accordance with a floodplain management plan, the development of which is considered in more detail in section 2.6.1 Preparing a floodplain management plan.

2.2 Flood studies

A flood study allows the likelihood of flooding at particular locations as well as the characteristics of each flood, such as extent of inundation, flow, depth and velocity, to be determined. Flood studies form the foundation upon which floodplain management measures are built; it is not possible to adequately manage the risk of flooding if that risk is not properly understood. There is no single way of doing flood studies: they may be comprehensive or relatively simple.

Flood studies typically have two main components:

- a hydrologic study aimed at determining rainfall and associated stream flows in a range of scenarios
- a hydraulic analysis that estimates the behaviour of flood flow (that is, flow rate, velocity, depth and extent of inundation) as it passes through the floodplain.

Some matters of terminology should be dealt with at the outset. The likelihood of flooding occurring at a particular point is often described in terms of annual exceedance probability (likelihood that a particular flood flow or height will be exceeded in any one year) or average recurrence interval (average period in years between floods of a particular size or greater).9 A flood with an annual exceedance probability of 1 per cent has an average recurrence interval of 100.10 The flood line which represents the extent of such a flood is commonly known as the Q100. In this report, the Commission will use the term ‘flood with an annual exceedance probability of one per cent’ or its shortened form, ‘1% AEP flood’, except where another term may be needed to maintain consistency with the evidence.

The term ‘flood hazard’ is sometimes used to refer to the behaviour or characteristics of floodwaters (that is, velocity, depth, rate of rise, and length of inundation). However, flood hazard is defined in Floodplain Management in
Australia as ‘potential loss of life, injury and economic loss caused by future flood events’. The level of flood hazard in that sense will vary with a number of factors:

- flood behaviour (depth, velocity, rate of rise, duration)
- topography (for example, whether there are evacuation routes, or whether land is surrounded by floodwater)
- the nature of the population at risk and the types of land use in the flooded area
- emergency management issues (such as the adequacy of flood forecasting, flood warning and evacuation plans).

A flood study is a scientific investigation; it involves no matters of policy. It can determine the characteristics of floods with different likelihood of occurring, but cannot determine ‘hazard’; the latter involves qualitative considerations such as the nature of land use and the efficacy of evacuation plans. Models created during a flood study can be used to create flood maps – see section 2.7 Flood mapping for land planning controls below.

### 2.3 A flood study of the Brisbane River catchment

#### 2.3.1 The expert panel

The Commission heard evidence from a panel of experts about flood studies for the Brisbane and Bremer rivers. Those rivers were of particular interest to the Commission because of the large urban centres – Brisbane and Ipswich – that flooded in January 2011. The Brisbane River panel included eight experts, who were either hydrologists or hydraulic engineers: three engaged by the Commission (Dr Rory Nathan, Mr Mark Babister and Dr Michael Leonard), three engaged by Brisbane City Council (Professor Colin Apelt, Mr Erwin Weinmann and Mr Drew Bewsher) and one engaged by each of Ipswich City Council (Mr Neil Collins) and the Insurance Council of Australia (Mr Sharmil Markar). The Bremer River panel comprised the experts engaged by the Commission, Ipswich City Council and the Insurance Council of Australia.

The Commission initially engaged Mr Babister to prepare reports giving his best estimate of the Q100 at certain points along the Brisbane and Bremer rivers. The other experts on the panels responded to Mr Babister’s report with reports of their own. Before giving evidence in public hearings of the Commission, the experts participated in a conference with an independent facilitator, Mr Peter Davis SC, and produced a joint expert statement. In that statement, all experts, including Mr Babister, agreed that his estimate was not an appropriate flood level figure corresponding to the Q100 because he had not been able to complete a comprehensive flood study. (Given the short timeframes under which the Commission has worked, Mr Babister was given only four weeks to produce a report; it represented his best efforts in the time available to him to calculate Q100 without the benefit of a comprehensive flood study.) The reports prepared by each expert were critiques of Mr Babister’s methodology and results. The joint expert statement diverged significantly from that topic. It focussed on the sort of comprehensive flood study which would be necessary to obtain a sound estimate of the level that would be reached by floods of different probabilities, such as the Q100. The joint expert statement sets out a blueprint for a best practice flood study for the Brisbane River catchment.
2.3.2 A comprehensive study of the Brisbane River catchment

The joint statement of the expert panel recommended that a flood study analyse flood behaviour throughout the entire Brisbane River catchment. That analysis would lead to a determination of the likelihood and characteristics of flood in Brisbane and Ipswich. They suggested that such a study should be conducted over a range of possible floods from the flood with a 50 per cent annual exceedance probability through to the probable maximum flood.

The experts considered that it would not be appropriate for them to prescribe the methodology for conducting the flood study, but did recommend that the study should be comprehensive in use of data sources and range of methodologies. Corroboration of results could be obtained by comparing estimates of flow, height, velocity or depth using different methodologies.

The proposed data, hydrologic investigations and hydraulic investigations to be used in the study are set out in the joint expert statement. The joint statement gives no opinion on the exact order in which different pieces of work should be done, but during public hearings the experts supported an iterative approach to the flood study. That would involve an initial data collection and hydrologic modelling to arrive at estimates of floods of different likelihoods. These estimates would not be final figures, but would be used to determine which factors introduced the most uncertainty. The work would then focus on reducing the uncertainty created by those factors, for example by refining data sets or creating modelled data, thus producing the best returns from the least effort.

The process of data collection, hydrologic and hydraulic modelling set out below is likely to need to be undertaken more than once.

Dr Nathan gave a rough estimate of the time required to complete the entire study as three years. That period incorporates time spent developing the framework for the completion of the study with all agencies that are to be involved, including councils and dam operators. He estimated the cost of the study in professional fees as in the low numbers of millions. He estimated that the first iteration, being the characterisation of the flood risk, would take between 12 and 18 months.

1. Collection of data

Significant work is required on data. The experts recommended the collation of existing data along with any review or analysis of it, and the collection of further data on historical events. In addition, the study should involve a fresh analysis and review of data relied upon in previous studies. The creation of a central repository of flood study data may assist in this task: see section 2.5.5 Central repository of flood study data.

The experts concluded that the following data must be used in the flood study:

- rainfall data including:
  - historical rainfall data (including sub-daily and daily-point rainfall)
  - radar data sets
  - rainfall data, often described as design, synthetic or probabilistic, obtained through the use of rainfall models. Such data sets are often available from the Bureau of Meteorology and include information about average depth over catchment, temporal and spatial patterns
- stream flow, including historical peak, continuous and anecdotal stream flow data, observed flow data from physical gauging and rating curves used at different times in history
- tide levels, including historical and modelled tide levels, astronomical tides and tidal anomalies
- inundation levels and extents during historical floods
- data about how Wivenhoe Dam and Somerset Dam are operated now and have been operated in the past, including discharges and levels in historical and modelled events
- modelled, continuous inflow and outflow data for Somerset and Wivenhoe dams to allow an investigation of the probability of the dam being at certain levels at the start of a flood
- historical land use conditions
- river channel and floodplain characteristics for hydraulic modelling to be performed in current and historical conditions, including:
  - topographic data obtained through LIDAR (light detection and ranging, technology that is used to measure geospatial information) and bathymetry (mapping of river beds)
structures and other development affecting flood flows
vegetation on the floodplain
survey data
characteristics of the movement of sediment in the Brisbane and Bremer rivers and major tributaries.

Given the iterative nature of the flood study, it would not be necessary for the collection, collation and review of data to be comprehensive before any further investigations were undertaken. The extent to which this initial data collection and collation should be completed before commencement of the study is a matter for the judgment of those carrying out the study.

2. Preparation of hydrologic models

Hydrologic models convert rain falling over land into flow in a stream. Different models are needed for different catchments. For the Brisbane River catchment, hydrologic models relating at least to Somerset and Wivenhoe dams, the Lockyer Creek, the Bremer River and the Brisbane River downstream of Wivenhoe Dam will be required.

The expert panel recommended that the hydrologic models be run in what is known as a Monte Carlo framework.

3. Running hydrologic models in Monte Carlo framework

The benefit of the Monte Carlo framework is that it allows the natural variability of factors which affect flood to be taken into account. It is obvious that there is no single set of conditions that will cause a flood. It is the combined effect of when, where and the extent to which rain falls, dam levels and saturation of the catchment which causes a flood, and there may be many different values ascribed to each one of those features.

In the past, some hydrologists have estimated the Q100 flood (or a flood of any exceedance probability) by assuming that a rainfall event of the same probability will cause such a flood and then modelling the effect of one such rainfall event. For example, a rainfall event with an annual exceedance probability of one per cent might be simulated to determine the peak flow which would occur at different points in a river in a 1% AEP flood. Fixed values have been assigned to all other relevant factors: one saturation factor, one lake level, one spatial and temporal distribution of the rainfall, and so on. Some studies have analysed more than one rainfall event: for example studies done for the Brisbane City Council in 2003 addressed seven rainfall events.

The Monte Carlo framework allows the modelling to be done using thousands of different values for each of the factors that produce floods. Looking at all the different values of the different factors, the model can approximate something like the thousands of possible outcomes. The hydrology expert panel recommended the following factors be varied in different model runs:

- temporal (the period in which rain falls) and spatial (the area over which it falls) patterns of rainfall
- saturation of the catchment
- initial water level in dams
- variability of operating procedures of dams
- physical limitations on operation of the dams
- tidal conditions
- previous and following rainfall events.

Some of the factors will not be independent of each other, but will be related in some way. For example, the degree of saturation in the catchment of the Brisbane River above Wivenhoe and the initial water level in the dams are both dependent on the amount of rain that has fallen in the catchment in the previous weeks, months and years. Common sense dictates that when a large amount of rain has fallen, it is more likely that the dams will be full and the catchment will be saturated. The relationships between factors must be reflected by ascribing mutually consistent values to them. This correlation between data sets must be determined before the Monte Carlo analysis can be performed.

The results of all of those model runs are considered together so that a probability distribution of the peak flow or volume of floods that could occur from a rainfall event of a particular probability can be developed. A probability distribution is a representation of the likelihood of different outcomes occurring. For example, it may be that the modelling shows that 4 per cent of the time, a 1% AEP rainfall event will cause a flood with peak flow greater than
7000 m$^3$/s, or that 15 per cent of the time, a 1% AEP rainfall event will cause a flood with peak flow greater than 9000 m$^3$/s. The probability distribution will show how likely it is that certain values of flow will be met or exceeded during a rainfall event of a particular probability.

4. Validation of hydrologic models

The expert panel recommended that the hydrologic models be validated by comparing the results they produce against observed data from historical floods. Models developed in a Monte Carlo framework, taking into account natural variability, should reproduce observed flood behaviour and natural variability of outcomes. In particular, at key locations, the models should be able to reproduce:

- hydrograph attenuation (that is, the extent to which a flood is attenuated as it travels downstream by water's entering floodplains and natural detention basins or absorbing into soil)
- probability distribution of the total flood volume produced by rainfall
- probability distribution of the peak flow produced by rainfall
- probability distribution of timing of flows from major tributaries
- natural flood behaviour observed in no dam conditions and current conditions.

Dr Nathan gave evidence that this reproduction of natural variability might be more important for some factors at different places in the catchment. His evidence was that the reproduction of volume and peak flow was important above Wivenhoe and Somerset dams, whereas the reproduction of peak flow was the most important aspect of validation below the dams.

The expert panel also recommended validating the hydrologic models by comparing peak flows and flood volumes obtained through modelling with values obtained through mathematical analysis of the historical flood record. That latter technique, called flood frequency analysis, produces estimations of the probabilities of different flood heights purely from the historical record. Ideally, such an analysis would occur using data over as long a period as possible; in practice, a flood record of 150 years at the Brisbane Port Office gauge is considered a fairly substantial period of record. Flood frequency analysis uses probability theory to obtain a flood frequency curve for a particular point on a river. The flood frequency curve can be used to determine a value (usually peak flow or height of the flood) for floods of different probabilities (say 10 per cent and 5 per cent, through to a small probability, for example 0.0001 per cent). The results can be compared to the results obtained from the Monte Carlo analysis.

The expert panel recommended that consideration should be given to pooling regional information in the flood frequency analysis. That technique allows observed data from comparable areas to be used as though it occurred in one place, thereby increasing the amount of data available to analyse. This method was used by a firm of consulting engineers and hydrologists, Sinclair Knight Merz, in 2003 to compare and combine data from different gauges in the Brisbane River, but could also be employed to incorporate the use of data from rivers on the Sunshine and Gold coasts.

If the models are not validated, those performing the flood study will need to collect more data and refine the hydrologic models until they are defensible.

5. Hydraulic modelling

A hydraulic model converts flow in a stream into flood heights, thus allowing assessment of the extent of inundation. The expert panel recommended the use of a hydraulic model to determine flood levels, flows and extents over the full floodplain surrounding the Brisbane River and its major tributaries downstream of Wivenhoe Dam.

The hydraulic model will also identify areas influenced by backwater at the confluence of two streams. Backwater effects occur during flooding when an excess of water in the larger waterway prevents water from flowing out of a tributary, and the tributary 'backs up', making flood levels upstream of the confluence higher. This is particularly important at the confluence of the Bremer and Brisbane rivers, where significant backwater effects have been observed. The experts emphasised the need to model that backwater carefully and precisely.

The experts considered that there should be one hydraulic model for the whole of the lower Brisbane River area. They recommended use of a standard 'linked one-dimensional two-dimensional model'. That type of model has some parts which are one-dimensional and assume velocity is constant at different points on the cross section of a
It may be necessary to develop a separate, more detailed model of the interaction at the Bremer-Brisbane confluence.63

When creating any model, there is a balance to be struck between its complexity and its practicality. One important indicator of its practicality is the length of time it takes to run.64 The experts recommended that attention be given to that balance, and considered that the model should:

• be able to assess historical changes to the river bathymetry
• run quickly enough to allow detailed calibration work and assessment of changes (the expectation being that hundreds of simulations will be required for this purpose).65

The hydrologists and engineers undertaking the study should also consider the ability of the model to deal with the movement of sediment and changes in river bed cross sections during flood events as a means of evaluating the effect of changing river conditions on flood levels.66

The results of the hydraulic modelling can be represented as a probability distribution for flood height, depth or velocity at different points along the Brisbane River for a range of floods of varying likelihood (for example Q100, 0.5 per cent, 0.001 per cent).

The iterative nature of the entire flood study means there will be some interplay between the hydrologic and hydraulic modelling. In particular, the experts considered that the rating curves67 derived for the hydraulic modelling at different places down the river should be considered in the hydrologic modelling.68

6. Joint probability considerations

The expert panel identified two areas in which a joint probability analysis was required: the relationships between floods occurring in the Bremer and Brisbane rivers, and between flooding in the lower Brisbane River and elevated ocean levels.

A joint probability problem arises for the Bremer-Brisbane relationship because Ipswich can be affected by flooding in the Bremer River, flooding in the Brisbane River or both.69 The same rainfall event may cause flooding in both rivers, which means the likelihoods of flooding in each river are linked. A joint probability analysis will determine the likely flooding in one river given the flooding that is occurring in the other. That can be represented in the form of a relationship (for example, a curve, such as a rating curve linking flows in the Brisbane with flows in the Bremer) or in terms of probabilities (for example, that for a given flow in the Brisbane, there is a 90 per cent chance that a flow above a certain level will be occurring in the Bremer).

No methodology for investigating the joint probability question was prescribed by the hydrology expert panel.70 Those completing the study should seek expert advice as to which approach should be used.

Elevated ocean levels can affect flood heights in Brisbane because it is so close to the mouth of the river.71 One meteorological condition, such as a cyclone, may cause both flooding in the river and elevated ocean levels.72 The flood study must, the experts said, consider the interaction between ocean levels and flooding in the Brisbane River catchment, which will affect both the hydrologic and hydraulic modelling.73

7. Climate change

The experts agreed that the impacts of climate change should be assessed during the study.74

Climate change, and the uncertainties surrounding it, can be taken into account in a Monte Carlo analysis,75 although it has been observed that the uncertainties surrounding climate change are much greater than other uncertainties in flood studies. Dr Leonard’s opinion was that a Monte Carlo analysis should be completed first without taking into account climate change; later, steps could be taken to incorporate climate change into the analysis.76 Guidance may also be found in the joint Queensland Government-Local Government Association of Queensland Inland Flood Study, completed in 2010, which considered the impacts of climate change.77
2.3.3 Responsibility for completing the study

The Commission recommends that the Queensland Government and councils should work together to ensure flood studies are done for all urban areas that do not have current flood information: see recommendations made in section 2.5.3 Ensuring all urban areas have flood studies, below. Those recommendations apply to the Brisbane River catchment as to all catchments in Queensland. A particular consideration of the state of the study in Brisbane is required, because a study which might involve a significant portion of the work now recommended has already been initiated by the Queensland Government, through Seqwater. That study is called the Wivenhoe Dam and Somerset Dam Optimisation Study.78 The study’s primary aim is to inform the review of the flood mitigation manual applicable at Wivenhoe and Somerset dams. The Commission’s view is that the flood study of the catchment might be more efficiently performed outside the confines of the study commenced. That position is further explained in section 17.1.1 The structure for the completion of the scientific investigations.

That said, it is a matter for the parties involved to determine the structure within which both studies are completed. The Commission considers that the steering committee of the Optimisation Study should determine whether it is more effective for the Brisbane River flood study to be completed inside or outside of it.

Whatever is decided, the Commission considers it the responsibility of the councils, Brisbane City Council, Ipswich City Council and Somerset Regional Council, and the Queensland Government, in accordance with section 2.5, below, to ensure that a flood study with the characteristics recommended is completed. Those agencies should assess the work done (if any) within the Optimisation Study to determine whether further work is necessary for the flood study. If further work is required, that work should be completed on a catchment wide basis in a way determined by those agencies in accordance with the scheme set up for the completion of flood studies under section 2.5.3 Ensuring all urban areas have flood studies.

Recommendations

2.1 The steering committee of the Wivenhoe Dam and Somerset Dam Optimisation Study should consider whether it would be more effective for the floodplain management investigation to be removed from the Wivenhoe Dam and Somerset Dam Optimisation Study.

2.2 Brisbane City Council, Ipswich City Council and Somerset Regional Council and the Queensland Government should ensure that, as soon as practicable, a flood study of the Brisbane River catchment is completed in accordance with the process determined by them under recommendation 2.5 and 2.6. The study should:

• be comprehensive in terms of the methodologies applied and use different methodologies to corroborate results
• involve the collation, and creation where appropriate, of the following data:
  – rainfall data including historical and design data and radar
  – stream flow data
  – tide levels
  – inundation levels and extents
  – data on the operation of Wivenhoe and Somerset dams
  – river channel and floodplain characteristics including topography, bathymetry, development and survey data
• involve determining the correlation between any of the data sets above
• produce suitable hydrologic models run in a Monte Carlo framework, taking account of variability over the following factors:
  – spatial and temporal rainfall patterns
  – saturation of the catchment
  – initial water level in dams
  – effect of operating procedures
  – physical limitations on the operation of the dams
2 Floodplain management

– tidal conditions
– closely occurring rainfall events
• validate hydrologic models to ensure they reproduce:
  – observed hydrograph attenuation
  – probability distributions of observed values for total flood volume and peak flow
  – timing of major tributary flows
  – observed flood behaviour under no dams conditions and current conditions
• produce a suitable hydraulic model or models that:
  – are able to determine flood heights, extents of inundation, velocities, rate of rise and duration of
    inundation for floods of different probabilities
  – are able to deal with movement of sediment and changes in river beds during floods
  – are able to assess historical changes to river bathymetry
  – are able to be run in a short time to allow detailed calibration and assessment work
  – characterise the backwater effect at the confluence of the Brisbane and Bremer rivers and other
    confluences as appropriate
• involve analysis of the joint probability of floods occurring in the Brisbane and Bremer rivers (and
  any other pair of rivers if considered appropriate)
• be iterative, and obtain a short-term estimate of the characteristics of floods of different probabilities
  in all significant locations in the catchment (at least Brisbane City, Ipswich City and at Wivenhoe
  Dam) in order to determine the priorities for the rest of the study.

2.3.4 Further investigations required for Ipswich

Once it has received the results of the study to be completed for the entire Brisbane catchment, Ipswich City
Council may require more refined data and mapping to assist it in its floodplain management. The further work
required to be done on the Bremer River would naturally follow the Brisbane River study. However, because of the iterative
nature of the Brisbane work, it may be possible to start work on the Bremer River study before the finalisation of
the Brisbane River study.

Ipswich City Council may require more work to be done in the way of detailed data collection, hydrologic and
hydraulic modelling for the Bremer River and its tributaries than is undertaken in the Brisbane River flood study.
The expert panel recommended the following specific steps for Bremer River hydrologic and hydraulic modelling:

• use of Brisbane River historical flood data as well as data from floods in the Bremer River
• validation of the hydrologic model against the probability distribution of flood levels obtained from the
  historical record at Ipswich. This will be a check on whether the joint probability problem described
  above has been solved.

Dr Nathan indicated that the extra work required for the Bremer River would take a matter of months, not years.
Dr Leonard gave an estimate of nine to 12 months. The cost of the Bremer River work would be significantly less
than the Brisbane work.

Recommendation

2.3 Ipswich City Council should determine whether the results, models and maps produced by the Brisbane
River flood study are sufficient for its floodplain management. If they are not, Ipswich City Council
should ensure appropriate work is done by way of data collection and creation and hydrologic and
hydraulic modelling for use in its floodplain management.
2.3.5 Effect of the need for a comprehensive flood study on current planning

The expert panel found that it could not determine whether the most recent Q100 estimates obtained by both Brisbane and Ipswich city councils were appropriate flood level figures, because neither was based on a comprehensive flood study. Neither Brisbane nor Ipswich City Council is presently using its most recent estimate of Q100 in its planning scheme or temporary local planning instrument. Brisbane City Council uses a ‘defined flood level’ in its planning scheme of 3.7 metres at the Port Office gauge, 40 centimetres higher than the most recent estimate of the Q100, which was set in 2003 at 3.3 metres. Ipswich City Council’s most recent estimate of Q100 is 15.28 metres at the David T rumpy Bridge gauge, obtained in a 2006 flood study. That study was completed after the finalisation of the current Ipswich planning scheme, which sets the flood height corresponding to Q100 at 16.8 metres. That figure was arrived at by an earlier flood study.

That does not render the correctness or otherwise of the councils’ most recent estimates of Q100 irrelevant. While Brisbane has moved away from the use of the term Q100, or tying its floor level used for planning controls directly to an estimate of the Q100, it remains a measure by which the conservatism of the defined flood level is judged. If a flood study were to return results with a Q100 higher than Brisbane City Council’s defined flood level, the council is likely, prudently, to reconsider its adherence to that line. Equally, new estimates of the Ipswich Q100 might affect planning controls in the Ipswich planning scheme.

The flood levels currently used by both councils should not be discarded because of the hydrology expert panel’s finding. Rather, they should remain in place, in the absence of some exceptional reason, while the comprehensive flood study is performed and appropriate flood levels and extents are determined. Brisbane City Council has implemented temporary planning controls that reference the greater of its defined flood level or the 2011 flood line. Ipswich City Council’s temporary local planning instrument provides for temporary planning controls that reference equal to the greatest of the defined flood level from its 2006 scheme, and the 1974 and 2011 historical flood lines. That approach is prudent and should be continued until a comprehensive flood study is completed. The use of freeboard in the Brisbane and Ipswich planning schemes over many years has also been a sensible measure in the face of uncertainty surrounding Q100 levels.

2.4 Brisbane and Ipswich council procedures

The previous section dealt with what is now required by way of a flood study for the Brisbane River catchment. This section deals with the means by which two of the councils within that catchment, Brisbane City Council and Ipswich City Council, have approached the task of obtaining and using a flood study in the past.

2.4.1 The Brisbane Q100

From 1976 to March 2011, Brisbane City Council had, as the basis for planning controls related to flood, the same flood level: 3.7 metres at the Port Office gauge. In that time, the council received from expert engineers more than one estimate of the Q100. Estimates ranged between 3.16 metres and 5.34 metres at the city gauge.

The 3.7 metre level was adopted by the council in 1976 on the basis that it represented the peak height that would have been reached by the 1974 flood had it been mitigated by Wivenhoe Dam. The council’s submission states that it modelled and reviewed flood levels between 1996 and 2003; that in 2003 an independent expert review panel found the best estimate of Q100 was 3.3 metres at the city gauge; and that the council subsequently decided to maintain the defined flood level used for Brisbane’s planning scheme at 3.7 metres. As an explanation of the process by which estimates of the Q100 flood height were obtained, this submission is, while accurate, simplified. It is easier to distil relevant lessons from the expanded account which follows.

The Sinclair Knight Merz study

The council commissioned Sinclair Knight Merz, consultant engineers, to perform a comprehensive flood study in 1996. The final report was delivered to the council in June 1998. It gave a best estimate for Q100 at 5.34 metres at the city gauge, which was 1.64 metres above the level referred to in the council’s planning controls (at 3.7 metres).
Internal review

The manager of Water Resources, the division of the council responsible for flood management policy, received the report. He had a number of concerns related to its methodology, and, after some discussion with council officers from Water Resources and City Design (a division of the council which provides technical services to policy divisions) decided to engage an expert in hydrology from Melbourne to review it. The terms of reference for the review were settled by the manager of Water Resources.

His concerns were confirmed by the expert’s report, received in December 1998. The expert took issue with Sinclair Knight Merz’s methodology as to the assumption that Wivenhoe and Somerset dams would be at full supply level at the start of a flood, the use of aereal reduction factors and the assumption that no water would be lost to the ground or evaporation. Further, he was concerned by the difference in results between the flood estimated by the design rainfall technique and a flood frequency analysis. As a result of those concerns, the expert concluded that Sinclair Knight Merz’s estimate of the Q100 was probably an overestimate. His report otherwise confirmed Sinclair Knight Merz’s approach and methodology as appropriate. The expert made recommendations about the work to be done in order to deal with the issues he identified.

The manager of Water Resources decided to act on those recommendations and enlisted City Design to do the necessary work. City Design worked toward satisfying the expert’s recommendations and produced a report in June 1999 which gave a best estimate of Q100 as 5.0 metres at the Port Office gauge. The manager of Water Resources, deciding that the report did not adequately address the expert’s concerns, commissioned City Design to perform more work. The unit produced a second report in December 1999 which gave a best estimate of Q100 as 4.7 metres at the Port Office gauge, one metre above the planning control level used by the council. The manager was still not satisfied with the methodology used and considered the December report still did not meet the expert’s recommendations. No decisions were taken in respect of the Q100 or related planning controls in response to the June or December report: Water Resources considered further work was required.

Waiting for data

Officers of Water Resources then decided that the council should approach the study in concert with other agencies. They opened channels of communication with the Department of Natural Resources and Mines, the Bureau of Meteorology and the South East Queensland Water Corporation. A technical workshop was held involving these agencies in October 2000. The purpose of the workshop was to determine the best practice methodology that should be adopted for the finalisation of the Brisbane River flood study.

At the workshop, a hydrologist from the department drew the attention of the council officers present to a set of studies then being conducted, in which the department was a participant. They were designed to underpin the application of new procedures in the recent revision of Australian Rainfall and Runoff to regions of Queensland. One of those regions was the Wivenhoe Dam catchment. The studies included modelling of likely releases from the dam if affected by the new design rainfalls. The hydrologist from the department advised the council officers that he expected the results of the study would include an estimate of the flow of the Q100 flood that was closer to the council’s current estimate (from pre-1998 studies) than earlier departmental studies. It was anticipated that the work would be finalised by December 2000. The manager of Water Resources decided to put the council’s flood study on hold and wait for the department’s data to be provided.

The department’s data was not provided in December 2000. In fact it was not provided for nearly three years, finally being made available to the council in June 2003. The data was the product of a range of studies conducted by a large number of partners, which took much longer than expected to be concluded. For current purposes it cannot be said that any detriment was suffered because of the period of time taken for the data to become available, but the delay illustrates how flood studies can be frustrated by circumstances outside of the control of the council.

Resolution

The Courier-Mail ran a number of articles in June 2003 about the manner in which the council had dealt with flood study information. The June 1999 City Design report had been released to The Courier-Mail without the council’s approval and was the object of public scrutiny.

In July 2003, the council decided to continue the flood study with the new data received from the Department of Natural Resources and Mines. There was urgency in the council’s approach – it wanted the issue resolved
quickly. This was due partly to media attention and public interest and partly to the length of time that had passed since the study started in 1996. The Lord Mayor decided that the results obtained needed to stand up to examination; an independent review panel was viewed as the way to achieve this outcome. The manager of Water Resources commissioned the independent review panel, which was chaired by the same expert who peer reviewed the 1998 report. The manager of Water Resources also commissioned Sinclair Knight Merz to do the modelling work for the independent review panel to review.

The independent review panel’s terms of reference included the sentence ‘even if the Q100 changes from 6,800 m³/s, it is likely that the Development Control Level will remain the same as is currently used in the Brisbane City Plan’. A senior engineer in the Water Resources Branch who wrote the terms of reference said he intended to indicate that if the independent review panel found that the Q100 was lower than previously thought, planning control levels would not be correspondingly lowered.

The independent review panel had five weeks to deliver its report. It did no substantive modelling, but reviewed results provided to it by Sinclair Knight Merz. The consultants from Sinclair Knight Merz were given between one and two months to produce draft reports to be reviewed by the panel. They were not to produce new models, but to use those created in the 1996 to 1998 study. The manager of Water Resources gave evidence that he ‘would have’ asked them how long it would take to feed the new data and information into the models. No consideration was given as to whether the 1998 models remained appropriate. The independent review panel was involved in setting the scope of the work to be conducted by Sinclair Knight Merz.

The prospect of performing a Monte Carlo analysis to deal with uncertainty was raised during the study. At a project meeting attended by the independent review panel and representatives of Sinclair Knight Merz and Brisbane City Council on 14 August 2003, it was estimated that such an analysis would at least require six weeks of work to convert the hydrologic models. This amount of time was considered to be ‘too long’. Draft reports provided to the panel were dated 8 and 28 August 2003. In the draft reports, and in the final report in December 2003, Sinclair Knight Merz outlined the sources of uncertainty and recommended that a Monte Carlo analysis be performed in the future.

Presenting results to full council

The independent review panel delivered its report to the council on 3 September 2003, seven days after the second draft report was received. The panel determined that the best estimate of the Q100 was 3.3 metres at the city gauge, corresponding to a flow of 6000 m³/s. The panel gave a range of uncertainty around those estimates, putting the possible values between 2.8 and 3.8 metres and 5000 and 7000 m³/s.

The independent review panel report recognised the inevitable uncertainty that attaches to estimates of the flow or height of a flood of a particular probability. This remaining uncertainty arose in a number of areas including: the accuracy of rating curves; the relationships between, on the one hand, the occurrence of flood-producing storms and saturation of the catchment, and, on the other, storm occurrence and dam levels; and the choice of particular spatial and temporal patterns for the storms used to model the Q100 flow. As to the last point, the panel said that a different estimate of the Q100 might be obtained by the use of different storms. That, the panel said, could be resolved by a full Monte Carlo analysis.

Having made those observations in the body of the report, the panel gave its conclusions in the following terms:

The panel notes that the current ‘best estimates’ of Q100 and of the corresponding flood level at the Port Office, provide a sufficient basis for a decision on whether the currently accepted flood levels are broadly acceptable. However, for general flood risk assessments and risk-based flood management decision, more refined flood frequency estimates will ultimately be required.

The report contained five suggested areas of future work. The panel ‘strongly recommend[ed]’ that a Monte Carlo analysis be performed ‘as Council moves towards a risk-based approach to flood management’.

Water Resources prepared a memorandum to civic cabinet, recommending that the independent review panel’s best estimate of Q100 of 6000 m³/s and 3.3 metres at the city gauge be accepted, but that the planning control level be maintained at 3.7 metres. The memorandum reasoned that the current level of 3.7 metres was within the range suggested by the independent review panel for Q100. It noted that there was uncertainty arising from the methods used to estimate flows and heights and climate variability. There was no reference in the memorandum to the foreshadowed requirement for more refined estimates of the Q100 if the council were to make risk-based
flood management decisions. Nor was there reference to the recommendation for Monte Carlo analysis. That is unfortunate. Council officers and elected members should be cognisant of the uncertainties involved in any flood estimate, and make decisions with that in mind.

The draft resolution had the effect of accepting the independent review panel’s best estimate of Q100 flow as 6000 m$^3$/s and determining that the planning control level of 3.7 metres was still ‘the most appropriate level’. The draft resolution was recommended to full council by civic cabinet and then adopted by the council on 2 December 2003. The council decided to adopt the ‘defined flood level’ terminology for this planning control level, moving away from the use of the term Q100.

Reports received after the decision was made

The reports provided by Sinclair Knight Merz to the independent review panel were drafts. The final report of the 2003 investigations was delivered in December 2003. It determined the best estimate of Q100 to be 3.51 metres at the city gauge and 6500 m$^3$/s. The range of uncertainty was 2.76 metres to 4.41 metres and 5000 to 7000 m$^3$/s. After further calibration of the hydraulic model, Sinclair Knight Merz provided another estimate of Q100 in February 2004, of 3.16 metres.

There is no evidence that these figures were ever provided to the relevant council committee, the chief executive or the full council. The present manager of the Water Resources Branch, who had reviewed the files, said that no decisions were made as to giving briefings to councillors about the December 2003 report because ‘decisions had been made in reliance on the Panel (2003)’. The former manager said he would only have put information in front of council if they had to make a decision on it; for example, if the report had suggested the council needed to revisit the Q100.

The Commission considers that elected representatives should be informed of the results of all flood studies completed for a council. See, further, section 2.5.4 Commissioning, assessment and use of flood studies.

Recommendations for future work

The 2003 reports of Sinclair Knight Merz and the independent review panel made recommendations for work that should be completed. One recommendation that has gained prominence, given the recommendations of the Commission’s expert panel, is the recommendation to perform a Monte Carlo analysis.

Water Resources officers decided not to proceed with the Monte Carlo analysis. There were two reasons given to the Commission for the decision. First, the council’s planning control level was at the top of the range for the Q100 produced by the independent review panel. Second, Water Resources, after consultation with City Design, decided the Monte Carlo methodology was not sufficiently developed to be used immediately. Some members of the independent review panel had advised council officers in 2003 that the recommendation went beyond best practice.

The expert panel members who gave evidence before the Commission expressed varying views as to whether the Monte Carlo method was an appropriate method to incorporate into a flood study in 2003, and if not, at what time it was appropriate. Most agreed with Dr Nathan’s observation that hydrologists are better placed to conduct a Monte Carlo analysis in 2011 than they were ten years ago. Reference was made to the improvements in computing power between 2003 and 2011, increased understanding of radar, and the benefit of data gained from the 2011 flood. Others said it was feasible in 2003, but on a lesser scale than that possible with current technology.

The question as to when use of the Monte Carlo method might become appropriate was left unasked by the council, which had no formal procedure in place to track the progress of such methodology. The council has not, since 2003, implemented the recommendation to perform a Monte Carlo analysis, although it has completed other flood risk management investigations.

In any case, the implementation of the technique is now supported by the whole of the Commission’s expert panel and recommended by the Commission. See recommendation 2.2 above.
2.4.2 The Ipswich Q100

The Commission asked Ipswich City Council about flood studies completed since 2000. Due to changes in personnel at the council, it was unable to provide detailed information about how decisions were made regarding each flood study, but it confirmed the accuracy of a chronology provided by Mr Mark Babister in his Flood Frequency Report on the Bremer River.

Inextricably intertwined with Brisbane

As stated above in section 2.3.4 Further investigations for Ipswich, the Bremer River flooding issues are a subset of the issues to be addressed in flood studies of the Brisbane River. The work done on the Bremer River has often, sensibly, followed work done by the Brisbane council for the Brisbane River catchment.

Ipswich City Council adopted planning schemes in 2004 and 2006. Both planning schemes include a similar flood overlay, which depicts the council’s ‘Q20 development line’ (a flood line based on a long standing regulation line) and the Q100 flood line.

A major study of the Bremer River was performed by Sinclair Knight Merz in 2000. Sinclair Knight Merz used models produced during its study for Brisbane City Council between 1996 and 1998 to obtain estimates of the Q100 by modelling the passage of a 1% AEP rainfall event through the Bremer River. The flood levels thus obtained were compared to flood levels arrived at by performing a flood frequency analysis on the historical record. The two methods produced levels for the Q100 of 18.65 metres and 18.6 metres respectively at the David Trumpy Bridge, the main gauge in Ipswich.

Those estimates, and other work completed in 2002 by Halliburton KBR for rural areas, were used to create the flood overlay for the 2004 planning scheme. In 2003, whilst in the process of adopting the planning scheme, Ipswich City Council found that Brisbane City Council had changed its estimate of the Q100 flow at the Brisbane city gauge in response to the independent review panel report. The council decided to amend its overlay so that it was consistent with the independent review panel’s conclusion that 6000 m$^3$/s was the best estimate of the Q100 level at the Port Office gauge in Brisbane. The council had no modelling of the extent to which an event in Ipswich would produce that flow. It used, instead, mapping produced by Sinclair Knight Merz in 2000 based on a 6800 m$^3$/s peak flow at the Brisbane city gauge. That map was a modified version of the Q50 map produced by Sinclair Knight Merz, but Ipswich City Council began using it as a Q100 map because of the similarity of the peak flow used to create it to Brisbane City Council’s latest estimate of the Q100 flow. The flood overlay used in the 2006 scheme reflected only minor amendments from the 2004 scheme.

The 2006 studies

Brisbane City Council’s new Q100 flow was not the only new piece of information available to the Ipswich City Council at the end of 2003. The council was also provided the dam operation and rainfall data assembled by the Queensland Government, and so long awaited by Brisbane City Council. Funding was obtained for a review and update of the 2000 Ipswich River flood study, a task performed by Sargent Consulting in 2006. That study had the following goals:

- to develop a refined version of the council’s hydrologic model to account for the new information received
- to use stochastic (Monte Carlo) simulation to account for variability in spatial and temporal rainfall distributions, saturation and dam levels
- to develop a refined version of the hydraulic model
- to ensure consistency of flood levels and mapping at the border of the Ipswich City Council region and neighbouring councils’ regions, including that of Brisbane City Council
- to produce flood mapping and flood overlays for the Ipswich planning scheme.

The Monte Carlo analysis performed by Sargent was not of the scale recommended by the Commission’s expert panel. The complexity of the hydrologic model limited the number of times it could be run: manual entry of data was required on each occasion. As the existing model had been expensive to develop and was used by both the Brisbane and Ipswich city councils, it was determined that building a new model was not appropriate. The flow
results obtained for the 1% AEP flood event were 20 to 30 per cent less than those obtained in the 2000 Sinclair Knight Merz study. The Sargent estimate of the 1% AEP flood level at the David Trumpy Bridge was 15.28 metres. The new 1% AEP flood flows and heights were not embraced by the other agencies involved in the study – Brisbane City Council, the Bureau of Meteorology, Seqwater, the Queensland Government, SunWater and Esk Shire Council. Those agencies were concerned that the flows and heights were lower than those identified in previous studies and observed in the catchment. Further, the results were based on the assumption that significant storage would be available in the dams at the start of the flood; other agencies did not agree this was appropriate.

The results of this study have not been considered for inclusion in a planning scheme, as the current Ipswich planning scheme was finalised before the results were received.

**Joint probability**

The joint probability problem at Ipswich concerns the relationship between floods occurring in the Bremer River and the Brisbane River at the same time. As has been stated, Ipswich City Council’s flood estimates should sensibly be attuned to work done on the Brisbane River. The recent history indicates just how dependent the council has been on results from Brisbane River studies.

Generally, modelling commissioned by Brisbane and Ipswich city councils has made assumptions about the magnitude of the flood that is likely to occur in the Brisbane River when a flood is occurring in the Bremer River. For example, some have assumed a 5% AEP flood in the Brisbane and a 1% AEP flood in the Bremer to estimate flood heights in Ipswich.

The Commission’s expert panel recommended that a joint probability analysis should be done in a comprehensive Bremer River flood study. Just as saturation and dam levels are likely to be related, so are floods occurring in the Bremer and the Brisbane rivers. Their headwaters are close; one storm system could be responsible, as it was in 2011, for producing floods in each. To adopt a process of assumption about the type of flood that occurs in each is too simplistic an approach; it is not a realistic reflection of what actually occurs. The correlation between the two variables must be investigated.

The result of that investigation will be a set of probability distributions of the flow that is likely to occur in one river, given a particular flow in the other.

The need for a joint probability analysis to be done was identified some time ago. Following the 2003 Brisbane River studies, Ipswich City Council commissioned a review by Sinclair Knight Merz of Ipswich flood modelling and overlays. The Sinclair Knight Merz memorandum, received by the council in January 2004, stated that the coincident flows for the Brisbane and Bremer rivers were significant, but unable to be determined on the material available. A joint probability approach was suggested. The memorandum recommended further work be performed, in particular to deal with the joint occurrence of floods issue. It was suggested that such work might be done in conjunction with Brisbane City Council.

The Sargent study in 2006, in the use of a simplified Monte Carlo framework, investigated the effects of different spatial variations of rainfall across the entire Brisbane River catchment. Part of that study involved different patterns of rainfall over the upper Brisbane River, lower Brisbane River and Bremer River catchments. Variability between storms over the Bremer and Brisbane rivers was part of the analysis, but the variability was not compared to the historical variability between floods in the two rivers. It did not constitute a rigorous analysis of the joint probability. The Commission recommends that such an analysis now be implemented: see recommendation 2.2 above.

**The future**

The next statutory review of the Ipswich planning scheme is due to commence after 2012. The results of the comprehensive flood study now recommended by the Commission’s expert panel are at least three years away. Ipswich City Council should maintain its temporary flood lines in the interim: see section 5.2 Temporary local planning instruments. The council should be actively involved in the progress of the work to be done for the Brisbane River. See section 2.3.3 Responsibility for completing the study, above.
2.5 The performance of flood studies in Queensland

2.5.1 Catchment wide flood studies

Having considered both the future and the past of the Brisbane and Ipswich City Council Q100 lines, the Commission’s focus turned to general principles that might be applicable to flood studies around Queensland. Parts of the expert panels’ joint expert statements are applicable for all catchments. The internal processes of the Brisbane and Ipswich city councils are a useful starting point from which to make some general points about conducting flood studies.

Not all parts of Queensland need a comprehensive flood study. Flood studies are expensive and time consuming; they will be justified only when their results can be used to inform land planning and emergency management decisions that affect a large number of people. The Commission considers that all urban areas should have access to the results of a recent flood study.

It is not best practice to conduct a flood study for an urban area alone or even for a local government area. The performance of individual flood studies for cities and towns can lead to different or imperfect information being used and inconsistencies in predicted flood levels at local government boundaries. A flood study should be completed over a whole catchment to encompass the hydrology and hydraulics of all relevant waterways. This approach is supported by Floodplain Management in Australia, the expert panel and more recently by the Queensland Reconstruction Authority, and a number of submissions to the Commission.

Those two concepts – the expense of a flood study and the fact that it would ideally be conducted for a whole catchment – lead to some difficulty in determining the areas for which flood studies should be initiated. Some urban areas have current flood studies; others have studies that require updating or expansion. Still others have never had a flood study completed. Some of those flood studies are a small part of a catchment wide study, while others have been done on the waterways immediately surrounding the urban area. Some levels of government or communities within a particular catchment might wish a catchment wide study to be initiated now, while others might be happy with the currency of their information.

Requiring the performance of all flood studies over full catchments may involve duplication and unnecessary use of resources. The entire catchment approach is ideal, but not always practicable.

**Recommendation**

2.4 A recent flood study should be available for use in floodplain management for every urban area in Queensland. Where no recent study exists, one should be initiated.

2.5.2 Who should be responsible for the performance of flood studies?

A question which was hotly debated in submissions before the Commission was which level of government should be charged with conducting flood studies. The question entails twin issues: who is best placed to obtain a flood study from experts and who should fund it.

Councils have, historically, borne the burden of producing flood studies for parts of catchments within their local government areas. They are the principal entities involved in land use planning, development assessment and disaster management; they are the primary users of flood maps and are best placed to assess their flood mapping requirements. The completion of flood maps may require detailed information about local river conditions and previous flooding events. Councils are often the principal custodians of such information, and are best placed to retrieve any knowledge their residents might have about previous flood levels.

Some councils have received substantial assistance from both state and federal governments. The Queensland Government has, in 2011, through the Queensland Reconstruction Authority, collected data about floods which occurred and provided interim floodplain maps to those councils with no mapping. Department of Environment
and Resource Management (DERM) officers review flood maps that are proposed to be used as a flood overlay in a planning scheme to determine whether the department has further information, which it makes available, and they provide advice and direction to councils on request. (DERM does not review the modelling behind a flood map or consider its appropriateness for use in land planning; see section 4.1.7 The role of DERM.)

The Commonwealth Government, through Geoscience Australia, is responsible for providing topographic data, including digital elevation model data and contours. The availability of that information substantially reduces the cost of completing a flood study and producing a flood map. It also supports projects for the production of national guidelines. Both the Commonwealth and the Queensland governments contribute equally to flood study projects that have obtained a grant under the Natural Disaster Resilience Program. That program commenced in 2008 and has allocated approximately half of its $44 million in funds; a portion of those funds have been for flood study projects.

It is clear, however, that the current arrangements have not been effective in ensuring the completion of adequate flood studies across the state.

The Queensland Government submitted that flood studies, and associated mapping, should remain the responsibility of councils. It says that the lack of flood studies and maps reflects a failure by some councils to prioritise their completion. It does not deny that some councils are incapable of performing flood studies on their own, but it points to the provision of technical advice by the Queensland Government to councils through DERM and the Queensland Reconstruction Authority.

Many councils, and their representative body, the Local Government Association of Queensland, on the other hand, assert that the Queensland Government should play a far greater role than it has in the past. That role, they say, should entail co-ordinating the conduct of flood studies and the development of flood mapping, as well as providing funding and technical assistance. They indicate that local governments do not have sufficient resources to undertake flood studies themselves. Another argument for state responsibility for, or at least co-ordination of, flood studies is their catchment wide nature: catchments often extend well beyond local government boundaries.

There are reasonable arguments on both sides of the debate, although one suspects that they are underpinned by a uniform disinclination to accept the funding burden. The Commission is not in a position to determine how the three tiers of government – federal, state and local – should allocate their resources. What is clear is that catchment wide flood studies are needed in many areas, and the three levels of government should co-operate to ensure they are produced.

### 2.5.3 Ensuring all urban areas have flood studies

The Commission does not intend to prescribe in detail how the Queensland Government and the councils work together to ensure flood studies are completed for those urban areas that require it. There are some basic steps that are required for that process.

First, the urban areas that do not have current flood risk information will need to be identified. Those areas should be ranked in order of priority depending on their need for the information. This will depend on a number of factors, including population, date of last flood, date of last flood study and frequency of floods in the historical record.

Having determined the priorities, flood studies should be conducted, whether catchment wide or on a narrower basis if appropriate, in those areas that require them within a reasonable time. Decisions will also need to be made about how those flood studies will be carried out, how each level of government will be involved and from whom technical and financial resources will be sought to complete the flood studies. One avenue might be to request assistance from the Commonwealth Government.
Recommendations

2.5 The Queensland Government, in consultation with councils, should determine which urban areas in Queensland do not have access to flood information from a current flood study. The Queensland Government should rank those areas in order of priority in accordance with their need for updated flood information by reference to factors including:

a. population
b. sophistication of land use planning and emergency management measures already in place in those areas
c. currency of any flood risk information available to the council
d. approximate frequency of damaging floods in the area according to the historical record.

2.6 By reference to the order of priority determined in accordance with recommendation 2.5, the Queensland Government and councils should together ensure that the council responsible for each urban area in Queensland has access to current flood study information. This will include determining:

a. a process or processes by which the flood studies will be completed, including the involvement of the Queensland Government and relevant councils
b. how, and from whom, the necessary technical and financial resources will be obtained
c. a reasonable timeframe by which all flood studies required will be completed.

2.5.4 Commissioning, assessment and use of flood studies

A continuing obligation

Flood studies are often performed reactively, undertaken after a large flood or in response to the availability of a new method or data set. The obligation to maintain up-to-date information is a continuing one: all councils should ensure they have access to up-to-date flood information and act on it for land planning and disaster management preparation. How the results of flood studies are used in land planning and emergency management are discussed in more detail in sections 2.6, 2.7 and 2.8 below.

The decision to commission a flood study

Flood studies should, ideally, be commissioned for whole catchments. As set out above, though, it might be that a particular urban area needs a flood study immediately whereas others within the catchment have current information. In that sense, a flood study for an area smaller than an entire catchment might be appropriate in the short term. In the long term, it would make sense for councils responsible for different areas within a catchment to organise their new flood studies to be done together on a catchment wide basis.

Before the start of any flood study, it would be prudent to enquire as to work being done by others in developing scientific techniques that may be relevant to the study. Enquiries should be made of the Bureau of Meteorology, DERM, dam operators, surrounding councils and research centres.

The work to be done in a flood study will logically follow any work done by Commonwealth or state agencies such as the Bureau or DERM. A flood study completed on the best available data or in accordance with the most recent scientific techniques will be more accurate. On the other hand, there are continuing advances in the ways information is gathered, data is analysed and modelling is run. It may be that a flood study will be out of date only a few years after completion. The body conducting the flood study must decide what data or scientific development is worth waiting for, and when to go ahead with what is currently available. The balance is between accuracy of the final result and obtaining updated results quickly.

If the decision is made to wait, timelines should be set for the completion of work that is to be done by each agency. If unexpected delays are encountered during the waiting period, this should be brought to the attention of the chief executives or elected representatives of all councils involved in the study.
Initiating the study

Flood studies can be conducted internally within state or local governments or by external consultants. The people chosen should have the relevant expertise and access to the data, models and local information necessary to complete it. If possible, where data analysed or created by other agencies is to be used, it should be checked by those performing the flood study. The central repository recommended in section 2.5.5 Central repository of flood study data, should assist in this process.

The decision as to the scope of the flood study will determine many aspects of the results, in particular the level of certainty which attaches to them. If resources were unlimited, there would undoubtedly be a recent and comprehensive flood study for all catchments. As they are not, there must be a balance between the resources to be expended and the level of certainty of the results. For a catchment wide flood study, decisions will need to be made within each council involved as to how much can be spent from their budgets. Any contribution by state or federal governments must also be taken into account. Councils should be heavily involved in the determination of the scope of the work of the study, as they will use the results upon completion. Therefore, all relevant councils should consider the options for the scope of the flood study and their implications for resources and certainty.

Once a scope of work has been determined, detailed instructions will need to be drafted. This should be done by persons with technical expertise in hydrology and hydraulics. It should not involve any statement of the likely planning or emergency management decisions which may flow from decisions of those performing the flood study. The science should be kept separate from the policy.

Assessment and use of results by councils

Regardless of who completes or funds the flood studies, it will be councils who use the information in them to make decisions about land planning and emergency management to reduce the flood risk to their communities. Once a flood study is completed, it is councils who must take responsibility for its assessment and use.

At the end of the flood study, results should be presented to all councils affected. Some councils will have internal officers skilled in hydrology to review flood study reports. In all cases, council officers should engage in frank discussion with hydrologists or engineers completing a flood study, to ensure that any limitations and any uncertainty attaching to its results are clearly understood. Experts must take some responsibility, too, for ensuring the uncertainties attaching to their results are clearly stated. It was conceded in evidence before the Commission that hydrologists and engineers have not always done a good job of communicating uncertainty and the implications of that uncertainty for future decisions.

If a council is not satisfied with the methodology by which a flood study is completed, an independent review may be appropriate; although care must be taken not to become mired in an extensive trail of expert reviews and opinions. Uncertainty and limitations are inevitable; they can be factored into the risk management processes that should be used by councils before acting on the results.

The use to which flood studies are put depends heavily on local circumstances; the Commission can make no recommendation that has universal application. At the conclusion of each flood study relevant to the council’s region, it should be presented to the full council. Consideration should be given to the impacts of the result on current land planning and emergency management arrangements. Council officers can usefully provide information and advice to assist in those decisions.

Recommendations for further work

Where a flood study report makes recommendations for further work, it should be elected representatives who determine, after receiving risk based advice, whether the further work suggested should be completed. For a catchment wide flood study, it may be the elected representatives from all agencies involved in the flood study who make the decision together. Officers of state and local governments do, of course, add value by their recommendations as to whether further work should be completed, but should not be deciding the matter. This is the only way to achieve the balance between the public interest in obtaining highly accurate flood levels and the cost of the resources required to obtain them.

It would be useful for larger councils and the Queensland Government, who may receive many expert reports with varying recommendations, to create and maintain a database of those recommendations to track their implementation. If particular recommendations are not able to be immediately implemented because of the state of
the science, or other investigations that are continuing, steps should be taken to ensure they are acted upon when practicable.

**Recommendations**

2.7 As far as is practicable, councils should maintain up-to-date flood information.

2.8 When commissioning a flood study, the body conducting the study should:
   - check whether others, such as surrounding councils which are not involved in the study, dam operators, the Department of Environment and Resource Management, and the Bureau of Meteorology, are doing work that may assist the flood study or whether any significant scientific developments are expected in the near future, and decide whether to delay the study
   - discuss the scope of work with the persons to perform the flood study as well as surrounding councils which are not involved in the study, dam operators, the Department of Environment and Resource Management, and the Bureau of Meteorology.

2.9 Elected representatives from councils should be informed of the results of each flood study relevant to the council’s region, and consider the ramifications of the study for land planning and emergency management.

2.10 Elected representatives from all agencies involved in a flood study should be informed of recommendations made for future work, and determine, on a risk basis, whether that further work is to be completed.

2.5.5 Central repository of flood study data

The panel of experts described in section 2.3.1 was frustrated in their consideration of the Brisbane River and Bremer River Q100 levels by the lack of a central repository for data needed for flood studies. Mr Babister gave evidence that there were numerous examples of data that was not available to others conducting studies or to him in his examination of this topic. One example was data created by the Queensland Government in 2003, showing the attenuation provided by the dams for modelled rainfall events. Dr Nathan gave the example of LIDAR data (high resolution data on the topography of the earth) which allows hydrologists to define the potential of a flood plain to absorb rainfall, carrying capacity of rivers and the extent of inundation which would be caused by a flood of a certain height.

The expert panel recommended that a central repository of flood-related data be created, maintained and updated. That recommendation was made in the context of determining what would be required to obtain a robust estimate of the Q100. The Commission has only considered the appropriate characteristics of the repository through the prism of what is required for flood studies used in land planning. The repository could be useful for other agencies or address other data deficiencies. For example, it could be used to provide information to insurers, or to provide flood maps to the public (see section 2.9 below regarding the provision of information to the public). Whether the repository is used to fulfil those purposes is a question for those responsible for the repository.

**Responsibility for the repository of data**

Different suggestions were made as to which agency should be responsible for such a repository. DERM and the Bureau of Meteorology were nominated, as, more generally, were Queensland and Commonwealth governments. Dr Nathan suggested that councils would be best placed to maintain the repository for their catchments.

Geoscience Australia, a Commonwealth agency, maintains a database of flood studies around Australia. It has a web portal which allows access to flood studies around Australia. The Natural Disaster Insurance Review report recommended that an agency be created to co-ordinate a national repository of flood risk information.
These initiatives might negate the need for a separate repository of data for Queensland. The Commonwealth and Queensland governments should determine, jointly, whether the repository should be established within those initiatives or as a separate entity. In any case, they must ensure that the data needed for flood studies is available to all who might need it.

Contents of the repository of data

At a minimum, the repository should hold the data listed as necessary for the completion of a comprehensive flood study. Some data will simply need to be collated. Other data does not yet exist, and will be created as flood studies are performed for catchments around Queensland. As those flood studies are performed, the data used or created from models and the analysis of it should immediately be given to the repository.

The data should be accompanied by the results of any review or analysis of that data. The methodology used to obtain the data should also be specified. That information will assist those using the data to determine how much reliance should be placed on it.

The repository’s records must make it possible to ascertain what the data held was at any particular point in time so that those subsequently considering work done in reliance on it can understand the basis on which the work was done.

Where a flood study is to be performed by independent consultants, the obligation for ensuring that all data used or created is available to the central repository should fall on the council or other body commissioning the study. All levels of government should contribute to the body of knowledge about floods in Queensland.

Access

The experts considered that the data should be available for access by all agencies involved in the creation and use of flood studies; that would include, at least, the Bureau of Meteorology, dam operators and all levels of government.

A range of issues will need to be considered in the decision as to who should have access to the database: questions of intellectual property, impacts on land values, insurance prices and liability for incorrect information. To deal with these issues, the agency with responsibility for the repository may need to create contractual arrangements for the deposit of, and access to, the data.

The complexity of such issues should not be allowed to prevent the development of the repository. A repository would ensure the availability of data to those undertaking flood studies and increase the accuracy of those flood studies. At the same time, it should have the effect of reducing costs, an important consideration; on the evidence before the Commission, cost is a major obstacle in the way of councils wishing to undertake flood studies. See section 2.5 The performance of flood studies in Queensland.

Recommendation

2.11 The Queensland Government and Commonwealth Government should ensure the existence and maintenance of a repository of data of the type used in flood studies. The database should include the types of data which the expert panel specified as needed for a comprehensive flood study. Councils, Queensland and Commonwealth Government agencies and dam operators should be able to deposit and obtain access to data.
2.6 Using flood studies in floodplain management

Performing flood studies and producing flood maps is of little use unless the information gained is used by government and provided to others.

Firstly, all levels of government must use effectively the information they have gained. Councils require such information to impose appropriate planning controls, set minimum floor levels for development of different types and institute effective emergency management procedures. That may be done under the auspices of a floodplain management plan. The Queensland Government similarly needs such information, in its case to attend to statewide concerns, such as the construction of dams, flood mitigation or the placement of public infrastructure. Those decisions should be made as part of a floodplain management approach consistent with the best practice principles outlined in Floodplain Management in Australia.

Secondly, the information should be provided to the public and others with a legitimate need for it. Floodplain Management in Australia states that communities in areas susceptible to flood should be made aware of the flood risk to which they are subject. The focus is on their need to understand emergency management procedures, such as evacuation, in which they may be involved during a flood. The Commission considers that individuals might also benefit from the provision of information for land planning purposes. Government can do only so much; individuals’ decisions within the scope of land planning, such as decisions about where and how to build, have an impact on the resilience of the community to flood: see section 2.9 Distribution of flood information, below.

2.6.1 Preparing a floodplain management plan

Floodplain Management in Australia describes a floodplain management plan as the cornerstone of effective floodplain management. Such a plan should outline the mix of land planning and building controls, emergency management plans and structural flood mitigation measures to be employed in a catchment. Decisions as to the distribution of resources across these types of measures are complex; they require economic, social and environmental costs and benefits to be weighed against each other. Floodplain Management in Australia recommends that this decision-making process be informed by the results of a floodplain management study. Such a study involves the identification of people and property at risk of flooding, an assessment of the acceptability of different levels of flood risk and a consideration of the relative merits of possible management measures.

Floodplain Management in Australia recommends that a floodplain management plan should be reviewed at regular intervals of not more than 10 years and after severe flood events. There may be significant expenses associated with the establishment and review of floodplain management plans. In the case of larger, fast-growing regions or those particularly susceptible to flooding, however, the benefits are likely to outweigh the costs. Those benefits include reduced risk to human life and public health, improved decision-making in relation to appropriate land use, integration of land use planning, emergency management and structural floodplain management measures, and increased community understanding of flood risks.

2.6.2 Responsibility for floodplain management

The Commission considers that councils should be responsible for the development of floodplain management plans. Councils are responsible for the imposition of development conditions and have detailed knowledge of local river conditions and past flood events. They are best positioned to engage in the investigations necessary to determine the appropriate mix of floodplain management measures.

This is not, however, to say that other government agencies should not play a role in floodplain management. Floodplain Management in Australia states that the role of state and territory governments is to co-ordinate the implementation of floodplain management plans in accordance with appropriate standards, which may involve providing advice to councils in the areas of planning, hydrology and emergency management. It also notes that the Commonwealth Government has previously been involved in floodplain management by way of, for example, financial assistance for the development and implementation of floodplain management plans, flood forecasting by the Bureau of Meteorology and financial relief to ameliorate the effects of flooding.

Councils’ concerns about their financial and technical ability to produce flood maps are equally applicable to the creation of floodplain management plans. However, the need for floodplain management plans to integrate a range of measures (such as planning scheme controls and emergency management planning) that are most appropriately
administered at a local level requires that councils be primarily responsible for the creation and implementation of such plans. Many councils may require assistance from higher levels of government to develop floodplain management plans. All three levels of government should work together to ensure that all councils are able to adequately manage the flood risk posed in their local areas.

2.6.3 Councils’ floodplain management activities

It appears that many councils had not implemented a comprehensive management plan that accords with best practice principles as at the 2010/2011 wet season. The best practice principles are just that: they are not mandatory. And it must be said that there is a vast disparity in size and resources between Queensland’s largest and smallest councils. Accordingly, the Commission recognises that it is not possible for all councils to develop floodplain management plans that adhere with best practice principles in all possible respects.

By no means, however, should this be taken as a suggestion that the best practice principles ought to be discarded. As discussed above, adherence to the process and principles set out in Floodplain Management in Australia by developing a single, overarching, floodplain management plan, is likely to result in a more efficient distribution of resources among various floodplain management measures.

It was not possible for the Commission to engage in a comprehensive review of the floodplain management measures adopted by each council within the state. Nevertheless, the Commission’s investigations revealed that councils have implemented a range of useful floodplain management measures.

Brisbane City Council, as Queensland’s (and Australia’s) largest local government has substantial resources and staff with expertise in the technical disciplines necessary to conduct effective floodplain management. As is to be expected, the council has invested a great deal of resources on flood-related planning and mitigation. The measures it has implemented provide a useful illustration of the kinds of floodplain management mechanisms that councils can adopt.

In 2005, for example, Brisbane City Council established the Lord Mayor’s Taskforce on Suburban Flooding. The taskforce was required to consider a range of flood-related issues, with a particular focus on creek and local flooding. In the years following the release of the taskforce’s report, the council has implemented a range of floodplain management measures including:

- investigations of flood risk, including undertaking flood studies for a number of creeks, and modelling the probable maximum flood of the Brisbane River
- the voluntary home purchase scheme
- drainage works programs
- emergency management measures including the establishment of a local disaster management group, a local disaster co-ordination centre, a disaster management plan and the development of the ‘Bender’ flood model and the Brisbane River Flood Forecasting System allowing predictions to be made as to the peak level of flood waters at various locations
- initiatives aimed at informing the community of flood risk, including community awareness and education programs, the provision of free flood maps and FloodWise property reports, and early warning alert services regarding the possible impact of creek flooding and severe storms.

Brisbane City Council is not the only council taking active steps towards the implementation of an appropriate range of floodplain management measures. The Rockhampton Regional Council, for example, arranged for a detailed flood study to be conducted after the 2010/2011 wet season. This flood study included hydrologic and hydraulic modelling of the impact of 2, 5, 10, 20, 50, 100 average recurrence interval flood events and the probable maximum flood, as well as a brief consideration of emergency management planning, community awareness, and planning controls. The study commissioned by Rockhampton Regional Council should not be mistaken for a comprehensive floodplain management plan, but it is likely to provide a useful foundation from which the council will be able to develop one.
2.7 Flood mapping for land planning controls

There is a variety of land use planning measures councils can employ to manage floodplains. They include devising appropriate assessment criteria, and determining minimum floor levels for different types of development. Many of them are dealt with in more detail in chapters 3 to 11 of this report. The Commission’s focus in this chapter is the production of mapping, a key tool to translate knowledge of flood risk into effective land planning controls.

2.7.1 The absence of flood maps in Queensland

Flood maps are based on the results of flood studies and, by showing information about the extent, likelihood and characteristics of flooding, as well as its consequences, can form the basis of decisions about the best way to use land in the floodplain.267

There is currently a lack of flood mapping in Queensland planning schemes. A recent report commissioned by the Queensland Reconstruction Authority in conjunction with the Department of Local Government and Planning reviewed 127 of Queensland’s 137 planning schemes268 and established that 80 out of the 127 planning schemes reviewed (63 per cent) contained no flood-related mapping.269 Of the remaining 47 planning schemes with maps, only 23.6 per cent were completed in accordance with the guideline to State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide.270 It must be recognised that the review assessed the existence of flood mapping in the context of Queensland planning schemes and is therefore not conclusive as to the proportion of councils who have created flood maps for other purposes. However, even taking its restricted scope into account, the review’s conclusions lead the Commission to find that there is, in Queensland, a wholly inadequate level of flood mapping.

There are two principal reasons for the inadequate level of flood mapping within Queensland:

- There is no requirement that councils undertake flood mapping by the operation of State Planning Policy 1/03, the Sustainable Planning Act 2009, or any other piece of legislation.
- In almost every case, creating a comprehensive flood map involves undertaking a detailed flood study: an expensive, time consuming and technically complex process, beyond the reach of many councils.

2.7.2 The effectiveness of flood maps in land planning

Flood maps are used in the preparation of planning schemes, and the assessment of development applications. As to the first process, councils need enough information to understand the risk of flooding and to put in place the appropriate planning controls to minimise or eradicate the effects of flooding on people and property.271 Decisions about what controls to put in place, and where they should operate, should be informed by a clear understanding of the risk of flooding, obtained by reference to information about the chance of flooding, and its potential consequences for people and property. The second process – the assessment of development applications – usually requires council assessment officers to have regard to a planning scheme’s flood overlay map. Such maps depict the land constrained by flooding and to which the council has attached planning controls.

The cost of creating the flood map will almost always be an issue. But employing significant resources is not always necessary. If development pressures are small and the potential for damage from flooding is minimal, the costs incurred creating a detailed flood map using a flood study may not be justified.272 However, for towns and cities with substantial populations, and for areas where development is expected to occur, there is a clear need to understand where and when flooding will occur, so that its effects can be mitigated.273

The costs of flood mapping are not only borne by governments. Developers may incur costs too: councils can require additional flood investigations about the likelihood and behaviour of flooding at a proposed site. Preparing
Having regard to the requirements of the land planning system, the Commission has assessed each type of map against the following criteria:\footnote{275}

1. whether the map allows a proper assessment of flood risk
2. whether the map can be used effectively as an overlay in a planning scheme
3. whether the map is efficient in terms of the costs incurred by the government (local or state, or both) in generating the map.

### 2.7.3 Assessment of mapping options

**Q100**

Queensland’s State Planning Policy 1/03: _Mitigating the Adverse Impacts of Flood, Bushfire and Landslide_ requires planning schemes to nominate a flood event, referred to as a defined flood event, which determines the land subject to flood-related planning controls.\footnote{276} Where councils have decided to do so, most have nominated a single flood event with a 1% AEP (Q100) to govern planning decisions in their area. This is no surprise: the 1% AEP flood has traditionally been considered the acceptable level of risk for most forms of development in Australia.\footnote{277}

Moreton Bay Regional Council Q100 flood areas at Caboolture

*Source:* Statement of Chris Warren, Moreton Bay Regional Council, 12 September 2011

This focus on the Q100 and one defined flood event should not continue. Q100 represents only one possible flood. Reliance on a single defined flood event contains this limitation: there are only two areas by reference to which planning controls relevant to flood can be set – the area inside, and the area outside the line depicting the extent of the flood. Restricting development within the extent of the 1% AEP flood will manage a portion of the risk,\footnote{278} but it does not deal with the risk of floods that are less frequent, but more severe, or those that will occur more often, but with less damaging consequences.\footnote{279} Instead, the various areas to which planning controls apply should be selected having regard to the likelihood, behaviour and consequences of the full range of possible floods, up to and including the probable maximum flood.\footnote{280}
The case of Ipswich is instructive. Flood levels in the Bremer River can vary dramatically. Several members of the expert panel sought to emphasise that in Ipswich the consequences of a flood greater than a 1% AEP could be devastating, and far graver than would be experienced by Brisbane should a flood of the same probability occur. In cases such as Ipswich’s, it is vitally important to have an understanding of floods greater than a 1% AEP flood and to put in place the appropriate controls.

It would appear that, having received the Commission’s draft findings to this effect, the Queensland Government has acknowledged the need for this shift in approach to planning; as is apparent from the Queensland Reconstruction Authority’s draft guidelines released for public consultation in January 2012, Planning for stronger, more resilient floodplains: Part 2 - Measures to support floodplain management in future planning schemes.

Once a council has a current flood study with a hydraulic model it can produce a map showing flood likelihood and behaviour without incurring significant costs.

Likelihood and behaviour mapping

A flood behaviour map shows information as to likelihood of flooding in particular locations, and the characteristics of the flood, such as velocity, rate of rise and depth. Likelihood is often indicated by lines showing the extent of floods of different likelihoods. The characteristics of a flood can be shown in zones.

A map showing both likelihood and behaviour is best practice. It is supported by Floodplain Management in Australia, State Planning Policy 1/03 and expert land planners engaged by the Commission. It allows the risk of flooding to be understood across the full spectrum of floods, thus enabling the appropriate flood-related planning controls to be used in development assessment. Those controls can differ between different ‘zones of risk’, taking into account the likelihood of flooding alone, the behaviour of flooding alone, or the combination of likelihood and behaviour.

Given the wide range of information depicted, it is unsurprising that a flood behaviour map is the most expensive map to produce. Most hydraulic models created during a flood study can produce maps which show likelihood or behaviour. Simpler models may not be able to produce behaviour data accurately; if a council intends to obtain a flood behaviour map, the base model should be chosen with that in mind. The behaviour maps produced by such a model will each be for a flood of a particular probability. The council will then have a sheaf of maps, each relevant to a flood of a particular likelihood. Using all those maps might be useful in an emergency management context, as it is not always clear at the start of a flood how large it will be.

However, for use in a planning scheme, councils will have to choose how to aggregate the information obtained from the model. Detailed information about the likelihood of flooding, and its characteristics, or the use of many maps, may prove too complicated for a planning scheme. The Commission heard from two expert town planners on this point; each suggested that limiting the information depicted on the map to two or three ‘hazard’ categories – ‘low’, and ‘high’, with ‘medium’ as the additional option – would suffice for
land planning purposes. A council will have to make qualitative judgments on a risk basis as to the zones it wants to show on its map, having regard to the particular planning controls that might attach to each. Floodplain Management in Australia offers some guidance about the type of flood behaviour which could define these hazard categories. For example, ‘high hazard’ is characterised by flood depths of up to 1.0 metre and velocities of up to 1.5 metres per second. How that information is combined with information about likelihood is a decision for councils. The Queensland Reconstruction Authority, in its draft guideline, Planning for stronger, more resilient floodplains: Part 2 - Measures to support floodplain management in future planning schemes, released in January 2012 also supports the approach of three ‘hazard’ categories and provides some guidance about how a council may classify land for planning purposes.

To date, this approach to flood mapping has rarely been undertaken in Queensland, although the Commission is aware of flood mapping conducted for the Rockhampton Regional Council which has produced separate maps showing flood velocity, flood depth and flood ‘hazard’ – the latter being a combination of velocity and depth.

The Commission notes that the Victorian planning system requires planning schemes to nominate certain flood-related zones – urban floodway zone, floodway overlay, land subject to inundation overlay and special building overlay. These zones are differentiated in terms of the flood behaviour in those areas. Different planning controls apply within each zone. For example, land that conveys floodwaters in areas where the flood risk is high because of existing or contemplated development, are designated as being in the ‘urban floodway zone’. Within this zone, most land uses are prohibited. Such maps may be appropriate for use in Queensland.

Likelihood maps
A flood likelihood map is a map showing the extent of floods of several different probabilities, for example, a 0.5% AEP flood (Q200), a 1% AEP flood (Q100) and a 5% AEP flood (Q20). Each flood extent is represented by a line on the map. While such a map does not show information about the behaviour of flooding, it at least shows the frequency with which parts of the floodplain are subject to inundation. That allows planning controls to be attached to more than one zone, for example: development in areas shown to flood with greater frequency should be subject to stricter planning controls. By allowing multiple zones of planning control to be established, it is closer to best practice than the approach – currently supported by State Planning Policy 1/03 – of mapping a single defined flood event.

Maps of floods of several different annual exceedance probabilities offer a judicious substitute for flood behaviour mapping and, because they often demand less sophisticated flood modelling for its creation, may be more easily attained. It should require little further work or expense to produce once a flood study that produces a hydraulic model has been completed; the model itself can produce a map capable of being inserted into a planning scheme.

Historical flood maps
A historical flood map shows the extent of a particular flood that has occurred in the past. It may simply be an aerial photograph of that flood. For instance, the 2010/2011 floods were captured by high definition photographs obtained by DERM in the days and weeks after flood peaks. Maps were then created by cartographers who determined the maximum extent of the flood from water and debris marks and by reference to information from local residents. Historical flood maps can also be derived from recorded data – such as stream gauge heights and peak recorded flood levels – and photographs and personal accounts of historic floods. Recorded data from an historical event, such as gauge heights, could also be run through a hydraulic model to determine its extent.

Maps of historical floods can be used as defined flood events in planning schemes. These maps are attended by the same problems as a map of a certain defined flood event – such as a 1% AEP flood – in that they restrict planning controls to differentiation between only two zones (outside and within the extent of the historical flood).

Caution must be exercised when using historical maps to make decisions about land planning. How likely it is that a flood will occur is an important factor in determining what flood-related land planning controls should be put in place. Historical flood maps cannot convey information about likelihood, unless they incorporate further information such as that produced by a flood frequency analysis. State Planning Policy 1/03 attempts to deal with this problem: it recommends that a council perform a flood frequency analysis and estimate the extent of inundation that would be experienced should a flood similar to the historical flood event reoccur by assessing changes to the floodplain. The Commission supports councils’ taking such steps before using historical flood events to regulate development in their regions.
The cost of preparing a map of an historical event will likely be lower than a flood map of behaviour and likelihood, or even just likelihood. Councils may choose to use the Queensland Reconstruction Authority’s maps of the 2010/2011 flood. Additional costs are likely to be incurred conducting further analysis to determine the historical flood’s likelihood of recurrence.

**Queensland Reconstruction Authority maps**

The Queensland Reconstruction Authority has created a set of maps titled ‘Interim Floodplain Assessment Overlays’ that are intended to have a role in Queensland’s planning schemes. These maps are part of a broader project undertaken by the Queensland Reconstruction Authority which also includes the creation of the Temporary State Planning Policy 2/11: Planning for stronger, more resilient floodplains and is supported by a guideline. The operation of the Temporary State Planning Policy is discussed in more detail in section 4.2 Temporary state planning policy.

These maps were created using satellite imagery of individual sub-basins and imposing the locations of towns and gauging stations onto the image. Ordered drainage data, contour data and the 2010/2011 flood line were also layered onto the satellite image, as was the ‘floodplain data set’, which comprises Pre-clear Vegetation Mapping of Landzone 3 (Alluvium), Landzone 1 (Estuarine) and SALI (Soil Flooding Limitation Mapping) data.

Through the use of these data sets, the maps depict areas of soil and vegetation characteristics compatible with the land having been previously inundated by floodwaters, at some unknown point in history, adjusted to take into account current contour information and the 2010/2011 flood line. The hard copy maps identify the locations of gauging stations, the expectation being that the user can then make inquiries as to the range of flood levels recorded at any particular gauge.

**Assessment of flood risk**

The interim floodplain maps do not depict an annual exceedance probability, nor do they provide any information about the risk or probability of flooding occurring in the future, or the frequency with which flooding has occurred in the past. The maps’ failure to show at least the likelihood of flooding means that they are, like historical flood maps without further analysis, of limited use in determining appropriate land planning controls.

The maps are expected to be refined by councils, by reference to existing flood studies, records, photographs and local knowledge. The authority has noted that, in some cases, where the process of local validation has occurred there is a correlation between the interim floodplain line and the results of flood studies. However, as one council engineer observed, any correlation ‘defies logic’; it is not a reason to support the use of the maps in a land planning context.

**Use of the maps in planning schemes**

According to the Queensland Reconstruction Authority, applicants, or councils, can obtain details of the highest recorded flood levels for the gauging stations identified on the map, and use this information to determine appropriate minimum floor levels. Again, however, this process gives no indication of the likelihood of flooding, and it remains necessary to establish how the highest historical flood level translates to a potential flood level for the proposed development site.

The maps may, the authority suggested, ‘trigger’ further consideration of flood risk on a site specific basis; for development proposed within the interim floodplain area, the applicant would be expected to demonstrate the absence of flood risk. The Commission considers that the use of the floodplain data set – soil and vegetation characteristics to identify areas congruent with previous flooding – limits the maps being used in this way. By incorporating the floodplain data set, even refined by reference to contour lines and the 2010/2011 flood line, the interim floodplain maps risk capturing too large an area. For several councils, the interim floodplain maps cover large tracts of their region which had not previously been considered liable to inundation. If a requirement were imposed on all applications within the extent of the interim floodplain map to provide more detailed, site-specific information, it could impose an onerous burden on a disproportionately large number of applicants.

The interim floodplain maps are a level above having no flood data at all. By showing topographical information, the 2010/2011 flood line, and areas which may have been inundated in the past, the maps depict – in the words of the authority – ‘an area of interest for potential flooding’. Councils may choose to use the maps to determine areas within their region which require more detailed flood studies and mapping. The guideline produced by the Queensland Reconstruction Authority contemplates use of the maps in this fashion, asserting that the interim...
floodplain maps ‘provide a framework for communities to decide priorities for more detailed flood studies’. The Commission agrees.

Cost

The Queensland Reconstruction Authority’s interim floodplain maps are freely available for use by councils. Councils choosing to adopt the maps into their planning scheme will incur little expense. There may, however, be some costs involved in validating the maps, although the authority has offered to assist councils with fewer resources to do this. The Commission acknowledges the extensive work that has gone into the interim floodplain maps. Working with DERM, the Queensland Reconstruction Authority has, over a matter of months, created maps covering most of Queensland. Even were resources available, it would have been impossible, in the timeframes imposed on the Authority, to collate the data required to map flood risk across the entire state.

Creating a flood map from topography information

It is important that the land planning system can accommodate circumstances where the risk of flooding is unknown. One outcome of the large scale flooding that occurred across Queensland in December 2010 and January 2011 is that locations in Queensland for which very limited flood data existed now have data – such as rainfall and streamflow – from a large historical event.

However there will remain areas in Queensland where the likelihood of flood remains unknown. It is important that those areas are identified, so that it is clear that the absence of information about flooding does not indicate the absence of flood risk; rather, that it has not been evaluated. The Gladstone planning scheme, for example, uses the designation of ‘Unknown Extent of Flooding (Lack of Information)’ in the flood and storm surge mapping for its 1 per cent annual exceedance probability overlay.

The Commission considers that there are two principal options for councils in this situation:

1. Councils identify, on a map, areas of ‘unknown flood extent’. For development proposed in these areas, certain basic information of relevance to flooding considerations should accompany every development application; for example, information about the elevation of a proposed development and its location relative to watercourses. Upon assessment of this basic information a council may consider further information is necessary; if so, it can be sought at a second stage of the development process.

2. Councils create maps showing areas with topographical features that indicate some chance (albeit crudely determined) of flooding. Only those proposing to develop in that area would be required to provide additional, site based information about flooding. This assessment requires access to information about a council region’s topography, for example, a contour map. What this kind of map would show might be referred to as a ‘flood investigation area’.

Both options rely heavily on identifying topographical characteristics synonymous with flooding: this is a rudimentary approach to assessing flood risk, and should be used only as a last resort. Where councils choose to produce their own map, they may incur some costs in obtaining the necessary topographical information.

The best flood maps

It is not feasible, nor is it necessary, for sophisticated flood mapping to be completed on a state-wide basis. There are locations where flood mapping is imperative, such as those with a large population and high levels of development (Ipswich, for example). For locations such as rural areas that are subject to low or no development, the expense of detailed flood mapping may well outweigh the potential benefits.

The Commission has ranked the flood maps in order of appropriateness for use in land planning:

1. Flood maps which depict both the likelihood of flooding and the characteristics of flooding.
2. Flood maps which depict a number of different levels of flood likelihood, for example probable maximum flood, 1 per cent (Q100) and 5 per cent (Q20) and 0.2 per cent (Q500).
3. Q100 maps – flood maps which depict the 1 per cent annual exceedance probability alone.
4. Historical flood maps.
5. Queensland Reconstruction Authority interim floodplain maps.
2 Floodplain management

Recommendations

2.13 For urban areas or areas where development is expected to occur:
   a. councils with the requisite resources should develop a flood map which shows ‘zones of risk’ (at least three) derived from information about the likelihood and behaviour of flooding
   b. councils without the requisite resources to produce a flood behaviour map should develop a flood map which shows the extent of floods of a range of likelihoods (at least three).

2.14 For non-urban areas or areas where limited development is expected to occur councils should consider, on a risk basis, what level of information about flood risk is required for the area, and undertake the highest ranked of the following options which is appropriate to that need and within the capacities (financial and technical) of the council:
   a. a map showing ‘zones of risk’ (at least three) derived from information about the likelihood and behaviour of flooding
   b. a map showing the extent of floods of a range of likelihoods (at least three)
   c. a flood map based on historic flood levels that have been subjected to a flood frequency analysis to estimate the annual exceedance probability of the selected historical flood
   d. a historic flood map without flood frequency analysis
   e. the Queensland Reconstruction Authority Interim Floodplain Assessment Overlay as a way to determine those areas for which further flood studies are required, or
   f. the Queensland Reconstruction Authority Interim Floodplain Assessment Overlay (preferably refined using local flood information) as a trigger for development assessment.

2.15 Councils should ensure that areas for which there has been no assessment of the likelihood of flooding are indicated on a map and that, as part of the development assessment process for these, there is at least some enquiry into whether a site proposed for development could be subject to flooding.

2.8 Use of flood information in emergency management

The Commission’s interim report made detailed findings and recommendations about emergency management measures. Further comment is provided in this chapter because of the integral role that flood modelling and flood mapping play in preparing for and responding to a disaster. Emergency management measures are the only measures available to address the ‘residual risk’ of flooding. The residual risk is that faced by the community even after all structural measures have been built (dams, levees and so on), planning controls put in place and building standards imposed to guard against flood.

The primary aim of emergency management, prior to and during a flood, is to reduce the damage caused by an actual flood. During a flood, this is best achieved by accurately predicting the flooding that will occur, warning the community and, where necessary and possible, evacuating people and property. When planning for a future flood event, it is necessary to have an understanding of the full range of flood events so as to plan for any eventuality.

Clearly, emergency management decision-making would benefit from access to detailed flood maps which show floods over a range of likelihoods – up to and including the probable maximum flood – as well as the behaviour of the flooding. These requirements can only be delivered by a flood behaviour map, such as that described in section 2.7.3 Assessment of mapping options.

While flood maps are an undeniably useful tool for emergency management, during a flood, decision-making is best informed by the use of a real-time flood model. Real-time flood models use current rainfall and river height data to predict the likely extent of flooding.

During the 2010/2011 floods, the Bureau of Meteorology used a hydrologic forecasting model which collected real-time rainfall and river level data, and combined that data with forecast rainfall data to make predictions about likely...
flood levels. The Bureau communicated its flood level predictions to Queensland’s state disaster coordination centre, emergency services agencies, local governments and dam operators, as well as to the public via the Bureau’s website and other forms of media, such as the radio. The Bureau’s predictions, in many cases, substantially informed the emergency measures taken by the government and the community in response to the flooding.

As noted in the Commission’s interim report, Brisbane City Council also has such a model – the ‘Bender’ – which it uses during a flood to provide property specific information to the public (through its call centre) and to determine the majority of response and recovery activities. Ipswich City Council expects to make available to the public a ‘real time’ flood mapping product which the council intends will assist residents to respond to flood disasters as they happen.

That is not to say that less sophisticated flood modelling and mapping serve no purpose in planning for or responding to a flood event. The Commission’s interim report described how, during the 2010/2011 floods, emergency management personnel relied on information about water heights provided by rural landowners living near watercourses to inform their response. Similarly, emergency responses can be informed by reference to historic floods, which provide a sense of the possible effects of a predicted flood.

2.9 Distribution of flood information

The distribution of flooding information to the community helps people to protect themselves, and their property, from flooding. During a flood emergency, individuals require property specific flood information to understand their own risk of flooding; and, if they are at risk, whether and when to evacuate. Individuals also use flood information to make decisions about whether to undertake a certain development or purchase a property or business.

Information provided to the public may take the form of general flood information, such as a map showing the likely extent of flooding for a whole city, or it may be property specific information which sets out flood heights for a particular property.

2.9.1 Providing flood information and mapping to the public

Mapping for use by the public should provide information that is useful to them in their decisions about land planning and response to an emergency. That should include information about the likelihood of flooding at a particular place, its depth, and the level of hazard to persons and property posed by it.

The usefulness of a particular map to the public mirrors its usefulness in a planning scheme; those that show little in the way of likelihood of flooding or deal with only one flood event are of less use than those that deal with the likelihood and behaviour of a full range of floods. A point of difference is the need for the public to know depth of flooding. Planning scheme maps may show the extent of flooding, but are unlikely to contain information about depth. However, flood levels are important to members of the public because they directly relate to the amount of damage caused to property; it would be helpful for maps showing depth to be publicly available.

Maps should not be provided without explanation; a map that provides behaviour and likelihood information is unlikely to be easily understood without guidance. An appropriate measure is to include with the map an explanatory note. Any explanatory note should, to be understandable, avoid confusing terminology such as Q100. The Commission heard evidence that some people whose property was above the Q100 level thought they were ‘safe’ from flooding; others thought that floods would occur only once every 100 years. The Commission considers the best approach is to describe likelihood of flood in terms of annual exceedance probability as a percentage. That, at least, makes clear that there is a chance of flood occurring at the property. In its interim report, the Commission made findings and recommendations about how to convey property specific information to the community so that it can be understood.

Brisbane City Council’s approach to the provision of flood information is a useful example. It makes available, free of charge, FloodWise property reports that provide information about January 2011 flood levels, estimated flood levels, source of flooding, minimum and maximum ground levels, minimum habitable floor level for building and development, and whether a property is located within a waterway corridor. In a similar vein, Ipswich City Council makes available property specific flood reports which identify minimum and maximum ground heights and the 1974 and 2011 flood event levels by reference to the eave height of the property.
All flood mapping commissioned or adopted by government should be made available to the public. If commissioned flood maps are not, in the event, adopted by government, an explanatory note should suffice to prevent public confusion.

The most useful, and cost effective, means of publishing such information is on government websites (local and state government). The Commission recognises that not all councils will have a website capable of providing all flood mapping to the public. Some councils may choose to charge a small fee for the provision of property specific flooding information, to cover administrative costs. While this is a matter for determination by individual councils, any decision about charging a fee must be weighed against the importance of ensuring all members of the community have access to information about flooding. Insurance companies may require ‘higher resolution’ or digital versions of the flood maps produced by local, state or federal authorities (and vice versa). It is a matter for the entities involved to decide what commercial arrangements are put in place to manage the sharing of this information.

There are, of course, numerous legal and commercial issues which might arise through the release of flood mapping products, including issues surrounding liability, licensing, intellectual property, property values and the pricing of insurance. These matters present challenges for the development of any information sharing model. However, the paramount consideration should be protection from the effects of flooding, which can be achieved, at least in part, through the provision of flood mapping.

**Recommendations**

2.16 Councils and the Queensland Government should display on their websites all flood mapping they have commissioned or adopted.

2.17 Flood maps, and property specific flooding information intended for use by the general public, should be readily interpretable and should, where necessary, be accompanied by a comprehensible explanatory note.

### 2.9.2 Flood information for dealing with property

It emerged from evidence before the Commission that purchasers of property, in making the decision to purchase, did not turn their minds to the property’s vulnerability to flood.

To be properly informed, individuals dealing with property should be aware of the flood risk at the property and any flood-related constraints on development. Awareness of flood risk is dealt with substantially above. The conditions of a development approval attach to the land the subject of the application and bind any subsequent owner or occupier of the land. Accordingly, it is important that subsequent owners and occupiers are aware of the conditions of all previous development approvals. That information could be communicated in a number of ways: through planning and development certificates, rates notices, real estate contracts or online.

**Planning and development certificates**

The *Sustainable Planning Act 2009* makes provision for the public to obtain from a council a limited, standard or full ‘planning and development certificate’ (for a prescribed fee). Each of the standard and full certificates identifies any development conditions that attach to the land. The limited certificate does not. These types of certificates are sometimes requested by prospective buyers of land as a part of the conveyancing process. However, in Queensland, there is no requirement to obtain such a certificate during the conveyancing process.

In New South Wales, when land is sold the seller must attach a ‘Section 149 Planning Certificate’ to the contract for sale. A Section 149 Planning Certificate is issued in accordance with the *Environmental Planning and Assessment Act 1979* and contains information on how a property may be used and restrictions on development (including flooding information). If a Section 149 Planning Certificate is not attached to the contract for sale, the buyer may have the right to rescind the contract and seek compensation from the seller.
The Queensland Government Planner said that this approach would have utility in Queensland. The Local Government Association, however, argued that the disclosure requirements for contracts for sale of land in Queensland were already onerous. Adopting the requirement for a planning certificate would be likely to impose an unfair cost burden on the vendors of property. In the absence of evidence as to those cost implications, the Commission notes the arguments, but makes no recommendation.

Rates notices

The Queensland Government Planner also suggested that the existence of development conditions that relate to flood-affected land could be communicated by placing a notification on a rates notice. Ipswich City Council’s view, however, was that this method of alerting subsequent landowners of the conditions was unlikely to be completely successful. The difficulties identified included that:

- the recipients of the notice might not be the occupants of the land
- it would be difficult for councils to identify which conditions should be included
- collating all decision notices to attach to each rates notice would be administratively difficult and time and resource intensive.

The Commission is also of the view that the difficulties associated with including the information on a rates notice militate against any recommendation that rates notices include such information.

Land contracts

The Commission sees merit in a mechanism to bring prospective purchasers’ attention to the issue of flood risk and flood-related development constraints prior to signing a contract. That might be achieved by including in standard contracts of sale a condition which makes the contract subject to the purchaser’s obtaining a satisfactory flood search. That style of condition currently exists for building and pest inspections in the standard Real Estate Institute of Queensland contract for residential properties. Just as not all purchasers retain the building and pest inspection conditions in the contract, so too could purchasers choose to delete the flood report condition. But at least the issue would have been brought to their attention and a decision made.

Online information

Another way a member of the public can obtain information about conditions binding the use of land, and in most cases overlays affecting the use of land, is through a database known as ‘PD Online’. PD Online databases allow the user to carry out a search on a particular property to identify development approvals relevant to the land. However, not all councils offer the PD Online service; and for those that do, the information is limited to approvals issued after a certain date, given that it is not feasible for councils to upload all historic development approvals. It would be of considerable public benefit for all councils to offer PD Online databases.

Recommendations

2.18 Councils that do not currently do so should consider offering an online database which allows the public to conduct a search on a parcel of land to find development approvals relevant to that parcel of land.

2.19 The Queensland Government should consider implementing a mechanism by which prospective purchasers of property are alerted to the issue of flood risk. To that end, the Queensland Government should consider consulting the Real Estate Institute of Queensland and the Law Society of Queensland as to the appropriateness of amending standard contract conditions so as to include a ‘subject to flood search’ condition, or other means of achieving the same objective.
2.10 Guidelines for the preparation of flood studies and flood management plans

The Commission considers that all levels of government would benefit from access to guidelines for the performance of flood studies, the production of flood maps and the development of floodplain management plans. Several relevant guidelines already exist. For example:

- Floodplain Management in Australia provides a detailed overview of best practice floodplain management.
- Australian Rainfall and Runoff sets out a series of guidelines for the performance of flood studies and the calculation of flood risk.
- The guideline produced by the Queensland Reconstruction Authority Planning for stronger, more resilient floodplains: Part 1 - Interim measures to support floodplain management in existing planning schemes aims to assist councils to incorporate floodplain management principles into their existing planning schemes.
- The draft guideline produced by the Queensland Reconstruction Authority Planning for stronger, more resilient floodplains: Part 2 - Measures to support floodplain management in future planning schemes aims to assist councils to integrate floodplain management principles and processes into future planning schemes.

Some of those guidelines are in a state of flux. The second part of the Queensland Reconstruction Authority guideline is a draft. The most recent version of Australian Rainfall and Runoff was published in 1987 and is significantly out of date. A review of this document has begun but has been delayed by a failure to secure adequate funding. Evidence before the Commission suggested that the new version of Australian Rainfall and Runoff will support the use of Monte Carlo analysis. The completion of this review is likely to assist significantly in the conduct of flood studies. It is clearly desirable that funding be made available for the completion of the work.

The National Flood Risk Advisory Group is currently developing a new floodplain management guideline that will supersede Floodplain Management in Australia. This document is expected to be finalised in June 2012. The Queensland Government should use its membership of the group to ensure that the principles set out in the new floodplain management guideline are appropriate for Queensland conditions. If the new guideline is not sufficiently adapted to the Queensland context, the Queensland Government should take responsibility for the preparation of guidelines appropriate for use in this state.

As a final note, the results of the National Flood Risk Advisory Group’s review will also be relevant to the terms of Queensland’s State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide. State Planning Policy 1/03 is supported by a guideline which suggests the use of a floodplain management approach in line with the best practice principles set out in Floodplain Management in Australia, and provides a summary of those principles as they relate to land planning. Depending on the terms of the new best practice floodplain management guidelines, it may be necessary to amend State Planning Policy 1/03 and the attached guideline. This further underscores the need for the Queensland Government to be involved in the National Flood Risk Advisory Group’s review of best practice floodplain management.

Recommendations

2.20 The Queensland Government should endeavour to ensure that Queensland conditions are appropriately considered in the National Flood Risk Advisory Group’s review of best practice principles.

2.21 In the event that the review does not adequately account for Queensland conditions, the Queensland Government should produce a document that provides appropriate guidelines for floodplain management in the Queensland context.

2.22 The Queensland Government should determine whether existing guidelines are sufficient for councils to understand best practice in the performance of flood studies and the production of flood maps. If a lack of current guidelines is identified, the government should create and circulate guidance material for councils.
(Endnotes)

1 State Planning Policy 1/03 Guideline: *Mitigating the Adverse Impacts of Flood, Bushfire and Landslide* [p26].

2 Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain management in Australia: Best practice principles and guidelines, SCARM Report 73, 2000 [p xiv].

3 See chapters 3 and 5 of the interim report in relation to disaster management and emergency response, and chapter 2 of the interim report in relation to dam operation (note that a consideration of where and when to build levees and dams has not been part of the Commission’s investigation). Chapters 3-9 of this report deal with matters of land planning and building controls.

4 The efficacy of such a process was questioned in other reports prepared in response to the 2010/2011 floods: see, for example, Brisbane City Council, Joint Flood Taskforce Report, May 2011.

5 The Standing Committee on Agriculture and Resource Management is a permanent standing committee established to assist the Agriculture and Resource Management Council of Australia and New Zealand (a ministerial council) with the development of policies, guidelines and programs in relation to agriculture and land and water resource issues.

6 It should be noted that Emergency Management Australia has published a condensed manual based on the SCARM Report 73. See Emergency Management Australia, Manual 19: Managing the Floodplain, 1999.


8 Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p13-14].

9 Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p96].

10 Note that this inverse relationship between annual exceedance probability and average recurrence interval is not consistent across the full range of annual exceedance probabilities. See www.bom.gov.au/water/designRainfalls/ifd/glossary.shtml.

11 Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p97].


13 Exhibit 883, Document number 7, Common expert reading list A, Brisbane, Mark Babister, WMWater, Brisbane River 2011 Flood Event – Flood Frequency Analysis.

14 Exhibit 883, Document numbers 7-16, Common expert reading list A, Brisbane.


16 Transcript, Hydrology Expert Panel, 26 October 2011, Brisbane [p4392: line 43-50].


Transcript, Rory Nathan, 26 October 2011, Brisbane [p4426: line 7].

Transcript, Rory Nathan, 26 October 2011, Brisbane [p4373: line 42].

Transcript, Rory Nathan, 26 October 2011, Brisbane [p4374: line 29].

Transcript, Rory Nathan, 26 October 2011, Brisbane [p4377: line 12].

Transcript, Rory Nathan, 26 October 2011, Brisbane [p4377: line 12].


Transcript, Rory Nathan, 26 October 2011, Brisbane [p4363: line 47].


Transcript, Rory Nathan, 26 October 2011, Brisbane [p4363: line 45].

Transcript, Rory Nathan, 26 October 2011, Brisbane [p4364: line 8].


Transcript, Rory Nathan, 26 October 2011, Brisbane [p4412: line 32]; Transcript, Mark Babister, 26 October 2011, Brisbane [p4413: line 2].

See, in a different context, Transcript, Michael Leonard, 26 October 2011, Brisbane [p4426: line 46].

Transcript, Mark Babister, 26 October 2011, Brisbane [p4365: line 3]; Transcript, Rory Nathan, 26 October 2011, Brisbane [p4365: line 48].


Transcript, Rory Nathan, 26 October 2011, Brisbane [p4365: line 41].


Transcript, Rory Nathan, 26 October 2011, Brisbane [p4412: line 32]; Transcript, Mark Babister, 26 October 2011, Brisbane [p4413: line 2].

See the discussion in Exhibit 883, Document number 7, Common expert reading list A, Brisbane, Mark Babister, WMAwater, Brisbane River 2011 Flood Event – Flood Frequency Analysis [p27-29].


Transcript, Mark Babister, 26 October 2011, Brisbane [p4366: line 6].

For example, DERM completed a physical gauging of flow at Jindalee during the 2011 flood event of the Brisbane River. See section 2.6.3 Stream gauges of the Commission’s interim report.

A rating curve is a mathematical representation of the relationship between flood flow and height at a particular place along a river. For more information about rating curves, see section 2.6.3 Stream gauges of the Commission’s interim report.

Transcript, Rory Nathan, 26 October 2011, Brisbane [p4363: line 16]; Transcript, Mark Babister, 26 October 2011, Brisbane [p4391: line 28].

Transcript, Rory Nathan, 26 October 2011, Brisbane [p4363: line 20].
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Transcript, Rory Nathan, 26 October 2011, Brisbane [p4366: line 18].

Transcript, Brisbane River Flood Frequency Expert Panel, 26 October 2011, Brisbane [p4361: line 47].


Trevor Johnson, Cardno, Flooding Behaviour, 11 November 2011 [p2].

Trevor Johnson, Cardno, Flooding Behaviour, 11 November 2011 [p3].


Transcript, Mark Babister, 26 October 2011, Brisbane [p4366: line 22].

Transcript, Mark Babister, 26 October 2011, Brisbane [p4366: line 30].


Transcript, Rory Nathan, 26 October 2011, Brisbane [p4367: line 5].

Transcript, Michael Leonard, 26 October 2011, Brisbane [p4367: line 22].


For a description of this study, see section 17.1.1 The structure for the completion of the scientific investigations.

Transcript, Rory Nathan, 26 October 2011, Brisbane [p4435: line 39]; Transcript, Neil Collins, 26 October 2011, Brisbane [p4437: line 19].


Transcript, Rory Nathan, 26 October 2011, Brisbane [p4432: line 49].

Transcript, Rory Nathan, 26 October 2011, Brisbane [p4435: line 57].

Transcript, Rory Nathan, 26 October 2011, Brisbane [p4438: line 23].

For information about rating curves, see section 2.6.3 Stream gauges of the interim report.
85 Transcript, Rory Nathan, 26 October 2011, Brisbane [p4437: line 6].


88 This defined flood level does not appear in Brisbane's planning scheme itself. The information is maintained elsewhere.

89 See section 5.2 Temporary local planning instruments. See also the evidence of Mr Collins and Mr Babister, members of the hydrology expert panel on this point: Transcript, 26 October 2011, Brisbane [p4441].

90 Freeboard is a height allowance that provides for uncertainty in the distance between the expected height of the water surface and the above floor.

91 Brisbane City Council, Submission No. 2, 8 April 2011 [p2: para 2.2]; [p9: para 4.7].

92 Sinclair Knight Merz, City Design – Flood Modelling Services, Recalibration of the Mike11 Hydraulic Model and Determination of the 1 in 100 AEP Flood Levels, 5 February 2004 [p11].

93 Exhibit 547, Sinclair Knight Merz, Brisbane River Flood Study, June 1998, Appendices [p0245].

94 Brisbane City Council, Submission No. 2, 8 April 2011 [p9: para 4.7].

95 Brisbane City Council, Submission No. 2, 8 April 2011 [p12: para 4.26].

96 Brisbane City Council, Submission No. 2, 8 April 2011 [p28: para 7.9-7.10]. That account is similar to the one provided in the statement of Martin Reason, the council’s acting manager of City Planning and Economic Development. See Exhibit 544, Statement of Martin Reason, 1 September 2011 [p10: para 26]; [p15: para 45]; [p19: para 57]; [p20: para 60-61].

97 Crime and Misconduct Commission, Brisbane River Flood Levels, March 2004 [p10].


99 Exhibit 547, Sinclair Knight Merz, Brisbane River Flood Study, June 1998, Appendices [p0245].

100 Water Resources was named Waterways before being merged with the Infrastructure Management Branch in 2002: see Crime and Misconduct Commission, Brisbane River Flood Levels, March 2004 [p8].


103 Exhibit 952, Transcript of Interview – Commission Staff with Barry Ball, 7 November 2011 [p9].

104 Exhibit 883, Document number 37, Common expert reading list B, Brisbane, Professor Russell Mein, Brisbane River Flood Study: Review of Hydrological Aspects [p3-5].

105 Exhibit 883, Document number 37, Common expert reading list B, Brisbane, Professor Russell Mein, Brisbane River Flood Study: Review of Hydrological Aspects [p5-6].


108 Exhibit 883, Document number 37, Common expert reading list B, Brisbane, Professor Russell Mein, Brisbane River Flood Study: Review of Hydrological Aspects, 9 December 1998 [p6-7].

109 Exhibit 952, Transcript of Interview – Commission Staff with Barry Ball, 7 November 2011 [p10]; Transcript, Barry Ball, 10 November 2011, Brisbane [p4898: line 49].

110 Exhibit 952, Transcript of Interview – Commission Staff with Barry Ball, 7 November 2011 [p10]. City Design are the ordinary supplier of hydrology studies to Water Resources.
111 Exhibit 883, Document number 38, Common expert reading list B, Brisbane, City Design, Sinclair Knight Merz, Brisbane River Flood Study (Draft), June 1999 [p9].


113 Exhibit 952, Transcript of Interview – Commission Staff with Barry Ball, 7 November 2011 [p13]; Exhibit 947, Statement of Gavin Blakey, 4 November 2011 [p5: para 24]; Transcript, Gavin Blakey, 9 November 2011, Brisbane [p4828: line 50].

114 Exhibit 883, Document number 39, Common expert reading list B, Brisbane, Brisbane City Council, Further Investigations for the Brisbane River Flood Study, December 1999 [p3].

115 Exhibit 952, Transcript of Interview – Commission Staff with Barry Ball, 7 November 2011 [p16].

116 Exhibit 946, Statement of Julie McLellan, 4 November 2011 [p17; para 70]; [p18-19; para 82-86]. See also Exhibit 952, Transcript of Interview – Commission Staff with Barry Ball, 7 November 2011 [p15].

117 Transcript, Gavin Blakey, 9 November 2011, Brisbane [p4829: line 30]; Exhibit 952, Transcript of Interview – Commission Staff with Barry Ball, 7 November 2011 [p19].

118 Exhibit 947, Statement of Gavin Blakey, 4 November 2011 [p7: para 35]; Exhibit 952, Transcript of Interview – Commission Staff with Barry Ball, 7 November 2011 [p19].

119 Exhibit 946, Statement of Julie McLellan, 4 November 2011 [p19; para 86].

120 Transcript, Barry Ball, 10 November 2011, Brisbane [p4899: line 30].


123 Exhibit 952, Transcript of Interview – Commission Staff with Barry Ball, 7 November 2011 [p19]; Exhibit 947, Statement of Gavin Blakey, 4 November 2011 [p8: para 38].


125 Exhibit 952, Transcript of Interview – Commission Staff with Barry Ball, 7 November 2011 [p21, 24].

126 Crime and Misconduct Commission, Brisbane River Flood Levels, March 2004 [p1].

127 The Crime and Misconduct Commission investigated allegations of official misconduct in not releasing the June 1999 report to the public, and produced a report in March 2004 which did not find any misconduct, but did make recommendations as to the council’s record keeping processes: Crime and Misconduct Commission, Brisbane River Flood Levels, March 2004 [p1].

128 See Exhibit 952, Transcript of Interview – Commission Staff with Barry Ball, 7 November 2011 [p26-27]; Exhibit 946, Statement of Julie McLellan, 4 November 2011 [p23; para 92(a)].

129 Transcript, Gavin Blakey, 9 November 2011, Brisbane [p4834: line 54].

130 Transcript, Gavin Blakey, 9 November 2011, Brisbane [p4833: line 47].

131 Transcript, Gavin Blakey, 9 November 2011, Brisbane [p4834: line 56].

132 Exhibit 952, Transcript of Interview – Commission Staff with Barry Ball, 7 November 2011 [p26].

133 Exhibit 952, Transcript of Interview – Commission Staff with Barry Ball, 7 November 2011 [p27].


136 Transcript, Colin Apelt, 26 October 2011, Brisbane [p4383: line 41].

137 Exhibit 952, Transcript of Interview – Commission Staff with Barry Ball, 7 November 2011 [p27]: Transcript, Erwin Weinmann, 26 October 2011, Brisbane [p4383: line 24].

138 Transcript, Rory Nathan, 26 October 2011, Brisbane [p4377: line 54].

139 Exhibit 952, Transcript of Interview – Commission Staff with Barry Ball, 7 November 2011 [p32-33].

140 Exhibit 952, Transcript of Interview – Commission Staff with Barry Ball, 7 November 2011 [p32].

141 Transcript, Gavin Blakey, 9 November 2011, Brisbane [p4835: line 22].

142 Exhibit 884, Statement of Roderic Nathan, 4 October 2011, Annexure RJN-31 [p3]. See also Transcript, Rory Nathan, 26 October 2011, Brisbane [p4382: line 28].


144 Exhibit 883, Document number 1, Common expert reading list A, Brisbane, Independent Review Panel (Russell Mein, Colin Apelt, John Macintosh, Erwin Weinmann), Review of Brisbane River Flood Study: Report to the Brisbane City Council, Executive summary [p i, p22].


147 Exhibit 883, Document number 1, Common expert reading list A, Brisbane, Independent Review Panel (Russell Mein, Colin Apelt, John Macintosh, Erwin Weinmann), Review of Brisbane River Flood Study: Report to the Brisbane City Council [p20].


150 Exhibit 544, Statement of Martin Reason, 1 September 2011 [p6: para 23]; Annexure MJR-6, Attachment A [p1: para 1(c), (d)].

151 Exhibit 544, Statement of Martin Reason, 1 September 2011, Annexure MJR-6 [p3].

152 Exhibit 544, Statement of Martin Reason, 1 September 2011, Annexure MJR-6 [p3].

153 Exhibit 544, Statement of Martin Reason, 1 September 2011 Annexure MJR-6 [p2-3].

154 Transcript, Erwin Weinmann, 26 October 2011, Brisbane [p4390: line 17].

155 Exhibit 544, Statement of Martin Reason, 1 September 2011, Annexure MJR-6, Attachment A [p1: para 1(i), (ii)].

156 Exhibit 544, Statement of Martin Reason, 1 September 2011, Annexure MJR-7 [p3: para 100].

157 Exhibit 544, Statement of Martin Reason, 1 September 2011, Annexure MJR-6, Attachment A [p1: para 1(iv)].
158 Exhibit 883, Document number 6, Common expert reading list A, Brisbane, Sinclair Knight Merz, Brisbane River Flood Study: Further Investigation of Flood Frequency Analysis Incorporating Dam Operations and CRC-Forge rainfall estimates – Brisbane River (Final), 18 December 2003 [p5].

159 Exhibit 883, Document number 2, Common expert reading list A, Brisbane, Sinclair Knight Merz, City Design – Flood Modelling Services, Recalibration of the Mike11 Hydraulic Model and Determination of the 1 in 100 AEP Flood Levels, 5 February 2004 [p11].


161 Exhibit 952, Transcript of Interview – Commission Staff with Barry Ball, 7 November 2011 [p43-44].


163 Exhibit 947, Statement of Gavin Blakey, 4 November 2011 [p19-21: para 77-86]; Transcript, Gavin Blakey, 9 November 2011, Brisbane [p4837: line 1]; Transcript, Barry Ball, 10 November 2011, Brisbane [p4904: line 3].

164 Transcript, Gavin Blakey, 9 November 2011, Brisbane [p4838: line 29].

165 Transcript, 26 October 2011, Brisbane [p4388-4389, 4397-4401].

166 Transcript, Rory Nathan, 26 October 2011, Brisbane [p4397: line 39]. See Transcript, 26 October 2011, Brisbane [p4397-4401].

167 Transcript, Sharmil Markar, 26 October 2011, Brisbane [p4398: line 15]; Transcript, Neil Collins, 26 October 2011, Brisbane [p4398: line 46]; Transcript, Drew Bewsher, 26 October 2011, Brisbane [p4399: line 16].

168 Transcript, Rory Nathan, 26 October 2011, Brisbane [p4397: line 49].

169 Transcript, Drew Bewsher, 26 October 2011, Brisbane [p4399: line 27].


171 Transcript, Gavin Blakey, 9 November 2011, Brisbane [p4840: line 5].

172 Transcript, Gavin Blakey, 9 November 2011, Brisbane [p4838-4843].

173 See section 2.6.3, above.

174 Exhibit 1017, Statement of Carl Wulff, 8 November 2011 [p4-5: para 14-15].

175 Exhibit 1017, Statement of Carl Wulff, 8 November 2011 [p11: para 23].

176 Ipswich City Council, Submission No. 2, 28 April 2011 [p54: para 18.6(b)-(c)].


178 Exhibit 883, Document number 1, Common expert reading list A, Ipswich, WMAtwater, Supplementary Report – Ipswich Flood Frequency Analysis (Final Report), October 2011 [p12: para 26]. The chief executive officer of Ipswich City Council gave evidence that that section of Mr Babister’s report was accurate: Exhibit 1017, Statement of Carl Wulff, 8 November 2011 [p11: para 23].


181 Exhibit 1017, Statement of Carl Wulff, 8 November 2011 [p14: para 37].

182 See Resolution, above and Exhibit 1017, Statement of Carl Wulff, 8 November 2011, Annexure CCW-3 [p1].

183 Exhibit 1017, Statement of Carl Wulff, 8 November 2011 [p17: para 51]; Annexure CCW-10; Annexure CCW-14.

184 Exhibit 1017, Statement of Carl Wulff, 8 November 2011 [p16: para 45].

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186 Exhibit 1017, Statement of Carl Wulff, 8 November 2011 [p22: para 65].

187 Exhibit 1017, Statement of Carl Wulff, 8 November 2011, Annexure CCW-1 [p1].

188 Exhibit 1017, Statement of Carl Wulff, 8 November 2011, Annexure CCW-1 [p2].

189 Exhibit 1017, Statement of Carl Wulff, 8 November 2011 [p8: para 21(c)].

190 Exhibit 1017, Statement of Carl Wulff, 8 November 2011 [p8: para 21(c)].

191 Exhibit 1017, Statement of Carl Wulff, 8 November 2011 [p9: para 21(d)].

192 Exhibit 883, Document number 1, Common expert reading list A, Ipswich, WMAtwater, Supplementary Report – Ipswich Flood Frequency Analysis (Final Report), October 2011 [p14: Table 1].

193 Exhibit 1017, Statement of Carl Wulff, 8 November 2011 [p9: para 21(e)]; Annexure CCW-1 [p9].

194 Exhibit 1017, Statement of Carl Wulff, 8 November 2011, Annexure CCW-23.

195 Exhibit 1017, Statement of Carl Wulff, 8 November 2011, Annexure CCW-23.


198 See section 2.3.5 A comprehensive study of the Brisbane River catchment.

199 Exhibit 1017, Statement of Carl Wulff, 8 November 2011 [p19: para 55].

200 Exhibit 1017, Statement of Carl Wulff, 8 November 2011, Annexure CCW-7 [p8]. See also Annexure CCW-20.

201 Exhibit 1017, Statement of Carl Wulff, 8 November 2011, Annexure CCW-7 [p8].


203 Exhibit 1017, Statement of Carl Wulff, 8 November 2011 [p7: para 19].

204 Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p7].

205 Exhibit 992, Submission of RACQ – Flood Mapping [p1]; Exhibit 993, Submission Local Government Association of Queensland [p1]; Exhibit 994, Submission of Insurance Council of Australia – Flood Mapping [p1]; Exhibit 995, Submission of Ipswich City Council – Flood Mapping [para 3.2]; Exhibit 919, Submission of Commonwealth Government – Flood Mapping [p: para 10]. It is also supported in the Queensland Reconstruction Authority draft guidelines Planning for stronger, more resilient floodplains: Part 2 - Measures to support floodplain management in future planning schemes, which was released for public consultation in January 2012.

206 Exhibit 996, Submission Four of Brisbane City Council [p12]; Exhibit 917, Submission of State of Queensland – Flood Mapping [p4]; Exhibit 992, Submission of RACQ – Flood Mapping [p1]; Exhibit 994, Submission of Insurance Council of Australia – Flood Mapping [p1]; Exhibit 993, Submission of Local Government Association of Queensland [p1]; Exhibit 995, Submission of Ipswich City Council – Flood Mapping [para 1.2(b), 3.1, 37].

207 Exhibit 917, Submission of State of Queensland – Flood Mapping [p4]; Exhibit 993, Submission from Local Government Association – Flood Mapping [p4]; Exhibit 996, Submission Four of the Brisbane City Council [p12].

208 Exhibit 996, Submission Four of Brisbane City Council [p12]; Exhibit 995, Submission of Ipswich City Council – Flood Mapping [para 3.9].

209 Transcript, Russell Cuerel, 5 October 2011, Brisbane [p3708: line 50]; Exhibit 728, Statement of Russell Cuerel, 14 September 2011 [p5: para 8(b)].

210 Transcript, Russell Cuerel, 5 October 2011, Brisbane [p3702: line 10].

212 Exhibit 917, Submission of the State of Queensland [p6].


215 Exhibit 534, Statement of Gary Mahon, 8 September 2011 [p24-25: para 119-120].

216 Exhibit 917, Submission of the State of Queensland – Flood Mapping [p4-5]. Since this submission was received, the Queensland Reconstruction Authority has released, for public consultation, a draft guideline Planning for stronger, more resilient floodplains: Part 2 - Measures to support floodplain management in future planning schemes. At page 5 it indicates that, while the Queensland Government’s position is that responsibility for flood mapping should rest at the local level, there is a significant role for regional planning committees to oversee and co-ordinate at the catchment level.

217 Correspondence from Queensland Government, 29 February 2012.


220 Exhibit 993, Submission of Local Government Association of Queensland [p3-4].

221 Transcript, Julie McLellan, 9 November 2011, Brisbane [p4812: line 41]; Exhibit 951, Transcript of Interview – Commission Staff with Barry Ball, 28 October 2011 [p2].

222 Transcript, Barry Ball, 10 November 2011, Brisbane [p4899: line 42]; Exhibit 951, Transcript of Interview – Commission Staff with Barry Ball, 28 October 2011 [p2-3].

223 Transcript, Gavin Blakey, 9 November 2011, Brisbane [p4827: line 17]; Exhibit 951, Transcript of Interview – Commission Staff with Barry Ball, 28 October 2011 [p2].

224 Transcript, Gavin Blakey, 9 November 2011, Brisbane [p4835: line 47].

225 See Exhibit 951, Transcript of Interview – Commission Staff with Barry Ball, 28 October 2011 [p5-6].

226 See also the statement in the independent review panel terms of reference Exhibit 883, Document number 1, Common expert reading list A, Brisbane, Independent Review Panel (Russell Mein, Colin Apelt, John Macintosh, Erwin Weinmann), Review of Brisbane River Flood Study: Report to the Brisbane City Council. See Transcript, Gavin Blakey, 9 November 2011, Brisbane [p4834: line 12].

227 See Exhibit 951, Transcript of Interview – Commission Staff with Barry Ball, 28 October 2011 [p7].

228 Transcript, Rory Nathan, 26 October 2011, Brisbane [p4387: line 51]; Transcript, Michael Leonard, 26 October 2011, Brisbane [p4388: line 7].

229 See, for further information about the limitations of models, section 16.14 The effect of releases from Wivenhoe Dam on flooding in the Brisbane River.

230 See Exhibit 951, Transcript of Interview – Commission Staff with Barry Ball, 28 October 2011 [p10].

231 Transcript, Barry Ball, 10 November 2011, Brisbane [p4905: line 14].

232 Transcript, Mark Babister, 26 October 2011, Brisbane [p4362: line 9].

233 Transcript, Mark Babister, 26 October 2011, Brisbane [p4362: line 32; p4363: line 7].

235 Transcript, Erwin Weinmann, 26 October 2011, Brisbane [p4415: line 23]; Transcript, Colin Apelt, 26 October 2011, Brisbane [p4416: line 20].

236 See also: Transcript, Mark Babister, 26 October 2011, Brisbane [p4415: line 14].

237 Transcript, Erwin Weinmann, 26 October 2011, Brisbane [p4415: line 23]; Transcript, Mark Babister, 26 October 2011, Brisbane [p4415: line 6]; Transcript, Colin Apelt, 26 October 2011, Brisbane [p4416: line 20].

238 Transcript, Drew Bewsher, 26 October 2011, Brisbane [p4415: line 47].

239 Transcript, Rory Nathan, 26 October 2011, Brisbane [p4417: line 16].


242 See section 2.3.2 A comprehensive study of the Brisbane River catchment, above.


244 Transcript, Sharmil Markar, 26 October 2011, Brisbane [p4420: line 26].

245 Transcript, Rory Nathan, 26 October 2011, Brisbane [p4417: line 38]. See also Exhibit 995, Ipswich City Council – Flood Mapping Submission, 4 November 2011 [para 3.22].


248 Exhibit 996, Brisbane City Council – Flood mapping submission Four dated 4 November 2011 [p14]; Exhibit 992, Submission of RACQ – Flood Mapping [p3].

249 Transcript, Rory Nathan, 26 October 2011, Brisbane [p4363: line 1-10].

250 Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p xv].


252 Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p14].


254 Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p57].


Council has submitted that it has spent approximately $870 million on flood-related planning, mitigation, awareness and response initiatives since 2004: Exhibit 946, Statement of Julie McLellan, 4 November 2011 [p34-35: para 139].

Exhibit 946, Statement of Julie McLellan, 4 November 2011, Annexure JAM-12.


Exhibit 946, Statement of Julie McLellan, 4 November 2011 [p36: para 149].

Exhibit 946, Statement of Julie McLellan, 4 November 2011 [p37: para 152(d)].

Exhibit 946, Statement of Julie McLellan, 4 November 2011 [p43: para 168].

Initial Submission of Brisbane City Council [p12]; Exhibit 946, Statement of Julie McLellan, 4 November 2011 [para 163].

Initial Submission of Brisbane City Council [p10]; Exhibit 946, Statement of Julie McLellan, 4 November 2011 [para 164].

Exhibit 1020, Statement of Evan Pardon, 20 October 2011, Attachment 2].


Exhibit 965, Report of Greg Vann, Planning Aspects of Alternative Approaches to Mapping the Effect of Flood, 10 November 2011 [p29: para 5.4.9-5.4.10].

A town planner consulted by the Commission suggested some of these criteria. See Exhibit 965, Report of Greg Vann, Planning Aspects of Alternative Approaches to Mapping the Effect of Flood, 10 November 2011 [p28: para 5.3.4; p29: para 5.4.8-5.4.10; p30: para 5.6.2].

State Planning Policy 1/03: Mitigation the Adverse Impacts of Flood, Bushfire and Landslide [p16: para A3.2].


2. Floodplain management


Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p73].


Transcript, Steve Reynolds, 11 November 2011, Brisbane [p4955: line 48].


Report of Trevor Johnson, 11 November 2011 [p4-5].

Exhibit 927, Statement of Steven Jacoby, 17 October 2011 [p2: para 12].

300 For a description of what constitutes a flood frequency analysis, see section 2.3.2 A comprehensive flood study of the Brisbane River catchment; Exhibit 965, Report of Greg Vann, Planning Aspects of Alternative Approaches to Mapping the Effect of Flood, 10 November 2011 [p22: para 4.5.4 – 4.5.5].

301 State Planning Policy 1/03 Guideline: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p35: para A2.23].

302 Ordered drainage data is a stream classification system used to determine a hierarchy of streams. Once this data set is overlaid on the map, it is possible for DERM officers to select the stream orders, or drainage lines, to include on the Interim Floodplain map. (Exhibit 538, Statement of Brendan Nelson, 15 September 2011 [p13: para 256(d)].

303 Generally 10 metre contours. More accurate contours are used, if they are available. Exhibit 927, Statement of Steven Jacoby, 17 October 2011, Attachment SKJ-11 [p7].


305 Transcript, Steven Jacoby, 8 November 2011, Brisbane [p4726: line 1; p4727: line 51]; Transcript, Brendan Nelson, 19 September 2011, Brisbane [p2819: line 40].

306 Transcript, Steven Jacoby, 8 November 2011, Brisbane [p4729: line 1].


308 Transcript, Brendan Nelson, 19 September 2011, Brisbane [p2823: line 40]; Transcript, Brendan Nelson, 20 September 2011, Brisbane [p2833: line 55].

309 Transcript, Brendan Nelson, 19 September 2011, Brisbane [p2817: line 44; p2821: line 1]; Transcript, Brendan Nelson, 20 September 2011, Brisbane [p2830: line 30]; Transcript, Brendan Nelson, 8 November 2011, Brisbane [p4706: line 15].

310 Transcript, Brendan Nelson, 19 September 2011, Brisbane [p2820: line 19; p2821: line 28; p2823: line 28]; Transcript, Brendan Nelson, 20 September 2011, Brisbane [p2829: line 46; p2831: line 1; p2831: line 24; p2836: line 43].


312 Third statement of Brendan Nelson, 30 November 2011 [p14: para 431].

313 Transcript, Robert Fredman, 13 October 2011, Gympie [p4064: line 3].

314 Transcript, Brendan Nelson, 19 September 2011, Brisbane [p2823: line 45].

315 Transcript, Brendan Nelson, 19 September 2011, Brisbane [p2823: line 45].


318 Exhibit 926, Supplementary Statement of Brendan Nelson, 21 October 2011, Attachment BJN-43 [p8].

319 Planning for stronger, more resilient floodplains: Part 1 - Interim measures to support floodplain management in existing planning schemes [p9].

320 Exhibit 927, Statement of Steven Jacoby, 17 October 2011 [p4: para 22; p7: para 37].

321 Transcript, Brendan Nelson, 8 November 2011, Brisbane [p4707: line 54].


324 The Guidelines to the State Planning Policy suggest that care should be taken when using such information to make a determination about flood risk. See, State Planning Policy 1/03 Guideline: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p36: para A2.25].


331 Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p99].

332 Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p17].

333 Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p17].


335 Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p18-19, 69].

336 Report on the Environmental Scan into a National Approach to Flood Modelling, June 2011 [p5: para 21].

337 Exhibit 37, Statement of James Davidson, 4 April 2011, JD-1 [p8: para 46].

338 Exhibit 37, Statement of James Davidson, 4 April 2011, JD-1 [p772: para 1].


341 Exhibit 404, Statement of Ken Morris, 3 May 2011 [p15: para 3.10].


343 Queensland Floods Commission of Inquiry, Interim Report, 2011, Section 4.1.2 [p135].


Not all sources of information are available for every lot within Brisbane City Council’s jurisdiction.


Exhibit 993, Submission of Local Government Association of Queensland – Flood Mapping, November [p6]; Exhibit 992, Submission of RACQ – Flood Mapping, 3 November 2011 [p5].


Transcript, 19 September 2011, Anthony Leighton [p2793: line 50]; Transcript 27 September 2011, David Dunworth [p3225: line 20].

Section 245, Sustainable Planning Act 2009.

Section 737, Sustainable Planning Act 2009.

Sections 738-740, Sustainable Planning Act 2009.

Conveyancing practice in Queensland is regulated by the Property Agents and Motor Dealers Act 2000.

See section 52A of the Conveyancing Act 1919 (NSW) and section 4 and schedule 1 of the Conveyancing (Sale of Land) Regulation 2010 (NSW). These provisions provide that a seller must attach a Section 149 Property Certificate for the land the subject of the contract for sale.

3 Planning framework

A number of chapters in this report make findings and recommendations about aspects of the planning framework. To give context to these findings, this chapter sets out an overview of the planning framework in Queensland.

The principal piece of planning legislation in Queensland is the Sustainable Planning Act 2009. It provides for the regulation of land use planning at the state, regional and local levels through what are known as ‘planning instruments’. In essence, land use planning under the Sustainable Planning Act comprises two elements: the preparation of planning instruments and the assessment of applications for proposed development against the standards set out in those instruments. The Minister responsible for exercising the powers set out in the Sustainable Planning Act 2009 is the Minister for Local Government.

State planning instruments set out planning rules that apply across Queensland or within a region; local planning instruments set out planning rules that apply to each council area. In the event of any inconsistency, state planning instruments prevail over local planning instruments.

State planning instruments are considered in detail in chapter 4 and local planning instruments in chapter 5.

3.1 State planning instruments

There are four categories of state planning instruments:

- regional plans
- state planning regulatory provisions
- state planning policies
- the standard planning scheme provisions.

3.1.1 Regional plans

For planning purposes, Queensland is divided into a number of regions; examples are far north Queensland and south-east Queensland. Separate regional plans have been prepared for each area. The first regional plan came into effect in 2005.

Regional plans provide the framework for land use and infrastructure planning at a regional level. A regional plan sets out the ‘desired regional outcomes’ and the policy for achieving those outcomes for a particular region. The plan describes future land uses, provides for adequate infrastructure and nominates the environmental, economic and cultural resources that should be maintained or developed.

For example, the South East Queensland Regional Plan 2009 – 2031 establishes desired regional outcomes for three categories of land use: ‘Urban footprint’, ‘Rural living area’ and ‘Regional landscape and rural production area’. The categories relate to the expected level of development that will occur in each; as the names suggest, land in the ‘urban footprint’ is designated for urban development, ‘rural living areas’ for rural-residential development, and ‘regional landscape and rural production area’ for non-urban uses, such as agriculture and conservation.
Regional plans also identify growth centres, called ‘regional activity centres’: areas where growth is encouraged. For example, Goodna is marked as a major regional activity centre in the South East Queensland Regional Plan 2009 – 2031.7 Regional plans are discussed in more detail in section 4.4.

Local planning instruments must be amended to reflect a regional plan.8 In the absence of that amendment, development applications must be assessed against the regional plan9 as well as the local planning instrument.

3.1.2 State planning regulatory provisions

A state planning regulatory provision is a type of planning instrument that the Minister may make,10 for purposes identified in the Sustainable Planning Act, in relation to any area in Queensland.11 State planning regulatory provisions can be used, among other things, to implement regional plans.12 In that case, the state planning regulatory provision will contain the operative provisions of the regional plan setting out the rules that regulate how the regional plan is implemented in practice. It might, for example, prohibit the making of certain development applications, such as an application for urban development outside of the urban footprint.

3.1.3 State planning policies

State planning policies are planning instruments that are made to protect and regulate matters known as ‘state interests’.

A ‘state interest’ is defined by the Sustainable Planning Act 2009 as ‘an interest that the Minister considers affects an economic or environmental interest of the State or a part of the State, including sustainable development; or an interest that the Minister considers affects the interest of ensuring there is an efficient, effective and accountable planning and development assessment system’.13 Examples of state interests include koala conservation, management of acid sulfate soils, coastal management and the management of good quality agricultural land.

State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide is the state planning instrument most relevant to flood. It was made under the now-repealed Integrated Planning Act 1997, and continues as a state planning policy under the Sustainable Planning Act 2009.14 Councils should ensure their planning schemes reflect state planning policies. If a planning scheme does not reflect a state planning policy, the state planning policy will apply in assessing development applications,15 together with the criteria in the planning scheme.

3.1.4 Standard planning scheme provisions

The standard planning scheme provisions, known as the ‘Queensland Planning Provisions’, are made by the Minister for Local Government. They act as template planning scheme provisions and are intended to provide a consistent structure for all planning schemes across Queensland. To that end, the Queensland Planning Provisions provide standardised definitions, zones, overlays, and development assessment codes.

More detailed information about the Queensland Planning Provisions is in section 4.3.

3.2 Local planning instruments

Local planning instruments regulate land use at the council level and include:16

- planning schemes
- planning scheme policies
- temporary local planning instruments.

Local planning instruments are considered in more detail in chapter 5.

3.2.1 Planning schemes

The planning scheme is the principal planning instrument for regulating development in Queensland. Planning schemes regulate which development must be assessed before it can be undertaken, the type of assessment required and the criteria used in an assessment.17
The process for making a planning scheme is set out in the Sustainable Planning Act 2009 and the Statutory Guideline 01/12 Making and amending local planning instruments.\(^{19}\)

The Sustainable Planning Act contains a list of matters that a planning scheme must address in order to provide an integrated planning policy for a council region.\(^{19}\) However, flooding considerations are not included (or at least not expressly) in this list. When drafting planning schemes, councils must consider the ‘core matters’ listed in the Act: land use and development, infrastructure and valuable features.\(^{20}\) Again, they do not include any explicit requirement to consider flooding. The Queensland Government Planner suggested, in evidence before the Commission, that flooding might fall within the term ‘valuable feature’\(^{21}\) (as concerning ‘resources or areas … of ecological significance’), but that seems a rather tenuous connection. It might be argued, however, that flooding is a development constraint and thus part of the core matter of ‘land use and development’.

If there is an inconsistency between a regional plan and a planning scheme (or another planning instrument), the regional plan prevails.\(^{22}\) Similarly, if there is an inconsistency between a state planning policy and a planning scheme (or another local planning instrument), the state planning policy prevails.\(^{23}\)

A planning scheme regulates land use and development primarily through a system of zones, often represented as different areas on a map. Land is allocated a zone (such as a residential zone) in the planning scheme. Zoning is the principal means by which planning schemes establish the type of assessment which a development application should undergo; different rules apply to each zone. Overlay maps are also included in planning schemes; these maps depict extra information superimposed on zoning maps. The various parts of a planning scheme and how they operate are explained further in section 4.3 Queensland Planning Provisions; for an explanation of the development assessment process see 3.3.2 Development assessment.

Planning schemes prepared under the Sustainable Planning Act must be consistent with the Queensland Planning Provisions (the standard planning scheme provisions).\(^{24}\) This requirement does not apply to planning schemes prepared under the repealed Integrated Planning Act 1997, which was the legislation in force before the Sustainable Planning Act. If the Queensland Planning Provisions are amended, a planning scheme made under the Sustainable Planning Act 2009 must be amended within 90 days to reflect the change.\(^{25}\)

In 2008, councils across Queensland were amalgamated in order to create larger local government areas. As a result, most councils are now responsible for the administration of a number of planning schemes. Each of these planning schemes is likely to be underpinned by different information and, as a result, may approach flood differently. For example, Bundaberg Regional Council administers the Kolan Shire Planning Scheme 2006, Isis Shire Planning Scheme 2007, Burnett Shire Planning Scheme 2006 and the Bundaberg Planning Scheme 2004; these planning schemes have varying standards and criteria to address flood and development.

The Queensland Government envisages that with time, and as planning schemes are reviewed,\(^{26}\) each council will prepare a single planning scheme in accordance with the Queensland Planning Provisions to cover the whole of its area.\(^{27}\)

### 3.2.2 Planning scheme policies

A planning scheme policy is a policy made by a council to support its planning scheme.\(^{28}\)

Substantive planning content should be contained in the planning scheme, not the policy. The planning scheme policy supports the planning scheme by among other things:

- stating the information a council may request as part of a development application, such as a flood study
- containing standards identified in a planning scheme code, for example construction standards or flood hazard standards
- including guidelines or advice about how to satisfy assessment criteria in a planning scheme, including, for example, those relating to flooding.\(^{29}\)
3.2.3 Temporary local planning instruments

A temporary local planning instrument is a tool councils can use to temporarily suspend and replace part of a planning scheme. It does not amend the planning scheme and will expire after 12 months.30

For example, after the 2010/2011 floods, the Department of Local Government and Planning worked with councils to develop temporary local planning instruments to help resolve rebuilding and development issues in flood affected areas.31

More detailed information on temporary local planning instruments is found in chapter 5 Local planning instruments.

3.3 Types of development and development assessment

3.3.1 Categories of development

The Sustainable Planning Act 2009 provides for a number of categories of development:

- exempt development
- self-assessable development
- development requiring compliance assessment
- assessable development (which is further categorised into code assessable and impact assessable development)
- prohibited development.32

The category of development will determine whether the development needs to be assessed before it can be undertaken and how that assessment will occur. Each category of development is explained in more detail below.

Exempt development

Exempt development does not require any development approval to proceed.33 It is defined in the Sustainable Planning Act as being a type of development that is not assessable, self-assessable or prohibited development or development requiring compliance assessment.34

The Sustainable Planning Regulation lists types of exempt development.35 The list includes operational work that the Queensland Government is authorised to do under another state law;36 an example would be the placement of fill for the purposes of building a state highway. This type of exempt development is the subject of further consideration in section 7.6 Placement of fill in the floodplain.

Self-assessable development

Self-assessable development means the person undertaking the development is responsible for ensuring that it complies with all applicable codes.37 The council is not involved; it is a self-regulating process.

An example of development that may be self-assessable is the addition of a verandah to a house. This may not require a development approval but may nevertheless need to comply with requirements of a code, such as a requirement that the verandah be constructed no closer than a certain distance from the boundary of the property.

Development requiring compliance assessment

Development requiring compliance assessment does not require a development approval, but must be authorised by a compliance permit38 granted by a council.39

This type of development concerns prescribed (usually simple) types of development in particular areas. The compliance assessment process allows councils to assess technical aspects of a development before it proceeds.

Assessable development

Assessable development is development for which development approval is needed before it can proceed.40
In order to obtain a development approval, the applicant submits to council a development application that then must undergo the assessment procedure stipulated in the *Sustainable Planning Act*. This may involve ‘code assessment’, ‘impact assessment’, or both.

Code assessment involves a basic assessment of the information contained in the application against the applicable assessment criteria set out in codes in a planning scheme. The application must also be assessed against other matters specified in the Act; including any state planning instruments, such as a state planning policy.

If an applicant meets the criteria in the codes, the council may give a development approval that authorises the development to take place.

Impact assessment applies where it is anticipated that the development may affect the surrounding area in a way that requires closer scrutiny; for example, where an industrial development is proposed in a residential area. The prospective ‘impact’ on the surrounding area means that the application is subject to more intense consideration.

Prohibited development

Prohibited development is, self-evidently, development that is prohibited: no application can be made to authorise it.

### 3.3.2 Development assessment

Applications for assessable development are generally, but not always, assessed by the responsible council. In the usual case, the council receives an application seeking approval for a type of development, assesses and decides it.

There are up to five stages in the assessment process:

- application stage
- information and referral stage
- notification stage
- decision stage
- compliance stage.

Each of these stages is described in more detail below.

The application stage involves lodging an application with the assessment manager. The application must meet certain legislative requirements in order to progress to subsequent stages. If it does not, the assessment manager must give the applicant a notice that sets out how to fix the application so that it will meet those requirements.

The second stage is the information and referral stage. At this stage the assessment manager requests any further information necessary to complete the assessment. The application is also, at this stage, sent to ‘referral agencies’ for their assessment. Referral agencies are bodies that have an interest in some aspect of the type of development that is being considered; typically they are Queensland Government departments. For example, the Department of Transport and Main Roads may assess the traffic impacts of a development on a main road. Referral agencies, like the assessment manager, are able to make information requests and assess certain aspects of the application.

The third stage is the notification stage, when a development application is put to the public for comment. The notification stage applies to impact assessable development. By making a submission on a development application, members of the public can secure a right to appeal the assessment manager’s decision to the Planning and Environment Court (a specialist court constituted by District Court judges).

In the decision stage, the assessment manager must decide to approve all or part of the application, approve all or part of the application with conditions, or refuse the application.

The compliance stage is only applicable to compliance assessment. Here, the decision is made whether to grant the applicant a compliance permit, the document which authorises the development.
3.3.3 Referral agencies

As explained earlier, referral agencies are bodies that have an interest in certain aspects of development. They include Queensland Government agencies, government owned corporations and certain private sector corporations. For example, vegetation management is overseen by the Department of Environment and Resource Management (DERM); some development applications that involve vegetation management are referred to DERM during the development assessment process for assessment and comment.

There are two types of referral agencies: concurrence agencies and advice agencies.48 Concurrence agencies have the power to direct the outcome of an application, by requiring that development conditions be imposed on any approval, or directing that the application be refused.49 A concurrence agency may also ask an applicant for further information about an application.

Advice agencies provide non-binding advice to an assessment manager.50 Advice agencies only provide advice in their areas of expertise; for example, the Department of Transport and Main Roads might provide advice on the impact of the development on roads, but would not comment on its impact on the electrical network.

The referral process’s purpose is to streamline the development application system by allowing more than one regulatory entity to assess the development application at the one time.51

There is currently no referral agency with respect to flood.52 As a part of its inquiries, the Commission considered whether a ‘flood referral agency’ should be established.

The Queensland Government Planner’s view was that the referral of a development application to an entity set up for the purpose of assessing flooding issues would not be necessary if planning schemes contained adequate controls.53 The absence of a referral trigger does not prevent a council from seeking advice from a particular Queensland Government department on an ad hoc basis.54 Queensland Government departments also have an opportunity to consider the planning mechanisms proposed for a scheme as part of the procedure for making a planning scheme. This involvement is addressed in more detail in section 4.1 State Planning Policy 1/03.

The Commission considers that the introduction of a ‘flood referral agency’ would place an unnecessary burden on the development process and on Queensland Government resources.55

(Endnotes)

1 The Sustainable Planning Act 2009 replaced the now repealed Integrated Planning Act 1997.

2 Schedule, Administrative Arrangements Order (No.2) 2011.


4 Section 15, Sustainable Planning Act 2009.

5 Exhibit 532, Statement of Gary White, 2 September 2011 [p5: para 25].

6 Section 28, Sustainable Planning Act 2009.

7 The State of Queensland (Queensland Department of Infrastructure and Planning), South East Queensland Regional Plan 2009-2031, July 2009 [p32].

8 Section 29(2), Sustainable Planning Act 2009.

9 Sections 313(2)(b), 314(2)(b) and 316(4)(c)(ii), Sustainable Planning Act 2009.

10 Or in some instances, the Minister jointly with another ‘eligible’ Minister who is responsible for administering the subject matter of the state planning regulatory provision, see: Section 20(3), Sustainable Planning Act 2009.

11 Section 20(1), Sustainable Planning Act 2009.

12 Sections 16 and 20, Sustainable Planning Act 2009.


14 Section 773, Sustainable Planning Act 2009.

15 Sections 313(2)(d), 314(2)(d) and 316(4)(c)(iii), Sustainable Planning Act 2009.

16 Section 77, Sustainable Planning Act 2009.

17 These matters are also dealt with, to a much more limited extent, in the Sustainable Planning Regulation 2009 and in regional plans.

18 Section 117(1), Sustainable Planning Act 2009; Section 5, Sustainable Planning Regulation 2009.

19 Sections 79, 88 and 89, Sustainable Planning Act 2009.
3 Planning framework

20 Section 89, Sustainable Planning Act 2009.

21 Transcript, Gary White, 19 September 2011, Brisbane [p 2746: line 47].

22 Section 26(3), Sustainable Planning Act 2009.

23 Section 43, Sustainable Planning Act 2009.

24 Section 55, Sustainable Planning Act 2009.


26 Planning schemes made under the Integrated Planning Act 1997 are required to be reviewed every 8 years, see: Section 2.2.1, Integrated Planning Act 1997. Planning schemes made under the Sustainable Planning Act 2009 are required to be reviewed every 10 years, see: Section 91, Sustainable Planning Act 2009.

27 Section 55, Sustainable Planning Act 2009.

28 Section 113, Sustainable Planning Act 2009.


30 Section 104, Sustainable Planning Act 2009.

31 Exhibit 532, Statement of Gary White, 2 September 2011 [p57: para 320].

32 Section 231, Sustainable Planning Act 2009.

33 Section 235(1), Sustainable Planning Act 2009.

34 Section 231(2), Sustainable Planning Act 2009.

35 Schedule 4, Sustainable Planning Regulation 2009.

36 Schedule 4, Table 4, ‘By or on behalf of a public sector entity’, Sustainable Planning Regulation 2009.

37 Section 236, Sustainable Planning Act 2009.

38 Section 237, Sustainable Planning Act 2009.

39 Sometimes developments can be assessed by an agency other than a council, for example a Queensland Government department.

40 Section 238, Sustainable Planning Act 2009.

41 Sometimes developments can be assessed by an agency other than a council, for example a Queensland Government department.

42 Section 313, Sustainable Planning Act 2009.

43 Section 314, Sustainable Planning Act 2009.

44 Section 239, Sustainable Planning Act 2009.

45 In some cases the assessment manager is the chief executive of a Queensland Government department which administers relevant legislation: Section 246, Sustainable Planning Act 2009; Section 12 and Schedule 6, Column 2, Sustainable Planning Regulation 2009.

46 Sections 260 and 261, Sustainable Planning Act 2009.

47 By applying the provisions of the Transport Infrastructure Act 1994 within the jurisdiction of the Department of Transport and Main Roads.

48 Section 252, Sustainable Planning Act 2009.

49 Section 285, Sustainable Planning Act 2009.

50 Section 291, Sustainable Planning Act 2009.

51 Clause 270, Explanatory Notes, Sustainable Planning Bill 2009.

52 Schedule 7 of the Sustainable Planning Regulation 2009 sets out when a referral agency will be triggered to assess a development application within the terms of its jurisdiction.

53 Transcript, Gary White, 7 November 2011, Brisbane [p4624: lines 3-25]; Town Planning experts, Greg Vann and Steve Reynolds agreed with Mr White’s view, see: Transcript, Greg Vann, 11 November 2011, Brisbane [p4992: lines 27-50]; Transcript, Steve Reynolds, 11 November 2011, Brisbane [p4963: lines 10-32]; Similarly, town planner, Paul Grech, also says that if a competent flood risk management plan has been prepared and the recommendations of the plan are implemented the relevant agency should have had appropriate input to that process at the planning scheme preparation stage and should not normally have a role at the development application stage, see: Transcript, Paul Grech, 11 November 2011, Brisbane [p4987: lines 18-50].

54 Transcript, Greg Vann, 11 November 2011, Brisbane [p4992: lines 36-47].

55 This view is supported by the Queensland Government Planner, Gary White, and town planner, Steve Reynolds, see: Transcript, Gary White, 7 November 2011, Brisbane [p4624: lines 3-25]; Transcript, Steve Reynolds, 11 November 2011, Brisbane [p4963: lines 10-32].
4 State planning instruments

Because a development generally has its greatest effect on its immediate neighbourhood and the surrounding community, decisions about development and planning are appropriately made at a local level, primarily by councils. The Queensland Government’s role is at a higher level, and is played through state planning instruments. These are the means by which the Queensland Government formally articulates matters which local level planning instruments should address, and which it considers should be taken into account in the development assessment process. The Commission has examined the state planning instruments which influence how the issue of flooding is addressed by councils: the State Planning Policy 1/03, the Queensland Planning Provisions and Regional Plans.

4.1 State Planning Policy 1/03

4.1.1 The purpose and objectives of State Planning Policy 1/03

State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide took effect on 1 September 2003. It records the Queensland Government’s policy position that ‘development should minimise the potential adverse impacts of flood, bushfire and landslide on people, property, economic activity and the environment’. The Queensland Government’s objective in implementing State Planning Policy 1/03 was to reduce the increasing costs incurred by the community, government and the insurance industry in recovering from natural disasters. State Planning Policy 1/03 seeks to achieve this objective, as it relates to flood, by ensuring that the natural hazard of flood is adequately considered when decisions are made about development; that is, ‘when development applications are assessed, when planning schemes are made or amended and when land is designated for community infrastructure’.

To this end, State Planning Policy 1/03 contains ‘development outcomes’ relevant to the assessment of development applications, as well as outcomes relevant to making and amending planning schemes. In addition to adopting State Planning Policy 1/03, the Queensland Government published the State Planning Policy 1/03 Guideline: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide. Its purpose is to ‘provide advice and information on interpreting and implementing the State Planning Policy 1/03’.
4.1.2 Application of State Planning Policy 1/03

Natural hazard management areas

State Planning Policy 1/03 applies to areas identified as ‘natural hazard management areas’.

A natural hazard management area for flood is determined by measuring the extent of land which is inundated during what State Planning Policy 1/03 refers to as a ‘defined flood event’ – the flood event selected by a council to regulate development in the council’s region. The policy expresses the Queensland Government’s position that a planning scheme’s defined flood event should, generally, be a flood with a one per cent annual exceedance probability. However, the policy also acknowledges that a council may, subject to consultation with the Queensland Government, elect to use a flood event with a higher chance of occurring – a flood with an annual exceedance probability of two per cent, for example – to determine its natural hazard management area for flood.

Clause 6.6 of State Planning Policy 1/03 states that until a council has determined its defined flood event and identified the area affected by that flood event in its planning scheme, State Planning Policy 1/03 ‘does not take effect for development assessment in relation to flood hazard in that locality’. Queensland’s Government Planner accepted that this excludes State Planning Policy 1/03 from applying to development assessed in council regions that do not have a flood map. The Department of Community Safety’s Assistant Director-General, Strategic Policy Division, explained that clause 6.6 was not intended to limit the application of State Planning Policy 1/03 by operating as an ‘opt out clause’. However, the terms of clause 6.6 are clear: State Planning Policy 1/03 cannot apply to assessment unless a natural hazard management area for flood has been identified in a planning scheme. And development proposals can only sensibly be assessed against the development outcomes in State Planning Policy 1/03 when land at risk from flooding has been identified.

Plainly, the application of State Planning Policy 1/03 hinges on councils’ identifying a natural hazard management area for flood. The State Planning Policy 1/03 Guideline provides information about how this is to be achieved. Best practice, according to the guideline, is for councils to prepare detailed flood studies and flood modelling for the whole of the floodplain. However, the guideline recognises that this can be expensive. Accordingly, it outlines other less costly methods – including using historical data, existing flood studies or topographical features – to determine the natural hazard management area for flood. More detailed findings and recommendations about flood studies and flood mapping are made in chapter 2 Floodplain management.

The development outcomes

To achieve its objectives, State Planning Policy 1/03 contains ‘development outcomes’ relevant to the assessment of development applications, as well as outcomes relevant to making and amending planning schemes.

Outcomes 1 to 3 in State Planning Policy 1/03 are relevant to the regulation of development in areas at risk of flood.

The first criterion, Outcome 1, focuses on limiting development in natural hazard areas which is not ‘compatible with’ the hazard: for present purposes, flood.

Outcome 2 in State Planning Policy 1/03 acknowledges the possibility of development occurring despite its incompatibility with flood, and focuses instead on minimising, as far as possible, the unacceptable risk to people or property.

Outcome 3 encourages the location and design of community infrastructure so that it can function effectively during and immediately after flood events (see 7.2 Community infrastructure).

The outcomes are expressed generally; more specific advice is contained in the guideline about how development can achieve the policy’s outcomes. The guideline also contains examples of solutions that, once adapted by a council to reflect local knowledge and conditions, can be used as assessment criteria in a planning scheme, and more detailed (although in some cases obvious) direction about how to decide appropriate land use in a floodplain. For example, open space is identified as an appropriate land use in areas with a high risk of flood, and residential uses and hospitals are appropriate in areas with a low risk of flood.
The exception for development commitments

Where flood is the relevant natural hazard, a development will comply with Outcome 1 of State Planning Policy 1/03 when it:26

- maintains the safety of people on the development site from all floods up to and including the defined flood event
- does not result in adverse impacts on people’s safety or the capacity to use land within the floodplain
- minimises the potential damage from flooding to property on the development site
- does not adversely affect public safety and the environment through the detrimental impacts of floodwater on hazardous materials manufactured or stored in bulk
- maintains the functioning of essential services infrastructure (for example, on-site electricity, gas, water supply, sewerage and telecommunications) during a defined flood event.

However there are exceptions to the application of Outcome 1 where:

- the development proposal is a ‘development commitment’, or
- there is an overriding need for the development in the public interest and no other site is suitable and reasonably available for the proposal.

‘Development commitment’ is defined in State Planning Policy 1/03 as including any of the following:

- development with a valid preliminary approval
- a material change of use that is code assessable or otherwise consistent with the requirements of the relevant planning scheme
- a reconfiguration of a lot and/or work that is consistent with the requirements (including any applicable codes) of the relevant planning scheme, or
- development consistent with a designation for community infrastructure.27

The second limb of that definition – that ‘development commitment’ includes a material change of use that is code assessable or otherwise consistent with the planning scheme – is of concern. It has a broad application:28 effectively, any development which is ‘consistent’ with the requirements of an existing planning scheme may proceed, even if the development is not ‘compatible with’ the flood hazard.29 The definition also extends to development which is simply ‘code assessable’, but which is not consistent with the applicable planning scheme.30

The Queensland Government Planner agreed that ‘a major proportion’ of development could fall within this exception to State Planning Policy 1/03.31 Consequently, the definition of development commitment does little to encourage the consideration of flooding as part of the development assessment process. However, according to the Queensland Government Planner, the way that Outcome 1 is framed – with its broad exception – is acceptable;32 it is designed to protect the position of those with existing approvals for development or a clear expectation that they can develop land in a certain way.33 He suggested that planning schemes were a more appropriate instrument for particularising constraints on development (such as those concerning flood risk) and thus qualifying people’s expectations about what land can be used for development, and how.34

The Commission agrees generally with that position. Councils should, ideally, include flooding considerations in their planning schemes, and, where such considerations do not already exist, should change their schemes accordingly. However, under the Sustainable Planning Act 2009, changes to a planning scheme can, in some circumstances, give rise to a liability for payment of compensation.35 Accordingly, councils may be averse to amending their schemes to include planning controls that deal with flooding because of the risk of incurring liability to pay compensation.36 Section 5.5 Compensation sets out a more detailed discussion of the specific concerns raised by councils about their exposure to liability. As described in that section, the Commission considers that the Queensland Government, in response to these concerns, should investigate whether the compensation provisions of the Sustainable Planning Act are a deterrent to the inclusion of flood controls in a planning scheme and whether they ought be amended.

The ultimate aim, however it is achieved, is for Queensland’s planning framework to encourage the consideration of flooding in the assessment of development applications.
4.1 The Queensland Government should:

a) narrow the definition of ‘development commitment’ in State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide to ensure more development applications are assessed for compatibility with flood, and

b) investigate whether the compensation provisions of the Sustainable Planning Act 2009 act as a deterrent to the inclusion of flood controls in a planning scheme and consider whether they ought be amended.

4.1.3 Review of State Planning Policy 1/03

It has been nearly nine years since State Planning Policy 1/03 came into effect. Like all state planning policies, it will cease to have effect after ten years. Accordingly, State Planning Policy 1/03 is being reviewed to inform the development of a new state planning policy that deals with natural hazards. The review, which is due to be completed by September 2013, will consider matters such as:

• the extent to which planning schemes comply with State Planning Policy 1/03
• how flood studies should be conducted
• whether natural hazard management areas for flood should be based on a ‘zones of risk’ approach – low, medium, and high for instance – or continue to be determined by reference to a defined flood event
• how to take into account the Queensland Reconstruction Authority’s work, and in particular part 2 of the guideline to Temporary State Planning Policy 2/11 Planning for stronger more resilient floodplains
• the recommendations made in the report Increasing Queensland’s resilience to inland flooding in a changing climate: Final report on the Inland Flooding Study, which include the following:
  – the review (of State Planning Policy 1/03) should consider whether there should be a standard method for undertaking a flood study and determining a defined flood event
  – the review should consider developing criteria that make clear the circumstances in which it is appropriate to use a defined flood event greater than, or less than, a 1% AEP flood, as a planning control for residential development
  – the review should consider how to improve the integration of land use planning and disaster management
• whether there should be a department or departments responsible for monitoring whether planning schemes appropriately reflect the (next) state planning policy that deals with flood and include a flood map derived from an adequate flood study
• the recommendations of the Queensland Floods Commission of Inquiry.

The Commission endorses consideration being given to the issues identified in the review of State Planning Policy 1/03. In the nine years that have passed since its advent, there have been significant developments in land planning and, in particular, in the technology available to conduct flood studies to determine what land is susceptible to flooding. The review of State Planning Policy 1/03 is a valuable opportunity to consider these developments so as to determine the best approach to measuring flood risk and crafting the most appropriate land planning controls. Chapter 2 Floodplain management contains a detailed discussion about the matters surrounding the completion of flood studies, flood maps and floodplain management plans.

4.1.4 State interest review of planning schemes

The state interest review process is the mechanism by which the Queensland Government determines whether planning schemes incorporate the outcomes set out in state planning policies. It represents the Queensland Government’s principal opportunity to ensure that State Planning Policy 1/03 is appropriately reflected in planning
Given the objective of State Planning Policy 1/03 is to ensure that flooding is adequately considered in decisions about development, achieving that outcome is important.

The process is set out in Statutory Guideline 01/12: Making and amending local planning instruments. This guideline took effect on 16 January 2012 and replaces Statutory Guideline 02/09: Making and amending local planning instruments.

Steps in the process

The state interest review process includes the steps described below.

Planning scheme preparation

The council prepares a proposed planning scheme or amendment. Under the new guideline, a council is required to consult with relevant Queensland Government agencies while preparing a proposed planning scheme.

First state interest review

Once a proposed planning scheme has been prepared, it is submitted to the Department of Local Government and Planning for the ‘first state interest review’. At this stage, the council is required to provide a report about the extent and outcomes of any consultation undertaken with Queensland Government agencies, and about how the planning scheme reflects all relevant state planning instruments. The Department of Local Government and Planning provides the proposed planning scheme to Queensland Government agencies and seeks comments on whether state interests are affected.

As part of the first state interest review, the Department of Community Safety is expected to assess whether a planning scheme appropriately reflects State Planning Policy 1/03. As the department responsible for disaster management – including natural hazards – it is the Queensland Government agency whose interests are articulated in State Planning Policy 1/03. It provides its comments to the Department of Local Government and Planning, which collates the remarks of all Queensland Government agencies to forward to the council for response. The Department of Local Government and Planning then attempts to resolve any matters about which the council and the Queensland Government agencies do not agree.

The Department of Local Government and Planning then prepares a briefing note to the Minister detailing key matters of state interest raised in the review process and any outstanding issues to be considered by the Minister. Having considered whether any state interests are adversely affected, the Minister advises the council either that it:

- can commence public notification of the proposed planning scheme or amendment (with or without conditions imposed by the Minister), or
- cannot proceed further.

Public notification

The period for public notification is 30 business days. After considering all properly made submissions, the council may choose to incorporate changes arising out of submissions received during the public notification period. Alternatively, it may proceed with no changes, or not proceed at all.

Second state interest review

The Minister receives the council’s proposed planning scheme (which may or may not be amended as a result of public notification) and considers whether a second state interest review is required. If so, this review is limited to matters such as those which have already been identified during the first review, or matters that have arisen out of changes made to the proposed scheme subsequent to the first review. The second state interest review is more targeted; comments are only sought from agencies affected by any unresolved matters, or any new ones.

As with the first state interest review, the Department of Local Government and Planning collates the remarks of Queensland Government agencies, provides them to the council for response, and attempts to resolve any issues still outstanding.
Finally, the Minister is briefed with information about the key state interests that have been raised by Queensland Government agencies, and those that remain outstanding. The Minister then makes a decision about whether the council may adopt the proposed planning scheme or amendment (with or without conditions), and advises the council accordingly. If the Minister advises that the proposed planning scheme or amendments may be adopted, the Minister must also advise which state planning instruments, including state planning policies (or parts of state planning policies), are reflected in the proposed planning scheme or amendment.

4.1.5 The role of the Department of Local Government and Planning

Under the State Planning Policy 1/03 Guideline, the role of the Department of Local Government and Planning is to review proposed planning schemes, or proposed amendments, to ensure that the outcomes sought by State Planning Policy 1/03 are achieved.

The Minister for Local Government is also the responsible Minister for the purposes of the state interest review process. Ultimately, it is the Minister for Local Government who decides whether a planning scheme can be declared to appropriately reflect State Planning Policy 1/03. Accordingly, it is also the Minister (and by extension the Department of Local Government and Planning) who must determine what weight to afford the comments made by Queensland Government agencies as part of the state interest review process.

Determining which Queensland Government agency comments should result in the imposition of a condition requiring a council’s amendment of its proposed planning scheme demands the exercise of a considerable degree of judgment. However, the basis upon which the Department of Local Government and Planning decides whether or not to act on comments, including those of the Department of Community Safety concerning the reflection of State Planning Policy 1/03, is far from clear.

The process by which Brisbane’s planning scheme, City Plan, was amended is instructive. In 2004, the state interest review process was commenced in respect of amendments to the planning scheme. One of the proposed amendments, called amendment ‘C6’, sought the insertion into City Plan of a statement declaring that Brisbane’s planning scheme appropriately reflected State Planning Policy 1/03. As part of the state interest review, the Department of Community Safety requested that the reference to State Planning Policy 1/03 be deleted from the amendments; according to the department, there was insufficient ‘hazard mapping’ to support such a statement. Brisbane City Council agreed to delete the reference. Despite that agreement, the amendments to City Plan that took effect on 1 January 2006 listed State Planning Policy 1/03 as one with which the planning scheme complied.

The Queensland Government Planner gave evidence that, in his view, Brisbane’s planning scheme did in fact comply. However, the Department of Community Safety’s position remains unchanged: since the City Plan 2004 amendments were proposed, the Department of Community Safety has advised the Department of Local Government and Planning, on 16 separate occasions, that Brisbane City Council’s planning scheme does not comply with State Planning Policy 1/03. Twelve out of those 16 occasions were after the 2010/2011 floods, and in each case the advice was provided as part of the state interest review process. Despite these reiterations (many are quite recent), there is no record of the Department of Local Government and Planning giving consideration to the Department of Community Safety’s advice that Brisbane’s City Plan does not appropriately reflect State Planning Policy 1/03. Nor is there any record of whether the two departments have attempted to reconcile the different positions.

In 2004, the Department of Community Safety made similar comments with respect to the Emerald planning scheme; it stated that the proposed scheme did not adequately address State Planning Policy 1/03, due to the absence of flood mapping. At the time of writing its advice, the Department understood that the (then) Emerald Council had access to at least one flood study, the Nogoa River Flood Plain Study. The department suggested that the results of this study be incorporated into the Emerald planning scheme by way of an overlay map. The second state interest review occurred two years later, and the mapping had still not been incorporated. As it had two years prior, the Department of Community Safety advised that the results of any flood studies available to the council should inform the development of a flood hazard overlay.
Subsequent to the state interest review process, the council adopted the Emerald planning scheme. The scheme does not appropriately reflect State Planning Policy 1/03: it does not include any flood mapping, nor does it nominate a defined flood event. There is no evidence before the Commission to explain why the Department of Local Government and Planning, or Emerald Council, did not heed the advice of the Department of Community Safety about incorporating the results of the Nogoa River Flood Plain Study.

It is evident that the Department of Local Government and Planning does not insist, through the imposition of conditions, that every comment made by every department be incorporated into a council’s planning scheme – and nor should it. However, where comments are of a substantive nature, and relate to compliance with an important state planning policy, as in the cases of Brisbane’s and Emerald’s planning schemes, it seems reasonable that the Department of Local Government and Planning articulate its reasons for not reflecting the Department of Community Safety’s comments in conditions attached to adoption of the planning scheme, and advise the latter accordingly.

4.1.6 The role of the Department of Community Safety

The Department of Community Safety is responsible for reviewing draft planning schemes to determine whether State Planning Policy 1/03 has been appropriately reflected and to provide advice about the implementation of the policy. As part of this responsibility, the Department of Community Safety is expected to consult with the Department of Environment and Resource Management (DERM) to provide guidance about determining natural hazard management areas for use in planning schemes.

The evidence suggests that the Department of Community Safety takes a reactive approach to its role. In preparation for the Commission’s public hearings, the Department of Community Safety compiled a schedule of each instance in which it had provided advice to the Department of Local Government and Planning about the appropriate reflection of State Planning Policy 1/03 in Brisbane’s planning scheme. Preparing this schedule revealed to the department that its advice was not always being taken into account. It is of some concern that the department did not fully appreciate this fact until the Commission’s public hearings.

The assistant director of the strategic policy division in the Department of Community Safety gave evidence that the department is currently reviewing its administrative processes so that it can better ascertain whether its comments are being incorporated into planning schemes. This is encouraged. Any process that is developed should ensure that the department can readily determine what advice it has given in respect of each planning scheme, and when its advice about State Planning Policy 1/03 needs to be followed up.

4.1.7 The role of DERM

DERM also plays a role in the state interest review process. As part of this role, DERM provides advice to the Department of Community Safety about whether:

- the proposed planning scheme has an adequate flood map. This includes an assessment of whether the map shows areas and properties which are affected. DERM does not check the accuracy of the modelling used to produce the flood map.
- the information about flooding provided in support of the proposed planning scheme accords with the information held by DERM for the area. If there is additional information, DERM will advise the council so that it can be incorporated into any flood study or map.
- the council has identified an appropriate defined flood event in its planning scheme. In particular, where the council has adopted a defined flood event lower than the 1% AEP flood, DERM will provide comments to the Department of Community Safety about the appropriateness of the nominated flood event.
- the council has taken adequate steps to appropriately reflect State Planning Policy 1/03 in its planning scheme.
According to the Department of Community Safety, DERM’s contribution in respect of those matters is sought routinely as part of the state interest review process. However, there is no record of the Department of Community Safety’s requesting advice from DERM about Brisbane or Ipswich city councils’ planning schemes. This is particularly noteworthy in the case of the Brisbane planning scheme; the Department of Community Safety’s central issue with that scheme is its failure to identify a defined flood event.

In providing advice about the appropriateness of a council’s defined flood event, or its flood mapping, DERM relies on the professional expertise of the engineers whose flood modelling is the subject of DERM’s review. On occasion, the Department of Community Safety has asked DERM to assess the adequacy of the flood modelling done to support the selection of a defined flood event in a proposed planning scheme. The Department of Community Safety would like DERM to provide such advice on a more regular basis. DERM resists this idea. At present, DERM is not always able to provide the advice sought in the timeframes proposed. Unless more resources are made available to DERM, there is little reason to think this situation will change.

The Department of Community Safety and DERM would both benefit from greater clarity about DERM’s role in reviewing planning schemes’ appropriate reflection of State Planning Policy 1/03. The Commission considers that DERM’s expertise would be better used earlier in the process of preparing or amending a planning scheme: for example, if it were requested to help councils determine the best methodology for a proposed flood study prior to its being undertaken.

In addition, access to detailed guidelines about the conduct of flood studies and the production of flood maps would help councils prepare these components, and might reduce the need for DERM’s input at a later stage. The preparation of guidelines and the technical aspects of preparing a flood study and flood map are discussed further in chapter 2 Floodplain management.

4.1.8 Gaps identified

The Commission has identified some gaps in the process, as already described; in particular:

- When the Minister for Local Government chooses not to impose conditions reflecting comments made by the Department of Community Safety about a proposed planning scheme’s compliance with State Planning Policy 1/03 before the relevant council may proceed with the planning scheme, the basis of the decision is not made clear. When this occurs, it would assist if it were articulated and the Department of Community Safety advised why the decision has been made.
- The Department of Community Safety has not been, until very recently, in a position to ascertain easily whether its comments about planning schemes reflecting State Planning Policy 1/03 are being taken into account as part of the state interest review process.
- The role of DERM in the state interest review process is unclear.

Some of the difficulties identified may be a product of the way State Planning Policy 1/03 defines each department’s role: as only to ‘review’ or ‘provide advice’. The policy does not contemplate a monitoring role, or that any department be responsible for taking steps to encourage compliance with State Planning Policy 1/03.

Whether there should be a single department, or a number of departments, with responsibility for monitoring councils’ compliance with State Planning Policy 1/03, or the adequacy of councils’ flood studies and flood mapping, is a policy decision to be made by the Queensland Government. There is value in having different departments involved, each providing advice on matters within its area of expertise. On the other hand, a single department might be charged with the task of ensuring planning schemes reflect State Planning Policy 1/03. As noted in section 4.1.3, this is a topic being considered as part of the review of State Planning Policy 1/03 which is currently on foot. The Commission endorses consideration being given to the issue by the Queensland Government. In the meantime, the gaps which the Commission has identified should be addressed.
**Recommendations**

4.2 If, as part of a state interest review process, the Department of Local Government and Planning decides that no condition should be imposed requiring a council’s proposed planning scheme to incorporate the effect of the Department of Community Safety’s comments about State Planning Policy 1/03: *Mitigating the Adverse Impacts of Flood, Bushfire and Landslide*, it should advise the Department of Community Safety of the reasons for its decision.

4.3 The Department of Community Safety should put in place administrative arrangements which ensure it can readily ascertain whether its comments are being reflected in council planning schemes. If the Department of Community Safety becomes aware that its comments are not being adequately addressed, it should take steps to follow this up with the Department of Local Government and Planning.

4.4 The Queensland Government should ensure that the circumstances in which the Department of Community Safety is to consult the Department of Environment and Resource Management about a planning scheme’s flood modelling and flood mapping are clear.

**4.2 Temporary state planning policy**

A temporary state planning policy can suspend or affect the operation of an existing state planning policy, but does not amend it. It operates for a maximum of 12 months, at which point the existing state planning policy will resume operation if, in the meantime, it has not been amended or replaced.

Following the 2010/2011 floods, the Queensland Government through the Queensland Reconstruction Authority released a draft Temporary State Planning Policy 2/11: *Planning for stronger, more resilient floodplains*. This temporary state planning policy, which commenced on 14 November 2011, affects the operation of State Planning Policy 1/03 by suspending the operation of paragraphs A3.1 and A3.2. In consequence, until 14 November 2012, a council can identify the natural hazard management area for flood by reference to the 1% AEP flood or by using the ‘Interim Floodplain Assessment Overlay mapping’ and ‘Model Code’ provided by the Queensland Reconstruction Authority (with amendments where a council considers them appropriate). In this way, the temporary state planning policy aims to assist councils to identify the natural hazard management area for flood and to develop planning controls to regulate assessable development within the natural hazard management area.

**4.2.1 Mapping referred to in the temporary state planning policy**

The interim floodplain assessment overlay mapping is a series of maps released by the Queensland Reconstruction Authority that a council may choose to incorporate in a planning scheme together with an associated code to regulate development.

The Queensland Government Planner described the interim floodplain assessment overlay mapping as representing ‘work in progress’; it was, he said, useful as an interim measure. However, he recognised this difficulty: Temporary State Planning Policy 2/11 encourages councils to adopt the interim map by way of a permanent amendment to their existing planning schemes or as part of a new planning scheme. As planning schemes are only required to be reviewed every 10 years, there is a risk that the temporary state planning policy may encourage councils to use the interim maps produced by the Queensland Reconstruction Authority as their final position on flood. The Queensland Government Planner acknowledged this risk: a result which was unintended. A more detailed assessment of the adequacy of the interim maps is at chapter 2 *Floodplain management*.

**4.2.2 The Model Code provided by the Queensland Reconstruction Authority**

Temporary State Planning Policy 2/11 does not permit the use of the mapping alone, instead requiring councils to use the interim floodplain assessment overlay mapping together with the Model Code. This approach is curious, given the temporary state planning policy is not intended to be used for development assessment processes; it has not suspended the development assessment provisions of State Planning Policy 1/03.
The Model Code forms Schedule 1 to the Queensland Reconstruction Authority's *Planning for stronger, more resilient floodplains: Part 1 – Interim measures to support floodplain management in existing planning schemes*. As that document identifies, it includes *interim* planning scheme measures supporting the mapping.110 The Model Code was based on the principles of State Planning Policy 1/03, particularly the specific outcomes in Annex 4, as well as flood mitigation provisions in existing local planning instruments such as Brisbane City Council’s Temporary Local Planning Instrument 1/11 and the Rockhampton Regional Council’s planning scheme. The Department of Local Government and Planning, including Building Codes Queensland, and the Department of Community Safety also contributed to the development of the Model Code.111

At its outset, the Model Code explains that it applies to assessable development involving land wholly or partly within the areas identified on floodplain maps. The code goes on to state that it is a ‘Queensland Planning Provisions-compliant code’. A more detailed explanation of the Queensland Planning Provisions is at section 4.3 *Queensland Planning Provisions*.

Should a council elect to amend its planning scheme to incorporate the interim floodplain assessment overlay mapping together with the Model Code (in their original form or amended for local conditions), it will apply in place of the development assessment provisions of State Planning Policy 1/03. As already identified in respect of the mapping, this, too, may have the result of entrenching provisions that are clearly intended to reflect the Queensland Government’s interim position.

The interim nature of the provisions is apparent from the authority’s guideline: it explains that ‘[a]s an interim solution, Part 1 does not offer a comprehensive solution for managing new or existing development in floodplain areas’.112 It intends to include in Part 2 guidance on incorporating floodplain management principles and processes into future planning schemes.113 A draft of Part 2 was released for public consultation on 23 January 2012. The Commission commends the consistent approach to floodplain management proposed by the authority.

**4.2.3 Reflecting the Temporary State Planning Policy in planning schemes**

Any council that chooses to amend its planning scheme to make it consistent with the temporary state planning policy would risk the amendments’ being inconsistent with, or not ‘appropriately reflect[ing]’ the Queensland Government’s longer term policy position. The Commission is concerned at the prospect of diverting limited council resources into the making of permanent planning scheme amendments which may, after 12 months, no longer represent the Queensland Government’s preferred approach to planning for floodplains.

The Commission considers, given the ‘interim’ nature of the Model Code, together with the Queensland Government’s intention to finalise Part 2 of the authority’s guideline, that the Temporary State Planning Policy 2/11 should be changed to remove the option for councils to use the interim floodplain assessment overlay mapping and the Model Code as part of a permanent amendment to their existing planning schemes or as part of new planning schemes.

Part 1 of the Queensland Reconstruction Authority’s guideline notes a council may use a temporary local planning instrument to give effect to the temporary state planning policy, but indicates that this is not the preferred approach.114

In contrast, the Queensland Government Planner gave evidence that it would be appropriate for the temporary state planning policy to be given effect as part of a temporary local planning instrument, rather than as a permanent amendment to a planning scheme.115 The Commission agrees with the Queensland Government Planner. It is not appropriate for councils to incorporate interim planning measures in permanent planning schemes, particularly where the interim measures give effect to state policy which is subject to revision after 12 months.
Recommendation

4.5 The Queensland Government should change Temporary State Planning Policy 2/11: Planning for stronger more resilient floodplains to remove the possibility of councils’ using the interim floodplain assessment overlay mapping and Model Code as part of a permanent amendment to their existing planning scheme or as part of a new planning scheme.

4.3 Queensland Planning Provisions

Under the Integrated Planning Act 1997, now repealed, there were no requirements about the structure planning schemes should take, and little guidance about content. The Sustainable Planning Act 2009 changes this by permitting the Minister for Local Government to make standard planning scheme provisions, known as the ‘Queensland Planning Provisions’, that provide:

- a consistent structure for all new planning schemes
- both mandatory and optional provisions, including some provisions that can be adapted by councils to reflect local conditions within their region.

If the Queensland Planning Provisions are amended, a planning scheme made under the Sustainable Planning Act must be amended to reflect the change. Questions of compensation do not arise where a planning scheme is amended to reflect a mandatory component of the Queensland Planning Provisions.

4.3.1 History of the Queensland Planning Provisions

Version 1.0 of the Queensland Planning Provisions became available on the commencement of the Sustainable Planning Act on 18 December 2009. On 4 October 2010, following further consultation with the public and interested parties, version 2.0 of the Queensland Planning Provisions was released. The consultation period on the latest draft (version 3.0) was carried out between 28 October 2011 and 25 November 2011. This version is proposed to be released in early 2012.

While existing planning schemes were not required to be changed on the advent of the Sustainable Planning Act, councils are required to ensure new planning schemes are consistent with the Queensland Planning Provisions.

The Commission is only aware of one council, the Toowoomba Regional Council, which has ready for adoption a planning scheme using the Queensland Planning Provisions template. However, many other councils are preparing draft planning schemes following the template and are in the consultation stage with Queensland Government departments.

4.3.2 Structure of the Queensland Planning Provisions

The Queensland Planning Provisions contain a number of elements that can be used to promote the consideration of flooding in planning schemes. These are explained below.

The Queensland Planning Provisions are made up of two parts, or modules: Module A (Planning Scheme Structure) and Module B (Drafting Instructions).

Module A sets the structure each council in Queensland must replicate when adopting a new planning scheme. It contains both mandatory and optional provisions.

Module B contains instructions for drafting planning schemes and provides ‘standard suites’ from which optional components may be drawn for insertion into the Module A structure. For example, councils have an option whether or not to include a layer in their schemes known as a ‘development constraint category overlay’. This involves using a map to identify land which should be subjected to additional planning controls in response to certain factors, such as flooding. However, if a council elects to include this layer of detail in its planning scheme, it may only use overlays which are provided within Module B. This allows councils to choose the level of detail most appropriate for their planning schemes, while still ensuring a level of consistency throughout Queensland.
There are a number of mechanisms within the Queensland Planning Provisions that allow for flooding considerations to be addressed in planning schemes. They are explained below.

**Assessment criteria**

‘Assessment criteria’ are the provisions in a planning scheme that establish the outcomes sought for self-assessable development, assessable development and development requiring compliance assessment.\(^{129}\) Assessment criteria include ‘overall outcomes’, ‘performance outcomes’ and ‘acceptable outcomes’.\(^{130}\)

Overall outcomes are outcomes that achieve the purpose of the code. Performance outcomes must meet the overall outcomes and purpose of the code and are the detailed requirements with which a development must comply. Acceptable outcomes are suggested ways a development may comply with the performance outcome. When a development complies with an acceptable outcome, it is deemed to comply with the performance outcome. Accordingly, care must be taken when drafting assessment criteria to ensure compliance with an acceptable outcome in fact achieves the related performance outcome.

**Zones**

The first layer of information in a planning scheme is ‘zones’.

All land within a planning scheme area\(^{131}\) is mapped into zones, which are used by councils to give a general indication of the type of land use that is preferred in a particular location. The preference is indicated, in part, through the use of ‘tables of assessment’ for each zone, which prescribe for each land use the level of assessment that must be undertaken if a development application is made for that use.

Module B of the Queensland Planning Provisions provides a list of zones from which councils may choose. There are five categories: residential,\(^{132}\) centre,\(^{133}\) recreation,\(^{134}\) industry\(^{135}\) and other.\(^{136}\)

According to the Queensland Planning Provisions, each zone chosen by a council is to have a corresponding zone code within the planning scheme. Each zone code must include a mandatory purpose statement, an additional purpose statement and overall outcomes that achieve the purpose of the code.\(^{137}\)

The mandatory purpose statement for each zone code is already contained within the Queensland Planning Provisions. The additional purpose statement is to be drafted by a council to refine the general mandatory statement to reflect the local context.\(^{138}\) The Queensland Planning Provisions provide a list of suggested overall outcomes for inclusion in a council’s zone code.\(^{139}\) However, a council may formulate its own.

For most zones, a suggested overall outcome addressing flooding considerations is included. The Commission identified a number of inconsistencies in the overall outcomes that address flooding,\(^{140}\) but they have been rectified in the new draft of the Queensland Planning Provisions (version 3.0). These improvements should be retained in the latest version of the Queensland Planning Provisions.

Although nothing prevents a council from drafting its own overall outcomes addressing flooding, the Commission’s view is that the model provisions promote consistency, ease the drafting burden on councils and ensure that flooding is not overlooked during development assessment. This view is discussed further in section 5.1.1 Model flood planning controls.

The zone code may also include ‘performance outcomes’ and ‘acceptable outcomes’ (described above).\(^{141}\) The Queensland Planning Provisions do not stipulate any model performance or acceptable outcomes within the zone codes. It is up to the council to draft these.

Within the ‘other’ zones category, the Queensland Planning Provisions provide for a ‘limited development (constrained land)’ zone. The purpose of this zone is to identify land known to be significantly affected by one or more factors, such as flooding, so as to impose ‘severe restrictions on the ability of the land to be developed for urban purposes’.\(^{142}\)

Councils may find it useful to adopt this zone for parts of council regions that are susceptible to severe and frequent floods.\(^{143}\) That would encourage proper consideration of the types of development appropriate for such areas.
4.6 Councils should consider using the limited development (constrained land) zone in their planning schemes for areas that have a very high flood risk.

Overlays

A further layer of information in a planning scheme is an ‘overlay’.

An overlay in a planning scheme is used to identify areas that are affected by a particular constraint or areas that present opportunities for development.\(^{144}\) This layer of information is generally presented on an overlay map and accompanied by an overlay code. Overlays prevail over most other elements of the planning scheme.\(^{145}\)

An overlay may change the level of assessment\(^{146}\) to be undertaken for a particular type of development application.\(^{147}\) For example, the use of land in the ‘general residential’ zone for a house might ordinarily be code assessable, unless it is designated on an overlay map as subject to flooding, in which case it may be required to undergo impact assessment.

The Queensland Planning Provisions recommend that overlays rarely be used as a mechanism for changing the level of assessment,\(^{148}\) to ensure planning schemes remain user-friendly.\(^{149}\) However, the Commission considers it may be appropriate to do so where the land has a high risk of flood,\(^{150}\) particularly for sensitive developments such as child care centres and aged care facilities.

The Queensland Planning Provisions provide a list of standard overlays from which councils may choose.\(^{151}\) Councils are not required to use all overlays and may propose additional overlays to address or reflect a particular local circumstance, provided the overlays do not duplicate or conflict with the overlays in the list.\(^{152}\)

The overlays listed in the ‘development constraints category’ include a ‘flood hazard’ overlay. This overlay deals with areas of land identified by councils as subject to State Planning Policy 1/03.\(^{153}\) The flood hazard overlay currently provides for the mapping of both ‘flooding and inundation’ and ‘overland flow paths’.\(^{154}\)

As councils are afforded the flexibility to choose which overlays are included in their planning scheme, the adoption of an overlay depicting flood hazard is optional, even where a council has the relevant flood mapping information available.

The Queensland Planning Provisions allow assessment criteria for overlays to be contained within an overlay map, overlay code, zone code or local plan code.\(^{155}\) The most recent draft of the Queensland Planning Provisions (version 3.0) provides that the assessment criteria for an overlay may only be contained within an overlay map or overlay code, omitting the reference to a zone code or local plan code.\(^{156}\) The Commission agrees with this approach: all overlay assessment criteria should be contained in an overlay code, as opposed to any other type of code.\(^{157}\) The Commission’s view on this point is further explored in 5.1.2 Features of the model flood planning controls.

Where assessment criteria for an overlay are included in an overlay code, the code must include a statement articulating the purpose of the code and overall outcomes identifying how the purpose of the code can be achieved. The codes may also include specific criteria in the form of performance outcomes and acceptable outcomes.\(^{158}\)

The Queensland Planning Provisions provide limited assistance with the content of assessment criteria for overlays, including the ‘flood hazard overlay’. Councils must draft all purpose statements and overall, performance and acceptable outcomes.

By way of an improvement, the new draft Queensland Planning Provisions (version 3.0) provides that a flood hazard overlay should apply where the development:

- increases the number of people living and working in the natural hazard management area, except where the premises are occupied on a short term or intermittent basis
- involves institutional uses where evacuating people may be difficult
- involves the manufacture or storage of hazardous materials in bulk.\(^{159}\)
The level of guidance the Queensland Planning Provisions should provide on the content of assessment criteria is discussed further in 5.1.2 Features of the model flood planning controls.

Planning scheme policies

The Queensland Planning Provisions require councils to include planning scheme policies (if they have any) in schedule 4 of their planning schemes. Planning scheme policies are documents that can provide guidance to applicants and assessing authorities about how to comply with the planning scheme. A planning scheme policy must not regulate or prohibit development or the use of premises, or take the place of a policy which should be contained within the main body of the planning scheme.160

The role of a planning scheme policy is further explained in chapter 3 Planning framework. The Commission’s recommendations as to how planning scheme policies can be used to improve the consideration of flooding in development assessment can be found in 5.3 Planning scheme policies and 8.1.2. Site-specific flood information provided by an applicant.

4.4 Regional plans

A regional plan is a state planning instrument which sets out the desired land use and development outcomes for a particular region and the ways in which those outcomes can be achieved.

The requirements of a regional plan will prevail over any state planning policy, in the event of an inconsistency.161 Councils within a regional plan’s geographical area must amend their planning schemes to reflect the provisions of the applicable regional plan.162 Consequently, a regional plan’s stipulation that land be used in a particular way – as an urban area, for example – can determine planning for the region.

The Sustainable Planning Act 2009 sets out the elements which each regional plan must address.163 The matters listed are described in general terms, such as a requirement that regional plans identify key regional environmental, economic and cultural resources to be preserved, maintained and developed.164 There is, however, no reference to natural hazards, such as flooding. Regional plans are not required to reflect the contents of state planning policies, such as State Planning Policy 1/03. This means that there is currently no requirement that regional plans be prepared having regard to the flood risk of parts (or all) of a particular region. (A description of regional plans is in chapter 3 Planning Framework.)

There is, on the other hand, nothing to preclude the issue of flooding being addressed, and all existing regional plans do contain land use policies which articulate the need to protect development from the potential effects of natural hazards.165 Nonetheless, the Commission considers it advisable that a matter of such importance in the planning process be directly addressed by statute, by way of a requirement that consideration be given to flooding when preparing or revising a regional plan.

4.4.1 Land use designations under the South East Queensland Regional Plan

Goodna as a major regional activity centre

The Commission considered Goodna’s designation as a ‘major regional activity centre’ under the South East Queensland Regional Plan 2009-2031. About 34 per cent of the area comprising the Goodna major regional activity centre lies below the 1% AEP flood level; 42.7 per cent of that area was affected by the January 2011 floods.166 Clearly, Goodna is susceptible to flooding but, as a major regional activity centre, it is nonetheless expected to accommodate significant growth in the form of commercial and residential development, public transport hubs and regional cultural and entertainment precincts.167

Ipswich City Council’s City Planner indicated that there is a need in the Ipswich area for Goodna to serve as a major regional activity centre.168 He said that, at present, Goodna contains enough land at low risk of flooding for it to retain its current designation and for growth to continue within the suburb.169 (This, however, may not always be the case.)

The Commission does not have sufficient evidence to make any finding about the appropriateness of Goodna’s designation as a major regional activity centre under the South East Queensland Regional Plan 2009-2031.
However, given the influence that a regional plan can have on development in a region, the example highlights the importance of having regard to flood risk and impact when regional plans are prepared.

**Male Road Caboolture**

The South East Queensland Regional Plan has also influenced how development has occurred in the Caboolture area. Like some parts of Goodna, Male Road in the Moreton Bay Regional Council area is highly susceptible to flooding.\(^1\) In 2008, as a result of concerns raised by residents about Male Road’s propensity to flood, the Moreton Bay Regional Council sought to amend the Caboolture planning scheme to change the zoning of the area from residential A to rural residential.\(^2\) Correspondence from the (then) Minister for Infrastructure and Planning indicates that the amendment could not proceed because the land proposed to be zoned as rural residential fell within the South East Queensland Regional Plan’s ‘Urban Footprint’.\(^3\) The Minister advised that flooding constraints were more appropriately dealt with as part of the development assessment process.\(^4\) This position conforms with the provisions of the [*Sustainable Planning Act 2009*](#) which stipulate that planning schemes must be amended to reflect regional plans.\(^5\)

While the Queensland Government’s advice that Male Road must remain zoned for residential use reflects the current hierarchy of planning instruments, it demonstrates the impact that regional plans can have on council level decisions about development. Again, the example reinforces the argument for the risk of flooding to be taken into account when land uses in regional plans are designated.

### Recommendation

4.7 The Queensland Government should consider amending the [*Sustainable Planning Act 2009*](#) to require that consideration be given to the risk of flooding in the preparation or revision of a regional plan.

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### (Endnotes)

1. Exhibit 532, Statement of Gary White, 2 September 2011 (p5: para 24); Transcript, Gary White 19 September 2011, Brisbane (p2746: line 1).

2. Exhibit 532, Statement of Gary White, 2 September 2011 (p5: para 24); Transcript, Gary White 19 September 2011, Brisbane (p2746: line 1).


50 Transcript, Gary White, 19 September 2011, Brisbane [p2765: line 31]; Transcript, Greg Vann, 11 November 2011 [p4990: lines 9-18].

51 It is not the only opportunity. The Minister can, whenever he or she pleases, direct a council to give effect to a state interest. See section 126(1) Sustainable Planning Act 2009. However, the Minister has rarely used this power.

52 The Minister is entitled to make guidelines that assist the administration of the Sustainable Planning Act 2009 (section 759(1), Sustainable Planning Act 2009).

53 Statutory Guideline 01/12: Making and amending a local planning instrument, 16 January 2012 [p7: para 2.1].

54 Statutory Guideline 01/12: Making and amending a local planning instrument, 16 January 2012 [p9: para 4.1A].

55 Exhibit 532, Statement of Gary White, 2 September 2011 [p12].

56 Exhibit 532, Statement of Gary White, 2 September 2011 [p12].

57 Exhibit 532, Statement of Gary White, 2 September 2011 [p12].

58 Exhibit 532, Statement of Gary White, 2 September 2011 [p12].


60 Statutory Guideline 01/12: Making and amending a local planning instrument, 16 January 2012 [p13: para 6.3].


62 Statutory Guideline 01/12: Making and amending a local planning instrument, 16 January 2012 [p16-17: para 8.5].


64 Exhibit 532, Statement of Gary White, 2 September 2011 [p13].

65 Exhibit 532, Statement of Gary White, 2 September 2011 [p13].

66 Exhibit 532, Statement of Gary White, 2 September 2011 [p13].


70 Transcript, Gary White, 7 November 2011, Brisbane [p4626: line 15].

71 Exhibit 913, Statement of Gary White, 7 October 2011 [para 11].

72 Exhibit 913, Statement of Gary White, 7 October 2011, Attachment 1 [para 11].

73 Exhibit 913, Statement of Gary White, 7 October 2011, Attachment 4 [para 14].

74 Exhibit 913, Statement of Gary White, 7 October 2011, Attachment 6 [para 16].

75 Exhibit 913, Statement of Gary White, 7 October 2011, Attachment 21 [para 32].

76 Transcript, Gary White, 19 September, Brisbane [p2757: line 39].


78 Exhibit 534, Statement of Gary Mahon, 8 September 2011, Attachment GLM-33.

79 Exhibit 534, Statement of Gary Mahon, 8 September 2011, GLM-33 [p2]. See also Exhibit 728, Statement of Russell Cuerel, 14 September 2011, Attachment RKC-07 [p6].

80 Exhibit 534, Statement of Gary Mahon, 8 September 2011, Attachment GLM-34 [p4].


82 Transcript, Gary Mahon, 7 November 2011, Brisbane [p4646: line 56; p4647: line 16].

83 State Planning Policy 1/03 Guideline: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p24: para 8.5-8.6].

84 State Planning Policy 1/03 Guideline: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p24: para 8.7].

85 Transcript, Gary Mahon, 7 November 2011, Brisbane [p4644: line 30]; Exhibit 918, Statement...

86 Transcript, Gary Mahon, 7 November 2011, Brisbane [p4646: line 1; p4647: line 44].

87 Transcript, Gary Mahon, 7 November 2011, Brisbane [p4647: line 41].

88 Exhibit 728, Statement of Russell Cuerel, 14 September 2011 [p4-5: para 8]; Transcript, Russell Cuerel, 5 October 2011, Brisbane [p3703: line 40].

89 Transcript, Gary Mahon, 7 November 2011, Brisbane [p4650: line 25].

90 Transcript, Russell Cuerel, 5 October 2011, Brisbane [p3707: line 26; p3709: line 3].

91 Transcript, Russell Cuerel, 5 October 2011, Brisbane [p3703: line 51-p3704: line 18].

92 Transcript, Gary Mahon, 7 November 2011, Brisbane [p4652: line 31].

93 Transcript, Russell Cuerel, 5 October 2011, Brisbane [p3704: line 34 – p3705: line 2].

94 Transcript, Gary Mahon, 7 November 2011, Brisbane [p4652: line 40].

95 Transcript, Russell Cuerel, 5 October 2011, Brisbane [p3704: line 23].


97 Transcript, Gary Mahon, 7 November 2011, Brisbane [p4659: line 30].

98 Transcript, Gary Mahon, 7 November 2011, Brisbane [p4648: line 54].

99 Transcript, Gary Mahon, 7 November 2011, Brisbane [p4649: line 30].

100 Transcript, Gary Mahon, 19 September 2011, Brisbane [p2777: line 25; line 47; p2778: line 21].

101 Section 48, Sustainable Planning Act 2009.


103 Third Supplementary Statement of Brendan John Nelson, 30 November 2011 [p16: para 443].

104 Paragraphs A3.1 and A3.2 in State Planning Policy 1/03 (Annex 3, Natural hazard management areas, Flood) are:

A3.1 A natural hazard management area (flood) is land inundated by a Defined Flood Event (DFE) and identified in a planning scheme.

A3.2 The Queensland Government's position is that, generally, the appropriate flood event for determining a natural hazard management area (flood) is the 1% Annual Exceedance Probability (AEP) flood. However, it may be appropriate to adopt a different DFE depending on the circumstances of individual localities. This is a matter that should be reviewed when preparing or undertaking relevant amendments to a planning scheme. Local governments proposing to adopt a lower DFE in their planning scheme to determine a natural hazard management area (flood) for a particular locality will be expected to demonstrate to the satisfaction of the Department of Emergency Services (DES) and the Department of Natural Resources and Mines (NR&M) that the proposed DFE is appropriate to the circumstances of the locality.

105 Exhibit 538, Statement of Brendan John Nelson, Attachment BJN-10 [p4].

106 Transcript, Gary White, 7 November 2011, Brisbane [p4615: line 32].

107 Mr White acknowledged that this would be an appropriate matter for amendment in the Temporary State Planning Policy: Transcript, Gary White, 7 November 2011, Brisbane [p4615: line 17].

108 Exhibit 531, Temporary State Planning Policy 2/11 'Planning for stronger, more resilient floodplains' [p7].


110 Queensland Reconstruction Authority, Planning for stronger, more resilient floodplains: Part 1 - Interim measures to support floodplain management in existing planning schemes [p4].

111 Supplementary Statement of Brendan Nelson, 30 November 2011 [p23: para 468].

112 Queensland Reconstruction Authority, Planning for stronger, more resilient floodplains: Part 1 - Interim measures to support floodplain management in existing planning schemes [p4].

113 Queensland Reconstruction Authority, Planning for stronger, more resilient floodplains: Part 1 - Interim measures to support floodplain management in existing planning schemes [p4].
114 Queensland Reconstruction Authority, *Planning for stronger, more resilient floodplains: Part 1 - Interim measures to support floodplain management in existing planning schemes* [p12].

115 Transcript, Gary White, 7 November 2011, Brisbane [p4615: line 17].

116 Section 54, *Sustainable Planning Act 2009*.


118 Sections 55(2),117(1), *Sustainable Planning Act 2009*. If a council fails to change their planning scheme in response to an amendment to the Queensland Planning Provisions within 90 business days, the Minister for Local Government has the power to make the changes to the planning scheme on council’s behalf - section 55(3)-(6), *Sustainable Planning Act 2009*.

119 Section 706, *Sustainable Planning Act 2009*.

120 The Queensland Government Planner has confirmed that, subject to the consultation process, the draft Queensland Planning Provisions (version 3.0) are the Government’s current way of thinking (Transcript, Gary White, 7 November 2011, Brisbane [p4618]).


122 Section 777, *Sustainable Planning Act 2009*.

123 Section 55(1), *Sustainable Planning Act 2009*.

124 It is anticipated the Toowoomba Regional Planning Scheme will commence operation in 2012 (Toowoomba Regional Council ‘Final version of council’s planning scheme now awaits Minister approval’ www.toowoombarc.qld.gov.au/our-region-major-projects/toowoomba-regional-planning-scheme.html accessed on 23 February 2012.

125 For example, Brisbane City Council, Moreton Bay Regional Council, Fraser Coast Regional Council and Somerset Regional Council. The Grantham Development Scheme, while not a planning scheme prepared under the *Sustainable Planning Act 2009*, reflects the Queensland Planning Provisions (version 2.0). It is discussed in more detail in section 11.2 Rebuilding Grantham.

126 Queensland Planning Provisions (version 2.0), Background and usage [p4].

127 Queensland Planning Provisions (version 2.0), Background and usage [p4].

128 Queensland Planning Provisions (version 2.0), Background and usage [p4].

129 Self assessable development, assessable development and development requiring compliance assessment are explained further in chapter 3 *Planning framework* and in the glossary.


131 ‘Planning scheme area’ is defined in section 82 of the *Sustainable Planning Act 2009*.

132 The ‘residential’ zones category includes ‘level 1’ zones: general residential; and ‘level 2’ zones: residential living, residential choice, apartment residential, character residential and tourist accommodation - Queensland Planning Provisions (version 2.0), Module B [p22].

133 The ‘centre’ zones category includes ‘level 1’ zones: centre; and ‘level 2’ zones: principal centre, major centre, district centre, local centre, neighbourhood centre, and specialised centre - Queensland Planning Provisions (version 2.0), Module B [p22].

134 The ‘recreation’ zones category includes ‘level 1’ zones: recreation and open space; and ‘level 2’ zones: sport and recreation, and open space - Queensland Planning Provisions (version 2.0), Module B [p23].

135 The ‘industry’ zones category includes ‘level 1’ zones: industry; and ‘level 2’ zones: low impact industry, medium impact industry, high impact industry, noxious and hazardous industry, waterfront marine industry, high technology industry, and industry investigation - Queensland Planning Provisions (version 2.0), Module B [p23].

136 The ‘other’ zones category includes ‘level 1’ zones: community purposes, emerging communities, environmental management and conservation, extractive industry, innovation, limited development (constrained land), mixed use, road, rural, rural residential, and township - Queensland Planning Provisions (version 2.0), Module A [p23].
State planning instruments

137 Queensland Planning Provisions (version 2.0), Module B [p24 and 50].

138 Queensland Planning Provisions (version 2.0), Module B [p24].

139 Queensland Planning Provisions (version 2.0), Module B [p50].

140 For example, the zones ‘residential choice’, ‘apartment residential’ and ‘character residential’ include the suggested overall outcome ‘development responds to land constraints, including but not limited to topography, bushfire and flooding constraints’. Curiously, however, no corresponding overall outcome is suggested for any other zone. These inconsistencies were acknowledged by the Queensland Government Planner - Transcript, Gary White, 19 September 2011, Brisbane [p2749 – 2752].

141 Queensland Planning Provisions (version 2.0), Module B [p50].

142 Queensland Planning Provisions (version 2.0), Module B [p46, 47].

143 This zone is used in the Grantham Development Scheme discussed in more detail in section 11.2 Rebuilding Grantham.

144 The Queensland Planning Provisions state the purpose of an overlay is to address both state and local government interests by identifying areas that include one or all of the following: are sensitive to the effects of development, constrain land or development, are subject to valuable resources or present opportunities for development - Queensland Planning Provisions (version 2.0), Module B [p52]; See also exhibit 532, Statement of Gary White, 2 September 2011 [p22: para 120].

145 The current version of the Queensland Planning Provisions (version 2.0) state that overlays prevail over all elements of a planning scheme, other than the strategic framework, to the extent of the inconsistency (Queensland Planning Provisions (version 2.0), Module A, Section 1.5(5)(b)); the draft Queensland Planning Provisions (version 3.0) state that overlays prevail over all elements of a planning scheme, other than the strategic framework and statewide codes, to the extent of any inconsistency, (Queensland Planning Provisions, (version 3.0) Module A, Section 1.6(2)).

146 Levels of development assessment are explained in chapter 3 Planning framework.

147 Queensland Planning Provisions (version 2.0), Module A, Section 5.3.

148 Queensland Planning Provisions (version 2.0), Module B [p52].

149 Town planner, Steve Reynolds, says that the avoidance of using overlays to change levels of assessment promotes efficiency in the planning system. See Exhibit 962, Report of Steve Reynolds, Flood Mapping in Queensland Planning Schemes, 9 November 2011 [p32: para 114].

150 This view is supported by town planner, Steve Reynolds, exhibit 962, Report of Steve Reynolds, Flood Mapping in Queensland Planning Schemes, 9 November 2011 [p32: para 114], and the Queensland Government Planner, transcript, Gary White, 7 November 2011, Brisbane [p4619].

151 A standardised approach to the mapping of overlays is also provided (Queensland Planning Provisions (version 2.0), Module B, schedule 2).


153 Queensland Planning Provisions (version 2.0), Module B [p53].


155 Queensland Planning Provisions (version 2.0), Module B [p55].

156 The draft Queensland Planning Provisions (version 3.0) also clarifies that where development is proposed on a lot or premises partly affected by an overlay, the assessment criteria for the overlay only relate to the part of the lot or premises affected by the overlay (draft Queensland Planning Provisions Version 3.0), Module A, Section 1.6(2)).

157 Zone codes should be aimed at achieving the purpose of the zone type. Local plan codes, which provide finer grained planning at a neighbourhood or suburb level, are more appropriately used to identify heritage or amenity characteristics (see Queensland Planning Provisions (version 2.0), Module B [p51]).

158 Queensland Planning Provisions (version 2.0), Module B [p56].

159 Draft Queensland Planning Provisions (version 3.0), Module B [p72].
4 State planning instruments

160 Queensland Planning Provisions (version 2.0), Module B [p91].

161 Section 26(3), Sustainable Planning Act 2009.

162 Section 29(2), Sustainable Planning Act 2009.

163 Section 28, Sustainable Planning Act 2009.

164 Section 28(b)(iii), Sustainable Planning Act 2009


167 South East Queensland Regional Plan 2009-2031, July 2009 [p97].

168 Transcript, John Adams, 28 October 2011, Brisbane [p4595: line 52].

169 Transcript, John Adams, 28 October 2011, Brisbane [p4595: line 52; p4596: line 1].

170 Transcript, Lola Worthington, 26 September 2011, Brisbane [p3116: lines 43-50; p3117: line 13-17]; Exhibit 614, Statement of Anthony Martini, 9 September 2011, Attachment 1680907-2 [p19].

171 Exhibit 620, Ordinary Council Meeting, Report of consideration of submissions to the draft amendments, 12 February 2008 [p389]; Transcript, Christopher Warren, 26 September 2011, Brisbane [p3158: lines 1-21].

172 Exhibit 621, Letter from Paul Lucas MP, Minister for Infrastructure and Planning to John Rauber, 16 October 2008 [p1].

173 Exhibit 621, Letter from Paul Lucas MP, Minister for Infrastructure and Planning to John Rauber, 16 October 2008 [p1].

174 Section 29(2), Sustainable Planning Act 2009.
5 Local planning instruments

Councils are responsible for preparing local planning instruments and implementing planning controls at a local level. Where flooding is an issue, councils should craft their local planning instruments so that a balance is achieved between using available land for development and restricting development to ensure the safety of people and property from flooding. This chapter considers some of the challenges councils face in ensuring their local planning instruments strike this balance. Planning schemes, planning scheme policies and temporary local planning instruments are considered, together with councils’ exposure to claims for compensation or damages.

5.1 Planning schemes

Each council in Queensland maintains a planning scheme or planning schemes for its area of responsibility. The planning scheme is the principal planning instrument against which development applications are assessed; it should include a mechanism for considering how flood might affect a development. Councils are, generally, in the best position to decide whether a development should go ahead; they have local knowledge about past flooding events and the ability to decide whether certain uses are appropriate in a flood-affected area.

The Queensland Government, primarily through State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide, places the onus on councils to ensure flooding considerations are taken into account when planning schemes are drafted and development assessment is carried out. Planning schemes should reflect State Planning Policy 1/03; if they do not, all development applications to which the policy applies must be assessed against both the policy and the applicable planning scheme.

There are, presently, limits on the extent of prescription for how flooding considerations are to be taken into account in making planning schemes and assessing development:

- planning schemes are not expressly required to address flooding (this is discussed in more detail in section 3.2.1 Planning schemes)
- State Planning Policy 1/03 does not take effect for development assessment until a council adopts a flood event and identifies the affected area in the planning scheme (this is discussed in more detail in section 4.1.2 Application of State Planning Policy 1/03)
- State Planning Policy 1/03 and the associated guideline contain only generic assessment criteria which are not adapted to local circumstances
- there is no requirement that the assessment criteria in State Planning Policy 1/03 be incorporated into planning schemes
- flood related assessment criteria can be dispersed throughout a planning scheme and may vary between planning schemes
• there is no formulation for general use of the type of information about flooding that should be included in development applications.9

These limitations should be addressed by developing model flood planning controls to be included in a state planning instrument and mandating that they be incorporated into new planning schemes. Those controls would act as minimum standards to promote consistency of approach to flooding across Queensland, aiding councils in the drafting exercise they would have to undertake, while allowing councils discretion to tailor their planning schemes to accommodate local conditions.

5.1.1 Model flood planning controls

Model flood planning controls could be incorporated into planning schemes through one of two mechanisms: a state planning policy dealing with flood or the Queensland Planning Provisions. (See chapter 4 State planning instruments for an explanation of these instruments.) The merits of these alternatives are discussed under separate headings below. The decision as to which of the two options is used should be made by the Queensland Government, in consultation with councils.

State planning policy dealing with flood

The Sustainable Planning Act 2009 provides that a state planning policy gives expression to the Queensland Government's policy position about a matter of state interest.10 Given this purpose, a state planning policy would seem an appropriate planning instrument to deliver model flood planning controls which accord with the Queensland Government's policy position, and to promote incorporation of those controls into new planning schemes.

An advantage of including the model flood planning controls in a state planning policy stems from the requirement that, if a planning scheme fails to reflect a state planning policy, development applications to which the policy applies must be assessed against the policy as well as the planning scheme.11 Accordingly, any model flood planning controls contained in a state planning policy would, in the absence of their incorporation into planning schemes, still be considered in the assessment of development applications. This would ensure that the substance of the model flood planning controls had effect throughout Queensland.

However, placing the model controls in a state planning policy has a significant disadvantage: the Sustainable Planning Act 2009 does not require councils to include the contents of state planning policies in their planning schemes. In contrast, such a requirement exists in respect of the Queensland Planning Provisions and regional plans: the Sustainable Planning Act provides that a council 'must ensure each of its local planning instruments is consistent with' the Queensland Planning Provisions12 and a council 'must amend its planning scheme ... to reflect the ... region's regional plan'13 (emphasis added).

For the reasons already given, model flood planning controls would still have effect even if they were not included in planning schemes. However, the result is likely to be a more complicated development assessment process; it would also mean that councils had not tailored the model controls to local conditions.

Consequently, if the decision is taken to incorporate model flood planning controls in a state planning policy dealing with flood, the Sustainable Planning Act should be amended to require, expressly, that new planning schemes are to reflect or be consistent with any state planning policy dealing with flood. It may be appropriate for some provisions contained within such a policy to be mandatory and for others to be optional; the model flood planning controls should be mandatory.

In addition, if the model flood planning controls are included in a state planning policy dealing with flood, the problem identified in section 4.1.2 Application of State Planning Policy 1/03 needs to be addressed: that is, the policy should apply to all development applications, not just those in respect to land mapped in a council's planning scheme as affected by flood.

Queensland Planning Provisions

Alternatively, the Queensland Planning Provisions are a mechanism through which model flood planning controls could be incorporated into new planning schemes. Some components of the Queensland Planning Provisions are mandatory, while others are not.14 If included in the Queensland Planning Provisions, the model flood planning controls should be mandatory.
As section 4.3 Queensland Planning Provisions explains, the Queensland Planning Provisions are designed to provide a consistent structure for planning schemes and to set out standard provisions that can be adapted according to local requirements and incorporated into planning schemes.15

One view is that any flood assessment criteria which would form part of the model flood planning controls should not be placed in the Queensland Planning Provisions, because the provisions are not designed to articulate the government’s policy position about matters of state interest, but are simply meant to provide the format and structure for new planning schemes. Against that view, the Sustainable Planning Act expressly permits the Queensland Planning Provisions to provide ‘standard provisions’. It appears to the Commission that there is no legal impediment or significant conceptual objection to the model flood planning controls’ being included in the Queensland Planning Provisions.

The Sustainable Planning Act unequivocally requires new planning schemes to be consistent with the Queensland Planning Provisions.16 Consequently, if the Queensland Government elected to include model flood planning controls in the Queensland Planning Provisions, all new planning schemes would have to be consistent with those model controls.

A disadvantage of including model flood planning controls in the Queensland Planning Provisions is that the provisions have no application to the development assessment process until they are adopted by a council into a planning scheme.17 This means the controls would not take effect until a council adopted a planning scheme which was compliant with the Queensland Planning Provisions.

5.1.2 Features of the model flood planning controls

The Queensland Government should address in the model flood planning controls the matters set out below. This is not necessarily an exhaustive list; the Queensland Government, in consultation with councils, the public and other interested parties, should consider if there are other matters that should also be included.

The model flood planning controls should comply with the format and structure of the Queensland Planning Provisions and be drafted so as to allow councils to adapt them to local circumstances.

Flood overlay map

A flood overlay map is a map in a planning scheme that identifies areas where flood related planning controls are imposed.

The flood overlay map should identify the areas of the council region:

- that are known not to be affected by flood
- that are affected by flood and on which the council has imposed planning controls (there may be subsets in each area to which different planning controls attach)
- for which there is no flood information available to council.

The Queensland Government should, as an aspect of model flood planning controls, require councils to include such a flood overlay map in their planning schemes.18

The Queensland Planning Provisions include some sample maps and instructions to assist councils to prepare their planning scheme maps.19 Similar guidance should be included in the model flood planning controls.

At present, a number of councils in Queensland have flood maps that are not formally incorporated into their planning schemes.20 Where a council has carried out the necessary flood studies, it should incorporate a flood map into its planning scheme. Instructions about how to prepare the map may assist councils to do so.

The Commission deals with the topic of what areas should be shown on a flood overlay map in section 2.7 Flood mapping for land planning controls.

Model flood overlay code

A flood overlay code contains planning controls used to regulate development potentially affected by flood. The application of a flood overlay code in the development assessment process is triggered by a flood overlay map. The code may affect development assessment in two ways: it may change the level of assessment and it may impose additional criteria against which the development will need to be assessed.
The model flood overlay code should comprise a consolidated set of flood related assessment criteria. That would assist in eliminating the scattering of such criteria throughout planning schemes which commonly occurs now and would provide clarity for planning scheme users. The Queensland Government Planner agrees that consolidating assessment criteria relating to flood in a single code is a useful and definitive way of imposing constraints on development within flood prone areas.21

Some planning schemes already consolidate all flood related assessment criteria into a single code: examples are the Bundaberg planning scheme22 and the Ipswich planning scheme.23 The Toowoomba draft planning scheme24 has included a flood hazard overlay code and accompanying flood hazard overlay map. Flood related planning controls are currently dispersed throughout Brisbane’s planning scheme,25 but Brisbane City Council is presently preparing a flood code which will consolidate the various assessment criteria that relate to flooding.26

The model flood overlay code should include model assessment criteria that apply to the assessment of developments where there is the potential for flooding.27 This will promote consistency between planning schemes. The Queensland Government Planner considers a code with model assessment criteria would alleviate the drafting burden for councils, provided local conditions are able to be taken into account.28

The assessment criteria of the model flood overlay code should be devised by the Queensland Government in consultation with councils, the public and other interested parties. They should be drafted so that they have application in the development assessment process regardless of whether a council has a flood map that identifies the areas susceptible to flooding.29

The Commission has made findings and recommendations about assessment criteria relating to:

- community infrastructure
- commercial development
- industrial uses and hazardous materials
- filling in a floodplain
- access routes
- electrical infrastructure.

These findings and recommendations are contained in chapter 7 Development and flood considerations and section 10.3 Electrical infrastructure.

The guideline Planning for stronger, more resilient floodplains: Part 1 – Interim measures to support floodplain management in existing planning schemes, prepared by the Queensland Reconstruction Authority contains a ‘Model Code’ which includes assessment criteria relating to matters such as evacuation routes, design and construction of development, hazardous materials and community infrastructure.30 The authority’s code is also compliant with the format and structure of the Queensland Planning Provisions.31

In addition, it would appear that the Queensland Government accepts that it should develop model flood planning controls. Since receiving the Commission’s draft findings it has, on 16 January 2012, released for public consultation a draft guideline, Planning for stronger, more resilient floodplains: Part 2 – Measures to support floodplain management in future planning schemes. That draft guideline includes, as schedule 2, example planning scheme provisions dealing with flood. They are more extensive than those in Part 1 of the guideline. For example, they contain sample ‘overall outcomes’, ‘performance outcomes’ and ‘acceptable outcomes’ for the ‘Limited development (constrained land) zone code’. They, like the Model Code, the example planning scheme provisions in Part 2, are also compliant with the format and structure of the Queensland Planning Provisions. (See section 4.3.2 Structure of the Queensland Planning Provisions for a more detailed explanation of these types of controls.)

Model planning scheme policy

A planning scheme policy should provide guidance to applicants about the type of flooding information required to support a development application and the form in which that information should be provided.

Where the proposed development is located in an area where the likelihood of flooding is unknown, a planning scheme policy could be used to provide guidance about what further information the applicant should supply to support its application.32
The Queensland Government should include a model planning scheme policy in the model flood planning controls.

A more detailed discussion of the type of guidance councils should provide to applicants when a development is at risk of flooding is provided in section 5.3 Planning scheme policies and section 8.1.2 Site-specific information provided by an applicant.

**Recommendations**

5.1 The Queensland Government should draft model flood planning controls, using a similar format and structure to that in the Queensland Planning Provisions, that councils can adapt for local conditions. The Queensland Government should require these controls to be reflected in new planning schemes. This may be achieved by including the controls in either:

- a state planning policy dealing with flood, with an accompanying amendment to the Sustainable Planning Act 2009, or
- the Queensland Planning Provisions.

The Queensland Government should consult councils to determine which of the two state planning instruments is the more appropriate to include the model flood planning controls.

5.2 The Queensland Government should include in the model flood planning controls a requirement that councils have a flood overlay map in their planning schemes. The map should identify the areas of the council region:

- that are known not to be affected by flood
- that are affected by flood and on which councils impose planning controls (there may be subsets in each area to which different planning controls attach)
- for which there is no flood information available to council.

5.3 If the Queensland Government does not include a requirement for such an overlay map in the model flood planning controls, councils should include a flood overlay map in their planning schemes. The map should identify the areas of a council region:

- that are known not to be affected by flood
- that are affected by flood and on which councils impose planning controls (there may be subsets in each area to which different planning controls attach)
- for which there is no flood information available to council.

5.4 The Queensland Government should include in the model flood planning controls a model flood overlay code that consolidates assessment criteria relating to flood.

5.5 If the Queensland Government does not include such a code in the model flood planning controls, councils should include in their planning schemes a flood overlay code that consolidates assessment criteria relating to flood.

5.6 The Queensland Government should include in the model flood planning controls a model planning scheme policy that:

- for development proposed on land susceptible to flooding, outlines what additional information an applicant should provide to the assessment manager as part of the development application, or
- for development proposed on land where the potential for flooding is unknown, requires an applicant to provide:
  - as part of the development application, information to enable an assessment of whether the subject land is susceptible to flooding, and
  - upon a determination the subject land is susceptible to flooding, more detailed information, to allow an assessment of the flood risk.
5.2 Temporary local planning instruments

A temporary local planning instrument is a temporary planning mechanism that a council may use to protect a planning scheme area from adverse impacts.33

A temporary local planning instrument can be made for all or part of a planning scheme area and can suspend or affect the operation of all or part of a planning scheme for up to one year.34 It does not change or amend the planning scheme; rather it overrides the relevant provisions and replaces them temporarily. After the year has expired, the planning scheme will operate as it did before the temporary local planning instrument was created, unless the planning scheme has been amended within the year using the process outlined in section 5.4 Amending planning schemes.

The process for making a temporary local planning instrument is set out in the Sustainable Planning Act 200935 and Statutory Guideline 01/12: Making and amending local planning instruments. In brief, a council resolves to make a temporary local planning instrument and drafts the instrument. The council then applies to the Minister for Local Government36 to consider the proposed instrument against criteria set out in section 105 of the Act and to decide whether the council can adopt the proposed instrument. The Minister may approve a temporary local planning instrument only if the Minister is satisfied that:

- there is a significant risk of serious environmental harm, or serious adverse cultural, economic or social conditions happening in the planning scheme area
- the delay involved in amending the council’s existing planning scheme would increase the risk
- state interests would not be adversely affected by the proposed temporary local planning instrument
- the proposed temporary local planning instrument appropriately reflects the standard planning scheme provisions.37

Unlike a major amendment to a planning scheme, the process for making a temporary local planning instrument does not involve mandatory referral to Queensland Government agencies for public consultation. This is considered justified because temporary local planning instruments are a planning solution for urgent circumstances and have only a limited period of application.

The Queensland Government Planner notes that temporary local planning instruments are adopted sparingly; they create additional layers to a planning scheme, making the scheme more difficult for the general public to use and understand.38

5.2.1 Interim flood regulation through temporary local planning instruments

In response to the 2010/2011 floods, some councils have adopted, or resolved to prepare, temporary local planning instruments that replace provisions in their existing planning schemes.

The Somerset Regional Council initially resolved, in June 2011, to prepare a temporary local planning instrument but it has since advised the Commission that it will instead adopt the Queensland Reconstruction Authority’s Interim Floodplain Assessment Overlay and Model Code (discussed in detail in section 4.2 Temporary state planning policy).39

The Central Highlands Regional Council also resolved in June 2011 to prepare a temporary local planning instrument to establish an interim residential flood level for known flood affected areas in Emerald.40 It proposes...
that the instrument will include data obtained from the 2008 and 2010/2011 floods and regulate development in Emerald until more detailed flood studies are completed.

The Lockyer Valley Regional Council has prepared and adopted two temporary local planning instruments intended, respectively, to help flood-affected Grantham businesses to recover and to establish temporary premises and to enable the start of works on land designed for new development in Grantham. The council has also resolved to prepare a further temporary local planning instrument to respond, more generally, to an interim flood study which it has commissioned.

Brisbane City Council and Ipswich City Council have each prepared and adopted a temporary local planning instrument following the 2010/2011 floods to provide interim planning standards for both new and existing development in areas that were affected by flood.

Each council’s temporary local planning instrument includes requirements imposed on building work within the area designated by the interim flood regulation lines. These building work requirements are unique in Queensland planning instruments. There is debate as to whether the regulation of building work should be dealt with in planning schemes at all, including in temporary local planning instruments, or whether it should be confined to the building codes created under the Building Act 1975. This debate is discussed elsewhere in this report, see chapter 9 Building controls.

Each of the Brisbane and Ipswich city councils’ temporary local planning instruments adopts an interim flood regulation line and associated development provisions which permit corresponding increases in building heights. The Brisbane interim residential flood level is the outer limit of the January 2011 flood event and the council’s ‘defined flood level’ (that is, a flood of 3.7 metres AHD at the Brisbane City Gauge). The Ipswich interim flood regulation line is based on the outer limit of the council’s existing ‘1 in 100 flood line’, the January 2011 flood event and known information about the 1974 flood. The Commission endorses the adoption of these flood regulation levels as an interim form of floodplain management.

In addition, Ipswich City Council’s temporary local planning instrument 01/2011 discourages the intensification of residential uses on land situated below its interim flood regulation line and identifies ‘special opportunities areas’ within which it reduces the assessment levels for low impact, non-residential uses to encourage a transition away from residential uses.

The chief executive officer of Brisbane City Council has advised the Commission that an extension to the council’s temporary local planning instrument is likely to be required, and would be highly desirable, to allow the council to properly consider its final response to the 2010/2011 floods and the Commission’s recommendations. The council has, however, begun drafting a full amendment to its planning scheme to reflect the changes effected by the temporary local planning instrument.

Ipswich City Council’s City Planner also gave evidence that the 12 month time limit on the life of its temporary local planning instrument presents difficulty for the council, which is unable to complete a suitable flood study before the temporary local planning instrument expires. The City Planner indicated that he would like the period of the temporary local planning instrument’s application to be extended; but another option, he suggested, would be to fast-track an interim amendment to the council’s planning scheme.

Some urgency attaches to resolving the problems identified by Brisbane City Council and Ipswich City Council. Brisbane City Council’s Temporary Local Planning Instrument 01/11 will cease to have effect on 15 May 2012; Ipswich City Council’s Temporary Local Planning Instrument 01/11 on 19 June 2012.

Given those councils’ concerns and the Commission’s recommendations in section 2.3.2 A comprehensive study of the Brisbane River catchment, the question arises whether councils should be afforded an express statutory means by which to extend or remake a temporary local planning instrument dealing with interim flood regulation. No provision of the Sustainable Planning Act 2009 expressly allows a temporary local planning instrument to be extended beyond the 12 months time limit or ‘remade’ at the end of its period of application (although the Queensland Government considers that nothing prevents a council from remaking a temporary local planning instrument). Neither does Statutory Guideline 01/12: Making and amending local planning instruments provide a procedure for extending or remaking a temporary local planning instrument.
In the Commission’s view, it would be preferable for the Sustainable Planning Act expressly to confer a power to extend or remake a temporary local planning instrument with the relevant process prescribed in a new iteration of Statutory Guideline 01/12. The alternative – basing the remaking of a temporary local planning instrument on an absence of prohibition in the legislation – may create uncertainty and be susceptible to changing ministerial views or to court challenge.

The Commission takes no position as to whether the power ought to be to extend or to remake a temporary local planning instrument, provided there is an attendant process of review, which can result in substantive change. Such a process is necessary to ensure the instrument’s provisions:

- remain relevant
- do not duplicate or conflict with other requirements that may have been introduced during the time the original temporary local planning instrument was in effect
- take into account any information that may have become available during the time the original temporary local planning instrument was in effect.

It would seem sensible, in the Commission’s view, for the process of remaking or extending a temporary local planning instrument to be permitted only where the Minister is satisfied that the circumstances listed in section 105 of the Sustainable Planning Act 2009 still exist and that there are good grounds for the failure to make a permanent scheme amendment during the original period of operation of the temporary local planning instrument. Because the proposed process requires neither referral to Queensland Government agencies nor public consultation, the remade or extended instrument should not be given effect for more than a limited period.

**Recommendation**

5.8 The Queensland Government should consider amending the Sustainable Planning Act 2009 to expressly provide either a power to remake or a power to extend a temporary local planning instrument containing interim flood regulation for a further limited period. The power to remake or extend should:

a. permit the modification of the temporary local planning instrument to the extent required to ensure its provisions remain relevant, having regard to any requirement that may have been introduced or any information that may have become available while the original temporary local planning instrument was in force

b. be contingent on the Minister’s being satisfied that the circumstances listed in section 105 of the Sustainable Planning Act continue to exist and that there are proper grounds for the failure to make a permanent scheme amendment while the original temporary local planning instrument was in force.

5.3 Planning scheme policies

Planning scheme policies are local planning instruments that are intended to support a planning scheme and assist councils to make decisions about development applications. Planning scheme policies may be used (among other things) to set out the information a council may request for a development application or to include guidelines or advice for applicants about satisfying assessment criteria. (Planning scheme policies are also discussed in chapter 3 Planning framework and section 4.3 Queensland Planning Provisions.)

State Planning Policy 1/03 identifies planning scheme policies as an appropriate instrument for providing guidance about the type of information that should accompany a development application in order to address flooding considerations. The Commission considers such guidance is best contained in a planning scheme policy as opposed to a guideline. A guideline has no binding effect, and, unlike a planning scheme policy, may not be subject to public scrutiny before adoption.

The Commission is aware of several councils that already use planning scheme policies in this way. For example, Ipswich City Council has a planning scheme policy entitled ‘Information Local Government May Request’, which applies if an application involves land subject to flooding or major stormwater flows. It informs applicants that
council may request further information about matters such as depth, volume and velocity of flows across the site, the likely impact of the proposed development and areas of the site preferred for various activities. In addition to its planning scheme policy, Ipswich City Council has a guideline entitled Implementation Guideline No. 24 ‘Stormwater Management’. The guideline provides detailed information about what ‘flood impact assessment’ is required when the land on which a development is proposed is constrained by flooding or urban stormwater flow paths. The guideline also provides advice about matters such as the appropriate hydrologic and hydraulic models to use, the hydraulic parameters requiring analysis and assessment, the data sources to be used and the requirements for survey and historical flood data. The guideline is further described in chapter 8 Development assessment in practice. For the reasons given, it would be preferable if this information were contained in a planning scheme policy rather than a guideline.

Toowoomba Regional Council’s draft planning scheme includes a planning scheme policy entitled ‘Development Application Requirements’. Pursuant to that policy, once the flood hazard overlay code is triggered, a site-specific ‘flood hazard assessment’ must be carried out by a suitably qualified person and provided in support of the development application.

A report provided to the Commission by consulting hydrologists, Sinclair Knight Merz, provides a summary of minimum and additional information requirements that should be included as part of all ‘flood-prone development’ applications. The report suggests that a development application should, at a minimum, show:

- existing flood levels (that is, under pre-development conditions) at the site
- impacts of the development on adjacent and upstream flood levels
- velocities at the site, with and without the development
- flood depths and velocities along evacuation route(s) from the proposed development to high ground
- the amount of floodplain storage, if any, that would be lost as a result of the development.
The report proposes that a development application would provide this information with a plan (showing the site, the proposed development, ground and floor levels, and all waterways from which the site could be flooded), describe the methods and assumptions, and identify the sources of survey information, used to determine flood levels.69

Plainly, any development application should make clear the development’s potential for constituting a threat to human life, property and the environment.

When drafting a planning scheme policy for inclusion in the model flood planning controls the Queensland Government should consider including the type of information requirements identified in Ipswich’s planning scheme policy and implementation guideline, and in the Sinclair Knight Merz report. The model planning scheme policy should also contain a requirement that the flood risk assessment be carried out by a suitably qualified person.

Some councils administer planning scheme policies that contain substantive planning provisions, such as assessment criteria. For example, Brisbane’s planning scheme is supported by the Subdivision and Development Guidelines70 which stipulate that residential and non-residential subdivisions be designed so that new lots are not located on land susceptible to flooding.71 Similarly, Somerset Regional Council’s Planning Scheme Policy 12 ‘Flood Mitigation in the Lowood and Fernvale Locality’ provides guidance about ‘the standards Council will rely on when determining the level of flood immunity’ for development in Lowood and Fernvale.72

Having regard to the role of planning scheme policies identified above, the Commission considers planning schemes policies are not the appropriate instrument to provide substantive planning content; such content should be confined to the planning scheme itself.73

## 5.4 Amending planning schemes

Planning schemes have a long life: they can remain unchanged for up to ten years.74 Invariably, the behaviour of flooding will change over this period as a result of changes to the natural watercourse and the surrounding built environment, and environmental conditions such as rainfall and runoff. A planning scheme cannot reflect such changes unless its flood map is updated, but to do so requires the planning scheme’s amendment.

Amendments to planning schemes are categorised as ‘major’, ‘minor’ or ‘administrative’.75 The time entailed in each type of amendment varies, with quite a different process for administrative amendments compared with that for major amendments.

Changes to flood maps in planning schemes are defined as major amendments. They are, as a consequence, required to undergo a period of public consultation and at least one state interest review prior to the Minister’s considering whether the council may adopt the amendment.76 The entire process can take around 18 months.77 (See section 4.1.4 State interest review of planning schemes for a detailed description of the state interest review process.)

In response to a council’s submission,78 the Commission considered the appropriateness of requiring updates to planning scheme flood maps to be subject to this lengthy, and sometimes complex, process.

### 5.4.1 A shorter process?

It is important for development decisions to be based on the most up to date information. Ideally, planning scheme overlay maps should reflect updated flood data as that data becomes available.79 But this is an unrealistic goal: it would require councils to undertake regular major amendments.

There are, however, important benefits deriving from the major amendment process. The state interest review allows Queensland Government agencies, particularly the Department of Environment and Resource Management (DERM), to review the proposed mapping and to advise councils of the existence of any additional flood studies or flood data that should be incorporated.40 The public consultation process also has value. Individuals, particularly those in rural or regional areas, may have information about local flooding conditions that contradicts what is displayed on a flood map derived from a flood model (which is an artificial estimation of the potential extent of flooding). And public consultation allows anyone likely to be affected by the proposed mapping (particularly any individual whose property now falls within the mapped area) to make submissions to the council. These features of the major amendment process – public and state consultation – make the amendment process most appropriate for the introduction of new flood mapping into a planning scheme (of unmapped catchments or sub-catchments, for instance).
Nonetheless, a shortened amendment process could apply to updating existing flood mapping information. The Commission considered the appropriateness of using the minor amendment process for this purpose. A minor amendment is defined in Statutory Guideline 01/12: Making and amending local planning instruments. It is an amendment that the Minister is satisfied:

- reflects a current development approval, a master plan or an approval under other legislation
- includes a planning scheme policy
- reflects a change made in response to a regional plan that is applicable to the relevant council region
- reflects all or part of a state planning policy
- reflects changes to a planning scheme in response to a ministerial direction, where those changes have been subject to adequate public consultation, or
- has involved adequate consultation with the public and the state
- if in south-east Queensland, reflects changes to the planning scheme relating to water and wastewater infrastructure and services.

Accordingly, to make a minor amendment a council must prepare the amendment and then submit it to the Minister, who determines whether he or she is satisfied that the amendment is indeed a minor one. The minor amendment process still requires Queensland Government consultation.

The Queensland Reconstruction Authority interim floodplain maps can be incorporated into a planning scheme by way of the minor amendment process. The streamlined procedure is justified on the basis that the authority considers itself to have undertaken the state interest review process and the public consultation on behalf of the council.

The Commission considers it acceptable for flood mapping information to be updated by way of a minor amendment process, provided that adequate public consultation has occurred, allowing individuals potentially affected by any proposed changes to the existing planning scheme flood map an opportunity to comment.

**Recommendation**

5.9 The Queensland Government should consider allowing councils to amend a planning scheme to update existing flood mapping information by way of the minor amendment process, provided that adequate public consultation has occurred.

### 5.5 Compensation

The Commission received a number of submissions from local government concerning councils’ exposure to claims for flood-related compensation or damages. The submissions raised two distinct issues:

- the protection of councils against liability for losses arising from the provision of flood advice or from acts done, or omitted to be done, in respect of land subject to flooding
- councils’ exposure to compensation claims under the Sustainable Planning Act 2009 for a reduction in land value because of a change to the flood controls contained in a planning scheme or planning scheme policy.

#### 5.5.1 Statutory immunity

Currently, councils in Queensland have no specific statutory protections in relation to the provision of flood information or decisions concerning development of flood-affected land.

The Local Government Association of Queensland has submitted that councils are concerned about the prospect of liability; for example, for losses caused by flood where rebuilding has been approved after previous flooding, even if the owner knew of the risk.
Gold Coast City Council has raised similar concerns about liability should it publish information about possible effects of climate change, and has pointed out that the lack of legislative prescription for flood modelling may leave local government flood modelling open to challenge on a case by case basis.89

Mr Steve Reynolds, an expert planning witness engaged by the Commission, expressed the view that councils’ exposure to liability presented a challenge for achieving effective flood management under the Queensland planning system.90

It is of some interest that the Natural Disaster Insurance Review has recommended that, to encourage provision of flood risk information to the public, Commonwealth, state and territory governments grant indemnities to those making it available, if it is obtained and provided in good faith and in the absence of any gross negligence.91

Both the Local Government Association of Queensland and the Gold Coast City Council contended that uncertainty about local governments’ exposure to liability could be relieved by the introduction of a legislative exemption from liability for reasonably based local government decision-making.92 They proposed a statutory immunity modelled on section 733 of the Local Government Act 1993 (NSW). (The Brisbane City Council also supports the introduction of such an immunity.93)

Section 733 provides that a council does not incur any liability in respect of advice given or acts done or omitted to be done in good faith in respect of the likelihood of any land being flooded or the nature or extent of any such flooding.

The immunity has general application to anything done or omitted to be done in the exercise of a council’s functions under legislation and has explicit application to particular circumstances including:

• the preparation or making of an environmental planning instrument
• the granting or refusal of consent to a development application, including any conditions imposed
• the preparation or making of a coastal zone management plan
• the furnishing of advice in planning certificates which may specify, for instance, whether or not development on land is subject to flood related development controls94
• the carrying out of flood mitigation works
• the carrying out of coastal management works
• the failure to upgrade flood mitigation works or coastal management works in response to projected or actual impacts of climate change
• the provision of information relating to climate change or sea level rise.

Under the provision, unless the contrary is proved, a council is taken to have acted in good faith if it has acted substantially in accordance with principles contained in manuals published by the Minister for Planning.

The circumstances surrounding and the intentions behind the enactment of section 733 can be discerned from the second reading speech of the responsible minister.95 It was informed by reasoning that, as flooding is a natural and recurring but unpredictable phenomenon, local governments should be protected against claims for damages arising from development and building approvals and the provision of flood information or advice. Local government made strong representations that the existing law was inadequate to protect councils from claims for damages arising from planning and development decisions and the issue of advice relating to flood liable land, even though they had acted in accordance with the relevant government policy and in good faith. This uncertainty was alleged to have caused a number of councils to adopt an excessively conservative approach to decision-making, for instance unnecessarily refusing development applications or imposing superfluous and costly development and building conditions. The immunity was said to strike the appropriate balance between protecting the rights of individuals, on the one hand, and the problems encountered by local government, on the other, by only protecting actions taken in good faith.

In late 2010, the New South Wales parliament extended the exemption to climate change related decision-making. It now applies to things done in relation to coastal management and the provision of information relating to climate change or sea level rise.

The evidence before the Commission as to whether councils’ concerns about liability adversely affect their willingness or ability to minimise infrastructure or other property damage from floods is limited and mixed.
The Queensland Government Planner has given evidence that the Queensland Government is trying to help local governments to respond to climate change by developing a ‘co-ordinative framework’ to enable a consistent approach. However, Gold Coast City Council has expressed its concern that the current legislative framework may not provide adequate support for local governments that wish to publish the latest credible information, for example flood maps or data which take into account sea level rise or the storm surge impacts of climate change, but fear that doing so may open them to claims for compensation.

The director of development and environment at the North Burnett Regional Council gave evidence that the council had reservations about adopting a defined flood event recommended by a commissioned flood study which adopted a climate change factor of 20 per cent. It had, however, undertaken a joint project with the Queensland Government to assist it in incorporating climate change into its flood risk management framework. It has yet to fix on a defined flood event which takes climate change into account. Council officers are presently working to simplify the way in which climate change is incorporated into the council’s planning scheme to ensure that the information is comprehensible by the general public.

Resolutions made by the Central Highlands Regional Council since the 2010/2011 floods seem to demonstrate conservative decision-making based on uncertainty about the likelihood of flooding. On 21 February 2011, the council resolved that it would not provide any flooding information (historic or current) to any person or entity except in response to an application under the Right to Information Act 2009 or some other lawful process. The chief executive officer of the council gave evidence that this was ‘a slowdown tactic’ while the council was doing further work to ascertain flood levels; it was concerned about giving the wrong information to the public.

The council also resolved to defer a number of development applications until it obtained information on flood levels from the 2010/2011 floods. This case by case response to development applications has been supplemented by a council resolution to defer (with some exceptions) the consideration of all development applications located within the Emerald town zone on land subject to inundation during the 2010/2011 flood event until such time as flood studies commissioned by the council were finalised. But it is not apparent whether the council, in adopting these resolutions, was motivated by concern about liability or whether it simply considered its actions best served the public interest.

The Local Government Association of Queensland’s position that local government is concerned about the issue of liability where a development approval is given to rebuild in an area affected by recent flood events is given some credence by measures adopted, but shortly after rescinded, by the Lockyer Valley Regional Council in response to the January 2011 flooding.

A council resolution of 28 June 2011 stated that the council would require owners rebuilding a dwelling on land where a dwelling existed prior to the January flood to provide an immunity statement to council confirming that they were aware of the risks associated with rebuilding below an interim minimum habitable floor level adopted by the council. The relevant part of that resolution was rescinded on 7 September 2011. Despite inquiries, the council has not given any clear account of its concerns or intentions in making and revoking the resolution.

There are, in the examples cited, some hints that council decision-making may have been influenced by apprehension about exposure to liability arising from the provision of flood advice or actions in respect of land subject to flooding. However, the evidence before the Commission is insufficient for it to form a view about the utility of introducing a statutory immunity.

The Queensland Government has advised the Commission that it will investigate the viability of introducing legislation similar to section 733 of the Local Government Act 1993 (NSW). The Commission endorses the proposal; any such investigation should occur in consultation with councils.

### 5.5.2 Reduction in land value

The statutory regime for the payment of compensation for a reduction in land value because of a change to a planning scheme or planning scheme policy in Queensland is contained in the Sustainable Planning Act 2009.

Under sections 704 and 705 of the Act, the owner of an interest in land is entitled to be paid reasonable compensation by a council for such reduction in land value ‘in specified circumstances’ if he or she is adversely affected by changes to a planning scheme.
Section 706 of the Act limits the circumstances in which compensation must be paid; it is not, for example, payable:

- if a change to a planning scheme has the same effect as a state planning instrument (such as State Planning Policy 1/03) in relation to which compensation is not payable; section 706(1)(a), or
- if a change to a planning scheme affects development which, under the superseded planning scheme, would have led to significant risk to persons or property from flood and the risk could not have been significantly reduced by conditions attached to a development approval: section 706(1)(i)(i).

Some matters have been identified to the Commission as restricting or making doubtful the availability of the section 706(1)(a) exclusion in relation to the imposition of flood controls in a planning scheme, particularly where reliance on State Planning Policy 1/03’s effect is proposed.

The Queensland Government Planner’s evidence was that the breadth of the definition of ‘development commitment’ in the policy (which allows development incompatible with a natural hazard where it is a development commitment) would make it difficult for a council to rely upon the exclusion.\textsuperscript{111} For more detail about the definition of development commitment in State Planning Policy 1/03, see section 4.1.2 Application of State Planning Policy 1/03.

Brisbane City Council pointed out that the requirement that changes to a planning scheme have the ‘same effect’ as a state planning instrument produced uncertainty, because current state planning instruments do not provide a sufficient degree of detail for confidence on the point.\textsuperscript{112} It may be open to challenge, for example, whether changes which expand upon the operation of State Planning Policy 1/03’s development outcomes have the ‘same effect’ as those outcomes.

In respect of the section 706(1)(i)(i) exemption, Brisbane and Ipswich city councils contended that the scope of the phrases ‘significant risk’ and ‘the risk could not have been significantly reduced by conditions attached to a development approval’ was open to argument.\textsuperscript{113}

Ipswich City Council observed that the section 706(1)(i)(i) exclusion was further limited, in this way: it does not apply if conditions on development could have significantly reduced the risk; and the range of conditions that may be imposed is in turn restricted by section 347(1) of the Sustainable Planning Act,\textsuperscript{114} which provides that:

\begin{quote}
\textbf{a condition must not be inconsistent with a condition of an earlier development approval or compliance permit still in effect for the development.}\textsuperscript{115}
\end{quote}

Ipswich City Council has expressed the view that exposure to compensation claims for a reduction in land value because of a change to a planning scheme or planning scheme policy acts as a deterrent to the inclusion of flood controls in a planning scheme.\textsuperscript{115} The evidence of the council’s City Planner was that it had concerns that it would be liable for compensation if it were to ‘down-zone’ land below its 1 in 20 development line, previously designated for residential uses under a superseded planning scheme. In his view, further limiting the entitlement to compensation where a planning scheme is amended following a natural disaster would allow councils more scope to make zoning decisions.\textsuperscript{116} Mr Reynolds, the planning expert engaged by the Commission, similarly regarded the prospect of liability to compensation under the Sustainable Planning Act as an impediment to local governments wanting to ‘down-zone’.\textsuperscript{117}

Councils proposed the following changes to the Sustainable Planning Act to ensure that its compensation provisions did not deter local governments from including appropriate provisions in their planning schemes:

- Ipswich City Council supported amendment to exempt all planning scheme controls for flooding (and other natural processes) from giving rise to compensation for a reduction in land value because of a change to a planning scheme or planning scheme policy\textsuperscript{118}
- Brisbane City Council supported amendment of section 706(1)(i)(i) to clarify the intent of the subsection, provide certainty to council as to the scope of the exemption and remove the words ‘significant risk’ and ‘the risk could not have been significantly reduced by conditions attached to a development approval’\textsuperscript{119}
- Gold Coast City Council suggested that the entitlement to compensation be limited where a planning scheme is changed to meet the impacts of climate change.\textsuperscript{120}
The Queensland Government Planner accepted that some local governments were reluctant to change their planning schemes to preclude development on flood constrained land where doing so might trigger an entitlement to compensation. He agreed, in principle, that the Sustainable Planning Act should be amended to make clear that no compensation was payable should a local planning instrument be amended for the purposes of mitigating flood, while pointing out that larger policy implications would have to be considered.

Although the Queensland Government does not currently propose to investigate the viability of change to the compensation provisions of the Sustainable Planning Act, the concerns expressed by councils suggest that such change should at least be considered, to ensure that councils are not inhibited by the prospect of statutory liability to compensation from adopting appropriate land planning regulation and making appropriate land planning decisions where flooding is a consideration. Whether this is necessary may hinge upon any action taken by the Queensland Government to narrow the definition of development commitment so that more development applications are assessed against flood criteria. For the Commission's recommendation as to these matters, see section 4.1.2 Application of State Planning Policy 1/03.

(Endnotes)

1 Transcript, Gary White, 19 September 2011, Brisbane [p27746: line 1; p27769: line 15].

2 Exhibit 666, Statement of Glen Brumby, 15 September 2011 [p14: para 56].

3 State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p8: para 7.1].

4 Chapter 6, Part 5, Division 2, Sustainable Planning Act 2009; Exhibit 532, Statement of Gary White, 2 September 2011 [p30: para 158].

5 Clause 6.6, State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p6].

6 Assessment criteria are referred to in State Planning Policy 1/03 and the associated guideline as ‘development outcomes’, ‘specific outcomes’ and ‘solutions’.

7 Exhibit 532, Statement of Gary White, 2 September 2011 [p30: para 156]. The Queensland Government Planner stated the reason the Sustainable Planning Act 2009 does not require councils to include the contents of a state planning policy as not all parts of a state planning policy will be relevant to all councils (Transcript, Gary White, 7 November 2011, Brisbane [p4615: line 54]). However, as it is the Minister for Local Government who approves planning schemes that are developed or amended by councils, it is within the Minister’s prerogative to not approve a planning scheme or an amendment to a planning scheme until a matter the Minister considers must be addressed is done so to the Minister’s satisfaction. Further, the Minister may direct a council at any time to amend an existing planning scheme under Chapter 3, Part 6 of the Sustainable Planning Act 2009 to address a state interest, such as flood management (Exhibit 532, Statement of Gary White, 2 September 2011 [p31: para 159]). This power has not been exercised to the Queensland Government Planner’s knowledge (Transcript, Gary White, 19 September 2011, Brisbane [p27748: line 8]).

8 State Planning Policy 1/03 Guideline: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide, notes that development assessment codes dealing with floods in planning schemes may take the form of ‘special hazard management codes’ or be incorporated into broader codes, as appropriate (State Planning Policy 1/03 Guideline: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p23: para 7.15]).

9 Limited guidance is currently provided by the Queensland Government as to the type of flooding information that should be submitted with development applications (see State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide and the associated guideline).

10 Section 40(b), Sustainable Planning Act 2009.

11 Chapter 6, Part 5, Division 2, Sustainable Planning Act 2009.

12 Section 55(1), Sustainable Planning Act 2009. Existing planning schemes are not required to be consistent with the Queensland Planning Provisions (see section 777, Sustainable Planning Act 2009).

13 Section 29(2), Sustainable Planning Act 2009.

14 For a more detailed discussion of the structure of the Queensland Planning Provisions, see section 4.3 Queensland Planning Provisions.

15 Section 50(b), Sustainable Planning Act 2009.
16 Section 55(1), *Sustainable Planning Act 2009*. Existing planning schemes are not required to be consistent with the Queensland Planning Provisions (see 777, *Sustainable Planning Act 2009*).

17 For what is to be taken into account in the assessment of development applications, see Chapter 6, Part 5, Division 2, *Sustainable Planning Act 2009*.

18 This is in line with the ‘flood hazard overlay’ as proposed by the new draft Queensland Planning Provisions, version 3.0, October 2011, section 4.3 *Queensland Planning Provisions*.


20 For example, Brisbane City Council, Moreton Bay Regional Council and Somerset Regional Council.

21 Transcript, Gary White, Brisbane, 7 November 2011, Brisbane [p4618: line 17]. Town planner Steve Reynolds’s view is that where mapping data exists, all flooding matters should be dealt with in a flood overlay and flood overlay code a planning scheme (Exhibit 962, Steve Reynolds, *Flood Mapping in Queensland Planning Schemes*, 9 November 2011 [p29: para 105]).

22 The Flood Management Code is triggered by a Flood Management Overlay in the Bundaberg planning scheme.

23 The Flooding and Urban Stormwater Flow Path Areas Development Constraint Code is triggered by the Flooding and Urban Stormwater Flow Path Areas Overlay in the Ipswich Planning Scheme. The operation of this code is currently suspended due to the introduction of the Temporary Local Planning Instrument 01/2011 – Flooding Regulation.

24 The draft Toowoomba Regional Council planning scheme is consistent with the Queensland Planning Provisions.


27 For example, a purpose statement, overall outcomes, and performance outcomes and acceptable outcomes (Queensland Planning Provisions (version 2.0) [p55 -57]).

28 Transcript, Gary White, 7 November 2011, Brisbane [p4619: line 14].

29 This is to overcome the difficulty identified with the application of State Planning Policy 1/03 in that a natural hazard management area for flood must be identified for the policy to apply. See section 6.6 of State Planning Policy 1/03: *Mitigating the Adverse Impacts of Flood, Bushfire and Landslide*, 2003; Exhibit 532, Statement of Gary White, 2 September 2011 [p29: para 148; 152] and Transcript, Gary White, 19 September 2011, Brisbane [p2747: line 10]. The limitations of State Planning Policy 1/03 are explained in further detail in section 4.1 *State Planning Policy 1/03*.

30 The Queensland Reconstruction Authority Guideline *Planning for Stronger, More Resilient Floodplains: Part 1 - Interim measures to support floodplain management in existing planning schemes* [p18, 19].

31 The Queensland Reconstruction Authority Guideline *Planning for Stronger, More Resilient Floodplains: Part 1 - Interim measures to support floodplain management in existing planning schemes* [p18].

32 Town planner, Steve Reynolds, has the view that where there is no flood data available there should be two tiers of information requirements in a planning scheme policy: the first tier to determine whether the site has characteristics which warrant further study and the second tier to set out the usual flood study requirements of a council (Exhibit 962, Steve Reynolds, *Flood Mapping in Queensland Planning Schemes*, [p27: para 91.d]).

33 Section 101, *Sustainable Planning Act 2009*.

34 Sections 103, 104, *Sustainable Planning Act 2009*.

35 Chapter 3 Part 5, Division 2.

36 Section 105 of the *Sustainable Planning Act 2009* states that a local government may make a temporary local planning instrument for all or part of its planning scheme area only if ‘the
Minister’ is satisfied of certain matters. Since 22 June 2011, and as at 19 January 2012, the Minister responsible for administering the Sustainable Planning Act 2009 is the Minister for Local Government, see: Administrative Arrangements Order (No. 2) 2011.

37 Section 105, Sustainable Planning Act 2009.
38 Exhibit 532, Statement of Gary White, 2 September 2011 [p59: para 317].
40 Exhibit 670, Statement of Luke Lankowski, 1 September 2011 [p3: para 2.3, 2.4].
41 Exhibit 670, Statement of Luke Lankowski, 1 September 2011 [p3: para 2.5].
42 Exhibit 683, Statement of Bryan Ottone, 6 September 2011 [p3].


48 Exhibit 953, Statement of Colin Jensen, 31 August 2011, CDJ-35 [p2: para 1.2]; Table A.
49 Exhibit 911, Statement of John Adams, 2 September 2011 [p18: para 34].
50 Exhibit 911, Statement of John Adams, 2 September 2011, JA-10, Attachments 2, 3 and 4.
51 Exhibit 953, Statement of Colin Jensen, 31 August 2011 [p5: para 3.8].
52 Exhibit 953, Statement of Colin Jensen, 31 August 2011 [p5: para 3.9].
53 Transcript, John Adams, 28 October 2011, Brisbane [p4588: line 49].
54 Transcript, John Adams, 28 October 2011, Brisbane [p4588: lines 36-54].
55 Transcript, John Adams, 28 October 2011, Brisbane [p4588: line 56 – p4589: line 9].
56 Section 108(c), Sustainable Planning Act 2009.
57 Section 114, Sustainable Planning Act 2009.
58 Where the information is not provided at the application stage, the information should be the subject of an information request under the Integrated Development Assessment System (State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide, 2003 [p9: para 7.7]). The Integrated Development Assessment System is described in more detail in chapter 3 Planning framework.
59 Statutory Guideline 01/12: Making and amending local planning instruments [p27-28].
60 Ipswich City Planning Scheme Policy 2 ‘Information Local Government May Request’ [p6: section 8].
61 The Flooding and Stormwater Flow Path Areas overlay map and related provisions have been suspended and replaced by Temporary Local Planning Instrument 1/11 – Flooding Regulation, which may remain in effect up until 19 June 2012: Ipswich City Council’s Implementation Guideline No. 24 Stormwater Management [p10: para 7.1].
62 The Toowoomba Regional Council draft scheme has been drafted in compliance with the Queensland Planning Provisions.
63 Draft Toowoomba Regional Planning Scheme, Schedule 4, Planning Scheme Policy No. 1 ‘Development Application Requirements’ [SCA.1.6].
Draft Toowoomba Regional Planning Scheme, Schedule 4, Planning Scheme Policy No. 1 ‘Development Application Requirements’ [SC4.1.6].


Sinclair Knight Merz, Brisbane 2011 Flood Event – Investigation into Causes of Property Inundation: Hydrology Requirements for Development Applications, Final A, 15 November 2011 [section 2.3.2].

Sinclair Knight Merz, Brisbane 2011 Flood Event – Investigation into Causes of Property Inundation: Hydrology Requirements for Development Applications, Final A, 15 November 2011 [section 2.3.3].

Sinclair Knight Merz, Brisbane 2011 Flood Event – Investigation into Causes of Property Inundation: Hydrology Requirements for Development Applications, Final A, 15 November 2011 [section 2.3.2].

The title of the Subdivision and Development Guidelines does not identify it as a planning scheme policy, as is the usual practice.

Brisbane City Council Subdivision and Development Guidelines, Part A Hazard Management, Chapter 1 Flood Affected Land [p1: section 2.1].

The Former Esk Shire Planning Scheme Policy No. 12 (Flood Mitigation in the Lowood and Fernvale Locality) is not triggered by the planning scheme (see Exhibit 1002, Statement of Robert Bain, 21 October 2011 [p1: para 4]).

Clause 108, Explanatory Notes for the Sustainable Planning Bill 2009. This approach is also similar to the Practice Notes accompanying the Victorian Planning Provisions which provide an explanation of the flood zone and flood overlays, the types of development suitable in floodways and the extra material that should be included in the development application.

Section 91(1), Sustainable Planning Act 2009.
5 Local planning instruments

91 Natural Disaster Insurance Review, Inquiry into flood insurance and related matters, September 2011 Recommendation 24 [p70].


94 See also section 149, Environmental Planning and Assessment Act 1979 (NSW) and clause 279 and schedule 4, Environmental Planning and Assessment Regulation 2000 (NSW).

95 Bob Carr, Minister for Planning and Environment, New South Wales Legislative Assembly, Parliamentary Debates, 16 April 1985 [6025].

96 Transcript, Gary White, 19 September 2011, Brisbane [p2755: line 27].

97 Second Submission of Gold Coast City Council, undated [p2].

98 Transcript, Robert Savage, 11 October 2011, Bundaberg [p3932: line 52].

99 Exhibit 772, Increasing Queensland’s resilience to inland flooding in a changing climate: Final report on the Inland Flooding Study, 2010; Exhibit 773, Increasing Queensland’s resilience to inland flooding in a changing climate: Policy options for incorporating climate change into the flood risk management framework in Gayndah (North Burnett Regional Council), November 2010.

100 Transcript, Robert Savage, 11 October 2011, Bundaberg [p3934: line 22 – p3935: line 21].

101 Exhibit 683, Statement of Bryan Ottone, 6 September 2011, copies of council resolutions [p3].

102 Transcript, Bryan Ottone, 29 September 2011, Emerald [p3432: lines 10-25].

103 Exhibit 683, Statement of Bryan Ottone, 6 September 2011, copies of council resolutions [p1].

104 The following exceptions apply to this blanket resolution: where the applicant provides a flood study prepared by a hydrologist or other suitably qualified professional, where the development is considered ‘low risk’ or where the application is for a negotiated decision or permissible change in relation to an existing approval that does not impact upon minimum approved floor height or any other flood condition: Exhibit 683, Statement of Bryan Ottone, 6 September 2011, copies of council resolutions [p9].

105 Exhibit 683, Statement of Bryan Ottone, 6 September 2011, copies of council resolutions [p9].

106 Exhibit 983, Statement of Ian Flint, 3 November 2011, Annexures ICF1 and ICF3.

107 Exhibit 983, Statement of Ian Flint, 3 November 2011, Annexure ICF1.

108 Exhibit 983, Statement of Ian Flint, 3 November 2011, Annexure ICF3.

109 Exhibit 917, Submission of State of Queensland, 4 November 2011 [p9].

110 Previously called ‘injurious affection’ in earlier legislation.

111 Transcript, Gary White, 7 November 2011, Brisbane [p4632: line 1].


113 Correspondence from Clayton Utz (Ipswich City Council), 6 January 2012, Statutory Indemnity; Brisbane City Council submission, ‘Land Planning B – Indemnity’, undated.

114 Correspondence from Clayton Utz (Ipswich City Council), 6 January 2012, Statutory Indemnity.

115 Submission of Ipswich City Council, 28 April 2011 [p3-4: para 1.4; p30: para 11.2; p51: para 18.5].

116 Transcript, John Adams, 28 October 2011, Brisbane [p4585: lines 3-15].

117 Exhibit 962, Steve Reynolds, Flood Mapping in Queensland Planning Schemes, 9 November 2011 [p7: para 10(g)]; Exhibit 964, Building Controls for Flood Hazard Areas, Steve Reynolds, 7 November 2011 [p7: para 10].
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6 Satellite planning systems

Most development in Queensland is regulated by the Sustainable Planning Act 2009. However, there is a number of ‘satellite’ planning systems, created and regulated by separate legislation, and operating independently of the Sustainable Planning Act.

In particular, the Commission has considered evidence about the planning and development assessment systems governed by the Urban Land Development Authority Act 2007, the South Bank Corporation Act 1989 and the State Development and Public Works Organisation Act 1971.

6.1 Urban Land Development Authority Act 2007

The Urban Land Development Authority Act was introduced as part of the Queensland Housing Affordability Strategy in 2007. The strategy and the Act aim to improve housing affordability by improving the efficiency of the planning and development, land supply, and infrastructure funding systems.1 The Urban Land Development Authority planning system is designed to ensure that affordable land is brought to the market quickly, by removing inefficiencies in the approval of development applications and by providing a range of housing options for low to moderate income households.2

Once the Minister for Local Government and Planning declares an area to be an ‘urban development area’, the operation of the Sustainable Planning Act is ousted and development proposals are processed under the planning system provided for in the Urban Land Development Authority Act.3

The planning and co-ordination of development of land in declared urban development areas is the responsibility of the Urban Land Development Authority, established under the Urban Land Development Authority Act. For those declared areas, it is the authority, not the local government, which:

- makes the development schemes that regulate development
- assesses development applications.

The Urban Land Development Authority Act sets out the process for making the development schemes which regulate development. It involves a process of consultation but, unlike the procedure for making planning schemes under the Sustainable Planning Act,4 does not entail mandatory referrals to Queensland Government departments.5 In making a scheme the Urban Land Development Authority must consider, but is not bound by, the requirements of State Planning Policy 1/03.6

Development applications are assessed against a limited set of criteria.7 The criteria require the authority to consider the relevant scheme but do not refer to State Planning Policy 1/03; flood risk is not a relevant criterion in the Urban Land Development Authority Act.
6.2 South Bank Corporation Act 1989

The South Bank Corporation was created by the South Bank Corporation Act to manage the development of a riverside area on the south bank of the Brisbane River opposite the central business district that was formerly occupied by World Expo '88.8

The South Bank Corporation Act empowers the corporation to:

- prepare a development plan,9 which effectively operates as the planning scheme for the area
- implement the development plan, which includes regulating development within the area covered by the Act.10

The South Bank Corporation Act sets out the procedure for making a development plan.11 It involves consultation with Brisbane City Council, but not with Queensland Government departments. A development plan is not required to reflect State Planning Policy 1/03 or to address flooding as a consideration.

There is also no requirement to consider the possible impacts of flood in implementing the development plan or in assessing development applications. South Bank Corporation’s obligations, with respect to carrying out and regulating development, are:

- to ensure the development is carried out in accordance with the approved development plan12
- in deciding a development application, to consult with Brisbane City Council in the way the corporation considers appropriate.13

6.3 State Development and Public Works Organisation Act 1971

The original State Development and Public Works Organisation Act was passed in 1938 as a post-Depression measure to encourage public works and generate employment.14 The current Act is administered by the Minister for State Development and Trade and the Coordinator-General.15 The Act regulates a range of development types; those of most interest to the Commission are state development areas, significant projects and prescribed projects.

6.3.1 State development areas

The Governor in Council, on recommendation by the Minister, may declare a state development area when satisfied that it is required by the public interest or for the general welfare of Queensland residents.16 To determine this, consideration may be given to any relevant matter, including the need to establish or relocate a population, industry or essential services.17

A state development area may be declared to promote economic development or address market failure.18 Recently approved state development areas include the Queensland Children’s Hospital State Development Area, which is intended to consolidate health services for children and young people, and the Abbot Point State Development Area, which provides for industrial development, including infrastructure corridors and essential services.19

For a state development area, the Coordinator-General:

- prepares a development scheme for the area which identifies land use precincts and specifies the purpose of those precincts; it overrides any planning scheme applicable to the land20
- assesses land use applications for a material change of use under the provisions of the development scheme to the extent provided in the scheme.21

The process for making a development scheme for a state development area is not prescribed by the Act. The Coordinator-General’s evidence to the Commission is that he releases the draft development scheme for public and government comment and that he considers all submissions received.22

The Act does not require the Coordinator-General to consider State Planning Policy 1/03, or flooding more generally, when making a scheme for a state development area or assessing an application against a state development area scheme.
6.3.2 Significant projects

The Coordinator-General may declare a project to be a significant project under section 26 of the State Development and Public Works Organisation Act. A significant project typically involves:

- complex approval requirements involving all levels of government
- a capital investment of more than $100 million
- potential effects on infrastructure or the environment
- the provision of substantial employment opportunities
- ‘strategic significance’ to a locality, region or the state.

Recently declared significant projects include the Australia Pacific Curtis Liquefied Natural Gas and the Wandoan Coal Mine projects.

The assessment process for a significant project differs from the other processes discussed in this part. The declaration of a significant project does not exclude the Sustainable Planning Act provisions; its assessment process continues to apply, but is modified for different development types.

For example, an application for a material change of use for a significant project, although assessed under the Sustainable Planning Act, does not undergo mandatory referral to Queensland Government departments and is not the subject of public notice given under the Sustainable Planning Act. Instead, before the application is made:

- the Coordinator-General may (but is not required to) refer the project to Queensland Government departments under the State Development and Public Works Organisation Act;
- the applicant must ‘publicly notify’ the environmental impact statement for the project.

After these steps take place, the Coordinator-General evaluates the material and prepares a report that acts as a concurrence agency response for the application under the Sustainable Planning Act. Any properly made submission received by the Coordinator-General (in response to the public notification) is also taken to be a properly made submission about the application under the Sustainable Planning Act assessment process.

The Coordinator-General’s report may, but will not necessarily, address flooding.

In determining the application, the assessment manager must also take into account State Planning Policy 1/03 in the usual way.

6.3.3 Prescribed projects

A prescribed project generally has state or regional economic, social or environmental significance. The Coordinator-General’s powers in respect of prescribed projects enable intervention in the statutory approvals process for development to ensure timely decision-making.

A recently prescribed project which has been the subject of evidence before the Commission is the Ensham Mine Flood Recovery Project, declared in April 2008 following the inundation of the mine and surrounding areas in January 2008.

Once a prescribed project is declared, the Coordinator-General may issue a notice requiring the usual decision-maker to proceed with the decision-making process or to decide a development. If the usual decision-maker does not comply with the notice, the Coordinator-General becomes the approval authority for the relevant application.

The Coordinator-General’s decision making process and powers in respect of a prescribed project are prescribed by the statute applicable to the usual decision-maker (usually the Sustainable Planning Act); thus, the planning and development assessment process for a prescribed project is not strictly an alternative system. For this reason, the Coordinator-General’s decision-making (including consideration of flooding) for prescribed projects is not further discussed.
6.4 Consideration of flooding as part of satellite planning systems

6.4.1 Satellite planning systems generally

The alternative planning and development assessment systems established by the *Urban Land Development Authority Act*, the *South Bank Corporation Act*, and, for state development areas, by the *State Development and Public Works Organisation Act*, are not subject to the provisions of the *Sustainable Planning Act*.

Of the relevant entities (the authority, the corporation and the Coordinator-General), only the Urban Land Development Authority is required to consider State Planning Policy 1/03 in the preparation of a development scheme, and none of the entities is required to consider the policy in the assessment of development applications or to comply with the policy.

It follows that any improvements made to the way the planning systems under the *Sustainable Planning Act* deal with flood, for example through revision of State Planning Policy 1/03 or the Queensland Planning Provisions, will not flow through to these alternative planning systems.

The Commission acknowledges that there may be legitimate reasons for different planning systems to apply in certain circumstances. For example, the goal of the *Urban Land Development Authority Act*, of streamlining the development application process to deliver more affordable housing, is a laudable one. And the Commission also recognises that, although neither South Bank Corporation nor the Coordinator-General is required to address flood, even generally, the relevant planning systems do not preclude consideration of flooding. All planning agencies established under satellite legislation do in fact consider issues associated with flooding, but to varying extents.

To illustrate, the chief executive officer of the Urban Land Development Authority indicated that the authority’s typical practice, although not mandated by legislation, is to:

- consider the susceptibility to flood of the land being investigated as an urban development area as part of a review of site characteristics
- undertake ‘assessment of flood impacts’ and consider the need for additional flood information for an urban development area when preparing a development scheme
- include in development schemes for urban development areas where flooding is identified as a risk, criteria requiring that development take place in a way that ensures people and property are safe from potential flooding hazards
- require development applications to identify whether the site is flood affected and to demonstrate that the proposed development does not adversely affect flooding conditions on other land. To this end, the Urban Land Development Authority has prepared Draft ULDA Guideline No. 15: Protection from Flood and Storm Tide Inundation which refers to State Planning Policy 1/03 and sets out the authority’s requirements to ensure development is adequately protected from flood.

By way of comparison, South Bank Corporation:

- in its development plan, only deals with the potential impact of flooding on infrastructure and property in relation to the Melbourne Street Precinct
- consults the Brisbane City Council when developing, or making amendments to, the approved plan of development and in many (but not all) instances adopts the council’s suggestions
- as a matter of practice, often (but not always) adopts the Brisbane City Council’s suggested development conditions, although it is not required to do so
- as a matter of practice, for developments in close proximity to the Brisbane River, imposes conditions requiring minimum floor levels for habitable rooms
- does not otherwise consider the ‘mitigation of adverse flood impacts’ in determining land use, as it is not required to do so when assessing development applications under the *South Bank Corporation Act*.46
The Coordinator-General’s process for preparing a development scheme for a state development area may identify flood impacts:

- during the planning assessment undertaken to determine the general location of a state development area
- during land use studies undertaken for the purpose of identifying land use precincts within a state development area
- if they are raised in submissions received from the public and from government in response to the publication of the draft development scheme for a state development area.

Even though it is apparent that the planning agencies under the satellite legislation do consider the issue of flood, the Commission considers that the planning and development process should be open and explicit.

**Recommendation**

6.1 The Queensland Government should consider amending the *Urban Land Development Authority Act 2007*, the *South Bank Corporation Act 1989*, the *State Development and Public Works Organisation Act 1971* insofar as it governs state development areas, and other legislation which establishes alternative planning systems that operate independently of the *Sustainable Planning Act 2009*, to require that:

- any planning scheme, interim or otherwise, appropriately reflects any state planning policy with respect to flood
- flood risk be considered in the assessment of any development application.

### 6.4.2 Significant projects under the *State Development and Public Works Organisation Act 1971*

The Coordinator-General’s process for declaring a significant project and assessing a significant project is set out in Part 4 of the *State Development and Public Works Organisation Act*. Generally speaking as part of that process the following occurs:

- An applicant makes an application to the Coordinator-General for the declaration of a project as a significant project. The application includes an initial advice statement which should be prepared in accordance with guidelines set by the Coordinator-General.
- The Coordinator-General considers the application and, if it is approved, declares the project to be a significant project.
- At the time of declaring a significant project, the Coordinator-General decides whether an environmental impact statement is required for the project.
- If an environmental impact statement is required, the Coordinator-General prepares terms of reference, using a generic draft document, which set out the requirements which the applicant must address in preparing the environmental impact statement.
- Once an environmental impact statement has been prepared to the satisfaction of the Coordinator-General, it is released for public and government agency comment.

The Coordinator-General then evaluates the environment impact statement and takes into account all relevant materials, including submissions received during the consultation process, and uses this information to complete its report for the significant project. Although the assessment manager who ultimately decides whether a development approval is granted for a significant project is able to refuse the application or impose additional conditions on the development approval, the Coordinator-General’s report to some extent determines development rights and obligations. For instance, the Coordinator-General’s report may:

- impose conditions for undertaking the project under the *State Development and Public Works Organisation Act*
• state conditions that must attach to development approvals under other legislation, including the Sustainable Planning Act
• make recommendations for approvals under other legislation, including the Sustainable Planning Act
• state that a development approval under the Sustainable Planning Act must be for part of the development only
• state that a development approval under the Sustainable Planning Act must be for a preliminary approval only.57

The Coordinator-General may have regard to flood risk at various stages during the process outlined above. The Coordinator-General has agreed that his office could improve its assessment of flooding issues for significant projects at the time of seeking an initial advice statement from the applicant.58

The Coordinator-General’s guideline for the preparation of an initial advice statement does not explicitly require an applicant to address flood risk.59 As a result, an applicant’s initial advice statement may, conceivably, omit reference to relevant flooding considerations.60 The Coordinator-General has accepted that amending the pro forma guideline to make direct reference to flooding is a sensible suggestion.61

The Coordinator-General’s office also provides applicants with draft terms of reference for an environmental impact statement. That document, in its generic form, requires an environmental impact statement to:

• describe the vulnerability of the project area to natural hazards (which includes flood)62
• assess the possible impacts of the project on ‘water resource environmental values’, such as impacts on downstream environments63 and propose mitigation strategies.64

The document directs an applicant to complete, where applicable ‘due to the [project’s] location’, a comprehensive flood study.65

The Coordinator-General gave evidence that although his office has some internal expertise available to determine whether a project location might be subject to flooding, he relies on advice from agencies (such as the Department of Environment and Resource Management (DERM) and councils in the area concerned) and from affected landholders.66

The Commission considers that requiring an applicant to provide information about a project’s flood risk at the time of submitting an initial advice statement would place the Coordinator-General in a better position to determine, at the time of preparing the terms of reference, whether a project should be supported by a comprehensive flood study.

**Recommendation**

6.2 The Coordinator-General should amend the guideline for preparing an ‘initial advice statement’ for a significant project under the *State Development and Public Works Organisation Act 1971* so that it specifically requires an applicant to consider and provide information about the project’s flood risk.

**(Endnotes)**

3 Section 40, *Urban Land Development Authority Act 2007*.
4 See section 5.4 Amending planning schemes.
5 The Urban Land Development Authority must consult with the relevant council before preparing a scheme. It must also make reasonable attempts to consult with other authorities which might likely be affected. After preparing a draft scheme, the Urban Land Development Authority must publish the scheme on its website, in a gazette notice and in a local newspaper inviting anyone to make submissions, which the authority must then consider.
Section 23(5), Urban Land Development Authority Act 2007.

Section 57, Urban Land Development Authority Act 2007.

Transcript, Malcolm Snow, 26 September 2011, Brisbane [p3161: line 48].


Section 36 and Part 7, South Bank Corporation Act 1989.


Section 60, South Bank Corporation Act 1989.


Sections 77(3) and 82(1), State Development and Public Works Organisation Act 1971.


Exhibit 921, Statement of Keith Davies, 2 September 2011, Annexure 1A [p3: para 7-8]; The Coordinator-General, Development Scheme for the Queensland Children's Hospital State Development Area, June 2008 [p6].


See, for example, The Coordinator-General, Development Scheme for the Abbot Point State Development Area, June 2008 [p12-21: section 9]; The Coordinator-General, Development Scheme for the Queensland Children's Hospital State Development Area, June 2008 [p9-16: section 9].

Exhibit 921, Statement of Keith Davies, 2 September 2011, Annexure 1A [p2: para 3-4].

Exhibit 921, Statement of Keith Davies, 2 September 2011, Annexure 1B-1 [p1].


Under the State Development and Public Works Organisation Act 1971 and the relevant, corresponding provisions of the Sustainable Planning Act 2009, the person who proposes a significant project is called 'the proponent'. For simplicity's sake, the word 'applicant' is used in this part.


Section 37(1)(c), the State Development and Public Works Organisation Act 1971.


Exhibit 921, Statement of Keith Davies, 2 September 2011, Annexure 3 [p1: para 3; p2: para 7, 8].


Section 23(5), Urban Land Development Authority Act 2007. It is noted, however, that the Assistant Director-General of the Strategic Policy Division of the Department of Community Safety (the lead agency for ensuring the application of State Planning Policy 1/03) gave evidence that the Urban Land Development Authority had not sought the department's advice in relation to the policy. See: Transcript, Gary Mahon, 19 September 2011, Brisbane [p2783: line 28].

Although the Urban Land Development Authority will obviously consider State Planning Policy 1/03 in the assessment of a development application, to the extent to which the policy is reflected in the planning scheme against which the application is assessed, by reason of section 57, Urban Land Development Authority Act 2007.

This was accepted by the Queensland Government Planner. See Transcript, Gary White, 7 November 2011, Brisbane [p4634: line 5].

Transcript, Paul Eagles, 21 September 2011, Brisbane [p2936: lines 1-14, 30-40; p2937: lines 3-32].
38 Exhibit 579, Statement of Paul Eagles, 9 September 2011 [p2: para 7]; Transcript, Paul Eagles, 21 September 2011, Brisbane [p2936: line 1-14].

39 Exhibit 579, Statement of Paul Eagles, 9 September 2011 [p4: para 11]; Transcript, Paul Eagles, 21 September 2011, Brisbane [p2937: line 3-32].

40 Exhibit 579, Statement of Paul Eagles, 9 September 2011 [p9: para 28].


45 Transcript, Malcolm Snow, 26 September 2011, Brisbane [p3166: lines 18-30].

46 Exhibit 623, Statement of Malcolm Snow, 16 September 2011 [p5: para 31].

47 Exhibit 921, Statement of Keith Davies, 2 September 2011, Annexure 1A [p1: para 2(b), (c)].

48 Exhibit 921, Statement of Keith Davies, 2 September 2011, Annexure 1A [p2: para 2(d); p3: para 6].

49 Exhibit 921, Statement of Keith Davies, 2 September 2011, Annexure 1A [p2: para 3].


51 Exhibit 921, Statement of Keith Davies, 2 September 2011, Annexure 1B [p1: para 3(a)].

52 Exhibit 921, Statement of Keith Davies, 2 September 2011, Annexure 1B [p2: para 3(b)].

53 Exhibit 921, Statement of Keith Davies, 2 September 2011, Annexure 1B [p2: para 3(b)].

54 Exhibit 921, Statement of Keith Davies, 2 September 2011, Annexure 1B [p2: para 3(c)].

55 Exhibit 921, Statement of Keith Davies, 2 September 2011, Annexure 1B [p3: para 3(d)].

56 Exhibit 921, Statement of Keith Davies, 2 September 2011, Annexure 1B [p3: para 3(e)].


58 Transcript, Keith Davies, 7 November 2011, Brisbane [p4674: line 36].

59 Transcript, Keith Davies, 7 November 2011, Brisbane [p4672: line 40].

60 Transcript, Keith Davies, 7 November 2011, Brisbane [p4672: lines 40-57].

61 Transcript, Keith Davies, 7 November 2011, Brisbane [p4673: line 24].

62 Exhibit 921, Statement of Keith Davies, 2 September 2011, Annexure 1B-2 (section 5.1) [p19-20].

63 Exhibit 921, Statement of Keith Davies, 2 September 2011, Annexure 1B-2 (section 5.4.2) [p39].

64 Exhibit 921, Statement of Keith Davies, 2 September 2011, Annexure 1B-2 (section 5.4.2) [p38-39].

65 Exhibit 921, Statement of Keith Davies, 2 September 2011, Annexure 1B-2 (section 5.1.1) [p19].

66 Transcript, Keith Davies, 7 November 2011, Brisbane [p4673: lines 28-34, 46-58].
7 Development and flood considerations

In this chapter, the Commission deals with the flood considerations relevant to various types of development including: residential uses, community infrastructure, commercial development, industrial development (considering hazardous materials in particular), river architecture, filling in the floodplain and levees. One flood consideration, the problem of isolation or hindered evacuation, which is relevant to many types of development, is given particular attention.

In the course of the chapter, the Commission refers to evidence of particular sites flooding during the 2010/2011 floods. The fact that a particular site or development did flood during the 2010/2011 floods should not be taken to indicate that there was a deficiency in the development assessment process. The results of the Commission’s scrutiny of the development assessment process are contained in chapter 8 Development assessment in practice.

7.1 Residential uses

The Commission has heard a great deal of evidence from individuals whose homes were inundated by floodwaters during the 2010/2011 floods. Experiences varied widely: floodwaters lapped at floorboards, or left homes completely submerged. For some, the waters rose slowly; for others, like the people of Grantham, the torrent swept away homes with little or no warning, and lives were lost.

What follows is a brief discussion of how the planning system regulates future residential development and the limitations of land planning in protecting existing residential uses.

7.1.1 Existing residential uses

Many existing uses have been established historically without regard to flood or by reference to what was accepted wisdom at an earlier point in time. For example, Brisbane City Council estimates that almost 90 per cent of the residential properties in Brisbane that were affected by the 2010/2011 floods were in areas predominantly developed prior to 1978, the year in which the council adopted a defined flood level as a planning tool.¹

Planning systems do not operate retrospectively. Improvements in land planning regulation are only realised when development applications are assessed against the improved regulation. Where residential uses have been established historically, there is little the planning system can do to mitigate their risk of flooding.

Councils can, however, take steps to limit further residential development occurring in areas that flood. Generally, this involves ‘down-zoning’ such areas so that the planning scheme provisions discourage future approvals for residential development. For example, Ipswich City Council, in response to the January 2011 floods, considered which parts of its region should be rezoned, having been affected by flooding in January 2011.² Ipswich City Council’s temporary local planning instrument also contains ‘special opportunity areas’, in which the council is encouraging...
the transition of existing residential precincts to 'low impact, non-residential uses'. This is not a zone change, but rather involves reducing the level of assessment for certain non-residential uses, making it easier to obtain a development approval. For a more detailed discussion of temporary local planning instruments see section 5.2.

However, land planning measures, such as those used by Ipswich City Council, can present some difficulties. Councils may be concerned that changing their planning schemes in response to flooding – by ‘rezoning’ or ‘down-zoning’ certain areas – will result in claims for liability under the Sustainable Planning Act 2009. (For a detailed discussion, see section 5.5 Compensation.) In addition, existing residential communities in flood-affected areas may, understandably, be resistant to the introduction of non-residential land uses, with the prospect of losing the amenity of their neighbourhoods.

There will be circumstances which warrant more concerted measures: when homes are frequently damaged by flooding, a government (local or state) may offer to buy the properties from their owners. This is known as a property buy-back program or a voluntary purchase scheme. Buying back residential property does not stop flooding: instead, it puts an end to the land being used for residential purposes. With similar intent, the Lockyer Valley Regional Council recently undertook a large scale land swap for the Grantham area, enabling certain eligible land owners to relocate their homes on land above the level of flooding experienced in the January 2011 floods. A description of both these programs is contained in chapter 11 Buy-backs and land swaps.

Existing residential development located in areas that flood will, inevitably, remain vulnerable to flood damage. This raises the question of what can be done to minimise the impact of flooding on existing residential uses. Some of the options examined by the Commission include:

- installing backflow prevention devices to prevent stormwater rising out of drains and flooding residential properties, see section 10.2 Stormwater
- sealing electricity conduits to prevent floodwaters entering residential buildings through basements, see section 10.3 Electrical infrastructure
- providing protection from flooding by way of flood mitigation levees, see section 7.7 Levees.

Another option (which is beyond the Commission’s terms of reference and hence is not further explored in this report) is retrofitting existing houses in areas at risk of flooding to reduce their vulnerability to flood impact. This might include renovating a house to incorporate water resistant building materials or to raise its ground floor level: a costly solution, which is not appropriate for every location or every house type and does not guarantee immunity from all floods. The use of appropriate building materials to guard against some of the damage caused by flooding is examined in more detail in chapter 9 Building controls. Ensuring that homeowners are provided with information about the risk of flood to their property or residence is a first step in enabling them to make decisions about whether the use of resilient building materials is necessary and useful. The communication of information about flooding to purchasers of property is discussed in section 2.9.2 Flood information for dealing with property.

7.1.2 An acceptable level of risk for proposed residential uses

The Standing Committee on Agriculture and Resource Management report, Floodplain Management in Australia: Best Practice Principles and Guidelines, states that residential development should be located in areas of low hazard, or medium hazard where justified by careful planning, design and construction which takes account of the potential flood damage and provides safe evacuation. The ‘hazard’ referred to is the loss of life, injury and economic loss which may be caused by future floods. This standard is given effect, at least in part, in State Planning Policy Guideline 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide, which provides that planning schemes should discourage residential development in areas of high or medium hazard, unless the scheme includes a clear requirement that people and property be protected from the relevant hazard. It contains proposed solutions in support of this aim. In particular, the guideline suggests that houses be located so that habitable floor levels are above the defined flood event level.

These solutions are mirrored in planning schemes across Queensland (and throughout Australia): flood related planning controls typically require that residential buildings be constructed so that their habitable floor levels are located at or above the level of a 1% AEP flood. An additional freeboard of (usually) between 300 millimetres and 500 millimetres may also be required.
But whether the 1% AEP flood constitutes an acceptable level of risk for development, and in particular residential development, is a vexed issue. The consequences of flooding are likely to be at their most disastrous for residents and homeowners. Floodplain Management in Australia recognises this: according to it, the community must play a role in determining what level of flood risk it is prepared to live with.

The history of Bundaberg Regional Council’s 2004 planning scheme is instructive. Prior to 2004, the scheme stipulated that the floor level of residential premises be at least as high as the level of the 1942 flood in Bundaberg, which was lower than the level of a 2% AEP flood. The 1942 flood level was widely accepted by the community. When, in 2000, the council sought to introduce a new planning scheme adopting a 2% AEP flood level, the public’s reaction was decidedly negative. The council’s director of infrastructure and planning services reported that there were demonstrations and a ‘fiery’ public meeting in response to the 2% AEP flood map. The council has since introduced the level of the 2% AEP flood into its planning scheme to regulate development proposals affected by Burnett River flooding. State Planning Policy 1/03 generally proposes that a 1% AEP flood level be adopted, although it accepts that the local circumstances may warrant the use of a different level. A key feature of the Bundaberg Regional Council’s justification of choosing the lower, 2% AEP level is the community’s willingness to accept the concomitant higher risk of flooding.

The current review of State Planning Policy 1/03 is considering this particular issue in more detail. The Inland Flood Study – a joint project of the Queensland Government and the Local Government Association of Queensland – recommended that, as part of the review of State Planning Policy 1/03, criteria be developed to determine the circumstances in which a council should be able to adopt a defined flood event of a greater or lesser magnitude than a 1% AEP flood to regulate residential development.

The Commission endorses consideration being given to this issue. To determine what amounts to an acceptable level of risk for residential development, it is necessary to understand the consequences associated with floods across the full range of probabilities. Only once this understanding has been gained is it appropriate to canvas what level of risk from flooding the community is prepared to tolerate. To this end, the public notification period required for all major planning scheme amendments is particularly important. (For a discussion of the planning scheme amendment process see 4.1.4 State interest review of planning schemes. In chapter 2 Floodplain management, the Commission has outlined, in detail, the way in which government can conduct flood studies to measure the full range of floods, in terms of likelihood and behaviour, and how such studies can be used in floodplain management.)

7.2 Community infrastructure

Community infrastructure is development that provides services vital to the wellbeing of the community. Under the Sustainable Planning Act 2009, a Minister or a council may designate land for community infrastructure. The kinds of development which are identified as community infrastructure for the purposes of the Sustainable Planning Act are contained in Schedule 2 of the Sustainable Planning Regulation 2009.

Much of the development which falls under the community infrastructure designation, whether so designated by the Minister or a council, is exempt development which does not require approval under a planning scheme and is not required to meet any scheme requirements. However, development under a community infrastructure designation must comply with the requirements of the designation, which may specify, for instance, the height and location of the works on land.

Where a Minister is responsible for making the designation, he or she must consider relevant state planning policies, which include State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide, before designating the land.

State Planning Policy 1/03 also applies where a council:

- designates land for community infrastructure under the Sustainable Planning Act
- assesses a development application for community infrastructure under the Sustainable Planning Act or
- allocates land for community infrastructure in a planning scheme.

State Planning Policy 1/03 lists, in Annex 1, the types of community infrastructure development to which it applies. They are:

- police and emergency services facilities, including emergency shelters
• hospitals and associated infrastructure
• facilities for the storage of valuable records or items of cultural or historic significance
• State-controlled roads
• railway lines, stations and associated facilities
• aeronautical facilities
• communication network facilities
• works of an electricity entity under the Electrical Safety Act 2002
• water cycle management infrastructure.31

There is both overlap and divergence between the types of development identified as community infrastructure in Schedule 2 of the Sustainable Planning Regulation and those specified in Annex 1 of State Planning Policy 1/03. Some of the uses which are identified as community infrastructure under the Sustainable Planning Regulation, but which are absent from the list of community infrastructure uses in the State Planning Policy 1/03, are:

• child care facilities
• aged-care facilities
• cemeteries and crematoriums
• correctional facilities
• educational facilities
• parks and recreational facilities
• operating works under the Electricity Act 1994
• various types of transport infrastructure and waste management facilities.

For those types of development which are identified as community infrastructure by the Sustainable Planning Regulation but which are not included in the State Planning Policy 1/03 list, there is no requirement that regard be had to the policy when a Minister or council considers the suitability of the development for the proposed location.

State Planning Policy 1/03 aims to ensure that, where practicable, community infrastructure to which it applies is located and designed so as to function effectively during and immediately after floods of a ‘specified level of risk’.32 The policy applies to the listed types of development anywhere in Queensland (not only within natural hazard management areas for flood).33 If it is proposed to locate community infrastructure within a natural hazard management area for flood, its compatibility with the flood hazard of the land is assessed against Outcomes 1 and 2 of State Planning Policy 1/03.34 These outcomes are discussed in chapter 4.1 State Planning Policy 1/03.

State Planning Policy 1/03 acknowledges that it would be unrealistic to locate and design community infrastructure so as to withstand any conceivable flood.35 Accordingly, the policy, when read together with the State Planning Policy 1/03 Guideline, recommends appropriate levels of risk for specific types of infrastructure.36 For example, the guideline suggests that emergency shelters be located above the level of a 0.5% annual exceedance probability flood, while hospitals and associated facilities should be located above the level of a 0.2% AEP flood.37 The policy also says that the steps needed by way of design and location to enable the infrastructure to withstand flood should be weighed against the need for the infrastructure to serve the community effectively in normal circumstances, when there is no flooding.38

The types of community infrastructure to which State Planning Policy 1/03 applies are those which the community needs to continue to function, notwithstanding flood. An example of such infrastructure is the Wesley Hospital, located in Auchenflower, Brisbane, and constructed in 1976. In January 2011, it was surrounded by floodwaters.39 All vehicle access, including access by ambulances, to and from the hospital was cut during an almost two day period from early Wednesday, 12 January, to late Thursday, 13 January.40 The hospital became fully operational again from Monday 17 January.41 (The difficulties the hospital experienced are discussed in greater detail in section 7.8 Anthills: Properties isolated by flooding of low-lying access routes.)

Not all of the development identified as community infrastructure under Schedule 2 of the Sustainable Planning Regulation is of the kind which the community needs to continue to function during and immediately after flood. An obvious example is parks and recreational facilities. However, some of the identified forms of infrastructure provide services important to community well-being.
The special characteristics of child care centres make the use a suitable one to be assessed against criteria requiring centres to be located and designed, wherever practicable, so as to function effectively during and immediately after floods of a specified level of risk. The closure of a child care centre is likely to cause considerable inconvenience and, possibly, expense (loss of wages or the cost of substitute casual child care) to parents using its service. In any assessment it is relevant that many of the occupants of child care centres are likely to be too young to evacuate on foot, or even to be evacuated in a motor vehicle unless fitted with appropriate car seats, increasing the required evacuation time. An ideal evacuation would likely involve children being collected by their parents or carers, but that is dependent on there being flood free evacuation routes.

The Queensland Government Planner’s opinion, given in response to the description of a case where a child care centre was served by a flood free evacuation route and was required to have a flood evacuation plan in place as a term of its development approval, was that it was, nonetheless, preferable that it be located outside a flood ‘risk area’. His opinion reinforces the Commission’s view that child care centres should be assessed against the standard State Planning Policy 1/03 as it applies to community infrastructure, given the ‘specified level[s] of risk’ for community infrastructure prescribed by the State Planning Policy 1/03 Guideline tends to be set very low, generally between the 0.2% AEP and 0.5% AEP flood levels.

During hearings held at Ipswich, a witness gave evidence about the inundation of a child care centre in Goodna. The development of the centre was approved by the Ipswich City Council in August 2006, on a site which was inundated during the 1974 floods and is located within the council’s ‘1 in 100 flood line’, adjacent to an overland flow path and close to the council’s ‘1 in 20 development line’. The centre is able to accommodate approximately 115 children per day, including eight babies (under 15 months in age) and 20 toddlers (aged 15 months to two and a half years); on any given day about 25 staff are employed at the centre. On the morning of 11 January 2011, the centre manager decided to evacuate the centre because of concern about flooding. By 5.00 pm that day, all children had been collected by their parents or carers and the staff had evacuated. By 5.00 am on Wednesday 12 January 2011, the water levels at the centre exceeded six feet. The centre remained closed for 45 days.

Notwithstanding that child care facilities are not within the compass of the State Planning Policy 1/03 definition, the council assessed the development application against criteria under the Ipswich Planning Scheme 2004’s community use code requiring the use (in this case, the child care centre) to be able to function effectively during and immediately after a flood. This standard was plainly not achieved by the centre during the January 2011 flood. This aspect of the development approval is considered in detail in section 8.3.1 Conditions going to acceptability of use.

Arguably, aged-care facilities should also be assessed against criteria requiring them to be located and designed so as to function effectively during and immediately after flood. The Standing Committee on Agriculture and Resource Management report Floodplain Management in Australia: best practice principles and guidelines states that housing for the aged is best sited in flood-free areas because of the additional time likely to be involved in evacuation, and the dangers of slower evacuation.

The Commission heard some evidence about the evacuation of residents of a Yeronga retirement complex (providing aged-care, assisted living and independent living facilities) during the January 2011 flooding. The evacuation, for the most part, ran smoothly, but was described as being very stressful for some of the residents. The flood inundated the basement carpark and reached a level approximately one metre above ground. Only those residents fit enough to climb the fire escape stairs were permitted to return to the complex two weeks later to collect additional personal items. Residents were not able to return to living in the complex until approximately two months after the inundation of the property. For a fuller discussion of this example, see section 7.8 Anthills: Properties isolated by flooding of low-lying access routes.

A third kind of development which is identified as community infrastructure under Schedule 2 of the Sustainable Planning Regulation, but which is absent from the list of development which constitutes community infrastructure in State Planning Policy 1/03, is operating works under the Electricity Act 1994. Elsewhere in this report, the Commission recommends that the Queensland Government should consider measures to include requirements in the designation of land for community infrastructure under the Sustainable Planning Act to ensure that critical infrastructure for operating works under the Electricity Act is built to remain operational during and after a flood of a particular magnitude, with that magnitude being determined by an appropriate risk assessment. This proposition is discussed in detail in section 10.3.3 Shared network infrastructure.
The Commission’s investigation as to the kinds of development which are included in the definition of community infrastructure under Schedule 2 of the Sustainable Planning Regulation but excluded from State Planning Policy 1/03 is, plainly, not comprehensive. Even this selective review, however, establishes a case for the Queensland Government to give consideration to extending the application of a state planning policy which deals with flood to the types of community infrastructure which are identified in the Sustainable Planning Regulation and which the community needs to continue functioning, notwithstanding flood.

The Commission otherwise endorses the criteria set by State Planning Policy 1/03 for determining the compatibility of proposed community infrastructure with a specific level of flood risk and supports the incorporation of criteria in these terms in model flood planning controls and planning schemes.

**Recommendations**

7.1 The Queensland Government should consider extending the application of a state planning policy dealing with flood to the types of community infrastructure which are identified in the Sustainable Planning Regulation 2009 and which the community needs to continue functioning, notwithstanding flood.

7.2 The Queensland Government should draft assessment criteria to be included in the model flood planning controls that require community infrastructure (including the types of community infrastructure which are identified in the Sustainable Planning Regulation 2009 and which the community needs to continue functioning, notwithstanding flood) to be located and designed to function effectively during and immediately after a flood of a specified level of risk.

7.3 If the Queensland Government does not include such assessment criteria in model flood planning controls, councils should include assessment criteria in their planning schemes that require community infrastructure (including the types of community infrastructure which are identified in the Sustainable Planning Regulation 2009 and which the community needs to continue functioning, notwithstanding flood) to be located and designed to function effectively during and immediately after a flood of a specified level of risk.

**7.3 Commercial uses**

This part considers the location of commercial uses on land liable to flood. Industries that involve the processing or storage of dangerous goods and substances are considered separately; see 7.4 Industrial uses and hazardous materials.

The location of commercial uses, such as shops and offices, in areas susceptible to flood carries the risk of damage to goods, property and equipment. Many businesses across Queensland experienced such damage during, and as a consequence of, the 2010/2011 floods, as well as temporary closures and loss of power.

Nevertheless, commercial uses within the floodplain may be more appropriate than other uses.57 The personal safety of a commercial building’s occupants may still be at risk, but generally to a lesser degree than would be the case for residential or certain community infrastructure uses. Commercial buildings may also be better able to withstand flood damage because they have the advantage, in many cases, of being more structurally robust than houses, and are required to be designed to withstand other hazards such as fire.58

Business owners may become aware of the susceptibility of a location to flood by undertaking a general flood search. The site-specific flood information which some councils make available to all members of the community is discussed in chapter 2 Floodplain management.

Businesses may willingly establish a commercial use in an area which floods because the location offers other commercial benefits. A Gympie real estate agent gave evidence that the company for which she worked as licensee and office manager did just that: it elected to lease a property knowing that the vicinity flooded, because of its cheaper rent.59 The premises were completely flooded by the rising Mary River in January 2011. The real estate agency, in collaboration with the business’ landlord, has refurbished with an eye to future inundation, using flood-resilient or readily removed materials and furniture: a front desk easily moved; floor tiles laid, not glued, in place of carpet; removable ceiling tiles; and corrugated iron, rather than plaster, dividing walls.60
However, although a proprietor may be willing to balance flood risk against other advantage in establishing his or her business, councils need to consider the appropriateness of commercial development in areas liable to flooding.

A development approval granted for a car and dog wash on land approximately 600 metres from the Mary River in Gympie and below the ‘1 in 40 flood level’ provides an example.61

The car and dog wash comprises four manual car cleaning and vacuum bays, one automated drive-through car wash and two manual dog washing bays.62 The buildings are permanent steel and concrete structures and the site infrastructure involved a complex plumbing network and extensive plant and equipment.63 The business was inundated during the 2010/2011 floods, causing it to become inoperable for a period of eight weeks and to incur substantial financial losses through damage to the buildings and equipment and loss of trade.64

The council’s considerations, when assessing the owners’ development application for a material change of use, were dictated by the assessment criteria of the Cooloola Shire Council planning scheme. Of the codes applicable, only one, the Gympie Planning Area Code, contained a provision requiring flooding to be taken into account.65 Development within the commercial zone of the Gympie planning area is assessed against a requirement to maintain the safety of people from floods.66 There is no requirement that seeks to protect property used for commercial purposes from the impacts of floods.67 Nor does the scheme contain a provision which requires the potential for flood damage to commercial property to be mitigated. The council also did not consider, because it was not required to by the terms of the planning scheme, the frequency with which the site has been affected by flood, the site’s proximity to the Mary River or the effects of stormwater runoff.68

The Gympie Regional Council’s manager of development and compliance agreed that the Cooloola Shire Council planning scheme’s provisions could be made more detailed in regards to flooding.69

The Council’s director of planning and development gave evidence of an anomaly in the Cooloola Shire Council planning scheme’s code for reconfiguring a lot, relevant to the subdivision of land. (That code did not apply to assessment of the car and dog wash development application, which involved no subdivision.) The reconfiguration of a lot code:

• requires that ‘new lots intended for non-residential use maintains [sic] the safety of people and minimises [sic] the potential damage to property from flood’
• states that this specific outcome can be achieved, for example, if each lot contains a safe refuge.70

Thus, a development could meet the criterion which requires the potential damage to property from flooding to be minimised by providing a ‘safe refuge’; in other words, without doing anything to ensure the preservation of buildings or equipment.71 The planning director said that the hiatus would be addressed in the preparation of the council’s new planning scheme. He regarded the resilience of non-residential buildings to flood as ‘an important and a laudable outcome’ in development assessment.72

Councils should be required to consider the impact of flood on commercial property when assessing a development application for a commercial use on land at risk of flood. This could be achieved by including in planning schemes assessment criteria (overall outcomes, performance outcomes and acceptable outcomes) that require the impact of flood on property to be minimised. Including assessment criteria of this kind in planning schemes may also carry the incidental benefit of alerting business owners to the risks associated with establishing a commercial use on the floodplain.

Recommendations

7.4 The Queensland Government should draft assessment criteria to be included in the model flood planning controls that require the impact of flood on commercial property to be minimised.

7.5 If the Queensland Government does not include such assessment criteria in the model flood planning controls, councils should include assessment criteria in their planning schemes that require the impact of flood on commercial property to be minimised.
7.4 Industrial uses and hazardous materials

After the January 2011 floods, the Oxley Creek, and other nearby tributary creeks in Brisbane’s south, were slick with contaminants and littered with industrial debris. Much of this pollution was discharged from the many industrial and commercial facilities located within the Oxley Creek catchment.

Brisbane City Council quickly commenced the process of cleaning up. Due to the large amount of hazardous material discharged onto nearby land and spilled into local waterways, the council needed assistance from DERM, which was duly provided.

The scale of the post-flood clean up of the Oxley Creek catchment highlights what can happen when industrial premises flood. This prompted the Commission to examine the way in which the storage and manufacture of hazardous materials are regulated, and in particular whether the risk of flooding is adequately considered.

Hazardous materials

Hazardous materials were defined in the Dangerous Goods Safety Management Act 2001 as materials that can cause harm to people, property and the environment, and that definition was adopted by State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide. (The Dangerous Goods Safety Management Act has been repealed; the Work Health and Safety Act 2011 now applies to the storage of dangerous goods, even if they are not in a workplace or used in the course of work.) In addition, the term ‘hazardous materials’ may have a specific meaning in council planning schemes.

Hazardous materials are often stored, used or manufactured on land associated with industrial uses. Such materials are also associated with rural land uses, such as agriculture, which can involve, for example, the use of fertilisers and petrol products. It is generally more appropriate for industrial or rural land uses to be located on land at risk from flooding, as compared to more sensitive land uses, such as residential or community infrastructure.

However, when floodwaters inundate land on which dangerous chemicals and other hazardous materials are located, those substances can be discharged, causing harm to people, property and the environment. Given this, it is important that regulation of the storage and location of hazardous materials takes into account the risk of flooding on sites at which these products will be stored.

7.4.1 Regulation

In Queensland, the principal state level instruments that regulate the storage and use of dangerous chemicals and hazardous materials are the Work Health and Safety Act 2011, the Environmental Protection Act 1994, and State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide. At a local government level, the storage and use of hazardous materials is addressed in planning scheme provisions.

Work Health and Safety Act 2011

Dangerous goods are defined in the Work Health and Safety Act 2011 as meaning asbestos or anything defined under the Australian Code for the Transport of Dangerous Goods by Road and Rail as dangerous goods or goods to dangerous to be transported. The Act imposes duties of safe storage of substances and design of structures.

Protocols for the storage of hazardous materials are also informed by the Safe Storage and Handling of Dangerous Goods: Guidelines for Industry, which provide practical guidance on meeting the requirements of the (now repealed) legislation previously governing dangerous goods, the Dangerous Goods Safety Management Act 2001 and its associated Regulation. The guidelines describe specific engineering controls for the storage and handling of dangerous goods and recommend that dangerous goods be stored as far as practicable above ‘recorded flood levels’, although no advice is provided as to the meaning of this term. Where this is not practicable, the guidelines suggest dangerous goods be stored in closed containers that are ‘appropriately restrained’ and impervious to the intrusion of floodwaters.

Environmental Protection Act 1994

Environmentally relevant activities

The Environmental Protection Act 1994 regulates ‘environmentally relevant activities’: generally speaking, activities which may cause environmental harm through the release of contaminants.
There are four broad categories of environmentally relevant activities:

- agricultural activities which affect the Great Barrier Reef (regulated by chapter 4A of the Act)
- mining activities (regulated by chapter 5 of the Act)
- petroleum and greenhouse gas activities (regulated by chapter 5A of the Act)
- activities which are not agricultural, mining or petroleum activities, but which will, or may, cause harm as a result of contaminants being released into the environment.

Activities in the last category are ‘chapter 4 activities’ and are listed in Schedule 2 of the Environmental Protection Regulation 2008; this list includes activities such as chemical manufacturing, boilermaking, motor vehicle workshop operation, meat processing and textile manufacturing. The chapter 4 activities listed in Schedule 2 are of particular relevance to this section of the Commission's report: they are commonly associated with industrial land uses in urban areas and tend to involve the storage and manufacture of hazardous materials. The following discussion relates to chapter 4 activities alone. Mining activities are discussed at length in chapter 13 Mining.

Unlike other environmentally relevant activities, such as mining or agriculture, chapter 4 activities are assessable development under the Sustainable Planning Act 2009. A development applicant must make an application for a material change of use in order to: start a new chapter 4 activity; increase the threshold of a chapter 4 activity; re-establish an abandoned chapter 4 activity; or materially increase the intensity or scale of a chapter 4 activity.

All chapter 4 activities are assessed by DERM, except where they have been devolved to local government for assessment and enforcement. Devolved chapter 4 activities include: poultry farming; asphalt manufacturing; motor vehicle workshop operation and printing; and certain other activities, such as chemical storage, which are devolved to councils if they meet specific thresholds prescribed in the regulation.

The ‘standard criteria’

All environmentally relevant activities are assessed against the standard criteria as defined in the Environmental Protection Act 1994. The standard criteria comprise a list of general considerations, such as ‘any applicable environmental protection policy’. They make no express reference to flooding, although in some cases such a reference may be inferred. For example, one of the criteria – ‘any applicable Commonwealth, state or local government plans, standards, agreements or requirements’ – may encompass flood related provisions in council planning schemes. Notwithstanding, the current criteria provide no basis for specific consideration of flood when assessing applications for environmentally relevant activities. They offer little guidance to Queensland Government or council officers about whether, and how, flooding should be taken into account in that assessment process.

The Commission reviewed ten approved applications for environmentally relevant activities in four local government areas. Each approval was granted in respect of land that flooded in 2010/2011 floods. This review disclosed that none of the assessments explicitly considered whether flooding might occur at the site, or what effects flooding would have, should it eventuate.

The risk of flooding, and its potential effects, should be taken into account in the assessment of environmentally relevant activities. The Commission considers that, to achieve this, a specific direction to consider the issue of flooding should form part of the assessment process under the Environmental Protection Act 1994.

**Recommendation**

7.6 The Queensland Government should ensure that the criteria under the Environmental Protection Act 1994 that apply to the assessment of development applications for material change of use for environmentally relevant activities include consideration of the risk of flooding at the site on which the activity is proposed to occur.
7 Development and flood considerations

DERM information sheets and assessment reports templates

Template documents used in the assessment of applications for environmentally relevant activities could be improved so as to promote proper consideration of the issues associated with flooding.

DERM makes available an ‘information sheet’ for use by those applying to conduct an environmentally relevant activity. The information sheet does not suggest the provision of information about flood risk, except for applications that concern activities where discharges to the environment are anticipated. According to an officer of the department, information about flooding is rarely provided with development applications. This, of course, makes it difficult for the risk of flooding to be considered as part of the decision making process. A practical solution to this problem would be for DERM to amend its information sheet to indicate that information regarding flood risk (including confirmation, if it be the case, that there is none) should be provided routinely with development applications concerning environmentally relevant activities.

DERM officers use an assessment report template when assessing applications for environmentally relevant activities. The template contains a development approval assessment checklist, which contains no specific reference to flooding. This checklist could be amended to invite consideration of flooding as part of the assessment process for environmentally relevant activities.

However, checklists will not always ensure that adequate thought is given to the matter of flooding. DERM reviewed a number of completed assessments for environmentally relevant activity assessments. That review revealed that, even with the assessment report template checklist, there were inconsistencies in the approaches taken by department officers. After completing the review exercise, DERM resolved to revise the template report to minimise divergence amongst the approaches taken.

The Commission considers that while a checklist may not ensure reference to flooding issues, a more comprehensive document would, at the very least, encourage their consideration during the assessment of environmentally relevant activities.

Recommendations

7.7 The Department of Environment and Resource Management should amend its information sheet about applications for a material change of use for environmentally relevant activities so that applicants are prompted to include information (if any) about the risk of flooding at the site where the activity is proposed to occur.

7.8 The Department of Environment and Resource Management should amend the template assessment report used to assess applications for a material change of use for environmentally relevant activities so that it prompts departmental officers to give specific consideration, as part of the assessment process, to the risk of flooding at the site where the activity is proposed to occur.

Information sharing between the Queensland Government and councils

When a decision to approve an environmentally relevant activity is made by a Queensland Government officer, the council within whose boundaries the activity is being conducted may not have automatic access to details about the location and nature of the proposed activity. Council officers would benefit from this information: it is relevant to any subsequent decisions about land use at or near sites at which environmentally relevant activities occur.

As noted above, certain chapter 4 activities are also devolved to councils for assessment. There appears to be no obligation for councils approving devolved environmentally relevant activities to provide DERM with the details of such approvals.

An assessment officer in the Brisbane City Council expressed the view that it would be quite simple for such an information sharing arrangement to be established between a council and DERM. It would also seem prudent for any agency which assesses applications for environmentally relevant activities to keep a register of such activities and include in that register the details of environmentally relevant activities assessed by other agencies.
Recommendations

7.9  The Department of Environment and Resource Management should ensure that, when applications for a material change of use for an environmentally relevant activity are approved by the department, the details of those activities, including their nature and location, are provided to the council within whose area the activity will be conducted.

7.10  Councils should ensure that, when applications for environmentally relevant activities are approved by a council, the details of those activities, including their nature and location, are provided to the Department of Environment and Resource Management.

State Planning Policy 1/03

State Planning Policy 1/03 applies to certain development which involves the manufacture or storage of hazardous materials in bulk.

Hazardous materials ‘in bulk’, as defined in the State Planning Policy 1/03, are hazardous materials in quantities that:

- are equal to or exceed the threshold amounts which determine a ‘large dangerous goods location’ under the (now repealed) Dangerous Goods Safety Management Regulation 2008, or
- require a licence, granted under the Explosives Regulation 1955, for the storage of explosives.

The application of State Planning Policy 1/03 to individual development proposals is only enlivened where the development is proposed on land which is identified as a natural hazard management area for flood, and where the council planning scheme does not appropriately reflect the policy. State Planning Policy 1/03 requires that development which involves the manufacture or storage of hazardous materials in bulk should be compatible with the nature of the natural hazard management area for flood. Compatibility exists where public safety and the environment are not adversely affected by the detrimental impacts of floodwater on hazardous materials manufactured or stored in bulk.

The State Planning Policy 1/03 Guideline offers two solutions for achieving this outcome:

- the manufacture or storage in bulk of hazardous materials takes place above the defined flood event flood level
- structures used for the manufacture or storage of hazardous materials in bulk are designed to prevent the intrusion of floodwaters.

The first solution contemplates the possibility that a site which is susceptible to flooding during a defined flood event might contain locations, such as the highest part of the site or the second storey of a building, which remain flood free.

The solutions proposed in the State Planning Policy 1/03 Guideline are alternatives; applicants can choose to locate hazardous materials above the defined flood event flood level or store or manufacture them in a way that prevents the intrusion of floodwaters. Framing the solutions as alternatives allows a more flexible approach to be adopted for industrial development involving the storage or manufacture of hazardous materials on land at risk from flooding.

This flexibility is important. Placing stringent restrictions on the location of industrial uses that involve hazardous materials – for example, to areas outside the 1% AEP flood extent only – may have consequences, particularly economic ones, which are not ascertainable in the absence of a proper risk based analysis. For example, parts of Brisbane that are susceptible to flooding also house large industrial precincts. If industrial development were to be restricted in these areas, the economic disadvantages might outweigh the benefits gained from reducing the risk of floodwaters discharging hazardous materials associated with such development.
The Commission agrees generally with the solutions proposed by State Planning Policy 1/03 Guideline for
determining whether the storage or manufacture of hazardous materials in bulk is compatible with the natural
hazard management area for flood. However, determination of the level above which hazardous materials must
be located is best determined through a risk based assessment, not simply by reference to the defined flood event
nominated by a council in its planning scheme.

7.4.2 Planning schemes

Planning scheme provisions

There is variation among planning schemes as to the way in which the manufacture and storage of hazardous
materials are regulated. Bundaberg City Council (under the Bundaberg and Burnett planning schemes only),
Gympie Regional Council (under the Cooloola and Tiaro planning schemes only) and the Sunshine Coast
Regional Council (under the Maroochy and Noosa planning schemes only) include both of the solutions
proposed in the current Guideline to State Planning Policy 1/03. All three planning schemes managed by the
Moreton Bay Regional Council, and the Kilcoy planning scheme (administered by Somerset Regional Council)
include only the first proposed solution: that materials be stored above the defined flood level.

Brisbane City Council’s planning scheme does not directly regulate development involving hazardous materials.
Instead, regulation is achieved by the operation of the Subdivision and Development Guidelines, which are arrived
at after consideration of several different codes.

Ipswich City Council’s planning scheme requires, where industrial sites are located below the 1 in 20 development
line, the 1 in 100 flood line or within the Urban Stormwater Flow Path areas, that any materials stored on site:

- are readily able to be moved in a flood event
- are not hazardous or noxious or comprise materials that may cause a deleterious effect on the
  environment if discharged in a flood event, and
- where capable of creating a safety hazard by being shifted by floodwaters, are contained in order to
  minimise movement in times of flood.

The elements of this provision are not drafted as alternatives; the effect is that materials which are hazardous,
noxious or that may cause a deleterious effect on the environment, should not be located on land below the 1 in
100 flood line or in areas subject to overland flow.

Other planning schemes provide no specific guidance for the assessment of land uses involving the use or storage
of hazardous materials on the floodplain. For instance, the Esk Shire planning scheme (now administered by the
Somerset Regional Council) contains no standards or controls relating to the storage of hazardous materials on land
at risk from flooding. The Central Highlands Regional Council relies on the regulatory framework provided by
the previously applicable Dangerous Goods Safety Management Act, and the Environmental Protection Act (discussed
above), to make decisions about the storage and use of hazardous materials. Beyond these regulatory instruments,
the planning scheme appears to contain no additional restrictions.

It is important that all Queensland planning schemes address the storage and manufacture of hazardous materials
on land that is susceptible to flooding. The Queensland Government Planner agreed that the Queensland Planning
Provisions should include an outcome, similar to that prescribed in the Guidelines to State Planning Policy 1/03
(discussed above). This could be achieved by including assessment criteria in the model flood planning controls,
which are intended to apply to land identified by a council as being susceptible to flooding. The model flood
planning controls are discussed in detail in section 5.1 Planning schemes.
7 Development and flood considerations

### Recommendations

#### 7.11
The Queensland Government should draft assessment criteria to be included in the model flood planning controls that require that:

- a. the manufacture or storage of bulk hazardous materials (as defined in State Planning Policy 1/03) take place above a certain flood level, determined following an appropriate risk based assessment, or
- b. structures on land susceptible to flooding and used for the manufacture or storage of bulk hazardous materials (as defined in State Planning Policy 1/03) be designed to prevent the intrusion of floodwaters.

#### 7.12
If the Queensland Government does not include such assessment criteria in the model flood planning controls, councils should include assessment criteria in their planning schemes that require that:

- a. the manufacture or storage of bulk hazardous materials (as defined in State Planning Policy 1/03) take place above a certain flood level, determined following an appropriate risk based assessment, or
- b. structures on land susceptible to flooding and used for the manufacture or storage of bulk hazardous materials (as defined in State Planning Policy 1/03) be designed to prevent the intrusion of floodwaters.

### Conditions on development approval

Where the manufacture or storage of hazardous materials is addressed in a planning scheme, some councils impose additional conditions on development approvals, while others do not. Where conditions are imposed, the approach differs among councils. For instance, the Gympie Regional Council (under the Cooloola Planning Scheme only) requires contingency plans for hazardous material evacuation as well as flood management plans. Fraser Coast Regional Council, on occasion, imposes conditions that preclude the manufacture or storage of bulk hazardous materials, at or below the adopted flood level, unless approved in writing by a council assessment manager; it is not clear what would be taken into account by the assessment manager in deciding whether to grant approval.

Problems can arise where the condition imposed, or the outcome prescribed by the planning scheme, relies on human intervention to prevent hazardous materials escaping into floodwaters. For example, should access to a site be cut, hazardous materials could not be removed and the solution proposed would fail. While this might be rendered less likely by the prospect of a long flood warning time, the chance that individuals will be unable to reach a property to remove hazardous materials can never be entirely eliminated. Accordingly, development approval conditions which rely on evacuation plans or some other form of human intervention should not be the sole restriction placed on the storage or manufacture of hazardous materials on land at risk from flooding.

### Recommendation

#### 7.13
When approving applications for development which involve the manufacture or storage of hazardous materials, councils should not restrict the conditions imposed to ones which are solely reliant on human intervention to remove the materials in the event of flood.
7.5 River architecture

7.5.1 Brisbane’s river architecture

The Commission uses the term ‘river architecture’ in this report as referring to structures built for public or private use in rivers and waterways, but it has focussed its attention on those structures built along the Brisbane River, such as the New Farm Riverwalk (a floating walkway), the CityCat terminals (docks for the larger catamaran ferries), the CityFerry terminals (docks for the smaller ferries) and private pontoons.

In the January 2011 floods, Brisbane’s river architecture was severely damaged, and in some cases became a danger to river navigation as detached pieces became waterborne debris. This debris posed a danger to other pieces of river architecture and to the structural soundness of any bridge it collided with.

Brisbane’s image as the ‘River City’ is built, in part, upon its impressive river architecture. The amenity provided by these facilities must be balanced against the potential for them becoming a hazard in any future flood: a risk which must be considered in the design of new structures.

7.5.2 Regulation of river architecture as ‘prescribed tidal work’

River architecture is classified as ‘prescribed tidal work’ under the Coastal Protection and Management Act 1995 and requires a development approval for its construction. Applications for river architecture were previously approved by the Queensland Government. On 18 November 2005, the ‘code for development applications for prescribed tidal work’ was introduced, and councils became responsible for approving those development applications.

The code has a number of purposes, one of which is to ensure prescribed tidal work is structurally sound. It also stipulates ‘specific outcomes’ that need to be met by the development and ‘probable solutions’ that identify ways in which the ‘specific outcomes’ may be achieved.

One specific outcome requires prescribed tidal work to be designed and constructed to ensure it is structurally sound, having regard to relevant engineering standards, the location of the work, the purpose of the work and the impact of flooding, tide and hydrodynamic changes.

The code suggests that in order to satisfy this ‘specific outcome’, one ‘probable solution’ is for the development to be consistent with all relevant Australian standards and with relevant planning scheme standards, if they are more stringent than the relevant Australian standard.

7.5.3 New Farm Riverwalk

The New Farm Riverwalk was a floating walkway that ran parallel to the bank of the Brisbane River from New Farm to the Story Bridge. In the January 2011 flood, the walkway suffered significant damage from the impact of debris, and the downstream section of the walkway was washed away. As the flood levels rose, other support structures that comprised the Riverwalk also failed.

Authorities became concerned a 300 metre section of the Riverwalk that had detached and floated down the river posed a threat to the structural integrity of downstream bridges if a collision were to occur. On 13 January 2011, tug boats guided the detached section of the walkway away from bridges and other infrastructure, preventing any collision occurring.

The force of the flooded river on the pontoon at the mid-section of the structure led to the walkway’s failure. Brisbane City Council maintenance records do not contain any evidence to suggest that any earlier incidents, such as the impact from large debris or any deterioration of the building materials before the January 2011 flood, contributed to the Riverwalk’s failure.
Design standards

The Riverwalk was built in 2003 for Brisbane City Council by contractors, following a tender process that began in early 2001. The Riverwalk was designed to survive at least a 1% AEP flood, which meant that although damage might be sustained in such a flood, the walkway should remain intact.

The identification of appropriate design standards for flood resilience at the time of the Riverwalk’s construction was a matter for the design engineer applying relevant Australian standards and professional judgment. There was no requirement for the flood resilience standards and design for the Riverwalk to be assessed by any third party, and there was no evidence that any review of this kind had taken place.

Following the January 2011 floods, a hydraulic study was undertaken to determine the velocity of the water and flood levels at the Riverwalk structure. This study found that the 1% AEP flood level for the Riverwalk was 3.52 metres, whereas the actual flood level in January 2011 reached 4.0 metres.

A study carried out to determine the cause of the Riverwalk’s failure indicated that its design standard may have been intended for use in river architecture built in a typical marina situation along a coast. In a setting such as the Brisbane River at New Farm, flood levels can be significantly greater than the tidal range. This study recommended that an analysis of the 0.05% AEP flood be undertaken for the design of any future Riverwalk.

Reconstruction of the Riverwalk

Brisbane City Council has indicated that it intends to rebuild the Riverwalk, at an estimated expense of around $70 million. Plainly, such a structure needs to be designed and built to a higher standard than the previous one, with measures put in place to ensure that if it does fail in any future flood, all parts that detach can be quickly and effectively secured.

Given the unique character of such a project, the risk involved in any failure, and the value of the work required, it would be prudent to ensure that any design is reviewed by an independent expert.
7.5.5 CityCat and CityFerry terminals

The terminals used by Brisbane’s ferries, the CityCats and the CityFerries, suffered significant damage in the January 2011 flood. Of the 24 CityCat and CityFerry terminals across Brisbane:

- ten terminals were categorised as useable with minor works (they could be reinstated for use within a short time frame by cleaning and replacing electrical components)
- seven terminals were categorised as useable with moderate works (they required repairs to pile brackets, removal of broken balustrades, repairs to roof structures and removal of debris)
- the remaining seven terminals were categorised as requiring major repairs (they suffered extensive damage to, or destruction of, piles, pontoons, gangways and/or waiting areas).157

The terminals in the minor and moderate damage categories were reinstated relatively quickly after the flood event (except one, River Plaza, which was subsequently reclassified as requiring major repairs). Brisbane City Council decided to reinstate the terminals that suffered major damage (including River Plaza) on a temporary basis, pending their replacement with new terminals constructed to different flood design standards. The temporary replacement of the West End terminal was not carried out, as there were pre-existing plans to replace the entire terminal.158

In 1995 and 1996, the CityFerry terminals159 were upgraded to accept CityCat vessels. These terminals were originally designed and built between the early 1920s and 1996. Brisbane City Council was not able to tell the Commission whether they were originally constructed in accordance with the relevant Australian standards or what, if any, standards and policies were used for their design and construction.160 Nor was the council able definitively to inform the Commission as to what flood the terminals were built to withstand during the upgrade.161

In 1995 and 1996, four new CityCat terminals were also built.162 Brisbane City Council was able to indicate with more certainty that these terminals were designed to withstand a 1% AEP flood.163 From 2001, a number of the terminals were upgraded progressively to withstand a 1% AEP flood.164

All of the works undertaken to repair the damage caused to the terminals in the January 2011 floods are now complete. Brisbane City Council indicated that it intends to replace the terminals that suffered major damage with new structures built using design criteria developed in light of what was learnt from the January 2011 flood and using more advanced three dimensional modelling.165 The new designs will incorporate a deflection structure at the upstream end of the pontoon and the pontoon itself will be streamlined to reduce drag forces. They will include a retractable gangway that can be removed from the path of the flood flow.166 The new designs are expected to result in terminals that are more resilient to flood than the previous designs.167

7.5.6 Private pontoons

During the January 2011 floods, over four hundred private pontoons in the Brisbane River were dislodged from their moorings, including the floating restaurant ‘Drift’. These pontoons ultimately ended up in the lower reaches of the river, creating serious navigational hazards for boats and shipping in the river and at the Port of Brisbane. On their journey down the river some of these pontoons may have caused damage to other infrastructure in the river, including Brisbane City Council’s CityCat and CityFerry terminals.168

7.5.7 Response to the floods

Ordinarily, the repair or replacement of damaged structures in tidal areas requires a development approval from council. However, following the 2010/2011 floods, DERM granted an exemption (which applies between 14 February 2011 and 31 January 2013) to allow the repair of structures, without further approval, provided they are replaced on a like-for-like basis and in the same location.170 “The exemption was issued to allow for faster reconstruction of previously approved maritime structures.”171

For private pontoons rebuilt under this exemption, Brisbane City Council has, in conjunction with DERM and Marine Queensland, developed a voluntary code of practice setting out the design, construction and maintenance standards that should be applied. The code is only intended to apply during the exemption period.172

Brisbane City Council believes that the code for development applications for prescribed tidal work in the Coastal Protection and Management Regulation 2003 should be reviewed to ensure the design and construction provisions for all river architecture are adequate.173 The Commission agrees that the Queensland Government and councils...
having responsibility for river architecture such as that in the Brisbane River should review development standards to ensure the most up to date and appropriate standards are applied.

**Recommendations**

7.14 The Queensland Government should review the code for development applications for prescribed tidal work in the *Coastal Protection and Management Regulation 2003* to consider whether the design and construction standards should be made more stringent than the existing standards.

7.15 Councils (particularly Brisbane City Council) should consider including in their planning schemes more stringent standards for the design and construction of prescribed tidal work than those in the code for development applications for prescribed tidal work in the *Coastal Protection and Management Regulation 2003*.

7.6 Placement of fill and development in a floodplain

Most towns and cities in Queensland are built on floodplains. A common solution to this constraint has been to import fill onto low-lying land, to build it up and reduce its flood risk. That measure can result in the diversion of floodwater to properties up and downstream, and can exacerbate flooding of those properties. Compensatory earthworks are often needed to prevent or minimise these consequences.174

The following diagram from the ‘Compensatory Earthworks Planning Scheme Policy’ in Brisbane’s planning scheme depicts compensatory earthworks.175

![Diagram of compensatory earthworks](image)

**Figure a** Calculating Compensatory Cut and Fill Volumes – Cross Section

*Source: Compensatory Earthworks Planning Scheme, Brisbane City Plan 2000, Volume 2, Appendix 2: Planning Scheme Policies*

In some limited circumstances, filling in the floodplain does not adversely affect surrounding properties, even without compensatory earthworks; for example, placing fill in backwater or low flow velocity areas may not have any consequence for properties up or downstream.176

A number of witnesses expressed their concern to the Commission that development in their areas exacerbated the flooding of their properties. Although the Commission is not in a position to determine whether or not the fill did worsen flooding in any particular instance, it is useful to refer to some cases which demonstrate public concern about the adverse flooding effects that filling in the floodplain can have.
Graceville

One of the clearest examples of the issue was raised by two witnesses, one residing at, and one near, Graceville Park, a multi-level complex containing 90 townhouses. The land on which the development was built is low lying, part of the Oxley Creek and Brisbane River floodplains, and traverses a natural waterway. Prior to development, the site was a horse paddock with a creek running through the middle. Images depicting the 1974 flood level at the site show that water covered most of the land upon which the townhouse complex is now located.

In January 2011, 81 of the 90 townhouses on site were flooded; 60 of these suffered total inundation. Nearby residences were also heavily affected. A neighbouring land owner, whose property is bordered on one side and at the rear by the townhouses of Graceville Park, gave evidence that the floodwaters reached the eaves of his house. He expressed concerns that the Graceville Park development changed the topography of the land and, given its proximity to his residence, increased the potential for his property to flood.

A number of approvals were required from Brisbane City Council before construction on Graceville Park could begin, including a rezoning approval, a town planning consent permit, and two group title subdivision approvals. In 1991, the land was officially rezoned to a residential use, following the submission and approval of a rezoning application. The rezoning did not itself authorise the construction of town houses; a town planning consent permit was required for this purpose. When the town planning consent application was initially submitted, the developer was advised that the topographical features and drainage problems of the site rendered it unsuitable for the development of town houses at the proposed density.

Council records indicate that the resolution of flood issues proved difficult. Problems were identified with the hydraulic study provided in support of the town planning consent permit application; before approval was granted, the developer made several attempts at providing a flood study that was satisfactory to the council. The study had contained insufficient information to enable the council to assess the possible impacts of the proposal on adjacent land in terms of flooding, ponding of water and overland flow. The developer undertook to recalculate the flood levels of the site using more accurate information. Ultimately, the various issues identified were resolved to the satisfaction of the council, and approval was granted.

Flood damage in Graceville back yard, neighbouring Graceville Park complex visible over fence (photo courtesy Rob Clements)
For the developer to achieve compliance with some of the conditions of the development approval, filling was required. The precise amount of filling undertaken is not known, although it appears as though it must have been at least 0.8 metres across the site.\textsuperscript{193}

The planner responsible for assessment of the rezoning application and the town planning consent permit application indicated that if the development were assessed under today’s standards, some aspects of the approval would be different. This is unsurprising; the application was made under an earlier planning scheme and before the State Planning Policy had been adopted. By way of example, the witness indicated that fill levels on the site would likely have been increased to allow higher floor levels, with a greater distance required between the townhouses and adjoining properties; the number of townhouses would probably have been reduced by five or ten units; and access roads into the site might have been required to be built to a higher level.\textsuperscript{194}

**Emerald**

An Emerald resident whose house, built in 2004, was inundated in the 2010/2011 floods told the Commission that she was concerned about the possible impact of future developments approved nearby. Two new businesses have been approved to be built on land filled up to and above the 2008 flood level; one is a concrete batching plant to be located 60 metres from her home.\textsuperscript{195} The resident’s view was that such developments would affect drainage for the area, restrict water movement and increase the depth of floodwater.\textsuperscript{196}

**Karalee**

Residents of Karalee in Ipswich have expressed concerns about the extent of fill deposited on the Citiswich Industrial Estate, a large scale development (315 hectares in size) located approximately seven kilometres east of the Ipswich central business district.\textsuperscript{197} The developer has chosen to undertake the project in seven stages, or areas, of construction and development work.\textsuperscript{198}

A Karalee resident informed the Commission that, although she was not personally affected by the January 2011 flood, several houses in her neighbourhood were inundated.\textsuperscript{199} When she moved into her present home in 1993, the land on the opposite side of the Bremer River was pasture with cattle grazing and the natural floodplain was unaltered.\textsuperscript{200} At the time of purchasing her property, she checked the 1974 flood maps for the area and saw that her house had not been inundated.\textsuperscript{201} Because of this, she was surprised at the level the 2011 floodwaters had reached in her area.\textsuperscript{202}

This Karalee resident said that during the past decade, the land on the opposite side of the Bremer River has been progressively developed as part of the Citiswich development.\textsuperscript{203} Over the last three years there had been dramatic increases in the earthworks on the area between the Warrego Highway and the Bremer River, known as stage seven of the Citiswich project. She had observed large amounts of soil being cut away from hills and placed onto the floodplain, as well as truckloads of dirt being transported into the development site.\textsuperscript{204} She and another Karalee home-owner who gave evidence said that the fill brought in for this stage of the development built the land levels up to as much as 10 metres higher than the natural ground level in the floodplain.\textsuperscript{205}

The second of the Karalee witnesses said that his house was completely inundated during the January 2011 flood.\textsuperscript{206} He believed that the floodwaters which immersed his property came from the direction of the Citiswich development and the Warrego Highway bridge,\textsuperscript{207} that the 10 metre high earth fill on the Citiswich site acted as a dam and pushed the floodwaters back onto his property, and that the effect of the Citiswich development was to increase the height of the flood.\textsuperscript{208}

The engineering and environment manager for Ipswich City Council acknowledged that infill works occurred on stage seven of the Citiswich site before the 2010/2011 floods\textsuperscript{209} and that in some respects, the description provided by the residents about the extent of fill was accurate.\textsuperscript{210} However, the ten metres of fill spoken of by the Karalee residents was isolated to a small depression on the site,\textsuperscript{211} approximately half a hectare in size.\textsuperscript{212} Most filling conducted on this stage was more likely to have been at a height of two to three metres, covering an area approximately one to two hectares in size.\textsuperscript{213} He explained that some of the filling in the stage seven area at the Citiswich site was exempt development and consequently did not require a development approval.\textsuperscript{214} The issue of exempt development of this kind is discussed further at section 7.6.2 Exemption where fill is carried out by a public sector entity.
The development application for the preliminary approval for the Citiswich site included a ‘Masterplan Flooding Investigation’, which addressed both river and local flooding concerns. The study included a cumulative flooding impact assessment, which set out the proposed filling extent for the whole of the Citiswich site. The assessment concluded that the proposed filling would ‘not adversely impact on the flood levels external to the site’ and that ‘the flood immunity of the Warrego Highway has not been reduced’. A preliminary approval overriding the planning scheme for operational works was granted; it had the effect that subsequent earthworks applications for filling on the Citiswich development were assessed by reference to the Masterplan Flooding Investigation.

The Ipswich City Council did not expect there would be any impact from the exempt fill on stage 7, even though there had been no compensatory earthworks (such as excavation) to offset the volume of soil imported to the site. This was because the amount of fill being placed on the site accorded with the Masterplan Flooding Investigation, which indicated that flood levels external to the site would not change if filling was conducted without any compensatory cut. This perceived lack of impact was attributed to the particular floodplain characteristics at that locality, such as its location outside high flow areas.

It is apparent from the evidence received by the Commission that the Bremer River in the vicinity of the Citiswich site was not fully contained in the waterway and did break out across the floodplain in the January 2011 floods. The Commission makes no finding as to the extent to which the fill on the Citiswich site resulted in loss of flood storage capacity, if at all, or whether there were consequential impacts to surrounding properties.

### 7.6.1 Treatment of fill in State Planning Policy 1/03 and Guideline

Given the potential for adverse consequences to surrounding areas, the placement of fill in a floodplain should be assessed against criteria which consider its impact on surrounding land. The importance of maintaining the flood storage function of floodplains is recognised in State Planning Policy 1/03.

Outcome 5 of the State Planning Policy, which applies when councils are making or amending a planning scheme, encourages councils to include planning strategies in planning schemes which ‘prevent development from materially increasing the extent or the severity of natural hazards’.

In Appendix 5 to the State Planning Policy 1/03 Guideline, there are example criteria which give councils a basis for devising performance outcomes to be incorporated into a code in a planning scheme. They include criteria that stipulate:

- Works do not involve:
  - any physical alteration to a watercourse or floodway including vegetation clearing; or
  - net filling exceeding 50 cubic metres.

OR

- The development complies with any applicable development criteria set out in a floodplain management plan.

OR

- Where a floodplain management plan does not exist, the proposed works either:
  - avoid any reductions of on-site flood storage capacity and contain within the subject site any changes to depth/duration/velocity of floodwaters of all floods up to and including the DFE [defined flood event]; or
  - do not change the flood characteristics at the DFE outside the subject site in ways that result in:
    - loss of flood storage;
    - loss of changes to flow paths;
    - acceleration or retardation of flows; or
    - any reduction in flood warning times elsewhere on the floodplain.

The Commission does not have sufficient evidence to comment on whether a criterion that permits filling up to 50 cubic metres is appropriate. However, in the Commission’s view, it is essential that councils assess applications for filling or development in a floodplain against criteria which seek to protect surrounding land from any increases in flood risk, or resulting changes to flood behaviour.
Recommendations

7.16  The Queensland Government should consider drafting assessment criteria to be included in the model flood planning controls which require that works in a floodplain:

- do not reduce on-site flood storage capacity
- counteract any changes the works will cause to flood behaviour of all floods up to and including the applicable defined flood event by measures taken within the subject site (for example, use of compensatory works, detention basins or other engineering mechanisms)
- do not change the flood characteristics outside the subject site in ways that result in:
  - loss of flood storage
  - loss of changes to flow paths
  - acceleration or retardation of flows, or
  - any reduction in flood warning times elsewhere on the floodplain.

7.17  If the Queensland Government does not include such assessment criteria in the model flood planning controls, councils should consider including assessment criteria in their planning schemes which require that works in a floodplain:

- do not reduce on-site flood storage capacity
- counteract any changes the works will cause to flood behaviour of all floods up to and including the acceptable defined flood event by measures taken within the subject site (for example, use of compensatory works, detention basins or other engineering mechanisms), and
- do not change the flood characteristics outside the subject site in ways that result in:
  - loss of flood storage
  - loss of changes to flow paths
  - acceleration or retardation of flows, or
  - any reduction in flood warning times elsewhere on the floodplain.

The process of assessing development applications for fill may be assisted by the creation and maintenance of a model. The Bundaberg Regional Council has developed, and maintains, a model which assists it to assess the impact of fill on local flooding from overland flow when an application is submitted. It regards the model as critical in managing stormwater issues. The benefit of such models is dealt with in further detail in section 10.2 Stormwater.

7.6.2 Exemption where fill is carried out by a public sector entity

There is no requirement to obtain a development permit for filling if the works constitute exempt development. Such works include ‘operational work or plumbing or drainage work (including maintenance and repair work) if the work is carried out by or on behalf of a public sector entity authorised under a state law to carry out the work’. This could include placing fill onto a site in the floodplain. As indicated previously, some of the fill placed on the Citiswich site falls within this category of development.

In addition to fill placed on the Citiswich site, members of the public have raised concerns with Ipswich City Council about the depositing, without approval, of fill taken from the Ipswich Motorway Upgrade Project. The project, being overseen by the Department of Transport and Main Roads, is an upgrading of the Ipswich Motorway in three locations: the Ipswich/Logan Interchange, from Wacol to Darra and from Dinmore to Goodna. The Ipswich City Council observed that fill sourced from the project had not necessarily been placed by the Department of Transport and Main Roads, but may have been deposited by some of its contractors. It is unclear, from the council’s perspective, whether the exemption afforded to public sector entities under the legislation protects the activity in this respect.

Ipswich City Council provided a statement to the Commission about the difficulties experienced in Ipswich in consequence of the exemption afforded to public sector entities. The exemption can result in fill’s being placed in
stormwater flow paths and areas that are susceptible to flood without any technical assessment by council of the impacts.\textsuperscript{235} There are associated difficulties in taking compliance action against receiving landowners, and problems with distinguishing what is exempt.\textsuperscript{234} Ipswich City Council believes that it should have an opportunity to assess the impact of any proposed filling in a floodplain, regardless of the identity of the entity undertaking the fill.\textsuperscript{235}

In the Commission’s view, given the potential impact on other properties through the diversion of floodwaters, public sector entities should not be exempt from obtaining development approvals for filling where the filling is to be deposited away from the site of its extraction and in a floodplain.

**Recommendation**

7.18 The Queensland Government should consider amending the *Sustainable Planning Regulation 2009* so that operational work or plumbing or drainage work (including maintenance and repair work) carried out by or on behalf of a public sector entity authorised under a state law to carry out the work is not exempt development under the *Sustainable Planning Act 2009* if the development has the potential to reduce floodplain storage.

7.6.3 Examples of problems from fill associated with infrastructure

In addition to the evidence concerning fill placed in commercial development projects and fill extracted from major infrastructure projects and deposited elsewhere, the Commission heard evidence from members of the public who expressed concerns about the impact of public infrastructure on flooding.

An Emerald resident believed that the railway line running parallel to the Capricorn Highway caused floodwaters to back up in the 2010/2011 floods.\textsuperscript{236} His opinion was based on the facts that the flood peaked at different levels and times on each side of the railway line; the southern side was approximately 600 millimetres higher than the northern side;\textsuperscript{237} and the rail line has only a limited number of small culverts where water can drain away.\textsuperscript{238}

Concerns about the effect of local railway lines on flood behaviour were also raised by the Jondaryan District Residents Association. The association expressed the view that the Western Railway line raised water levels in homes on the northern side of the line at Jondaryan during floods, and that this was a consequence of lack of adequate drainage points under the railway.\textsuperscript{239} According to the association, the resulting pressure build-up caused the railway line to ‘blow out’ at points between Doctor’s Creek and Jondaryan, washing ballast from the line onto the Warrego Highway.\textsuperscript{240}

One resident of Male Road in Caboolture raised concerns that the Bruce Highway exacerbated local floodwater levels.\textsuperscript{241} A report commissioned by the Moreton Bay Regional Council on the cause of regular flooding in Male Road concluded that regular flooding of the area was attributable primarily to the fact that the land is low lying and located within the floodplain of King John Creek.\textsuperscript{242} The Bruce Highway was found to contribute to the increase in upstream flood levels at Male Road, although it was not possible to state with certainty how this increase affected the flooding of houses in the area.\textsuperscript{243}

Upgrades to the Ipswich Motorway, in particular the Monash overpass construction works, were also the subject of evidence heard by the Commission. Residents of a nearby townhouse complex believed these works created a damming effect which increased the height of floodwaters.\textsuperscript{244} The Department of Transport and Main Roads acknowledged that the Monash overpass construction works involved a significant road embankment which would remove the existing overland flow path for the catchment, and accordingly required the construction of a culvert.\textsuperscript{245}

It is not appropriate or feasible for the Commission to undertake the factual and technical investigations necessary to reach a conclusive view in each of these cases about whether the construction of the infrastructure worsened the flooding conditions experienced by nearby residents. However, the examples provided serve to identify that there is community concern about the effects of infrastructure development on flood levels. The possibility of impact on flooding should be considered by the Queensland Government when designing and constructing infrastructure. (See also section 10.5 Roads and rail.)
7.7 Levees

A levee is a raised embankment. Flood mitigation levees are located so as to provide protection from water breaking out of rivers and creeks. An embankment built, for example, alongside a river to protect a town on the floodplain will mitigate flooding, up to a point, in that town. It might, though, increase flood heights on the other side of the river. By protecting the town, the levee removes a portion of the storage volume on the floodplain; logically, the water that would have inundated the town must go elsewhere. On some floodplains and for some levees, the effect may be minimal. In other places, it may be significant.

Levees have other drawbacks: if they are overtopped, the damage caused by the water’s breakout can be considerable. A levee may hold floodwater at a damaging height for longer by constraining its escape. There is also a risk that individuals or a community protected by a levee will become complacent, assuming that the levee will protect against all floods: a dangerous mindset.

The Commission has not set out to establish whether any particular levee caused harm in the 2010/2011 floods; individual hydraulic studies would be required to form such conclusions and are beyond the scope of the Commission’s investigation. What has attracted the Commission’s attention are systemic questions of inconsistency in the approach to the control of the development of levees and disputes as to who should impose that control. The potential impact of levees on flooding means that those issues should be resolved.

7.7.1 Levees in the 2010/2011 floods

The Commission heard evidence about towns with levees in the Goondiwindi and Balonne Regional Council areas. In Goondiwindi, an 11 metre high embankment built in 1957 successfully protected the town from the 2010/2011 floods: the highest floods on record. A temporary levee constructed in St George prior to flooding protected most of the town in 2010/2011: the flood peak of 13.2 metres was more than a metre below the crest of the embankment. Thallon, Mungindi and Dirranbandi also employ levee banks which successfully protected those towns from the nearby Balonne River during the 2010/2011 floods.

Evidence was received of various types of levees used to protect rural properties during the 2010/2011 floods. In the St George region, channel irrigation systems on cotton farms, primarily used to deliver water to the farms, acted as levee banks to protect properties from the floodwaters of the Balonne River. In north-east Emerald, a large levee, kilometres long, had been built along the side of two creeks. In Bundaberg, small dirt banks had been constructed on a farm. Owners of properties near each of those levees raised concerns that their effect was to worsen the flooding nearby.

Possibly the largest levee banks in Queensland are those at the Ensham mine near Emerald, built 30 metres high to withstand the level that would be reached by a flood with an average recurrence interval of 1000 years. Those levees were built after previous, smaller banks were overtopped by flooding in 2008, leading to inundation of mine pits and a loss of production. The current levee banks were approved in 2009 and withstood the major flooding of the Nogoa River in 2010/2011.

7.7.2 Post-flood consideration of levees in urban areas

Following the 2010/2011 floods, Brisbane and Ipswich city councils have taken steps to explore using levees as a flood mitigation measure in high density urban areas.

There are currently no levees within the Ipswich City Council boundaries. The council engaged external consultants to investigate the feasibility and cost effectiveness of levees in specific areas that were seriously affected by the 2010/2011 floods. Particular attention is being given to an area of the central business district where inundation was the result of water’s making its way through a railway underpass from the Bremer River.

Brisbane City Council engaged experts to prepare a report identifying engineering options that could provide flood mitigation for Brisbane; it listed a number of possible structural flood mitigation measures for Brisbane, including levees. The report acknowledged the complexity of assessing whether levees would be suitable in such an urban environment, and suggested that they would not be suitable along waterways. However, the report considered that levees might be a feasible solution to protect critical infrastructure such as the cold stores at the Brisbane Markets at Rocklea.
These considerations have been taken into account by Brisbane City Council in developing an interim framework for the management of levees in areas of strategic importance as part of its Flood Action Plan of January 2011. The framework is designed for assessing levees’ prospects of success, with specific criteria to assist the council or private owners considering the building of a levee. It remains for this framework to be given legal effect, either by a local law or an amendment to the Brisbane planning scheme.

7.7.3 Controlling the construction of levees

Current regimes

Planning schemes

Councils can control the conditions under which levees are built through their planning schemes. For example, the construction of levee banks in the Ipswich City Council area requires development approval under the council’s planning scheme. However, the construction may be exempt from requiring development approval under the Ipswich planning scheme if the levee bank is insignificant; for example, if it is not greater than 1000 square metres in area or more than 50 centimetres in height.

Local laws

During the 2010/2011 floods, seven councils had local laws concerning levees. Two councils let their local laws expire on 31 December 2011; three councils have indicated their intention to repeal them, and one council has provided no indication as to the future of its local laws. The seventh council, Goondiwindi Regional Council, is considering the inclusion of levees as assessable development in its next planning scheme, which would have the effect that no levee bank could be built without the approval of council. In the interim, the council proposes to enact a local law for the regulation of levee banks for the whole council region.

A catchment wide floodplain board

The former Emerald and Peak Downs shire councils formed the Nogoa River Flood Plain Board in 1996, with authority to assess levees within the boundaries of a defined floodplain area. The board was empowered as a ‘joint local government’ under the Local Government Act 2009. It followed an assessment process outlined in the relevant local law. On receiving an application for construction of a levee, the board would invite the public and nearby landholders to make submissions on the application. Applications were required to be accompanied by a hydraulic report advising on the impact of the levee on the catchment and neighbouring properties. SunWater Limited provided the board with further hydraulic analysis and advice in respect of the applications it received.

The board voted to dissolve itself in 2011. The Central Highlands and Isaac regional councils approved its abolition. The board said it had taken such drastic action because it was unable to regulate the floodplain efficiently; its preference was for the Queensland Government to assume responsibility for floodplain regulation. The magnitude of the issues it was dealing with, including multi-million dollar mining operations, were matters of state and national importance, and it lacked the technical and financial means to address the possible ramifications of coal mining developments on the floodplain; it was created to deal with farming levees.

The board’s concern was borne out in its dealings with Ensham Resources in 2009 regarding the latter’s proposed mine levees: after Ensham complained of difficulty obtaining flood levee construction permits from the board, the Minister for Infrastructure and Planning declared the levee construction project a ‘prescribed project’ under Part 5A of the State Development and Public Works Organisation Act 1971, with the ultimate result that the Coordinator-General made the decision to issue permits for the levee banks. An explanation of prescribed projects is provided at section 6.3.3.

Department of Environment and Resource Management

The Assistant Director-General of DERM gave evidence that DERM has no overarching role or responsibility in respect of flood mitigation levees; in fact, he was not aware of any significant regulatory role of any Queensland Government department. He outlined four narrow areas in which DERM does exercise regulatory control over levees:

- diversion of a watercourse approved under the Water Act 2000 as part of mining activities authorised by the Environmental Protection Act 1994
• activities authorised by the *Environmental Protection Act 1994* (flood protection levees for mining activities and bunding for the containment of hazardous materials)\textsuperscript{295}

• within a drainage and embankment area designated under the *Water Regulation 2002*\textsuperscript{296} (only three areas have been designated drainage and embankment areas under the Regulation)\textsuperscript{297}

• the construction and use of infrastructure, including dams and associated works intended to take overland flow water, including floodwater, for water supply purposes.\textsuperscript{298}

There might be an argument that DERM’s role in fact extends beyond those four situations. Some instances of ‘taking or interfering with water’ (which is likely to capture most, if not all, levees) require a development permit under the *Sustainable Planning Regulation*, while others do not.\textsuperscript{299} Where a development permit is required, DERM may be the assessment manager.\textsuperscript{300}

In addition to its legislative responsibilities, DERM provides information, on request, to councils to assist them to assess flood mitigation levees.\textsuperscript{301} DERM does not collate or hold comprehensive information on all levees in Queensland, as it does not consider itself responsible for them.\textsuperscript{302}

**Need for regulation**

Structural measures, such as levees, are one of the four main threads of best practice floodplain management outlined in *Floodplain Management in Australia*;\textsuperscript{303} see section 2.1 *Principles of floodplain management* above. If it is appropriate that levees form part of a council’s floodplain management plan, it is also appropriate that levees be regulated. The fact that levees affect watercourses makes them a necessary part of any consideration of flooding in a catchment. It does not assist floodplain management for landholders to have, as they do in some areas of Queensland, free rein to build levees on their properties.

Levees may cause damage far from their location. As an adjustment to the natural watercourse, they can affect the entire catchment in which they are located. That propensity to cause damage to other property supports the argument for consistent and state-wide regulation.

The patchwork of DERM and council approvals, and in some areas, a complete absence of regulation, is not conducive to consistent decision-making. Uniform regulation of the construction of levee banks would ensure that applications to build them are judged against the same standards, no matter where they are built and for what purpose. Mining levees in Central Queensland assessed by DERM would be required to meet the same criteria as farming levees near the New South Wales border. Consistency holds advantages for landholders who wish to build a levee, or who live near a proposed one.

**Options for controlling the building of levees**

The Commission considered two options for controlling the construction of levee banks within the land use planning regime: the designation of levees as assessable development, or local laws. If the former is chosen, either councils or the Queensland Government could act, in effect, as regulator; if the latter, the regulators must be councils.

Levees are a type of development under the *Sustainable Planning Act 2009*.\textsuperscript{304} They are not specifically designated, by name, as ‘assessable development’ in the *Sustainable Planning Regulation 2009*, although they may be assessable as ‘interfering with water’: see the section *Department of Environment and Resource Management* above. The regulation of levees in a planning scheme prepared under the *Sustainable Planning Act 2009* is not compulsory. Levees are not dealt with in regional plans, state planning regulatory provisions, any state planning policy or the Queensland Planning Provisions.

The Queensland Government could, by legislation, ensure that building a levee requires a development permit by:

• designating it as assessable development in Schedule 3 of the *Sustainable Planning Regulation 2009*, or

• requiring, by way of a state planning policy or mandatory provision in the Queensland Planning Provisions,\textsuperscript{305} that councils nominate the construction of a levee as ‘assessable development’ in their planning schemes.\textsuperscript{306}

If a council’s current planning scheme is not made under the *Sustainable Planning Act 2009*, and does not regulate levees, the council can make a local law for that purpose.\textsuperscript{307} The Queensland Government could encourage councils in that position to adopt such a local law by proposing a suitable model local law. But any such local law will only
apply until the time that a council decides to prepare its next planning scheme under the Sustainable Planning Act 2009; after that, the council may only regulate levees through its planning scheme. Consequently, this option would be an interim measure at best.

The Queensland Government should consult councils to determine the most effective way to regulate the construction of levees consistently across Queensland.

The appropriate regulator

The two candidates to regulate levees are the Queensland Government and councils.

Many councils, and their representative body, the Local Government Association of Queensland, submitted that the Queensland Government should be responsible for regulating all levees. In New South Wales and Victoria, floodplains are managed at a state government level. They maintain that councils do not have the necessary technical expertise and financial means to conduct the scientific studies necessary for proper assessment of a proposal to build a levee bank, and refer to the catchment wide implications of levees and interstate issues in the border region as reasons for the Queensland Government to be in charge.

The Queensland Government does not consider it is best placed to consider applications to build levee banks. It points to council expertise in approving development applications under planning legislation, and the importance of local knowledge of the area in which a levee is proposed. The government suggests that it could assist councils by providing expert advice as a referral agency during the assessment process.

Both arguments have merit. The evidence is that neither councils nor the Queensland Government are immediately capable of assessing applications for permits to build levee banks: both would require the devotion of more resources to that task. Depending on the method of regulation chosen, both could be involved, in different capacities, in assessing applications. The Queensland Government and councils should reach a decision as to which will regulate the construction of levee banks. The Commission’s concern is that a state-wide, consistent process be put in place for that regulation.

Recommendations

7.19 Levees should be regulated.

7.20 The Queensland Government should consult with councils to determine an effective method for the regulation of the construction of levees in Queensland.

In particular, the Queensland Government should consider:

• requiring a development permit for the construction of a levee by designating levees as assessable development in the Sustainable Planning Regulation 2009, or

• requiring, by way of a state planning policy or mandatory provision in the Queensland Planning Provisions, that councils nominate the construction of a levee as assessable development in their planning schemes.

7.7.4 Types of levees to be regulated

A uniform definition is essential to consistency of decisions about where and how levees are built across Queensland. There is no widely accepted definition of ‘levee’ as a term for the purpose of regulation. There are, however, a number of definitions in Australian, and indeed Queensland, literature on the subject, which could be considered in determining how best to define the term so as to identify what is to be regulated. One matter that should be considered in defining ‘levees’ is whether some embankments are so small, or have such insignificant effect, that they should be excluded from regulation. Another is whether any definition should extend to emergency works carried out to protect properties against an immediate threat of flooding.
**Recommendation**

7.21 The Queensland Government should consult with councils to formulate a definition of ‘levee’ to identify what should be regulated.

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### 7.7.5 Process and criteria for approving the construction of a levee

There is no common process or agreed list of relevant considerations used in different areas where levees are regulated. Having common standards would assist in a uniform approach across Queensland.

In terms of process, it is important that any decision about a levee be made after public consultation and obtaining relevant scientific studies.

One important factor in assessing a proposed levee is its effects across the whole catchment in which it is located, which may include effects across local government or state borders. The assessor must determine whether the proposal strikes the appropriate balance between the persons and property it seeks to protect and those it may adversely affect. Increased flood risk in neighbouring properties may be justified if the levee protects infrastructure vital to the whole community, such as a hospital or a state emergency service shed. The adverse impacts of a levee which protects a significant part of a community might be mitigated by setting higher minimum floor levels or building new evacuation routes for affected areas. Structural measures, including other levees and detention basins, could also be considered to offset the impact of a proposed levee.

The considerations applicable in determining whether to allow the building of a proposed levee should be set out in publicly available documentation. Guidance might be gained from Floodplain Management in Australia and other publications. If it is decided that councils will grant development permits for the construction of levees, these considerations might usefully form part of model flood planning controls: see section 5.1 Planning schemes.

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**Recommendations**

7.22 There should be a consistent process for the determination of applications to build levees. That process should include:

- consulting landholders who may be affected by the proposed levee
- obtaining or commissioning appropriate hydrological and hydraulic studies to assess the impacts of the proposed levee.

7.23 There should be a common set of considerations in the decision whether to approve an application to build a levee, including:

- the impacts of the proposed levee on the catchment as a whole
- the benefits of the proposed levee to the individual or entity applying to build the levee and to any nearby community as a whole
- any adverse impacts on other landholders, including the risk of levee failure
- the implications of the proposed levee for land planning and emergency management procedures
- whether any structural, land planning or emergency management measures can be taken to mitigate the adverse impacts of the proposed levee.
7.8 Anthills: Properties isolated by flooding of low lying access routes

Some properties did not suffer inundation during the 2010/2011 floods, but were isolated by rising floodwaters. This problem largely occurred where properties were developed on land higher than access roads. That circumstance caused difficulties of two kinds: evacuation became necessary, but routes were cut; or evacuation was not necessary, but people were isolated from essential services.317

The Commission heard evidence about a number of properties that suffered such difficulties in the 2010/2011 floods. One of the clearest examples was in the Brisbane suburb of Bellbowrie. Three properties situated at Allard Close were built on land filled to a height above the 1% AEP flood level, which was separated from the rest of the suburb by a former golf course to the east and a low-lying gully to the west.318

On 11 January 2011, some residents of Allard Close were isolated from the suburban road network because their shared driveway across the gully was covered by a metre of floodwater.319 One of those residents described how, unable to get his vehicle across the water, he could not drive his family to safety or remove belongings from his house.320 On 12 January 2011, the Brisbane River filled up the gully, creating a body of water approximately 150 metres wide between his house and the rest of Bellbowrie.321 His family had to evacuate that day by walking across the former golf course behind their house to Weekes Road, from where the SES ferried them across floodwaters.322

The construction of housing in an area susceptible to isolation in floodwaters creates a number of risks for its occupants. The artificial peninsula on which the Allard Close resident’s house was constructed provided little opportunity for conventional evacuation once the floodwaters began to rise. While he was aware of the risk that his property would be isolated,323 by the time he realised that he might need to evacuate, the evacuation route was cut.324

The Wesley Hospital in the Brisbane suburb of Auchenflower also experienced a serious loss of access during the January 2011 floods. Situated on a steep hill (and very close to the Brisbane River), the hospital is bordered on two sides by the low lying Moorlands Park and Coronation Drive.
Floodwaters closed all usual forms of access to the hospital from the early hours of Wednesday 12 January 2011 to late on 13 January 2011.325 Any patients who could be discharged safely were advised to leave before the hospital became isolated, if their personal circumstances allowed.326 All elective, non-acute services were cancelled for the remainder of the week and patients who would normally have been admitted to the hospital were directed to other hospitals.327 A large number of staff members volunteered to remain on site to maintain patients’ care.328 Linen, pharmacy and food supplies had to be delivered using the nearby Auchenflower Railway Station pedestrian overpass; staff either carried or pushed the supplies to the hospital.329 This remained the only access route for the hospital until late on Thursday 13 January 2011. No ambulances were able to reach the hospital, although ambulance officers were able to transfer emergency patients, on foot, across the railway station overpass bridge.330 One patient was moved across the bridge on an ambulance trolley, with great difficulty.331 At one point, the electricity supply to the hospital was at risk of being cut, which would have necessitated the evacuation of all patients.332 Fortunately this did not occur, and the hospital was able to perform most fundamental services.

Since the January 2011 flood, the hospital executive has reviewed the question of access to the hospital during flood and is considering investing in a helicopter pad. It has also reviewed the hospital’s communications with the State Health Emergency Control Centre and the local district disaster management group, with a view to obtaining better information during a crisis about the availability of access routes and the supply of essential services, particularly electricity.333

The fact that such an important piece of community infrastructure was effectively isolated for two days is of concern. Planning considerations for community infrastructure generally are discussed elsewhere in the Commission’s report (see section 7.2 Community infrastructure).

The issue of access roads was also highlighted in the suburb of Yeronga, in south Brisbane. ‘The Village’, a multi-level aged care facility situated at Cansdale Street, was built on land zoned as a light industrial area, and developed in 2007 and 2008. The Brisbane City Council considered that the site presented a number of attractive features for aged care accommodation: its proximity to services and public transport, the uncontaminated nature of the site, its amenity (with parkland on three sides) and the fact that it enabled elderly residents to remain in the community, rather than having to move to the outer suburbs of Brisbane.334

It was apparent from an early stage of the assessment process for this development that the site had flood-related constraints. The preliminary development assessment for the facility included a series of pre-lodgement meetings in late 2004 and early 2005 where issues relevant to flooding on the site were identified by the developer and Brisbane City Council.335 One such issue was the location of the site in a waterway corridor.336 Throughout the development application assessment process, the Brisbane City Council raised concerns with the developer regarding the management of floodwaters from both the Brisbane River and overland flow.337 The developer’s initial hydraulic reports required extensive re-analysis338 before the Brisbane City Council eventually approved the development, with conditions, on 3 October 2006.339

Although the site was known to be affected by flooding from two sources (a 1% AEP flood from the Brisbane River, or a 1% AEP overland flood340), no conditions were imposed on the development in relation to access or evacuation routes in the event of flooding.341 The driveway crossover into ‘The Village’ is at the 1% AEP flood level;342 however, the heights of the two access roads relevant to the site, Cansdale Street and Venner Road, have lower flood immunity levels. Cansdale Street is built to withstand floods with an average recurrence interval of 50 years, whereas Venner Road is built to withstand floods with an average recurrence interval of 20 years.343 When the aged care use was approved by Brisbane City Council, these road heights were seen as acceptable, because they accorded with the specified flood immunity levels for existing roads contained in the Subdivision and Development Guidelines in force at the time.344

During the January 2011 flood, the entire site was surrounded by floodwaters. On 11 January 2011, the residents of ‘The Village’ had to evacuate in order to escape the imminent flooding.345 Evacuation was carried out prior to the floodwaters reaching the premises. The basement of the building was flooded and the ground floor was submerged in approximately one metre of floodwater.346 Access roads to and around the site were inundated.347

There are obvious difficulties in residents of advanced age with mobility problems having to evacuate when surrounding roads are flooded. In some circumstances, there may not be enough warning time available for evacuation to occur before access roads begin to flood. Currently, the Brisbane City Council Subdivision and
Development Guidelines require that existing access roads be built to a height that will withstand floods with an average recurrence interval of 50 years. They do not require access above the height of the 1% AEP flood level. Nor is there any express requirement that in assessing applications for developments where the intended residents are likely to experience difficulty in evacuating quickly, regard be had to the height of the access roads into the site. The Regional Manager of the Development Assessment South Team in Brisbane City Council, expressed the view that there ought to be criteria requiring consideration of the site’s proposed occupants, as well as the particular characteristics of the proposed use.

In Maryborough, residents of Granville experienced loss of access to essential services as a consequence of the closure of the Granville Bridge and the major thoroughfares leading into the city. The bridge crosses the Mary River, providing the only entry point to the Maryborough central business district for the residents of Granville and other suburbs. Problems also arose when low lying sections of the access roads leading off the bridge (Kent Street, Tiger Street and Mary Street) were inundated by floodwaters. The combination of the closure of these roads and of the Granville Bridge effectively closed off Granville residents’ access into Maryborough from the morning of 8 January 2011 to the evening of 14 January 2011. Similar problems were experienced by residents of Bellbowrie when that suburb was isolated and its main shopping centre inundated.

Residents of the Tennyson Reach development also lost road access during the January 2011 flood. Situated on the banks of the Brisbane River, the ground floors of the residential towers at Tennyson Reach are built to a height above the level of the 1% AEP flood. However, problems arose during the flood when access roads to the Softstone and Lushington buildings were inundated by floodwater well before the buildings were affected. One witness estimated that the main access road on the site, King Arthur Terrace, was cut off approximately six hours before the units began to flood. Residents attempting to evacuate had to wade or swim through water to reach their vehicles.

7.8.1 Current provisions in State Planning Policy 1/03

Outcome 1 of State Planning Policy 1/03 requires that in the assessment of applications for development within specified natural hazard management areas, regard must be had to the compatibility of the development with the nature of the natural hazard, except where the development proposal is a development commitment; or where there is an overriding need for the development in the public interest and no other site is suitable and reasonably available for the proposal.

Under Outcome 2, if the development is not compatible with the nature of the natural hazard, but there is an overriding need for it in the public interest (and no other site is suitable and reasonably available), the aim is to minimise as far as practicable the adverse impacts from natural hazards, and to ensure the development does not result in unacceptable risk to people or property. The policy specifies that Outcome 2 will be achieved when the development is brought as near as practicable to the level required to comply with the specific outcomes in Annex 4, and does not result in an unacceptable risk to people or property. The specific outcomes in Annex 4 are:

1. Development maintains the safety of people on the development site from all floods up to and including the DFE [defined flood event].
2. Development does not result in adverse impacts on people’s safety or the capacity to use land within the floodplain.
3. Development minimises the potential damage from flooding to property on the development site.
4. Public safety and the environment are not adversely affected by the detrimental impacts of floodwater on hazardous materials manufactured or stored in bulk.
5. Essential services infrastructure (for example, on-site electricity, gas, water supply, sewerage and telecommunications) maintains its function during a DFE.

Assessment of ‘unacceptable risk’ requires consideration of on-site and external impacts of the proposed development. Annex 5 specifies that the minimum required to avoid an unacceptable risk is achievement of 1, 2 and 4 above. But State Planning Policy 1/03 does not expressly require consideration of:

- the potential for land not susceptible to flooding to be adversely affected by flood through isolation
• the impact of isolation: this may involve consideration of characteristics of the flood such as the rate of rise and duration, and how those characteristics affect a proposed use, having regard to factors such as warning times, evacuation routes and access to essential services during periods of isolation.362

The examples provided earlier in this section demonstrate the utility of such considerations.

### Recommendations

7.24 The Queensland Government should draft assessment criteria to be included in the model flood planning controls that address:
• the prospect of isolation or hindered evacuation
• the impact of isolation or hindered evacuation.

7.25 If the Queensland Government does not include such assessment criteria in the model flood planning controls, councils should consider including assessment criteria in their planning schemes that address:
• the prospect of isolation or hindered evacuation
• the impact of isolation or hindered evacuation.

### Endnotes


2. Second submission of Ipswich City Council, 28 April 2011 [p68: para 23.1].

3. Exhibit 911, Statement of John Adams, 2 September 2011, JA-10 [p2: para 7.3].


5. Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain Management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p7: para 2.3.2.1].


7. See, for example: Exhibit 561, Statement of Peita McCulloch, 15 September 2011 [p7: para 21].


12. Exhibit 666, Statement of Glen Brumby, 15 September 2011, Attachment 19, Annexure 4; Exhibit 666, Statement of Glen Brumby, 15 September 2011, Attachment 5 [p7].


15. Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain management in Australia:
best practice principles and guidelines, SCARM Report 73, 2000 [p4: para 1.8].

16 Exhibit 766, First statement of Andrew Fulton, 1 September 2011 [p10-11: para 3.1.1.2].

17 Exhibit 766, First statement of Andrew Fulton, 1 September 2011 [p10: para 3.1.1.2].

18 Transcript, Andrew Fulton, 11 October 2011, Bundaberg [p3911: line 10].

19 Exhibit 766, First statement of Andrew Fulton, 1 September 2011 [p11: para 3.1.1.2.2 – 3.1.1.2.3]; Transcript, Andrew Fulton, 11 October 2011, Bundaberg [p3912: line 21].

20 Exhibit 534, Statement of Gary Mahon, 2 September 2011, Attachment GLM-21 [p5-6].

21 Exhibit 534, Statement of Gary Mahon, 2 September 2011, GLM-39 [p2]; Transcript, Gary White, 19 September 2011, Brisbane [p2761: line 18].


25 For section 200 of the Sustainable Planning Act, ‘Minister’ includes any Minister, see: Schedule 3, Sustainable Planning Act 2009.

26 Section 200, Sustainable Planning Act 2009.

27 Section 203, Sustainable Planning Act 2009.

28 Section 202, Sustainable Planning Act 2009. Use of designated land contrary to a requirement is an offence under section 582(b)(ii) of the Sustainable Planning Act 2009.

29 Section 207(2)(d), Sustainable Planning Act 2009.


32 State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p5: para 5.2; p8: Outcome 3]. ‘Throughout this section, including in the recommendations, the phrase ‘specified level of risk’ should be construed to have the same meaning as the phrase does in Outcome 3 of State Planning Policy 1/03.

33 State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p3: para 2.2; p13: Annex 1].

34 In brief, Outcome 1 requires, subject to some exceptions, such as where there is an overriding need for the development in the public interest and no other site is suitable and reasonably available for the proposal, that a development be compatible with the severity of the flood hazard. Outcome 2 provides that, where a proposed development is not compatible with the severity of the flood hazard, it must minimise as far as practicable the adverse impacts from flood and not result in an unacceptable risk to people or property. See State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p6-7].

35 State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p8: para 6.15].

36 State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p8: para 6.15]; State Planning Policy 1/03 Guideline: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p38].

37 State Planning Policy 1/03 Guideline: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide, Appendix 9 [p70].

38 State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p8: para 6.15].

39 Transcript, Luis Prado, 21 September 2011, Brisbane [p2946: line 19 and p2946: line 39].

40 Transcript, Luis Prado, 21 September 2011, Brisbane [p2946: line 44].

41 Exhibit 580, Statement of Luis Prado, 8 September 2011, Annexure 1 [p4].

42 Transcript, Gary White, 7 November 2011, Brisbane [p4639: line 37].
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43 Exhibit 858, Statement of Timothy Foote, 7 October 2011, TCF-10; Exhibit 830, Major Flood Information Map 42 marked to show 45 Alice Street, Goodna; Exhibit 831, PD Online Map of 45 Alice Street, Goodna.

44 Transcript, Krystal Wilson, 18 October 2011, Ipswich [p4101: line 47; p4102: line 24].


46 Transcript, Krystal Wilson, 18 October 2011, Ipswich [p4104: line 30].

47 Transcript, Krystal Wilson, 18 October 2011, Ipswich [p4104: line 54].

48 Transcript, Krystal Wilson, 18 October 2011, Ipswich [p4105: line 32].

49 Exhibit 858, Statement of Timothy Foote, 7 October 2011, TCF-1, JB Goodwin Midson & Partners Assessment Report – 45 Alice Street Goodna [p17].

50 Exhibit 1007, Standing Committee for Agriculture and Resource Management (SCARM), Floodplain Management in Australia: best practice principles and guidelines SCARM Report 73, 2000 [p20].

51 Exhibit 639, Seventh statement of Rory Kelly, 21 September 2011, Attachment RJK-106 [p BCC.061.4797].

52 Transcript, Kenneth Smith, 21 September 2011, Brisbane [p2886: line 40].

53 Transcript, Kenneth Smith, 21 September 2011, Brisbane [p2886: line 49]; Exhibit 567, Statement of Kenneth Smith, 13 September 2011 [p2: para 6].

54 Transcript, Kenneth Smith, 21 September 2011, Brisbane [p2887: line 17].

55 Transcript, Kenneth Smith, 21 September 2011, Brisbane [p2887: line 35].

56 Transcript, Kenneth Smith, 21 September 2011, Brisbane [p2887: line 47].

57 Hawkesbury-Nepean Floodplain Management Steering Committee, Managing Flood Risk through Planning Opportunities: Guidance on Land Use Planning in Flood Prone Areas, April 2007 [p113].

58 See generally: Hawkesbury-Nepean Floodplain Management Steering Committee, Managing Flood Risk through Planning Opportunities:

59 Exhibit 815, Statement of Emily Lang, 2 September 2011 [p5: para 21].

60 Exhibit 815, Statement of Emily Lang, 2 September 2011 [p5: para 20].


63 Exhibit 804, Statement of Rosleys Blaich, 27 September 2011 [p5: para 9].

64 Exhibit 804, Statement of Rosleys Blaich, 27 September 2011 [p3: para 4].

65 Transcript, Tania Stenholm, 13 October 2011, Gympie [p4028: line 44; p4031: line 36].

66 Exhibit 811, Statement of Tania Stenholm, 28 September 2011 [p3: para 15].

67 Transcript, Tania Stenholm, 13 October 2011, Gympie [p4030: line 42].

68 Transcript, Tania Stenholm, 13 October 2011, Gympie [p4031: line 17].

69 Transcript, Tania Stenholm, 13 October 2011, Gympie [p4031: line 9].


71 Transcript, Michael Hartley, 13 October 2011, Gympie [p4071: lines 46-56].

72 Transcript, Michael Hartley, 13 October 2011, Gympie [p4072: line 21].

73 Exhibit 545, Memorandum Brisbane City Council to DERM, Department of Community Safety and Department of Infrastructure and Planning, 25 January 2011 [p2: para 1].

74 Exhibit 545, Memorandum Brisbane City Council to DERM, Department of Community Safety and Department of Infrastructure and Planning, 25 January 2011 [p1]; Exhibit 546,
Brisbane City Council Internal Memorandum, 27 January 2011 [p1].

75 Exhibit 546, Brisbane City Council Internal Memorandum, 27 January 2011 [p1]; Exhibit 546, Brisbane City Council Internal Memorandum, 27 January 2011 [p3].


78 State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p11]. See, for example, State Planning Policy 1/03 Guideline: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p38: para A2.31].

79 Section 12, Work Health and Safety Act 2011; Schedule 1, section (1)(6).

80 Sections 19(3)(a) and 22(2), Work Health and Safety Act 2011.


84 Section 18, Environmental Protection Act 1994.

85 Schedule 4, Environmental Protection Act 1994.

86 Section 17, Environmental Protection Regulation 2008; Schedule 2, Environmental Protection Regulation 2008.

87 Schedule 2, Section 7, Environmental Protection Regulation 2008.

88 Schedule 2, Section 18, Environmental Protection Regulation 2008.

89 Schedule 2, Section 21, Environmental Protection Regulation 2008.

90 Schedule 2, Section 25, Environmental Protection Regulation 2008.

91 Schedule 2, Section 40, Environmental Protection Regulation 2008.

92 Section 10, Sustainable Planning Act 2009.

93 Section 10, Sustainable Planning Act 2009.

94 Section 101, Environmental Protection Regulation 2008. DERM has also delegated responsibility to the Department of Employment, Economic Development and Innovation for the administration of two particular environmentally relevant activities: intensive animal feedlotting and pig keeping. The activities administered by the Department of Employment, Economic Development and Innovation are not generally associated with industrial land uses, and are not addressed further in this section.

95 Section 101, Environmental Protection Regulation 2008.

96 Section 73A, Environmental Protection Act 1994.

97 Environmental Protection Act 1994, Schedule 4 definition of “Standard Criteria”, para (c).

98 Exhibit 624, Statement of Jonathan Womersley, 19 September 2011 [p12: para 74, and 75]; Transcript, Rory Kelly, 27 September 2011, Brisbane [p3249: line 40].


100 Transcript, Rory Kelly, 27 September 2011, Brisbane [p3249: line 21].

101 Exhibit 624, Statement of Jonathan Womersley, 19 September 2011, Annexure JCW-03.


103 Transcript, Jonathan Womersley, 26 September 2011, Brisbane [p3172: line 54].

104 Exhibit 624, Statement of Jonathan Womersley, 19 September 2011, Annexure JCW-09.

105 Exhibit 624, Statement of Jonathan Womersley, 19 September 2011, Attachment JCW-09.

106 Transcript, Jonathan Womersley, 26 September 2011, Brisbane [p3173: line 27].

107 Transcript, Rory Kelly, 3 October 2011, Brisbane [p3491: line 21].

108 Section 101, Environmental Protection Regulation 2008.

109 Transcript, Rory Kelly, 3 October 2011, Brisbane [p3491: line 48].
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112 State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p6].

113 State Planning Policy 1/03, Mitigating the Adverse Impacts of Flood, Bushfire and Landslide, Annexure 4 [p18: para A4.2].

114 State Planning Policy 1/03, Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p59].

115 State Planning Policy 1/03, Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p59: para 4.1].

116 State Planning Policy 1/03, Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p59: para 4.2].

117 State Planning Policy 1/03, Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p59].

118 Exhibit 766, Statement of Andrew Fulton, 1 September 2011 [p18: para 5.1 – p19: para 5.4].


120 Statement of Julie Edwards, undated [p10: para 4.6-4.7].

121 Statement of Christopher Warren, 12 September 2011 [p11: para 5.8]; Exhibit 1005, Statement of Bradley Sully, 7 September 2011 [p2: para 5].

122 Specifically the Industrial Design Code and the Industrial Amenity and Performance Code. These codes ‘call up’ the Stormwater Management Code. With respect to flooding, the Stormwater Management Code lists, as an acceptable solution, compliance with the Subdivision and Development Guidelines. The Subdivision and Development Guidelines prescribe minimum floor levels for certain types of building, and certain types of flooding (that is, Brisbane River flooding, local flooding, waterway flooding, and storm tide). The Guidelines also allow a risk management approach to be applied, in lieu of compliance with prescribed minimum floor levels.

123 Statement of John Adams, 2 September 2011 [p25: para 54].


125 Exhibit 1005, Statement of Bradley Sully, 7 September 2011 [p3: para 1].


127 Transcript, Gary White, 19 September 2011, Brisbane [p2751: line 57].


131 Exhibit 796, Statement of Michael Ellery, 1 September 2011 [p5: para 32-33].

132 Transcript, Rory Kelly, 27 September 2011, Brisbane [p3245: line 40].

133 ‘Prescribed tidal work’ is defined in sections 14 and 15 of the Coastal Protection and Management Regulation 2003.


135 Schedule 4A, Coastal Protection and Management Regulation 2003.
136 See Schedule 6, Sustainable Planning Regulation 2009. The Department of Transport and Main Roads, the Department of Employment, Economic Development and Innovation and DERM may also be involved in the assessment of prescribed tidal work as referral agencies (see schedule 7, Sustainable Planning Regulation 2009).

137 Schedule 4A, Part 1, Clause 2(b), Coastal Protection and Management Regulation 2003.

138 ‘Specific outcomes’ and ‘probable solutions’ work in a similar way to ‘performance outcomes’ and ‘acceptable outcomes’ which are described in section 4.3 Queensland Planning Provisions.


140 For example, Australian Standard (AS 4997-2005) Guidelines for the design of maritime structures and Australian Standard (AS 3962-2001) Guideline for the design of marinas.


142 The floating pontoon section of the Riverwalk was between Howard Smith Wharves and Merthyr Road. This floating pontoon comprised one section of the Riverwalk which also includes ground and elevated walkways, which run parallel to both sides of the Brisbane River. These other sections of the Riverwalk performed well (apart from localised damage) in the January 2011 flood and remain in service (see Exhibit 535, Statement of Christopher Beckley, 9 September 2011 [p3: para 8]).

143 Exhibit 535, Statement of Christopher Beckley, 9 September 2011, Attachment CJB-9 [p11].

144 Exhibit 535, Statement of Christopher Beckley, 9 September 2011, Attachment CJB-9 [p11].

145 Exhibit 376, Statement of Captain Richard Johnson, 18 April 2011 [p12].

146 Exhibit 535, Statement of Christopher Beckley, 9 September 2011, Attachment CJB-9 [p11].

147 Exhibit 535, Statement of Christopher Beckley, 9 September 2011, Attachment CJB-9 [p11].

148 Exhibit 535, Statement of Christopher Beckley, 9 September 2011 [p3: para 9].

149 The 1% AEP flood loads were adjusted to obtain an anticipated 0.05% AEP flood load applying a load factor of 1.4 (see Exhibit 535, Statement of Christopher Beckley, 9 September 2011 [p7: para 14]). The data to determine the 1% AEP flood was supplied by Brisbane City Council to the design consultant by supplying one and two dimensional modelling information and the consultant then used three dimension modelling to give a more specific answer (Transcript, Christopher Beckley, 20 September 2011, Brisbane [p2855: lines 1-10]).

150 As far as Brisbane City Council is aware, while there were at the time statutory requirements relating to authorisation of the carrying out of works like the New Farm Riverwalk in tidal areas, the standards for flood resilience for structures were a matter for the design engineer applying professional judgment in the design, and relevant Australian standards to the extent they applied (see Exhibit 535, Statement of Christopher Beckley, 9 September 2011 [p7: para 15]).

151 Exhibit 535, Statement of Christopher Beckley, 9 September 2011 [p7: para 16].

152 Exhibit 535, Statement of Christopher Beckley, 9 September 2011, Attachment CJB-9 [p15].

153 Exhibit 535, Statement of Christopher Beckley, 9 September 2011, Attachment CJB-9 [p12, 13].

154 Exhibit 535, Statement of Christopher Beckley, 9 September 2011, Attachment CJB-9 [p18].


156 Transcript, Christopher Beckley, 20 September 2011, Brisbane [p2856].

157 Exhibit 556, Statement of Ashley Horneman, 9 September 2011 [p7: para 30].

158 Exhibit 556, Statement of Ashley Horneman, 9 September 2011 [p7:para 32 – p8: para 34].

159 The terminals were: Apollo Road, Bulimba; Brett’s Wharf, Hamilton; Commercial Road, Teneriffe; Oxford Street, Bulimba; Hardcastle Park, Hawthorne; Merthyr Road, New Farm; Wynnnum Road, Norman Park; New Farm Park, New Farm; Park Avenue, Mowbray Park; Sydney St, New Farm; Eagle Street/Riverside, Brisbane City; Holman Street, Kangaroo Point; Thornton Street, Kangaroo Point; QUT-Gardens Point, Brisbane City; Cultural Centre/Southbank, South Brisbane; Orleigh Park, West End; University of Queensland, St Lucia; and TJ Doyle Memorial
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Drive, Dutton Park (see Exhibit 556, Statement of Ashley Horneman [p3: para 11]).

Exhibit 556, Statement of Ashley Horneman, 9 September 2011 [p3-4: para 12]. Australian Standard AS 3962-2001 Guidelines for the Design of Marinas, which contains standards relevant to the design of ferry terminals, was first published in 1992 and therefore ferry terminals designed prior to this would not have used this Australian Standard as a basis for design: Exhibit 556, Statement of Ashley Horneman, 9 September 2011 [p4: para 13].

The design notes for the terminal upgrades state the flood velocity adopted was 2.5 metres per second. However, the design notes do not indicate to what flood event the flood velocity applies: Exhibit 556, Statement of Ashley Horneman, 9 September 2011 [p4: para 15].

The terminals were: a new site at University of Queensland; Guyatt Park, St Lucia; North Quay, Brisbane City; and South Bank, South Brisbane: Exhibit 556, Statement of Ashley Horneman, 9 September 2011 [p4: para 16].

Brisbane City Council indicated the design velocity for these new terminals was 3 metres per second, which, Brisbane City Council told the Commission, is ‘almost certainly’ a velocity that would be experienced in a 1% AEP flood: Exhibit 556, Statement of Ashley Horneman, 9 September 2011 [p4: para 15; p5: para 17].

These seven terminals are: University of Queensland; Regatta; North Quay; Queensland University of Technology; Maritime Museum (formerly River Plaza); Holman Street; and Sydney Street (see Exhibit 556, Statement of Ashley Horneman, 9 September 2011 [p7-8: para 33]).

Exhibit 556, Statement of Ashley Horneman, 9 September 2011 [p5: para 20 – p6: para 26].

The repair must comply with the conditions of DERM Exemption Certificate (permit no. CSCE019518811) dated 14 February 2011.

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Further approvals for building works and operational works may have also been required; however the Commission did not conduct an examination of these applications. See Exhibit 638, Sixth Statement of Rory Kelly, 21 September 2011 for a description of the approval process.

Further information was provided to address drainage concerns and the proposed density of the development was reduced from 110 townhouses and a shop down to 90 townhouses. See Exhibit 638, Sixth Statement of Rory Kelly, 21 September 2011 [p8: para 16(b)]; Annexure RJK-77. The initial application was for 110 townhouses, a shop and a caretakers flat: Exhibit 638, Sixth Statement of Rory Kelly, 21 September 2011 [p7: para 15].
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208 Exhibit 842, Statement of Julian Chambers, 20 September 2011 [p2: para 7]; Transcript, Julian Chambers, 18 October 2011, Ipswich [p4140: line 18; p4141: line 1].

209 Transcript, Gary Ellis, 19 October 2011, Ipswich [p4258: line 42].

210 Transcript, Gary Ellis, 19 October 2011, Brisbane [p4258: line 6].

211 Transcript, Gary Ellis, 19 October 2011, Ipswich [p4258: line 12].

212 Transcript, Gary Ellis, 19 October 2011, Ipswich [p4258: line 32].

213 Transcript, Gary Ellis, 19 October 2011, Ipswich [p4258: line 37].

214 Transcript, Gary Ellis, 19 October 2011, Ipswich [p4261: line 13, p4258: line 42]. Transcript, Natalie Plumbe, 19 October 2011, Ipswich [p4236: line 52].

215 Exhibit 861, Statement of Gary Ellis, 13 October 2011 [p12: para 22(b)].

216 Exhibit 861, Statement of Gary Ellis, 13 October 2011 [p13: para 22(g)]; Annexure GE-4 [p14].

217 Exhibit 861, Statement of Gary Ellis, 13 October 2011 [p14: para 24]; Transcript, Gary Ellis, 19 October 2011, Ipswich [p4255: line 29].

218 Transcript, Gary Ellis, 19 October 2011, Ipswich [p4259: line 1].

219 Transcript, Gary Ellis, 19 October 2011, Ipswich [p4259: line 17].

220 Transcript, Gary Ellis, 19 October 2011, Brisbane [p4259: line 17].

221 Exhibit 844, Queensland Reconstruction Authority Map of Disaster Affected Properties, Drawing Number LGA3960-0015-2, May 2011 [Citiswich marked].

222 State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p9: para 7.5].

223 State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p9].

224 State Planning Policy 1/03 Guideline: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p53: para A5.5].

225 State Planning Policy 1/03 Guideline: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p57].

226 Transcript, Andrew Fulton, Bundaberg, 11 October 2011 [p3916: line 49].

227 Section 235, Sustainable Planning Act 2009.

228 Section 231(2), Sustainable Planning Act 2009; Regulation 10 and Schedule 4, Table 4, Item 1 of the Sustainable Planning Regulation 2009.


230 For more information, see the Department of Transport and Main Roads website: www.tmr.qld.gov.au/Projects/Name/I/Ipswich-Motorway-Upgrade.aspx.

231 Transcript, John Adams, 28 October 2011, Brisbane [p4594: line 25; p4600: line 1].

232 Transcript, John Adams, 28 October 2011, Brisbane [p4602: line 51; p4603: line 1].


235 Transcript, John Adams, 28 October 2011, Brisbane [p4594: line 41]; Transcript, Natalie Plumbe, 19 October 2011, Ipswich [p4239: line 4].


237 Transcript, Geoff Jago, 29 September 2011, Emerald [p3426, line 40].


239 Submission of Jondaryan District Residents Association Inc, 7 July 2011 [p1].

240 Submission of Jondaryan District Residents Association Inc, 7 July 2011 [p1].


242 Statement of Anthony Martini, 2 December 2011 Annexure AM-2 [p19].

243 Statement of Anthony Martini, 2 December 2011, Annexure AM-2 [p19].

244 Transcript, Sharron Campbell, 5 October 2011, Brisbane [p3684: line 10]; Exhibit 718, Statement of Sharron Campbell, 7 September 2011 [p9: para 27]; Transcript, Jeanenne Wilkinson,
The Commission's interim report included the following definition of 'levee': 'Levee is a raised embankment or earthworks along the floodplain that reduce the frequency of inundation of areas adjacent to the waterway. They are designed to withstand certain river heights, and will be overtopped if floodwaters exceed this level (Office of the Chief Scientist, 2011, Understanding floods: questions and answers [p vii]).' This definition serves only to lend a certain context to the structures that are being discussed in this chapter; the question of what is a levee for the purpose of regulation is an issue that is not settled and is discussed at section 7.7.4 Types of levees to be regulated.

For a definition of overtopping, refer to Appendix 6, Glossary.
273 Central Highlands Regional Council, Goondiwindi Regional Council, Lockyer Valley Regional Council, South Burnett Regional Council, Toowoomba Regional Council, Western Downs Regional Council and Paroo Regional Council.

274 The means of regulating through local laws is discussed further at section 7.7.3 Controlling the construction of levees.


277 Exhibit 977, Statement of Mark Watt, 20 September 2011.

278 Exhibit 646, Statement of Graeme Scheu, 12 September 2011 [p3: para 7].

279 Exhibit 646, Statement of Graeme Scheu, 12 September 2011 [p3: para 6].

280 Exhibit 680, Statement of Philip Brumley, 6 September 2011 [p1: para 1].

281 Exhibit 681, Statement of Philip Brumley, 22 September 2011 [p2: para 7(b)].

282 It was originally empowered under the Local Government Act 1993, but after this legislation was repealed, its status was preserved under the Local Government Act 2009 and Local Government Reform Implementation Regulation 2008; Exhibit 680, Statement of Philip Brumley, 6 September 2011 [p1: para 1, 4].

283 Exhibit 681, Statement of Philip Brumley, 22 September 2011 [p1: para 3].

284 Exhibit 681, Statement of Philip Brumley, 22 September 2011 [p1: para 3-4].

285 Exhibit 681, Statement of Philip Brumley, 22 September 2011 [p1: para 5].

286 For a description of SunWater, see: Queensland Floods Commission of Inquiry, Interim Report, Section 2.1.5, 2011 [p34].

287 Exhibit 681, Statement of Philip Brumley, 22 September 2011 [p2: para 6].

288 Exhibit 681, Statement of Philip Brumley, 22 September 2011 [p2: para 7(b); Attachment A].

289 Exhibit 681, Statement of Philip Brumley, 22 September 2011 [p2: para 7(b)].

290 Exhibit 921, Statement of Keith Davies, 2 September 2011, Annexure 3 [p2: para 6-8; p3: para 13; p3: para 18-19].

291 Exhibit 943, Statement of Michael Birchley, 22 September 2011 [p2: para 10].

292 Exhibit 943, Statement of Michael Birchley, 22 September 2011 [p3: para 12].

293 Exhibit 943, Statement of Michael Birchley, 22 September 2011 [p2: para 8].

294 Exhibit 943, Statement of Michael Birchley, 22 September 2011 [p2: para 8].

295 Exhibit 943, Statement of Michael Birchley, 22 September 2011 [p2: para 8].

296 Section 61 and Schedule 9, Water Regulation 2002.

297 Haughton River, Major Creek and Tully/Murray Rivers; Exhibit 943, Statement of Michael Birchley, 22 September 2011 [p2: para 8].

298 Exhibit 943, Statement of Michael Birchley, 22 September 2011 [p2: para 8].

299 Schedule 3, Part 1, Table 4, item 3, Sustainable Planning Regulation 2009 of Schedule 3, Part 2, Table 4, item 1, Sustainable Planning Regulation 2009.

300 Schedule 6, Table 3, item 3, Sustainable Planning Regulation 2009.

301 Exhibit 943, Statement of Michael Birchley, 22 September 2011 [p8: para 35]; Transcript, Michael Birchley, 9 November 2011, Brisbane [p4806: line 8].

302 Exhibit 943, Statement of Michael Birchley, 22 September 2011 [p2: para 7].

303 Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain Management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p8, 23].

304 Sections 7 and 10, Sustainable Planning Act 2009.

305 These two mechanisms are preferred over the use of state planning regulatory provisions or regional plans. See section 5.1 Planning schemes.
306 It may also be necessary to amend Schedule 4, Table 5, Items 1–5, Sustainable Planning Act 2009, to ensure levees can be made ‘assessable development’.

307 Section 37 of the Local Government Act 2009 provides that a local law cannot duplicate a development process in the Sustainable Planning Act. Since levees would appear to fall within the definition of ‘operational work’ (as things constructed that allow interfering with water: section 10), carrying out their construction is ‘development’ (section 7) and is either assessable or self-assessable under the Act. Section 37(4) of Local Government Act 2009 excludes local laws relating to levees from the prohibition on duplicating Sustainable Planning Act processes until such time that a local government decides to prepare its next planning scheme under the Sustainable Planning Act.


312 Exhibit 646, Statement of Graeme Scheu, 12 September 2011 [p1: para 3].

313 Exhibit 977, Statement of Mark Watt, 20 September 2011 [p2: para 7]; Transcript, Phillip Brumley, 29 September 2011, Emerald [p3416: line 21]; Transcript, Michael Birchley, 9 November 2011, Brisbane [p4808: line 50].


315 For example, an informal arrangement surrounded levee development in the Goondiwindi region. Landholders building new levees on one side of the Macintyre River gave notification to owners of properties where the levee was likely to affect the flow of water in the river, see: Exhibit 646, Statement of Graeme Scheu, 12 September 2011 [p1: para 3].

316 Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain Management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p8, 23].


318 Exhibit 537, Statement of Anthony Leighton, 6 September 2011 [p1: para 2]; Transcript, Anthony Leighton, 19 September 2011, Brisbane [p2793: line 56].

319 Transcript, Anthony Leighton, 19 September 2011, Brisbane [p2795: line 30]; Exhibit 537, Statement of Anthony Leighton, 6 September 2011 [p2: para 71].

320 Transcript, Anthony Leighton, 19 September 2011, Brisbane [p2795: line 36].

321 Transcript, Anthony Leighton, 19 September 2011, Brisbane [p2796: line 57].

322 Transcript, Anthony Leighton, 19 September 2011, Brisbane [p2796: line 25]; Exhibit 537, Statement of Anthony Leighton, 6 September 2011 [p2: para 9].

323 Transcript, Anthony Leighton, 19 September 2011, Brisbane [p2801: line 15; p2808: line 12].

324 Transcript, Anthony Leighton, 19 September 2011, Brisbane [p2808: line 27].
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325 Transcript, Dr Luis Prado, 21 September 2011, Brisbane [p2946: line 19; p2946: line 39].

326 Exhibit 580, Statement of Dr Luis Prado, 8 September 2011, Annexure 1 [p4]; Transcript, Luis Prado, 21 September 2011, Brisbane [p2945: line 33].

327 Exhibit 580, Statement of Luis Prado, 8 September 2011, Annexure 1 [p3].

328 Exhibit 580, Statement of Dr Luis Prado, 8 September 2011, Annexure 1 [p1, 3-4].

329 Exhibit 580, Statement of Dr Luis Prado, 8 September 2011, Annexure 1 [p2]; Transcript, Dr Luis Prado, 21 September 2011, Brisbane [p2946: line 23].


331 Transcript, Dr Luis Prado, 21 September 2011, Brisbane [p2946: line 47].

332 Exhibit 580, Statement of Dr Luis Prado, 8 September 2011, Attachment 1 [p2].

333 Transcript, Luis Prado, 21 September 2011, Brisbane [p2947: line 18].

334 Transcript, Rory Kelly, 10 November 2011, Brisbane [p4946: line 24].


336 Exhibit 639, Seventh Statement of Rory Kelly, 21 September 2011 [p3: para 10(a)].

337 Exhibit 639, Seventh Statement of Rory Kelly, 21 September 2011 [p6: para 17; p8: para 24; p10: para 32]; Annexure RJK-114 [p3]; Annexure RJK-120; Annexure RJK-128 [p5].

338 Exhibit 639, Seventh Statement of Rory Kelly, 21 September 2011 [p5: para 13, 14; p6: para 17, 18; p7: para 22, 23; p10: para 32]; Annexure RJK-112; Annexure RJK-113 [p1]; Annexure RJK-114 [p3]; Annexure RJK-115 [p7]; Annexure RJK-120; Annexure RJK-128 [p5].

339 Exhibit 639, Seventh Statement of Rory Kelly, 21 September 2011 [p11: para 34, 35]; Annexure RJK-131; Annexure RJK-132.


341 Exhibit 639, Seventh Statement of Rory Kelly, 21 September 2011 [p12: para 41]; Transcript, Rory Kelly, 3 October 2011, Brisbane [p3512: line 12].

342 Transcript, Rory Kelly, 3 October 2011, Brisbane [p3512: line 42].

343 Exhibit 639, Seventh Statement of Rory Kelly, 21 September 2011 [p16: para 45].

344 Transcript, Rory Kelly, 3 October 2011, Brisbane [p3508: line 26].

345 Transcript, Ken Smith, 21 September 2011, Brisbane [p2886: line 35].

346 Transcript, Ken Smith, 21 September 2011, Brisbane [p2887: line 17].

347 Exhibit 566, QRA Map of Yeronga, 21 September 2011.

348 Brisbane City Council, Subdivision and Development Guidelines 2008, Part A Hazard Management, Chapter 1 ‘Flood Affected Land’ [p10: Table A1.6].

349 Transcript, Rory Kelly, 3 October 2011, Brisbane [p3508: line 26].

350 Transcript, Rory Kelly, 3 October 2011, Brisbane [p3514: line 4].

351 Exhibit 782, Statement of Graham Wode, 29 September 2011 [p1: para 3]; Transcript, Graham Wode, 12 October 2011, Maryborough [p3952: line 6].

352 Exhibit 782, Statement of Graham Wode, 5 September 2011 [p1: para 3]; Transcript, Graham Wode, 12 October 2011, Maryborough [p3952: line 3].

353 Transcript, Bruce Flegg, 5 May 2011, Brisbane [p1345: line 15].


356 The areas are specified in A1.1 of Annex 1 of State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p13].
357 State Planning Policy 1/03: *Mitigating the Adverse Impacts of Flood, Bushfire and Landslide* [para 6.3].

358 Outcome 2 of State Planning Policy 1/03: *Mitigating the Adverse Impacts of Flood, Bushfire and Landslide* [p7: para 6.12].

359 State Planning Policy 1/03: *Mitigating the Adverse Impacts of Flood, Bushfire and Landslide* [p7: para 6.13].

360 State Planning Policy 1/03: *Mitigating the Adverse Impacts of Flood, Bushfire and Landslide* [p7: para 6.13].

361 State Planning Policy 1/03: *Mitigating the Adverse Impacts of Flood, Bushfire and Landslide* [p7: para 6.13].

8 Development assessment in practice

Land use planning has two key stages: the making of land use plans which specify ideal outcomes, and the development approval process, which requires the assessment of development proposals against that plan. Steps which might be factored into the making of land use plans in order to minimise flood impact are discussed in various other chapters in this report; for example, see section 5.1.1 Model flood planning controls. This chapter of the report considers some aspects of the development approval process.

The Commission has not conducted an exhaustive review of the operation in practice of the development approval process prescribed by the Sustainable Planning Act 2009; such an activity would exceed the scope of the task with which it has been charged. Neither has the Commission conducted a review of the merits of development decisions which have already been made; it has not focussed on whether particular development approvals should or should not have been granted. Instead, the Commission has examined a number of council assessment files from across Queensland, to develop an understanding of how flood issues are, in practice, considered in the assessment process. That examination did not reveal evidence of systemic failure, but it did enable the Commission to identify some aspects of the process which could be changed to better achieve the objective of minimising flood impact to property. In this chapter, some council processes are discussed in a general way. On occasion, it is useful to make specific reference to files examined by the Commission.

Whereas councils are generally responsible for approving a use in the first instance through land use planning systems, building certifiers check that building work complies with conditions of a development approval for a material change of use that relate to the built form of the use and other standards specified in legislation and building codes. The Commission has not conducted its own investigation of the scope for improvement, if any, to be made to Queensland’s building certification system, as the task is not raised by the Commission’s terms of reference. The Commission does note however that the Queensland Government, through Growth Management Queensland, is reviewing Queensland’s building certification system in response to calls to improve building certifiers’ professional development, work practices and available resources.

Not all development applications are assessed against flood-related development controls. This may occur for a number of reasons. For example, the application of the flood controls may be dependent on the existence of a flood map. Another reason may be that the proposed development is exempt from assessment against a planning scheme’s provisions.

For the most part, the Commission’s examination of development assessment files has been conducted for the purpose of identifying issues of process which arise at the local government level with the assessment of development applications. However, the circumstances that led to the construction of one development, which located two residential towers very close to the Brisbane River (the buildings are set back a distance of
In May 1996, the Department of Natural Resources commissioned a study into the use that could be made of the land on which the Tennyson power station was situated. The report noted that the land was low-lying and susceptible to flooding; it had been flooded many times in its history. The study concluded that the site’s future use would be limited by:

- poor road access
- contamination from previous activities
- poor drainage
- the need for significant fill to raise the site level to the required ‘flood immunity level’ for development.

Despite these limitations, in September 2002, Tennis Queensland made an unsolicited proposal to the Queensland Government to build a State Tennis Centre on the site. Tennis Queensland’s proposal listed six possible sites for the tennis centre, but ultimately concluded that the Tennyson power station site was the most attractive option. Of the six sites, the proposal identified only the Tennyson site as deliverable at no cost to government. Before presenting the proposal to the Queensland Government, Tennis Queensland granted Mirvac, a property development company, what it described as a ‘mandate’ to work exclusively with it to acquire and develop the Tennyson power station site.

The Queensland Government rejected Tennis Queensland’s proposal and opened the land to the market for tender. The winning developer would be required to deliver a state of the art tennis facility on the Tennyson site at no cost to the government. The section of land not used for the State Tennis Centre would be made available to the developer for an associated development project compatible with the tennis centre and surrounding areas. It was envisaged that the developer would use the associated development to fund construction of the tennis centre. The executive director of the Infrastructure Planning and Development Branch, Sport and Recreation Services of the Department of Communities gave evidence that the Queensland Government was aware when it opened the development of the land to tender that the site presented those problems.

After expressions of interest were received, three parties were shortlisted to submit detailed development proposals. Two of the three proposals were regarded as non-conforming with the project brief and draft development agreement as they did not locate both the tennis centre and the associated residential development on the one site. The conforming – and ultimately successful – proposal was submitted by Mirvac. The Department of Communities witness accepted that it was plain from the concerns expressed by the other bidders about locating the tennis centre and the associated development on the available land that the site would be a tight fit.

The Queensland Government was not prepared to locate any part of the project at another location, and Mirvac did not consider asking the Queensland Government if the development could be built on a different site. Its chief executive officer of development gave evidence that, provided the proposal was able to meet the council’s minimum requirements on flood, Mirvac regarded the concept as ‘perfectly viable’.

Mirvac’s bid was not without problems, however; it sought a number of departures from the draft development agreement, including:

- locating some of the project infrastructure over easements, due to the tight fit of the site
- locating some of the tennis courts below the 1 in 100 flood level.

The Queensland Government entered negotiations with Mirvac to determine whether its proposal could be altered sufficiently to meet the minimum requirements for the project as contained in the Queensland Government’s project brief and draft development agreement.

During these negotiations, Mirvac advised that it required a financial contribution of $10 million from the Queensland Government to increase the commercial viability of the project. This represented a significant departure from the original project requirement of no cost delivery to government; however, the state agreed to the request. At no stage was serious consideration given to locating the project elsewhere. On 16 June 2005, Mirvac
was appointed as the preferred developer for the Tennyson Reach development. Subsequently, the Brisbane City Council concurrently assessed and approved preliminary approval and development permit applications for the development. Aspects of that assessment process are discussed later in this chapter.

During the January 2011 floods, the Tennyson Reach development was inundated. The basement and ground floor levels of two of the three residential buildings suffered the most severe effects, with water filling both basement levels (nine ground floor apartments were inundated to a depth of approximately 65 centimetres). Residents of all apartments were unable to obtain access to their properties for several weeks, due to the extensive damage caused to essential services in the building. Ground floor residents were not able to return to their apartments until June 2011.

The State Tennis Centre also sustained significant damage. Floodwaters inundated two grass courts, four clay courts, nine hard courts, the car park, the maintenance shed and the pump sheds. Additionally, the entire first level of the Pat Rafter Arena building was flooded to a depth of three to four metres. Property damage totalled approximately $6 million.

What emerges from the circumstances described is that although the Brisbane City Council was responsible for assessing Mirvac’s development application, the location for the project was essentially the choice of the Queensland Government. If the Queensland Government becomes involved in selecting land for a development, it should exercise caution when choosing a site; if it becomes apparent that the selected site presents significant flooding risks, it ought to be prepared to consider abandoning the development on that site.

This is particularly so when a residential development is proposed. Two residents of Tennyson Reach whose properties were flooded said that the involvement of the Queensland Government in the development led them to believe that the site would be a safe investment. One of them gave evidence that he did not conduct any flood searches before purchasing the property. He believed that the combination of Queensland Government involvement, Brisbane City Council approval and a reputable developer meant that the development would have been held to stringent standards. Members of the public are likely to regard projects like the Tennyson Reach development as being, at least in part, a Queensland Government initiative and thus having been given the imprimatur of the Queensland Government.

8.1 Sources of flood information for use in development assessment

Good decision-making in development assessment for land susceptible to flooding relies on decision-makers’ having access to accurate data. Councils need sufficient data to allow them to assess the effect of the development on the development site itself and on other properties. Inevitably a balance must be found between ensuring that there is sufficient information on which to make decisions and the time and cost involved in acquiring information.

There are two sources of flood information for development assessment: flood information maintained by the council itself and site-specific flood information provided to the council by the applicant. Each of these is considered below.

8.1.1 Flood information maintained by councils for use in development assessment

Many councils maintain information on flood and overland flow. These provide the councils with their own source of information for use in development assessments. (The importance of councils’ developing these maps and models is discussed in chapter 2 Floodplain management and section 10.2 Stormwater.) By way of example, the practices of three councils are discussed below.

Brisbane City Council has prepared detailed maps of flooding and overland flow paths. These ‘flood flag maps’ are made publicly available and are used in the assessment of development applications, although the mapping of overland flow paths is not yet complete. The council’s development assessment team also makes use of FloodWise Property Reports for Brisbane River flooding, major creek flooding and storm surge, and a geographic information system, known as ‘iBIMAP’, which has layers showing flood flags, contours and stormwater drainage to identify land which may be subject to flooding.
Bundaberg Regional Council maintains local flooding models to help it manage stormwater flows in Bundaberg and the surrounding areas. It regularly uses these flood models to determine development assessment conditions. Bundaberg Regional Council’s director of infrastructure and planning commented that the use of models is vital in areas which are rapidly developing; the models must be updated regularly to reflect changed conditions caused by new development. The council has a local flooding model for Bundaberg that is progressively updated to include data for works undertaken, so that at any particular time the model reflects the position on the ground. The model is provided to development applicants preparing their development proposals, who adjust the model to reflect the proposal and then return the adjusted model to the council to be checked.

The task of keeping models up to date is difficult in catchments where a significant amount of development occurs. The process of updating the model must take account of matters such as the placement of fill, the construction of flood mitigation devices such as dams or levees, and the effect of development in the upper part of the catchment on downstream flood levels. This process is made more difficult for a council by uncertainty as to when works approved will in fact be constructed.

Fraser Coast Regional Council, at least until recently, used maps of historical flooding in its planning scheme and in providing information in response to flood searches. Its assessment of development applications is based in part on the assessment team members’ personal knowledge of the flood and drainage history of the area in question. A council officer explained that the council is developing models of various levels of sophistication in different areas, with hydraulic models used most in areas of high growth, such as Hervey Bay. Where a hydraulic model is available, the potential impact of each new development is assessed in accordance with the model.

There is an obvious advantage in councils’ maintaining their own flood models. It ensures that there is uniform approach to assessing flooding and overland flow; this allows a consistent approach within a council’s area. Updating the model or map regularly to reflect new developments as they occur allows the council to analyse the cumulative effects of development in its area.
Recommendation

8.1 Councils should, resources allowing, maintain flood maps and overland flow path maps for use in development assessment. For urban areas these maps should be based on hydraulic modelling; the model should be designed to allow it to be easily updated as new information (such as information about further development) becomes available.

8.1.2 Site-specific flood information provided by an applicant

If a development application is made for an area where the council does not have a flood map or model, the council will not be able to consider the potential impacts of flood and stormwater on, or resulting from, the development unless the applicant provides information as part of the application. A council may ask an applicant to provide a flood map or flood study. Practically, this may pose a challenge to somebody who has no knowledge of the flood characteristics of a particular area. The assessment of development applications where there is no flood map or model is considered in section 2.7 Flood mapping for land planning controls.

Even where a council has a flood map or model for an area where a development application is made, it may request the applicant to provide detailed site-specific flood information as part of the application.

The Commission considered two aspects of applicants’ provision of site-specific flood information:

- applicants’ use of models to generate and provide site-specific flood information to councils
- councils’ guidance of applicants about what flood information in support of a development application should be provided and how it should be provided.
Flood maps and models used by the applicant

Councils need to be able to assess whether a map or model provided by an applicant is accurate. Bundaberg Regional Council’s director of infrastructure and planning services gave evidence that applicants sometimes submitted inaccurate flood reports. When this occurred, it was the role of the council engineers to go back to the consultants, reject the report and identify the shortcomings; if the issue was not resolved, the development was not approved. The practice of Bundaberg Council is to provide any council developed flood map or model to the applicant for use by the applicant’s consultant. The consultant adjusts the model to reflect the proposed development and returns it to the council for checking. This is a sensible practice; it would be beneficial if it were adopted more widely.

Fraser Coast Regional Council’s approach to applicant-prepared flood studies is to refer them to the council’s infrastructure and environment directorate for engineering officers to conduct a first review. If that review indicates possible major problems with the data provided, the council will consider referring the review of the problems to appropriately qualified consultants for further consideration.

There are clear advantages to councils’ maintaining their own flood maps and models for use in the development assessment process. However, there may be instances where the applicant is able to provide more accurate information. Where this occurs, it is sensible for the council to use that information. For example, while Ipswich City Council generally encourages developers to use the same flood model as the council, the council’s development planning manager gave evidence of an instance where the 1% AEP flood level of a particular property derived from a flood study prepared by a developer for a development application was used even though it differed from the council identified 1% AEP flood level. The council accepted that the developer’s 1% AEP flood modelling was more accurate for the specific site and used it in preference to the council’s own information.

Recommendation

8.2 Councils should make their flood and overland flow maps and models available to applicants for development approvals, and to consultants engaged by applicants.

Guidance from councils to applicants about the provision of flood information

If a council requires flood information from an applicant in support of a development application, the council should provide the applicant with clear guidance on what information is required and how it should be presented. This will ensure that it is apparent to the applicant what it does, and does not, need to provide and that the council receives all the information that it requires for the assessment process.

As previously mentioned, the council needs to be in a position to assess whether the map or model provided by the applicant is reliable. For this reason it is vital that any model or map, or information generated from such a model or map, is accompanied by a clear statement of the methodology used in its preparation and the assumptions upon which it is based.

Ipswich City Council, since September 2011, has had a stormwater management guideline that sets out a reporting template showing the type of information typically required in stormwater management plans submitted to the council. (For example, the plan must include a flood impact assessment.) The guideline also sets out factors to be considered in deciding which flood modelling methodology should be used, the data that should be used and how the data should be presented. The guideline was prepared with assistance from consultants with expertise in hydrology and hydraulic modelling. It includes a requirement for a joint probability analysis to be prepared where the flow within the local watercourse is influenced by regional flooding. It also includes a requirement for applicants to identify the assumptions upon which any model or map submitted is based.

An independent consultant engineer appointed by the Commission reviewed the guideline and commented that it represented current best practice among Queensland councils.

It would be desirable for every council to provide applicants with specific guidance setting out information of this type, although, for reasons explained elsewhere in this report, it should be included in a planning scheme policy.
rather than a guideline that has no legislative effect. (See section 5.3 Planning scheme policies.) A planning scheme policy could also indicate the type of situation where no information is required. It may be that councils with well developed overland flow information and flood models do not require much (or perhaps any) information about overland flow or flood to be provided in a development application; this too should be indicated in the policy.

The Commission recognises that some councils may have limited technical and financial resources available to prepare such guidance; the Queensland Government could support councils by preparing a template planning scheme policy to be included in the model flood planning controls.

### Recommendations

8.3 The Queensland Government should draft a model planning scheme policy to be included in the model flood planning controls that sets out the information to be provided in development applications in relation to stormwater and flooding. The policy should specify:
- the type of models and maps to be provided
- the substantive information required to be shown in the development application
- how the assumptions and methodologies used in preparing the models and maps should be presented
- the form in which the information on stormwater and flooding is to be presented in the application.

8.4 If the Queensland Government does not include such a policy in the model flood planning controls, councils should include a planning scheme policy in their planning schemes that sets out the information to be provided in development applications in relation to stormwater and flooding. The policy should specify:
- the type of models and maps to be provided
- the substantive information required to be shown in the development application
- how the assumptions and methodologies used in preparing the models and maps should be presented
- the form in which the information on stormwater and flooding is to be presented in the application.

### 8.2 Assessing flood information in development applications

A development application typically includes (in addition to mandatory forms) technical reports that are intended to advance a development applicant’s case as to how the proposal will meet the requirements of the relevant planning scheme. Depending on the type of application and the constraints of the land, supporting reports may address matters such as hydrology, stormwater and engineering design. Councils must be able to interpret and evaluate the technical information provided to them about the flood risk associated with a particular site, and the flood impacts associated with a particular development proposal, in order to assess the development against the requirements of the planning scheme.

A brief description of the way Ipswich City Council and Brisbane City Council assess technical information about flood provided to them in support of a development application follows. The description of Brisbane City Council’s processes is supplemented by a description of the process it undertook when assessing these aspects of Mirvac’s application for the Tennyson Reach development. Other councils may follow similar or other processes. The Commission acknowledges that the process adopted by any particular council in any particular case will be determined by the scope and nature of the development application and the associated flood impacts, as well as a council’s resources. The section concludes with some more general observations about matters which may limit councils’ ability to adequately assess applications against the flood controls in planning schemes and is drawn from evidence given by Bundaberg Regional Council.
8.2.1 Ipswich City Council’s assessment process

When a development application is lodged with Ipswich City Council, it is assigned to an assessment officer. That officer presents the application to an internal panel called an ‘Integrated Development Assessment Panel’.68

The purpose of the panel, which meets twice a week, is to discuss the strategic principles for the assessment, to identify any obvious issues or deficiencies with the application and to decide whether the application should be referred internally to other council teams for advice.69 Council engineers that assess the flood aspects of operational works development applications participate in the panel.70 If the subject land is within an overland flow path or below the council’s ‘1 in 100 flood line’, the application will be referred to a hydraulic engineer within council to assess the proposal against the planning scheme provisions about flood.71

To prepare a flood study in support of an application, an applicant may make use of studies undertaken by the council, but if none are available, the applicant will need to embark on its own hydrological and hydraulic studies.72

As discussed in section 8.1.2 Site-specific flood information provided by an applicant, since September 2011 the Ipswich City Council has had a stormwater management guideline that indicates the flood information that should be provided to the council with development applications.73

The council reviews flood studies it receives. Its normal practice for studies of a particularly complex nature is to refer them internally to the council’s Works, Parks and Recreation section for further comment.74 If it is considered necessary, the council may refer the flood study to a third party consultant for independent review.75

8.2.2 Brisbane City Council’s assessment practices

A development application lodged with Brisbane City Council is considered by a team of senior town planners, who identify key issues arising from the application, determine what specialists within council are required to contribute to the development assessment process and allocate the application to an assessment manager. The need for further internal referral of the application may be identified as the assessment progresses.76

Where necessary, assessment managers at Brisbane City Council are able to refer applications to other sections of the council for advice.77 Straightforward hydraulic issues are ordinarily assessed by an engineering officer within the assessment team to which an application is allocated.78 More complex hydraulic issues are referred to the technical specialist team, which contains specialist engineers. When a flood report accompanying a development application is referred to the technical specialist team, a hydraulic engineer conducts an assessment against the provisions of the Brisbane city planning scheme, with reference to the Australian Rainfall and Runoff Guideline and the Queensland Urban Drainage Manual, to identify possible issues, provide advice and make recommendations to the assessment manager to approve, approve with conditions or refuse a development application.79 The specialist engineer may also request that further information be provided by the applicant.80

Some development applications lodged with the Brisbane City Council are assessed pursuant to the council’s RiskSmart program. The RiskSmart process is available for development applications which are regarded as having a low risk of adverse impact. For RiskSmart applications, the assessment is undertaken by a council-accredited consultant; if flood needs to be considered, a registered professional engineer assesses compliance with the relevant planning scheme provisions and planning scheme policies.81

For all applications, the person undertaking the assessment prepares a report to the council commenting on key issues, which may include flood, and recommending that the application be approved (in whole or part), approved with conditions, refused or given preliminary approval.82

The Tennyson Reach development illustrates this process in practice.

On 16 November 2005,83 Mirvac lodged a development application with the Brisbane City Council for:

- a preliminary approval for a material change of use overriding the planning scheme under section 3.1.6 of the Integrated Planning Act 199784 for multi-unit dwellings (191 units in three buildings), and park
- a development permit for a material change of use for indoor sport and recreation (tennis centre stadium) and outdoor sport and recreation (outdoor courts) and associated uses including office, restaurant, shop and convention centre (function room)
- a development permit for a material change of use for multi-unit dwellings (114 units in buildings E & F) and park
• a development permit for material change of use for multi-unit dwellings (88 units in building D), shop, restaurant and park
• a development permit for operational works for disturbance to marine plants.

The preliminary approval for a material change of use overriding the planning scheme was sought for a number of reasons, including the complexity of the development and the fact that the site was zoned ‘Community Use Area CU8 (Utility Installation and Road Area)’. The application for preliminary approval overriding the planning scheme under the Integrated Planning Act was assessed by the council having regard to the whole of the planning scheme. Once granted, the approval prevailed over the planning scheme to the extent of any inconsistency. A preliminary approval of this nature sets the framework for the assessment of a proposed development by specifying codes, criteria and levels of assessment against which the development is assessed.

The development application submitted by Mirvac was accompanied by a number of site specific reports, addressing matters such as flooding and stormwater. To ensure that the Tennyson Reach proposal met the flooding and drainage requirements of the Brisbane planning scheme, the flooding and stormwater reports were reviewed by a hydraulic engineer from the technical specialist team. The engineer’s review identified three issues requiring the provision of further information from the developer: the ‘flood immunity’ of access roads, overland flow easements and underground drainage requirements. A senior town planner of the Brisbane City Council gave evidence that, in his experience, the engineer’s advice was, in effect, an implied statement that all flooding issues, other than the three referred to, had been adequately addressed. He confirmed that he proceeded on that assumption. Assessment managers would not, he said, usually deviate from an engineer’s advice; any matters about which the engineers remained silent would not be further considered in the assessment process.

The Commission does not find that the engineer failed to consider any relevant issue. The point to be made is that proceeding on assumption is problematic. An assessment manager might assume that all hydraulic matters have been considered and dismissed in the absence of advice to the contrary, whereas there may in fact have been a failure to consider them at all.

Communication between individuals of different professional disciplines was also a feature of Mirvac’s subsequent request to change the development permit for a material change of use that was granted on 9 October 2006 for the State Tennis Centre. The request sought approval for the construction of additional storage rooms and a new multi-purpose room at the tennis centre. Plans submitted in support of the application indicated that flood barriers would be incorporated along the door openings of the rooms.

The proposed change was referred to the principal engineering officer in the development assessment team (not the technical specialist team), who advised that the proposed change to the existing development approval would not affect the previously set engineering conditions.

A week later, the council architect responsible for reviewing the proposal gave his advice, expressing concerns as to how the barriers would operate in terms of flooding, and requesting that the issue be referred to hydraulic engineers for comment. The architect’s concerns were referred to the developer, which provided further information about the flood barriers. However, the senior town planner indicated that he did not know whether the architect’s concerns had been forwarded to the council’s hydraulic engineers for comment; he could not find any document on the file which suggested that this had occurred.

8.2.3 Improving council assessment processes

A range of professional disciplines can helpfully contribute to the assessment of a development application against flood controls in planning instruments. In particular, given the complexity of the type of information supplied with respect to flooding issues, expert engineering assistance is often required.

When a flood study is provided in support of a development application it should ideally be referred to an appropriately qualified engineer, as a matter of course, for advice as to whether the proposed development meets the applicable flood-related assessment criteria. The Commission acknowledges that this may not be possible for some councils, due to resource constraints.
As one development application may be subject to comment by a number of professionals, it is important that the responsibilities and accountability of each contributor are clear from the outset.

There must also be sufficient communication between each contributor and the town planner in charge of the file generally for the town planner to be able to make a complete evaluation. For example, where an engineer provides advice with respect to a flood study report submitted as part of the application, an indication as to matters of concern with the hydrology of the proposed development alone is insufficient. The engineer's advice to the town planning officer should specifically comment on the adequacy of the development by reference to each of the scheme criteria to the extent they are able; and otherwise identify and explain any inability to comment. Councils should implement a process to ensure communication of this kind occurs.

**Recommendation**

8.5 Councils should review their assessment processes to ensure that:

- the person with primary responsibility for the assessment of the development application considers what expert input is required
- where a development application is subject to comment by a number of professionals, the responsibilities and accountability of each contributor are clear
- where flood-related information is referred to an expert for advice, the expert is required to comment on the extent of compliance by reference to each relevant assessment criteria and identify and explain any inability to comment.

### 8.2.4 Information requests

Earlier in this report, the Commission has made recommendations which are designed to ensure that councils receive appropriate flood information from an applicant at the time a development application is made; see section 5.1.2 Features of the model flood planning controls and section 8.1.2 Site-specific flood information provided by an applicant.

When flood information provided in support of a development application is insufficient for the flood risk associated with the development to be assessed, a council acting prudently will request the applicant to provide further information. The value of making that request will depend on the precision with which the council identifies the information which it requires.

For example, Ipswich City Council, when assessing a development for a child care centre in Goodna, on land susceptible to flood, requested the applicant to submit a site-specific flood study for the proposal which would address the potential effect of the development on flood levels at surrounding properties. Council officers gave evidence that the request was made because the child care centre was surrounded by residential uses. In the Commission's view, while the effect of the development on surrounding areas was a relevant consideration, the council's request was incomplete because the development applicant was not asked to provide information about the way in which stormwater and flood would affect the proposed development itself. This was a relevant line of inquiry given the site's susceptibility to flood. As it happened, and despite the limited scope of the information request, the flood study provided by the development applicant included information about the effect of flood on the proposed development. This outcome was not, however, guaranteed by the terms of the request.

### 8.2.5 Problems in development assessment

The Commission has not undertaken a comprehensive investigation of the difficulties which may arise in practice when assessing development applications against flood-related assessment criteria. However, Bundaberg Regional Council has drawn to the Commission's attention a specific difficulty it has had to deal with, as well as the more general problem of lack of available expertise.
Difficulties in establishing compliance with a planning scheme

Planning schemes generally contain criteria against which development proposals are to be assessed in relation to flood risk. Sometimes, because of the way criteria are drafted, it is difficult for applicants to demonstrate compliance.

By way of example, the Kolan Shire Planning Scheme, through the use of an infrastructure overlay map, identifies 12 properties in the town of Gin Gin as being located within a flood and drainage liability area. The scheme requires that development proposed on land identified in the overlay map provide ‘an acceptable level of flood immunity’. One way in which an applicant can demonstrate compliance with this standard is by constructing the floor level of habitable rooms at not less than 300 millimetres above the level of a 1% AEP flood. Other provisions in the planning scheme also require floor levels for particular uses to be at a height above the 1% AEP flood level.

Demonstrating compliance with the habitable floor level standard is prohibitively onerous, because Bundaberg Regional Council (the council responsible for administering the scheme) does not have information about the 1% AEP flood level for the Kolan Shire. Thus, short of engaging a specialist engineer to determine a 1% AEP flood level, an applicant cannot demonstrate compliance with this provision of the planning scheme.

The council has decided that, in practice, if an applicant demonstrates that the proposed development was designed with floor levels similar to the levels of the adjacent homes, that will satisfy the council that there is an acceptable level of flood immunity. The council intends to address this difficulty in its new planning scheme by undertaking hydraulic modelling of the creeks in the area.

Avoiding the circumstances described above is, it seems to the Commission, a matter of councils and the Queensland Government taking appropriate care when making planning schemes.

Expertise of staff

It is essential that assessment is undertaken by appropriately qualified staff to ensure any approved development adequately addresses flood risk. Some councils, though, are hampered by a lack of resources and ability to attract and retain suitable qualified staff.

The director of infrastructure and planning of the Bundaberg Regional Council expressed concern about the dearth of suitably trained staff to assess hydrologic and hydraulic reports. The council has difficulty attracting and retaining engineers with experience and skills in stormwater modelling; this affects its ability to properly assess development applications for which stormwater design is a relevant consideration. The council deals with this in practice by paying for its staff to be trained in the use of the relevant models. This is a pragmatic, if not ideal, solution to the problem.

8.3 Development conditions

Councils, and in some cases, government agencies, can attach conditions to a development approval. Conditions are a valuable part of the development assessment process. They regulate how a development is to be established and will proceed. Just as development applications can be refused where they are subject to an unacceptable risk of flood, so too can they be approved, where the risks associated with flood can be managed by attaching conditions to the approval. For example, a development may be made subject to a condition that minimum floor levels are adopted.

Once a development approval has been granted by a council, it attaches to the land and binds any subsequent owner or occupier of the land who chooses to exercise the rights conferred by the approval. The ways in which subsequent owners and occupiers of land may be made aware of the conditions attaching to the land is discussed in section 2.9.2 Flood information for dealing with property.

Conditions can only be lawfully imposed if they are relevant and reasonably required in relation to the development or use of premises; a condition must not be an unreasonable imposition on the development or use of premises. The scope of matters that may be controlled through conditions is broad, although is subject to some specific limitations. Conditions must be certain and final.
8.3.1 Conditions going to acceptability of use

In some cases, conditions are of such fundamental importance that without their inclusion, a development application would be refused.

The Commission has, for example, heard evidence about Ipswich City Council’s assessment process for a child care centre in Goodna, which it approved in August 2006.\textsuperscript{123} The site is located on land which is at risk of flooding from two sources: the Bremer River and an adjacent overland flow path (described by an employee of the centre as a creek)\textsuperscript{124}. It is within Ipswich City Council’s ‘1 in 100 flood line’ and is above the council’s ‘1 in 20 development line’ by about a metre.\textsuperscript{125} The entire site was affected by the 1974 flood and during the January 2011 flood was inundated to a depth of at least 1.8 metres.\textsuperscript{126}

The development application was submitted with a town planning report, which set out how (in the town planner’s view) the proposal complied with the relevant planning scheme codes.\textsuperscript{127} As the application was for the construction of a child care facility, the Ipswich Planning Scheme 2004’s community use code required the use be located so as to ‘avoid areas prone to flooding’, and be able to function effectively during and immediately after natural hazard events, such as flood.\textsuperscript{128}

The town planner’s report acknowledged the site’s proximity to the ‘1 in 20 development line’ and that it would be completely covered by a ‘1 in 100 flood’. It went on to note that the site was within the area of ‘the backup flood water’ from the Brisbane River but was not likely to be subject to flash flooding. In the event of a potential ‘backwater flood’ it was expected that approximately 12 to 24 hours notice would be available to evacuate the facility.\textsuperscript{129}

After receiving the development application and the town planning report, the council requested the applicant to submit a site-specific flood investigation for the proposal.\textsuperscript{130} The engineer’s report provided in response examined local flooding from the adjoining waterway only; it stated that mitigation of Brisbane River ‘backup flooding’ could not be achieved at the local level.\textsuperscript{131} The report suggested that the proposed development could achieve immunity from a 1% AEP flood by setting appropriate minimum building levels and constructing walls along two boundaries to divert flows from the roadway into the waterway and to prevent the entry of flows into the site from the waterway.\textsuperscript{132} Despite the fact that the site-specific flood report did not address how riverine flooding could be mitigated, a council witness gave evidence that the council saw no reason for a further report to be obtained from the applicant or for commissioning its own flood report.\textsuperscript{133}

In response to questioning about the reasons which informed the council’s decision that the development proposal complied with the requirements of the community use code in respect of flood, the council officer acknowledged the following:

- the application’s compliance with the requirement to avoid areas susceptible to overland flooding was assessed with a clear understanding that the site had been inundated in the past from riverine flooding, but the assessment had regard primarily to flooding by stormwater\textsuperscript{134}
- the proposed facility would not be able to function effectively during and immediately after a major flood, such as at that which took place on 11 January 2011, but it was considered that the site could function during, and immediately after, a less severe flood.\textsuperscript{135}

The council witness’s evidence was that ultimately the development was considered to comply with the community use code requirements in respect of flood by reason of the conditions imposed on the development approval.\textsuperscript{136} Relevant conditions required that:

- the design and construction of the development be in accordance with the site-specific flood report submitted to the council (this included the construction of the solid wall along part of the boundary of the site)\textsuperscript{137}
- all buildings and structures have a base floor level of 300 millimetres above the level associated with a 1% AEP flood\textsuperscript{138}
- a sealed surface be constructed to convey stormwater flows into the existing drainage channel\textsuperscript{139}
- signs be erected in the car park to advise that the car park is subject to local creek flooding and to backwater flooding from the Brisbane River in some circumstances.\textsuperscript{140}
• a flood escape plan and procedure be developed and periodically rehearsed; the plan is to include permanently displayed signs and directions for staff, visitors and parents to follow.141

The council witness said that he could, in hindsight, see that there would have been benefit in imposing conditions requiring construction of the building with flood-resistant materials, and that the car parks signs should have described the whole development, and not just the car park, as being subject to flooding in some circumstances.142 But in the Commission’s view, even if these measures had been made conditions on the approval, the development would have remained incapable of complying with the community use code requirement that child care facilities should be located away from ‘areas prone to flooding’.

8.3.2 Standard conditions

Typically, the conditions which attach to a development approval are written by the assessment manager. To alleviate the drafting burden, many councils maintain a pool of standard conditions which they draw from when conditioning a development. In doing so, councils need to ensure that only conditions which are required and relevant to the development are included. The approval of the Goodna child care centre provides an example of the use of standard conditions.

Ipswich City Council attached a standard condition related to flood to its approval of the Goodna child care centre in August 2006. This development application is discussed above, see section 8.3.1 Conditions going to acceptability of use.

Condition 24(g) to the approval required the applicant to provide a stormwater detention basin or system on the land, designed and constructed in accordance with the Queensland Urban Drainage Manual, with some further requirements for its construction.143 Condition 24(h) required the proposed development to be designed and constructed in accordance with the flood report provided in support of the application.144

The report referred to in condition 24(h) expressly stated that the site area, topography and development layout was ‘not really suited to a stormwater detention arrangement’ and instead proposed the construction of a water tank on site to reduce stormwater discharges.145

The council officer who gave evidence said that condition 24(g) was a standard engineering condition, qualified by condition 24(h).146 He acknowledged, in hindsight, some difficulty in seeing the point of the condition.147 Certainly, any member of the public examining the conditions could have been forgiven for believing that infrastructure for stormwater detention would be part of the development; there was no clue to the contrary.

As stated at the beginning of section 8.3, conditions attaching to a development approval must be relevant and reasonably required. Councils should take care when imposing conditions on a development approval to ensure that each condition has purpose.

Recommendation

8.6 Councils should take care when imposing conditions to ensure that each condition has purpose; standardised conditions should not be included where they have no application to the development in question.

8.3.3 Conditions which require flood evacuation plans

Ipswich City Council also attached to its approval of the Goodna child care centre in August 2006, discussed above in section 8.3.1 Conditions going to acceptability of use and section 8.3.2 Standard conditions, a condition that required a ‘flood escape plan and procedure’ be developed and periodically practised. The plan was to include permanently displayed signs and directions for staff, visitors and parents to follow.148 The council officer explained that this condition was imposed to ensure the safe evacuation of the centre given the site’s potential for flooding.149

Evacuation plans are an appropriate topic to be addressed in a condition to a planning approval and, in the case of the Goodna child care centre, this condition was one of several related to the site’s susceptibility to flooding. It would be, however, inadvisable to rely on a condition requiring a flood evacuation plan as the sole basis for
approving a development susceptible to flooding. The success of such a measure depends on human intervention, which of itself assumes the occupiers of the site are aware of the condition, are present at the time of flooding and able to comply with the plan.

**Recommendation**

8.7 Councils should not rely on a condition requiring an evacuation plan as the sole basis for approving a development susceptible to flooding.

**8.4 Communicating information about flood risk**

In instances where a council has information about flood risk, it should be communicated to a development applicant early in the assessment process. A planning scheme is one means of communicating this information in the first instance, for example, by depicting an area at risk of flood on a map.

There may be other circumstances in which a council conducts an assessment of a site on the basis of less than the full extent of flood information that is available. For example, a council must comply with the rules of the *Sustainable Planning Act 2009* in assessing a development application. For code assessment, councils must only consider the codes and standards contained in planning instruments, not extraneous materials. This means if a council has a new flood map not yet reflected in a planning scheme, it generally cannot use the map in the assessment process for code assessable development. In such circumstances, it would be prudent for the council to alert the applicant to the fact that the development application has not been assessed by reference to all available flood data. This would allow such an applicant to consider obtaining the additional data. Similarly, if the council does not have any flood information at all, it should notify the applicant accordingly, to ensure that the applicant does not infer from the fact of a development approval’s being granted that there is no flood risk.

Ipswich City Council has used decision notices that include advice notes about flood information for sites which were inundated during the 1974 floods. These decision notices contain the following advice:

> The subject site was fully inundated in the 1974 flood. Council, and its servants and agents, accept no liability or responsibility for any loss or damage to person or property of whatever nature or however caused as the direct or indirect consequence of the granting of the approval herein contained. Such approval has been granted at the request of the Developer and in reliance of [sic] information submitted by the Developer in support thereof.

The Commission observes that there is some inconsistency in advising an applicant, on the one hand, of a site’s susceptibility to flood, and on the other, stating that the approval has been granted as appropriate solely on the basis of the applicant’s information. And if the applicant had no notice of the risk of flood before receiving the council’s advice, it is doubtful that the applicant was in a position to provide adequate information. Council officers explained that the purpose of the advice note is to alert development applicants that their site flooded in 1974; it has no formal status for development assessment purposes.

The Commission’s preferred approach is for councils to provide advice to applicants about the extent of any flood assessment during any pre-lodgement meetings and in writing at the time of receiving a development application, rather than in a decision notice. This would allow an applicant to take the information into account before taking further steps to obtain a development approval, and well before establishing the proposed use on land susceptible to flood.

**Recommendation**

8.8 Councils should consider providing advice to development applicants during pre-lodgement meetings, and at the time of receiving a development application, about the way in which the development will be assessed for flood risk and what flood information council will be relying on to make this assessment.
The development assessment process is governed by the Sustainable Planning Act 2009, whereas Queensland’s building certification system is governed by the Building Act 1975.


See section 4.1.2 Application of State Planning Policy 1/03.

Section 235, Sustainable Planning Act 2009; Exhibit 766, Statement of Andrew Fulton, 1 September 2011 [p29: para 11.10]; Transcript, Andrew Fulton, 11 October 2011, Bundaberg [p3918: line 9].


Exhibit 707, Statement of Timothy Peisker, 7 September 2011 [p2: para 8].

The report noted that the site had been inundated in 1863, 1864, 1870, 1893 and 1974. See Exhibit 707, Statement of Timothy Peisker, 7 September 2011, Annexure TP-03, Appendix A.

Exhibit 707, Statement of Timothy Peisker, 7 September 2011 [p2: para 10]; Annexure TP-03 [p98: para 9.1].

Exhibit 707, Statement of Timothy Peisker, 7 September 2011, Annexure TP-06 [p2: para 13].

Exhibit 707, Statement of Timothy Peisker, 7 September 2011 [p3: para 18-19]; Annexure TP-06 [p4].

Exhibit 707, Statement of Timothy Peisker, 7 September 2011, Annexure TP-06 [p4]; Transcript, Timothy Peisker, 4 October 2011, Brisbane [p3604: lines 40-50].

Exhibit 707, Statement of Timothy Peisker, 7 September 2011 [p3: para 20]; Transcript, Timothy Peisker, 4 October 2011, Brisbane [p3603: line 23].

Exhibit 707, Statement of Timothy Peisker, 7 September 2011, Annexure TP-09 [p3].

Exhibit 707, Statement of Timothy Peisker, 7 September 2011, Annexure TP-09 [p6, 8].

Exhibit 707, Statement of Timothy Peisker, 7 September [p4: para 28].

Transcript, Timothy Peisker, 4 October 2011, Brisbane [p3604: line 52].

Transcript, Timothy Peisker, 4 October 2011, Brisbane [p3617: line 24].

Transcript, Timothy Peisker, 4 October 2011, Brisbane [p3617: line 39].

Transcript, Timothy Peisker, 4 October 2011, Brisbane [p3617: line 49].

Transcript, Timothy Peisker, 4 October 2011, Brisbane [p3618: line 10].

Transcript, Brett Draffen, 6 October 2011, Brisbane [p3772: line 39].

Transcript, Brett Draffen, 6 October 2011, Brisbane [p3772: line 46].

Exhibit 707, Statement of Timothy Peisker, 7 September 2011, Annexure TP-15 [p10]; Annexure TP-16, Attachment A [p1: para 1].

Exhibit 707, Statement of Timothy Peisker, 7 September 2011, Annexure TP-15 [p10]; Attachment B [p20].

Transcript, Timothy Peisker, 4 October 2011, Brisbane [p3618: line 51]; Exhibit 707, Statement of Timothy Peisker, 7 September 2011 [p7: para 54].

Exhibit 707, Statement of Timothy Peisker, 7 September 2011 [p8: para 58].

Exhibit 707, Statement of Timothy Peisker, 7 September 2011 [p8: para 59]; Transcript, Timothy Peisker, 4 October 2011, Brisbane [p3622: line 40].

Transcript, Timothy Peisker, 4 October 2011, Brisbane [p3618: line 5 – p3619: line 16].

Exhibit 707, Statement of Timothy Peisker, 7 September 2011 [p8: para 62].

Exhibit 633, First Statement of Rory Kelly, 31 August 2011, Annexure RJK-32.


Exhibit 631, Statement of David Dunworth, 26 August 2011, Annexure A.
Four clay courts and two grass courts at the State Tennis Centre were built at the level that would be reached by a flood with an average recurrence interval of 20. Specialist advice assessed the cost of remediation of these six courts following flood as being $166,000 and Mirvac established a sinking fund for this amount. In the January 2011 floods, the grass and clay courts had to be entirely replaced at a cost of approximately $400,000: Exhibit 707, Statement of Timothy Peisker, 7 September 2011 [p14: para 105]; Transcript, Timothy Peisker, 4 October 2011, Brisbane [p3621: line 10 – p3622: line 14]; Transcript, Ian Whitehead, 4 October 2011, Brisbane [p3561: line 53].
8 Development assessment in practice

Transcript, Gary Ellis, 19 October 2011, Ipswich [p4250: line 30].

Exhibit 861, Statement of Gary Ellis, 13 October 2011 [p10: para 14].

Exhibit 833, Statement of Joanne Pocock [p4: para 21, 23].

Transcript, Gary Ellis, 19 October 2011, Ipswich [p4250: line 30].

Transcript, Gary Ellis, 19 October 2011, Ipswich [p4264: line 30].

Exhibit 861, Statement of Gary Ellis, 13 October 2011 [p10: para 14].

Transcript, Gary Ellis, 19 October 2011, Ipswich [p4250: line 30].

Exhibit 833, Statement of Joanne Pocock [p4: para 21, 23].

Exhibit 861, Statement of Gary Ellis, 13 October 2011 

Exhibit 861, Statement of Gary Ellis, 13 October 2011, Annexure GE-44.

Transcript, Gary Ellis, 19 October 2011, Ipswich [p4249: line 38].

Transcript, Gary Ellis, 19 October 2011, Ipswich [p4251: line 38]; Transcript, Joanne Pocock, 18 October 2011, Ipswich [p4156: line 1].

Exhibit 544, Statement of Martin Reason, 9 September 2011 [p7: para 32 and 33].

Exhibit 957, Eighth Statement of Rory Kelly, 9 November 2011 [p7: para 22].


Exhibit 957, Eighth Statement of Rory Kelly, 9 November 2011 [p7: para 24].

Exhibit 544, Statement of Martin Reason, 9 September 2011 [p7: para 24].

Exhibit 957, Eighth Statement of Rory Kelly, 9 November 2011 [p7: para 24]; Exhibit 544, Second Statement of Martin Reason, 9 September 2011 [p7: para 34].

Exhibit 634, Second Statement of Rory Kelly, 8 September 2011, Brisbane [para 13]; Annexure RJK-33 [p1-3]. The application was made under sections 3.5.24 and 3.5.33 of the Integrated Planning Act 1997.

Exhibit 633, First Statement of Rory Kelly, 31 August 2011, Annexure RJK-19 [p1].


Transcript, Rory Kelly, 4 October 2011, Brisbane [p3592: line 20].

Transcript, Rory Kelly, 4 October 2011, Brisbane [p3593: line 34].

Exhibit 634, Second Statement of Rory Kelly, 8 September 2011, Brisbane [para 13]; Annexure RJK-33 [p1-3]. The application was made under sections 3.5.24 and 3.5.33 of the Integrated Planning Act 1997.

Exhibit 634, Second Statement of Rory Kelly, 8 September 2011, Brisbane [para 13].

Exhibit 634, Second Statement of Rory Kelly, 8 September 2011, Brisbane [para 16]; Annexure RJK-35.

Exhibit 634, Second Statement of Rory Kelly, 8 September 2011, Brisbane, Annexure RJK-36 [para 18].

Exhibit 634, Second Statement of Rory Kelly, 8 September 2011, Brisbane, Annexure RJK-38 [para 20].

The full development application, including the reports mentioned, can be found at Annexure RJK-18 of Exhibit 633, First Statement of Rory Kelly, 31 August 2011.

The planning legislation which preceded the Sustainable Planning Act 2009.
102 Transcript, Rory Kelly, 10 November 2011, Brisbane [p4941: line 27].

103 Exhibit 858, Statement of Timothy Foote, 7 October 2011, Annexure TCF-2 [p4222: line 6].

104 Transcript, Timothy Foote, 19 October 2011 [p4222: line 6].

105 Exhibit 858, Statement of Timothy Foote, 7 October 2011, Annexure TCF-10.

106 Exhibit 766, First Statement of Andrew Fulton, 1 September 2011 [p8: para 1.4.4]; Transcript, Andrew Fulton, 11 October 2011, Bundaberg [p3919: line 10].

107 Exhibit 766, First Statement of Andrew Fulton, 1 September 2011, Annexure T: Kolan Shire Planning Scheme [p5.29: Table 5.13].

108 Exhibit 766, Statement of Andrew Fulton, 1 September 2011 [p8: para 1.4.2].

109 Exhibit 766, Statement of Andrew Fulton, 1 September 2011 [p8: para 1.4.3].

110 Transcript, Andrew Fulton, 11 October 2011, Bundaberg [p3919: line 51].

111 Transcript, Andrew Fulton, 11 October 2011, Bundaberg [p3919: line 45].

112 Transcript, Andrew Fulton, 11 October 2011, Bundaberg [p3919: line 55].

113 Transcript, Andrew Fulton, 11 October 2011, Bundaberg [p3920: line 26].

114 Exhibit 766, Statement of Andrew Fulton, 1 September 2011 [p32: para 13.1.1]; Transcript, Andrew Fulton, 11 October 2011, Bundaberg [p3921: line 49].

115 Transcript, Andrew Fulton, 11 October 2011, Bundaberg [p3922: line 1].

116 Section 324, Sustainable Planning Act 2009.

117 Section 287 (1)(a), Sustainable Planning Act 2009.

118 Section 245, Sustainable Planning Act. It is an offence to contravene a condition of a development approval, section 580 of the Sustainable Planning Act 2009.

119 Section 345, Sustainable Planning Act 2009.

120 Section 346, Sustainable Planning Act 2009.

121 Section 347, Sustainable Planning Act 2009.

122 McBain v Clifton Shire Council [1996] 2 Qd R 493; Mr. Marrow Blue Metal Quarries Pty Ltd v Moreton Shire Council [1996] 1 Qd R 347.


124 Exhibit 829, Statement of Krystal Wilson, 14 October 2011 [p1: para 2]; Transcript, Krystal Wilson, 18 October 2011, Ipswich [p4103: line 1].

125 Transcript, Timothy Foote, 19 October 2011, Ipswich [p4216: line 7]. Ipswich City Council’s ‘1 in 20 development line’ is based on a long standing flood regulation which was established in the 1976 Town Planning scheme for the former City of Ipswich. See Ipswich City Council, Second Submission, 28 April 2011 [p5: para 1.5].

126 Exhibit 780, Statement of Krystal Wilson, 14 October 2011 [p4: para 18].


130 Transcript, Timothy Foote, 19 October 2011, Ipswich [p4221: line 37]; Exhibit 858, Statement of Timothy Foote, 7 October 2011, Annexure TCF-2, Ipswich City Council Information Request, 10 May 2005.


132 Exhibit 858, Statement of Timothy Foote, 7 October 2011, Annexure TCF-3 [p3].

133 Exhibit 858, Statement of Timothy Foote, 7 October 2011 [p11: para 57].

134 Transcript, Timothy Foote, 19 October 2011, Ipswich [p4222: line 50; p4225: line 1].

135 Transcript, Timothy Foote, 19 October 2011, Ipswich [p4225: lines 35-46; p4229: lines 19-26].
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136 Transcript, Timothy Foote, 19 October 2011, Ipswich [p4224: line 38; p4226: line 17].

137 Exhibit 858, Statement of Timothy Foote, 7 October 2011 [p12: para 63].

138 Exhibit 858, Statement of Timothy Foote, 7 October 2011 [p13: para 63].

139 Exhibit 858, Statement of Timothy Foote, 7 October 2011 [p13: para 63].

140 Exhibit 858, Statement of Timothy Foote, 7 October 2011 [p13: para 63].

141 Exhibit 858, Statement of Timothy Foote, 7 October 2011 [p13: para 63].

142 Transcript, Timothy Foote, 19 October 2011, Ipswich [p4226: lines 21-35; p4228: line 48].

143 Exhibit 858, Statement of Timothy Foote, 7 October 2011, Annexure TCF-10 [p12].

144 Exhibit 858, Statement of Timothy Foote, 7 October 2011, Annexure TCF-10 [p12].

145 Exhibit 858, Statement of Timothy Foote, 7 October 2011, Annexure TCF-10 [p12].

146 Transcript, Timothy Foote, 19 October 2011, Ipswich [p4223: line 13].

147 Transcript, Timothy Foote, 19 October 2011, Ipswich [p4223: line 35 cf. p4223: line 48].

148 Exhibit 858, Statement of Timothy Foote, 7 October 2011, Annexure TCF-10 [p14, Condition 27(k)].

149 Transcript, Timothy Foote, 19 October 2011, Ipswich [p4227: line 33].

150 Section 313 (5), Sustainable Planning Act 2009.

151 Exhibit 858, Statement of Timothy Foote [p13: para 64]; Annexure TCF 10 [p16: Condition 2].

152 Exhibit 833, Statement of Joanne Pocock [p7-8: para 38, 42].
9 Building controls

Development controls in a floodplain should contain an appropriate mix of measures, including land use planning and building controls, to minimise the impact of floods.

Land use planning controls are primarily contained in local planning instruments and indicate the types of development suitable for various parts of the floodplain. Building controls regulate the structural form of development and are primarily contained within national or state building regulations but are also found, in some instances, in local planning instruments.

Where land use planning allows development in places susceptible to flooding, building controls may reduce the risks posed to people and property. Building controls may also reduce the cost of property damage caused by flooding and the time taken to restore a building so that it can be reoccupied after a flood.

9.1 Minimum floor levels

A council may specify minimum floor levels for habitable rooms through a planning scheme, a temporary local planning instrument or a council resolution. The State Planning Policy 1/03 Guideline: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide suggests that councils may also set minimum floor levels for non-habitable rooms where local flooding characteristics warrant doing so.

There are variations in the way councils impose minimum floor levels. For example, Brisbane’s planning scheme requires habitable and non-habitable rooms of houses to be built to specified flood immunity levels. Ipswich’s temporary local planning instrument for floods requires other factors to be considered as well in determining the minimum floor level for a habitable room, such as the consistency in height between the proposed building and the existing streetscape.

9.2 Freeboard levels

In setting floor levels, councils typically use a ‘freeboard’ to provide an additional buffer allowing for uncertainty in estimating flood water heights, the effects of wave action and unforeseen variation in local flood behaviour. However, as floods vary from event to event, there is a limit to the protection afforded by a freeboard allowance.

It is not mandatory for councils to set a freeboard level, nor is any particular freeboard level prescribed. As with minimum floor levels, this has led to variation in approaches among councils, with some setting freeboard levels for habitable and non-habitable floor levels, some setting them for habitable floor levels only, and some not setting them at all.

Where councils have set freeboard levels, they generally range from 300 millimetres to 500 millimetres. A town planning expert who gave evidence to the Commission supported the introduction of a mandatory minimum freeboard level across the state, allowing councils to retain the discretion to raise the level for planning reasons, for example, to protect heritage buildings. A council might also choose to set a higher freeboard where there was a high measure of uncertainty surrounding its estimated flood level.
Building controls

The Queensland Government intends to introduce a new mandatory part to the Queensland Development Code: mandatory part 3.5 ‘Construction of buildings in flood hazard areas’.\(^{12}\) The proposed new part establishes a standard minimum freeboard of 300 millimetres,\(^ {13}\) but leaves councils free to set a greater freeboard height, if they consider it necessary.\(^ {14}\) The operation of the proposed new part is discussed in further detail in section 9.5 Proposed new part of the Queensland Development Code: ‘Construction of buildings in flood hazard areas’.

9.3 Building materials and design

The question arises as to whether there should be greater regulation, in areas at risk from flooding, of the design and types of materials used in the construction of buildings and other structures.

A town planning consultant submitted to the Commission that despite the obvious benefits of using flood resistant materials and innovative design solutions, the associated costs often discouraged developers from employing them.\(^ {15}\) The Property Council of Australia is similarly concerned that prescribed mitigation measures for buildings may add to project costs, reducing their affordability.\(^ {16}\) The Insurance Australia Group has suggested that building standards and codes should be improved so that they better protect property from flood damage, but in a cost effective manner.\(^ {17}\)

Although the Commission does not consider it appropriate for it to prescribe building design and materials, it is worth mentioning the experiences of some building owners whose properties incorporated building materials and design measures to mitigate flood damage. Local and state governments and individual property owners may benefit from considering similar measures.

In Maryborough, businesses in the low-lying marina precinct are some of the first to be affected by flooding of the Mary River. The owner of the main marina building fitted the building with louver windows that could be easily removed, and built partition walls out of besser block.\(^ {18}\) Following the 2010/2011 floods, the building owner and tenants have further adapted the building to enable more efficient evacuation before, and quicker recovery after, flooding by placing equipment on wheels and raising the height of power points.\(^ {19}\)

In Gympie, a furniture store which flooded to its second storey was fully operational within a week of the flood because of its comprehensive evacuation plan\(^ {20}\) and building improvements which better enabled it to cope with and recover from flooding.\(^ {21}\) The improvements included constructing walls from modern fibrous cement, using acrylic water based paint, raising the height of electricity supply points and using flood resistant floor materials.\(^ {22}\)

A residence in West End in Brisbane, built on the edge of the Brisbane River, includes several features designed to reduce any flood related damage. Design features included ensuring there was no built-in furniture in the downstairs area. Water resistant materials were used to build the doors and walls of the lower levels.\(^ {23}\)

Some councils have also benefited from designing their buildings to be more flood resilient. For example, Ipswich City Council designed the caretaker’s residence and kiosk at Colleges Crossing so they could be dismantled and removed before flooding occurs.\(^ {24}\) The council proposes to construct its public buildings from concrete rather than timber to lower any cost of cleaning and restoration after a flood.\(^ {25}\)

The location of essential services such as lifts, electrical switch boards and back-up power supplies is also a relevant consideration in the design of a building to mitigate effects of flooding. The proposed new part of the Queensland Development Code introduces standards for the location of essential services in buildings.\(^ {26}\) This is further discussed in section 10.3 Electrical infrastructure.

The proposed new part of the Queensland Development Code establishes requirements about the design of residential buildings.\(^ {27}\) Building Codes Queensland is also considering introducing non-mandatory provisions into the Queensland Development Code relating to the use of water resistant materials of a non-structural nature. Some councils have indicated they will incorporate these standards into their local planning instruments, making them mandatory.\(^ {28}\) Following the 2010/2011 floods, a number of councils included standards about the use of flood resilient materials in their temporary local planning instruments.\(^ {29}\) Matters of building materials and design are also referred to in the model code proposed by the Queensland Reconstruction Authority.\(^ {10}\)
9.4 State versus local regulation

There is agreement in the building industry about the need for more detailed building controls in areas susceptible to flooding.31 However, there is some debate about which level of government should regulate these types of controls. Certain aspects of building work are assessed by a building certifier against the Queensland Development Code; other aspects of building work may be assessed by a council, if it has incorporated building controls in its planning scheme.32 Building work regulated by the Queensland Development Code cannot be regulated by planning schemes.33 This rule did not apply to temporary local planning instruments, but the Queensland Government has recently passed the Sustainable Planning and Other Legislation Amendment Act 2012, which ensures that temporary local planning instruments are also unable to regulate building work covered by the Queensland Development Code.34

The Queensland Government Planner considers it is appropriate to incorporate building controls into either building codes (which include the Queensland Development Code) or into local planning instruments (which include planning schemes and temporary local planning instruments).35

On the other hand, Building Codes Queensland considers it is generally inappropriate for building controls to be included in local planning instruments.36 Building Codes Queensland's view is that compliance with building controls is a matter best addressed through dedicated building codes that are routinely used by the construction industry, such as the Queensland Development Code and the Building Code of Australia.37 It argues that if building design criteria were included in local planning instruments, there would be variation in building requirements and terminology across councils.38

Building Codes Queensland also notes that any overlap between local planning instruments and building codes may create uncertainty for building certifiers39 and lead to duplication in processes, creating additional costs and delays in the development application process.40

However, Ipswich City Council’s view is that planning schemes should deal with building design, habitable floor levels and the placement of buildings,41 whereas structural adequacy, use of flood resistant materials and construction techniques should be regulated by the Queensland Development Code.42

For some aspects of building controls for areas at risk of flooding, this debate will be resolved with the introduction of a proposed new part of the Queensland Development Code: Mandatory Part 3.5 ‘Construction of Buildings in Flood Hazard Areas’.

9.5 Proposed new part of the Queensland Development Code: ‘Construction of buildings in flood hazard areas’

The Queensland Development Code consolidates many of Queensland’s building standards into a single document and is applied by building certifiers in the assessment of applications for building work.43 It incorporates and adds to many of the standards contained in the Building Code of Australia44 and regulates a range of building matters such as the design and siting of certain buildings, fire safety and the establishment of swimming pool barriers.

Some parts of the Queensland Development Code are mandatory,45 other parts are not. The non-mandatory parts of the code provide model standards which may be modified by councils to suit local circumstances and incorporated into planning schemes. The code, as it is presently framed, does not include any mandatory or non-mandatory parts that regulate the construction of buildings in areas at risk of flooding.

The Building Code of Australia contains provisions dealing with natural hazards including bushfires, earthquakes and cyclones, though, like the Queensland Development Code, it does not deal with flood. The Commonwealth Government attributes this omission to the fact that planning authorities have the power to prohibit building in areas at risk from flooding and to require habitable floors to be above a specified flood level.46

The Australian Building Codes Board has recently developed the ‘Draft Standard for Construction of Buildings in Flood Hazard Areas’47 to address the lack of specific state or national building regulation for how buildings should be constructed in areas at risk of flooding.

Basing its work on this draft national standard, Building Codes Queensland has prepared a proposed new Mandatory Part 3.5 of the Queensland Development Code, ‘Construction of Buildings in Flood Hazard Areas’.
Queensland’s proposed new part has three performance requirements which establish new standards for buildings in areas at risk from flooding. They are (paraphrased):

- to maintain the structural integrity of residential buildings during a flood
- to set criteria for the design and location of utilities (for example, electrical switchboards and lift motors)
- to protect sanitary drains from backflow.

The first reflects, for the most part, the draft national standard, but the second and third do not appear in the draft national standard.

A more detailed discussion of the second and third performance requirements is in sections 10.1 Sewage and sewerage and 10.3 Electrical infrastructure.

The Queensland Government has indicated that the proposed new part will commence following the release of this report in early 2012, but before the finalisation of the draft national standard, which will be available for adoption by states and territories on 1 May 2013.

9.5.1 Required flood information

The Commission has concerns the proposed new part may, in certain circumstances, be unduly onerous for applicants wishing to build in areas at risk of flooding.

For the proposed new part to apply to building work, the following is required:

- the relevant council must have designated a ‘flood hazard area’ within its region
- the building work is proposed within the designated flood hazard area
- the building work is proposed below a particular level, known as the ‘defined flood level’, within that flood hazard area.

The defined flood level, for a lot located in a flood hazard area, in the proposed new part is defined to mean:

a. the expected flood level for the area declared by a Local Government under the Building Regulation 2006, section 13; or
b. if a Local Government has not declared an expected flood level –
   i. the 1% Annual Exceedance Probability flood level for the lot, as determined by a competent person; or
   ii. the highest recorded flood level for the lot.

It is not apparent whether clause (b)(ii) of the definition requires that a flood level has been recorded at the lot, or whether it is sufficient for the flood level at the lot to be worked out from a recorded flood level at some other place (for example, at a gauge). If the latter, the definition does not contain any indication who should determine the highest recorded flood level for a lot. Neither part of clause (b) provides any information about how the relevant flood level is to be determined.

The effect of the definition seems to be that, where a council has designated a flood hazard area but has not declared an expected flood level, it is left to the building applicant to ascertain either the 1% AEP flood level or the highest recorded flood level for the relevant lot.

This scenario may arise, for example, where a council has adopted the Queensland Reconstruction Authority maps, without amendment, for the purpose of designating its flood hazard area. While these maps may assist councils to identify areas where future flood investigations are required, they do not establish flood levels for all lots. Flood levels might be able to be worked out where there is a gauge nearby, but for lots not directly adjacent to a gauge, further work will have to be done. (For further discussion about the Queensland Reconstruction Authority maps see section 2.7.3 Assessment of mapping options.)

As well as the problems of determining the defined flood level, there are the difficulties of meeting the first requirement of the proposed new part, which is, in effect, that the building be designed and constructed to withstand a flood. The proposed acceptable solution ‘A1’ (which entails compliance with sections of the draft national standard) applies only where one of the following also applies:
a. the Local Government has declared, under section 13 of the Building Regulation 2006, an expected maximum flow velocity for the area in which the lot is located, that is less than 1.5 metres per second; or
b. it is reasonable to expect the lot to be subjected to a maximum flow velocity of less than 1.5 metres per second; or
c. the lot is located in an inactive flow or backwater area.59

That provision contemplates that councils will (after the necessary amendment of section 13 of the Building Regulation 2006) be able to declare the expected maximum flow velocities of flood water and to designate inactive flow or backwater areas.60

Where the defined flood level and ‘maximum flow velocity’ information for a lot are not declared by the relevant council, the building applicant may need to engage an engineer to establish them.61 Hydrologic and hydraulic models are likely to be required.62 The extent of the flood modelling required to determine the relevant flood level and flow velocity will depend upon the size and complexity of the watercourse, or the flow path, affecting the particular property.63 (Flood studies are discussed further in section 2.2.)

Concerns have been raised about the time and cost implications for councils in obtaining the relevant flood data required to implement the proposed new part.64 It has also been suggested that the potential requirement for a site-specific flood analysis where a council has not declared (for example) a defined flood level in its flood hazard area may be ‘both impractical and cost prohibitive’ for applicants for all but the largest of projects.65 And it is said, with some justice, that it is unreasonable to require an applicant to obtain information about the maximum velocity of flow to which the entire lot is subjected and whether it is in the inactive flow or backwater area, when in fact the proposed development may only occupy a part of a lot, unaffected by flooding problems.66

### Recommendations

9.1 The proposed new part of the Queensland Development Code, Mandatory Part 3.5 ‘Construction of buildings in flood hazard areas’, should be amended so that the performance requirement relating to building design and construction (Performance Requirement P1) for building on a lot will only be triggered where the council has:

- designated part of its area as a natural hazard management area (flood) under section 13 of the Building Regulation 2006, and
- either:
  - declared a height to be the expected flood level under section 13 of the Building Regulation 2006, or
  - adopted a highest recorded flood level for the lot, and
- either:
  - declared a velocity to be the expected maximum velocity of flood water for the area in which the lot is located, or
  - designated the area in which the lot is located an inactive flow or backwater area.

9.2 The proposed new part of the Queensland Development Code, Mandatory Part 3.5 ’Construction of buildings in flood hazard areas’, should be amended so that the performance requirements about utilities and sanitary drains (Performance Requirement P2 and P3) for building on a lot will only be triggered where the council has:

- designated part of its area as a natural hazard management area (flood) under section 13 of the Building Regulation 2006, and
- either:
  - declared a height to be the expected flood level under section 13 of the Building Regulation 2006, or
  - adopted a highest recorded flood level for the lot.
9 Building controls

Recommendation

9.3 The Queensland Government should consider amending the 'Limitation' section of the proposed new part of the Queensland Development Code, Mandatory Part 3.5 'Construction of buildings in flood hazard areas', to allow for the possible application of 'acceptable solution A1' to a building located on a lot if:

- it is reasonable to expect the part of the lot on which the building work is proposed to be subjected to a maximum velocity of less than 1.5 metres per second, or
- the part of the lot on which the building work is proposed is located in an inactive flow or backwater area.

9.5.2 Assessing building applications against the proposed new part

A building certifier generally assesses building work applications. A council may also become involved in the assessment process as a 'concurrence agency'. This enables the council to require the building certifier to refuse the application, approve it in its entirety or impose conditions on the approval of the application.

Ipswich City Council has concerns about how building certifiers will deal with the determination of technical flood issues, such as calculating maximum velocities, when applying the proposed new part. It considers that councils should have the primary responsibility for assessing building work applications within a flood hazard area, or, at a minimum, be a concurrence agency for these applications.

It is logical that the entity assessing a building application to which the proposed new part applies should have the appropriate technical expertise to make informed decisions.

In circumstances where the proposed new part applies to a building application, a council (as the concurrence agency) will be able to indicate to a building certifier that it would be 'impractical or undesirable' for the building to comply with some requirements of the part. This enables councils to exercise discretion in circumstances where there are competing planning considerations. For example, a council may consider it to be 'impractical or undesirable' to build an extension to an existing building above the defined flood level where the existing building is at a lower level.

The breadth and imprecision of the expression 'impractical or undesirable' may result in its inconsistent application by councils: this would run counter to one of its objectives, which is to introduce consistency in the application of building regulations. It has been suggested to the Commission that the expression is also likely to introduce uncertainty, because its terms have not been used before in a planning context. It was suggested the expression be rephrased to be more consistent with the language of the Sustainable Planning Act, by amending the proposed new part to provide that councils can decide whether there are sufficient grounds to justify the decision to approve a development, despite any conflict with the proposed new part.

The Queensland Government contends that the current wording provides flexibility for councils to consider a wide range of matters when making their determinations. To assist in interpretation of the provision, the Queensland Government included in the proposed new part some examples of the types of matters a council may wish to consider. These include:

- the expected level of flood inundation, the level of surrounding homes and any practical difficulties in achieving compliance
- the level of an existing building for additions and any practical difficulties in achieving compliance
- heritage or other planning related matters.

The Queensland Government also intends to develop material to guide councils on the types of matters they may wish to consider when making a decision. The Commission believes this may go some way to ensuring consistent decisions are made.
9.5.3 Early adoption of the proposed new part

The Queensland Government intends to adopt the proposed new part in early 2012, which is prior to the finalisation of the draft national standard (expected to be available for adoption on 1 May 2013).

The draft national standard is to be the subject of consultation throughout Australia to identify compliance costs, effects on competition and ways to maximise the efficiency of the new requirements. The results of that consultation are expected to be provided to the Australian Building Codes Board in February 2012.

Building Codes Queensland asserts that the early adoption of the proposed new part is necessary to address the immediate need for detailed standards for constructing new buildings as well as to improve flood resilience of communities across Queensland.

On 26 July 2011, Building Codes Queensland circulated a ‘Building Newsflash bulletin’ to building organisations, industry groups, councils and members of the general public seeking comments on the implementation of the proposed new part. The proposed new part has also been published on the Department of Local Government and Planning’s website, with an explanatory note. That is the extent of public consultation. Building Codes Queensland has also consulted directly with various councils, the Queensland Reconstruction Authority and other building industry representatives.

The consultation process for the draft national standard has not yet been completed. The Commonwealth Government anticipates the results of the consultation process will be available by June 2012.

The Commonwealth Government expects the Queensland Government will undertake a similar consultation process before the proposed new part commences. Examples of what the Commonwealth Government believes the Queensland Government may need to consider as part of the consultation process include:

- the potential costs for councils of undertaking flood studies to determine maximum velocities or to identify inactive flow or backwater areas
- the potential costs for applicants of engaging suitably qualified professionals to determine flood levels or flood behaviour
- the costs of building materials or design solutions to meet the requirements of the proposed new part.

The Commission acknowledges the advantages of prompt attention to ensuring proper regulation of building in flood risk areas. However, it would be unfortunate if measures were put in place hastily, without proper consideration of their implications for both councils and those wishing to build, and without the benefit of more extensive public consultation.

(Endnotes)

1 Local planning instruments include planning schemes, temporary local planning instruments and planning scheme policies (section 77, Sustainable Planning Act 2009) and are discussed in more detail in chapter 3 Planning framework and in chapter 5 Local planning instruments.


3 Minimum floor levels of buildings are regulated by the Building Act 1975. Section 13(1)(b) of the Building Regulation 2006 allows councils to declare minimum floor levels for habitable rooms. Non-Mandatory Part 1.5 ‘Floor Heights’ of the Queensland Development Code may be adopted by councils to establish minimum floor levels for residential dwellings.

4 State Planning Policy 1/03 Guideline: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [p58].

5 Brisbane City Council, Brisbane City Plan 2000, Chapter 5 ‘House Code’, Section 4 ‘Performance Criteria and Acceptable Solutions’, Section 4.1 ‘General Requirements’ [p100-101].

6 Ipswich City Council Temporary Local Planning Instrument 01/2001 – Flooding Regulation [p5, 7].

7 Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p23]. Freeboard is also defined in the glossary.

8 Transcript, Glen Brumby, 28 September 2011, Brisbane [p3328, 3329].

10 Exhibit 666, Statement of Glen Brumby, 15 September 2011, Attachment 19: sub-attachment 4; Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p23].


14 Statement of Glen Brumby, 16 November 2011 [p4: para 5(g)].

15 Submission of John Brannock (Brannock and Associates), 4 April 2011 [p5].

16 Submission of Property Council of Australia, 4 April 2011 [p3].

17 Submission of Insurance Australia Group, 31 March 2011 [p7].

18 Exhibit 795, Statement of Michael Cox, 28 September 2011 [p7: para 26].

19 Exhibit 795, Statement of Michael Cox, 28 September 2011 [p7: para 26]; Transcript, Michael Cox, 12 October 2011, Maryborough [p3994].

20 Evacuation plans are further discussed at section 8.3 Development conditions.

21 Exhibit 817, Statement of Amanda White, 28 September 2011 [p1: para 3].


25 Transcript, Carl Wulff, 19 October 2011, Ipswich [p4191].

26 Draft Mandatory Part 3.5, Queensland Development Code, Construction of Buildings in Flood Hazard Areas, 21 November 2011 [p7].

27 Draft Mandatory Part 3.5, Queensland Development Code, Construction of Buildings in Flood Hazard Areas, Performance requirement P1, 21 November 2011 [p7].

28 Exhibit 666, Statement of Glen Brumby, 15 September 2011 [p12: para 50-51].

29 Exhibit 666, Statement of Glen Brumby, 15 September 2011 [p12: para 52]. For a discussion about temporary local planning instruments introduced following the 2010/2011 floods see section 5.2 Temporary local planning instruments.

30 The model code is discussed in more detail in section 4.2.2 The Model Code provided by the Queensland Reconstruction Authority.

31 Exhibit 666, Statement of Glen Brumby, 15 September 2011 [p13: para 53].

32 Chapter 4, Part 1, Division 1, Building Act 1975; Chapter 4, Part 2, Division 1, Building Act 1975.

33 Section 86, Sustainable Planning Act 2009; Sections 32, Building Act 1975; Section 33, Building Act 1975.

34 Clause 62, Sustainable Planning and Other Legislation Amendment Bill 2011.

35 Transcript, Gary White, 7 November 2011, Brisbane [p4620].

36 Exhibit 1015, Statement of Glen Brumby, 1 November 2011 [p4: para 15].

37 Exhibit 1015, Statement of Glen Brumby, 1 November 2011 [p4: para 15].

38 Exhibit 1015, Statement of Glen Brumby, 1 November 2011 [p4: para 15].

39 Exhibit 1015, Statement of Glen Brumby, 1 November 2011 [p5: para 18].

40 There may be duplication when an application is assessed at both the planning and building approval stage, see Exhibit 1015, Statement of Glen Brumby, 1 November 2011 [p4: para 19].


43 Chapter 4, Part 1, Division 1, Building Act 1975; Chapter 4, Part 2, Division 1, Building Act 1975.

44 The Building Code of Australia is a nationally uniform set of technical standards for the design and construction of buildings and other structures. The Building Code of Australia and the Plumbing Code of Australia comprise the National Construction Code. The National Construction Code is regulated by the Australian Building Codes Board. If there is any inconsistency between the Queensland Development Code and the Building Code of Australia, the Queensland Development Code prevails, see Section 35, Building Act 1975.

45 Schedule 1, Building Act 1975 details the parts of the Queensland Development Code that have legislative effect.


48 The location of essential services is further discussed in section 10.3 Electrical infrastructure.

49 Utilities is defined in the proposed new part to mean: lift motors and lift motors for emergency lifts; electrical switchboards and meters; back-up power supplies and generators for essential services; sprinkler valve rooms and any associated pumps; fire indicator panels; controls for stairwell pressurisation and air-handling systems used for smoke control; and hot water systems (see draft Mandatory Part 3.5 of the Queensland Development Code ‘Construction of Buildings in Flood Hazard Areas’, 21 November 2011 [p7]).

50 See performance requirements P1, P2 and P3 of the draft Mandatory Part 3.5 of the Queensland Development Code ‘Construction of Buildings in Flood Hazard Areas’, 21 November 2011 [p7]. The prevention of backflow of sewage into buildings is discussed further in section 10.1 Sewage and sewerage.

51 Correspondence from the Queensland Government, Queensland Development Code, 18 January 2012.

52 Submission from the Attorney-General’s Department, Commonwealth Government, undated [p3: para 12].

53 A ‘flood hazard area’ is defined within the proposed new part as ‘an area, whether or not mapped, designated by a Local Government as a natural hazard management area (flood) under section 13 of the Building Regulation 2006’ - Draft Mandatory Part 3.5 of the Queensland Development Code ‘Construction of Buildings in Flood Hazard Areas’, 21 November 2011, Definitions [p4].


56 The Queensland Reconstruction Authority contemplates the Queensland Reconstruction Authority maps being used by councils to trigger the proposed new part (Queensland Reconstruction Authority Guideline Planning for stronger, more resilient floodplains: Part 1 - Interim measures to support floodplain management in existing planning schemes [p16]).

57 The Queensland Reconstruction Authority maps include historical data of flood heights at gauges. That historical data could be used to identify a flood level at properties immediately adjacent to the gauge, but would require a hydraulic model to identify flood heights at any other property.


60 To enable this, the Queensland Government proposes to amend the Building Regulation 2006 accordingly (Statement of Glen Brumby, 16 November 2011 [p8-9: para 13]).
In explaining the operation of the proposed new part, Building Codes Queensland advised that where a council does not provide a defined flood hazard level, then for buildings to be located in a designated flood hazard area, a hydrologist would be required to obtain this information (Exhibit 666, Statement of Glen Brumby, 15 September 2011 [p11: para 48]).

Trevor Johnson, Cardno, Draft Queensland Development Code, 19 December 2011 [p4, 5].

Trevor Johnson, Cardno, Draft Queensland Development Code, 19 December 2011 [p4].

Submission of Ipswich City Council, 6 December 2011 [p4].

Submission of the Local Government Association of Queensland, 6 December 2011 [p1].

Submission of the Local Government Association of Queensland, 6 December 2011 [p1].

Section 45, Building Act 1975.

Section 46, Building Act 1975.

The role of a 'concurrence agency' is described in more detail in chapter 3 Planning framework.

Submission of Ipswich City Council, 6 December 2011 [p1].

Submission of Ipswich City Council, 6 December 2011 [p3: para 1.2(b)].

Where an application involves building work for the construction of a class 1 building or an addition to a class 1 building and that work does not comply with performance requirement P1 of the proposed new part or section 2.7(a) of the draft national standard, the council may give a concurrence agency response about whether it is impractical or undesirable for the work to comply entirely or partly with performance requirements P1 and P2 of the proposed new part. The Queensland Government proposes to include the referral agency jurisdiction in Item 27, Table 1 of Schedule 7 of the Sustainable Planning Regulation 2009 (Draft Mandatory Part 3.5 of the Queensland Development Code ‘Construction of Buildings in Flood Hazard Areas’, 21 November 2011 [p3]).

Statement of Glen Brumby, 16 November 2011 [p2: para 5.b].

Department of Local Government and Planning, Explanatory notes for the draft Queensland Development Code to adopt the draft Australian Building Codes Board Standard for Construction of Buildings in Flood Hazard Areas [p2].

Exhibit 1015, Statement of Glen Brumby, 1 November 2011 [p4: para 15, 17].

Submission of Ipswich City Council, 6 December 2011 [p3: para 1.2(d)].

Correspondence from the Queensland Government, 18 January 2012.


Correspondence from the Queensland Government, 18 January 2012.

This process is a requirement of the Council of Australian Governments’ Guidelines for Best Practice Regulation, 2007 (Exhibit 1016, Submission from the Commonwealth Government on the draft Standard, 28 October 2011 [p1-2: para 5]).


Exhibit 1015, Statement of Glen Brumby, 1 November 2011 [p2: para 7].

Exhibit 666, Statement of Glen Brumby, 15 September 2011 [p7: para 30]; Attachment 14; Exhibit 1015, Statement of Glen Brumby, 1 November 2011 [p3: para 9].

Statement of Glen Brumby, 16 November 2011 [p1-8].

Although Building Codes Queensland intends to consider the results of the national consultation process once completed (Exhibit 1015, Statement of Glen Brumby, 1 November 2011 [p13: para 44(i)]).

Submission from the Attorney-General’s Department, Commonwealth Government, undated [p3: para 12].

Submission from the Attorney-General’s Department, Commonwealth Government, undated [p3: para 13].

Submission from the Attorney-General’s Department, Commonwealth Government, undated [p3: para 13].

Submission from the Attorney-General’s Department, Commonwealth Government, undated [p3: para 13].
10 Essential services

The Commission’s interim report examined the adequacy of measures to manage the supply of essential services including power, water and communications during the 2010/2011 floods.

This chapter addresses the damage caused by the 2010/2011 floods to sewerage, stormwater, electricity, telecommunications and roads and rail infrastructure. It considers how damage to this essential services infrastructure can be minimised in future floods, with a particular emphasis on planning and design measures.

10.1 Sewage and sewerage

10.1.1 Definitions

‘Sewage’ is human waste product, sometimes referred to as ‘wastewater’.

‘Sewerage infrastructure’ or the ‘sewerage system’ is the infrastructure through which sewage flows, for example pipes, pump stations and treatment facilities. In the material before the Commission it is sometimes referred to as ‘wastewater infrastructure’.

‘Effluent’ is sewage in a liquid form that has been treated or partially treated.

10.1.2 The role of sewerage infrastructure

By enabling the safe collection and treatment of human waste, sewerage systems play a critical role in ensuring the health of the community and the environment. These systems were damaged or inundated in a number of locations in the 2010/2011 floods, with, in some locations, the discharge of untreated sewage into residential areas, public parks and waterways.

Sewage disposal occurs either through a centralised public sewerage system or through smaller independent systems, commonly referred to as septic systems, located on private properties (usually in rural areas with more dispersed populations).

A public sewerage system comprises an integrated sewage collection and treatment network. Sewage is collected from individual private premises by service branch lines that transmit the collected material to larger mains. The mains then feed into pump stations and sewers that connect to sewage treatment plants. Within the sewage treatment plants, sewage is passed through a series of biological and chemical treatments that render it safe to be discharged into a waterway or to be used as recycled water.

Public sewerage systems are managed by public authorities. In most parts of Queensland the council is the responsible authority, except in the south-east where sewerage is managed by specialised service providers known as ‘distributor-retailers’ that are responsible for catchment areas spanning several councils. The councils and distributor-retailers are responsible for the sewerage system up to the point where the sewerage infrastructure connects to the boundary of private properties. Generally, sewerage infrastructure and septic systems on private land are the responsibility of the property owner.
Damage to, or the inundation of, any part of a sewerage system may result in the discharge of untreated sewage, presenting a hazard to health and to the environment, even when diluted. Discharges from public sewerage systems are a particular concern, given the large volume of sewage that passes through them.

10.1.3 The regulatory structure applicable to sewerage infrastructure

A number of pieces of legislation regulate sewerage infrastructure.

The Water Supply (Safety and Reliability) Act 2008 provides the regulatory framework for water and sewerage services in Queensland and sets out the functions and powers of water and sewerage service providers.

The Sustainable Planning Act 2009 provides the planning framework for the development of water and sewerage infrastructure. Under the Act, any new infrastructure or upgrades to existing infrastructure may be subject to development assessment.

The Plumbing and Drainage Act 2002 establishes the legislative framework for plumbing and drainage and on-site sewerage facilities in Queensland. It provides a mechanism for enforcing compliance with standards for on-site sewerage work and facilities.

The Local Government Act 2009 and the City of Brisbane Act 2010 prohibit the connection of any part of the sewerage system to the stormwater system and give councils the power to take enforcement action to rectify illegal connections.

The Environmental Protection Act 1994 (and related legislation) imposes standards to ensure that the management of sewerage infrastructure does not unduly cause adverse effects to the environment.

In south-east Queensland, there has recently been a major reform of the administration of water and sewerage networks through the South-East Queensland Water (Restructuring) Act 2007 and the South-East Queensland Water (Distribution and Retail Restructuring) Act 2009. The latter Act created three separate council-owned 'distributor-retailers' that took over the management and operation of sewerage infrastructure and services from councils: UnityWater, which serves Moreton Bay and Sunshine Coast regions; Queensland Urban Utilities, which serves the Brisbane, Ipswich, Lockyer Valley, Scenic Rim and Somerset regions; and Allconnex which serves the Gold Coast, Logan and Redland City regions. (Gold Coast, Logan and Redland City councils will take back responsibility from Allconnex on 1 July 2012.) In all other areas the council is responsible for the management of sewerage infrastructure.

10.1.4 The impact of the 2010/2011 floods on sewerage infrastructure

The Commission received evidence that sewerage systems were affected in all areas where major flooding was experienced, and that, in many areas, there was a need to warn the public about the possible contamination of public areas and waterways by untreated sewage.

Damage to sewerage infrastructure managed by Queensland Urban Utilities

The Commission received detailed evidence from Queensland Urban Utilities about the impact of the 2010/2011 floods on its sewerage system, which serves approximately 1.25 million people. Flooding affected 128 sewerage pump stations operated by Queensland Urban Utilities; they suffered varying levels of damage. Nine sewage treatment plants were affected. The principal damage caused by inundation was to the electrical systems (the generators and switchboards) resulting in critical failures of treatment systems (see section 10.1.6 Electrical switchboards and generators below).

The damage to infrastructure and the inundation of the sewerage system resulted in the discharge of untreated sewage through overflow relief structures, which are designed for this purpose, and backflow of sewage into private properties in the Brisbane area. (Overflow relief structures are discussed in section 10.1.7 Prevention of sewage discharge below.) The Brisbane City Council issued a media release on 12 January 2011 notifying residents of the prospect that untreated sewage could enter floodwaters and of the risk this posed to human health. The operations log and situation reports for the Brisbane local disaster co-ordination centre show that reports were received of untreated sewage entering waterways and of sewage leaks occurring near residential premises. A situation report of 28 January 2011 identified 19 public parks as possibly contaminated with sewage.
Queensland Urban Utilities’ records show that between 11 January 2011 and 25 January 2011 it attended 110 locations to perform site clean-ups, in 65 of those cases responding to reports of ‘sewerage flooding / backflow’.10 (Because its focus was on cleaning up rather than identifying causes, it was unable to confirm whether all cases involved sewage flooding or backflow.)

To alleviate public health risks, the organisation used diesel pumps to collect untreated sewage, which was removed by tankers or discharged to waterways.12 Queensland Urban Utilities’ general manager for planning expressed the view that the likely causes of sewage flooding and backflow were the large volume of rain, the height of the floodwaters, the failure of sewerage infrastructure due to inundation and loss of electricity and, possibly, sewerage systems being overwhelmed by stormwater entering through illegal connections.13

The owner of an apartment in a multi-storey complex at West End described to the Commission how, during the 2010/2011 floods, dirty water, possibly sewage, rose into baths and toilets in the apartment complex. She suspected that it emanated from the sewerage system because the baths and toilets were not overtopped by floodwater.14 Queensland Urban Utilities’ general manager for planning said the organisation had not received any reports of sewage backflow or flooding at the building at the time, although it was aware of flooding in the general vicinity.15 Investigations conducted by Queensland Urban Utilities later in 2011 indicated that sewage backflow in West End was caused by a number of factors, including debris in the sewer, a fracture in the cross-river sewerage pipeline that ran under the Brisbane River and the inundation of the Grey Street pump station.16

**Damage experienced elsewhere in Queensland**

The 2010/2011 floods caused significant damage to sewerage infrastructure throughout Queensland. Its repair was expensive, the loss of treatment facilities inconvenient and the releases of untreated sewage a cause of hardship and distress.

The director of infrastructure for the South Burnett Regional Council gave evidence of multiple sewer collapses and damage to sewage treatment plants in the Nanango and Kingaroy areas.17 The cost of reconstruction of and repairs to the council’s water supply and sewerage infrastructure exceeded $2 million.18

In the neighbouring area of North Burnett Regional Council, floodwaters damaged the sewerage pump stations and effluent holding tanks in Mundubbera, Gayndah and Monto. The sewerage system functioned satisfactorily until flooding reached a level which required removal of the control panels and electrical systems.19 In Mundubbera, floodwater entered the sewerage system through flooded houses, causing an overload of the pump station, which was then shut down.20 Untreated sewage was discharged into the river system from the Mundubbera and Gayndah pump stations, which had been shut down.21 Eidsvold also experienced flooding, but it did not suffer the same damage to the sewerage infrastructure as occurred elsewhere in the North Burnett council region. The cost to the council of the reconstruction works required for the water and sewerage systems was around $2 million.22

In St George, in the Balonne region, steps were successfully taken to prevent inundation of the sewerage infrastructure. Sewage pump stations were sandbagged and sewer entry points below previous flood levels were blocked to prevent floodwater causing backflow.23

At Theodore, in the Banana Shire, the sewerage pump station transmitting sewage to the township’s sewage treatment plant was flooded. Ergon Energy shut off power to it on the morning of 27 December 2010, preventing further pumping to the treatment plant.24 By the afternoon of that day, reports were being received of backflow through the sewerage system.25 In Jericho and Alpha, within the Barcaldine Regional Council area, a number of septic tanks were submerged in floodwater. Following the flooding, sewage pumping trucks were used to pump the tanks out.26

In Bundaberg, the sewage treatment plants at Millbank and East Bundaberg were disabled by the council’s removal of the plants’ electrical systems in anticipation of the inundation which subsequently occurred. Because the sewerage network as a whole is gravity driven, even without a functioning electrical system it continued to deliver sewage to the treatment plants, with the result that untreated sewage was discharged into the waterways. These discharges were heavily diluted; only a negligible impact on the environment was identified.27 Although the removal of the electrical systems disabled the plants, it meant that systems could be restored more efficiently once the floods subsided.28 There were also concerns about the malfunctioning of private septic systems: a resident of Gooburrum gave evidence that the floodwaters near his house were declared contaminated because the contents of underground septic tanks had leached into the water.29 He also said that his neighbour’s septic tank had floated up out of the ground.30
In the Western Downs, the sewerage systems in Chinchilla and Dalby were affected by flooding, but no major damage was sustained. Sewerage services continued to operate throughout the floods in Chinchilla, despite the main pump station's being located in the flooded area of the town. In Dalby the sewerage network was inundated, although full treatment was restored shortly after the floods receded.

In Kilkivan, effluent ponds forming part of the sewage treatment plant flooded and overtopped. The director of engineering at Gympie Regional Council said that the council investigated claims that effluent may have entered residential premises, but concluded that it had not, and that no harm had been suffered from the overtopping. An SES officer from Kilkivan gave evidence that some houses in Kilkivan were flooded by sewage or effluent, including one located only 500 metres from the sewage treatment plant; but he acknowledged that it was not clear whether the source of the waste in that house was the sewage treatment plant or private septic systems. One of the houses he identified was ultimately condemned, at least in part because of evidence that sewage had entered the house.

The chief executive officer of UnityWater, the distributor-retailer that provides sewerage services for the Moreton Bay Regional Council and the Sunshine Coast Regional Council, gave evidence that almost $1 million in damage was suffered to the sewerage systems of Maroochydore, South Buderim, Caloundra (Golden Beach and Dicky Beach), Kallangur, Brendale and Murrumba Downs.

In the Southern Downs, the Stanthorpe sewage treatment plant was inundated by floodwaters.

In Emerald, 19 of the 30 sewerage pump stations were inundated by floodwater; of those, seven suffered electrical damage as a result of their control panels or switchboards being submerged. The 12 pump stations that did not suffer electrical damage were able to return to service once the floodwaters subsided. In Rolleston, two pump stations were flooded and suffered electrical damage.

### 10.1.5 The location and design of public sewerage infrastructure

#### The location of public sewerage infrastructure

The location of the plant and infrastructure in public sewerage systems is constrained by a number of factors, which in combination often lead to the location of public sewerage systems in areas susceptible to flooding.

Sewage treatment plants have to be located within reasonable proximity of the communities that they serve. The distance from the point of collection of sewage to the location of its treatment must be minimised, because sewage degrades when it travels over distance, affecting its treatability. (At the same time, of course, a buffer between residential areas and sewage treatment plants is desirable.) Additional limiting factors include the need to allow access for maintenance and the need to allow for the location of other infrastructure, such as stormwater systems and underground power cables.

Most sewerage infrastructure networks are driven by gravity and are designed to make use of the gradient of the land. Although alternative systems (such as pressurised sewerage systems) exist, gravity based systems are the most cost effective because of their relatively low power consumption and pumping costs. As a result, sewerage systems are usually designed to drain to the lowest point of the natural land layout and sewage treatment plants are typically located on low lying land. Treatment plants require discharge points for the release of treated sewage and, in an emergency, of untreated sewage, which means that they are usually positioned adjacent to waterways, such as rivers or creeks. In consequence, the natural site for a sewage treatment plant will often be on low lying land near a waterway, which may be susceptible to flooding.

State Planning Policy 1/03 imposes particular development outcomes on development within ‘natural hazard management areas’, which includes areas identified as likely to be inundated during a ‘Defined Flood Event’. There is a specific development outcome that ‘essential services infrastructure [e.g. on-site electricity, gas, water supply, sewerage and telecommunications] maintains its function during a [defined flood event]’. The ‘Defined Flood Event’ is determined for each area by the relevant council, but is typically identified by reference to the 1% AEP flood. It does not necessarily encompass all land that might, at some time, flood. This development outcome is not mandatory and can be departed from where there is an overriding need in the public interest or in order to satisfy a development commitment. Whether an overriding need exists depends on an assessment of the net economic, social and environmental benefits to the community and the likelihood of suitable alternative sites being available.

State Planning Policy 1/03 applies where a natural hazard area for flood has been identified, unless a local planning instrument has been recognised as compliant with it, in which case the local planning instrument applies.
For example, Bundaberg Regional Council has jurisdiction over four legacy planning schemes from pre-amalgamation councils. Codes within three of them - the Bundaberg City Flood Management Code, the Burnett Shire Natural Features or Resources Overlays Code, and the Isis Shire Residential Zone Code - contain provisions about the protection of sewerage infrastructure from flooding similar to those in State Planning Policy 1/03, whereas in Kolan Shire, there are no provisions.

Queensland Urban Utilities gave evidence that, during the planning stage for sewerage infrastructure, consideration is given to flood risk, including the proposed site’s history of flooding, hydrological site assessments, Q100 levels, flood models and the resilience of the proposed infrastructure to flooding. These factors are weighed against engineering and commercial considerations.

UnityWater explained that the design manuals applicable to its area of operation specify various flood resilience parameters for sewerage pump station wet wells and switchboards. It noted that the level to which sewage treatment plants should be built is not specified, but that all of its sewage treatment plants are located above the 1% AEP flood level.

The North Burnett Council, which had a number of pumping stations affected by flood, is in the process of lifting low-lying pumping stations to higher elevations to improve their flood resilience. The director of technical services for the North Burnett Regional Council noted that even after such changes are made, pumping stations remain vulnerable to being overwhelmed by the entry of water into the sewerage system through flooded homes.

The evidence does not lead the Commission to conclude that there is a need for any fundamental reconsideration of the location of sewerage infrastructure to reduce its flood susceptibility. The approach taken in State Planning Policy 1/03 appears sound. However, in light of the reality that many sewage treatment plants are located in areas susceptible to flooding, improving resilience through design of the infrastructure is important.

The design of sewerage infrastructure

The Department of Environment and Resource Management (DERM) Planning Guidelines for Water Supply and Sewerage, prepared by the Queensland Government to assist in strategic planning for water and sewerage, provide guidance on process and principles, rather than specific technical requirements. The general manager for Queensland Urban Utilities gave evidence that it had a general rule of operating within the guidelines, but found them in some instances impractical. He noted, as an example, that section 5.2.2 of chapter 5 of the guidelines suggested the peak wet weather flow in a sewer could be modelled as five times the average dry weather flow; whereas Queensland Urban Utilities experienced up to thirty times the average dry weather flow through its network during extreme weather events. The representative of one regional council indicated that it had moved from reliance on the guidelines to use of the Water Services Association of Australia Codes, an industry publication.

Queensland Urban Utilities has adopted a formal sewer overflow mitigation strategy (developed by reference to industry guidelines, including the DERM guidelines) as part of its strategic asset management plan. One component of the strategy is to identify areas that are at risk of sewage flooding or backflow to allow the authority to direct its infrastructure upgrade, maintenance and education campaigns to those vulnerable areas and to track sewage flows more closely. It has a case management approach for properties that are particularly susceptible to sewage flooding or backflow (as identified from a history of past complaints, the condition of the sewerage system, and hydraulic models of the sewerage system) to ensure they are given priority.

Queensland Urban Utilities’ sewerage network has been constructed with reserve capacity to allow it to continue to function in the event of failure of one part of the system. For example, it has storage areas for sewage and backup generators for the event of power failure. The network has overflow relief structures built into it which, in emergency situations, discharge sewage into local watercourses to prevent discharges in residential areas. Pump stations are typically designed to include submersible pumps and motors that are not affected by floods. Electrical control panels are elevated, to some extent, to minimise the risk from flooding.

UnityWater adverts to similar matters to those considered by Queensland Urban Utilities in the design and management of sewers. The chief executive officer explained that the requirement that all sewers are built to at least five times the average dry weather flow allows for the inevitability that there will be defects and openings in any sewer through which stormwater runoff and groundwater can enter. Standards are applied in the design of certain components of the sewer network, such as a requirement that sewerage pumping station wet walls must be finished 300 millimetres above the level of the flood with an average recurrence interval of 20 years. Sewers must
be a minimum of 150 millimetres in diameter to minimise blockages.\textsuperscript{68} The chief executive officer explained that UnityWater uses hydraulic models to model sewage flows to identify areas that may need to be reinforced, and it is presently installing a supervisory control and data acquisition system that will allow it to monitor and control pumping stations remotely.\textsuperscript{69}

The flood resilience of the sewerage network can be improved by sealing, or by sealing and pressurising, the sewerage pipe network to prevent stormwater or floodwater entering the network.\textsuperscript{70} Sealed systems comprise pipes and maintenance shafts with welded joints to prevent stormwater or tree roots entering the system.\textsuperscript{71} A pressure system is operated by a pumping unit located on each property, rather than by gravity. The pump requires power to operate and is therefore an increased cost to the property owner.\textsuperscript{72} Queensland Urban Utilities suggested that the Australian Building Codes Board standard presently being developed should include a requirement that all new developments have sealed sewers and all new developments in areas that are susceptible to flood have sealed and pressurised sewers.\textsuperscript{73} The Commission has not received detailed evidence on the advantages and disadvantages of these systems and is not a position to make a finding as to whether the Australian Building Codes Board standard should contain such a requirement.

Queensland Urban Utilities pointed out that its ability to take control over the design of sewerage infrastructure was limited by the fact that it has no role in planning decisions such as the location of new property developments. It is simply obliged to provide sewerage infrastructure for whatever is planned or developed,\textsuperscript{74} although it does act as a referral agency for major developments and thus has a role in assessing those development applications.\textsuperscript{75} A further limitation is that property owners are responsible for all sewerage systems and plumbing to the boundary of their property, over which the authority has no control.\textsuperscript{76} Queensland Urban Utilities suggested that there may be advantages to allowing it greater involvement in planning processes and the setting of development conditions through more direct engagement between it and councils.\textsuperscript{77}

Queensland Urban Utilities’ suggestion has merit: there are obvious benefits to ensuring that planning and development decisions that affect sewerage infrastructure are made in consultation with the authority responsible for the management of that infrastructure. However, there are a number of ways in which that might be achieved and it is unnecessary for this Commission to select a mechanism. The Queensland Government intends to conduct a review, due to be completed by July 2013, of the planning and development assessment arrangements across the south-east Queensland region to determine the role of distributor-retailers in land use and infrastructure decision-making processes.\textsuperscript{78}

As noted above, evidence was received that floodwater may have been contaminated by sewage leaking from private on-site sewerage systems, such as septic tanks. The Commission did not receive detailed submissions on the adequacy of the design standards applicable to private on-site sewerage systems. Relevant standards are set out in the Queensland Plumbing and Wastewater Code, which provides acceptable performance solutions to meet the statutory requirements of the \textit{Plumbing and Drainage Act}.\textsuperscript{79} Flood resilience is not a specific performance criterion and is not mentioned in the code at all. It appears to the Commission that this is a matter that it would be prudent for the Queensland Government to consider for inclusion as a performance criterion.

**Recommendation**

10.1 The Queensland Government should consider including in the criteria in the Queensland Plumbing and Wastewater Code a requirement that the risk of leakage from private on-site sewerage systems during floods be minimised.

### 10.1.6 Electrical switchboards and generators

The main damage to sewerage infrastructure during the 2010/2011 floods was to the electrical switchboards and generators, which are not designed to withstand submersion in water.\textsuperscript{80} The other principal components of the system, for example pumps, are typically designed to be submersible and are not affected by inundation (although they are vulnerable to impact damage, and some parts are susceptible to power outages).

Damage to the switchboards and generators resulted in critical failures to treatment systems. This infrastructure is vital to the operation of the system as a whole; its susceptibility to inundation determines whether the sewerage
system can function during a flood, and it affects the length of time required for the system to become operational again after a flood.

The State Planning Policy 1/03 Guideline provides suggested solutions to achieve the planning outcome that sewerage infrastructure must continue to function during a Defined Flood Event (DFE). It proposes, relevantly, that any components of the infrastructure that are likely to fail to function or may result in contamination when inundated by floodwater (for example, electrical switchgear and motors) are (a) located above the DFE; or (b) designed and constructed to exclude floodwater intrusion/infiltration.

Queensland Urban Utilities’ chief operating officer gave evidence that, where practical, critical electrical and mechanical infrastructure is located at elevated levels within the sewerage system. He observed that in existing infrastructure this is not necessarily above the Q100 level. Following the 2010/2011 floods, Queensland Urban Utilities considered moving switchboards in sewage treatment plants to above the Q100 level, but preferred, given the considerable design and site works that would have been involved, to focus on restoring operational infrastructure to its pre-flood condition.

UnityWater gave evidence that its understanding of the combined effect of the Queensland Government guidelines and the design manuals of the councils within its jurisdiction was that sewerage pumping station switchboards must be located one metre above the level of the flood with an average recurrence interval of 50 years. Queensland Urban Utilities is reassessing the appropriate positioning of electrical systems in new infrastructure, and has commissioned consultants to reassess new infrastructure being built in an upgrade of the Fernvale and Lockyer Valley sewage treatment plants. It has also commissioned a firm of consulting engineers to undertake a study of the resilience of its existing infrastructure, including the electrical systems, against future floods. In advance of this study’s being finalised, Queensland Urban Utilities has relocated to higher ground a major power generator at Oxley Creek sewage treatment plant, which was flooded in the 2010/2011 floods.

The general manager for planning for Queensland Urban Utilities suggested that in all new developments in areas susceptible to flooding there should be a requirement that, subject to funding constraints, critical infrastructure should be located above peak maximum flood levels. The Commission has not received detailed evidence on the relative costs, advantages and disadvantages of mandating that critical infrastructure is always located above a prescribed flood level, whether that be 1% AEP flood, highest historical flood or probable maximum flood level. (Certainly the last seems an over-cautious approach.) It may be that in certain locations the cost of designing and constructing a sewage treatment plant with elevated critical infrastructure is disproportionate to the benefits to be obtained. The Commission considers it desirable that relevant authorities undertake risk and cost/benefit analyses of upgrading existing infrastructure where there have been significant adverse effects from flooding on the infrastructure and, in consequence, on the community. When resources allow, the review of other infrastructure to determine whether it should be upgraded would be desirable; priority should be given to areas that are most vulnerable to inundation.

**Recommendations**

10.2 Authorities responsible for the construction of sewerage infrastructure should, when embarking on new works, undertake risk and cost/benefit assessments to determine the level at which electrical infrastructure that may be vulnerable to inundation should be placed.

10.3 Authorities responsible for the management of sewerage infrastructure should conduct a review of their existing infrastructure to identify electrical infrastructure that may be vulnerable to inundation and perform risk and cost/benefit assessments to determine if it should be relocated to a higher level.

**10.1.7 Prevention of sewage discharge**

When the sewerage system becomes overwhelmed, untreated sewage sometimes discharges through household drains and toilet pedestals. In general, such discharges are a greater danger to human health than sewage contaminated floodwater because they are undiluted. A number of mechanisms can be installed within the
sewerage system to mitigate or prevent these discharges: overflow relief structures, overflow relief gully grates and sewage reflux valves.

**Overflow relief structures**

Overflow relief structures are built as part of the public sewerage system to provide an outlet for sewage to discharge in emergency situations or in extreme weather events. They are pipes designed to discharge the untreated sewage into a waterway; while undesirable, this is preferable to discharging to residential or commercial properties. As already described, these overflow relief structures discharged untreated sewage into waterways in Brisbane during the 2010/2011 floods.

Overflow relief structures are typically located adjacent to waterways\(^9\) or in other locations where the discharge will have a minimal effect on people and the environment and the discharge can be cleaned up efficiently. However, when the levels of waterways are elevated, overflow relief structures near waterways may become submerged and incapable of discharging excess sewage from the overloaded system. The increase in water pressure throughout the sewerage network may then result in backflow, lifting manhole covers and causing localised flooding elsewhere in the system. Manhole covers can be secured to ensure that this does not occur, although there is the possibility that this may in turn cause backflow into residential ground floor facilities through shower grates and toilet pedestals.\(^8\) Overflow relief structures, therefore, cannot be relied on to provide complete protection against sewage discharges during extreme weather events.

**Overflow relief gully grates**

Overflow relief gully grates are small grates located on residential premises within the private property boundary. They are connected to the sewerage system and have an opening at a lower height than the lowest bathroom or kitchen fixture within the premises. Their purpose is to ensure that if there is any backflow into the private sewer system, the discharge will occur through the overflow relief gully grate outside the house rather than through the bathroom or kitchen fixtures.\(^9\)

Overflow relief gully grates cease to function if the level of stormwater or floodwater rises above the height of the grate outlet; at this point they become an entry point for stormwater into the sewerage system. Queensland Urban Utilities intends to trial different designs for overflow relief gully caps to prevent stormwater entering the grates\(^7\) a welcome initiative. The problems caused by the entry of stormwater into the sewerage system are discussed further at 10.1.8 Illegal connections of stormwater to sewerage infrastructure below.

**Recommendation**

10.4 Queensland Urban Utilities should make the results of its trials on the use of caps for overflow relief gully grates available to other authorities responsible for sewerage infrastructure. Consideration should be given by those authorities as to how the results can be used to improve the flood resilience of their sewerage networks.

**Sewage reflux valves**

Sewage reflux valves, also known as backflow preventers, are devices that can be installed in household sewerage systems. They act as one-way valves to prevent the backflow of sewage into private sewer systems and then into bathroom or kitchen fixtures. Under current arrangements, it is up to house owners whether or not they install sewage reflux valves at their properties. Queensland Urban Utilities considers that householders are typically reluctant to install these valves because they may preclude the use of toilets and showers during floods, since when in operation they prevent waste from being discharged from the property.\(^\) Another cause of reluctance is that, since the backflow preventers are located on private premises, their maintenance is the responsibility of the landowners rather than a public authority.\(^9\)

In some locations, a variant of a sewage reflux valve known as a gate valve is used. These are manually operated valves that require comparatively less maintenance.\(^9\) Backflow can also be prevented through the use of sealed and pressurised sewers on private property.\(^9\)
On 2 February 2011, Building Codes Queensland presented a paper to the Plumbing Industry Council that outlined its concerns that sewage infiltration from sewerage mains caused significant damage to properties that were not inundated with floodwater in the 2010/2011 floods. It stated that overflow relief gullies failed to provide adequate protection and recommended that properties in low-lying areas subject to flooding should install reflux valves at the boundary connections to prevent surcharge from sewer mains.102 No proposal was made to amend legislation to make such installations mandatory, because the matter was being reviewed by councils.103

Subsequently, a proposed new part of the Queensland Development Code has included a requirement imposing new standards for the prevention of sewage reflux through the mandatory installation of sewage reflux valves in new buildings in designated flood hazard areas.104 The proposed new part of the code requires that the sanitary drain for a building be protected from backflow by fitting a reflux valve for sewage between the building and the point of connection to the public sewerage infrastructure. The installed reflux valve should be accessible for maintenance.105 Councils generally support the inclusion of reflux valves as a mandatory part of the Queensland Development Code, noting, however, that the valves can fail if not maintained properly.106 The Building Services Authority has also noted that reflux valves are not always effective.107 An independent engineering consultant engaged by the Commission commented that while reflux valves are effective in preventing backflow during floods, because they are prone to blockage and may increase head losses, they should only be used where sewage backflow is likely to occur.108 The maintenance of reflux valves is an issue that lends itself to the development of guidance material, particularly where responsibility for maintenance falls upon the homeowner. Should the Queensland Development Code include mandatory provisions related to the installation of reflux valves, the Queensland Government should develop appropriate advisory material for homeowners.

It is uncontroversial that mitigating the risk of sewage reflux and improving flood resilience of the sewerage infrastructure are desirable outcomes and that, at least in some circumstances, the installation of sewage reflux valves assists in achieving them. However, the Commission has not received detailed evidence on the relative advantages and disadvantages of these valves in all situations. It is not, therefore, in a position to reach a conclusion on the merits of including in the Queensland Development Code a requirement for the mandatory fitting of sewage reflux valves. (See section 9.5 Proposed new part of the Queensland Development Code: ‘Construction of buildings in flood hazard areas’ for further discussion of the Queensland Development Code.)

**Recommendation**

10.5 If the Queensland Development Code is amended to include provisions requiring homeowners to install sewage reflux valves, the Queensland Government should develop and make available to homeowners appropriate guidance material to assist them in meeting their responsibilities to maintain reflux valves.

### 10.1.8 Illegal connections of stormwater to sewerage infrastructure

The sewerage and stormwater systems serve different purposes. The stormwater system manages rainfall, whereas the sewerage system is designed to collect and transfer human waste to sewage treatment plants.109 The sewerage system is not designed to convey significant quantities of stormwater or floodwater and may be overwhelmed if large volumes of either enter the system.110 If the sewerage system’s capacity is exceeded, untreated sewage will be directed into waterways through overflow relief structures.111

The discharge of stormwater into the sewerage system is prohibited under section 193 of the Water Supply (Safety and Reliability) Act. Notwithstanding this, the chief operating officer of Queensland Urban Utilities described the practice of property owners directing a downpipe from a building’s roof into the sewer overflow grate as ‘quite common’.112 That conclusion was drawn in part from the dramatic increase in the volume of flow experienced through Queensland Urban Utilities’ system during exceptional weather events (although such flows could also be caused by stormwater entering broken sewerage pipes or by the inundation of inlets or outlets).113 It is also based on the results of what Queensland Urban Utilities general manager of planning described as ‘smoke testing’: the introduction of smoke into the sewerage system so that the smoke will then rise through the sewers and emit from the gutters of houses that have stormwater pipes connected to the sewer system.114 Queensland Urban Utilities expressed its concern that homeowners connecting their stormwater systems to the sewerage system may have
contributed to the sewerage system’s being overwhelmed in the 2010/2011 floods. UnityWater also identified the existence of illegal connections; when it conducted surveys of the areas for which it is responsible, it found that between 5 and 10 per cent of properties surveyed had illegal connections.

The Brisbane City Council has a different view of the prevalence of such illegal connections: during the December 2010/January 2011 period it recorded only seven cases in which stormwater drainage systems were illegally connected to sewerage systems, six of them related to connections to private sewerage drainage systems rather than to Queensland Urban Utilities’ infrastructure. Only four more instances were investigated in the intervening period to November 2011. Brisbane City Council regards the impact of illegal stormwater connections to sewerage infrastructure as perhaps ‘overstated’, having regard to the low incidence of illegal connections and the relatively low volume of stormwater entering the sewerage infrastructure through illegal connections where they occur.

The divergence of views between Queensland Urban Utilities and the Brisbane City Council as to the proportions of the problem of illegal connections may arise from a difference in approach to analysis of the issue: Brisbane City Council points to the rates of enforcement, whereas Queensland Urban Utilities focuses on the number of probable illegal connections it has identified through flow analysis and smoke testing, without enforcement action. Another possibility is that the issue of illegal stormwater connections is not as significant in Brisbane as elsewhere in Queensland Urban Utilities’ area of operation. The Commission has not received evidence on this point from the other councils in areas Queensland Urban Utilities serves.

Illegal connections are not the only means by which stormwater enters the sewerage system; for example, it may enter through uncapped sewerage relief gully grates. The DERM Planning Guidelines for Water Supply and Sewerage specifically incorporate ‘unauthorised roof, ground or stormwater drainage’ as a component in determining ‘peak wet weather flow’, a value used in calculating the minimum capacity of the sewerage system. That recognition suggests that the problem of illegal stormwater connections should be considered by sewer designers and an allowance made for a degree of surplus capacity to accommodate it.

Up until July 2010, councils were responsible for the sewerage networks and still retain that responsibility outside of south-east Queensland. A prohibition on connections of stormwater to sewerage infrastructure is imposed by, and associated enforcement powers are granted to councils under, the Plumbing and Drainage Act, the Standard Plumbing and Drainage Regulation 2002, the Sustainable Planning Act, Local Government Act and, in the case of the Brisbane City Council, the City of Brisbane Act. The councils’ enforcement powers under the Plumbing and Drainage Act include the power to issue written notices to the owners of premises with illegal drainage or to the person who performed the plumbing or drainage work requiring the recipient to do such things as may be stated in the notice: typically, to rectify the illegal connection. Similar powers are conferred by the Local Government Act and the City of Brisbane Act. All three pieces of legislation empower council representatives to enter private property with the occupier’s permission or with a warrant. Councils do not have a regulatory or enforcement role under the Water Supply (Safety and Reliability) Act, but, in the view of the Brisbane City Council, their existing powers under legislation are adequate to prevent, and order rectification of, illegal connections.

The enforcement and investigation powers vested in the councils have not been transferred to the distributor-retailers, despite the transfer of responsibility for water and sewerage services. A distributor-retailer may enter ‘places’ for the purpose of repairing its own infrastructure, but not for the purpose of identifying illegal connections of stormwater pipes to the sewerage system and, in any event, not into parts of ‘places’ used for residential purposes. Nor can it compel the disconnection of such connections.

Queensland Urban Utilities’ present practice is that when it identifies a suspected illegal connection, it reports the matter to the relevant council, which is then responsible for inspecting the property or otherwise dealing with the private property owner. However, Queensland Urban Utilities submitted that the council’s use of powers was directed primarily towards stormwater management, and ensuring sewerage discharges did not enter the stormwater system, rather than the converse. When smoke testing of properties is conducted, Queensland Urban Utilities personnel attend sites together with personnel from the council responsible for that area. Queensland Urban Utilities described the level of co-operation between it and its participating councils as ‘very good’, but it suggested that it was an inefficient use of resources to have personnel from both the distributor-retailer and the relevant council present when investigating illegal stormwater connections. In Queensland Urban Utilities’ view, the current regulatory framework is inadequate.
Queensland Urban Utilities submitted that stormwater flows within the sewerage system could be effectively reduced through two measures. First, it proposed increased community and industry education on the need to maintain separate sewerage and stormwater systems and the importance of not connecting stormwater systems to the sewerage systems; some property owners may not be aware that the systems are separate or may not appreciate the importance of the separation. Second, it suggested an extension of the statutory powers of distributor-retailers like Queensland Urban Utilities under the Water Supply (Safety and Reliability) Act to allow them to investigate whether illegal stormwater connections exist on private properties and, if so, to require their removal. UnityWater and Ipswich City Council made similar submissions to the Commission. Another proposal was for a statutory requirement that any house to be sold be subject to inspection of its stormwater connections prior to sale. If all else failed, ‘enhanced’ sewer planning in areas prone to flooding or stormwater flow might need to be considered.

The Commission is not in a position to make findings about the extent to which illegal connection of stormwater pipes to sewerage infrastructure causes sewerage flooding. However, it seems clear that illegal connections do occur and, if allowed to go unchecked, have the potential to affect adversely the ability of the sewerage system to withstand extreme weather events. There seems, also, to be a gap in the practical workings of the enforcement regime applicable to illegal stormwater connections. However, the Commission is unconvinced that the remedy is to extend powers of entry or enforcement to an additional group of entities. The distributor-retailers have the technological capability to detect illegal connections of stormwater to sewage infrastructure. The better course is for them to work with councils, providing evidence for enforcement action, with a mutual exchange of information.

**Recommendations**

10.6 Queensland Urban Utilities, and other distributor-retailers and councils, that have identified a practice of stormwater drains being connected to sewerage infrastructure, should conduct a program of education to raise public awareness that this practice is illegal and impedes the operation of the sewerage infrastructure.

10.7 Councils and distributor-retailers should agree to protocols for the exchange of information about suspected illegal connections, the steps being taken to investigate them or the basis for concluding that no investigation is required, and the results of any investigations or enforcement actions.

**10.1.9 Interactions with disaster management groups**

Queensland Urban Utilities raised a concern that, despite its role as a provider of essential services in contact with the public, as users of sewerage services, it did not have any direct involvement with or line of communication to the state disaster management group during the 2010/2011 floods. Instead, the state disaster management group engaged with the SEQ Water Grid Manager. Queensland Urban Utilities pointed out that while the SEQ Water Grid Manager undoubtedly has an important role to play in disaster management, unlike Queensland Urban Utilities it has no responsibility for sewerage and does not interact directly with the end users of sewerage services.

That concern would appear to be met by 48A of the Disaster Management Act 2003 (inserted into the Act by the Disaster Readiness Amendment Act 2011) which requires disaster management groups to consult with providers of essential services, such as sewerage infrastructure, if the chairperson of the disaster management group considers that the provider can assist the group. Disaster management groups are defined in the Disaster Management Act to include state, district and local groups.

For the reasons outlined by Queensland Urban Utilities, it is likely that in many disaster situations, particularly major floods, Queensland Urban Utilities and other distributor-retailers will be well-placed to assist the relevant disaster management group.
10.2 Stormwater

10.2.1 Overview of the stormwater network

The role of the stormwater network

Stormwater is rain water that has not yet entered a river system or soaked into the ground. The aim of the stormwater network is to ensure that stormwater flows generated from developed catchments cause minimal nuisance, danger and damage to people, property and the environment. Those parts of the stormwater system that are used primarily to manage the quality of the water, rather than its flow, are not considered in this report.

The stormwater network comprises:

- a. stormwater infrastructure, which is the civil works built for the primary purpose of stormwater collection and conveyance, such as pipes, gullies, inlets and culverts
- b. natural components such as overland flow paths and waterways

In Australia, stormwater and sewerage networks are designed to operate separately: the stormwater network is not designed to process human waste, and sewerage networks do not have the capacity to carry the volume of flows caused by stormwater. The problem of stormwater infiltration into the sewerage system is discussed in section 10.1 Sewage and sewerage.

The stormwater network provides some flood mitigation benefits, but is not designed to manage major creek or river flooding. If the stormwater network is poorly designed or poorly maintained it may provide only limited flood mitigation benefits. Areas with old stormwater networks constructed for smaller populations than those they now serve, or built to outdated design standards, are flooded more frequently by stormwater than areas with modern networks.

Stormwater contributed to flooding in many locations in the 2010/2011 floods, sometimes in combination with riverine flooding. There are two particular types of stormwater flooding which will be dealt with in some detail in this section: flooding of basements by stormwater, which is discussed in section 10.2.4 Basements, and flooding by stormwater by backflow through the pipe network, which is discussed in section 10.2.6 Backflow flooding. The latter type of flooding was especially a problem in low-lying areas of Brisbane, occurring even before the banks of the river had been breached.

The components of stormwater networks

Stormwater pipes are pipes designed for the purpose of collecting and conveying stormwater. They include both stormwater drains and secondary pipes that link gullies and inlets to the stormwater drains. Stormwater pipes are often located underground.

Gullies and inlets are entry points for stormwater to enter stormwater pipes. The term ‘gully’ usually refers to a grilled box inlet of the type commonly seen in suburban streets. ‘Inlets’ are usually openings in parks or open areas.

Kerbs and channels (or gutters) are the structures built on the sides of roads that allow the road surface to convey water flow.

Culverts are short passageways under roads designed to allow stormwater to flow from one side of the road to the other without being dammed by the roadway.

Detention basins are depressions in the ground constructed for the purpose of catching and holding stormwater. The captured water is then drained out gradually by a pipe, so that the release has a reduced impact, compared to its effect if the same volume of water flowed uncontrolled during a large inundation.

A backflow prevention device is a one-way valve installed at, or near, the point at which a stormwater pipe discharges into a waterway. The purpose of the device is to ensure that, if the water levels rise in the waterway, water does not flow back through the stormwater network and flood low-lying areas. Backflow prevention devices are discussed in more detail at section 10.2.6 Backflow flooding below.
The other key components of the stormwater network are waterways and overland flow paths.\textsuperscript{156} In each case they may be naturally occurring or partially or totally constructed.\textsuperscript{157} Waterways include creeks, rivers and wetlands. Overland flow paths are depressions in the ground in which water accumulates and then flows.\textsuperscript{158}

**10.2.2 The regulatory structure applicable to stormwater networks**

A number of pieces of legislation regulate stormwater infrastructure.

The *Sustainable Planning Act 2009* provides the planning framework for managing the process by which development takes place, which includes carrying out plumbing and drainage work. All new work may be subject to development assessment.

The *Plumbing and Drainage Act 2002* establishes the legislative framework for plumbing and drainage work. It requires that stormwater drainage be kept separate from sewerage infrastructure.

The *Building Act 1975* requires that stormwater drainage be taken into account in building development approvals and stormwater runoff considered in building work undertaken in areas susceptible to erosion.

The *Local Government Act 2009* and the *City of Brisbane Act 2010* prohibit the connection of any part of the sewerage system to the stormwater system and give councils the power to take enforcement action to rectify illegal connections.

The *Environmental Protection Act 1994* (with related legislation) imposes standards to ensure that the management of stormwater and drainage does not cause undue adverse effects to the environment. The *Environmental Protection (Water) Policy 2009* requires councils to develop and implement urban stormwater quality management plans to manage the quality of urban stormwater flows.

**10.2.3 The design and construction of stormwater networks**

**Design principles**

The stormwater network has a role to play in flood mitigation; however, it is not constructed to manage major river or creek flooding.\textsuperscript{159} As with any infrastructure, stormwater infrastructure is only effective up to its design limits. Stormwater design standards aim to strike a balance between managing risk and the cost to the community, rather than to provide immunity from all stormwater flows.\textsuperscript{160} For example, the underground pipe network is constructed to cope with stormwater from a storm with an average recurrence interval of 2 years to a storm with an average recurrence interval of 10 years;\textsuperscript{161} its capacity will be exceeded during major inundations.\textsuperscript{162} While it may be possible to build the network to accommodate rarer floods, for example to cope with a storm with an average recurrence interval of 100 years, this would involve higher capital and maintenance costs and is generally not economically feasible.\textsuperscript{163}

Urban stormwater drainage systems are generally designed on a minor/major storm basis. The piped drainage system is designed to manage frequent minor storms of low severity, while the system of overland flow paths caters for severe storms which exceed the piped system.\textsuperscript{164} Most stormwater flooding problems are caused by the inadequate capacity of one of these systems.\textsuperscript{165} This is particularly an issue in older areas of cities and towns, where urban stormwater systems were designed before the advent of modern runoff and overland flow path practices.\textsuperscript{166}

Councils are responsible for managing and enforcing compliance with stormwater standards in their respective jurisdictions through the design standards and development codes they administer.\textsuperscript{167} The only stormwater infrastructure managed directly by the Queensland Government is that relating to state owned roads, for which the Department of Transport and Main Roads is the responsible authority.\textsuperscript{168}

The Queensland Urban Drainage Manual is a stormwater planning and design guide produced by DERM in collaboration with councils and industry representatives.\textsuperscript{169} The last edition was prepared in 2007. The manual is not mandatory, but it is used as a benchmark by councils to develop their own stormwater policies and standards.\textsuperscript{170} Its contents are widely accepted and implemented by councils across Queensland.\textsuperscript{171} The Queensland Development Code also sets out model standards for stormwater drainage for use by councils; however, they do not have any legislative force and are only advisory in nature.\textsuperscript{172} (See section 9.5 Proposed new part of the Queensland Development Code: ‘Construction of buildings in flood hazard areas’ for a more detailed discussion of the Queensland Development Code.)
Stormwater infrastructure is most efficiently installed contemporaneously with other development. Careful attention to stormwater drainage systems when they are built is essential; upgrades of inadequate systems can be very expensive, and may be impossible. In designing new stormwater infrastructure it is important to consider both its local effect and its effect on the network, to ensure it does not exacerbate flooding locally or in other areas. In the land planning process, it is the responsibility of the developer not to increase the runoff downstream of the development. For example, where land is built up with fill prior to the construction of a new development, care should be taken that there are no impacts by way of ponding or runoff to adjoining properties. (See section 7.6 Placement of fill and development in a floodplain.)

Stormwater design policies and standards, such as those set out in the Queensland Urban Drainage Manual, apply to new development. They do not require that existing infrastructure be upgraded to meet the standards. The Queensland Urban Drainage Manual specifies that the minor drainage system, which includes the underground drainage systems, should be built with sufficient capacity to convey flows from minor storm events in a way that does not pose a risk to pedestrians; some inundation of the roadways is permitted. A minor storm is one that has an average recurrence interval of between 2 and 10 years; which recurrence interval within that range applies depends on the level of urbanisation. Some older stormwater networks, such as some of those in Brisbane and Ipswich, do not meet this standard. The upgrade and optimisation of existing networks is considered further in section 10.2.5 The maintenance and optimisation of stormwater systems.

The needs of stormwater networks differ across Queensland depending on factors such as topography, climatic conditions, the size of the catchment and the level of development of each location. The financial capacity of each council will affect its ability to maintain and upgrade the stormwater networks under its control. Parts of the stormwater network are also significant for other council functions, such as road construction, and other parts perform dual functions, such as parklands that operate as overland flow paths. It is therefore appropriate that the design of stormwater systems is managed by councils, by reference to state and national policy; no evidence was presented to the Commission suggesting this should not be the case. However, the guidance materials, particularly the Queensland Urban Drainage Manual, are important resources for councils, helping to ensure that a common approach is taken across catchments that encompass multiple councils. These materials need, therefore, to be kept up to date by the responsible state-level authorities. The last edition of the Queensland Urban Drainage Manual was published in 2007 and it no longer reflects all current legislation; for example, the list of key legislation refers to the Integrated Planning Act 1997 rather than the Sustainable Planning Act 2009. It would be useful for the manual to be reviewed to ascertain whether any parts of it need to be amended, to reflect the current law and to take into account insights gained from the 2010/2011 floods.

Recommendation

10.8 The Department of Environment and Resource Management should review the Queensland Urban Drainage Manual to determine whether it requires updating or improvement, in particular, to reflect the current law and to take into account insights gained from the 2010/2011 floods.

Overland flow paths

Understanding overland flows is critical to achieving an appropriate design of a stormwater network. This adds complexity to the planning regime, because it requires detailed mapping of overland flows in order to allow their assessment in relation to any new development. The modern approach to planning is to accommodate overland flows as far as possible. This has not always been the case; some older houses are built in the middle of overland flow paths. Current practice requires the road network to follow overland flow paths; historical practices resulted in some roads traversing overland flow paths.

There is significant benefit to be gained by mapping overland flow paths, especially in urban areas where human intervention has altered the natural paths. There is less likely to be a benefit to mapping flow paths outside urban areas. However, only a limited number of urban councils map overland flow paths in their planning systems, probably because it is a difficult and highly detailed process. Brisbane City Council has prepared detailed maps of overland flow paths. These ‘flood flag maps’ are made publicly available and used in the assessment of development
applications, although the mapping is not yet complete. Bundaberg Regional Council maintains local flooding models to help it manage stormwater flows in Bundaberg and the surrounding areas and to assist in assessing development applications. It has had difficulty attracting and retaining engineers with appropriate modelling experience, but plans to build new models for other areas and upgrade its existing models. Ipswich City Council is undertaking a number of drainage and flood studies intended to assist with future stormwater and runoff design, which include sub-catchment studies of overland flow paths. Fraser Coast Regional Council has, since amalgamation, provided information on overland flow paths in flood searches and responses to requests for building information, although its knowledge of flow paths is based on observations from council employees and members of the public rather than on a hydraulic model. Moreton Bay Regional Council has commissioned a study to prepare a flood database that will include information on overland flow.

Given the benefits to be gained from properly mapped overland flow paths, such mapping is to be encouraged. The Commission’s understanding is that these maps can be prepared most accurately using hydraulic models. The models used should be capable of being amended to reflect changed conditions on the ground, particularly in areas that are rapidly developing. If site-specific or local overland flow models are developed, those models must be consistent with the overall hydraulic model of the catchment. (Hydraulic models are discussed further in chapter 2 Floodplain management.) The Commission recognises that the task is likely to be costly and resource intensive, and may be beyond the financial capacity of some councils.

**Recommendation**

10.9 All councils should, resources allowing, map the overland flow paths of their urban areas.

**Detention basins**

Detention basins are an important part of the stormwater network, particularly because, unlike other parts of the system, they are designed to manage large, sudden inundations. Although they are sometimes used in cities (Bundaberg has seven major detention basins throughout the city as well as minor ones in car park areas), the size of detention basins makes them more likely to be used outside central business district areas. The amount of land they require means that their full cost includes not only their initial construction cost and continuing maintenance costs, but also the opportunity cost of the land’s not being used for other purposes.

**10.2.4 Basements**

Stormwater entered the basements of a number of high rise buildings in the 2010/2011 floods and caused damage. In some cases this was because basements were not adequately sealed, in others because the stormwater management systems installed in them were inadequate for the volume of water that entered. For example, one high-rise in the Brisbane central business district has stormwater pits in place to capture excess stormwater entering the underground levels of the building; these pits were unable to cope with the volume of water they received. Similar problems occurred in a number of other apartment buildings. In one instance, a stormwater drain leaked and contributed to the inundation of the basement; in another, the sump pumps designed to remove water from the basement failed because the electrical control board was inundated; in a third, stormwater is believed to have entered a basement through leaking pipes. Stormwater entered basements through a number of other channels including electricity and communication conduits and air vents. (The ingress of water through electrical conduits is discussed in section 10.3.5 Conduits for electrical cables.)

The damage caused in basements was significant in those instances where essential services infrastructure, such as lighting, exhaust, security and air-conditioning systems and lift systems, was located in the basement.

The Queensland Government Planner observed that there were currently very few requirements (legislative or otherwise) for ensuring that essential services in a building - including fire safety systems, electricity supply, water and sewerage - were not affected during a flood event. Building designers would, consequently, only consider the effects of floodwaters on services where it was a specific element of the design brief or where it was required by other non-building regulations.
If councils approve development applications that entail the location of essential services in basements, they should ensure either that the basement will be constructed with an appropriate level of flood immunity or that measures will be put in place to ensure those essential services continue to function even if the basement is inundated.

Basements do not necessarily have to be built to exclude stormwater: as noted above, some include stormwater pits or drains to manage stormwater rather than to exclude it. Whether this is appropriate will depend on the purpose and design of each individual building. However, plainly it is important that stormwater systems be constructed so that they do not exacerbate flooding. Some steps have already been taken by councils. For example, Temporary Local Planning Instrument 01/11, introduced by the Brisbane City Council in May 2011, requires that basements be built with a higher level of flood immunity than was previously required.214 A Brisbane City Council town planner told the Commission that, following the 2010/2011 floods, the council has imposed conditions on the development approvals of basements in areas subject to inundation, requiring that stormwater connections be fully sealed to ensure that there is no possibility of backflow into basements.215

The Commission is aware of a proposal to amend the Queensland Development Code to impose a requirement that, in buildings in ‘flood hazard areas’, utilities (for example lift motors, switchboards and fire indicator panels) be designed or located to reduce the effects of floodwater on them during a defined flood event.216 The Commission has not received detailed evidence on this proposal, but it seems that such a measure would provide an additional layer of flood resilience to essential services contained in basements.

The Commission received a submission that there should be an examination of the effectiveness of non-return valves in basements.217 That kind of examination is more appropriately undertaken by Building Codes Queensland, which is presently considering whether non-return valves should be fitted on stormwater connections to private properties in designated ‘flood hazard areas’. This remains a work in progress; there is uncertainty as to whether such valves are helpful in all circumstances.218 (See section 9.5 Proposed new part of the Queensland Development Code: ‘Construction of buildings in flood hazard areas’ for further discussion of the work being done by Building Codes Queensland.)

**Recommendations**

10.10 Councils should consider amending their planning schemes to include provisions directed to consideration of the flood resilience of basements as a factor in determining the appropriateness of a material change of use.

10.11 In assessing and determining development applications for material change of use in areas susceptible to flood, councils should consider whether the new developments locate essential services infrastructure above basement level, or, alternatively, whether essential services infrastructure located at basement level can be constructed so that it can continue to function during a flood.
10.2.5 The maintenance and optimisation of stormwater systems

The first stormwater infrastructure in Brisbane was constructed in 1860. It was to serve the needs of a population of around 5000.\textsuperscript{219} It is, therefore, unsurprising that some of the oldest parts of the city are prone to flooding:\textsuperscript{220} an increase in population density puts additional strain on the stormwater system, as every new hard surface, such as a road or driveway, increases the volume of runoff.\textsuperscript{221} Many councils manage large networks of stormwater infrastructure: Fraser Coast Regional Council has approximately 500 kilometres of stormwater pipes and culverts;\textsuperscript{222} Brisbane City Council has 2640 kilometres of enclosed stormwater pipes.\textsuperscript{223} In all stormwater systems, continuing maintenance is critical to ensuring that the stormwater system operates to the full extent of its capacity. A program of upgrades is essential to ensure that the system has the capacity to serve the current population and level of development.

All parts of the stormwater network require a level of maintenance: for example, culverts need to be inspected for debris,\textsuperscript{224} detention basins need to be mowed\textsuperscript{225} and vegetation needs to be managed in natural waterways.\textsuperscript{226} The inspection and maintenance of the pipe network is difficult because most of it is located underground. New technology, such as remote-controlled vehicles with cameras, has reduced the need for manual inspection by torch and mirror, but it remains a slow process.\textsuperscript{227} With modern technologies, Brisbane City Council is presently able to inspect approximately 80 kilometres of stormwater pipes every year, which means that on average the entire system will be inspected once every 30 to 40 years.\textsuperscript{228} The Council’s ability to undertake additional inspections is constrained by both the cost of the work and the limited number of appropriately trained personnel.\textsuperscript{229}

In light of these resource constraints, Brisbane City Council targets its inspection program at those parts of the pipe network most likely to require maintenance. Priority is determined on the basis of complaints from the public, observations in the field by council staff\textsuperscript{230} and an active system of identifying the parts of the network likely to require maintenance in light of, for example, the age of those pipes and recent flooding.\textsuperscript{231} Once a problem is identified it may be addressed immediately or noted as future work that will be prioritised according to the impact of the fault.\textsuperscript{232} The 2010/2011 floods mean that higher priority will now be given to the pipes in flood-affected areas, since these are likely to have been silted up.\textsuperscript{233} This will be a drawn out process, as over 450 kilometres of pipes were affected.\textsuperscript{234}

Brisbane City Council has developed a similar system for prioritising upgrades to the stormwater network to the areas most likely to be in need. In Brisbane, some parts of the system were built to lower design standards than those now used and to serve a much lower population density than now exists, meaning that flooding inevitably occurs in those areas more frequently than would occur under modern design standards.\textsuperscript{235} The cost of the work required to bring all parts of the system up to modern standards is high, hence the need for Brisbane City Council to prioritise the work by reference to various criteria.\textsuperscript{236}

The Commission is aware of a specific issue in Emerald relating to the inundation of houses and businesses in the 2010/2011 floods, said to have been caused by flooding from a local irrigation drainage system, the LN1 system.\textsuperscript{237} SunWater owns and operates the system, which runs from the western edge of Emerald to the Nogoa River. It was designed for irrigation runoff, but it now takes a considerable volume of urban stormwater flow; the rapid development of Emerald in recent years has led to an increase in runoff into it. The Central Highlands Regional Council commissioned a firm of environmental consultants to prepare a flood report on the streams and rivers directly impacting on Emerald. The final report, published in December 2011, made recommendations for structural work to be undertaken on the LN1 drain to increase its capacity and reduce pooling.\textsuperscript{238}

The Commission is not in a position to make a technical assessment of the adequacy of the LN1 system, but notes that a significant obstacle to such an assessment’s being made, including as to any appropriate remedial steps to be taken, is the lack of a formal agreement between SunWater and the Central Highlands Regional Council about who should take ownership of the LN1 system and who should take responsibility for maintenance of the LN1 system.\textsuperscript{239} This needs to be resolved expeditiously.

The Commission has also been made aware of problems with a stormwater drain in Moore Park, a beachside suburb of Bundaberg. The drain, which runs through the middle of the residential area of Moore Park, is one of the two main drains which serve the Moore Park community. Residents raised concerns with the Commission about the maintenance of the drain and the drain’s effect on the area’s susceptibility to flood.\textsuperscript{240}
As with the LN1 drain in Emerald, the Commission is not in a position to assess the adequacy of the Moore Park town drain. However, given the drain’s significance to the Moore Park area and the concerns expressed by residents, the Commission considers that the Bundaberg Regional Council should investigate the adequacy of the drain to serve the area.

### Recommendations

10.12 SunWater and the Central Highlands Regional Council should determine the issues of ownership and responsibility for maintenance of the LN1 drain system in Emerald.

10.13 The Bundaberg Regional Council should investigate the adequacy of the drain and take reasonable steps to ensure the Moore Park area is effectively served.

**10.2.6 Backflow flooding**

Backflow flooding of the stormwater network can occur where a stormwater pipe runs from a low-lying area to a discharge point located near a waterway. If the discharge point becomes submerged by a tide, storm surge or floodwater, water can pass back through the pipe and out of inlets and manholes. If the banks of the waterway are higher than the low-lying area, flooding may occur in the low-lying area even though the banks are unbroken.

Backflow flooding occurred in a number of locations in the 2010/2011 floods, but was reported particularly in low-lying areas of Brisbane such as the central business district, Rosalie, Milton, New Farm and Auchenflower. Residential properties were flooded and the basements of a number of large buildings were inundated by backflow flooding, although typically the river’s breaking its banks caused higher flood levels.

In low lying areas, water rising out of the drains has been a problem for many years. Some low lying streets in the Auchenflower area often have water over them in king tides. In January 2011, Rosalie residents and business owners witnessed floodwaters flowing from drains at Nash Street, at Torwood Street and in other areas of Rosalie and Auchenflower. The Commission heard evidence that in the Brisbane city centre there was backflow of water through the drains in Albert Street. As discussed above, high-rise residential units were inundated by stormwater and backflow into their basements, as well as by water from the Brisbane River’s breaking its banks.

Before the 2010/2011 floods, many residents of Brisbane associated flooding solely with the overtopping of rivers. As backflow flooding occurs when river levels are elevated, but below the point at which the banks are overtopped, the risk of the river overtopping is not necessarily a useful measure of the likelihood of flooding. People living in areas susceptible to backflow flooding should be made aware of the risk, to ensure that they can make proper preparations before and during a flood. Making such information readily available to the public would also assist prospective purchasers of a property in such areas to make better informed decisions. The preparation of flood maps and the dissemination of the information they present to the public is considered in chapter 2 Floodplain management.

The problem of backflow flooding will become more frequent and more severe if present predictions about climate change become reality. Higher tides will mean that more drainage outlets become submerged during high tides and flooding. This is an important consideration for councils seeking to enhance their flood resilience. It is not an issue that can be addressed simply by building higher banks or levees; these structures prevent surface inundation but do not prevent backflow through underground pipes.

The risk posed by backflow flooding can be managed through planning and design standards. Modern development standards require that properties have higher ground floors. This reduces the risk of damage from any backflow flooding. Constructing stormwater outlets at higher levels can reduce the frequency of backflow flooding; however, there is a limit to the height at which they can be positioned, because stormwater systems require a minimum gradient to make use of gravity.

An alternative remedy for backflow flooding is the installation of backflow prevention devices. These are one-way or non-return valves that are designed to allow stormwater to discharge from a pipe into a waterway, but to close and seal against rising water in the waterway. Backflow flooding, at least in Brisbane, is a problem mainly in areas...
where the stormwater drainage systems were built prior to the implementation of modern planning codes (which place greater emphasis on drainage issues than older codes). Backflow prevention devices can be retrofitted to stormwater outlets in these systems. They are presently used in New Farm, Yeronga, West End and Newstead in Brisbane and it is likely that if they had been fitted more widely some of the flooding of low-lying areas of Brisbane during the 2010/2011 floods would have been avoided, at least up until the point when the river overtopped its banks. They are also used in other locations; for example, the Maryborough central business district has a shut off-valve to prevent overloading of the stormwater system during flood, as well as a number of valves used to manage tidal inundations.

The Commission received detailed evidence on the use of backflow prevention devices from an environmental consultant presently conducting a review for the Brisbane City Council and from an engineering consultant appointed by the Commission to provide an independent assessment of the usefulness of the devices.

There are a number of types of backflow prevention devices, each of which have certain advantages and disadvantages and may be more or less suitable in different environments. They include:

- Flap gates, which are hinged flaps or gates fitted at the stormwater discharge point. They normally fall closed under their own weight, but open when the pressure from the build up of stormwater inside the pipes is sufficient to open the gate. They will close when the pressure outside the pipes, such as hydrostatic pressure from a rising waterway, is greater than that inside the pipe. They operate by a simple mechanism and are relatively inexpensive compared to other backflow prevention devices. They require regular maintenance to ensure that they are not prevented from closing by silt, debris or marine organisms such as barnacles.

- Duckbill valves, also called duckbill check valves, which are made of a flexible moulded material and normally have a closed vertical face. That face transforms into a more open face to allow discharges when the pressure builds inside the pipes and will close when there is greater pressure outside. They are usually more expensive to install than flap gates and also require maintenance to ensure they are not blocked by silt or debris. They can be purchased pre-treated to prevent marine organisms’ causing their failure. Generally, less structural work is required to retrofit a duckbill valve onto an existing pipe than to fit a flap gate.

- Mechanically operated valves, which exist in various forms. They are either operated manually or by electronic sensors. They are significantly more expensive both initially and in terms of maintenance costs than flap gates or duckbill valves, particularly if they operate using sensors. Typically they are used only on industrial installations or at sewerage treatment plants where there are staff permanently onsite.

The selection of the type of valve for use in a particular location will depend on a number of factors: construction costs, continuing maintenance and operation costs, the level of monitoring and maintenance required and the environment in which it will need to operate. Backflow prevention devices are not appropriate for all stormwater pipes. While they operate to prevent backflow from occurring, the devices may impede the flow of water through the stormwater network, and in some circumstances may exacerbate local flooding because of the head loss they cause to the system. In some locations the cost of installing the device may be disproportionate to the expected benefits and there may be better alternative flood mitigation steps. For example, Brisbane City Council’s environmental consultant commented that in some areas, such as Auchenflower, it would be more cost-effective to augment the river bank (affording greater protection against riverine flooding) than to install a backflow prevention device. In certain circumstances, backflow prevention devices may, by causing greater flows of water over banks which are overtopped, increase erosive damage to those banks.

It is, accordingly, important to ensure that prior to any installation of a backflow prevention device, a full risk assessment is undertaken, which will likely include a full survey of the site and the affected stormwater network. The use of backflow prevention devices is presently being considered by the Brisbane City Council; a recommendation for a full survey and risk assessment was made by the Flood Response Review Board of the Brisbane City Council. Each of the expert consultants retained by, respectively, the Brisbane City Council and the Commission, was of the view that backflow flooding risk assessment should be undertaken by all near-coastal councils. Although the risk of backflow flooding caused entirely or in part by tides is limited to near-coastal councils, other causes of flood, such as rain, can also result in backflow. It would therefore be prudent for all councils to periodically conduct risk assessments to identify areas at risk of backflow flooding.
10 Essential services

10.14 All councils should periodically conduct risk assessments to identify areas at risk of backflow flooding. In respect of such areas, councils should consider how such risks can be lessened, including in that process consideration of the installation of backflow prevention devices. Backflow devices should not, however, be installed unless and until a full risk based assessment has been undertaken.

10.15 Councils should conduct education campaigns directed to ensuring that all residents and property owners in areas identified as being at risk of backflow flooding are aware of the circumstances in which backflow flooding can occur, the hazard it presents and what should be done if it occurs.

10.3 Electrical infrastructure

10.3.1 The electricity supply industry in Queensland

The 2010/2011 floods caused widespread damage to the electricity network in Queensland. In many locations power outages occurred even where the local electrical infrastructure was not damaged, either because of damage elsewhere to connecting parts of the network, or because the electricity was disconnected as a precaution. While frustrating for some customers who lost power although they were not directly affected by flood, such precautionary disconnections are vital. Water conducts electricity; if floodwater comes into contact with a live source of electricity there is both a risk that someone in contact with the water may suffer an electric shock and a risk that the electrical infrastructure may short circuit and be damaged, possibly failing explosively. (Precautionary disconnections were considered in the Commission’s interim report in the context of flood preparedness and emergency response, see section 6.1.1 Power of the interim report.)

Queensland’s electrical supply industry is divided into generation, transmission and distribution functions. Generators such as Tarong Energy, Stanwell and CS Energy produce electricity. The generators are connected to the transmission network, which is operated by Powerlink Queensland. The transmission network connects to the distribution network, which provides the link to the consumer of the electricity and is operated by electricity distributors. In Queensland there are two major distributors: Energex and Ergon Energy. Both are government owned corporations under the Government Owned Corporations Act 1993. Each is responsible for a different geographic area.

Energex is responsible for the electricity distribution network throughout south-east Queensland, including the regions of Brisbane, Ipswich, Gympie and the Lockyer Valley that were affected by the 2010/2011 floods. Energex supplies electricity to more than 2.8 million people.

Ergon Energy distributes electricity to regional Queensland. It serves about 1.4 million people across a network area of 1.7 million square kilometres; about 97 per cent of Queensland. Its network is vast: it includes approximately 150 000 kilometres of overhead powerlines, 6200 kilometres of underground power cable, 1 million power poles, 370 zone substations, 530 major power transformers and 90 500 distribution transformers.

The assets that comprise the distribution networks can be divided into two different categories, known as ‘customer dedicated assets’ and ‘shared network infrastructure’. Each of these categories is discussed separately in this chapter.

Customer dedicated assets are constructed inside customer premises and are usually commercial and industrial substations. Despite the use of the term ‘customer dedicated’, these substations may also used to supply shared areas outside of the building they are housed in.

All other distribution network assets are ‘shared network infrastructure’. Shared network infrastructure consists of the assets used to distribute electricity throughout Queensland, other than customer dedicated assets. It includes major bulk and zone substations, both of which supply electricity to many thousands of customers. It also includes overhead lines, underground cables and pole mounted and ground mounted distribution equipment.
10.3.2 The impact of the 2010/2011 floods on distribution infrastructure

Energex infrastructure (south-east Queensland)

On the afternoon of 11 January 2011, Energex was warned that flood levels in the Brisbane and Ipswich areas were likely to be similar to those experienced in 1974. It began taking steps to disconnect supply to substations and feeder systems and remove equipment from the substations it considered likely to be affected by flood. These included 10 major commercial and industrial substations in the Brisbane central business district and approximately 120 feeder systems throughout Brisbane and Ipswich.

In the Brisbane central business district the substations that were pre-emptively disconnected were generally located below ground level. A number of transformers throughout the central business district were also shut down because of the risk of water ingress during the anticipated flooding. The effect of this was that buildings which did not flood, but whose electricity was connected to other buildings that did flood or were seen as at risk of flooding, were without power. Energex also disconnected electricity to private properties in the suburbs of Ipswich and Brisbane that were likely to be flooded, or were connected to assets likely to be flooded. As a result, many properties in those suburbs that did not flood (and may have been at no risk of flooding) still experienced a loss of power.

Energex did not have the time or resources to pre-emptively disconnect every location. For example, the substation in the Brisbane suburb of Milton was not disconnected. When floodwater entered the terminals in the substation it caused an explosive electrical fault. This substation is discussed in more detail in section 10.3.3 Shared network infrastructure below.

Even where pre-emptive measures were taken, some infrastructure was still damaged. Damage occurred at all levels of the supply system, causing interruptions to assets further down the distribution network. For example, the broader Moggill region in Brisbane is provided with electricity via five high voltage feeders. Each of those feeders was affected by flood in some way (for example by fallen trees or fallen powerlines). This created an area within which no electricity was available for a time.

In total, the 2010/2011 floods caused 300,000 customers in Ipswich and Brisbane to lose power. Twelve thousand homes and businesses in south-east Queensland were flooded. Ninety per cent of the high voltage feeders were operating again by 15 January 2011. The restoration of power took some time; Energex required flood-affected properties to be inspected before it would reconnect the electricity. Where Energex considered that electrical safety had been compromised, the customer was issued with a disconnection notice that could not be revoked until a qualified electrician had inspected the premises.

The sudden and unexpected nature of the flash flooding in the Lockyer Valley meant that Energex was not able to pre-emptively disconnect supply to its electricity assets in that region. Many of those assets were flooded, which tripped automatic switches that disabled the assets. While the switches operated as they were designed to, the repair process was more difficult and took longer than would have been the case if the assets had been pre-emptively disconnected.

Much of the electricity infrastructure in the Lockyer Valley region was destroyed. The most serious damage was experienced in and around Murphys Creek, Helidon, Grantham, Withcott, Lake Clarendon, Spring Creek and Carpendale. The water washed away lines that were near watercourses, and ground mounted switch gear and transformers were inundated. The water surge on Monday 10 January 2011 affected the main feeder lines to the region, causing 5000 customers to lose power. Some 80 Energex crews worked extended hours for two weeks restoring power to homes and businesses in the Lockyer Valley; thirty-one poles and 18 transformers had to be replaced and over 36 kilometres of line had to be reinstalled.

About 25 zone substations (which provide the power to the distribution network) throughout south-east Queensland lost supply during the floods. At the peak of the electrical interruptions, approximately 150,000 people were left without supply. That interruption, however, was principally caused by the loss of the incoming power supply rather than flooding to the zone substations. Only eight zone substations lost supply directly because of flood damage.

Approximately 475 of Energex’s distribution substations were affected by floodwater; of those 120 had to have major components replaced. Some supplied only one building, but others were the connection points for a number of feeder routes and caused power outages to several buildings.
Apart from the damage to substations, many other pieces of infrastructure were affected. Among other things, 101 distribution transformers, 55 switch fuse gear items, 55 substation relays, 3645 watt hour meters, 95 power poles and 98 kilometres of overhead cable had to be replaced.\(^{313}\)

**Ergon Energy infrastructure (outside south-east Queensland)**

The 2010/2011 floods affected approximately 600 000 square kilometres (or 35 per cent) of Ergon Energy’s total distribution area.\(^{319}\) The floodwaters remained in some areas for as long as two weeks and some towns experienced a number of floods in December 2010 and January 2011.\(^{320}\)

However, Ergon Energy reported that the damage to its infrastructure was, in overall terms, relatively minor.\(^{321}\) The total cost was estimated to be in the order of $6 million.\(^{322}\) By way of comparison, the damage Cyclone Yasi caused to Ergon’s infrastructure was in the order of $60 to $80 million; and during the cyclone, about 220 000 customers lost electricity supply, compared with approximately 8300 during the 2010/2011 floods.\(^{323}\) Ergon’s primary assets are poles and wires, which are less susceptible to flood inundation than to damage caused by severe storms and cyclones.\(^{324}\)

The outages that occurred throughout the Ergon Energy network were primarily caused by electricity being disconnected pre-emptively in response to the threat to public safety that would have been caused by floodwaters coming into contact with sources of live electricity.\(^{325}\) Ergon Energy staff monitored forecast flood levels and determined which assets would be disconnected.\(^{326}\)

### 10.3.3 Shared network infrastructure

**Planning considerations**

Damage to shared network infrastructure can disrupt the supply of electricity to large numbers of people, including those in premises not flooded if the shared network infrastructure supplying them runs through areas that have been damaged by flooding.\(^{327}\)

The *Sustainable Planning Regulation 2009* divides shared network infrastructure into two categories:

- the construction of a new zone substation or bulk supply substation or the augmentation of an existing zone or bulk supply substation if the input or output standard voltage is significantly increased
- all other aspects of the supply network.\(^{328}\)

The regulation’s effect is that only work in the first category can be declared assessable development,\(^{329}\) which in turn means that all other aspects of the supply network are exempt development.\(^{330}\) Exempt development does not require a development approval, nor is it required to comply with planning instruments other than state planning regulatory provisions.\(^{331}\)

The result, generally, is that when new substations are developed or significantly augmented, the local council planning schemes will apply, but for all other electrical infrastructure development they will not. In addition, the Brisbane City Council reported that it is ‘not uncommon’ for the community infrastructure designation process under the *Sustainable Planning Act 2009* to be used to designate land for operating works (which includes substations)\(^{332}\) under the *Electricity Act 1994*, so that the development becomes exempt development and cannot be assessed under the Brisbane planning scheme.\(^{333}\) However, the *Sustainable Planning Act* does allow requirements about works for community infrastructure (including requirements about its height and location) to be imposed as part of its designation as land for community infrastructure, even though it is exempt development.\(^{334}\)

Energex explained that its zone substations or bulk supply substations are built on blocks of land that it owns; it endeavours to ensure those areas are as ‘flood-proof as possible’\(^{335}\) and purchases sites above the applicable defined flood level.\(^{336}\) If a major bulk or zone substation is required in an area susceptible to flood, Energex will usually construct the new assets within the substation above the defined flood level.\(^{337}\) Similarly, new work on existing assets in areas susceptible to flood is, where possible, carried out above the defined flood level.\(^{338}\)

State Planning Policy 1/03 applies to the planning of bulk subsupply stations and zone substations. The State Planning Policy 1/03 Guideline provides that substations should be able to function effectively during, and immediately after, floods, and that they should not be built below the level of a flood with a 0.5 per cent annual exceedance probability.\(^{339}\) The location of other network infrastructure is the responsibility of the distributor.
The Electricity Act requires distributors to provide electricity to any person who applies for connection.340 That means that where there are residents or businesses in areas susceptible to flood, overhead lines, underground cables and other associated equipment forming part of the shared network infrastructure must be constructed and may be located below the defined flood level.341 Such infrastructure follows the terrain; consequently, it is not always possible to provide flood proof infrastructure in every area.

The Commission examined two substations, both built in the last 10 years and both affected by flooding during the 2010/2011 floods, as case studies to consider their performance in the floods and to identify whether changes to the planning of substations and shared network infrastructure may be required.

**Milton substation**

Energex’s Milton substation is housed in the southern plaza of Suncorp Stadium. This was not where Energex had initially intended to build the substation.

Energex had identified the future need for a substation in Milton prior to the development of the stadium and had purchased various parcels of land for this purpose between 1990 and 1995.342 It had expected to build the substation in or about 2004.343 The load demand created by the stadium redevelopment, which was required to be completed by March 2003, and an increase in local demand, meant that the substation needed to be constructed earlier than Energex had intended.344

In September 2000, the Queensland Government designated the land on which the stadium is built as land for community infrastructure.345 The stadium development itself was declared to be a significant project requiring an environmental impact statement under the *State Development and Public Works Organisation Act 1971* and an assessment statement was prepared dated August 2000. (Development declared to be a significant project has been considered by the Commission in chapter 6 *Satellite planning legislation*.) The environmental impact statement did not make any reference to flooding (an issue considered further in chapter 6) although it did, relevantly, indicate that the southern plaza of the stadium was a possible site for Energex’s substation.346

At around the same time, in September 2000, the Queensland Government asked Energex whether it would sell the land it had purchased for the substation for use as part of the stadium development. Energex was reluctant to do so because it considered the site critical for energy supply and had already undertaken cabling and tunnelling works in preparation for its development.347 However, in November 2000 the Queensland Government issued to Energex a notice of intention to resume the land for the stadium redevelopment.348

Following receipt of the resumption notice Energex searched, without success, for an alternative site for the proposed substation. One difficulty was that 110 kilovolt cables running from Ashgrove West had already been installed for the substation. To move the cables from the planned route point by just 100 metres would have added $1.5 million to the cost of developing the substation.349

Meanwhile, the council approved the stadium development application in March 2001, and a negotiated decision notice was issued in May 2001. Condition 10 of the notice required all new proposed buildings to have finished floor levels above the Q100 level.350 Two months later, the Minister for State Development exercised his ‘call-in’ powers pursuant to the *Integrated Planning Act 1997* and re-decided the development application. The decision notice he issued did not contain an equivalent to the council’s condition 10.351

Unable to find a suitable alternative site, Energex had discussions with the Queensland Government about the location of the substation.352 Energex’s preference was to place the substation in the northern plaza of the stadium, which was a higher site and accordingly had a better flood profile.353 The stadium architects examined the proposal but concluded that it would be impossible to disguise the mass of the building and that its operating noise would also create a difficulty.354

Energex disagreed with this assessment, but acknowledged that the substation could be developed in the southern plaza.355 Energex wrote to the Queensland Government and said that: 356

- the southern plaza site was acceptable, although extremely crowded, from the point of accommodating all substation equipment
- the site was well below the Brisbane City Council’s predicted Q100 flood level
- the Brisbane City Council had advised Energex that given the value of the infrastructure being considered, a ‘greater flood immunity’ than Q100 might be appropriate
• given the disadvantages of the southern plaza, including flood susceptibility and difficult cable access, Energex preferred the northern plaza.

Ultimately the Queensland Government’s preference prevailed and the southern plaza was selected to house the substation.

While the southern plaza was partly above the 1% AEP level, because of site constraints the cable basement had to be built below the 1% AEP level. An overhead walkway to the Milton Railway Station meant that the height of the substation could be no more than 10 metres above the 1% AEP level. Consequently, the floor level of critical equipment was placed at the 1% AEP level without any freeboard. Energex viewed this flood risk as manageable because that part of the substation, if submerged, would not subject live high voltage electrical components to floodwater.
The January 2011 flood reached 0.95 metres above what was the Brisbane City Council 1% AEP level for the Milton substation at the time of its construction.361 Some design features meant that the entire substation did not go offline in the flood. For safety reasons, individual feeders and other components were switched offline to interrupt supply to flood-affected areas.362 However, there was significant damage to the substation, mainly from water and debris ingress, to the equipment and floors below the flood level.363 Some damage was caused by the collapse of ducting and structures under the weight of mud and debris.364

Energex estimates that the cost of rectifying the damage to the substation was $750 000.365 It plans to implement new flood resilience measures, including building bunds around the switchroom, installing sump pumps on the switch room floor, sealing vents below the defined flood level and replacing all local power sockets below the defined flood level with appropriately rated outlets.366

**Bundaberg Central substation**

The Bundaberg Central zone substation located on Walla Street, Bundaberg South is owned by Ergon Energy.367 Ergon Energy had investigated other sites in the area prior to building the substation on Walla Street, but was unable to find any alternative flood free sites suitably sized and located.368 Bundaberg City Council approved Ergon’s development application for the establishment of the electrical substation on the site in 2007. The development approval required essential services infrastructure to be built above the defined flood level of 8.5 metres.369

Consistent with that condition, the works specification for the substation prepared by Ergon Energy required all critical outdoor equipment to be located above 8.8 metres and all indoor equipment to be located above 9.55 metres.370

On 28 December 2010, floodwaters began to enter the substation’s yard. As a precautionary measure Ergon Energy disconnected the yard equipment due to the uncertainty of the forecast flood levels.371 Although there was a large amount of water in the yard around the substation, water did not reach the building or essential infrastructure on the site.372

**The distributors’ proposed new resilience measures**

Following the 2010/2011 floods Ergon Energy and Energex have both reviewed their flood resilience measures for infrastructure located in areas susceptible to flood.

Ergon Energy recently revised its flood level standard for the establishment of new bulk supply and zone substations. Its new standard requires zone substations to be built at or above the 0.5% AEP flood level. If infrastructure is to be located below that level, resilience measures must be taken so that the substation can operate effectively during and immediately after a flood up to the height of the recommended flood level.373 Where a substation is proposed, but the 0.5% AEP flood level is not presently known, and it is believed that flood risk exists in relation to the proposed site, Ergon Energy will obtain a hydrological assessment by an external consultant.374

Ergon Energy suggested that greater flood resilience would be achieved if more overhead assets were developed, as opposed to underground or on the ground structures. It noted, however, that in its experience, local authorities normally require underground or on ground infrastructure in new urban developments.375

Energex is considering implementing additional resilience measures for its substations, particularly the four that were directly affected by flood in January 2011. They include moving critical equipment to higher locations, installing bunds around substations and installing automatically activated sump pumps.376

These resilience measures are directed to ensuring that critical infrastructure is built so that it can continue to operate during and immediately after major floods (as was the case for the Bundaberg Central substation).

During the Commission’s public hearings Energex was asked about its capacity to isolate parts of its network, so that only directly affected areas lose electricity, rather than disconnecting whole service areas.377 Energex explained that isolating discrete parts of the network is not simple. Many high voltage feeders are built across areas that flooded in the 2010/2011 floods. These feeders supply electricity to a large number of customers. When one goes offline it is virtually impossible to avoid disconnecting people further down the line. Energex is considering installing connection points in the network for generators to supply electricity to customers who were not
experiencing flooding, but had lost power supply because flooding had cut supply at another location. This appears to be a logical means of dealing with the problem.

**Amendments to planning requirements for electrical infrastructure**

Flood resilient electrical infrastructure is important, not least because other essential services needed during and after a flood depend on electricity to operate.

The Milton substation case highlights the importance of ensuring that flood resilience is given priority in the location and design of essential electrical infrastructure. The initial concerns of Energex about the site were borne out: important infrastructure was damaged; this was not only inconvenient but also created a safety hazard. There were significant costs associated with restoring the substation, and the additional flood resilience measures now being implemented will be expensive. The decision to place the site in the south plaza, which was more susceptible to flood, was driven by considerations other than flood; the Commission is not in a position to say that the decision was wrong. However, the example demonstrates the importance of giving proper weight to flood risk when considering where to locate substations.

The example of the Bundaberg Central substation illustrates how to ensure essential infrastructure continues to operate during severe floods. Achieving flood resilience was an objective from the outset and was an important consideration in the selection of the site. The scope of works prescribed detailed minimum specifications and its requirements reflected the attention given to flood risk and resilience. The end result was that following an inspection, some testing and cleaning, the substation was returned to full capacity in the evening of 1 January 2011, just three days after the flood peak.

The flood resilience measures proposed by Energex and Ergon Energy for infrastructure located in areas susceptible to flood are important for at least two reasons. First, there is a need to protect existing infrastructure that cannot practically be moved to a site with greater flood immunity (for example, the Milton substation). Second, the statutory obligation to provide electricity means that new development of electrical infrastructure in areas susceptible to flooding may be unavoidable. Such initiatives by the distributors are welcome; it would also be beneficial for the Queensland Government and councils to impose minimum standards for electrical infrastructure in the planning regime.

*Flooding at Ergon Energy’s Bundaberg Central Substation (photo courtesy Ergon Energy)*
It is the Commission’s view that critical infrastructure in assessable substation developments should be built with the objective that they remain operational during and immediately after a flood. In some cases, it would be prohibitively expensive to build infrastructure to withstand the probable maximum flood. The magnitude of the flood that the infrastructure should be able to withstand is dependent on what is acceptable to community and government; a risk assessment should be conducted to determine that level. This risk assessment should be done as part of the tailoring of model flood planning controls to take account of local circumstances. Whatever the magnitude of the flood chosen, steps should be taken to make the infrastructure resilient to it. In some cases, this may be best, and most practically, achieved by placing the critical infrastructure at a height where it is not susceptible to flood waters. In others, the objective may be best achieved by adopting other flood resilience measures.

### Recommendations

10.16 The Queensland Government should draft assessment criteria to be included in the model flood planning controls that require critical infrastructure in assessable substation developments is built to remain operational during and immediately after a flood of a particular magnitude. That magnitude should be determined by an appropriate risk assessment.

10.17 If the Queensland Government does not include such assessment criteria in the model flood planning controls, councils should include assessment criteria in their planning schemes that require critical infrastructure in assessable substation developments is built to remain operational during and immediately after a flood of a particular magnitude. That magnitude should be determined by an appropriate risk assessment.

10.18 The Queensland Government should consider measures to ensure that requirements are included in the designation of land for community infrastructure under the Sustainable Planning Act 2009 to ensure that critical infrastructure for operating works under the Electricity Act is built to remain operational during and immediately after a flood of a particular magnitude. That magnitude should be determined by an appropriate risk assessment.

10.19 Electricity distributors should consider installing connection points for generators to provide electricity supply to non-flooded areas that have had their supply cut during floods.

### 10.3.4 Customer dedicated assets

Customer dedicated assets are commercial and industrial substations located inside an electricity consumer’s premises. The Commission received evidence that some substations housed within buildings in the Brisbane central business district flooded and stopped operating during the January 2011 floods and remained inoperative, often for lengthy periods of time, after the floods.

The Stamford Plaza Hotel, built in 1984, is a multi-storey hotel located on Edward Street in Brisbane. It is approximately 10 metres from the river. The building has a two-storey basement. The first floor is a car park and the second floor of the basement, used for various purposes, has an Energex substation housed within it.

At around midday on Tuesday 11 January 2011, the security manager of the hotel suspected that the basement was going to flood and made the decision to evacuate property in the basement to the third and fourth levels of the hotel. At 6.20 pm that evening, water had not started to enter the basement, but was close to doing so; Energex advised at that time that power would be cut to its substation but could not say exactly when. Power was cut at 10.10 pm. Two hundred guests were in the building. As the lifts were not operational, they had to use the fire escape, lit with candles and torches, to evacuate. A generator in the basement could not be used, because the basement could not be isolated from its circuit; if the generator had been switched on it would have made the basement, filled with water, live with electricity.

The hotel was without power for seven weeks. It was not able to reopen until 31 March 2011, and then only on a limited basis because the basement was still being reconstructed. The Energex substation was replaced in its
original position: because of its size there was nowhere else to put it. The generator circuit has, however, been upgraded so that damaged parts of it can be isolated in any future flood.\textsuperscript{384}

A contrasting case was Festival Towers, a 41-storey development at 108 Albert Street, Brisbane City. Development approval for the building was granted in 2002.\textsuperscript{389} The building has a four-level basement car park, and the two lower basements flooded in January 2011.\textsuperscript{390} The essential services at Festival Towers were above the defined flood level. The electrical switchboards and the substation were placed on level one of the building,\textsuperscript{391} with the result that the building was able to remain almost fully operational throughout January 2011 floods.\textsuperscript{392}

**Planning considerations**

The *Electricity Act 1994* and the *Electricity Regulation 2006* require that if a distributor reasonably considers it necessary to install a substation on the premises of a customer, the distributor may require the owner of the premises to provide, amongst other things, the space for a substation.\textsuperscript{393} However, while the regulation requires the customer to provide space for a substation, it does not mandate where the space is to be located. In particular, it does not mandate that the space be above the defined flood level.

State Planning Policy 1/03 requires that ‘essential services infrastructure (e.g. on-site electricity, gas, water supply, sewerage and telecommunications) maintains its function during a [defined flood event]’.\textsuperscript{394} However, it only applies if a council has identified a defined flood event.

In response to the 2010/2011 floods, both Brisbane City Council and Ipswich City Council introduced temporary local planning instruments. The Brisbane City Council temporary planning instrument now requires essential infrastructure to be built above the defined flood level, and in the case of residential buildings, that it have a 500 millimetre freeboard. It defines essential infrastructure as including:\textsuperscript{395}

any room used for fire control panel, telephone PABX, sensitive substation equipment including transformers, low voltage switch gear, high voltage switch gear, battery chargers, protection control and communication equipment, low voltage cables, high voltage cables, and lift controls etc.

The Ipswich temporary planning instrument also introduced new requirements for the location of essential infrastructure. The temporary planning instrument suspends part of the Flooding and Urban Stormwater Flow Path Areas of the Ipswich planning scheme and relevantly replaces it with requirements that:\textsuperscript{396}

- electrical installations are sited in the area of ‘greatest flood immunity’
- electrical switchboards, main data servers and the like are positioned above the adopted flood regulation line with all electrical and data installations below this level designed and constructed to withstand submergence in floodwater.

The Queensland Reconstruction Authority has also produced a guideline: ‘Planning for stronger, more resilient electrical infrastructure’. The guideline proposes that in new high rise building design electrical equipment should be raised and electrical infrastructure located above the defined flood level (as opposed to the traditional basement location) to improve resilience against flooding.\textsuperscript{397}

Energex told the Commission that it was liaising with the Brisbane City Council to amend the development approval guidelines to incorporate requirements to improve the flood resilience of Energex substations within new developments.\textsuperscript{398} Energex said that it presently encounters difficulties in having input into the location of substations in buildings as the developer has often determined the position of the electrical infrastructure before approaching Energex.\textsuperscript{399} By the time Energex is approached developers have often already obtained development approval and the approvals ordinarily contain detailed designs and plans.\textsuperscript{400} The decision has effectively been made before Energex is involved.

Flooding of customer dedicated assets was a cause of great inconvenience and disruption – it meant that people were unable to return to their places of residence or businesses for lengthy periods of time. For future development it presents as a problem with a simple solution: customer dedicated assets should not be built in basements.

The location of existing customer dedicated assets presents more difficulty. Given their size and weight, it may be difficult to move them. The impact of flooding may be mitigated through other measures such as bunds, pumps and through designing circuits that can be isolated to allow electricity to be provided from another source.
Energex submitted that amending the *Electricity Regulation* to require electricity customers to supply space above the defined flood level for substations would be one way to improve flood immunity. Energex noted that a risk associated with amending the legislation was that there was no legal link to the *Sustainable Planning Act 2009* assessment process, creating the prospect that any amendment to the *Electricity Regulation* might be overlooked. However, Energex also noted that some councils placed conditions on development approvals or provided advice on development applications that alerted developers to the need to liaise with Energex about connection requirements. Energex suggested, therefore, that amending the regulation would work best in conjunction with planning controls. Energex appears to prefer a state planning regulatory provision as a planning control, requiring customer dedicated substations to be built above the defined flood level.

**Recommendation**

10.20 The Queensland Government should consider whether there should be a legislative requirement that customer dedicated assets be built at or above the applicable defined flood level and if so, the Queensland Government should consider which legislation should contain such a requirement.

### 10.3.5 Conduits for electrical cables

Electrical infrastructure includes underground cables that supply power to larger buildings. These form part of the shared network infrastructure. To facilitate the supply of electricity to commercial and industrial premises, electricity distributors run electrical cables from the footpath through conduits into the substation enclosure inside the customer’s building. Accommodating the conduits is part of the customer’s obligation under the *Electricity Regulation* to provide space for network infrastructure.

The Commission received evidence that the fact that these conduits were not sealed against water allowed water to enter basements in some Brisbane central business district buildings during the 2010/2011 floods. Other forms of conduit – for example, those providing utilities such as telephone and data lines – may also have caused flooding in buildings. Energex’s executive general manager of network performance estimated that twenty buildings may have had their basements inundated by water entering through electrical conduits.

Witnesses to flooding at the Festival Towers building reported that from 9.00 am on 12 January 2011 water was entering the basement of the complex through two ‘waterfalls’. The sources of these ‘waterfalls’ were likely to be unsealed conduits. The first was an Energex conduit that carried power to the building. The second was a conduit that carried communication services into the building. The Energex conduit appears to have been the main source of the water entering the basement; a witness observed that water had ceased to flow through the communications conduit by the afternoon of 13 January 2011.

A Brisbane City Council representative explained that the council did not consider any flood risk caused by Energex conduits because such development was not assessable under the Brisbane City Council’s planning scheme. She observed that while the council might impose a condition on new basements, the reality was Energex might subsequently install further or altered services unaffected by such conditions. In her view, the method of installing, sealing and waterproofing utilities was a matter between the utility provider and the developer.

Another property which may have flooded, in part, from unsealed energy conduits was the River Park Central Apartments. Located on Mary Street in Brisbane City and completed in 2004, the complex has 120 residential units over 30 levels. The building has a one-level basement; below the basement is an electrical substation which is connected to conduits that carry cables. During the January 2011 flood, a resident saw water coming from near where the substation was located. The precise source of this water was not identified, but the resident suspected it came from the electricity cable conduits.

Energex acknowledged that it does not presently seal conduits to keep out large flows of water under pressure. Energex’s commercial and industrial substations manual requires conduits to ‘be securely sealed by the consumer in an approved Energex manner … to prevent ingress of dirt until cable installation by Energex’. It does not address the ingress of water. Energex’s understanding is that the building owners, rather than Energex, are responsible for the location, design, installation and maintenance of electrical conduits. Since the 2010/2011 flood, however,
Energex has been working with the owners of basements that experienced flooding through conduits to seal the conduits using different products. Energex’s general manager said that its commercial and industrial substation manual will be updated once Energex has had greater experience with the new products currently being trialled, and that an update to the manual is expected to be completed by the middle of 2012.

The Australian Building Codes Board has developed a draft standard for the construction of buildings in flood hazard areas. It is anticipated that the draft standard will be included in the 1 May 2013 version of the Building Code of Australia. The draft code contains a standard that ‘electrical conduits and cables installed below the FHL [flood hazard level] must be waterproofed or placed in waterproofed enclosures’. For that provision to have any operation it will be necessary for councils to adopt a defined flood hazard level. (See also chapter 9 Building controls.)

There is a gap in responsibility for ensuring that conduits do not compromise the flood immunity of basements. Although steps are now being taken voluntarily, the Queensland Government should consider imposing a requirement to ensure that it is clear who is ultimately responsible for securing such conduits, including those installed after the initial construction of a building. The Commission has not heard detailed evidence on who should bear this responsibility. At present, responsibility for the design and maintenance of conduits falls on the building owner, although there appears to be a sound argument that the distributor that uses the conduit should be responsible (or, at least, required to be closely involved) given that it has the expertise required to safely and effectively seal the conduits.

Recommendation
10.21 The Queensland Government should consider implementing mandatory requirements to ensure that all conduits for the purpose of providing electrical supply below the applicable defined flood level are sealed to prevent floodwaters from entering them or flowing into them.

10.4 Telecommunications infrastructure
Telecommunications services are crucial during disaster events for emergency service personnel and affected communities, but they are vulnerable. Breakdowns in telecommunications during natural disasters can result from lack of network coverage, power outages or damage to telecommunications infrastructure.

Telecommunications providers (‘carriers’) determine the extent of network coverage, which is usually dictated by commercial considerations. The problem of power outages in the 2010/2011 floods was discussed in the Commission’s interim report, as were the initiatives carriers adopted to deal with them: using generators, installing temporary mobile base stations, or re-routing telecommunications traffic to areas not affected by the power outage.

The third cause of loss of telecommunications - damage to infrastructure - is particularly acute in flooding. Its extent will largely depend on two factors: where infrastructure is placed and carriers’ approaches to the design and protection of their facilities. The first, the locating of telecommunications infrastructure, is guided by federal and state instruments.

10.4.1 The locating of telecommunications infrastructure
The installation of telecommunications infrastructure is regulated at the Commonwealth level by the Telecommunications Act 1997. The Act distinguishes between ‘low-impact’ facilities, temporary facilities for defence, and ‘other’ facilities. Low impact facilities are defined in the Telecommunications (Low-impact facilities) Determination 1997; they include small radio communications dishes, antennae and public payphones, though the designation of some activities as low impact depends upon their proximity to residential, commercial, industrial and rural areas. For instance, an extension to a telecommunication tower less than five metres in height will only be designated as a low impact facility in industrial and rural areas, and not in residential or commercial areas.
Low impact, temporary and defence-related facilities are exempt from state and territory planning laws. However, carriers must comply with the *Telecommunications Act 1997* and the *Telecommunications Code of Practice 1997* when installing these facilities. The code of practice also requires that carriers follow industry codes and standards, including the Communications Alliance’s *Deployment of mobile phone network infrastructure* industry code.

Section 5.1 of the industry code requires carriers to take a ‘precautionary approach’ when selecting a site. Amongst other things, the precautionary approach requires that carriers consider whether a site is likely to be a ‘community sensitive location’: a residential area, or the vicinity of a child care centre, school, aged care centre, hospital or ‘regional icon’ (the last is not defined, and could mean anything). The objective is to avoid such locations.

Facilities which do not fall within the ‘low impact’ category, or which are not temporary or defence-related facilities, are subject to development approval by councils.

Queensland’s State Planning Policy 1/03 Guideline suggests that essential services infrastructure, including telecommunications facilities, be:

- placed above the defined flood level
- constructed to exclude floodwaters
- designed and constructed to resist hydrostatic and hydrodynamic forces as a result of inundation by a defined flood event.

Since the State Planning Policy 1/03 Guideline is not binding, councils may decide whether to incorporate these suggested outcomes into their planning schemes. Thus, flood risk for telecommunications infrastructure may be approached differently by different councils.

By way of example, Brisbane City Council’s planning scheme incorporates a telecommunication tower code (Chapter 5) and telecommunication towers planning scheme policy (Appendix 2). The code and policy require that towers do not constitute a safety hazard to aviation operations and that sites be selected in an effort to minimise impacts on the surrounding environment and community, though they do not take account of flood risk. Assessable development for telecommunications infrastructure may enliven other regulations in the Brisbane City Council planning scheme, which do consider flood risk. However, the code and policy do not incorporate the suggested outcomes in the State Planning Policy 1/03 Guideline.

Where a carrier has been unable to secure development approval through a council, it may apply to the Australian Communications and Media Authority for a facility installation permit. This process is intended to ensure that there is a balance between the sometimes inconsistent aims of addressing community concerns and investing in infrastructure to meet demands for telecommunications services. In considering a permit application, the Australian Communications and Media Authority must apply criteria which require, amongst other things, that:

- where telecommunications facilities are proposed to be placed near communities, the community has been fully consulted and has agreed (wherever possible) to the placement of the facility, and
- alternative ‘less sensitive’ sites have been considered.

The combined effect of commonwealth, state and local regulation of the telecommunication industry means that carriers are encouraged to build telecommunications infrastructure away from residential and community use zones. Since residential and community use areas are generally situated outside the floodplain, a consequence of this approach has been that some telecommunications facilities have been built in areas susceptible to flooding. One carrier pointed out that the requirement under state and local regulations for base stations, in particular, to have low visual impact meant that they were often located in areas more susceptible to flood.

The installation of telecommunications facilities involves an obvious tension between minimising their impact on the community and reducing the chance of their flooding.

**Recommendation**

10.22 Carriers, councils and the Australian Communications and Media Authority should take into account the risk of flooding when considering the placement of telecommunications facilities.
10.4.2 The design and protection of telecommunications infrastructure

Given the various (legitimate) reasons for installing telecommunications infrastructure outside residential and community use areas, it is inevitable that some telecommunications infrastructure will still have to be built on floodplains. In those circumstances, carriers need to make their facilities as flood-resilient as possible.

Optus selects sites for exchanges and fibre access nodes which are above the flood level that has an annual exceedance probability of one per cent.\textsuperscript{453} It also attempts to place mobile base stations and transmission hubs above this level.\textsuperscript{454} However, this is only possible where accurate flood data is available. Clearly wider availability of floods maps would assist it in doing so.\textsuperscript{455}

Telstra takes various approaches to increasing the resilience of telecommunications infrastructure located in areas susceptible to flooding. These include elevating facilities above defined flood levels\textsuperscript{456} and bolting steel plates to the walls of exchanges or wrapping them in plastic to prevent the intrusion of floodwaters.\textsuperscript{457}

Telstra’s St George exchange wrapped in plastic and sandbagged to protect it from floodwaters during the 2010/2011 floods
Source: Exhibit 215, Supplementary submission of Telstra, 8 April 2011, Annexure 1 [p9].

Telstra’s CMUX unit at Rockhampton built on an elevated platform, so it was above floodwaters during the 2010/2011 floods
Source: Exhibit 215, Supplementary submission of Telstra, 8 April 2011, Annexure 1 [p12].
Carriers will, no doubt, continue their efforts to improve the resilience of telecommunications facilities against the impacts of flooding, with measures such as those identified in State Planning Policy 1/03 in mind. It is in their best interests, and those of emergency service personnel and the wider community, to ensure telecommunications services continue to function during disaster events.

10.5 Roads and rail

Road and rail infrastructure in Queensland was significantly affected by the 2010/2011 floods. Transport links are essential to all communities; this part of the Commission’s report examines the response of transport authorities to the need to re-establish these links as quickly as possible after flooding. Possible improvements in flood immunity are considered as an aspect of preparedness. The problem of properties isolated by the flooding of low-lying access routes is discussed in section 7.8 Anthills: Properties isolated by flooding of low-lying access routes.

10.5.1 Roads

The development and upkeep of Queensland’s network of major roads is the responsibility of the Department of Transport and Main Roads. This system of roads is referred to as the state-controlled road network. Within this network, roads have a priority status assigned to them (from one to three), depending on a range of factors including their social and economic importance, freight and passenger traffic volumes, and strategic significance. Thus, the Bruce Highway, unsurprisingly, has a priority status of one, although there are 111 priority one, 44 priority two and 71 priority three roads in Queensland.

Priority levels guide the department’s road development and investment programs. They also helped to determine the department’s response and recovery priorities following the widespread disruption of the network caused by the 2010/2011 floods.

Queensland has over 33,000 kilometres of state-controlled roads. Over 9000 kilometres (or about 27 per cent) of the network were affected by the natural disasters of the 2010/2011 wet season. In south-east Queensland, the road network sustained more damage than any other state asset during the floods.

Flooded road at Jondaryan, January 2011 (photo courtesy G Cooke, Jondaryan District Residents Association)
Most priority one roads (including the Bruce, Warrego, Cunningham, New England, Leichhardt, Dawson, Capricorn, Gregory, Peak Downs and Landsborough Highways) were closed at a number of locations and for varying periods of time during the floods. In terms of the duration of closures, some of the worst affected places were:

- the Bruce and Capricorn Highways around Rockhampton (between 10 and 20 days)
- the Capricorn Highway east of Duaringa and west of Comet (between 10 and 20 days in each case)
- the Warrego Highway between Dalby and Chinchilla (between 10 and 20 days)
- the Leichhardt Highway north of Taroom (between 30 and 50 days) and around Theodore (between 20 and 30 days).

The department’s response to the floods involved a three-phase approach consisting of:

- the incident response phase, guided by the Road Network Incident Response Plan
- the network recovery phase, guided by the Flood Recovery Phase Project Plan
- the network restoration or reconstruction phase.

Remedial roadworks undertaken during the initial two phases are not designed to achieve greater flood immunity; rather, they are meant to achieve the prompt resumption of safe vehicular use.

The third, or restoration, phase involves longer term work to restore flood damaged roads to ‘current engineering standards’. While this implies some degree of improvement, as roads are to be restored not to their pre-existing state but to prevailing modern standards, it does not necessarily equate to improved flood immunity. Instead, opportunities to improve the ‘resilience’ and safety of the road network are identified and pursued should there be funding available to do so.

The Queensland Transport and Roads Investment Program 2011-12 to 2014-15 sets out the road and rail transport projects the department expects to complete in the coming four years. However, the document only identifies firm funding commitments for the first two years, in the case of projects funded by the Queensland Government, and for the first year for projects funded by the Commonwealth Government. After those timeframes, the funding allocations become indicative only.

A review of the investment program reveals that most of the roadworks being undertaken on sections of the priority one network that were affected by the 2010/2011 floods are directed to flood recovery (or reinstatement) works, rather than increasing immunity. Where enhancement of the network is contemplated, it is often for the purpose of catering for increased traffic volumes or improving road safety. For example:

<table>
<thead>
<tr>
<th>Project location</th>
<th>Flood effects</th>
<th>Project</th>
</tr>
</thead>
</table>
| Capricorn Highway (Rockhampton to Duaringa) | Maximum duration of closure on road segment = 17 days | Flood recovery works
Undertake miscellaneous works,
install/replace signs
Construct overtaking lane/s, improve intersection/s |
| Gregory Highway (Emerald to Clermont) | Maximum duration of closure on road segment = 9.6 days | Flood recovery works
Install traffic signals, reseal bitumen |

The Commission understands that these works should be viewed in the broader context of the range of projects outlined in the investment program. Reducing road congestion while making provision for population growth (for example, by duplicating carriageways or developing mass transit systems such as busways) and increasing road safety (by widening road pavements and shoulders, improving road alignments, constructing overtaking lanes, upgrading intersections and roundabouts, installing traffic lights, constructing overpasses and rest areas, adding guardrails and better signage or improving access points on major roads) are recurrent themes in the spending priorities identified in the investment program. None of these projects necessarily involves improvements being made to the flood immunity of the road network, but they remain critically important to its functioning.
According to the department’s general manager of program delivery and operations, increasing the flood immunity of state-controlled roads is a longer term aim of the department, which would ordinarily be achieved ‘only…as part of the [department’s] normal infrastructure program’.

However, the Queensland Reconstruction Authority sought nominations from the department for projects which will increase road flood immunity to be funded as part of the Natural Disaster Relief and Recovery Arrangements. Six projects have been put forward by the department in response to the reconstruction authority’s invitation. A further eight projects, forming part of the department’s normal infrastructure program, are intended to improve the road network’s flood immunity.

A review of these eight projects indicates that major ones, such as those affecting the Bruce Highway, involve significant expense and are very much long-term in nature. Section C of the Cooroy to Curra upgrade (from Traveston to Keefon Roads south of Gympie) is one part of a four stage upgrade to the Bruce Highway between Cooroy and Curra, which will involve an extensive re-alignment of the route and provide a four lane highway that bypasses Gympie. Section C is still in the planning stage. Although the improvement in flood immunity expected to result from this project is not revealed by the information before the Commission, a part of this section of the highway was closed for five and a half days during the floods. This upgrade is described as being one of Queensland’s highest priority road projects.

South of Rockhampton, the Bruce Highway crosses the Yeppen floodplain. During the 2010/2011 floods, this section of the highway was closed as a result of inundation for about two weeks, cutting access to Rockhampton by this route. The highway at this point will currently escape inundation in a flood that has an average recurrence interval of 20 years or less. It is expected that the upgrade, which is currently in the planning and preliminary design phase, will ensure it is not cut in floods with an average recurrence interval up to 100 years. While the Bruce Highway upgrade strategy indicates that the Yeppen floodplain upgrade should occur within the next five to 10 years, it is possible that this could be delayed until 2021–2031.

Yellow Gin Creek, which passes under the Bruce Highway between Bowen and Ayr, is on the southern extremity of the Burdekin River floodplain. The location will be inundated with an average recurrence interval of more than 2 years. A business case in support of an upgrade has been prepared for submission to the Commonwealth Government. The proposal involves building a new bridge with higher approaches to replace the existing concrete floodway; the new bridge will be above the level of a flood with an average recurrence interval of 20 years. No higher level could be achieved because of the increased risk of flooding to the railway line located upstream.

Funding availability and the need to minimise the risk of causing upstream flooding are the two greatest constraints on achieving greater flood immunity across the road network. The budgetary constraints are the product of the significant financial cost that often accompanies projects incorporating improved flood immunity and the vast range of other projects that have a legitimate claim on the public purse, such as those which are designed to increase network efficiency, by reducing congestion, and improve road safety.

For flood immunity improvements to the existing road network, these pressures are acute. Whether they are less so for new roads in so-called ‘greenfield areas’ is perhaps doubtful. However, the opportunity to construct roads to an optimal level of flood immunity, even taking into account potential upstream effects, may be greater.

Recognising the competing considerations which underlie decisions as to what roadworks should be undertaken, the Commission, while emphasising the importance of maximising flood immunity for all roads, particularly those in new transport corridors, does not consider it appropriate to make any recommendation as to the priority to be given to that aim.

10.5.2 Rail

Queensland Rail

Queensland Rail owns and operates rail infrastructure in all parts of the state except for the central Queensland coalfields. It also operates passenger services throughout the state.

Queensland Rail has a corporate plan which includes various risk identification and mitigation strategies designed to protect its infrastructure from damage which may result in a loss of services. This plan resulted in the development of the company’s General Risk Framework and the Safety Risk Framework. The frameworks require risks to be identified and cross-referenced to safety manuals with mechanisms for responding to the risks in question.
At a practical level, these processes saw Queensland Rail staff in Toowoomba close the Toowoomba range line the day before it was washed away by flash flooding. The line had previously been identified as a location at risk of damage in the event of flooding. When faced with the prediction of a major storm the following day, Queensland Rail closed the line. It seems that as a result of rail lines at risk from flooding being identified in this way, no trains were running on lines when they became flooded and no Queensland Rail rolling stock was damaged or derailed.

Other steps taken included moving rolling stock away from areas of possible flooding and removing electric points machines from rail yards that were likely to be flooded, such as the one located in Rockhampton. Queensland Rail has acknowledged, however, that in some cases it only managed to stow its rolling stock safely because of the local knowledge of its staff, and not because of established risk management procedures. It has resolved to learn from this experience.

The 2010/2011 floods affected over 3000 kilometres of Queensland Rail track across the state in some way. The most severe disruption occurred on the West Moreton line as a result of the track largely being washed away at Spring Bluff. This was the only part of Queensland Rail’s network that was destroyed as a result of the floods. However, the Toowoomba range rail corridor, the worst-affected part of the West Moreton line, was entirely rebuilt within 12 weeks.

In Brisbane, the passenger network was almost entirely operational within six hours of the flood, and all services had resumed by 10.00 am on Thursday, 13 January 2011, with the exception of those on the Ipswich line between Darra and Rosewood. This part of the network became operational again on Wednesday, 19 January 2011.

Queensland Rail seeks to make its network infrastructure ‘flood free’ where possible. This means building it above the 1 in 100 flood level. Where it is not cost effective to achieve flood free status, Queensland Rail tries to make its infrastructure ‘flood-proof’ to the greatest possible extent. Even if floodwaters submerge its infrastructure, it can be promptly recommissioned, as it was designed to withstand water flows associated with a range of flood events. The Brisbane Airport line, which sits on concrete pylons above the floodplain, is designed to be flood free. Achieving this across the whole of the state’s rail network is simply not viable; however, it is viable for Queensland Rail to undertake flood-proofing. This would see the flood-proofed lines requiring only minor works after a flood to restore them to operational capacity in a relatively short time.

Queensland Rail’s priority after floodwaters had receded was to resume rail services as quickly as possible in the affected areas. In reality, this meant restoring the network to its former ‘flood-proof’ status without making improvements to the flood immunity of any of its railways. The one exception to this approach was in Emerald, where 10 additional pipes were installed under the railway line to prevent floodwaters from overflowing and causing scouring. No other specific improvements were seen as being necessary, on either the metropolitan or the regional track systems, including on the West Moreton line running through the Lockyer Valley from Rosewood to Toowoomba.

Since the floods, Queensland Rail has moved some critical equipment to higher ground, particularly in the Brisbane metropolitan area. At Goodna railway station, on the Ipswich line, the communication and signalling equipment rooms have both been raised a metre above the highest known flood level at that location.

QR National

QR National operates approximately 2300 kilometres of largely dedicated and purpose-built heavy haul rail infrastructure known as the Central Queensland Coal Network. Flooding occurred in various parts of this network between December 2010 and early January 2011. QR National’s response to these events included:

- initiating its safety plan for large-scale disasters
- purchasing specialised meteorological advice to guide the making of operational decisions
- moving locomotives and wagons to higher ground
- establishing a flood recovery taskforce to oversee the recovery effort.

These steps were both appropriate and effective, with no damage being sustained to rolling stock.
Parts of the rail network itself were damaged when flooding occurred and were closed until necessary repairs could be carried out. Worst affected were:

- The Moura System – after a temporary closure in early December 2010 due to heavy rainfall and flash flooding, the system was closed again between 27 December 2010 and 6 January 2011 as a result of flooding. The system reopened with speed restrictions to protect the track while repairs were continuing, and became fully operational on 13 January 2011.\(^{506}\)

- The Blackwater System – a temporary closure also occurred on this system in early December, followed by a more lengthy closure between 27 December 2010 and 19 January 2011 as a result of extensive flooding. Operations were progressively re-instated between 19 and 26 January 2011, except in the case of the Rolleston spur line, which was the most severely damaged part of QR National's network. This part of the system became fully operational again on 8 March 2011.\(^{507}\)

Repairs to QR National's rail network were completed within three to six weeks, enabling operations to return to full capacity. However, QR National found that it had more train services available to haul coal than were required, because of a fall in production from the mines.\(^{508}\)

QR National uses Queensland Rail’s West Moreton Line to haul grain, general freight and coal from areas west and south-west of Brisbane. Damage to this line on the Toowoomba Range caused the longest disruption to QR National’s freight services. In this instance, road transport was used in an attempt to meet haulage obligations.\(^{509}\)

QR National’s rail network in central Queensland is built for tropical environmental conditions.\(^{510}\) This does not mean that the system is immune from inundation; rather, it is designed to withstand the effects of flooding so that repairs can be effected quickly. In most areas of the network, track structure remained intact, with only the ballast being displaced. This enabled the main line of the Blackwater System to be reopened to traffic (without signalling) only seven days after floodwaters had receded.\(^{511}\)
Recommendation

10.23 Queensland Rail and QR National should continue to investigate opportunities for increasing the flood resilience of their networks, including raising the height of critical equipment.

(Endnotes)

1 Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p7: para 28].
2 Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p6: para 27].
3 Exhibit 865, Statement of Robin Lewis, 4 May 2011 [p4: para 20].
4 Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p7: para 35]; Appendix A.
5 Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p8: para 40]; Appendix C.
6 Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p8: para 42].
9 Exhibit 289, Statement of Colin Jensen, 19 April 2011, Attachment CDJ-16 [p528].
10 Exhibit 864, Statement of Paul Belz, 25 October 2011 [p2: para 7].
11 Exhibit 863, Statement of Paul Belz, 21 October 2011 [p2: para 8-9].
12 Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p8: para 44-45].
14 Transcript, Diane Robertson, 3 October 2011, Brisbane [p3476: line 10].
15 Exhibit 863, Statement of Paul Belz, 21 October 2011 [p2: para 3-6].
17 Statement of John Kersnovski, 16 September 2011 [p2].
18 Statement of John Kersnovski, 16 September 2011 [p2].
19 Exhibit 777, Statement of Ronald Smith, 12 September 2011 [p2, 5].
21 Statement of Mark Pirt, 12 September 2011 [p4: para 6]; Exhibit 777, Statement of Ronald Smith, 12 September 2011 [p2].
22 Exhibit 777, Statement of Ronald Smith, 12 September 2011 [p3].
23 Exhibit 270, Statement of Scott Norman, 1 April 2011 [p5].
24 Exhibit 463, Statement of Collin Head, 5 April 2011 [p12].
25 Exhibit 463, Statement of Collin Head, 5 April 2011, Attachment 6 [p43].
26 Exhibit 470, Statement of Desmond Howard, 1 April 2011 [p3].
27 Exhibit 775, Statement of Michael Clerke, 18 March 2011 [p13: para 84].
28 Exhibit 775, Statement of Michael Clerke, 18 March 2011 [p13: para 84].
29 Exhibit 750, Statement of Goodwin McLeod, 29 September 2011 [p3: para 19].
30 Transcript, Goodwin McLeod, 10 October 2011, Bundaberg [p3858: line 45].
32 Statement of Phil Berting, 25 March 2011 [p10].
33 Transcript, Robert Fredman, 13 October 2011, Gympie [p4058: line 33].
34 Transcript, Robert Fredman, 13 October 2011, Gympie [p4058: line 56].
36 Exhibit 823, Statement of Thomas Thomas, 28 September 2011 [p5: para 15].
38 Exhibit 249, Statement of Rodney Ferguson, 14 April 2011 [p3: para 27].
40 Exhibit 683, Statement of Bryan Ottone, Central Highlands Regional Council, 6 September 2011 [p5].
41 Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p5: para 22].
42 Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p5: para 24].
43 Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p5: para 22].
44 Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p5: para 20-21].
45 Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p5: para 20].
46 State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide, Annex 4 [A4.2].
47 State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide, Annex 3 [A3.1 – A3.2].
48 State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide, Annex 5 [A5.1 – A5.2].
49 State Planning Policy Guideline 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide [6.19].
50 Exhibit 766, Statement of Andrew Fulton, 1 September 2011 [p21: para 9.1.1].
51 Exhibit 766, Statement of Andrew Fulton, 1 September 2011 [p22: para 9.1.1.2].
52 Exhibit 766, Statement of Andrew Fulton, 1 September 2011 [p23: para 9.1.2].
53 Exhibit 766, Statement of Andrew Fulton, 1 September 2011 [p23: para 9.1.3].
55 Statement of Jonathan Black, 16 September 2011 [p4: para 18].
56 Exhibit 777, Statement of Ronald Smith, 12 September 2011 [p6].
58 Transcript, Paul Belz, 25 October 2011, Brisbane [p4273: line 10].
59 Statement of John Kersnovski, 16 September 2011 [p6].
60 Exhibit 863, Statement of Paul Belz, 21 October 2011 [p3: para 16-18].
63 Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p7: para 32].
64 Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p8: para 38].
65 Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p7: para 36].
66 Statement of Jonathan Black, 16 September 2011 [p3: para 14(a)].
67 Statement of Jonathan Black, 16 September 2011 [p3: para 14(b)].
68 Statement of Jonathan Black, 16 September 2011 [p4: para 22(a); p5: para 22(d)].
69 Statement of Jonathan Black, 16 September 2011 [p4: para 22(d)].
70 Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p11: para 66].
71 Submission of Queensland Urban Utilities, 23 November 2011 [p2: para 4(a)].
73 Statement of Paul Belz, 15 November 2011 [p3: para 16].
75  Transcript, Paul Belz, 25 October 2011, Brisbane [p4277: line 28].


80  Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p8: para 42].

81  State Planning Policy Guideline 1/03 : Mitigating the Adverse Impacts of Flood, Bushfire and Landslide, Appendix 5.

82  State Planning Policy Guideline 1/03 : Mitigating the Adverse Impacts of Flood, Bushfire and Landslide, Appendix 5 [p59: 5.1].

83  Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p9: para 48].

84  Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p9: para 53].


86  Statement of Jonathan Black, 16 September 2011 [p3: para 14(b)].


89  Transcript, Paul Belz, 25 October 2011, Brisbane [p4275: line 19].

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91  Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p8: para 38].

92  Department of Natural Resources NSW, Reducing Vulnerability of Buildings to Flood Damage: Guidance on Building in Flood Prone Areas, 2007 [p112-113].

93  Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p8: para 38].

94  Statement of Jonathan Black, 16 September 2011 [p3: para 14(c)].

95  Exhibit 866, Statement of Robin Lewis, 12 October 2011 [p8: para 38].


100  Department of Natural Resources NSW, Reducing Vulnerability of Buildings to Flood Damage: Guidance on Building in Flood Prone Areas, 2007 [p113].

101  Submission from Queensland Urban Utilities, 23 November 2011 [p2: para 5(c)].

102  Exhibit 666, Statement of Glen Brumby, 15 September 2011 [p7-8: para 32-33].

103  Exhibit 666, Statement of Glen Brumby, 15 September 2011 [p8: para 35].

104  Exhibit 1015, Statement of Glen Brumby, 1 November 2011 [p8: para 32; p9: para 36].


106  Statement of Glen Brumby, 16 November 2011, Attachment 2 [p2].

107  Statement of Glen Brumby, 16 November 2011, Attachment 1 [p4].


110  Exhibit 865, Statement of Robin Lewis, 4 May 2011 [p30: para 117]; Exhibit 578, Statement of Joe Bannan, 8 September 2011 [p4: para 16].

111  Exhibit 865, Statement of Robin Lewis, 4 May 2011 [p31-32: para 118-119].

112  Exhibit 865, Statement of Robin Lewis, 4 May 2011 [p31: para 119].

114 Exhibit 578, Statement of Joe Bannan, 8 September 2011 [p4: para 17].

115 Transcript, Paul Belz, 25 October 2011, Brisbane [p4270: line 3].

116 Exhibit 865, Statement of Robin Lewis, 4 May 2011 [p31: para 119].


118 Statement of Edward Denman, 14 November 2011 [p7: para 29-30].

119 Statement of Edward Denman, 14 November 2011 [p7: para 33].

120 Statement of Edward Denman, 14 November 2011 [p9: para 46]. Mr Denman estimates that the total stormwater outflow for a standard three bedroom dwelling during a rainfall event over a 24 hour period is approximately 50 000 to 100 000 litres.

121 DERM, Planning Guidelines for Water Supply and Sewerage, April 2010, Chapter 5, section 5.2.2, table 5.5 [p7].

122 Section 116, Plumbing and Drainage Act 2002.

123 Statement of Edward Denman, 14 November 2011 [p3: para 12].

124 Chapter 3, Part 4, Division 2; Chapter 5, Part 2, Division 1, City of Brisbane Act 2010; Chapter 3, Part 3, Division 2; Chapter 5, Part 2, Division 1, Local Government Act 2009.


126 Chapter 5 of the Water Supply (Safety and Reliability) Act 2008 confers all investigation and enforcement powers under the Act on the Water Supply Regulator, a state government entity.

127 Statement of Edward Denman, 14 November 2011 [p10: para 47].

128 Exhibit 865, Statement of Robin Lewis, 4 May 2011 [p31: para 120-122].


131 Transcript, Paul Belz, 25 October 2011, Brisbane [p4269: line 40].


133 Letter from Blake Dawson on behalf of Queensland Urban Utilities, 25 November 2011 [p1: para 3(b)].

134 Letter from Blake Dawson on behalf of Queensland Urban Utilities, 25 November 2011 [p1: para 3(b)].

135 Submission of Queensland Urban Utilities 4 April 2011 [p7: para 38(a)].

136 Submission of Queensland Urban Utilities 4 April 2011 [p7: para 38(b)].

137 Letter from UnityWater, 9 December 2011 [p3]: Letter from Ipswich City Council, 10 January 2012.

138 Exhibit 865, Statement of Robin Lewis, 4 May 2011 [p29: para 112].

139 Exhibit 865, Statement of Robin Lewis, 4 May 2011 [p30: para 113].


141 Exhibit 865, Statement of Robin Lewis, 4 May 2011 [p33: para 135].

142 Exhibit 865, Statement of Robin Lewis, 4 May 2011 [p33: para 135].

143 Section 11; Schedule 2, Disaster Management Act 2003.

144 Department of Natural Resources and Water, Queensland Urban Drainage Manual, Volume 1, Second edition, 2007 [p1-3].

145 Exhibit 578, Statement of Joseph Bannan, 8 September 2011 [p3: para 11]; Transcript, Joseph Bannan, 21 September 2011, Brisbane [p2908: line 28].

146 Exhibit 578, Statement of Joseph Bannan, 8 September 2011 [p3: para 13].


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149 Transcript, Joseph Bannan, 21 September 2011, Brisbane [p2930: line 1]; Exhibit 578, Statement
of Joseph Bannan, 8 September 2011 [p22: para 72-74].

150 Exhibit 578, Statement of Joseph Bannan, 8 September 2011 [p6: para 18(a)].

151 Exhibit 578, Statement of Joseph Bannan, 8 September 2011 [p7: para 18(e)]; Transcript, Joseph Bannan, 21 September 2011, Brisbane [p2913: line 19].

152 Exhibit 578, Statement of Joseph Bannan, 8 September 2011 [p7: para 18(f)]; Transcript, Joseph Bannan, 21 September 2011, Brisbane [p2913: line 26].

153 Exhibit 578, Statement of Joseph Bannan, 8 September 2011 [p6: para 18(b)]; Joseph Bannan, 21 September 2011, Brisbane [p2911: line 38].

154 Exhibit 578, Statement of Joseph Bannan, 8 September 2011 [p6: para 18(c)]; Transcript, Joseph Bannan, 21 September 2011, Brisbane [p2911: line 46].

155 Exhibit 578, Statement of Joseph Bannan, 8 September 2011 [p6: para 18(d)].

156 Exhibit 578, Statement of Joseph Bannan, 8 September 2011 [p7: para 19]; Transcript, Joseph Bannan, 21 September 2011, Brisbane [p2908: line 45].

157 Exhibit 578, Statement of Joseph Bannan, 8 September 2011 [p7: para 19]; Transcript, Joseph Bannan, 21 September 2011, Brisbane [p2908: line 44].

158 Transcript, Joseph Bannan, 21 September 2011, Brisbane [p2909: line 1].

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165 Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p54: section F.1].


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196 Transcript, Andrew Fulton, 11 October 2011, Bundaberg [p3922: line 28]; Exhibit 766, Statement of Andrew Fulton, 1 September 2011 [p33: para 13.1.3].


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203 Exhibit 766, Statement of Andrew Fulton, 1 September 2011 Part B: [p39: para 2.1-2.2].

204 Transcript, Joseph Bannan, 21 September 2011, Brisbane [p2912: line 39].

205 Transcript, Joseph Bannan, 21 September 2011, Brisbane [p2912: line 50].

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208 Transcript, Diane Robertson, 3 October 2011, Brisbane [p3471: line 55].
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217 Submission of the Queensland Board of Urban Places, undated [p3].

218 Transcript, Glenn Brumby, 29 September 2011, Brisbane [p3308: line 10].

219 Transcript, Joseph Bannan, 21 September 2011, Brisbane [p2930: line 2].

220 Transcript, Joseph Bannan, 21 September 2011, Brisbane [p2930: line 12].

221 Second submission of the Gold Coast City Council, undated [Annexure A: para 2.7].

222 Exhibit 793, Statement of Wayne Sweeney, 30 August 2011 [p2: para 7(d)].


224 Exhibit 578, Statement of Joseph Bannan, 8 September 2011 [p14: para 40].

225 Transcript, Joseph Bannan, 21 September 2011, Brisbane [p2912: line 46].

226 Exhibit 578, Statement of Joseph Bannan, 8 September 2011 [p16: para 49].

227 Transcript, Joseph Bannan, 21 September 2011, Brisbane [p2916: line 3].

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230 Exhibit 578, Statement of Joseph Bannan, 8 September 2011 [p13: para 38].

231 Transcript, Joseph Bannan, 21 September 2011, Brisbane [p2917: line 9]; Exhibit 578, Statement of Joseph Bannan, 8 September 2011 [p12: para 32].

232 Transcript, Joseph Bannan, 21 September 2011, Brisbane [p2917: line 53].

233 Transcript, Joseph Bannan, 21 September 2011, Brisbane [p2918: line 20].

234 Transcript, Joseph Bannan, 21 September 2011, Brisbane [p2919: line 18].

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239 Transcript, Bryan Ottone, 29 September 2011, Emerald [p3437: line 18].

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376 Submission, Energex Limited, Planning Term of Reference [p7: para 54; p8: para 58].
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393 See in particular Section 59, Electricity Regulation 2006.
395 Table 5, Brisbane City Council Temporary Local Planning Instrument 01/11.
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397 Queensland Reconstruction Authority, Planning for stronger, more resilient electrical infrastructure, 2011 [p15].

398 Submission, Energex Limited, Planning Term of Reference [p5: para 26].

399 Transcript, Chris Arnold, 25 October 2011, Brisbane [p4287: line 45].

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405 Exhibit 867, Statement of Chris Arnold, 6 October 2011 [para 6-7].

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413 Transcript, Cassandra Sun, 27 September 2011, Brisbane [p3211: line 35].

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415 Exhibit 596, Statement of Paul Cassels, 14 September 2011 [p1: para 2].

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417 Transcript, Paul Cassels, 22 September 2011, Brisbane [p3022: line 44].

418 Exhibit 867, Statement of Chris Arnold, 6 October 2011 [para 18].

419 Transcript, Chris Arnold, 25 October 2011, Brisbane [p4290: line 39].

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421 Transcript, Chris Arnold, 25 October 2011, Brisbane [p4290: line 47].

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425 Exhibit 666, Statement of Glen Brumby, 15 September 2011 [p9: para 36].


427 Exhibit 666, Statement of Glen Brumby, 15 September 2011 [p11: para 48].


429 Exhibit 215, Supplementary submission of Telstra, 8 April 2011 [p9: para 41].

430 While both ‘carriers’ and ‘carriage service providers’ provide telecommunications services to the public, only carriers install and own telecommunications network infrastructure (Australian Communications and Media Authority, Carrier and service provider requirements, 2011).

431 Exhibit 215, Supplementary submission of Telstra, 8 April 2011 [p8: para 37]; Exhibit 214, Supplementary submission of Optus, undated [p2: para 4].


433 Under section 7 of the Telecommunications Act 1997, a facility is any part of the infrastructure of a telecommunications network or any line, equipment, apparatus, tower, mast, antenna,
tunnel, duct, hole, pit, pole or other structure or thing used, or for use, in or in connection with a telecommunications network. A telecommunications network means a system, or a series of systems, that carries or is capable of carrying, communications by means of guided and/or unguided electromagnetic energy.

434 Schedule 3 Division 3 Section 6(3), *Telecommunications Act 1997* (Cth).

435 Schedule part 1(5A), *Telecommunications (Low-impact facilities) Determination 1997*.


438 Schedule part 1(9), *Telecommunications (Low-impact facilities) Determination 1997*.


440 These industry codes and standards must be registered with the Australian Communications and Media Authority (ACMA).


447 For instance, assessable development for telecommunications infrastructure may also enliven the Brisbane City Council’s Subdivision and Development Guidelines. Flood risk may be considered under Chapter 1 of the guidelines, though they do not recommend a specific flood level for communication network facilities (which are defined as a type of ‘community infrastructure’) and only require that development proponents ensure that the infrastructure is ‘optimally located and designed to achieve suitable levels of service’ (Brisbane City Council, Subdivision and Development Guidelines, 2008, Chapter 1 [p6]).

448 Australian Communications and Media Authority, *Guide to applying for a facility installation permit*, 2007 [p2].

449 Schedule 3 Division 6 section 21(1), *Telecommunications Act 1997* (Cth).

450 Australian Communications and Media Authority, *Guide to applying for a facility installation permit*, 2007 [p2].


452 Exhibit 213, Submission of Optus, 4 April 2011 [p11: para 7.3].

453 Exhibit 213, Submission of Optus, 4 April 2011 [p11: para 7.1].

454 Exhibit 213, Submission of Optus, 4 April 2011 [p11: para 7.2].

455 Exhibit 213, Submission of Optus, 4 April 2011 [p11: para 7.4].

456 Exhibit 215, Supplementary submission of Telstra, 8 April 2011 [p11: para 49-50].

457 Exhibit 215, Supplementary submission of Telstra, 8 April 2011 [p11: para 50].

458 The term “immunity” is used in a relative sense. For example, a road that is immune to a 1% AEP flood would not be immune to a 0.5% AEP flood. Further works might be undertaken on such a road to improve its immunity so that it was immune to a 0.5% AEP flood.

459 Statement of Miles Vass, 8 September 2011 [p2: para 8-9].

460 Statement of Miles Vass, 8 September 2011 [p2: para 10–11]; Attachments B and C.

461 Statement of Miles Vass, 8 September 2011 [p3: para 13]; Attachment D.

462 Statement of Miles Vass, 14 November 2011 [p3: para 11-12].

463 Statement of David Stewart, 18 April 2011 [p6: para 41, 44].
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466 Statement of Miles Vass, 8 September 2011, Attachments E and F.

467 Statement of David Stewart, 18 April 2011 [p6-7: para 41-43] and Attachments D and E; Statement of Miles Vass, 8 September 2011 [p3: para 15].

468 Statement of David Stewart, 18 April 2011 [p7-9: para 44-53] and Attachment G; Statement of Miles Vass, 8 September 2011 [p4: para 15].


470 Statement of Miles Vass, 8 September 2011 [p4: para 15].


472 Statement of Miles Vass, 8 September 2011 [p4: para 15]; Statement of Emma Thomas, 4 May 2011 [p7: para 28-29].

473 Statement of Miles Vass, 8 September 2011, Attachment F, road segment 16A [p10].


477 Statement of Miles Vass, 8 September 2011, Attachment F, road segment 27B [p12].


481 Statement of Miles Vass, 8 September 2011 [p4: para 16].

482 Statement of Miles Vass, 8 September 2011 [p4-5: para 17-20]; Statement of Miles Vass, 14 November 2011 [p3: para 13-14].

483 Statement of Miles Vass, 8 September 2011 [p5: para 21-22]; Attachment G.

484 Statement of Miles Vass, 8 September 2011 [p5: para 22]; Attachment G [p3]; Queensland Transport and Roads Investment Program 2011-21 to 2014-15 [p95, 100].

485 Statement of Miles Vass, 8 September 2011 [p3: para 14(a)]; Attachment E, Map – Flooding of Priority 1 Road Network – Duration of Closure, 1 December 2010 to 30 April 2011; Attachment F, road segment 10A [p9].


487 Statement of Miles Vass, 8 September 2011 [p5: para 22]; Attachment G [p1].


489 Statement of Miles Vass, 8 September 2011 [p5: para 22]; Attachment G [p3].


492 Response to Requirement to Provide Information, Greg Ford, 25 March 2011, Schedule 3 [p88: 3.2(b)].


494 Greg Ford and Theresa Timmins, Queensland Rail, Review and debrief report into the planning, preparation and response by Queensland Rail – Queensland floods and Cyclone Yasi, September 2011 [p32].


496 Greg Ford and Theresa Timmins, Queensland Rail, Review and debrief report into the planning,
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11 Buy-backs and land swaps

11.1 Property buy-backs

Property buy-back programs differ from compulsory resumption programs. In a buy-back program, the property owner willingly sells his or her property, usually to the local or state government. Some councils in Queensland operate formal programs under which they purchase privately owned properties and re-use the land for purposes other than residential. This may occur as part of a broader floodplain management plan or on an ad hoc basis. The programs are usually referred to as ‘voluntary purchase schemes’ or ‘property buy-back programs’.

The buy-back of properties often provides the ideal solution to the problem of mitigating the impact of damage to existing buildings in areas particularly exposed to natural hazards such as floods. It enables the clearing of potential obstructions in the floodplain, including residential and other structures, with the objective of mitigating risk to life through flood, and may, in some circumstances, be ‘the only feasible and economically justified management measure for the more hazardous areas of the floodplain’.

However, property buy-back programs are expensive to administer, and the lack of available funding is a major limiting factor to their implementation as a flood risk mitigation measure. Given the cost involved, property acquisitions by governments tend only to occur in very high risk areas and only where other flood risk mitigation measures are insufficient to protect lives. In some circumstances, a number of properties may need to be relocated from particularly exposed areas of the floodplain to other locations, as occurred at Grantham in the Lockyer Valley following the catastrophic flooding there on 10 January 2011.

11.1.1 Benefits and limitations

The benefit to the community of a property buy-back program, and the consequential removal of structures in the floodplain, is the minimisation of the risk posed by flood to life and property. Property buy-backs afford the owners of properties the benefit of eliminating the costs of repair or rebuilding after flooding as well as the opportunity to sell a potentially unattractive asset, given its exposure to the flood hazard.

Without appropriate planning to accompany property buy-backs, land may remain unused for any purpose for an extended period of time. The removal of buildings from the flood affected area, coupled with a moratorium on any new development, can amount to ‘sterilisation’ of the land. Decisions should be made for the future use of the land from which properties have been removed, recognising and accommodating the flood hazard. There may be opportunities to use the land for purposes that do not pose a risk to the health and safety of prospective users and which are commensurate with the risk posed by flood, such as the establishment of nature conservation and recreational areas.
11.1.2 Current arrangements

The Queensland Government does not currently operate a state administered buy-back program for properties at a high risk of flooding. In the past, there have been acquisitions of certain properties through joint Commonwealth/Queensland government schemes, but these have occurred on an ad hoc basis around the state, rather than through a targeted risk reduction program.4

Since 2007 the Queensland Government has received five applications for funding for property buy-backs from the Ipswich Rivers Improvement Trust.5 Each of these proposals sought funding to acquire, through a voluntary purchase scheme, houses in Goodna on the basis that they were highly susceptible to flooding from the nearby Woogaroo Creek. Funding was provided for one of the acquisition projects in the 2008/2009 financial year.6

The Natural Disaster Resilience Program provides a possible source of funding for councils wishing to buy back properties in high risk areas. It is a funding program administered in partnership by the Queensland Government (Department of Community Safety) and the Commonwealth Government, and is aimed at improving resilience to natural disasters through mitigation works, measures and related activities.7 Funding for eligible projects usually occurs through equal contributions by the applicant (for example, a council), the Queensland Government and the Commonwealth Government. Exceptions to that funding model are considered by the Queensland Government on a case by case basis.8 Funding applications must meet specific guidelines and even though an application may be technically eligible, the limited availability of funding (which is approximately $11 million per year) may mean that it fails.9 Councils are unable to obtain funds directly from the Natural Disaster Resilience Program: it is for the Queensland Government to determine each application’s eligibility for funding.10

Some councils in Queensland have introduced strategies to purchase high risk properties so that the land can be used for non-residential purposes (for example, for use as a public park or for drainage easements).11 However, given the expense of such programs, council buy-back programs have generally only been adopted in larger councils, and even then, only on a small scale.

11.1.3 Council buy-back programs

Following the 1974 Brisbane flood, the Brisbane City Council participated with the Queensland and Commonwealth governments in a jointly funded compulsory and voluntary house purchasing scheme.12 More recently, and in response to a priority recommendation contained in a 2005 report,13 the Brisbane City Council has instituted a residential property buy-back scheme: the ‘Voluntary Home Purchase Scheme’. As its title suggests, it operates solely on a voluntary basis: selling is at the owner’s discretion and there is no forced resumption by the council. Each year the council allocates funding to purchase residential properties that are at risk of frequent flooding. The council identifies eligible houses for the scheme,14 and prioritises which properties will be purchased based on the predicted frequency and depth of future flooding. The buy-back scheme operates in accordance with four eligibility criteria:

- the property is flooded during a flood with an average recurrence interval of two years
- the property is in a residential zone
- floodwaters inundate the residential dwelling on the property
- there is no other viable infrastructure solution (such as pipes) available to remove the flooding problem.15

As at May 2011 there were approximately 525 properties within the Brisbane City Council area that could be adversely affected during a creek flood with an average recurrence interval of two years.16 The council has approached the owners of some 242 properties to participate in the scheme, which has resulted in acceptance in respect of 55 properties. Those 55 properties were purchased for a total cost of $24.21 million.17

There have been some concerns raised about the criteria applied by the council. The current eligibility criterion that the property be inundated by a flood with an average recurrence interval of two years may be overly restrictive: many properties are ruled as ineligible even though they flood frequently. An independent review panel has acknowledged this limitation and suggested that the council should consider an extension of the scheme to cover less frequent flooding, noting, however, that this would require a ‘very substantial increase’ in the program’s funding.18 The council has previously sought funding from the Queensland and Commonwealth governments to support the scheme, but the funding requests have either been rejected or ignored.19 A councillor raised, by submission to the Commission, the concerns of residents of his ward affected by the 2010/2011 floods about the
process’ being too slow and inadequately funded, although a number still desired to use the program so they could sell their properties and move elsewhere.20

Apart from its property buy-back scheme, the council has purchased riverfront land at Tennyson Reach which was substantially inundated in the January 2011 floods. This land had been part of a parcel on which the council had approved a multi-storey residential development, but because of the developer’s difficulties in selling the units, compounded by the flooding, the continuation of the development project became economically unviable. As part of the council’s agreement to acquire the piece of riverfront land,22 the property developer has agreed to develop a park on the site for public use.23

A 2002 report prepared for the Ipswich City Council suggested that the council, as part of a long-term flood risk prevention strategy, consider the acquisition and removal of properties within the primary flow area of the floodplain.24 The report noted that to acquire all such properties would cost in the order of $112 million and that the council would require significant external funding to embark on such a program. At the time, the council considered the proposal difficult to implement, for financial reasons. It has suggested in evidence to the Commission that the Queensland and Commonwealth governments should provide increased financial assistance to enable it to acquire high risk land that would be inundated by a flood with an average recurrence interval of 20 years.25 The council currently estimates that the cost to purchase land at this risk level within its council boundary would be in the order of hundreds of millions of dollars.26 The council’s chief executive officer explained, too, that in some instances the problem of inundation in some of the older areas of the city could only be solved by the acquisition of properties and the removal of buildings to create overland flow paths.27

The Bundaberg Regional Council has indicated that it would like to discuss with the Queensland and Commonwealth governments the possibility of a collaborative program to buy back flood prone homes.28 The council has previously had a policy in place under which it has, over time, acquired some properties along drainage lines and created public parklands. Under this arrangement the council provided one third of the funding, with the rest provided by the Queensland and Commonwealth governments in equal measure.29 The council considers this approach to be a cost-effective solution for low-lying properties in the long term, but the financial commitment the council can make to the program requires annual review.30 It has also identified the need to extend future buy-backs to areas susceptible to flood that are outside of the city, but within the council’s boundary.31

Residents of the Moreton Bay Regional Council area have been lobbying for a buy-back program, similar to that operated by the Brisbane City Council, to be introduced by their council.32 The council is currently preparing a draft buy-back policy for flood affected properties.33 Development of the policy will entail consideration of issues such as the risk to life and the velocity of rivers in certain areas.34 It may take some time to finalise.35

11.1.4 Future considerations

Many submissions received by the Commission recognised the financial implications for the various levels of government responsible for administering a buy-back scheme. A number proposed a long-term approach.36 An urban designer recommended a ‘flood retreat’ program, entailing a ‘phased reduction in the number of people, properties and infrastructure assets’ exposed to flood risk,37 as part of a master plan process.38 This long-term view was echoed by another expert in environmental planning who suggested that freehold land in flood prone areas should revert to the public estate, noting that it would require strong political leadership.39 One Brisbane Valley resident in the Somerset Regional Council area pointed out that it was ‘bad economics’ to repeatedly rebuild residential and commercial buildings after floods.40

A number of local government representatives appearing before the Commission said that property buy-backs were appropriate in certain circumstances, and were being considered by their councils as a flood mitigation option.41 The Commission notes a uniformity of view, both in the evidence before the Commission and more generally, as to the need for support, including funding, from the Queensland and Commonwealth governments.42 As discussed, the Natural Disaster Resilience Program presents a potential source of funding for councils but, being a competitive grants program with a defined budget, has limited ability to meet funding applications.

Best practice approaches to floodplain management require that all levels of government take a long-term view of land planning measures (20 to 30 years),43 including property buy-backs, in areas that are significantly exposed to flood hazard. Given the voluntary nature of buy-back programs and the fact that in areas particularly susceptible to flood there may be a need to acquire a large number of properties, councils in particular may need to regard
buy-backs as part of their longer-term broader floodplain management strategy. A longer-view approach has been adopted by the Gold Coast City Council, which, as part of its sustainable flood management strategy, is reviewing the current buy-back practices of other local authorities. However, the council does not expect to complete its assessment until 2015 and has not confirmed that it will implement a formal buy-back program.

Property buy-back programs can, in some circumstances, provide an effective long-term solution for properties that are particularly exposed to the flood hazard. As noted above, they have been successfully implemented by some councils in areas at serious flood risk. Other councils should consider buy-backs as part of a strategic floodplain management program, obtaining funding, where possible, through the Natural Disaster Resilience Program.

**Recommendation**

11.1 Councils should consider implementing a property buy-back program in areas that are particularly vulnerable to regular flooding, as part of a broader floodplain management strategy, where possible obtaining funding from the Natural Disaster Resilience Program for this purpose.

11.2 Rebuilding Grantham

In response to the loss of life and property in Grantham caused by the 2010/2011 floods, and particularly the events of 10 January, the Lockyer Valley Regional Council committed to developing a master plan and land swap program for the Grantham area.

To enable it to quickly relocate willing residents to higher ground, the council asked the Premier and Minister for Reconstruction to declare Grantham a reconstruction area under the *Queensland Reconstruction Authority Act 2011*. This declaration was made on 8 April 2011. Its effect was to give the Queensland Reconstruction Authority primary responsibility for co-ordinating and managing the rebuilding and recovery of Grantham. To do so, the authority created a new development scheme for the Grantham reconstruction area.
11.2.1 Land swap program

In late March 2011, the Lockyer Valley Regional Council entered into a contract to purchase 18 parcels of freehold land, covering an area of approximately 378 hectares, to enable the voluntary relocation of displaced residents.47 The tract of land is situated directly north of the existing town of Grantham and is elevated above the January 2011 flood levels.48 Its purchase enabled the council to implement a land swap program.

Broadly speaking, this program allows eligible property owners in the Lockyer Valley towns of Grantham, Helidon, Murphys Creek, Postman’s Ridge and Withcott to ‘swap’ their land for part of the newly purchased council land.49 The program is governed by the Grantham Relocation Policy.50 The key features of the policy are that:

- landowners who meet the eligibility criteria participate voluntarily51
- the council offers unencumbered residential allotments to eligible landowners at no cost in exchange for their transferring ownership of their land, unencumbered, to council52
- blocks of comparable size are offered, up to 10 000 square metres; if a landowner elects to take a smaller block than his or her existing one, no compensation is paid for the difference53
- landowners are responsible for meeting the cost of building their homes on the new blocks54
- the process is a staged one: initial stages accommodate affected members of the community while later stages allow other lots to be developed and sold to provide revenue to council to help offset the cost of the land offer program55
- the timeframes are short, so that allotments were able to be allocated to eligible landowners in July 2011, with the land offer program expected to terminate on 1 July 2012.56

The Lockyer Valley Regional Council’s land swap program is a unique use of a planning measure to guard against the repetition of a disaster. Like a buy-back scheme, it facilitates the relocation of uses and people away from high flood hazard land. However, unlike a buy-back scheme, it also enables the collective relocation of a community, which carries social benefits as well as achieving floodplain management goals.

11.2.2 Grantham Development Scheme

Commencing in February 2011, the council began extensive community consultations to inform its master planning exercise for the Grantham area.57 The master plan formed the basis of the development scheme prepared by the Queensland Reconstruction Authority for the Grantham reconstruction area.58

The development scheme was given effect on 4 August 2011.59 The pace at which the scheme was developed and delivered was one of its advantages.60 In making the Grantham Development Scheme, the authority engaged in similar processes to those that apply to making a planning scheme under the Sustainable Planning Act 2009 (for example consulting state agencies and giving public notification of the proposed scheme), but it completed these tasks within significantly condensed timeframes.61

Grantham previously fell within the scope of the Gatton Planning Scheme, but that scheme’s operation is now suspended for the Grantham reconstruction area, except for any provision expressly referred to in the Grantham Development Scheme.62 The Lockyer Valley Regional Council is responsible for administrating the development scheme and determining any application lodged under it.

The development scheme was created primarily to expedite the rebuilding required within the Grantham reconstruction area.63 The scheme achieves this by regulating development so as to encourage the relocation of residents participating in the council’s land swap program to higher ground and meet many of the other reconstruction needs of the community, such as rebuilding of the main street, within two years.64 For example, under the Grantham Development Scheme, the following are exempt development, not requiring any approvals:

- reconfiguring a lot within the residential living zone, provided the lot complies with the Residential Living Zone Code, is owned by council and accords with the lot layout master plan determined by council65
- a house in the residential living zone if it accords with the Residential Living Zone Code.66
11 Buy-backs and land swaps

(The Residential Living Zone Code merely specifies minimum lot frontages and areas, and for buildings and structures, maximum heights and minimum setbacks.) The flood-devastated area of Grantham is designated ‘Limited Development (Constrained Land)’ under the Grantham Development Scheme. This designation allows residents who want to rebuild on the land they owned on 10 January 2011 to do so, provided the habitable flood level is 300 millimetres above the defined flood level. However, any new residential development in the area significantly affected by the flash flooding of 10 January 2011 is discouraged:

- The purpose of the zone is expressed as identifying land known to be significantly affected by one or more development constraints, such as flooding, which severely restrict the land’s ability to be developed for residential purposes.
- No new subdivision of lots is intended in the zone, while amalgamation of lots is encouraged so that existing lots can be aggregated for agricultural uses.
- The table of assessment provides that any new residential development will be impact assessable.

The Grantham Development Scheme is the first planning instrument in Queensland to apply the Queensland Planning Provisions (version 2.0), created under the Sustainable Planning Act 2009. This will ease the incorporation of the Grantham Development Scheme into any future Sustainable Planning Act compliant planning scheme for the Lockyer Valley area. Until such a scheme for the Lockyer Valley is given effect, the Grantham Development Scheme will continue to apply to the Grantham area.

In making the Grantham Development Scheme, the Queensland Reconstruction Authority was required to consider State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide, but was not bound to comply with it. The authority’s general manager of land use planning is of the view that the development scheme reflects State Planning Policy 1/03 in principle; the Commission agrees. The primary way in which the development scheme deals with flooding is by reference to the extent of the 10 January 2011 flooding, for example:

- residential zones are located outside the area affected by the 10 January 2011 flood
- the scheme incorporates a defined flood level and provides that this level is as determined by the Lockyer Valley Regional Council having regard to the flooding on 10 January 2011.

Given these aspects, the Commission views the Grantham Development Scheme as an appropriate instrument to direct and regulate the development of the Grantham reconstruction area until such time as the new Lockyer Valley Planning Scheme and the Lockyer Valley Regional Council’s floodplain management study are completed. (In forming this view, the Commission has taken into account the evidence of the council officer responsible for overseeing the redevelopment of Grantham that the development scheme may require some modification to clarify and streamline its provisions over the long term.)

11.2.3 Suitability of the Grantham response for other areas

The Lockyer Valley Regional Council’s land swap program, coupled with the Queensland Reconstruction Authority’s development scheme, is a timely and effective floodplain management response to the unique circumstances of Grantham.

Whether other councils are able to implement a land swap program similar to the Lockyer Valley Regional Council’s program, in isolation or together with zoning controls, and whether it would be appropriate for them to do so, will depend on the circumstances they face. Relevant matters include views of the community, the availability of close, undeveloped and unconstrained land, council’s financial resources and whether floodplain management principles justify restricting development of the land within the floodplain.

The success of the Grantham project, however, provides a template for a response to floodplain management which other councils in similar circumstances may wish to adopt.
11 Buy-backs and land swaps


Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p7: para: 2.3.2.1].

Financial considerations associated with property buy-backs, such as the benefit-cost ratio, have not been canvassed by the Commission. Other publications deal with this matter in some detail; see, for example, Department of Transport and Regional Services, Benefits of flood mitigation in Australia, 2002.

For example, in 2002/2003 under its regional flood mitigation program the Commonwealth Government provided $250 000 financial assistance to (then) Thuringowa City Council to acquire six flood prone properties which did not meet council’s flood related development controls and which were subject to inundation and damage.

A river improvement trust is a statutory authority that has, as one of its functions, the prevention or mitigation of flooding of land by riverine flood. Applications for funding were made under the Natural Disaster Resilience Program and its predecessor, the Natural Disaster Mitigation Program.

Correspondence from the Queensland Government, Natural Disaster Resilience Program funding and property buy-backs, 2 December 2011 [p8].

Exhibit 500, Natural disaster program partnership agreement implementation plans, Covering letter [p1].

Exhibit 534, Statement of Gary Mahon, 7 September 2011 [p24: para 118].

Correspondence from the Queensland Government, Request for further information: Natural Disaster Resilience Program and property buy-backs, 6 January 2012 [p1-2].

Exhibit 500, Natural disaster program partnership agreement implementation plans, Covering letter [p2].

For example, this is a feature of the scheme operated by Brisbane City Council.

Lord Mayor’s Taskforce on suburban flooding: Strategies to reduce the effect of significant rain events on areas of Brisbane prone to flooding, 2005 [p9].

Submission of Brisbane City Council, 11 March 2011, Attachment 4: Be FloodWise Fact Sheet – Voluntary Home Purchase Scheme.


Submission of Brisbane City Council, 11 March 2011, Appendix 5 [p8].

Submission of Councillor Steve Griffiths, undated [p9].

Exhibit 739, Statement of Brett Draffen, 26 September 2011 [p15: para 103-106].

Transcript, Colin Jensen, 10 November 2011, Brisbane [p4915: line 10].


Exhibit 855, Ipswich City Council Natural Disaster Risk Management Studies Program, Stage 3: Risk Evaluation and Treatment, August 2002 [p35: para: 3.2.2].


28 Transcript, Peter Byrne, 11 October 2011, Bundaberg [p3906: line 16].

29 Transcript, Peter Byrne, 11 October 2011, Bundaberg [p3906: line 20].

30 Transcript, Peter Byrne, 11 October 2011, Bundaberg [p3906: line 29].

31 Exhibit 764, Submission of the Bundaberg Regional Council, 18 March 2011 [p14: para 13].

32 Submission of Wyatt Roy MP, March 2011 [p4: para 5].

33 Transcript, John Rauber, 26 September 2011, Brisbane [p3148: line 16; p3148: line 21].

34 Transcript, John Rauber, 26 September 2011, Brisbane [p3148: line 26].

35 Transcript, John Rauber, 26 September 2011, Brisbane [p3148: line 33].

36 Submission of Gretchen Young, 24 April 2011 [p2]; Submission of Dennis Sharkey, 12 February 2011 [p4]; Submission of Chas Keys, undated [p1, 9].


38 Submission of Roy Barrett, March 2011 [p9].

39 Submission of Darryl Low Choy, 30 March 2011 [p4].

40 Submission of Fred Williams, 23 February 2011 [p2].

41 Transcript, Peter Byrne, 11 October 2011, Bundaberg [p3906: line 20]; Transcript, Carl Wulff, 19 October 2011, Brisbane [p4195: line 25]; Transcript, John Rauber, 26 September 2011, Brisbane [p3148: line 16].


43 Exhibit 1007, Standing Committee on Agriculture and Resource Management (SCARM), Floodplain management in Australia: best practice principles and guidelines, SCARM Report 73, 2000 [p3: para 1.4].

44 Second submission of the Gold Coast City Council, undated [p31].

45 Exhibit 538, Statement of Brendan Nelson, 15 September 2011 [p3: para 14].

46 Exhibit 538, Statement of Brendan Nelson, 15 September 2011 [p4: para 26].

47 Exhibit 538, Statement of Brendan Nelson, 15 September 2011 [p3: para 15].

48 Exhibit 602, Grantham Relocation Policy, 11 May 2011 [p2].

49 Transcript, Jamie Simmonds, 22 September 2011, Brisbane [p3055: line 58]; Exhibit 601, Statement of Jamie Simmonds, 18 September 2011 [p1: para 1].


51 Exhibit 602, Grantham Relocation Policy, 11 May 2011 [p2: para 1.2.4; p4: para 1.2.6, 1.2.7].

52 Transcript, Jamie Simmonds, 22 September 2011, Brisbane [p3056: line 41; page 3057: line 1]; Exhibit 602, Grantham Relocation Policy, 11 May 2011 [p5: para 1.2.9; p7: para 1.2.17].

53 Transcript, Jamie Simmonds, 22 September 2011, Brisbane [p3056: line 44]; Exhibit 602, Grantham Relocation Policy, 11 May 2011 [p5: table 1; p7: para 1.2.13].

54 Transcript, Jamie Simmonds, 22 September 2011, Brisbane [p3056: line 52].

55 Exhibit 602, Grantham Relocation Policy, 11 May 2011 [p4: para 1.2.1].

56 Exhibit 602, Grantham Relocation Policy, 11 May 2011 [p10: table 2].


58 Exhibit 538, Statement of Brendan Nelson, 15 September 2011 [p5: para 30]; Exhibit 601,
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Statement of Jamie Simmonds, 18 September 2011 [p: para 2].

59 Exhibit 538, Statement of Brendan Nelson, 15 September 2011 [p7: para 40].

60 Exhibit 601, Statement of Jamie Simmonds, 18 September 2011 [p: para 18].


63 Exhibit 538, Statement of Brendan Nelson, 15 September 2011 [p: para 71].

64 Exhibit 538, Statement of Brendan Nelson, 15 September 2011 [p: para 55, 58] and Annexure BJN-07 [p: para 52].

65 Exhibit 538, Statement of Brendan Nelson, 15 September 2011, Annexure BJN-07 [p: para 34].

66 Exhibit 538, Statement of Brendan Nelson, 15 September 2011, Annexure BJN-07 [p: para 34].


70 Exhibit 538, Statement of Brendan Nelson, 15 September 2011, Annexure BJN-07 [p: para 21].

71 Exhibit 538, Statement of Brendan Nelson, 15 September 2011, Annexure BJN-07 [p: para 21].


74 Exhibit 538, Statement of Brendan Nelson, 15 September 2011 [p: para 73]; Annexure BJN-07 [p: para 75].


77 Exhibit 538, Statement of Brendan Nelson, 15 September 2011 [p: para 7]; Annexure BJN-07 [Map 2].

78 Exhibit 538, Statement of Brendan Nelson, 15 September 2011, Annexure BJN-07 [p: para 42].

79 Transcript, Jamie Simmonds, 22 September 2011, Brisbane [p: para 19]; Exhibit 601, Statement of Jamie Simmonds, 18 September 2011 [p: para 17].
12 Performance of private insurers

For thousands of people whose homes were ruined and possessions destroyed or lost, insurance was an important issue in the aftermath of the 2010/2011 floods. It received significant public attention, a great deal of it critical of insurance companies. Some fundamental aspects of flood insurance – aspects which caused many policy-holders considerable stress – were also brought into sharp focus:

- Many insurance policies did not provide cover for damage caused by flood, but did provide cover for stormwater damage – or, in some cases, stormwater damage and flash flood – and other natural disasters.
- Many people did not believe or did not realise that their policies excluded flood from cover.
- Definitions of ‘flood’ in policies varied and were generally complicated.

The Commission was given a term of reference requiring it to examine ‘the performance of private insurers in meeting their claims responsibilities’. The term of reference is focussed specifically on the question of how insurers performed in dealing with claims which arose from the 2010/2011 floods and for which they were responsible, beginning at the point at which policy-holders contacted their insurers to make a claim. The Commission’s task did not extend to considering the broader issues of the availability and affordability of flood insurance, definitions of ‘flood’ or policy-holders’ awareness and understanding of the terms of their cover. Other reviews were established to consider these issues.

12.1 Other reviews

Three different reviews commenced at the federal level in the months after the 2010/2011 floods: the Natural Disaster Insurance Review, and reviews conducted by the Commonwealth Treasury and the House of Representatives Standing Committee on Social Policy and Legal Affairs. The first, the Natural Disaster Insurance Review, was established on 4 March 2011, principally because of ‘the absence of flood insurance for many policy-holders, particularly in Brisbane and Ipswich’. Its central focus was on ways of improving the availability and affordability of insurance for flood and other natural disasters. It considered other matters also, including measures to improve policy-holders’ understanding of the cover provided by insurance policies, and possible improvements to insurers’ claims management and dispute resolution processes. The second topic was relevant to the Commission’s inquiry, and the Commission and the review exchanged information where appropriate during the course of 2011.

The Natural Disaster Insurance Review provided a report to the Commonwealth Government on 30 September 2011 which was released to the public on 14 November 2011. The report contained 47 recommendations. One of the most significant was a recommendation that all home building, home unit and home contents insurance policies...
include flood cover,² with recommendations for the establishment of arrangements to make that cover feasible. Of the latter, of particular interest to the Commission was the review’s recommendation for a national repository of flood risk information.³ The Commission has considered a related question, of how information needed for flood studies can be maintained and made accessible: see 2.5.5 Central repository of flood study data. The review made some recommendations about insurers’ handling of claims, which are discussed in the relevant sections of this chapter (see 12.5 Timeliness and 12.6 Communication with policy-holders).

The review also endorsed proposals made by the Commonwealth Treasury in its discussion paper, Reforming Flood Insurance – Clearing the Waters, released in April 2011.⁴ The Treasury discussion paper focussed on two issues outside the Commission’s term of reference: the variation in how ‘flood’ is defined in policies and the problem that some policy-holders were not aware that their policies excluded flood. The paper proposed the introduction of:

• a standard definition of flood
• a requirement that insurers give policy-holders purchasing or renewing a household insurance policy a ‘Key Facts Statement’ setting out, in effect, what is covered and what is excluded under the policy.

The Commonwealth Government released its response to the Natural Disaster Insurance Review’s report on 14 November 2011. It announced, as part of the response, that the Treasury’s proposals would be implemented by legislation and, on 23 November 2011, presented the Insurance Contracts Amendments Bill 2011 (Cth) to Parliament. On 9 December 2011, draft regulations for a standard definition of ‘flood’ were released for public comment. Submissions closed on 3 February 2012. In addition, the Treasury released a second discussion paper in November 2011 proposing that insurers should be required to offer flood cover in home building and home contents insurance policies, for purchasers to choose to take up or decline.⁵ Submissions on the proposal close on 30 March 2012.

The House of Representatives Standing Committee on Social Policy and Legal Affairs conducted the third federal inquiry into insurance issues. On 2 June 2011, the Assistant Treasurer and Minister for Financial Services and
Superannuation asked the committee to inquire into and report on the insurance industry’s response to the extreme weather events around Australia in 2010/2011. The committee delivered its report on 28 February 2012. The report can be found at www.aph.gov.au. Its inquiry was not limited to the 2010/2011 floods but also encompassed other recent disasters in Australia, including Cyclone Yasi. The committee’s focus, like that of the Commission, was on issues of claims processing, including:

- the adequacy of information insurers provided to policy-holders about making a claim, the progress of the claim and policy-holders’ rights to external dispute resolution (see sections 12.2.2 and 12.2.3)
- the reasonableness of the time insurers took to process claims (see section 12.5)
- the effect of the engagement of experts and consultants (such as hydrologists and lawyers) on claims processing (see section 12.7)
- the effectiveness and timeliness of insurers’ internal dispute resolution processes (see sections 12.2.2 and 12.2.3)
- the effect of the engagement of experts and consultants (such as hydrologists and lawyers) on claims processing (see section 12.7)
- the effectiveness of the insurance industry’s General Insurance Code of Practice (see section 12.2.3)
- the effectiveness of external dispute resolution by the Financial Ombudsman Service (see sections 12.2.2 and 12.2.3).

The committee held public hearings about these matters in various places, including Brisbane, Ipswich and Toowoomba. The Commission considered the transcripts of the committee’s hearings. As the next section explains, aspects of all but the last of the above topics also came within the scope of the Commission’s inquiry into the performance of insurers in meeting their claims responsibilities.

12.2 Insurers’ claims responsibilities

Insurers’ claims responsibilities come from the contract of insurance (the policy), legislation and the general law. Most insurers also accept the responsibilities imposed by the industry’s voluntary code of practice.

12.2.1 Terms of the policy and the general law of insurance

An insurer’s foremost responsibility is to meet its obligations under the insurance policy, and in particular, to pay claims for which the policy provides cover. No insurer is required to pay a claim which is outside the terms of its policy or which falls within an exclusion. Notwithstanding, two insurers of which the Commission is aware – RACQ Insurance and CommInsure – made ‘compassionate payments’ to some policy-holders whose claims were declined because of the operation of the flood exclusion.6

In most cases with which the Commission was concerned, policies provided cover for stormwater damage (and in some instances, flash flood) and excluded damage caused by flood, as defined by the policy. The policies of the majority of insurers from which the Commission received information contained that distinction. RACQ Insurance’s household policy, for instance, provided cover for ‘flash flood and/or stormwater run-off’, which was defined as: ‘A sudden flood caused by heavy rain that fell no more than 24 hours prior to the flash flood or stormwater run-off.’ Flood, excluded under the policy, was defined as: ‘Rising water which enters your home as a result of it running off or overflowing from any origin or cause.’7

In each case where water had inundated a property, those insurers whose policies drew distinctions of that kind had to establish what type of water inundation had caused damage. (The onus is on the insurer to prove that an exclusion applies.) Determining causation was far from straightforward, often involving complex questions of fact and law. An insurer is liable for loss where the event covered by the insurance policy is its effective or ‘proximate cause’.8 Some of the complexities in resolving claims lay in determining which form of inundation was the proximate cause of the damage. And, in some cases, there were concurrent causes of damage. Where a loss has two or more proximate causes, one of which comes within the scope of the policy, the insurer will be liable, as long as none of the other causes is expressly excluded under the policy.9 The sequence of events was significant in some cases: if inundation damage was caused in the first instance by waters covered by the policy (for example, stormwater) followed by subsequent inundation by water not covered by the policy, the policy-holder was entitled to recover from the insurer for that damage (for more information, see 12.7.2 Site-specific hydrology reports).10

Having to resolve such questions inevitably protracted the decision-making process. Hydrology information was needed in most cases. In complex or uncertain cases, site-specific hydrology advice was necessary (for details,
see sections 12.5.1 Determination of liability and 12.7 Assessment process). Insurers that provided automatic flood cover, such as Suncorp and other insurers in the Suncorp Group, did not need to undertake this task; because their policies covered inundation from any source, the cause of the damage was not contentious.

Some insurers have announced that they will be providing automatic flood cover from February 2012. As already mentioned, the Natural Disaster Insurance Review recommended that all domestic policies include flood cover, and the Commonwealth Treasury has proposed that insurers should have to at least offer flood cover in home building and home contents policies, based on a standard definition of flood.13 If the proposal is adopted, it will go some way to removing the distinction between policies and the complexities associated with that distinction.

12.2.2 The Insurance Contracts Act 1984

The Commonwealth Government has power to make laws regulating private insurance policies.14 In 1984, it passed the Insurance Contracts Act 1984.15 The purpose of the Act is:

to reform and modernise the law relating to certain contracts of insurance so that a fair balance is struck between the interest of insurers, [policy-holders] and members of the public and so that those insurance contracts, and the practices of insurers in relation to such contracts, operate fairly.16

The Insurance Contracts Act 1984 does not contain provisions expressly relating to the performance by insurers of their claims responsibilities, but section 13 implies into the insurance contract a requirement that each party act with ‘utmost good faith’. The utmost good faith requirement requires ‘fair dealing in which the one party puts the interests of the other at least at the same level of protection as his own’.17 It encompasses notions of fairness, decency and reasonableness.18 Among other things, the utmost good faith requirement requires insurers not to act with undue delay in processing a policy-holder’s claim. Thus, for claims which are covered by the policy, the duty requires prompt admission of liability and prompt payment.19

The Australian Securities and Investments Commission (ASIC) has supervisory and investigatory powers under the Insurance Contracts Act 1984, including the power to monitor complaints regarding insurance matters.20

The Corporations Act 2001 requires insurers to have a dispute resolution system that consists of:21

• an internal dispute resolution process approved by ASIC, and
• membership of an ASIC approved external dispute resolution scheme.

The ASIC sets requirements for insurers’ internal dispute resolution procedures.22 One requirement is that insurers should determine complaints within 45 business days.23 For more information about the timeliness with which insurers dealt with disputes, see section 12.5.3.

The relevant external dispute resolution scheme is the Financial Ombudsman Service. Most insurers are members of this resolution scheme. It resolves disputes between policy-holders and their insurers, usually after the policy-holder has been through the insurer’s internal dispute resolution process. The Financial Ombudsman Service also monitors insurers’ compliance with the General Insurance Code of Practice.24

12.2.3 General Insurance Code of Practice

The General Insurance Code of Practice is a voluntary industry code developed by the Insurance Council for insurers. It came into operation on 18 July 2006 and is independently reviewed every three years; the last review was completed on 30 October 2009. Although it is not compulsory, more than 90 per cent of general insurance providers have signed up to the code.25

The code is to be applied having regard to the duty of utmost good faith.26 Set out as a series of undertakings to policy-holders, it establishes minimum standards for insurers to meet in handling claims and complaints. The code sets timeframes in which insurers will appoint loss assessors; give policy-holders updates as to the progress of their claims; respond to policy-holders’ requests for information; determine whether claims are payable; and handle complaints.27 It also requires insurers to give written reasons for declining claims28 and entitles policy-holders, with certain exceptions, to access any information relied on in the assessment of their claims and the opportunity to correct any mistakes or inaccuracies (for information about what this standard entails, see 12.8.2 Provision of information).29
The document acknowledges, however, that during times of ‘catastrophe and disaster’ (which includes fires, flooding, earthquakes, cyclones, severe storms and hail) large numbers of claims may prevent insurers from meeting all the prescribed standards. Notwithstanding, insurers undertake to establish internal processes for dealing with catastrophes and disasters, responding in a ‘fast, professional and practical way and in a compassionate manner’.

According to the code, insurers will handle complaints in a fair, transparent and timely manner, responding within set timeframes. If a policy-holder is not satisfied with the insurer’s response, the matter is then treated as a dispute and reviewed by a different employee. The insurer is required to keep the policy-holder informed of the progress of the response and respond within set timeframes, in writing, giving reasons for the decision. The insurer must also advise the policy-holder about his or her right to take the matter to the Financial Ombudsman Service.

In reviewing a policy-holder’s complaint, the Financial Ombudsman Service gives the policy-holder and insurer an opportunity to make submissions. It is not bound by the rules of evidence and may consult industry and consumer advisors or experts. Following this process, the Financial Ombudsman Service may make a recommendation. If both the policy-holder and insurer accept the recommendation, the complaint or dispute is resolved. If the recommendation is not accepted, the Financial Ombudsman Service proceeds to make a determination which is binding on the insurer but not the policy-holder who has the option of commencing legal action.

**12.2.4 Topics of investigation for the Commission**

The Commission’s consideration of the claims responsibilities which arise out of the Insurance Contracts Act 1984, the general law, the terms of insurance policies and the General Insurance Code of Practice has focussed on these matters:

- the timeliness of insurers’ decision-making (see 12.5.1 Determination of liability)
- the adequacy of communication with policy-holders (see 12.6 Communication with policy-holders)
- the adequacy of the assessment process (see 12.7 Assessment process)
- the adequacy of information given to policy-holders whose claims were denied (see section 12.8 Information to policy-holders whose claims were denied)
- the process and timeliness of internal dispute resolution (see 12.5.3 Timeliness of internal dispute resolution and 12.9 Internal dispute resolution).

**12.3 Process of investigation**

Fifty-three insurers are members of the Insurance Council of Australia. The Commission focussed its investigation on eight insurers:

- Australian Associated Motor Insurance Ltd (‘AAMI’, part of Suncorp Group Limited)
- Allianz Australia Insurance Limited
- CGU Insurance Limited (part of the Insurance Australia Group Limited)
- CommInsure
- NRMA Insurance (also part of the Insurance Australia Group Limited)
- QBE Insurance (Australia) Limited
- RACQ Insurance Limited
- Suncorp Metway Insurance Limited (‘Suncorp’, also part of the Suncorp Group).

The sample of insurers was chosen on the basis of two sources of information: submissions the Commission received and informal reports from advocates for policy-holders (Legal Aid Queensland and the Caxton Legal Centre). The latter were able to identify problems they had encountered and the insurers involved; of some interest were the numbers of complaints they had received in respect of particular insurers (which may have been a function of the numbers of claims those insurers received).

From those eight insurers the Commission obtained (by way of Requirements under the Commissions of Inquiry Act 1950) general information on the topics within the insurance term of reference. The extent to which the Commission could explore issues within its term of reference depended, however, on being able to examine the
way individual claims were dealt with, which in turn depended on policy-holders providing their accounts of their experiences. Unfortunately, the Commission received a limited number of submissions about insurance generally. The number relevant to the Commission’s term of reference was even more limited. Most concerned issues outside the scope of the Commission’s inquiry. They were provided to the Natural Disaster Insurance Review where they were relevant to the review’s inquiry and where the submitter was happy with that course.

The Commission took steps to encourage people to provide information about their experiences with their insurance claims. It wrote to local councillors and members of Parliament and also to a large group of policy-holders represented by Legal Aid Queensland. It invited (by way of media statement) people to provide information on a confidential basis if they preferred to do so. To encourage greater participation, police officers working for the Commission also visited flood-affected areas, including regional areas, from which the Commission received comparatively fewer submissions. Additional submissions were received as a result of these steps. Public hearings in September and October 2011 also prompted more submissions. However, the numbers were still not significant and some of those making them preferred that their information be kept confidential.

There may be a number of reasons for the lack of submissions. It seems likely that policy-holders were concerned with recovering from the effects of the 2010/2011 floods and had too much to contend with, or wanted to get on with their lives and did not want to re-live the experience through making submissions or giving evidence to the Commission. Some may already have given accounts of their experiences to the Commonwealth reviews previously mentioned, and felt disinclined to repeat them. The Commission is also aware that some policy-holders did not want to prejudice ongoing claims or negotiations with their insurers.

The Commission could, of course, have used its powers under the Commissions of Inquiry Act to require insurers to provide representative samples of policy-holders’ files, but it did not think it appropriate to encroach on individuals’ privacy in that way. Similarly, when people who provided submissions were not prepared for the Commission to seek information from their insurers, the Commission respected their wishes. However, the Commission did investigate a number of individual cases where policy-holders had approached the Commission and were willing to have their cases examined. It did so by requiring insurers to provide information about how those claims were handled. This process yielded a useful – albeit limited – body of case examples by which to test some insurers’ performance. Some of the cases were examined in the Commission’s public hearings. This report does not comment on every case the Commission reviewed or complaint it received. References are made to some of these cases, generally by way of illustration of the point under consideration. In some instances, however, more detailed discussion and specific comment about a case the Commission examined is warranted.

The following points must also be made about the submissions the Commission received, and how they informed the Commission’s investigation. As would be expected, most submissions were made by policy-holders who had some complaint against their insurer. The Commission did, however, receive some positive reports. Secondly, the submissions almost entirely concerned household insurance claims (home and contents claims). The investigation concentrated on those kinds of claims as a result.  

12.3.1 Co-operation of insurers

The Commission required the eight insurers to provide in a limited period of time a large amount of information: general information about the topics under investigation, information about particular claims and data (see section 12.3.2 below). The Commission received a great deal of co-operation and assistance from many of the insurers. In particular, the co-operation of Suncorp and AAMI (both part of the Suncorp Group) and RACQ Insurance, from which extensive information was sought, is acknowledged. Unfortunately, one insurer – CGU – was, in some instances, less meticulous in its responses to the Commission’s Requirements (see Appendix 5 Glossary for a definition of Requirement).

Some of CGU’s responses were incomplete. In one case, CGU was required to produce ‘copies of records of all communications’ between it and the ASIC and the Financial Ombudsman Service ‘concerning any matter relating to insurance claims arising from the Queensland floods’. It is evident that some correspondence was not provided to the Commission, while some correspondence that was provided made reference to telephone conversations or meetings, of which no record was produced.

CGU’s correspondence with ASIC and the Financial Ombudsman Service raised questions about the accuracy of a statement by CGU which responded to this question in a Requirement: ‘Is CGU or has CGU been the subject
of any investigation by the Financial Ombudsman Service … or any other regulatory body about the manner in which CGU has dealt with claims relating to the Queensland floods?’ CGU said that to the best of its knowledge and belief, it ‘had not been subject to such an investigation’. It added, however, that in April 2011 it had ‘received correspondence from ASIC requesting information addressing concerns that were raised anonymously to ASIC’, it responded to that correspondence, and it did ‘not believe that the matter [had] been taken any further’.37

It is not accurate that the matter had not been taken any further. After CGU provided its response to ASIC’s inquiries,38 the regulator requested further information in June 201139 and then again in August 2011.40 ASIC wrote to CGU again in September 2011 when it did not receive a response to the latter request.41 More to the point, however, CGU’s statement did not include any reference to inquiries by the Financial Ombudsman Service which commenced in April 2011.42 It is apparent that by 14 July 2011 CGU was made aware, formally, of an investigation by the ombudsman into a ‘possible systemic issue’43 and possible breach of the code of practice. That investigation resulted in a finding by the ombudsman, notified to CGU on 26 August 2011, of a ‘definite systemic issue’.44 The correspondence indicates that, in fact, CGU had been subject to an investigation by the Financial Ombudsman Service of which it must have been aware when it provided information to the Commission.

Another statement CGU made was shown to be plainly wrong. The insurer stated that all letters advising customers that their claims had been denied ‘detail[ed] the reasons for the decision’ and ‘referenced all material relied upon to come to the decision’.45 CGU conceded the statement was not correct.46 The concession was sensible: the insurer’s pro forma letters, which were provided to the Commission, did no such thing.

CGU said, by way of explanation, that the shortcomings were inadvertent, the result of pressures of work. The Commission accepts that CGU was put to considerable work in order to comply with the Commission’s Requirements (and it must be noted that its legal representatives also had to co-ordinate responses to Requirements issued to NRMA Insurance, which is also part of the Insurance Australia Group). It considers, however, that in those instances, the insurer was neither careful nor diligent in its responses to Requirements.

12.3.2 Insurance statistics

The Commission obtained data from the eight insurers as to:

- the number of household claims (home building claims, home contents claims, and home and contents claims) received as a result of the 2010/2011 floods47
- the time taken to decide to accept or decline the claims
- the time taken to finalise the accepted claims, whether by way of cash settlement, replacement of goods or repairs
- the number of the claims which were reviewed in the internal dispute resolution process and the time taken to complete the reviews.

The Commission obtained this information on two occasions. Insurers provided an initial set of data at the end of September 2011, with further, updated figures furnished in mid-December 2011. The data presented in this report relates to the period up to and including 1 November 2011.

However, because insurers do not collect and record data uniformly, some of the data was presented to the Commission in different ways. This made it difficult to collate it and to make meaningful comparisons between insurers. By way of example:

- Some insurers count composite home and contents claims as a single claim, while other insurers record them as two separate claims.
- One insurer recorded claims which were accepted in part as declined claims. The other insurers recorded such claims as accepted claims.
- Insurers defined the dates on which claims were accepted and declined differently.
- Insurers defined the dates on which accepted claims were finalised differently.

Where statistics are presented in the report, the qualifications that apply to the data are explained in the text and in endnotes. The statistics must be read with the qualifications in mind. The statistics provide some indication of the performance of eight insurers but little more.
12.3.3 The body of evidence

The general information and data the Commission received from insurers and the information derived from examination of particular claims formed a body of evidence which was necessarily limited. The Commission has had to be wary about making broad findings based on an unrepresentative number of cases. It has, however, been able to draw some recommendations it considers useful from the evidence available to it, particularly from the experiences of the people who provided information to the Commission.

There were, in addition, some discrete issues of insurer performance which warranted close attention. Those issues are discussed in some detail in this chapter.

Before discussing any of these matters, however, it is necessary to set out some context.

12.4 The picture as a whole

12.4.1 The number of claims

Insurers received an exceptionally high volume of claims as a result of the 2010/2011 floods. The Insurance Council of Australia has reported that, as at 24 November 2011, 58,463 residential and commercial claims were made as a result of the 2010/2011 floods. Residential claims (excluding, it seems, contents claims) alone totalled 26,554. Those figures did not include all insurers, but the Insurance Council estimated that its statistics represented 96.8 per cent of all residential and commercial claims made as a result of the 2010/2011 floods and also Cyclone Yasi.

The total household claims (which did include contents claims) of the eight insurers which provided data to the Commission added up to 23,210 claims. The number of household claims each insurer received is presented in Figure 12(a).

These numbers do not, however, give the full picture. Firstly, the figures relate only to household claims. Other kinds of claims insurers had to process, such as business insurance claims and motor vehicle claims, are not included. RACQ Insurance only included in its data what it called ‘inundation claims’: claims for water damage resulting from a ‘flood’ or ‘flash-flood or stormwater run-off’ as defined in its policy. It did not include nearly 3000 claims which related only to storm and rain which occurred during the period of the floods. That is, the insurer received over 5000 household claims from the 2010/2011 floods, more than double the number represented in Figure 12(a).

Insurers also had to deal with claims resulting from other events around the period of the 2010/2010 floods, including Cyclone Yasi. By way of example, as at 31 August 2011, RACQ Insurance had received a total of 11,836 household claims and 3980 motor vehicle claims from storms in Brisbane in mid-December 2010, the 2010/2011 floods.
floods and Cyclone Yasi. The Insurance Council has reported that (as at 24 November 2011) 72 203 claims resulted from Cyclone Yasi, of which 41 687 were residential claims. In addition:

- 7952 claims resulted from the floods in Victoria which occurred over the period 13 January 2011 to 18 January 2011
- 49 396 claims resulted from severe storms in Melbourne in early February 2011
- 410 claims resulted from bushfires in Perth in early February 2011.

The Commission accepts that the volume of claims made as a result of the 2010/2011 floods and other events in the period of, or soon after, the floods, put insurers under strain, and contributed to delays in the determination process (for details, see 12.5.1 Determination of liability).

### 12.4.2 Accepted versus declined claims

Figure 12(b) shows that, across the eight insurers which provided data to the Commission, the proportion of accepted claims (73 per cent) far exceeded the proportion of declined claims (27 per cent).

![Figure 12(b): Total number of accepted and declined household claims arising from the 2010/2011 Queensland floods, as at 1 November 2011, across eight insurers (N=19 833)](image)

The total claims accepted and declined by each insurer are shown in Figure 12(c).

![Figure 12(c): Total accepted and declined household claims arising from the 2010/2011 Queensland floods, as at 1 November 2011, across eight insurers (N=19 833)](image)
Figure 12(d) shows the proportions of accepted claims and declined claims for each insurer.

The claims represented in figures 12(b), 12(c) and 12(d) were accepted and declined under the following terms (or other policy terms):

- In the case of four insurers – AAMI, Allianz, CGU, NRMA – claims were accepted under terms providing cover for stormwater and declined under a flood exclusion.
- QBE provided cover for stormwater damage but some policies also covered ‘flash flood’ or ‘flood’. Accepted claims shown in figures 12(c) and 12(d) were accepted under those terms. Declined claims were generally declined on the basis of a flood exclusion.
- RACQ Insurance covered damage caused by ‘flash flood and/or stormwater run-off’ and excluded damage caused by ‘flood’. Flood cover was offered as an option, however. So, where that option had been taken, claims were accepted under the flood cover; otherwise, they were accepted under cover for ‘flash flood and/or stormwater run-off’. The declined claims in figures 12(c) and 12(d) are claims declined under the flood exclusion.
- CommInsure also provided cover for ‘flash flood’ and excluded ‘flood’. The claims represented in figures 12(c) and 12(d) were accepted and declined under those terms.
- Suncorp provided automatic flood cover. Suncorp claims account for 45 per cent of the total accepted claims in Figure 12(b). A very small proportion of claims were declined, as figures 12(c) and 12(d) show. Those claims were declined under an exclusion which applied if a policy was purchased within 72 hours of the event which caused the damage, or because there was no insured loss.

When Suncorp’s claims are removed from the total claims, the proportion of accepted claims (61 per cent) is still higher than the proportion of declined claims (39 per cent), as shown in Figure 12(e).
The Commission received submissions both from people whose claims were accepted and from people whose claims were denied, although the majority of submissions were from individuals in the second category. Many of the policy-holders who provided information and gave evidence were, or had been, in dispute with their insurer. As the next section shows, however, on the whole, across the eight insurers, the proportion of claims the subject of dispute was relatively small.

### 12.4.3 Disputed claims

The Financial Ombudsman Service reported in a submission to the Natural Disaster Insurance Review that flood claims yielded a higher level of dispute at its level, because many policies excluded flood. Flood claims raise complex questions of causation which contribute to delays involved in deciding claims and give rise to questions as to whether policy-holders were clearly informed of the exclusion. On the same reasoning, it is likely that flood claims also led to more disputes than usual in insurers’ internal dispute resolution processes.

Figure 12(f) shows the number and outcome of claims that went to internal dispute resolutions for each of the eight insurers from which the Commission received data.
Across the eight insurers, the total number of claims which were the subject of dispute and referred to internal dispute resolution represents only a small proportion (7 per cent) of the total number of decided claims. In other words, across those insurers, 93 per cent of insurers’ decisions were not disputed (keeping in mind, though, that Suncorp did not have to determine whether stormwater damage or flood had occurred). Taking each insurer separately, the proportions of decided claims the subject of dispute were:

- AAMI – 15 per cent
- Allianz Australia Insurance Limited – 7 per cent
- CGU Insurance Limited – 5 per cent
- CommInsure – 6 per cent
- NRMA Insurance – 9 per cent
- QBE Insurance (Australia) Limited – 23 per cent
- RACQ Insurance Limited – 14 per cent
- Suncorp – 0.8 per cent.

The eight insurers also informed the Commission about the number of household cases which had been, or were, the subject of dispute before the Financial Ombudsman Service as at mid-December 2011:

- Eighty-five AAMI claims had been or were the subject of dispute. Seven cases apiece had been determined in favour of the policy-holder and insurer. Four cases were settled without the ombudsman’s making a recommendation or determination (and two cases had been withdrawn).
- Forty-nine Allianz claims had been or were the subject of dispute, but 11 cases did not proceed to determination (eight of that group of cases were accepted by Allianz after the policy-holder registered a dispute with the ombudsman). Six disputes had been determined. The policy-holder was successful in two of the cases. The remaining cases were determined in Allianz’s favour.
- Fifty-two CGU claims (45 household claims and 7 landlord claims) had been or were the subject of dispute. Thirteen cases had been determined, four in favour of the policy-holder, eight in favour of CGU and one partially in favour of both parties.
- CommInsure was or had been involved in 44 cases. Six had been determined: three apiece in favour of the insurer and policy-holder.
- Eighty-three NRMA claims were or had been the subject of dispute, 14 of which had been determined. Two of those cases were determined in favour of the policy-holder, 11 were determined in NRMA’s favour and one was determined partially in favour of both parties.
- QBE had been or was involved in 59 disputes. Five had been determined in favour of the policy-holder, six had been determined in favour of QBE and five were settled before any determination.
- One hundred and forty-three RACQ Insurance claims were or had been the subject of dispute. Five cases had been determined in favour of the policy-holder and six in favour of RACQ Insurance. Thirty-three cases had been withdrawn, the majority of which were resolved by agreement between the policy-holder and insurer.
- Suncorp was or had been involved in 40 disputes. Two disputes had been finalised in the policy-holder’s favour, five in Suncorp’s favour and 10 were resolved by conciliation or agreement before the ombudsman made a recommendation or determination.

Most of these disputes (other than those which involved Suncorp) were about the insurer’s determination that flood was the effective cause of the damage to the policy-holder’s property. In cases where policy-holders were successful (in full or part), it was because the ombudsman had arrived at one of three conclusions: he had found that the insurer’s evidence was inadequate, because it had not established that the flood exclusion applied; or that stormwater run-off had caused some damage before the property was inundated by floodwater; or that the insurer had failed to show it had clearly informed the policy-holder of the flood exclusion.
12.5 Timeliness

12.5.1 Determination of liability

One of the main criticisms directed at insurers in public discussion was that they took too long to decide claims. Many policy-holders expressed frustration and distress in complaints to the Commission, and also to the Natural Disaster Insurance Review, about the time taken to determine their claims.

Insurers have an obligation to determine claims in a timely way. It is an aspect of their duty to act with utmost good faith. The General Insurance Code of Practice imposes a 10-day time limit on insurers to determine claims:

- from the date the claim is received if the insurer has all necessary information when the claim is lodged and no further assessment or investigation is required
- otherwise – where further information or investigation is required – from the time the insurer receives all necessary information and all investigations are completed.

The timeframes can be extended by agreement between the insurer and policy-holder. Insurers are not required to adhere to the time limits set in the code when dealing with a large number of claims following a natural disaster.

There is no question that in a large number of cases insurers could not meet the 10-business day timeframe and that delays occurred. The Natural Disaster Insurance Review reported that insurers took, on average, 28 days to accept claims related to the flood in Brisbane, four times more than the average time taken to accept claims which resulted from Cyclone Yasi. One insurer which, on average, determines ‘business as usual claims’ in five business days, told the Commission that the average time it took to determine claims arising from the 2010/2011 floods was 35 business days. (Claims resulting from Cyclone Yasi were determined on average in 14 business days.)

Delays were more extensive in many other cases. The majority of claims which were the subject of a complaint to the Commission were determined in two to four months; the longest period of delay was nearly five months.

The time taken to determine claims must be viewed, however, in the light of the investigations insurers (other than those which provided automatic flood cover) were required to undertake in order to decide whether to accept or decline claims (these investigations are considered in 12.7 Assessment process). Those steps generally included appointment of a loss assessor to inspect and report on damaged properties and, where it was thought that flood had caused the damage, obtaining and considering hydrology information (for details see 12.7.1 Area hydrology reports, 12.7.2 Site-specific hydrology reports and 12.7.3 Loss assessors’ reports). Many claims were not determined until insurers had received and reviewed general hydrology reports. Hydrology reports commissioned by the Insurance Council of Australia, by way of example, did not become available until various dates in mid-February, March and late April 2011. In some cases, on reviewing the available information, insurers considered that more information was required and instructed hydrologists to provide site-specific reports. One insurer indicated that such advice was generally provided in six to eight weeks. Another indicated it was in the order of eight to 12 weeks. The investigations insurers undertook did result in delays, but were (generally speaking) necessary in order to properly determine coverage. Most of the claims the Commission examined were decided soon after hydrology reports were received.

Insurers said that a number of difficulties added to delays in the determination process, including:

- the high volume of claims arising from the floods, as well as other natural disasters which occurred within the relevant period of time (discussed in 12.4.1 The number of claims)
- the complexity of some cases
- the difficulty of getting access to affected areas
- the limited availability of loss assessors and expert hydrologists
- the time taken to receive flood data and information from government agencies and councils. This point is discussed in the context of an examination of one insurer’s re-assessment of a large number of claims (see 12.7.5 RACQ Insurance Limited).

In light of these circumstances, it is not surprising that delays occurred.

The Commission sought data from the eight insurers as to the time taken to decide to accept and decline claims. The combined data of seven of the eight insurers is depicted in Figure 12(g).
AAMI’s data could not be included because it provided data which reflected when claims were finalised, not when they were decided. Its data is represented separately in Figure 12(j) below. The omission of AAMI’s data did not, however, substantially alter the results presented in Figure 12(g).

The results do not accord with the general impression created by media coverage and some public statements that insurers were slow to decide claims, at least not for the majority of cases. Figure 12(g) shows that across the seven insurers, more than half of claims were decided within one month. The largest proportion of claims – 47 per cent – was decided in 10 days or less.

The timeframes in Figure 12(g) are not definitive, however, because different insurers took different approaches to what constituted a ‘decision’ date. Five of the seven insurers – CGU, NRMA, CommInsure, Allianz and QBE – provided data indicating the time taken to determine liability and also communicate the decision to policy-holders. Generally policy-holders were informed of the decision on the same day it was made, or only a short time afterwards. One insurer (Allianz), however, said that the time between making a decision to decline a claim and notifying the policy-holder of the decision, could be as many as eight days. RACQ Insurance’s data did not encompass when decisions were communicated to policy-holders. It indicated when the general manager for Personal Insurance Claims made decisions about liability and conveyed those decisions to the claims officers. (The insurer said, however, decisions were generally communicated to policy-holders soon after they were made.)

Because Suncorp provided automatic flood cover, claims were accepted when they were lodged (unless the insurer suspected that an exclusion might apply).92 As a result, 98 per cent of Suncorp’s claims,93 and all claims it accepted, were decided in 10 days or less. Suncorp’s claims explain the high proportion of claims decided within 10 days shown in Figure 12(g): they comprise a large majority (74 per cent) of that group of claims. Additionally, across the seven insurers, a very high proportion – 98 per cent – of the total claims decided within 10 days were accepted; and 91 per cent of the claims decided within one month were accepted.

The following figure, Figure 12(h), excludes Suncorp’s claims to show the data which relates to the six other insurers represented in Figure 12(g) which had to determine in each case whether ‘flood’ or ‘stormwater run-off’ or (in the case of two insurers) ‘flash flood’ had occurred. As discussed above, the information must be read in the light of the determination process insurers were required to undertake.
The proportion of claims determined within 10 days – and within one month – decreases when Suncorp’s data is removed. Still, over a third of claims were decided within one month and more than half (61 per cent) were decided in two months or less. Even without Suncorp’s claims, a large proportion of the claims decided within 10 days and within one month was accepted: 91 per cent and 79 per cent respectively.

NRMA Insurance contributes considerably to the number and proportion of claims accepted within 10 days (71 per cent) and one month (44 per cent) across the six insurers. Sixty-four per cent of NRMA claims were decided in 10 days or less. Almost all of those claims (99 per cent) were accepted. This particular body of claims represents 96 per cent of NRMA’s total accepted claims (94 per cent of NRMA claims which were not decided within 10 days were declined).

Other insurers also accepted a large proportion of claims they decided within 10 days and within one month. Across the six insurers, 48 per cent of the total accepted claims were decided within one month, as shown in Figure 12(i).

Figure 12(h): Time taken to decide household claims arising from the 2010/2011 Queensland floods, as at 1 November 2011, across six insurers (that is, excluding AAMI and Suncorp), displayed as a percentage proportion of N (N=12 265)

Figure 12(i): Time taken to decide accepted and declined household claims arising from the 2010/2011 Queensland floods, as at 1 November 2011, across six insurers (that is, excluding AAMI and Suncorp), displayed as a percentage proportion of total accepted (7075) or total declined (4893) claims for the six insurers (N=11 968)
The majority of accepted claims (66 per cent) were determined in two months or less, while the majority of declined claims (81 per cent) were determined in one to three months. This may suggest, broadly speaking, that it was easier to identify claims that would be accepted (hydrology information may not have been required or general hydrology information was sufficient). Where it was suspected flood had caused damage, claims were harder to determine, or were not decided until hydrology information had been received.

The Natural Disaster Insurance Review recommended the repeal of sections 4.3 and 4.4 of the General Insurance Code of Practice, which relieve insurers of the obligation to comply with standards in the code in times of natural disaster. It recommended the introduction of a four-month time limit, subject to exceptional circumstances, for insurers’ determination of liability. On 10 October 2011, the Insurance Council Board agreed in principle to amend the code in line with the review’s recommendations. The amendments will also include timeframes for experts to provide reports to insurers.

In May 2011, about four months after the floods in January 2011, the Insurance Council said that its members had determined 97 per cent of claims resulting from the 2010/2011 floods and Cyclone Yasi. Figure 12(h) shows that, across the six insurers represented in the figure, 84 per cent of claims were decided in four months or less. Taking each insurer separately, five of the six insurers had a high proportion of claims within four months:

- NRMA Insurance decided 99.7 per cent of claims within four months (only five of 2371 claims were not decided within four months, and one claim was outstanding as at 1 November 2011).
- QBE decided 96 per cent of claims within four months.
- CommInsure decided 94 per cent of claims within four months.
- Allianz decided 90 per cent of claims within four months.
- RACQ Insurance decided 81 per cent of claims within four months.

The other insurer, CGU Insurance, decided 65 per cent of claims within four months.

The data AAMI provided to the Commission in December 2011 is represented in figures 12(j) and 12(k). The figures reflect when claims were closed, so the time taken from lodgement to finalisation of the claim. They cannot be compared with the data represented in Figure 12(g) or Figure 12(h).

![Time taken by AAMI to finalise claims](image)

**Figure 12(j): Time taken by AAMI to finalise household claims arising from the 2010/2011 Queensland floods, as at 1 November 2011, displayed as a percentage proportion of AAMI’s total claims (N=1384)**

Presumably the time taken to decline claims might still be reasonably (but approximately) reflected in AAMI’s data: the time taken to finalise a declined claim, after the decision was made to deny it, would not be great. Accepted claims, on the other hand, could take some months to be finalised where losses need to be quantified and buildings
repaired. This may explain the proportion of claims finalised in over 6 months shown in Figure 12(j). A high proportion of those claims – 96 per cent – was accepted. This group of claims represented 34 per cent of AAMI’s total accepted claims, as shown in Figure 12(k).

The Commission did ask insurers to provide data as to the time taken to finalise claims. That data is presented in the next section (12.5.2 Finalisation of accepted claims: settlement, replacement and repairs). Again, AAMI’s data could not be compared with that of other insurers because it included data which did not actually relate to finalised claims.

Delays in the determination process undoubtedly caused distress to policy-holders whose lives were significantly disrupted by the floods. The Commission supports the introduction of a time limit in the Code of Practice for the determination of claims arising from a natural disaster. In light of the evidence it received, the Commission considers a maximum of four months to decide flood claims, though lengthy, is reasonable in extraordinary circumstances such as those that prevailed in the wake of the 2010/2011 floods. Four months is, however, a long time for policy-holders to await decisions on their claims. It goes without saying that insurers should decide flood claims in a shorter period of time wherever possible.

12.5.2 Finalisation of accepted claims: settlement, replacement and repairs

In November 2011, the Insurance Council reported that 85 per cent of residential claims from the 2010/2011 floods had been ‘closed’, meaning that goods had been replaced, repairs completed or cash settlements made and the insurer considered the claim ‘finalised’. The repair process was underway in the remaining 15 per cent of cases.

In gathering the data, the Insurance Council asked insurers to separate their claims into ‘open’ and ‘closed’ categories. The Commission sought similar data from eight insurers. The Commission asked for data relating to:

- the number of accepted claims which had been settled or finalised – excluding all partially paid claims
- the time taken for settlement or finalisation to occur, starting from the time the claim was lodged.

Suncorp and AAMI (both part of the Suncorp Group) provided data which indicated when the most recent payment had been made on a claim. This encompassed not only final payments but also progress payments or some other payment to a policy-holder or supplier. That is, those insurers included data which related to claims which
had not, in fact, been finalised. As a result, AAMI and Suncorp’s data could not be compared with the data given by the six other insurers. It is represented separately in figures 12(l) and 12(m) respectively.

Figure 12(l): Time taken between lodgement of claim and last payment, as at 1 November 2011, displayed as a percentage proportion of AAMI’s total accepted claims, excluding withdrawn claims (N=1106)

Figure 12(m): Time taken between lodgement of claim and last payment, as at 1 November 2011, displayed as a percentage proportion of Suncorp’s total accepted claims, excluding withdrawn claims (N=6532)
The six other insurers took more logical and broadly similar approaches to what constituted ‘settlement’ or ‘finalisation’ of claims:

- Allianz used the date upon which all payments to the policy-holder, tradespeople and suppliers were complete.
- CGU and CommInsure used the date that all payments made on the claim were complete, including any administrative delays in processing payments.
- QBE, RACQ Insurance and NRMA Insurance provided data which represented when all payments had been made and the internal file was closed. RACQ indicated that administrative delays, such as processing invoices, were most likely around 16 days per claim. NRMA indicated that such delays could sometimes take up to 81 days.

The data of the six insurers was combined to produce Figure 12(n), but the differences in the data must be kept in mind. Figure 12(n) gives only a general impression of the time taken to finalise accepted claims across six insurers. It also encompasses both home building claims and home contents claims. Generally more was involved in finalising building claims, including appointment of an assessor to determine the scope of works, obtaining quotes, engaging builders (and perhaps engineers) and the building work.

Figure 12(n): Time taken to finalise accepted household claims arising from the 2010/2011 Queensland floods, as at 1 November 2011, across six insurers (that is, excluding AAMI and Suncorp), displayed as a percentage proportion of N (N=7050)

Figure 12(n) shows that, as at 1 November 2011, 91 per cent of household claims across the six insurers had been settled or finalised.

The Code of Practice does not prescribe any timeframe for the finalisation of claims. The Natural Disaster Insurance Review did not consider it practical to impose a time limit on the finalisation of claims once accepted. The Commission has not reached a different view. It did receive and examine a limited number of complaints about delays in the rebuilding process. The reasons for delay in those cases related, for the most part, to their particular circumstances; some matters were not within the insurer’s control. It is difficult to make general comment about those cases.

12.5.3 Timeliness of internal dispute resolution

Under the Code of Practice, insurers are required to respond to complaints (meaning an expression of dissatisfaction) and disputes (an unresolved complaint) within 15 business days. An insurer and policy-holder can agree on alternative timeframes, however, if further information or investigation is required; and in any case,
 insurers do not have to meet these timeframes when dealing with a large number of claims arising from a natural disaster.\textsuperscript{116}

If an insurer cannot resolve a complaint or dispute within 45 days, it must advise the policy-holder of the reasons for the delay and tell the policy-holder that he or she may take the grievance to the Financial Ombudsman Service.\textsuperscript{117} The Natural Disaster Insurance Review recommended changes to this part of the Code of Practice.\textsuperscript{118}

The eight insurers provided data as to the time taken to complete reviews of disputed claims in the internal dispute resolution process. Figure 12(o) shows that, across the eight insurers, the highest proportion of disputes were finalised within the timeframe set in the Code of Practice. Seventy-eight per cent were completed in 45 days or less.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{time_taken_to_complete_internal_review}
\caption{Time taken to complete internal reviews in the internal dispute resolution process, across eight insurers, as at 1 November 2011 and displayed as a proportion percentage of N (N=1402)\textsuperscript{119}}
\end{figure}

In most of the cases which were the subject of a complaint to the Commission, internal reviews were completed in 15 business days or less.\textsuperscript{120} Two matters took considerably longer (over three months). In one of those cases the policy-holder’s claim was denied on 6 June 2011. On 15 June 2011, the policy-holder requested a review. That review was not completed until 20 September 2011, two days before the policy-holder gave evidence to the Commission.\textsuperscript{121}

In the other case, the policy-holder indicated to the insurer an intention to dispute the insurer’s decision to deny the claim. This notification did not, however, commence the internal review process. The policy-holder formally requested a review on 24 April 2011. The review was completed on 26 July 2011 but the policy-holder did not learn that the review was unsuccessful until three weeks later, because notification had been sent to the wrong address (this issue is discussed in \textit{12.6 Communication with policy-holders}).\textsuperscript{122}

In each of these cases, the outcome – and time taken – depended on a site-specific hydrology report (for more information about the internal dispute resolution process, see \textit{12.9 Internal dispute resolution}). The decisions were made soon after the reports were received.

There was also, in both cases, a lack of communication from the insurers during the course of the review process. This added to the policy-holders’ frustration.
12.6 Communication with policy-holders

Submissions to the Commission raised a number of issues about communication. Complaints included the following:

- Insurers had dissuaded policy-holders from making claims.
- When they telephoned their insurers, policy-holders spent long periods of time on hold or could not get through.
- Insurers had not provided regular information about the progress of claims and had not returned policy-holders’ phone calls.
- Insurers had told policy-holders, incorrectly, that their claims would be covered when they called to lodge claims.
- Insurers had not provided a single point of contact: policy-holders had to deal with different staff at different times.
- Insurers had, in some instances, treated policy-holders less than professionally or compassionately. Insensitive or inappropriate remarks had been made to some policy-holders.

The Commission did not, in its examination of a limited sample of cases, see evidence of an insurer’s discouraging a policy-holder from making a claim. It was an issue reported to the Natural Disaster Insurance Review, and the Insurance Council Board has resolved to amend the General Insurance Code of Practice so that, when a policy-holder calls about making a claim and asks if the policy provides cover, the insurer will specifically ask the policy-holder whether he or she would like to lodge a claim and explain that the claim will be fully assessed.

There was evidence of one instance of inappropriate communication which involved an insurer’s chief executive officer. That issue is examined in detail in the section Events concerning Sallyanne Doyle’s claim.

As to the other issues raised in submissions, lack of communication was a common complaint. Some policy-holders said they did not receive regular updates on the progress of their claim and had to initiate most instances of contact with their insurers. In many cases the Commission examined, the evidence showed this to be true: the policy-holder contacted the insurer on more occasions than the converse. The Suncorp Group pointed out, however, that that did not necessarily indicate inadequate communication by the insurer. It said that comparing the number of times a policy-holder contacted an insurer with the number of times the insurer contacted the policy-holder was not a fair measure of the insurer’s performance. The Commission agrees: the frequency and nature of the communications must also be taken into account, and often there were communications between policy-holders and loss assessors in the intervals between policy-holders’ communications with the insurers.

The code requires that ordinarily insurers inform policy-holders of the progress of their claims at least every 20 business days. It recognises that insurers may not be able to meet this standard when responding to large volumes of claims after a natural disaster. After the 2010/2011 floods, one group of insurers notified the Financial Ombudsman Service it would not be able to do so and would instead update policy-holders every 40 business days (that is, every eight weeks).

The Commission accepts that, given the large numbers of claims and policy-holders with which insurers were dealing, it may have been difficult for insurers to provide regular updates to policy-holders. It is also unsurprising – but still a source of frustration for policy-holders – that in the circumstances calls went unreturned and policy-holders spent long periods waiting on hold.

The evidence demonstrates, however, that policy-holders wanted frequent information about the progress of their claims (more frequent, perhaps, than the 20-business day period set in the code). This is understandable given the losses and disruption they had experienced and were experiencing, particularly in cases where they were not able to return to live in their homes. Regular communication is particularly important when claims take a long time to determine. As one policy-holder said:

I think [communication] significantly affects one’s perception of whether or not a process is timely. The reality is that sometimes things are going to take a long time, but you need to make sure people are kept in constant communication and... that they know they haven’t been forgotten, especially in circumstances like these.
She suggested that regular updates (by way of email or text message, for example) would give policy-holders some comfort that their claim had not been forgotten. The Commission heard evidence from a policy-holder whose insurer sent him weekly text messages, which he found helpful. Another insurer wrote to all its policy-holders in February 2011, explaining that it required hydrology reports to determine claims, which were not expected to become available until late February or early March 2011. Keeping policy-holders informed on a regular basis goes some way towards reducing anxiety and dissatisfaction about delays in the determination process. The Financial Ombudsman Service has also noted that effective communication can reduce the level of disputes by policy-holders.

The effect of deleting section 4.3 of the Code of Practice – a recommendation of the Natural Disaster Insurance Review which the industry is adopting – is that the 20-business day timeframe for updating policy-holders will also apply to claims arising from a natural disaster. This is a better situation than that which applied previously; that is, there was no ‘ceiling’ for intervals between updates. This is not to suggest that insurers should not consider more frequent updates where that is feasible. It was clear on the evidence received by the Commission that some policy-holders who had suffered serious losses would have drawn considerable reassurance from regular, perhaps weekly, provision of information. At the very least, however, insurers should put in place measures so that, in similar circumstances, they can give policy-holders updates every 20 business days.

The Commission also considers it would be beneficial for insurers to establish with policy-holders an agreed mode of contact. One insurer has recently introduced such a system. The perils of not doing so were demonstrated in one case in which the policy-holder resided in Singapore. His preferred method of contact was email, but the insurer sent letters to his flood-damaged home in Brisbane and also tried to contact him by phone. As a result, the policy-holder did not receive important information until weeks after the event, causing confusion as to the status of the claim.

**Recommendation**

12.1 When a policy-holder makes a claim, the insurer should ascertain the policy-holder’s preferred method of contact and ensure that it is used (with other modes of communication if necessary) to keep the policy-holder informed about the progress of the claim. However, important decisions regarding the claim – for example, determinations about the outcome of the claim and settlement sums – should always be confirmed in writing.

12.6.1 Multiple case managers

Some policy-holders became frustrated by having to deal with different staff at different times, rather than one person who had management of their claim. There are practical and sensible reasons why some insurers do not use single case managers. Insurers should be aware, however, that processes using more than one person to manage a claim can cause confusion and some anxiety to some policy-holders. This could be reduced, perhaps, if insurers explained to policy-holders as clearly as possible that they will deal with multiple staff during the course of the claim, but that up-to-date information about the claim will be on their file and available to staff dealing with their claim.

12.6.2 File notes and recording calls

Processes that rely on multiple staff to deal with a policy-holder and his or her claim will inevitably fail if inaccurate or inadequate file notes are kept. The Commission saw examples of such file notes. Also, evidence in some cases revealed, unsurprisingly, discrepancies between the policy-holder’s recollection or impression of conversations and the insurer’s notes or recording of the same conversations. Two witnesses commented that versions of conversations recorded in the insurers’ file notes were not accurate or did not reflect the effect of the whole conversation. That evidence could not be tested, but it did point to the utility of insurers’ recording conversations with policy-holders. Where call recordings were available to the Commission, disputes about conversations were easily resolved.
Some insurers ordinarily record calls with policy-holders. One insurer arranged for calls to be recorded for this particular event, because of the complexity of the claims and anticipation that a large number of disputes might occur. (It provided numerous recordings to the Commission.) The insurer said that taking that course had proved beneficial, to both the insurer and policy-holders. Another insurer which did not record calls (because of technology limitations) said it believed – because of the number of disputed conversations – it would be prudent to do so in future. A call recording would have assisted in one case where a policy-holder had alleged that when she made her claim, she was told that it was very likely that her claim would be covered. There was no recording or detailed note of the conversation. The investigation into the matter resulted in delay in the determination of the claim.

There are obvious benefits to recording calls with policy-holders, for both insurers and policy-holders, particularly where it is anticipated a high number of disputes may arise. The Commission understands, however, that there are significant costs associated with doing so; and it may not prove worthwhile or necessary in ordinary circumstances. The evidence the Commission received suggests that the recording of calls would be ideal, but such decisions are better left to insurers.

In the absence of call recordings, adequate and accurate file notes are especially necessary.

### Recommendation

12.2 Insurers should review their existing systems and processes and implement any improvements necessary to ensure that accurate and complete records of conversations with policy-holders are made.

### 12.7 Assessment process

Insurers used a range of information to determine claims: information from policy-holders, aerial photography, flood maps showing the 2010/11 flood levels, loss assessors’ reports, and hydrology reports. Some insurers also relied on legal advice as to whether claims were payable. In cases where policies excluded flood but covered stormwater damage or flash flood, expert hydrology advice was usually required to determine which of these caused damage. Thus, in many cases, insurers regarded hydrology reports as essential in determining claims.

Insurers used two kinds of hydrology reports: reports covering broad areas or regions (‘area hydrology reports’) and reports relating to specific properties (‘site-specific hydrology reports’). RACQ Insurance used what it described as ‘hybrid reports’: reports prepared on a regional basis but with regard to individual properties the subject of claims. The process RACQ Insurance adopted to determine claims was distinct from the methods adopted by other insurers and is discussed separately in 12.7.5 RACQ Insurance Limited.

#### 12.7.1 Area hydrology reports

The Insurance Council of Australia commissioned three hydrology firms to jointly prepare area hydrology reports for Toowoomba, Lockyer Valley, Brisbane, Ipswich and the Somerset region. AAMI, Allianz and QBE used these reports to determine claims. Other insurers – CGU and NRMA (both part of the Insurance Australia Group) and CommInsure – commissioned their own area hydrology reports.

These area-wide hydrology reports provided broad conclusions about the likely nature and causes of flooding on an area, rather than property-by-property, basis. They were based on desktop studies which generally did not involve any site-specific investigations.

Insurers relied on these hydrology reports (together with other information) in the majority of cases, site-specific hydrology reports were obtained in particular cases when considered necessary. For example:

- NRMA Insurance obtained site-specific hydrology reports for 160 claims, out of 2371 claims it was required to decide (of which 1556 were accepted and 814 were declined). It obtained another 38 site-specific reports at the internal review stage.
- CGU Insurance Limited commissioned site-specific hydrology reports in 126 cases, out of 2821 cases (of which 1856 were accepted and 681 were declined).
• Site-specific investigations and assessments were carried out for 102 of CommInsure’s claims,\(^{162}\) out of 1473 claims (of which 687 were accepted and 775 were declined).\(^{162}\)
• AAMI obtained 146 site-specific hydrology reports at the claims determination stage,\(^{163}\) out of 1384 claims (of which 942 were accepted and 278 were declined).\(^{164}\) Thirty-four site-specific reports were obtained at the internal review stage and 33 at the Financial Ombudsman Service stage.\(^{165}\)

Insurers said reliance on area hydrology reports was practical and necessary in the circumstances, given the shortage of hydrologists; delays would have been much greater had site-specific reports been sought in every case.\(^{166}\) It was not logistically possible to obtain site-specific hydrology advice in every case before a determination was made.\(^{167}\) The Insurance Council contended the use of area hydrology reports, in conjunction with other information, was appropriate in the circumstances.

The Commission accepts that, given the number of claims and the high demand for hydrological expertise in the period after the floods, reliance on area hydrology reports was a practical means by which insurers could inform themselves in a general way, and in a comparatively timely manner, as to cause of inundation in flooded areas. However, an important question is the extent to which the particular circumstances of individual claims were properly considered, and whether flooding could be properly identified as the cause of inundation at properties in respect of which no site-specific hydrology advice was obtained.

The Commission obtained advice on this issue from expert hydrologists it engaged, which can be distilled as follows.\(^{168}\) It is not possible to say in the abstract whether insurers’ reliance on an area hydrology report was appropriate. That judgment can only be made on a case-by-case basis, by reference to the nature and strength of evidence (contained in a hydrology report or otherwise) available in each matter on the following issues:

a. whether the property was located well within an area of inundation, and
b. whether local rainfall would have produced sufficient stormwater run-off to exceed the capacity of the local drainage system and cause the level of inundation experienced at the property.

Where, for instance, the evidence shows that a property was located well within an area of floodwater inundation and the local rainfall was unlikely to have been sufficient to exceed the capacity of the local drainage system,\(^{169}\) flooding can reasonably be assigned as the cause of inundation. In cases where an insurer provides cover for ‘flash flood’,\(^{170}\) the timing of the rainfall and inundation is also critical.

Area hydrology reports presented rainfall data which could have been used to determine the level of rainfall in the vicinity of a particular property (depending on its location). The reports generally did not, however, contain suitable aerial photography of flooded areas which would have indicated whether a property was located within an area of inundation. That question could also be determined by reference to flood mapping derived from aerial photography and/or from peak water levels and accurate terrain data or, alternatively, by comparison of a property’s ground and floor levels with peak water levels in an adjacent waterway. The latter would typically require an inspection of the property.

The Insurance Council hydrology reports for Brisbane and Ipswich did contain flood extent mapping, but according to the advice the Commission received, that mapping, because of its scale and lack of resolution was often not adequate to ascertain whether a particular property was within an area of floodwater inundation.\(^{171}\) The report for Ipswich stated that the maps were indicative only and ‘should not be used for assessing flooding behaviour at individual properties’.\(^{172}\) Some insurers used Near Map aerial photography or the Queensland Reconstruction Authority’s interactive map, which was based on aerial flood photography and indicated the extent of the flooding, in assessing claims. Those sources were generally adequate to ascertain whether a property was located within an area of floodwater inundation.

Insurers said that hydrology reports were considered with other information, such as the policy-holder’s account, reports by loss assessors who had inspected the damaged property and maps which indicated the extent of inundation.\(^{173}\) (For information about loss assessors’ reports, see section 12.7.3 below.) The approach of insurers was generally consistent: area hydrology reports were relied upon where the reports, when read with other information, provided sufficient information to reach a decision as to cause of inundation.\(^{174}\) One insurer considered information – which usually comprised a policy-holder’s account, loss assessor’s report, the Reconstruction Authority’s interactive map and an Insurance Council hydrology report – sufficient if it consistently pointed to a particular cause.\(^{175}\) Another insurer relied on an area hydrology report in determining a claim if aerial photography, flood map and
the loss assessor's report indicated that flooding had occurred at the policy-holder's property. It said that area hydrology reports were sufficient to determine reasonably quickly that claims in Toowoomba and the Lockyer Valley for damage resulting from stormwater run-off were covered; on the other hand, its area hydrology report for Emerald 'strongly indicated' that flooding (which its policies excluded from coverage) had occurred in that region.

In four of the cases the Commission examined (which related to properties in Brisbane and Ipswich), the insurer relied on an area hydrology report (its own or the Insurance Council's). In each case, the hydrology report was used in conjunction with other information, such as a loss assessor's report and the Reconstruction Authority's interactive map. (One insurer did not use flood extent mapping or aerial photography.) The Commission engaged independent hydrologists to review the evidence used in the four cases. In three of the cases, the evidence used was considered 'clearly adequate' to support the insurer's decision that flood had caused the damage. The evidence in the fourth case was considered 'adequate'.

It is the Commission's view that generally it would not have been prudent to rely on an area hydrology report alone to reach a conclusion as to the likely cause of inundation at a particular property. As stated above, something more is usually required: whether that will be supporting information such as aerial photography, the policy-holder's account, flood extent mapping or site-specific hydrology (discussed below), will depend on the individual case. The Commission cannot point to any evidence that area hydrology reports were used other than appropriately. But nor does the Commission have sufficient evidence to say whether insurers sought adequate additional information, in particular site-specific hydrology advice, in all cases when they ought to have done so.

12.7.2 Site-specific hydrology reports

Whether a site-specific hydrology report should have been sought in a particular case depends on the strength of the information available in that case. The Commission received advice from the hydrologists it engaged that site-specific investigations should be carried out by a hydrologist in cases where it is not clear whether the property was located in an area of inundation and whether the amount of rainfall would have been likely to exceed the capacity of the local drainage system (and, where applicable, whether the timing of the rainfall corresponded with the relevant definition of 'flash flood'). It is advisable that the site-specific investigations include a site inspection.

It follows that in any given case the strength of the evidence needs to be assessed. Evidence received by the Commission indicates that decisions as to whether to obtain site-specific hydrology advice were taken by claims officers, with the exception of one insurer, whose decisions were made by the general manager on legal advice. Generally, prudence would dictate that someone with expertise in hydrology would make those decisions. In some cases, however, the assessment of whether site-specific investigation was needed could be undertaken by an individual with the ability to properly interpret aerial photography, flood extent mapping and rainfall data. The type of case envisaged here is where the information makes so obvious and certain the cause of inundation that it is clear that a conclusion can be reached without site-specific hydrology advice. Where, though, there is any doubt as to the cause of inundation, site-specific hydrology opinion should be sought.

Insurers explained that site-specific reports were obtained in particular cases where it was not possible – because of insufficient or inconsistent information – to make a decision on the area hydrology reports and other information available. One insurer said, by way of example, that if aerial photography did not show a continuation of water between the Brisbane River and a policy-holder's home, the area hydrology report would not be relied on and a site-specific hydrology report would be obtained. (That insurer obtained hydrology reports for specific properties or specific streets, as the case required.) Another said site-specific hydrology reports were sought if an area hydrology report and loss assessor's report did not provide sufficient information to evaluate a policy-holder's assertion that stormwater runoff or drain backflow had contributed to the damage. In a similar vein, another insurer said that it obtained site-specific reports if the information given by a policy-holder conflicted with the area hydrology report.

Site-specific hydrology reports were obtained to decide claims in a number of cases examined by the Commission. In one case, the insurer commissioned a site-specific hydrology report because the Insurance Council hydrology reports did not cover the area in which the property was located (Narangba). The same insurer obtained a site-specific hydrology report in another case because it considered the relevant Insurance Council report, on which it had intended to rely, did not enable the claim (relating to a property in Fernvale) to be decided.
Some insurers also obtained site-specific hydrology reports in cases where policy-holders disputed the insurer’s determination. This is discussed in more detail in 12.9 Internal dispute resolution.

The independent hydrologists the Commission engaged reviewed the methodologies, approaches and assumptions used in eight site-specific reports and five hybrid reports used by RACQ Insurance, which assigned a cause of inundation to particular properties and found no common problems. The methodology, approaches and assumptions used in those reports were generally considered sound. The reports were said to be based on a range of appropriate evidence, and the conclusions reached in each of the site-specific reports—flood was the cause of inundation—we were said to be supported by strong evidence.

The Commission notes, however, that the Financial Ombudsman Service has identified as an issue that hydrology reports tended to focus upon peak inundation, rather than initial inundation; in other words, what the source of the water was when the flood was at its height at the affected building, rather than where the water came from when the building was first flooded. The distinction was not the subject of any complaint to the Commission; but the point to be made is the same as for other questions about cause of inundation already discussed: it is important that expert opinion be directed to the causation questions the insurer is required to determine.

### 12.7.3 Loss assessors’ reports

On the information available to the Commission, the determination of the majority of claims at least involved a site inspection and report by a loss assessor. Loss assessors gathered information about the circumstances of water damage at a property by interviewing the insured, and conducting site inspections, which usually included taking measurements and photographs. Some insurers used internal loss assessors; others used external loss assessing companies. The reports of loss assessors contained relevant factual information for determining cause of inundation.

Five of the seven insurers from which the Commission received information appointed loss assessors in virtually all cases. Site inspections generally occurred early in the determination process. Of these insurers, one conducted second site assessments in some cases (approximately 150) where more information was thought necessary (such as where policy-holders suggested stormwater damage had occurred).

Of the two insurers that did not appoint loss assessors in all cases, one insurer arranged site inspections in the majority of home building cases (79 per cent), but not in the remaining cases because it considered the information from the policy-holder and/or area hydrology report sufficient to reach a decision to accept or decline the claims. The other insurer adopted a process which (initially at least) did not involve site inspections by loss assessors except in limited circumstances; distinguishing its claims determination process from those of the other insurers from which the Commission received information. That insurer’s process was examined by the Commission in some detail and is discussed separately in section 12.7.4 CGU’s desktop assessment process.

Although it is the Commission’s view that site inspections should generally form part of the process of determining cause of inundation (as discussed in Comments on the desktop assessment process in section 12.7.4), the proper role of loss assessors must be kept in mind: loss assessors, ordinarily, are not qualified in hydrology. Where determining the cause of inundation requires hydrological expertise, the opinions of loss assessors on the subject add nothing.

Notwithstanding this, many of the loss assessors’ reports viewed by the Commission expressed opinions as to the cause of water damage at a property (and also as to the insurer’s liability for the claim). Some insurers expressly instructed loss assessors to give those opinions.

Allianz, for example, instructed loss assessors to determine the likely cause of inundation at a property. Assessors’ reports indicated whether, in the assessor’s opinion, the damage was due to flood or stormwater. The insurer said, however, it considered the information in loss assessors’ reports against area hydrology reports commissioned by the Insurance Council of Australia; it did not make final determinations on claims until it had reviewed the hydrology reports. This was demonstrated in a case the Commission examined, in which the loss assessor reported his view that flooding of the Brisbane River and Oxley Creek was the principal cause of inundation of the property, but the insurer’s decision to decline the claim was made some weeks later, after the Insurance Council’s hydrology report for Brisbane was considered. This was one of the cases independent hydrologists reviewed for the Commission. The information used to determine the claim was considered ‘clearly adequate’.

AAMI indicated that site inspections by loss assessors were particularly focused on determining the source of water damage. Although loss assessors had no expertise in, and were not engaged to report on, hydrology matters, AAMI instructed loss assessors to ‘provide a preliminary report as to the cause of inundation’. The
instructions were to ‘provide a preliminary opinion as to whether or not you believe the inundation may have been caused by flood as defined in the policy’ and to set out the factual evidence on which the preliminary opinion was based. But, like Allianz, AAMI said it considered loss assessors’ reports in the light of area hydrology reports.209 The Commission viewed three reports provided to AAMI which expressed the opinion that flood was the cause of inundation.210 One report expressed a view that stormwater had caused the damage to the property and recommended that the insurer consider accepting the claim.211 Another report recommended that a hydrologist be appointed as the assessor was ‘unable to determine if floodwaters or overflowing road rains’ had caused the damage to the policy-holder’s property.212 In each case in which a loss assessor expressed a view as to the cause of inundation, the insurer did not decide the claim until it had received and considered hydrology reports. Two of the cases (in which the claims were declined) were among those independently reviewed for the Commission. In each case, the information was said to be ‘clearly adequate’ to support the insurer’s decision that the inundation had been caused by flooding.213

CGU’s instructions to loss assessors stated that because of the difficulty in obtaining site-specific hydrology reports ‘within reasonable timeframes’, the insurer would ‘rely on’ the reports of loss assessors and ‘nearby hydrology reports’.214 The expression ‘rely on’ is ambiguous: it might have meant that the insurer would act on information recorded in an assessor’s report or that it would adopt an assessor’s view as to the cause of inundation. The insurer explained that the role of loss assessors appointed by CGU was to gather information, including answers to a standard set of questions, to assist CGU staff to determine cause of damage and policy coverage and whether investigation by a hydrologist was required.215 It acknowledged that ‘assessors were not suitably qualified and had no expertise in determining any hydrology issues’.216

Notwithstanding, CGU gave loss assessors the following instructions:217

If in your opinion, given the location of the property to a watercourse, you consider that the inundation was caused by flood then your report to CGU can contain the expression of your view to that effect. If however you are of the view that there may be storm water inundation, your report should NOT express that opinion. Your report should contain only factual statements. Your report should contain [the] insured’s account of what occurred and your factual observations. We do not want to be in a position whereby you have expressed a view in your report that the inundation was caused by storm water and then subsequently receive a hydrologists [sic] report expressing the opinion that the inundation was caused by flood.

The instruction is odd. On its face, it appears assessors were permitted to go beyond their role of reporting facts and give an opinion which pointed to the denial of a claim, but (unlike assessors appointed by Allianz and AAMI) were directed not to give an opinion which might have supported granting one. By way of explanation, the insurer said that an assessor’s opinion that inundation was caused by flood, given the proximity of a property to a watercourse, assisted CGU staff to make a determination about the claim, whereas an assessor’s opinion that stormwater had caused damage would not so assist.218 That explanation is not compelling: assessors were not qualified to give either opinion, yet were invited to do so in respect of the type of opinion which would result in a denial of claim. The fact that a property was located near a watercourse was relevant to the determination of a claim, but the opinion of a loss assessor was not.

CGU said staff determined whether stormwater damage may have occurred by reference to answers to a set of standard questions (this is discussed in 12.7.4 CGU’s desktop assessment process), as reported in the assessor’s report, and other information such as area hydrology reports and aerial photography.219 But, if claims were assessed fairly, the same process must have been applied to determine whether flood was the cause of damage: a loss assessor’s opinion should not have added anything to, or influenced, the determination of the claim.

The insurer’s justification lacks logic. If by it CGU was indicating that, in fact, an assessor’s opinion as to cause of inundation carried some weight in the determination of a claim, that is concerning. If the purpose of the instruction was not related to the assessment of claims, it must have related to management of customers, to which the instruction alludes.220 A report which stated damage had been caused by flood could be used to support a decision to deny a claim. But a report which stated stormwater had caused damage could create a difficulty with a customer if his or her claim were later denied: a difficulty which CGU seemingly preferred to avoid. From CGU’s perspective, the logic behind it is understandable, although unattractive. However, the real point is that the use of an assessor’s opinion as a reason to deny a claim would make the resulting decision dubious.
In one case examined by the Commission, it appeared that CGU might have placed undue reliance on an assessor’s report. The insurer instructed the loss assessor to ‘assess and report on [the] cause of damage’. In the particular case, an issue was the extent to which sewerage problems reported by the policy-holder had contributed to the inundation. The insurer instructed the loss assessor: ‘Need to ascertain if flood/storm damage or sewerage issues’. The loss assessor’s report expressed a view on that question. It stated:

At issue is whether the sewer backup was a distinct and separate event from the flooding, or whether it was an early manifestation of the flooding itself. This report favours the latter understanding and makes its recommendation accordingly.

It is unlikely that the loss assessor was qualified to make such an assessment. The report said the damage was the result of ‘a flood event in which sewer backup preceded the inundation of water from the Brisbane River and Mt Ommaney Creek’. This view may have been based on information given by the policy-holder, which was recorded in the report. The report recommended that the claim not be accepted, as flood damage was excluded under the policy.

The claim was denied after the insurer received the assessor’s report. The insurer told the Commission that the decision to deny the claim was based on other information as well: aerial photography, flood extent mapping and an area hydrology report, for example. However, the sequence of events and the explanation given to the policy-holder (by telephone and in writing) gives the impression that the insurer treated the report as determinative of the decision. When CGU advised the policy-holder of the decision, it informed her that CGU had received the report, which stated the cause of damage at her property was flooding, and flood was excluded under the policy. No reference was made to the other information on which the insurer said it relied. (It is possible, however, that this merely reflects a deficiency in the explanation given to the policy-holder, an issue discussed in 12.8 Information to policy-holders whose claims were denied.)

The hydrologists the Commission engaged reviewed the assessor’s report. In their view, the information contained in the report was ‘barely sufficient’ to support a conclusion that flooding caused the inundation. The most relevant information in the report was the level of inundation recorded and the observation (presumably by the policy-holder) that water which damaged the property had initially come from ‘the toilets and drains, then, later from the Brisbane River… and Mt Ommaney Creek which overflowed’. In combination, those pieces of information indicated that flooding had caused the inundation; and the reviewers noted that no hydrological expertise would be required to conclude, given the observation that the water came from the river and creek, that the inundation resulted from the overflowing of watercourses. The expert hydrologists engaged by the Commission said that the conclusion in the report would have been greatly strengthened by one or more of the following:

- comparison of peak flood levels in the Brisbane River adjacent to the property with reported inundation levels in the property
- analysis of local rainfall intensity
- analysis of relative timing of rainfall and inundation
- inspection of aerial flood photography.

Facts gathered and reported by a loss assessor are relevant to an insurer’s determination, but loss assessors do not possess expertise in hydrology. In the Commission’s view, any decision to deny a claim based solely on a loss assessor’s opinion or advice that flood had caused the damage would be questionable. It is not a course which should generally be taken.

12.7.4 CGU’s desktop assessment process

CGU established a special process for assessing Queensland flood claims, in order to deal with claims as quickly as possible. Referred to as a desktop assessment process (or ‘desktop triage process’), it involved assessing claims in the first instance against aerial photography on the Near Map website and Google Maps, maps depicting inundation lines provided by the Insurance Council of Australia, area hydrology reports and policy-holders’ responses to a standard set of 15 questions asked via telephone.

Once a policy-holder was taken through the set questions, the call taker assessed the claim. If he or she considered that the policy-holder’s responses to the questions and the ‘desk top data’ (the maps and hydrology report) provided sufficient information to determine whether the claim was covered, the decision was made while the policy-holder
was still on the phone. If, in the claim officer’s view, the information established ‘conclusively’ that flood had caused the damage to the policy-holder’s property, the claim was denied and the policy-holder told that was the decision. If the information was not considered ‘conclusive’, further information, by way of a site assessment by a loss assessor (who also asked the policy-holder the set questions), was sought before a decision was made. Site-specific hydrology reports were also obtained in 126 cases. Approximately 340 claims (of nearly 3000) were declined without any site assessment: that is, on the telephone, on the basis of the desk top data and responses to the set questions.

CGU’s assessment process evidently caused distress to some of its policy-holders. In February 2011, about 40 or 50 policy-holders protested outside CGU’s offices. One of the group’s main complaints was that the insurer had determined claims without carrying out any site inspections (this is discussed below in Events concerning Sallyanne Doyle’s claim). The Commission examined CGU’s assessment process in some detail. It heard evidence from three policy-holders. None of those policy-holders’ claims, however, was declined on the telephone. The assessment of each case involved a site inspection. However, an examination of those cases – and one of the cases in particular, that of Ms Sallyanne Doyle, discussed below in Site assessments – gave some insight into how the desktop assessment process worked.

The Commission is also aware that the process has been the subject of inquiries by the Australian Securities and Investments Commission.

**Standard set of questions**

The desk top triage process was developed by a group of CGU’s senior managers on or about 6 January 2011. The standard set of questions was developed on 5 January 2011. The questions were:

1. What type of house is on the property – low set, highset, double storey, split level, etc?
2. Is the house on stumps or slab-on-ground?
3. Approximately how high is the habitable floor level above surrounding ground level?
4. Is the ground level at the house higher than the street level?
5. What date and time was the rain heaviest?
6. What time did the heavy rain stop?
7. When did the property get inundated (date)?
8. What time did the inundation of the property (yard) commence?
9. What time did water come into the house, garage, shed, etc?
10. What date and time did the water level in the property peak?
11. At its peak, how deep was the water inside the house, garage, shed, etc?
12. At its peak, how deep was the water in the yard?
13. [From which] direction did the water come into the property?
14. Was the water inundating the property ‘clean’ or ‘dirty’?
15. Was there any and if so what damage caused by rainwater through the roof or by overflowing gutters?

Their purpose was to identify whether damage to a policy-holder’s property had been caused by flood (excluded under household policies) or involved stormwater (covered by household policies) or whether further information was required. The questions were not designed to take policy-holders ‘through everything that [had] occurred’ at their properties.

The Commission was told that the questions were developed in consultation with a hydrologist. CGU asked the hydrologist by telephone on 5 January 2011 to ‘prepare a set of questions to assist CGU [claims officers] to identify the source of inundation to a customer’s residential property’. The hydrologist proposed 14 questions by email later that day. CGU’s technical manager added an extra question to those proposed by the hydrologist to form the set which was used by staff.

The Commission sought the opinion of independent hydrologists as to the extent to which responses to the set of questions could be relied upon to ascertain whether damage at a property had been caused by flood or stormwater.
It received advice that responses to the set questions could be useful in providing a preliminary indication, but could not alone have been relied on to ascertain the cause of inundation.240

There is no evidence that CGU used a policy-holder’s responses to the questions alone to determine a claim. It did not occur in the cases the Commission examined and CGU indicated to the Commission it did not occur in any case. The insurer said that in cases determined on the telephone (without a site inspection), decisions were based on responses to the set questions, aerial photography, flood mapping provided by the Insurance Council and area hydrology reports: this is reflected in instructions given to staff, as discussed in the next section, Guidance to staff.

It is not, however, evident on the material provided to the Commission that the policy-holders in those cases were asked all 15 questions. Responses to 12 questions are recorded in a set of file notes in one case;241 fewer responses are recorded in the two other cases.242 It may be that the policy-holders were asked 15 questions and the responses are not reflected, or were not recorded, in the notes (a topic discussed in 12.6.2 Files notes and recording calls).

It is noted, however, that the Australian Securities and Investments Commission wrote to CGU in April 2011 notifying the insurer of concerns raised about its ‘Desk Top Triage Process’ which it understood ‘involved asking up to five short questions of the policy holder and referring to a “Google map” or “[N]ear [M]ap” image… in order to decide a claim’.243 An internal record of a review CGU performed in February 2011 also refers to a ‘belief from some customers’ that they had only been asked five questions.244 This does not necessarily indicate that policy-holders were not asked all of the set questions: a letter CGU wrote to the Australian Securities and Investments Commission in June 2011 stated:245

Whilst the questions themselves did not change throughout the process, it became apparent relatively early during the events that, some of the responses to questions were often put as narrative rather than as specific responses to specific questions. Some customers also only recalled being asked a few questions when in fact CGU staff had covered all 15 questions during the initial discussion. CGU’s procedures were accordingly changed so that our claims officers ensured that each question was made more explicit and distinct.

**Guidance to staff**

The triage process was carried out by a team of ten staff assembled specifically to deal with the flood claims.246 The team began operating on or about 20 January 2011247 and first used the triage process on or about 24 January 2011. Determinations of flood claims began to be made at this time.248 CGU described the process as ‘robust’,249 ‘very thorough’250 and ‘very accurate’.251 Its national claims manager said assessments were based on ‘reliable information’ and the company was ‘very confident’ of the ability of its staff to make decisions without site assessments.252 The expertise of, and guidance given to, staff was thus of some interest to the Commission.

The Commission was told it was a team of experienced staff (but was not informed of the experience the team had in dealing with flood claims) and that the team was trained in the triage process.253 The national claims manager indicated in oral evidence that the team was instructed to make use of the desktop data to determine whether ‘an accurate decision’ could be made, and to seek further information, typically by way of site assessment, if one could not be made. Guidance was given to staff by the team’s manager and technical manager’s ‘walking [them] through’ the desktop data. The set of questions also provided guidance.254

After the national claims manager gave evidence, the Commission sought details of the training staff received by requiring CGU to produce ‘records of training’ relevant to the process of assessing claims. CGU was also required to produce ‘copies of any instructions, directions, or guidance’ given to staff. Assuming all such documents were provided in response to the Requirement, there is nothing to add on the topic of training: nothing resembling training records was provided to the Commission.

It appears the team was not given much more in the way of instruction (written or otherwise) than that indicated by the national claims manager. Of the documents produced, a ‘Queensland floods claims reference document’ dated 17 January 2011 provided instructions on the allocation and processing of claims. It did not include any instructions as to how household claims were to be assessed. The only relevant instruction was: ‘Do not allocate an assessor or builder. All potential flood [claims] needs [sic] to be allocated into the correct worklist… before we determine the appropriate assessment method’.255 Another document headed ‘Validation process Brisbane and surrounding area’s [sic]’ emailed to members of the team on 24 January 2011, set out the following procedure:256

1. CMC to validate claim...
2. Review flood maps, Near maps and hydrology report
3. Call customer as per scripting
4. Confirm coverage and make decision on phone
5. Fill out spreadsheet
6. If claim denied, send denial...
7. Finalise file, If [customer] disputes, file can be re-opened
8. If [customer] calls back to dispute decision, reopen claim and refer to [the team manager].

The reference to ‘scripting’ presumably means the standard set of questions. This document, steps 2 to 4 in particular, confirms the process the team followed in assessing claims. The only other relevant instruction given to the team was advice (given on 25 January 2011) on when water rising from drains, and rainwater unable to enter full drains, constituted ‘flood’.

Further instructions were given to staff following a review of the assessment process in mid-February 2011. The circumstances which led to the review and the instructions given to staff are discussed below (see Events concerning Sallyanne Doyle’s claim). The three documents referred to above apparently represent the totality of the instructions, directions and guidance relevant to the assessment of claims given to staff before mid-February 2011. Given that the members of the team were required to ‘confirm coverage and make a decision on [the] phone’, the dearth of detailed written instructions is surprising. In particular, there is nothing in the instructions which gives any guidance as to the conclusions staff could draw from a policy-holder’s responses to the set questions, how staff could apply the technical information contained in an area hydrology report to the information given by a policy-holder, or when staff could consider information ‘conclusive’ or make an ‘accurate decision’. Nor do they contain any reference to the appointment of assessors for site assessments (discussed in the next section). It would appear that claims officers were to apply their own judgment with little written direction or guidance. The Commission is not in a position to say, however, whether the lack of written instructions and records of training had any bearing on the determination of claims.

Site assessments

The circumstances in which site inspections by loss assessors were offered to policy-holders or sought by CGU are also unclear. The company’s chief executive officer, Mr Peter Harmer, indicated in a statutory declaration that an assessor would be appointed if a policy-holder disagreed with the outcome of the assessment made as a result of the triage process. He confirmed this in oral evidence, but also said site inspections were ‘clearly offered’ to policy-holders when a determination was made, whether policy-holders disagreed or not. This was a part of the ‘scripts’ staff used. He added that improvements were made, in February 2011, as to how that option was communicated to policy-holders. Mr Harmer qualified this aspect of his evidence by saying that it was something about which CGU’s national claims manager was better placed to inform the Commission.

The national claims manager said that site assessments were sought where the ‘desktop data’ was ‘inconclusive’ or where it was uncertain whether a claim would be covered (and also at the internal review stage if a site assessment had not been conducted). If a policy-holder indicated damage might have been caused by stormwater, this ‘introduced an element of doubt’ and further information would be sought ‘as a matter of course’, invariably by way of a site assessment. However, he also emphasised that because of the limited availability of assessors, staff had to be selective in assigning assessors to claims.

Neither the national claims manager’s nor Mr Harmer’s evidence is reflected in the instructions given to staff on 24 January 2011 or any other set of instructions: as discussed above, the instructions give no clue as to when staff were to assign an assessor to a claim. However, a document dated 16 February 2011, which recorded changes made as a result of feedback from policy-holders (detailed below), provides some indication of the circumstances in which assessors were appointed. It states that, as at 16 February 2011, site assessments for personal insurance claims were conducted only where there was ‘insufficient evidence to support a decision’ or where a policy-holder provided ‘objective information’ that suggested damage was not the result of flood. This supports the national claims manager’s evidence as to when site assessments were offered.

A site assessment did occur in the case of each of the three policy-holders who gave evidence. There is no dispute that one policy-holder was, on 27 January 2011, advised that an assessor would be appointed in the phone call in which the set questions were asked. The evidence as to the appointment of assessors was, however, contentious in the cases of two policy-holders.
One of the policy-holders gave an account of a telephone conversation on 2 February 2011, during which she was asked the set questions. This was consistent with descriptions of the triage process. During that call, she said, she was told her claim was being denied. She ‘made a fuss’, and protested that a decision had been made without an assessor inspecting her property. The next day, she was advised an assessor would attend. (She produced handwritten notes which she said she made at the time to support her account.) CGU disputed that account: its records indicated that the policy-holder was told during the conversation on 2 February 2011 that assessors would be appointed and told later that day that the assessors would be Crawford and Company. However, the file note of the conversation also states, ‘advised [policy-holder] flood water, [policy-holder] was adamant not flood damage’. This suggests the policy-holder was told floodwater had caused damage to her property, and that she then argued the damage had not been caused by floodwater.

The state of the evidence does not allow this particular factual dispute to be resolved; nor is it considered necessary to do so. It should be added, however, that the policy-holder had asserted that water had flowed up through the sewerage system, which had occurred a number of times before, and the insurer’s request for a site assessment stated: ‘Please assess and report on cause of damage as insured has stated that there have been issues over recent years with the council in regards to sewerage. Need to ascertain if flood/storm damage or sewerage issues…’ This aspect of the case is discussed in 12.7.3 Loss assessors’ reports.) This is consistent with the national claims manager’s evidence as to the circumstances in which site inspections were sought.

Ms Sallyanne Doyle was asked the set questions in a telephone call on 1 February 2011. After answering the questions, Ms Doyle was told that her claim would be declined because flooding from the Brisbane River had caused the damage to her West End property. Ms Doyle strongly disagreed with this assessment and argued with the claims officer, for about 30 minutes, that stormwater had caused damage to her property. On any view of CGU’s evidence as to its approach, these circumstances would have resulted in a site inspection being offered: either because she had disagreed with the insurer’s assessment or because she had raised the possibility that stormwater damage had occurred. However, an assessor was not appointed. The claims officer did, at the end of the conversation, invite Ms Doyle to get her tenant, who was present at the property at the relevant time (Ms Doyle was not), to provide information to CGU. However, the note of the conversation contained in the CGU’s records conveys something different. It states:

[Policy-holder] is adamant that water run off went through the property prior to the flood waters.
[Policy-holder] confirmed the drains rose, I confirmed this is flood from river.
[Policy-holder] then advised no the water ran down street and into her home.
[Policy-holder] talked for about 30 minutes about how the water entered.
Explained that this is consistent with flood as advised by the hydrologist etc. [Policy-holder] did not agree and would not accept it.
Eventually as conversation was not adding value to the claim: asked if I could speak with tenant also to gather further information. [Policy-holder] agreed she will have real estate contact me with tenant details.

This note appears to be consistent with Ms Doyle’s evidence, that the claims officer said the tenant could provide information merely as a means of bringing to an end a ‘long and tortuous’ conversation, as a result of which both Ms Doyle and the claims officer were exhausted. The Commission does not, however, have evidence from the claims officer. After the conversation, the claims officer sent an email to Ms Doyle’s broker (which was not passed on to Ms Doyle), which said:

We have discussed the claim with the insured Sally. While the information considered indicates the property has suffered damage as a result of flood the insured is of the opinion that storm water caused damage to the property prior to the flood. CGU will be considering this claim further and await contact details for the tenant to gather more information surrounding the circumstances of the event.

Ms Doyle explained that she did not take any steps to put her tenant in contact with claims officer, because she felt so discouraged after the call on 1 February 2011. She believed the claim had been denied and did not think that information from the tenant would make any difference.
Ms Doyle did, however, call back the following day and, in another lengthy conversation with the claims officer, repeated her view that stormwater had caused damage to her property. There was no discussion about the appointment of an assessor. Ms Doyle did not recall any further discussion about getting information from the tenant. The claims officer made a note of the conversation. It concludes: ‘She [Ms Doyle] will get property manager to email me regarding the gathering of further info. [P]ossibly need to appoint an assessor, await further info.’ The second sentence is a note to the team manager, not a record of something said to Ms Doyle during the conversation. This is the first time appointment of an assessor was raised as a possibility. It is unclear if the first sentence is also an internal note or reflects part of the conversation.

The records show that on 5 February 2011, the claims officer ‘recommended’ the appointment of an assessor, after the insurer received a written complaint from Ms Doyle, via her broker (which was also sent to state and federal politicians and journalists). The claim was referred to the team manager, who, according to a note dated 8 February 2011, considered whether an assessor should be appointed. The note also states that CGU was waiting for Ms Doyle to ‘forward further information’. The information was not provided, but the team manager approved the appointment of an assessor on the morning of 10 February 2011. An external assessor was initially appointed and an email to that effect was sent to Ms Doyle’s broker that morning, but later that day, the decision was made to assign an internal assessor instead because of concerns about delays the external assessor was experiencing.

Prior to the email on 10 February 2011, no indication had been given to Ms Doyle or her broker that an assessor might be appointed. Ms Doyle’s broker (who apparently had not seen the email) contacted CGU on the afternoon of 10 February 2011 and was informed the claim had not been denied and an assessor had been appointed. The broker advised Ms Doyle that CGU was continuing to ‘review the claim’ but did not mention the appointment of an assessor. Ms Doyle did not read an email sent by CGU on 10 February 2011 advising her of the decision to appoint the assessor. It was on 11 February 2011, when another CGU staff member contacted her to schedule the inspection, that she first learned that an assessor had been appointed.

These circumstances suggest that the decisions (on 1 February 2011) to receive further information from Ms Doyle’s tenant and then (on 10 February 2011) to appoint an assessor, were related to Ms Doyle’s persistence (perhaps intransigence) rather than her suggestion that damage had been caused by stormwater. The national claims manager’s evidence as to when site inspections occurred is not reflected in the circumstances of this case, although it was more generally borne out.

Mr Harmer’s account as to when site inspections were offered was similarly inconsistent with what happened in Ms Doyle’s case. His evidence on this topic does correspond with a letter from CGU’s General Counsel to the Australian Securities and Investments Commission, dated 13 May 2011; but is not reflected in any other evidence. The letter indicates that site assessments were sought if ‘coverage was unclear or where the customer disagreed with the outcome of the desk top assessment’. A subsequent letter to ASIC, however, dated 30 June 2011 (which responded to a request for further information), states that until ‘CGU reviewed its position on or around [22 February 2011]… a site assessment option was not conveyed to customers where a clear decision had been made to decline cover on the basis of a flood exclusion… Site assessments were still always conducted where there was doubt about the cause of the loss (e.g. uncertainty about whether the loss was caused by stormwater or flood)’. The author of the letters confirmed in a statutory declaration that site assessments were not ‘explicitly offered’ to policy-holders where CGU considered flood ‘to be the cause of the loss, up until [a] change in communicating the claims process was made on 22 February 2011’. This contradicts Mr Harmer’s evidence. It is consistent with the document which recorded the changes made after a review of CGU’s processes on or about 16 February 2011.

That review, which led to changes to CGU’s processes, occurred as a result of a meeting between Ms Doyle and CGU’s chief executive officer (Mr Harmer), corporate affairs manager and general manager of claims on 14 February 2011. For that reason, Ms Doyle’s claim warrants further attention. There is an additional reason for focussing on Ms Doyle’s case: the professional conduct of the insurer’s chief executive officer was called into question as a result of an incident between Ms Doyle and Mr Harmer on 22 February 2011; an issue relevant to the insurer’s performance which required examination.
Events concerning Sallyanne Doyle’s claim

14 February 2011 meeting

On 11 February 2011, Ms Doyle received a call from CGU’s corporate affairs manager about an article published in The Courier-Mail on 10 February 2011.295 The article reported that Ms Doyle was organising a demonstration outside CGU’s Brisbane office on 18 February 2011.296 The corporate affairs manager requested that Ms Doyle meet her and the general manager of claims; Ms Doyle agreed. The meeting took place at Ms Doyle’s property at West End on 14 February 2011. Mr Harmer was in Brisbane that day and also attended the meeting. He was aware of The Courier-Mail article and wanted to understand Ms Doyle’s concerns.297

Most of the communication at the meeting was between Mr Harmer and Ms Doyle. Their respective accounts of the meeting did not differ greatly. Both agreed the meeting was amiable.298 Ms Doyle expressed her concerns about CGU’s assessment process and felt optimistic after the meeting that improvements might be made.299

Process changes

The meeting led to a review of CGU’s processes.300 Mr Harmer said the point he gathered from the meeting was that Ms Doyle had not heard or had not understood that a site assessment was available to her, or the option had not been communicated to her effectively.301 He suggested that Ms Doyle had not appreciated that she had the option of a site assessment; she had not fully ‘absorbed’ the information which had been given to her.302 This evidence was curious: as set out above, the option of a site inspection was not communicated to Ms Doyle at all before 10 February 2011; and she was aware from 11 February 2011 that an assessor had been appointed (so there can be no question that she understood on 14 February 2011). At no stage before 11 February 2011 had Ms Doyle not heard or failed to understand that a site inspection was available to her: it simply was not offered to her. It is difficult to believe that Mr Harmer did not appreciate this. In light of the facts, his evidence does not make sense.

In any case, the issue, as far as Mr Harmer was concerned – at least as he explained it to the Commission – related to communication: the availability of site assessments had not been clearly communicated. As a result, ‘the way in which [the insurer] communicated [the] claims assessment process’ to policy-holders was reviewed.303 Mr Harmer asked that ‘the scripts’ be rewritten and training be conducted to ensure that staff offered a site assessment if a customer ‘was in any way dissatisfied with the determination’.304 However, the national claims manager said that, in fact, the changes made as a result of the meeting with Ms Doyle did not involve amendment of any script. Rather, changes were made to the process. One of the changes was to ensure that customers understood that a site assessment was available if they had any ‘grievance with the process’ or saw ‘merit in a site assessment’.305

The document which records the ‘process changes’ made as a result of a ‘process review’ on 16 February 2011 indicates that changes were made extending the circumstances in which site assessments were to be conducted.306 Site assessments would occur for all claims which were yet to be determined. An internal email dated 17 February 2011 confirms that ‘after the recent media attention’, site assessments would be conducted for remaining flood claims (of which there were about 150 personal claims in Brisbane and Ipswich).307 Site assessments would also occur for all ‘disputed/escalated claims’, that is, those the subject of a complaint or dispute, and where a customer asserted damage was the result of stormwater run-off or water rising from stormwater drains.308

This indicates that more was involved than changes to communication: the process changes related principally to the availability of site assessments themselves, with necessary changes to what was communicated to policy-holders. They were not merely changes to how an existing option was communicated, as Mr Harmer indicated in evidence and in a media statement made on 22 February 2011, in which he stated that the company had ‘reviewed and made changes to how we communicate our claims assessment processes to customers’. He also said he wished to make it clear that site assessments were available ‘to all customers should they want one’.

Changes to what staff told customers about site assessments would have followed necessarily from an extension of the circumstances in which site assessments were to occur. Precisely what staff were to tell customers after 16 February 2011 is not known. The document dated 16 February 2011 indicates that staff were to be given ‘updated scripting’; but if a script was updated, it has not been provided to the Commission.309 There are no written instructions which reveal what staff were to say to customers about site assessments (or at least none have been provided in response to a Requirement to produce copies of instructions, directions or guidance relevant to the changes made in February 2011). Nor are there any records of training given to staff (which were also specifically sought by the Commission). The national claims manager indicated in oral evidence that the process changes and
Mr Harmer’s media statement were explained to the flood team. Other than that, there is no evidence of the details of the training to which Mr Harmer referred.

**22 February 2011 telephone conversation**

Mr Harmer’s media statement was made in response to the demonstration led by Ms Doyle outside CGU’s offices on 18 February 2011. After the demonstration, a meeting, which had been arranged on 14 February 2011, was held between Ms Doyle and other policy-holders (and a lawyer from Legal Aid Queensland) and the corporate affairs manager, general manager of claims and other CGU executives. Mr Harmer was unable to attend. The group of policy-holders made a number of requests at the meeting. Ms Doyle indicated there were three: that site assessments occur as a matter of course in all cases of major loss; that ‘there be some recognition’ that CGU’s assessment process was ‘inadequate’ and compensation for mismanagement of claims; and that CGU give financial assistance to customers whose claims had been denied under the flood exclusion. Mr Harmer referred to additional demands, that CGU acknowledge that its assessment process was ‘illegal’ and issue a public apology for it. The CGU representatives agreed to provide a response by 23 February 2011. Mr Harmer communicated the response to Ms Doyle by telephone on 22 February 2011, at about 3.00 pm. What transpired during this call was the subject of contention.

Ms Doyle was at work when she received the call from Mr Harmer. He informed her that a media statement would be published that afternoon and he wanted to ‘walk her through it’. Ms Doyle took notes (which she no longer has) as he did so. She said Mr Harmer discussed each request in turn. He explained that CGU would continue to use the triage process and a customer could ask for a site assessment if he or she wanted one. He said the company would not make ex-gratia payments or pay compensation for inadequate assessment processes because he did not accept the processes were inadequate. Ms Doyle said words to the effect of: ‘So that’s no to everything we asked for.’ At this point, Ms Doyle said, the tone and content of the conversation changed. Mr Harmer said, in a ‘deliberate voice’: ‘I have copies of tapes of conversations between you and CGU. I have listened to those tapes and I know you misled the media.’ This took Ms Doyle by surprise; she asked: ‘What?’ Mr Harmer repeated: ‘I have tapes of conversations between you and CGU. I’ve listened to those tapes and I know you misled the media about the reasons for you being provided an assessor visit.’ Ms Doyle said: ‘Well, I suppose it is open season on CGU now’, to which Mr Harmer replied: ‘Well, you do what you need to do,’ and the conversation ended.

Ms Doyle said she felt that Mr Harmer had threatened her. The next day, she requested, by email to her broker and the claims officer who was handling her claim, copies of recordings of her conversations with CGU. The claims officer replied that ‘in some cases, not all, the calls are recorded for training and quality assurance purposes only’ and asked Ms Doyle to provide details of the calls, such as the dates and times and lengths of the calls and the names of the people to whom she had spoken. Ms Doyle responded:

It would seem that, at least some of the phone conversations I am requesting are in existence and have been referred to by your CEO Peter Harmer in a conversation I had with him yesterday afternoon, Tuesday Feb 22 at approximately 3pm. Mr Harmer has, he advises me, been in receipt of and listened to taped conversations of me, presumably talking to you regarding the outcome of my claim.

Over a week later, on about 4 March 2011, Ms Doyle received a letter from Mr Harmer, dated 1 March 2011, about her request for copies of call recordings. The letter said:

When we last spoke by phone on 22 February, I indicated that CGU was working towards individual site assessment at your property prior to you contacting the media about your claim. At the time, I made reference to this being reflected in call recordings. Unfortunately, I made a mistake, and it was the file notes of the call made by the claims officer that support this sequence of events.

Call recordings are not made of customer calls to the Brisbane Flood Claims Team... due to technology limitations and, as a result, no recording was made of this particular call. I apologise for any confusion I have caused.

Mr Harmer accepted in evidence he had ‘given Ms Doyle some misleading information’ in the conversation on 22 February 2011 – to which he had referred in the letter – but he denied that he told Ms Doyle he had call recordings, and that he had listened to them. He also denied saying to her that she had ‘misled the media’. He accepted, however, that he was, at the time of the conversation, concerned about the report in *The Courier-Mail* on 10 February 2011 (and possibly other media reports) and he expressed this to Ms Doyle in the conversation.
His concern, he explained in evidence, was that the ‘article did not cover the true position’ because it did not reflect that Ms Doyle’s claim had not been denied and the insurer had sought further information from Ms Doyle’s tenant and a site assessment had been offered to her.327 He ‘quite possibly’ felt that Ms Doyle had contributed to the nature of the reporting.328 He said he discussed with her the fact that the article did not report that she had been offered a site inspection.329 The article itself did not contain any details of Ms Doyle’s claim. While it reported that Ms Doyle was organising a demonstration against CGU, it did not state that her claim had been denied (although perhaps that inference was open) or that she had not been offered a site inspection, or mention her concerns about CGU’s assessment process. The article otherwise reported her perceptions, as a social worker, of the effects on people whose claims had been denied.

Mr Harmer gave an account of the conversation in a statutory declaration which responded to information Ms Doyle had given the Commission before she appeared as a witness.330 That information was substantially the same as the evidence given by Ms Doyle.331 In evidence, Mr Harmer said his statutory declaration did not give a verbatim account of the conversation but ‘reasonably reflected’ his recollection of it.332 When he said this, Mr Harmer was aware of the evidence Ms Doyle had given when she appeared as a witness the day before; he had, in fact, authorised a media statement which commented on Ms Doyle’s evidence.333 It became clear in the course of Mr Harmer’s evidence, as additional details were elicited, that his statement did not, in fact, reasonably reflect his recollection of the conversation. His account appears to be as follows.

Mr Harmer informed Ms Doyle about the media release and said he would ‘walk her through it’.334 He discussed CGU’s responses to the policy-holders’ demands. He told Ms Doyle CGU had ‘adjusted [its] process and implemented additional training’ in response to her feedback.335 At the end of that discussion, Ms Doyle said words to the effect of, ‘So, you are not giving us any of [the] demands’. Mr Harmer explained that CGU had made changes to its process but could not agree to the other demands. Ms Doyle then responded: ‘Don’t you guys want to do business in Queensland? Don’t you care how your brand is going to be trashed up here in this part of the world?’

Mr Harmer then expressed his concern about the media report. He said: ‘It’s very disappointing when not all of the facts get into the public domain’,336 and added that The Courier-Mail article did not mention that Ms Doyle’s claim had not been denied and that CGU had been waiting on Ms Doyle to provide her tenant’s contact details ‘to be able to conduct a site inspection and gain an eyewitness account’.337 Ms Doyle disputed what Mr Harmer said. She said something to the effect of: ‘That’s just not the case’,338 to which Mr Harmer responded by saying that CGU had made ‘reference to this being reflected in call recordings’, was not. That, he said, was a poor use of language. He had not said in the telephone conversation that the facts he asserted were reflected in the call recordings, but rather that the recordings – which he incorrectly assumed existed – could be checked to establish the true situation.339 Mr Harmer agreed that the tone of the conversation had changed, but he denied he had used a threatening tone.340 The conversation came to a conclusion by Ms Doyle’s commenting that CGU was not ‘giving [the protestors] anything’. She said: ‘Well, I guess it’s open season on CGU.’ Mr Harmer replied: ‘Well, you will have to do what you will have to do.’

Mr Harmer’s account that he said there were call recordings which could be checked is not reflected in the letter he sent Ms Doyle dated 1 March 2011. The letter stated that Mr Harmer had indicated to Ms Doyle on 22 February 2011, that the fact that CGU had been working towards a site assessment at her property before she contacted the media, was ‘reflected in call recordings’. He accepted in oral evidence that he did say to Ms Doyle that CGU had been working towards site assessment at her property, as stated in the letter. That sentence was an accurate reflection of what he had said in the conversation on 22 February 2011.341 However, the next sentence, that he had made ‘reference to this being reflected in call recordings’, was not. That, he said, was a poor use of language. He had not said in the telephone conversation that the facts he asserted were reflected in the call recordings, but rather that the recordings – which he incorrectly assumed existed – could be checked to ascertain whether his or Ms Doyle’s version was correct.342 He became aware that, in fact, calls had not been recorded after Ms Doyle’s request was brought to his attention. (He said the claims officer made him aware of the request, by email.343 Mr Harmer was, however, copied into the email Ms Doyle sent to the claims officer on 23 February 2011.)344 He wrote the letter to correct this ‘misleading information’ he had given Ms Doyle.345

Mr Harmer’s account corresponded with Ms Doyle’s except on the critical part of the conversation. His letter to Ms Doyle is consistent with Ms Doyle’s version. Ms Doyle presented as a credible and reliable witness. There is no reason to doubt that she gave her evidence honestly. CGU did not test Ms Doyle’s account in cross-examination, but did point out some differences between Ms Doyle’s evidence, on the one hand, and an earlier statement and questionnaire she provided to the Commission, on the other. The Commission does not consider the differences significant.
Ms Doyle’s account is recorded in a typed note she made in late March 2011, based on handwritten notes she made at the time of the events (which no longer exist).347 But for two incorrect dates (one of which, when drawn to her attention, Ms Doyle accepted was a mistake),348 Ms Doyle’s email to the claims officer on 23 February 2011 contained an otherwise accurate record of her claim. It seems unlikely that Ms Doyle was mistaken when she recorded in that email that Mr Harmer had said to her, the day before, that he had ‘been in receipt of and listened to taped conversations’. Taking all of the evidence into account, the Commission is comfortably satisfied that Ms Doyle’s account reflects the exchange with Mr Harmer on 22 February 2011. Mr Harmer’s conduct was, on this occasion, unprofessional. It seems to have been designed to intimidate Ms Doyle, with an element of bluff (about the existence of recordings). The Commission accepts that it may have been the product of annoyance at what he perceived as an incomplete account of her dealings with the company in the media, rather than any calculated attempt to deter her from persisting with her claim or the more general demands she and others were making.

Comments on the desktop assessment process

The desktop assessment process was designed to deal with flood claims quickly and practically. It may well have done so in many cases: a substantial number of claims was accepted using the process. The controversial aspect of the process – which informed the Commission’s investigation – was the absence of site inspections in cases (which related to significant destruction of people’s homes and loss of property) which were declined.

Assessment of inundation-related claims without inspection of the damage or features of the particular site carries a risk that the complexity of some cases, or some individual circumstances, will be overlooked. Ms Doyle’s claim demonstrated the potential for that to occur, insofar as it appeared the claims officer made a decision during the telephone call on 1 February 2011 that the claim would be declined without proper consideration of the possibility of stormwater damage. CGU continued to assess the claim because Ms Doyle did not accept that decision. On further investigation, a hydrologist considered there may have been some minor stormwater damage, which would have been covered under the policy; but then, after further investigation again, the hydrologist concluded damage had not been caused by stormwater. The initial assessment, on 1 February 2011, therefore turned out to be correct, but the process the claims officer used did not involve proper consideration of the individual circumstances of the claim. It raises the possibility that other claims, of policy-holders not as assertive or persistent as Ms Doyle, could have been determined without proper investigation of individual circumstances.

As part of the review that occurred in February 2011, however, CGU reviewed 497 claims that had been denied by that time, including those denied without a site inspection, to ensure that the decisions had been based on sufficient information. The decisions were also reviewed against hydrology information CGU had received since the claims were denied. None of the decisions was changed.349 Of the 126 claims which have been reviewed in the internal dispute resolution process, only three decisions have been overturned and a site inspection occurred in each of them. (The decisions in those cases were overturned for reasons unrelated to the insurer’s determination of the cause of damage.)

A number of cases, however, are still before the ombudsman – including the three the Commission examined. It must be added, however, that the expert hydrologists the Commission engaged, reviewed one of the cases and considered the information CGU had used to determine the claim adequate. The site-specific hydrology report used in another case was also reviewed and said to be supported by strong evidence.

ASIC indicated to the Commission that, in its view, the triage process appeared to be ‘acceptable’ because:

there is no evidence that assessing a claim under the ‘Desk top triage’ process has adversely affected the outcome of any individual claimant. It also appears to comply with obligations under section 4 of the General Insurance Code of Practice.

This view was based on an explanation given by CGU in correspondence dated 13 May 2011 in response to ASIC’s inquiries. ASIC added that if any ‘claimants had been disadvantaged by the process ASIC would be more likely to consider it a systemic issue’.350

One claim which CGU denied without a site assessment has been overturned by the ombudsman.351 The ombudsman’s determination contains some relevant observations. The ombudsman expressed ‘concern’ that the insurer had not sent a loss assessor to inspect the property. Had an assessor done so, there would have been ‘more detail on the topography and more general information on what occurred’. The ‘failure to assess the claim’ meant the insurer was unable to refute information from the policy-holders that the damage had occurred to the part of
the property furthest from the waterway which the insurer concluded had caused the damage; the insurer could not establish that the flood exclusion applied. The following comment is made in the determination:

The Panel notes a site specific report is not always required and an insurer may rely on a general hydrology report in certain circumstances. However, in doing so, it must still address the specific circumstances of the loss, such as conducting an assessment of the property and gathering evidence to clarify exactly what occurred and when, as well as providing details of the insured address and the topography of the area.

The Commission agrees with this comment and, as stated in the section on site inspections by loss assessors, considers that a site inspection should generally form part of a proper assessment of cause of damage at a particular property before a claim is declined. Otherwise, the comments made in the section on site-specific hydrology reports are relevant in this context.

The Commission accepts that CGU's process was improved by the changes made as a result of the review in February 2011. It notes also that CGU home, contents and landlord policies will include automatic flood cover from February 2012, removing the need for such a process of determination.

12.7.5 RACQ Insurance Limited

A number of RACQ Insurance's policy-holders complained about delay in the handling of claims. The insurer accepted that delay occurred.

The delay is explained, generally, by the large number of claims RACQ Insurance received, the complexity of some cases and the nature of the insurer's assessment process. Hydrological advice was needed for every claim which involved inundation of property, in order to determine whether the inundation was caused by 'flash flood and/or stormwater run-off' (a sudden flood caused by heavy rain that fell no more than 24 hours prior to the flash flood or stormwater run-off) or 'flood' (rising water which enters your home as a result of it running off or overflowing from any origin or cause). That advice was received from a hydrology firm, Water Technology, in the form of 'hybrid' hydrology reports, which covered regional areas but also took into account individual properties of policy-holders within each region. The hybrid reports differed from the area hydrology reports other insurers used in that they assigned a cause of inundation (flood or flash flood or stormwater run-off) to specific properties.

The reports were delivered to RACQ Insurance's solicitors, who considered the reports before providing them to the insurer with legal advice as to whether claims were payable. If Water Technology advised that additional information was needed for some properties, further investigation was then undertaken. In some cases, RACQ Insurance requested that Water Technology carry out further investigation. As those investigations were completed, and as more claims were received, Water Technology provided further reports to RACQ Insurance. The insurer determined a claim when it was satisfied that a report provided sufficient information on which to make a decision.

RACQ Insurance said that a number of difficulties caused delays in this process. One such difficulty was obtaining information and data from local and state authorities. It was in this context that RACQ Insurance explained the re-assessment of 247 claims in Ipswich which had been previously declined. On 2 August 2011, when the insurer announced that it had approved the claims, its media release stated that the decision had been made after 'finally' receiving access to 'new hydrological information' it had been seeking 'since early February'. The new information had been released by Brisbane City Council and upon receiving it, RACQ Insurance had acted 'as soon as possible'.

The 'new information' was in fact Brisbane City Council's Mike-11 hydraulic model of the Brisbane and Bremer Rivers, which the council had made available to RACQ Insurance on 17 May 2011. RACQ Insurance accepted that its media release of 2 August 2011 may have created the impression that other people were responsible for the delay in accepting the claims, but that, the insurer said, was not intentional. Any such impression so far as the Brisbane City Council was concerned would certainly have been unfair; delay in the model's provision, at least over the period from 5 April 2011 to 17 May 2011, was the result of RACQ Insurance's failure to return a user agreement, and then a purchase order.

The Commission examined the circumstances of RACQ Insurance's decisions to decline claims between February 2011, when the use of the Mike-11 model was first sought, and 17 May 2011, when access to the model was provided, to establish whether RACQ Insurance had acted reasonably. To understand the position, it is necessary
to appreciate the state of the expert reporting to RACQ Insurance. In a report provided in March 2011, Water Technology, which RACQ Insurance had engaged to investigate ‘inundation events’ in the Ipswich region, had explained that without the Mike-11 modelling, the effect of ‘tailwater’ from the Brisbane River upstream of the Ipswich gauge could not be established.\(^368\) However, there were locations upstream where the levels of the Bremer River were unlikely to have been affected by the tailwater; they had been identified in a ‘Schedule C’ to the report. There were properties inundated in the lower reaches of the Bremer River where that river’s levels had been elevated by the Brisbane River tailwater; those properties were identified in a document titled ‘Schedule B Part 1’. Of those properties there was a sub-group where in addition to the tailwater effect, a different mechanism might have produced flooding; that sub-group, identified on ‘Schedule B Part 3’, needed further investigation, with a site-specific approach. Then there was another group of properties which appeared to be outside the identified river inundation zone which might or might not have been affected by the elevated Brisbane River tailwater; they were listed on ‘Schedule B Part 2’.

The significance of the effect of the Brisbane River tailwater was that Water Technology had concluded that flooding in the Brisbane River was attributable to releases from Wivenhoe Dam. Water was discharged from the dam to accommodate inflows into the dam due to rainfall; if that rainfall had commenced more than 24 hours before the releases, claims for damage caused by the resulting dam releases into the Brisbane River and consequent elevation of Bremer River levels would not be payable under RACQ Insurance’s household policy. Without the tailwater, Water Technology said, the Bremer River would have been largely contained within its banks.\(^369\) On that basis, and with the information contained in Water Technology’s report, which was provided to RACQ Insurance’s solicitors on 9 March 2011,\(^370\) the insurer declined claims under the flood exclusion on various dates between 18 March 2011 and 30 June 2011.\(^371\)

Water Technology said in its March report that it had made requests to Brisbane City Council, Ipswich City Council and Seqwater for access to the Mike-11 model, but, as at the date its report was written, had received no response. RACQ Insurance’s solicitors followed up on those requests but were not able to obtain the model from Ipswich City Council or Seqwater. The solicitors asked the Brisbane City Council for the use of Mike-11 on 28 February 2011.\(^372\) The council replied, indicating that the request had been referred to the ‘appropriate area’ ‘as a priority’. The council would ‘endeavour’ to respond within 20 working days, and noted the urgency of the request.\(^373\) On 7 March, the insurer’s solicitors wrote to Brisbane City Council again and reiterated the urgency.\(^374\) The council responded on 10 March 2011 in similar terms to its letter dated 28 February 2011: it would endeavour to provide a response and acknowledged the urgency of the request. At this stage, RACQ Insurance had not received any indication that the model would be made available, but nor had any indication been given that its request would be refused.\(^375\) One hundred and forty-two of the Ipswich claims later re-assessed and accepted were declined in mid- to late March 2011.

On 5 April 2011, Brisbane City Council agreed to provide access to the model. It forwarded to RACQ Insurance’s solicitors, by email, a user agreement, requesting that it be signed and returned, together with a purchase order.\(^376\) (The Commission notes that the council’s provision of the model was a sensible step in the public interest.) The agreement was not signed by the principal of Water Technology until 29 April 2011; it was returned to Brisbane City Council on 3 May 2011, but without a purchase order. The insurer’s reason for the delay in returning the agreement was the pressure of work at the time on RACQ Insurance, its solicitors and Water Technology.\(^377\) In the interval between the council’s agreement to provide the model and the return of the agreement, 100 of the Ipswich claims which were eventually re-assessed were declined.\(^378\) Another claim was declined on 10 May 2011.

On 16 May 2011, Brisbane City Council requested the provision of ‘a purchase order number for this job... required by our finance department to initiate the project’. On 17 May 2011, Brisbane City Council provided RACQ Insurance with the means of accessing the model.\(^379\) Three claims were declined on that date.\(^380\)

When it obtained access to Brisbane City Council’s model, Water Technology carried out further investigations and analysis and provided supplementary reports to RACQ Insurance’s solicitors on 6 June 2011 and 14 June 2011. In the end, the result of having the model, and conducting new hydrological analysis, was that the impact of the Brisbane River tailwater was determined to be substantially less than what it was thought to be in the first analysis undertaken.\(^381\) The report of 6 June 2011 recommended acceptance of claims made by nine policy-holders in the Ipswich suburbs of One Mile and Churchill, which were upstream of the Ipswich gauge. Decisions on those claims had been deferred; it was now concluded that the contribution of any Brisbane River tailwater to flooding at the relevant properties was insignificant. The report of 14 June 2011 explained that Water Technology had used...
the Mike-11 model, together with some more detailed terrain information obtained from DERM, and Seqwater’s March flood event report, to simulate the flood over the period between 8 January 2011 and 14 January 2011 and to produce a new set of inundation lines. After RACQ Insurance received the report, it re-assessed a large number of Ipswich claims; the end result was that the 247 previously declined claims were accepted. The cost of the re-assessment was in the region of $20 million.383 RACQ Insurance did not deduct previously made compassionate payments from the insurance payouts of the 197 policyholders who had received them.384

RACQ Insurance justified its decision to proceed to decide claims over the March-May period on the ground that Water Technology’s March report made ‘reasonable conclusions based on the best information available at the time’,385 and provided a ‘reasonable basis for’ declining the claims, notwithstanding Water Technology’s ‘desire to obtain further information’.386 The decision was appropriate, the insurer’s witnesses said, given it was not known whether the model would be made available and, if it did become available, whether it would change Water Technology’s initial conclusions.387

The Commission accepts that for the large majority of the claims of the schedule, it was reasonable for RACQ Insurance to proceed with decisions. They related to properties inundated by the Bremer River in the stretches downstream of the Ipswich gauge, where the river approaches the junction with the Brisbane River. The relevant areas included Barellan Point, Basin Pocket, Booval, Bundamba, East Ipswich, Karalee, Moores Pocket, North Booval, Riverview, and Tivoli.388 The Water Technology report in March had presented the position as clear in relation to those areas; it asserted that they ‘had been impacted by high Brisbane River tailwater levels’, subject to the need for site-specific investigations for the small group where another mechanism might have operated. There was no real reason to suppose that for claims in respect of properties downstream of the Ipswich gauge, the Mike-11 model was likely to make a difference. Timely decision-making was undoubtedly a primary consideration.389 (As discussed in section 12.2.2, the duty of utmost good faith requires that an insurer not delay in determining claims.) There was, the insurer explained, a ‘pressing need’ to make decisions on claims in the Ipswich area.390

But for at least 28 properties in suburbs upstream of the Ipswich gauge, such as Brassall, West Ipswich, Woodend and Leichhardt, the decision to refuse claims in the second half of March and in April is not explained by reliance on Water Technology’s March report. It had said quite clearly that the hydrologists were not able to identify the upstream effect of the tailwater without the Mike-11 model. RACQ Insurance pointed out that it could not have been confident of the use to which Brisbane City Council’s version of the model could be put for Ipswich. The insurer’s chief executive officer said that Water Technology had hoped to obtain data relating to the Bremer River catchment and its configuration as part of the council’s model but did not expect the level of detail provided.391 The general manager, personal insurance claims, for the company similarly said that it was a ‘pleasant surprise’ to obtain the details of the Bremer catchment.392 But it seems that there was some level of expectation that the Brisbane City Council model would assist. In the user agreement submitted to the Brisbane City Council on RACQ Insurance’s behalf, the ‘proposed use of the model’ was described as ‘To assist [RACQ Insurance’s solicitors] and RACQ Insurance in determining inundation mechanisms in Ipswich and Brisbane regions’.393

In respect of the properties flooded by the Bremer upstream of the Ipswich gauge, the Commission has weighed the evidence about the need for timely decision-making and the element of uncertainty about what the model could offer. It does not consider, on the available evidence, that it was reasonable for RACQ Insurance, once it had embarked on an application for the Mike-11 model, to deny that group of claims. And it is worth observing that none of those policy-holders was told when their claims were denied that better information might become available or that Water Technology was carrying out further investigations. RACQ Insurance did not consider giving them the option of waiting on the possibility of new information coming to hand.

12.8 Information to policy-holders whose claims were denied

12.8.1 Provision of reasons

The General Insurance Code of Practice says that insurers will give a policy-holder whose claims are denied written reasons for the decision.394

The extent to which insurers provided reasons in their letters to policy-holders varied. Some insurers’ letters gave an explanation for the decision and referred to the information on which the insurer had relied in reaching the
Other insurers’ letters, however, did little more than state that the claim was denied because damage had been caused by flood, which was not covered by the policy. The explanation given in CGU’s standard letter was limited to the following:

We have carefully reviewed your claim and based on your advice and information available to us, we conclude that the loss for which you have claimed was caused by flood.

The standard letter did not specify the advice the policy-holder had given or the information that was available to CGU. CGU said that the standard letters followed detailed telephone conversations with policy-holders, but that was not evident in one case the Commission examined. In that case, CGU told the Commission it had relied on a range of information to determine the policy-holder’s claim: the policy-holder’s responses to a set of questions, an area hydrology report, an assessor’s report, flood extent mapping provided by the Insurance Council of Australia, aerial photography and Google Maps. The note of the conversation in which CGU advised the policy-holder her claim had been denied does not refer to all of this information. It indicates that CGU told the policy-holder that her claim had been denied on the basis of the loss assessor’s report, which had recently been received. This may not have been an isolated case of CGU’s giving a policy-holder an incomplete explanation. An internal record of a review CGU performed in February 2011 indicates that some customers were not being told of all the information which the insurer had used to decide their claims. CGU conceded that the standard letters it used could be improved.

Another insurer, RACQ Insurance, provided scant reasons to policy-holders whose claims were denied under the flood exclusion. A policy-holder was informed by phone, typically, that the claim had been denied because the insurer had determined that flooding had caused the damage to his or her property, and the policy did not cover flood. The standard letter confirming the decision did not provide any greater explanation. It stated that RACQ Insurance’s investigations had been completed and determined that flood was the cause of damage which was not covered by the policy. The letter set out the definition of ‘flood’ but did not refer to the relevant clauses of the policy which provided and excluded cover. No attempt was made to explain the basis for the conclusion that the damage was caused by flood. Nor did the letters apprise policy-holders of the information on which RACQ Insurance had relied, from which the policy-holder might glean the basis for the conclusion. The letter did advise policy-holders who had any queries or needed more information, to call RACQ Insurance, and provided a telephone number for this purpose.

RACQ Insurance did not regard the letters as being deficient in any respect. The insurer said the letter was consistent with the company’s usual practice and provided all the information that was necessary. It asserted that including any more particular information would have been onerous and extended the time taken to assess claims and advise policy-holders of decisions.

While the Commission acknowledges, given the magnitude of the tasks which insurers had to perform, that some standardisation of communications was essential, it considers that standard letters which do not give any sense of why the cause of inundation was flood, and therefore excluded from cover, do not assist policy-holders to understand the reason for rejection of their claims. A statement in a letter that the property damage was caused by flooding from the river, and not by stormwater, and that river flooding was excluded from the policy’s coverage, would have been more informative and would give a policy-holder some sense of why his or her claim was rejected.

If standard letters such as those discussed in the preceding paragraphs are to be regarded as meeting the code’s obligation to give reasons, they deprive that obligation of any meaningful content. They are not helpful, particularly when the complexity of flood claims and policy terms is considered, and given also that the code intends that a policy-holder will have the opportunity to review the information on which his or her insurer relied in assessing the claim.

At a minimum, letters telling policy-holders that their claims have been denied should advise them of the information on which the insurer relied to reach the decision. The letters should also advise policy-holders that they can request copies of that information, and how to do so.
12.8.2 Provision of information

Section 3.4.3 of the Code of Practice is the only section in the code which imposes an obligation on insurers to make material available to a policy-holder in the assessment stage. It states that:

You will have access to information about you which we have relied on in assessing your claim and an opportunity to correct any mistakes or inaccuracies. In special circumstances or where a claim is being or has been investigated, we may decline to release information and reports but we will not do so unreasonably. In these circumstances, we will give you reasons and you will have the right to request a review of our decision through our complaints handling procedures. We will provide our reasons in writing upon request.407

There is a corresponding provision in the section in the Code dealing with complaints handling procedures.408

Some insurers provided policy-holders with copies of the information on which they had relied with the letter confirming decisions to deny claims.409 Other insurers only provided material on request.410 That approach is consistent with the code, which does not require insurers to offer, unsolicited, copies of information on which they rely in assessing claims. The code also states that insurers may refuse to provide copies of material if ‘special circumstances’ apply; for example, if the material is ‘subject to privacy laws’ or ‘protected from disclosure by law’.

In its submission to the Natural Disaster Insurance Review, the ombudsman stated that ‘as a general rule with the Queensland floods, the insurers have provided early access to the information and in particular hydrology information relied upon. Where this information has not been provided this has led to a considerable level of complaints’.411

RACQ Insurance withheld its hydrology reports, for a time, from policy-holders, their lawyers and the Financial Ombudsman Service, on the grounds of legal professional privilege and protection of privacy.412 The insurer maintained its refusal to release the reports until the ombudsman indicated, that if the reports were not disclosed, adverse inferences might be drawn against the insurer in the ombudsman’s resolution of disputes. The reports were provided to the ombudsman in mid-July 2011.

RACQ Insurance had, in lieu of the full hydrology reports, given policy-holders who requested copies of reports, summaries of the conclusions expressed in the reports in ‘plain English’. For any matter before the ombudsman, RACQ Insurance provided to the ombudsman and policy-holder statements by its hydrologist, instead of the full hydrology report.413

The ombudsman is considering whether RACQ Insurance’s actions in withholding the hydrology reports give rise to a systemic issue.414 The insurer’s position is that it was, at all relevant times, entitled to claim legal professional privilege, and that there had been no breach of the code.415

The right to claim legal professional privilege is fundamental,416 and is not abrogated in any way by the Insurance Contracts Act 1984 or the code. The Commission makes no finding that RACQ Insurance was not entitled to claim privilege.

On the other hand, insurers are not obliged to claim privilege. There are good reasons for an insurer, in both its own interests and that of its policy-holders, to consider the wisdom of standing on privilege so as to refuse disclosure of information relied on in its decision-making. Hydrology reports, in particular, are fundamental to a policy-holder’s understanding of the refusal of a claim based on a distinction between flood and storm-water inundation; and to enabling him or her to make an informed decision as to whether to pursue internal and/or external review.417 Their prompt disclosure may assuage policy-holders’ doubts about whether their claims have been properly rejected, avoiding dispute.

The Commission notes that, on 10 October 2011, the Insurance Council Board agreed in principle to an amendment of the code to the effect that insurers will make hydrology and other expert reports used to determine claims available to policy-holders within ten business days of receiving the reports. The Commission generally supports the proposed amendment, but it has not seen its precise terms and does not know how it would apply to the circumstances of the case mentioned above.

The Commission also notes that clause 3.4.3 gives policy-holders the right to request a review of an insurer’s decision to refuse to release copies of information, but does not impose any obligation on insurers to inform policy-holders of their right to do so. The code should be amended to correct the omission.
Recommendations

12.3 Letters notifying policy-holders that their claims have been denied should, at a minimum, state the information upon which the insurer has relied in making the decision. These letters should also advise policy-holders that copies of the information will be made available upon request (in accordance with clause 3.4.3 of the General Insurance Code of Practice) and indicate how policy-holders can make a request.

12.4 The Insurance Council of Australia should consider an amendment to Part 3 of the code which requires insurers to notify policy-holders of the information on which they relied in assessing claims.

12.5 The Insurance Council of Australia should amend clause 3.4.3 of the General Insurance Code of Practice so that it requires insurers to inform policy-holders of their right to request a review of an insurer’s decision to refuse to provide access to information on which it relied in assessing claims.

12.9 Internal dispute resolution

The obligation on insurers to offer internal dispute resolution as part of their claims handling procedures is discussed in 12.2.2 The Insurance Contracts Act 1984.

The Commission received evidence from insurers detailing their internal dispute resolution procedures.418 As would be expected, there were differences in some of the detail of the procedures, but the key aspects of the process were consistent across insurers; a description follows.

If an insurer denies (or partially denies) a claim, a policy-holder is entitled, on request, to an independent review of the decision through the insurer’s internal dispute resolution procedure. On internal review, an internal dispute officer considers all the information contained in the policy-holder’s file (including expert reports) and requests any further information required. The decision made upon internal review is binding and cannot be challenged by the insurer. If the claim is denied at internal review, the insurer must outline the reasons for the decision and advise that the policy-holder is entitled to have the decision reviewed by the Financial Ombudsman Service.

In some cases the Commission considered, further evidence was obtained on internal review in the form of site-specific hydrology reports.419 By way of example, in one case, a site-specific hydrology inspection and report were commissioned when the policy-holder disputed the finding that the cause of the inundation was flood because of the location of his property.420 In another case, the insurer obtained a supplementary site-specific hydrology report after the policy-holder provided further information to the insurer, including an engineer’s report and flood maps, which raised doubts as to the cause of the inundation.421

The Commission received evidence from an AAMI policy-holder who complained that during the internal review process, he provided a written submission to AAMI which was not passed onto a hydrologist for further opinion. The initial claim was denied on the strength of a site-specific hydrology report in which the hydrologist concluded that the cause of the property’s inundation was overflow from a local creek, and was, in consequence, flood, excluded under the policy.422 The hydrology report concluded that the level of stormwater would have been insufficient to inundate the property above floor level.423

The policy-holder wrote to AAMI challenging that conclusion: he queried the validity of the hydrologist’s assumptions, particularly questioning the adequacy of the rainfall data, and the conclusions made in consequence of reliance on that data.424 He also suggested that a three metre stormwater drain in the vicinity, a photograph of which he attached, was significant and should have featured in the report (which it did not). The hydrology report attached an annotated aerial photograph described as depicting ‘[d]rainage features in the vicinity of the subject property’. The stormwater drain does not appear to be depicted within it.

The internal review officer was aware that seeking a further report from the hydrologist would delay the review by approximately six to eight weeks. He considered that course not justified because he had formed the view that:

- The information in the AAMI’s policy-holder’s submission had already been considered by the hydrologist (he assumed that the hydrologist must have had regard to the stormwater drain, although
the hydrologist did not expressly mention it in the hydrology report), was directly contradicted by information in the hydrologist's report, or was not of a kind likely to result in the hydrologist’s changing his mind.

- The evidence was of sufficient strength to make a decision on the available material without seeking a further report from the hydrologist.

The internal review officer had some training in reading hydrology reports, but was not an expert in matters of hydrology and was not in a position to determine whether the factual issues raised by the policy-holder were relevant to the hydrologist's opinion as to cause of inundation. That he was not qualified to determine such issues seems implicit in his letter to the policy-holder, which stated that he was guided by the expert qualified opinion of the hydrologist. Nevertheless, he did not seek such guidance when presented with the policy-holder's specific challenge to the hydrologist's report. And while the Commission accepts that there were delays in obtaining site-specific reports of up to eight weeks or more, it seems unlikely that it would have taken six to eight weeks for the hydrologist to advise whether the additional information provided by the AAMI policy-holder might affect his determination. There was no evidence of a pressing need to conclude the internal review in advance of the time it would take to receive and consider further hydrology advice.

The Commission is not in a position to say whether the additional information would have altered the result of the claim. However, as a matter of prudence and fairness, where a policy-holder provides information which appears relevant to the cause of inundation, claims officers and internal review officers should refer that information to any reporting hydrologist for consideration.

(Endnotes)

1 Natural Disaster Insurance Review, Inquiry into flood insurance and related matters, September 2011 [p1].

2 Natural Disaster Insurance Review, Inquiry into flood insurance and related matters, September 2011 [Recommendations 1, 8 and 11; see also p29: para 2.4 and 2.5].

3 Natural Disaster Insurance Review, Inquiry into flood insurance and related matters, September 2011 [Recommendation 25; see also p74: para 9.7].


6 Statement of Paul Fahey (CommInsure – Response to question 30), 23 September 2011 [Appendix A]; Exhibit 892, Second Affidavit of Graham Dale (RACQ Insurance Limited), 19 September 2011 [para 125].

7 Exhibit 892, Second Affidavit of Graham Dale (RACQ Insurance Limited), 19 September 2011, Exhibit 3 [p28].

8 Exhibit 892, Second Affidavit of Graham Dale (RACQ Insurance Limited), 19 September 2011, Exhibit 3 [p27].

9 Pye v Metropolitan Coal Co Ltd (1934) 50 CLR 614, 625.

10 To be a ‘proximate cause’ the cause must be ‘direct, real or commonsense, dominant, effective or operative’. A cause can be the proximate cause, whether or not it is the closest cause in time: D Derrington and R Ashton, The Law of Liability Insurance, Lexis Nexis Butterworths, 2005 (2nd edition) [p490-491]; see Elilade Pty Ltd v Nonpareil Pty Ltd [2002] FCA 909 [para 55].


12 Elilade Pty Ltd v Nonpareil Pty Ltd [2002] FCA 909 [para 52-53].

13 Commonwealth Treasury, Reforming flood insurance: A proposal to improve availability and transparency, Consultation paper, November 2011 [p3].
14 Section 51(xiv) Constitution of the Commonwealth of Australia.

15 It commenced on 1 January 1986.


21 Section 1017G, *Corporations Act 2001*.

22 Australian Securities and Investments Commission, Regulatory Guide 165 Licensing: Internal and external dispute resolution, April 2011.


24 Exhibit 587, General Insurance Code of Practice [section 7.7]. See also sections 7.8 to 7.23.

25 Foreword, General Insurance Code of Practice.

26 Section 1.19 of the General Insurance Code of Practice states: ‘The objectives of this code will also be pursued and its provisions applied having regard to the fact that a contract of insurance is a contract involving the utmost good faith which requires each party to the contract to act towards the other party with the utmost good faith in respect of any matter arising under the contract.’

27 Exhibit 587, General Insurance Code of Practice [section 3.2].

28 Exhibit 587, General Insurance Code of Practice [section 6.9].

29 Exhibit 587, General Insurance Code of Practice [section 3.4].

30 Exhibit 587, General Insurance Code of Practice [p15].

31 Exhibit 587, General Insurance Code of Practice [sections 4.1, 4.3].

32 Exhibit 587, General Insurance Code of Practice [section 4.2].

33 Exhibit 587, General Insurance Code of Practice [sections 6.6-6.9].

34 Financial Ombudsman Service, Terms of Reference, 10 January 2010 (as amended by 1 January 2012) [para 8.1-8.9].

35 One witness giving evidence at a public hearing commended his insurer’s performance (Transcript, Graham Spackman, 29 September 2011, Emerald [p3403: line 40]).

36 The eight insurers defined ‘household claims’ as follows.

- AAMI defined ‘household claims’ as ‘claims for damage to home and contents items covered by the following AAMI home and contents policies’ relating to residential properties: Home Building Insurance Policy; Home Contents Insurance Policy; Fire and Theft Contents Insurance Policy; Landlord Insurance Policy; Strata Title Landlord Insurance Policy.

- Allianz Australia Insurance Limited defined ‘household claims’ as ‘building or contents claims on policies that provide cover for domestic home buildings and contents’ including ‘domestic home buildings and contents written under landlords and rural products’.

- CGU Insurance Limited defined ‘household claims’ as ‘all home buildings, home contents (including valuables), and landlords claims’.

- CommInsure defined ‘household claims’ as residential and investment policies providing home buildings and home contents cover.

- NRMA Insurance defined ‘household claims’ as ‘all home buildings, home contents, landlord buildings and landlord contents claims’.

- QBE Insurance (Australia) Limited defined ‘household claims’ as ‘all claims related to home building &/or home contents risks’.

- RACQ Insurance Limited’s defined ‘household claims’ as claims made under its ‘household insurance policy’.

- Suncorp Metway Insurance Limited defined ‘household claims’ as ‘claims for damage to
home and contents items covered by the following Suncorp home and contents policies’ relating to residential properties: Classic Home & Contents; 55UP Home & Contents; Platinum Home & Contents; Investor Home & Contents.

37 Exhibit 742, Statutory Declaration of James Merchant (CGU Insurance Limited), 22 September 2011, Annexure 3 [para 41].

38 See correspondence from the Australian Securities and Investments Commission to CGU Insurance Limited, dated 20 April 2011, and CGU’s response, dated 13 May 2011, provided by CGU in response to a Commission Requirement, 14 October 2011.

39 Correspondence from CGU Insurance Limited to the Australian Securities and Investments Commission, dated 30 June 2011, provided by CGU in response to the Commission Requirement, 14 October 2011; Statutory Declaration of Dion Gooderham (CGU Insurance Limited), 21 November 2011 [p5: para 30-32].

40 Correspondence from the Australian Securities and Investments Commission to CGU Insurance Limited, dated 3 August 2011, provided by CGU in response to a Commission Requirement, 14 October 2011.

41 Statement of Gregory Kirk (Australian Securities and Investments Commission), 5 October 2011, Annexure 4G.

42 Correspondence between Financial Ombudsman Service and CGU Insurance Limited, various dates, provided by CGU in response to a Commission Requirement, 14 October 2011.

43 Correspondence from the Financial Ombudsman Service to CGU Insurance Limited, dated 14 July 2011, provided by the Financial Ombudsman Service. Under its terms of reference, the Financial Ombudsman Service ‘must identify systemic issues and refer [them] to the relevant Financial Services Provider [in this case, an insurer] for remedial action’. It must also report systemic issues to ASIC. A systemic issue is ‘an issue that will have an effect on other persons…beyond the parties to the Dispute’. The correspondence dated 14 July 2011 states, ‘A dispute has been referred to me as raising a possible systemic issue. I will be responsible for investigating the matter’. The letter states elsewhere: ‘This possible systemic issue was investigated recently…’.

44 Correspondence from the Financial Ombudsman Service to CGU Insurance Limited, dated 26 August 2011, provided by CGU in response to a Commission Requirement, 14 October 2011.

45 Exhibit 742, Statutory Declaration of James Merchant (CGU Insurance Limited), 22 September 2011, Annexure 3 [para 15, 16].

46 Transcript, James Merchant, 6 October 2011, Brisbane [p3816: line 25 – p3819: line 45].

47 Consistent with its terms of reference, the Commission defined the 2010/2011 floods as the floods that occurred in Queensland in December 2010 and January 2011.

48 The total number of residential and commercial claims across ‘all classes’ encompassed residential building, residential contents, domestic motor, domestic other, commercial property, commercial vehicles, business interruption and commercial other claims. Domestic and commercial ‘other’ claims include a variety of small insurance classes, including landlords insurance, farm and rural insurance and marine insurance (Statutory Declaration of Robert Whelan, 2 December 2011 [para 12-13]). The data does not include mining and heavy manufacturing claims (Statutory Declaration of Robert Whelan, 2 December 2011 [para 11]).

49 The Insurance Council of Australia defined the ‘Queensland floods’ as including:

- inundation in regional Queensland (including Ipswich) from 21 December 2010 to 14 January 2011
- inundation in the Lockyer Valley and Toowoomba from 10-11 January 2011
- inundation in the Brisbane local government area from 21 December 2010 to 14 January 2011 (Statutory Declaration of Robert Whelan, 2 December 2011 [para 3-4]).

50 The Insurance Council took ‘residential claims’ to mean residential building claims only, including claims for non-body corporate policies and visualised as claims arising from standalone or duplex properties in domestic use (Statutory Declaration of Robert Whelan, 2 December 2011 [para 23]).

51 The companies which were included were: Insurance Australia Group, Allianz Australia Insurance Limited, Auto & General Insurance, Catholic Churches Insurance, FM Global Insurance, Progressive Direct, Westpac Insurance,

52 Statutory Declaration of Robert Whelan, 2 December 2011 [para 10].

53 Figure 12(a) includes withdrawn claims for all insurers but RACQ Insurance Limited, which did not include withdrawn claims in its data. Withdrawn claims totalled 2,916 claims (13 per cent of N). Insurers counted composite home and contents claims differently. Four insurers – AAMI, QBE Insurance (Australia) Limited, RACQ Insurance Limited and Suncorp Metway Insurance Limited – counted composite home and contents claims as a single claim. The other insurers – Allianz Australia Insurance Limited, CGU Insurance Limited, NRMA Insurance and CommInsure – recorded composite claims as two separate claims: one home building claim and one contents claim. So, for every home and contents claim recorded by the first group of insurers, two claims were recorded by the second group – inflating the totals of the second group when compared with the first.

54 ‘Storm’ is defined in RACQ Insurance Limited’s Household Insurance Policy as ‘A violent disturbance of the atmosphere associated with strong winds including a cyclone, lightning, heavy rain, hail or snow, but not continuous bad weather by itself’ (Exhibit 892, Second Affidavit of Graham Dale (RACQ Insurance Limited), 19 September 2011 [p37: para 194]). QBE Insurance (Australia) Limited received approximately 7000 claims from Cyclone Yasi and 4500 claims from the Victorian Storms (Statutory Declaration of Shaun Standfield, 22 September 2011 (QBE Insurance (Australia) Limited), Annexure B [para 18]). AAMI received over 3050 claims for Cyclone Yasi (Exhibit 872, Statement of James Higgins (AAMI), 14 September 2011 [para 81]). NRMA Insurance received over 1000 (Exhibit 745, Statutory Declaration of Dominic Dower (NRMA Insurance), 23 September 2011 [para 79]).

55 In September 2011, QBE Insurance (Australia) Limited indicated that it received approximately 4000 claims from the 2010/2011 floods, a far greater number than indicated in Figure 1 (Statutory Declaration of Shaun Standfield, 22 September 2011 (QBE Insurance (Australia) Limited), Annexure B [para 18]). AAMI indicated that from the flooding in central and south east Queensland it received 1736 claims, of which approximately 1200 were paid and settled (Exhibit 874, Statement of James Higgins (AAMI), 13 October 2011 [p9: para 39]).

56 Exhibit 892, Second Affidavit of Graham Dale (RACQ Insurance Limited), 19 September 2011 [p37: para 194], QBE Insurance (Australia) Limited received approximately 7000 claims from Cyclone Yasi and 4500 claims from the Victorian Storms (Statutory Declaration of Shaun Standfield, 22 September 2011 (QBE Insurance (Australia) Limited), Annexure B [para 18]). AAMI received over 3050 claims for Cyclone Yasi (Exhibit 872, Statement of James Higgins (AAMI), 14 September 2011 [para 81]). NRMA Insurance received over 1000 (Exhibit 745, Statutory Declaration of Dominic Dower (NRMA Insurance), 23 September 2011 [para 79]).

57 Residential and commercial claims.


59 Figure 12(b) excludes all outstanding and withdrawn claims. Seven of the eight insurers recorded claims accepted in part as ‘accepted’ claims. Allianz Australia Insurance Limited records partially accepted claims differently: these claims were counted in its data as ‘declined’ claims.

60 As for Figure 12(b), Figure 12(c) excludes all outstanding and withdrawn claims. Seven of the eight insurers recorded claims accepted in part as ‘accepted’ claims. Allianz Australia Insurance Limited records partially accepted claims differently: these claims were counted in its data as ‘declined’ claims.

61 All percentages are rounded upwards to the nearest whole percentage point. As for figures 12(b) and 12(c), Figure 12(d) excludes all outstanding and withdrawn claims. Seven of the eight insurers recorded claims accepted in part as ‘accepted’ claims. Allianz Australia Insurance Limited records partially accepted claims differently: these claims were counted in its data as ‘declined’ claims.

62 The terms of cover were: ‘Storm and rainwater including stormwater runoff from areas surrounding the site, or water escaping from any water main, drain, pipe, street gutter, guttering or surface. Storm means violent wind (including a cyclone or tornado)’. ‘Flood’ was defined in AAMI’s home building insurance policies and home contents insurance policies as: ‘the inundation or covering of normally dry land by water which:’
• escapes or overflows from, or
• cannot enter (because it is full or has overflowed), or
• is prevented from entering (because other water has already escaped or been released from it) the normal confines of any watercourse or lake, including any that may have been modified by human intervention, or reservoir, canal, dam or stormwater channel.

Flood does not mean stormwater runoff from areas surrounding the site or water escaping from any water main, pipe, street gutter, guttering or surface.’

63 Allianz Australia Insurance Limited policies provided cover for ‘storm, rainwater or run-off’ where ‘storm’ was defined as ‘violent wind (including cyclones and tornadoes), thunderstorms and hail which may be accompanied by rain or snow’; ‘rainwater’ was defined as ‘rain falling naturally from the sky onto the buildings and/or ground’; and ‘run-off’ was defined as ‘rainwater that has collected on or has flowed across normally dry ground...’ Other polices provided cover for ‘storm, rainwater, hail or wind’, or ‘storm (including cyclone or hurricane) and/or rain, which may be accompanied by... hail’, or ‘storm, tempest, rainwater, wind, hail or tornado, cyclone’.

The declined claims shown in figures 12(c) and 12(d) were declined under the flood exclusion or some other policy exclusion (such as wear and tear, or subsidence, for example). The definition of ‘flood’ in Allianz Australia Insurance Limited’s generic domestic home policy was: ‘the inundation of normally dry land by water that has escaped or has been released from the normal confines of any natural watercourse, lake or lagoon whether or not altered or modified or of any reservoir, canal or dam’.

Some policies excluded loss or damage caused by ‘flood water combined with run-off and/or rainwater’.

64 Claims accepted by CGU Insurance Limited were accepted on the basis of one of the following events (depending on the policy): ‘storm, rainwater or wind’; ‘storm (including cyclone or hurricane) and/or rain...’; ‘storm, tempest, rainwater, wind, hail, tornado, cyclone or hurricane’. The most common definition of ‘flood’ in CGU Insurance Limited’s policies was: ‘the covering of normally dry land by water escaping or released from the normal confines of a watercourse or lake, whether or not it is altered or modified. Flood also includes water escaping from the confines of any reservoir, canal, canal or dam’.

Slightly different definitions were used in two policies. One was: ‘the inundation of normally dry land by water escaping from any watercourse, lake, canal, dam or reservoir. Flood does not include inundation from rainwater that cannot flow into a stormwater drain because the drain is blocked or backed up’.

65 NRMA Insurance’s policies defined ‘storm’ as ‘a violent wind, cyclone, tornado, thunderstorm or hail... or a sudden, excessive run-off of water as a direct result of a storm in your local area. It does not include persistent rain by itself’. ‘Flood’ was defined as: ‘the covering of normally dry land by water escaping or released from the normal confines of a watercourse or lake, whether or not it is altered or modified. Flood also includes water escaping from the confines of any reservoir, channel, canal or dam’.

66 ‘Flood’, or ‘River flood’ was generally defined as: ‘the inundation of normally dry land by water escaping from any watercourse, lake, canal, dam or reservoir’; or as ‘when water that is normally contained in a water catchment system increases because of rainfall or snow melt (whether in the immediate region or elsewhere) or is deliberately released by an authority, and the water overflows onto land that is not normally covered by water into your home’.

67 Defined as: ‘A sudden flood caused by heavy rain that fell no more than 24 hours prior to the flash flood or stormwater run-off’.

68 Defined as: ‘Rising water which enters your home as a result of it running off or overflowing from any origin or cause’.

69 ‘Flash flood’ was defined as: ‘The overflow of any lake, river, creek, stormwater channel, canal or any other watercourse (whether natural, altered or man made), caused by a storm, where the flooding occurs within 24 consecutive hours of the storm having commenced.’

CommInsure also covered damage caused by ‘storm’, defined as:

A violent wind (including cyclones), sometimes combined with thunder, heavy falls of rain, hail or snow; or
Thunderstorms or hailstorms, sometimes accompanied by heavy falls of rain or snow. It is not persistent bad weather or heavy or persistent rain by itself.

70 Defined as: ‘The inundation of normally dry land by water which has overflowed, escaped or been released from a lake, river, creek, storm water channel, canal or any other watercourse whether natural, altered or man made.’

71 Figure 12(e) excludes all claims received by Suncorp. Figure 12(e), like figures 12(b) to 12(d), excludes all outstanding and withdrawn claims. Six of the seven insurers recorded claims accepted in part as ‘accepted’ claims. Allianz Australia Insurance Limited records partially accepted claims differently; these claims were counted in its data as ‘declined’ claims.


73 Seven of the eight insurance providers treated disputes resolved by way of mutual agreement as being resolved in favour of the insured. CGU Insurance did not have any claims that were resolved by way of mutual agreement.

74 Total disputed claims across the eight insurers was 1331, as shown in Figure 12(f). Total decided claims across the eight insurers was 19833, as shown in figures 12(b) to 12(d).

75 Section 35 of the Insurance Contracts Act 1984 requires an insurer to clearly inform a policyholder, before the insurance contract is entered into, of the terms of the contract that differ from the standard terms of a prescribed contract under the Insurance Contract Regulations 1985. A contract for home buildings and home contents insurance is a prescribed contract under the regulations. The regulations prescribe that such contracts include flood insurance. Under s 35 of the Act, if an insurer fails to clearly inform a policyholder that flood is excluded from cover, the insurer is not entitled to rely on the exclusion.


78 Exhibit 587, General Insurance Code of Practice [section 3.1].

79 Exhibit 587, General Insurance Code of Practice [section 3.2.5].

80 Exhibit 587, General Insurance Code of Practice [section 3.3].

81 Exhibit 587, General Insurance Code of Practice [section 4.3].

82 Natural Disaster Insurance Review, Inquiry into flood insurance and related matters, September 2011 [p24; para 1.35]. This statement was based on unpublished data the Insurance Council of Australia provided to the Review Panel.

83 Statutory Declaration of Shaun Standfield (QBE Insurance (Australia) Limited), 23 September 2011, Annexure B [para 18].

84 For example, two claims were determined in two months: Raymond Byron (2 months): see Exhibit 591, Third Affidavit of Graham Dale (RACQ Insurance Limited), 14 September 2011 [para 8]; Michael Gourley (2 months): see Exhibit 898, Ninth Affidavit of Graham Dale (RACQ Insurance Limited), 19 October 2011, Exhibit 5.

Six claims were determined in two to three months: Robert Clements (2 months, 5 days): see Exhibit 649, Letter from Allianz Australia Insurance Limited to Robert Clements, 18 March 2011 and Statement of Garry Townsend (Allianz Australia Insurance Limited), 16 September 2011 [para 3.6]; Attachment 1.2; Gary Lobley (2 months, 2 weeks): see Exhibit 878, Statement of James Higgins (AAMI), 13 October 2011 [para 8 and 10-15]; Kristy Sihvola (2 months, 3 weeks): see Exhibit 891, First Affidavit of Graham Dale (RACQ Insurance Limited), 1 September 2011 [para 6 and 26]; Lynn Doyle (2 months, 3.5 weeks): see Exhibit 626, Statutory Declaration of James Merchant (CGU Insurance Limited), 22 September 2011 [para 4 and 6]; Leslie Cameron (2 months, 3.5 weeks): see Exhibit 897, Seventh Affidavit of Graham Dale (RACQ Insurance Limited), 13 October 2011, Exhibit 5; Dennis Ward (3 months): see Exhibit 879, Statement of James Higgins (AAMI), 3 October 2011 [para 8].

Three claims were determined in three to four months: Sharron Campbell (3 months, 1 week): see Exhibit 719, Statutory Declaration of Matthew Jarrett (NRMA Insurance), 22 September 2011 [para 18 and 33]; Sallyanne Doyle (3 months, 2 weeks): see Exhibit 717, Statutory Declaration of James Merchant (CGU
Three claims were determined in four to five months: Colin Sharp (4 months, 2 weeks); see Exhibit 851, Eighth Affidavit of Graham Dale (RACQ Insurance Limited), 15 October 2011, Exhibit 3; Thomas Fischer (4 months, 3.5 weeks); see Exhibit 593, Statutory Declaration of Shaun Standfield (QBE Insurance (Australia) Limited), 14 September 2011, Attachment 2; Josephine Sledge (4 months, 3.5 weeks); see Exhibit 896, Sixth Affidavit of Graham Dale (RACQ Insurance Limited), 13 October 2011 [para 13 and 104].

QBE Insurance (Australia) Limited indicated that it took, on average, 35 business days to determine claims arising from the 2010/2011 floods, but that if a site-specific hydrology report were not required, claims would generally be determined in less than 35 business days. If a site-specific report were obtained, determinations may have taken more than 35 business days (Statutory Declaration of Shaun Standfield (QBE Insurance (Australia) Limited), 23 September 2011, Annexure B [para 12.3.3]).

QBE Insurance (Australia) Limited indicated that it took, on average, 35 business days to determine claims arising from the 2010/2011 floods, but that if a site-specific hydrology report were not required, claims would generally be determined in less than 35 business days. If a site-specific report were obtained, determinations may have taken more than 35 business days (Statutory Declaration of Shaun Standfield (QBE Insurance (Australia) Limited), 23 September 2011, Annexure B [para 12.3.3]).

As for Figure 12(g), Figure 12(h) includes outstanding claims, but does not include withdrawn claims. All percentages are rounded upwards to the nearest whole percentage point. All references to ‘days’ includes business days only. ‘Months’ means calendar months.

Excluding withdrawn claims.

As for Figure 12(g), Figure 12(h) includes outstanding claims, but does not include withdrawn claims. All percentages are rounded upwards to the nearest whole percentage point. All references to ‘days’ includes business days only. ‘Months’ means calendar months. The timeframes in Figure 8 are not definitive because different insurers took different approaches to what constituted a ‘decision’ date. Five of the seven insurers – CGU Insurance Limited, NRMA Insurance, CommInsure, Allianz Australia Insurance Limited and QBE Insurance (Australia) Limited – provided data indicating the time taken to determine liability and also communicate the decision to policy-holders. Generally policy-holders were informed of the decision on the same day it was made, or only a short time afterwards. One insurer (Allianz Australia Insurance Limited), however, said that the time between making a decision to decline a claim and notifying the policy-holder of the decision, could be as many as eight days. RACQ Insurance Limited’s data did not encompass when decision dates were communicated to policy-holders. It indicated when the General Manager for Personal Insurance Claims made decisions about liability and conveyed those decisions to the claims officers. The insurer said, however, decisions were generally communicated to policy-holders soon after they were made.

This excludes withdrawn claims but includes outstanding claims.

For example, 96 per cent of Allianz Australia Insurance Limited claims decided in 10 days or less were accepted and 85 per cent of Allianz Australia Insurance Limited claims decided...
within one month were accepted; 95 per cent of RACQ Insurance Limited claims decided in 10 days or less were accepted and 93 per cent of RACQ Insurance Limited claims decided within one month were accepted; 94 per cent of CommInsure claims decided in 10 days or less were accepted and 61 per cent of claims decided within one month were accepted; 70 per cent of CGU Insurance Limited claims decided in 10 days or less were accepted and 64 per cent of claims decided within one month were accepted.

97 Figure 12(i) excludes outstanding and withdrawn claims. Five of the six insurers recorded claims accepted in part as ‘accepted’ claims. Allianz Australia Insurance Limited records partially accepted claims differently; these claims were counted in its data as declined claims. RACQ Insurance Limited was instructed to treat 247 Ipswich claims, which were originally declined but later accepted in bulk in August 2011, as accepted claims. For details, see section on Ipswich re-assessment.

As for figures 12(g) and 12(h):

- All percentages are rounded upwards to the nearest whole percentage point.
- All references to ‘days’ includes business days only. ‘Months’ means calendar months.
- The timeframes in Figure 8 are not definitive because different insurers took different approaches to what constituted a ‘decision’ date. Five of the seven insurers – CGU Insurance Limited, NRMA Insurance, CommInsure, Allianz Australia Insurance Limited and QBE Insurance (Australia) Limited – provided data indicating the time taken to determine liability and also communicate the decision to policy-holders. Generally policy-holders were informed of the decision on the same day it was made, or only a short time afterwards. One insurer (Allianz Australia Insurance Limited), however, said that the time between making a decision to decline a claim and notifying the policy-holder of the decision, could be as many as eight days. RACQ Insurance Limited’s data did not encompass when decision dates were communicated to policy-holders. It indicated when the General Manager for Personal Insurance Claims made decisions about liability and conveyed those decisions to the claims officers. The insurer said, however, decisions were generally communicated to policy-holders soon after they were made.


100 Figure 12(j) includes outstanding claims, but does not include withdrawn claims. All percentages are rounded upwards to the nearest whole percentage point. All references to ‘days’ includes business days only. ‘Months’ means calendar months.

101 Figure 12(k) excludes outstanding and withdrawn claims. All percentages are rounded upwards to the nearest whole percentage point. All references to ‘days’ includes business days only. ‘Months’ means calendar months.

102 The Commission did not compare the data AAMI provided with that of other insurers concerning finalisation of claims because it was not able to be satisfied, at the time of writing, that the data was comparable.

103 The Insurance Council of Australia took ‘residential claims’ to mean residential building claims only, including claims for non-body corporate policies and visualised as claims arising from standalone or duplex properties in domestic use (Statutory Declaration of Robert Whelan, 2 December 2011 [para 23]).

104 As at 24 November 2011. Across residential and commercial claims, 86 per cent of claims had been ‘closed’ and 14 per cent remained ‘open’. See Insurance Council of Australia, General insurance claims response – 2010/2011 Queensland floods and cyclone, 24 November 2011 [p2-3]. The Insurance Council of Australia’s report is available online at www.insurancecouncil.com.au. NRMA Insurance indicated to the Commission that 97 per cent of all accepted claims had been finalised as at 1 December 2011. RACQ Insurance Limited informed the Commission that, as at 30 September 2011, it had finalised 91 per cent of household claims arising from the 2010/2011 floods (Exhibit 893, Updated Table – RACQ Insurance Limited Finalisation Table as at 30 September 2011).

105 The Insurance Council of Australia did not seek further clarification as to how individual insurers interpret and record ‘open’ or ‘closed’
claims. The Commission’s experience was that different insurers record the finalisation date of claims at different times: some when the decision is finalised internally and others when the decision is communicated to the customer and the customer’s file is closed on the insurer’s records system. There is some potential, based on the Commission’s experience, that some insurers interpreted ‘closed’ claims as encompassing more or fewer claims than other insurers.

106 Figure 12(l) includes outstanding claims, but does not include withdrawn claims. All percentage points are rounded upwards to the nearest whole percentage point. ‘Months’ means calendar months.

107 Figure 12(m) includes outstanding claims, but does not include withdrawn claims. All percentage points are rounded upwards to the nearest whole percentage point. ‘Months’ means calendar months.

108 CGU Insurance Limited indicated that manual processing of invoices generally took three business days.


110 Figure 12(n) includes outstanding claims, but does not include withdrawn claims. All percentage points are rounded upwards to the nearest whole percentage point. ‘Months’ means calendar months. In this figure, ‘finalised’ claims only include claims that have been closed. It does not include claims where partial or progress payments have been made.

111 The duty of utmost good faith does require insurers to settle claims promptly (Moss v Sun Alliance Aust Ltd (1990) 55 SASR 145).


114 Exhibit 587, General Insurance Code of Practice [sections 6.2, 6.6].

115 Exhibit 587, General Insurance Code of Practice [sections 6.3, 6.7].

116 Exhibit 587, General Insurance Code of Practice [section 4.3].

117 Exhibit 587, General Insurance Code of Practice [section 6.10].


119 Figure 15 includes outstanding claims, but does not include withdrawn claims. All references to ‘days’ includes business days only. ‘Months’ means calendar months. All percentages are rounded upwards to the nearest whole percentage point. Seven of the eight insurers measured the time taken to finalise internal reviews from the date the request for a review was made. RACQ Insurance Limited measured the time taken to finalise internal reviews from the date the policy-holder provided substantive submissions, rather than the date that the policy-holder indicated that he or she would be disputing a decision. However, insurers used slightly different ‘completion’ dates. AAMI, Allianz Australia Insurance Limited, CommInsure, CGU Insurance Limited, NRMA Insurance and Suncorp Metway Insurance Limited used the date on which the decision was communicated to the policy-holder. QBE
Insurance (Australia) Limited also did so, but where an extension was agreed with the insured, it used the agreed date as the end date. RACQ Insurance Limited used the date that the review was completed internally, though it indicated that the customer was usually advised on the same day. Figure 15 must be read with these slight differences in mind. In addition, in Suncorp Metway Insurance Limited’s case, the disputes were not about the insurer’s decisions about cause of inundation. The exclusion of Suncorp Metway Insurance Limited’s data, however, has little effect on the results shown in Figure 15.

120 See, for example: Leslie Cameron (5 business days): see Exhibit 897, Seventh Affidavit of Graham Dale (RACQ Insurance Limited), 13 October 2011 [para 40, 44-45]; Sally Doyle (6 business days): see Exhibit 717, Statutory Declaration of James Merchant (CGU Insurance Limited), 3 October 2011 [para 59 and 76]; Gary Lobley (7 business days): Exhibit 878, Statement of James Higgins (AAMI), 13 October 2011 [para 46 and 50]; Kristy Sihvola (10 business days): see Exhibit 891, First Affidavit of Graham Dale (RACQ Insurance Limited), 1 September 2011 [para 42 and 51]. Michael Gourley (15 business days): Exhibit 898, Ninth Affidavit of Graham Dale (RACQ Insurance Limited), 19 October 2011 [Exhibit 5]. One matter (Nick Laszlo) was finalised in 16 business days: see Exhibit 874, Statement of James Higgins (AAMI), 13 October 2011 [para 53, 61].

121 Transcript, Thomas Fischer, 22 September 2011, Brisbane [p3009: lines 25-45]; Exhibit 593, Statutory Declaration of Shaun Standfield (QBE Insurance (Australia) Limited), 14 September 2011, Annexure B [para 8].

122 Statement of Gary Townsend (Allianz Australia Insurance Limited), 16 September 2011 [para 5.1 and 5.5]; Exhibit 658, Email from Robert Clements to Allianz, 11 August 2011; Transcript, Robert Clements, 27 September 2011, Brisbane [p3269: line 35]; Exhibit 647, Statement of Robert Clements, 13 September 2011 [para 9].

123 Natural Disaster Insurance Review, Inquiry into flood insurance and related matters, September 2011 [p110; para 14.14]. The Australian Securities and Investments Commission noted, in a different context, that advising a policy-holder calling to make a claim that the claim is likely to be denied can have the effect of dissuading him or her from proceeding with the claim (Report 245: Review of general insurance claims handling and internal dispute resolution procedures, August 2011 [p25: para 133-137]). In dealing with the claims arising from the 2010/2011 floods, some insurers advised policy-holders when they called to claim that their policy did not cover damage caused by flood. The Commission expresses no view as to whether or not it is better for an insurer to advise a policy-holder calling to make a claim that their claim is likely to be denied. Provided that advice is given in good faith, and that a policy-holder is informed that if a claim is lodged, it will be fully assessed, the Commission acknowledges that some policy-holders would prefer to have this early indication of likelihood of denial of claim, rather than being lulled into a sense of false hope.

124 This information is current as at 30 November 2011 (correspondence from Insurance Council of Australia to the Commission, 30 November 2011). The change arose from consultation between the Insurance Council of Australia, the ASIC and consumer advocates at the end of 2010 about ASIC’s Regulatory Guide 165 on Dispute Resolution (see ASIC’s Report 245: Review of general insurance claims handling and internal dispute resolution procedures, August 2011 [p25: para 137] and correspondence from Insurance Council of Australia to the Commission, 30 November 2011).

125 This was also raised with the Natural Disaster Insurance Review, Inquiry into flood insurance and related matters, September 2011 [p24: para 1.35; p110: para 14.14]).

126 Exhibit 587, General Insurance Code of Practice [section 3.2.3].

127 Exhibit 587, General Insurance Code of Practice [section 4.3].


129 RACQ Insurance Limited informed the Commission that during 2010 its ‘Teleclaims’ call centre received around 35 000 calls per month. In January 2011, the call centre received 60 090 calls
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and 71,463 calls in February 2011. It said this volume of calls was ‘unprecedented’ (Exhibit 896, Sixth Affidavit of Graham Dale (RACQ Insurance Limited), 13 October 2011 [para 47]).

130 RACQ Insurance Limited informed the Commission that calls took longer to answer during December 2010 and January and February 2011. The highest average wait time was in February: 264 seconds (Exhibit 896, Sixth Affidavit of Graham Dale (RACQ Insurance Limited); see also Transcript, Graham Dale (RACQ Insurance Limited), Brisbane, 27 October 2011 [p4449: line 16].

131 See, for example, Transcript, Sharron Campbell, 5 October 2011, Brisbane [p3682: lines 45-53].

132 Transcript, Sharron Campbell, 5 October 2011, Brisbane [p3683: lines 1-8].

133 Transcript, Graham Spackman, 29 September 2011, Emerald [p3403: lines 48-55].


136 Exhibit 587, General Insurance Code of Practice [section 3.2.3].

137 Exhibit 745, Statutory Declaration of Dominic Dower (NRMA Insurance), 23 September 2011 [para 81]; Transcript, Dominic Dower (NRMA Insurance), 6 October 2011, Brisbane [p3836: line 39].

138 Exhibit 659, Email from Allianz Australia Insurance Limited to Robert Clements, 16 August 2011; Statement of Garry Townsend (Allianz Australia Insurance Limited), 16 September 2011 [para 5.5].

139 See, for example, Exhibit 673, Statement of Cresta Richardson, 15 September 2011 [para 8].


141 Exhibit 843, Statement of James Higgins (AAMI), 7 October 2011 [para 22]; Annexure 2; Transcript, Sharron Campbell, 5 October 2011, Brisbane [p3676: lines 19-40].

142 Transcript, Judith Dobrowa, 27 September 2011, Brisbane [p3282: lines 1-39]; Transcript, Sallyanne Doyle, 5 October 2011, Brisbane [p3657: lines 8-21].

143 Exhibit 745, Statutory Declaration of Dominic Dower (NRMA Insurance), 23 September 2011 [para 91]; Transcript, Dominic Dower (NRMA Insurance), 6 October 2011, Brisbane [p3832: line 23]; Statement of Paul Fahey (CommInsure), 12 September 2011, Appendix A [p36].

144 Transcript, Graham Dale (RACQ Insurance Limited), 27 October 2011, Brisbane [p4477: lines 50-60; p4478: lines 22-48].


146 Exhibit 843, Statement of James Higgins (AAMI), 7 October 2011 [para 34]; Annexure 2. The insurer determined that the policy-holder had not been given incorrect information.


149 NRMA Insurance obtained reports which related to particular properties and to particular streets (Exhibit 745, Statutory Declaration of Dominic Dower (NRMA Insurance), 23 September 2011 [p14: para 64]).


152 Exhibit 872, Statement of James Higgins (AAMI), 14 September 2011 [p26: para 145; p28: para 158-159]; Statement of Garry Townsend (Allianz Australia Insurance Limited), 12 September 2011 [p11: para 12.3.1, 12.3.3; p12: para 12.3.5]. QBE Insurance (Australia) Limited also obtained reports for regions which were not covered by the Insurance Council’s reports (Statutory Declaration of Shaun Standfield (QBE Insurance (Australia) Limited), 22 September 2011, Annexure B [p6: para 12.3.1; p7: para 12.3.3]).


154 Statement of Paul Fahey (CommInsure), 23 September 2011, Appendix A [p10, 15-16].

155 See, for example, Statement of Garry Townsend (Allianz Australia Insurance Limited), 12 September 2011 [p11: para 12.3.3]; Statement of Paul Fahey (CommInsure), 23 September 2011, Appendix A [p16].

156 For example, one insurer took a ‘staged approach’ to determining what information was required, considering whether site-specific hydrology was required once it had reviewed the general hydrology information (Exhibit 1024, Statement of Jane Pires (AAMI), 8 November 2011 [p1-2: para 7]). See 12.7.2 Site-specific hydrology reports for more information as to when this second stage would be adopted.

157 Transcript, Dominic Dower (NRMA Insurance), 6 October 2011, Brisbane [p3829: line 39].

158 As at 1 November 2011, NRMA Insurance had received a total of 2955 household claims, including 584 claims which were withdrawn and 1 claim which had not been determined.

Withdrawn claims are excluded from the figure cited in the text. For more information, see 12.4 The picture as a whole.

159 Transcript, James Merchant (CGU Insurance Limited), 6 October 2011, Brisbane [p3813: line 17].

160 As at 1 November 2011, CGU Insurance Limited had received a total of 3897 household claims, including 1076 claims which were withdrawn and 284 claims which had not been determined. Withdrawn claims are excluded from the figure cited in the text. For more information, see 12.4 The picture as a whole.

161 Statement of Paul Fahey (CommInsure), 23 September 2011, Appendix A [p16].

162 As at 1 November 2011, CommInsure had received a total of 1644 household claims, including 171 claims which were withdrawn and 11 claims which had not been determined. Withdrawn claims are excluded from the figure cited in the text. For more information, see 12.4 The picture as a whole.

163 Exhibit 1025, Statement of Peter Unwin (AAMI), 8 November 2011 [p1: para 4]. See also, Exhibit 874, Statement of James Higgins (AAMI), 13 October 2011 [p9-10: para 40].

164 As at 1 November 2011, AAMI had received a total of 1,560 household claims, including 176 claims which were withdrawn and 164 claims which had not been determined. Withdrawn claims are excluded from the figure cited in the text. For more information, see 12.4 The picture as a whole.

165 Exhibit 1024, Statement of Jane Pires (AAMI), 8 November 2011 [p1: para 4].


167 Exhibit 1024, Statement of Jane Pires (AAMI), 9 November 2011 [p1-2: para 7]. See also Exhibit 843, Statement of James Higgins (AAMI), 7 October 2011 [p11: para 54]: ‘it was exceptionally difficult, if not impossible, to obtain site-specific reports.’

169 Sinclair Knight Merz advised that where storm events had an intensity of less than the 2-Year ARI, it is considered most unlikely that they would have been sufficient to exceed the local drainage system (Sinclair Knight Merz, *Brisbane River 2011 Flood Event – Investigation into Causes of Property Inundation: Review of Four Insurance Matters*, 14 December 2011 [p3: para 9]).

170 RACQ Insurance Limited’s household policy provided cover for ‘flash flood and/or stormwater run-off’ which was defined as: ‘A sudden flood caused by heavy rain that fell no more than 24 hours prior to the flash flood or stormwater run-off’. CommInsure also provided cover for ‘flash flood’, defined as: ‘The overflow of any lake, river, creek, stormwater channel, canal or any other watercourse (whether natural, altered or man made), caused by a storm, where the flooding occurs within 24 consecutive hours of the storm having commenced.’


173 See, for example, Statement of Garry Townsend (Allianz Australia Insurance Limited), 12 September 2011 [p6: para 5]; Statutory Declaration of Shaun Standfield, 22 September 2011 (QBE Insurance (Australia) Limited), Annexure B [para 12.3.5.1-12.3.5.2].


176 Transcript, Dominic Dower (NRMA Insurance), 6 October 2011, Brisbane [p3829: lines 20-25].

177 Exhibit 745, Statutory Declaration of Dominic Dower (NRMA Insurance), 23 September 2011 [para 70].


182 Exhibit 872, Statement of James Higgins (AAMI), 14 September 2011 [para 147-150 and 160]; Transcript, James Higgins (AAMI), 25 October 2011, Brisbane [p4311: lines 1-6; p4315: line 42; p4316: line 3]; Exhibit 742, Statutory Declaration of James Merchant (CGU Insurance Limited), 22 September 2011, Annexure 3 [p12: para 12.3.1; p14: 12.3.5]; Exhibit 745, Statutory Declaration of Dominic Dower (NRMA Insurance), 23 September 2011 [para 65 and 70] and Transcript, Dominic Dower, 6 October 2011, Brisbane [p3829: lines 20-43]. See also Exhibit 719, Statutory Declaration of Matthew Jarrett (NRMA Insurance), 22 September 2011 [para 25]; Statement of Paul Fahey (CommInsure),
23 September 2011, Appendix A [p16-17]; Statutory Declaration of Shaun Standfield (QBE Insurance (Australia) Limited), 22 September 2011, Annexure B [para 12.3.5]; Statement of Garry Townsend (Allianz Australia Insurance Limited), 12 September 2011, Annexure B [para 12.3.3 and 12.3.5.2].

183 Transcript, Dominic Dower, 6 October 2011, Brisbane [p3829: lines 20-43]. See also Exhibit 719, Statutory Declaration of Matthew Jarrett (NRMA Insurance), 22 September 2011 [para 25].


185 Statutory Declaration of Shaun Standfield (QBE Insurance (Australia) Limited), 22 September 2011, Annexure B [para 12.3.5.1].


189 Exhibit 745, Statutory Declaration of Dominic Dower (NRMA Insurance), 23 September 2011 [para 66 and 115]; Statement of Garry Townsend (Allianz Australia (Insurance) Limited), 12 September 2011 [para 12.3.5.2]; Statement of Paul Fahey (CommInsure), 23 September 2011, Appendix A [p16].


195 The Financial Ombudsman Service, Circular: Flood Edition, Issue 7, Update 1, November 2011, available at http://fos.org.au/centric/home_page/publications/the_circular.jsp. In a number of cases, the ombudsman has ruled that insurers were liable to pay part of a policy-holder’s claim because he was persuaded that stormwater run-off had initially caused damage before flood water inundated the property. See the following determinations, for example, which are available on the Financial Ombudsman Service’s website: case numbers 241994, 243793, 242183, 241145, 235302, 239580, 239578, 239186 and 235758.


199 Statement of Paul Fahey (CommInsure), 23 September 2011, Annexure A [p4].

200 Exhibit 742, Statutory Declaration of James Merchant (CGU Insurance Limited), 22 September 2011, Annexure 3 [p11: para 12.2.3, 12.2.4]; Transcript, James Merchant, 6 October 2011, Brisbane [p3807: lines 10-45]. Loss assessors were not appointed if the insurer considered that a policy-holder’s responses to a standard set of questions, aerial photography, flood mapping and an area hydrologist ‘conclusively’ established the cause of damage.

201 See, for example, Exhibit 593, Statutory Declaration of Shaun Standfield (QBE Insurance (Limited) Australia), 14 September 2011, Annexure B; Attachment 1; Exhibit 879, Statement of James Higgins (AAMI), 28 September 2011, Annexure 5; Exhibit 878, Statement of James Higgins (AAMI), 13 October 2011, Annexure 4; Exhibit 843, Statement of Garry Townsend (Allianz Australia Insurance Limited), 16 September 2011, Attachment 2.3.

202 Statement of Garry Townsend (Allianz Australia Insurance Limited), 12 September 2011 [p9: para 12, 12.1.3; p14: para 17].

203 Statement of Garry Townsend (Allianz Australia Insurance Limited), 16 September 2011, Attachment 2.3 [p3].

204 Statement of Garry Townsend (Allianz Australia Insurance Limited), 16 September 2011 [p8: para 3.8-3.9].


206 Exhibit 872, Statement of James Higgins (AAMI), 14 September 2011 [p25: para 141].

207 Transcript, James Higgins, 25 October 2011, Brisbane [p4312: line 5].


211 Exhibit 879, Statement of James Higgins (AAMI), 28 September 2011, Annexure 5 [p3].


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224 Exhibit 662, Statutory Declaration of James Merchant (CGU Insurance Limited), 22 September 2011 [p2-3: para 7].

225 Exhibit 662, Statutory Declaration of James Merchant (CGU Insurance Limited), 22 September 2011, Annexure 2 [p5].


228 Statutory Declaration of Dion Gooderham (CGU Insurance Limited), 21 November 2011 [p4: para 23]. The term 'triage process' was used in correspondence between the Australian Securities and Investments Commission and CGU Insurance Limited (see CGU Insurance Limited's response to the Commission Requirement, 14 October 2011), and in the Commission's public hearings (see, for example, Exhibit 715, Statement of Sallyanne Doyle, 5 October 2011 [p6: para 27]; Transcript, Sallyanne Doyle, 5 October 2011, Brisbane [p3638: lines 47-53]; Exhibit 716, Statutory Declaration of Peter Harmer (CGU Insurance Limited), 3 October 2011 [p4: para 19-20]; Transcript, Peter Harmer, 6 October 2011, Brisbane [p3779: lines 27-30].

229 Exhibit 742, Statutory Declaration of James Merchant (CGU Insurance Limited), 22 September 2011, Annexure 3 [p1: para 12.2.3, 12.2.4]; Transcript, James Merchant, 6 October 2011, Brisbane [p3807: lines 10-45].

230 Transcript, James Merchant, 6 October 2011, Brisbane [p3813: line 16].

231 Transcript, James Merchant, 6 October 2011, Brisbane [p3807: line 1].

232 The national claims manager said in his statutory declaration, dated 22 September 2011, that approximately 190 claims were declined without a site inspection having been carried out (Exhibit 742, Statutory Declaration of James Merchant (CGU Insurance Limited), 22 September 2011, Annexure 3 [p11: para 12.2.1]). He confirmed this in oral evidence (Transcript, James Merchant, 6 October 2011, Brisbane [p3802: lines 1-7]). CGU Insurance Limited informed the Commission on 18 January 2012 that this information was not correct. It lawyers advised that, ‘following further investigation… it appears that the 190 estimate is the number of site assessments that were conducted prior to the process change on or about 17 February 2011. The number of household claims declined without a site assessment is approximately 340’.

233 Exhibit 715, Statement of Sallyanne Doyle, 5 October 2011 [p7: para 34]; Transcript, Sallyanne Doyle, 5 October 2011, Brisbane [p3639: line 6].


235 Statutory Declaration of James Merchant (CGU Insurance Limited), 25 November 2011 [p1: para 3].


243 Correspondence from the Australian Securities and Investments Commission to CGU Insurance Limited, dated 20 April 2011, provided by CGU Insurance Limited in response to the Commission Requirement, 14 October 2011.


245 Correspondence from CGU Insurance Limited to the Australian Securities and Investments Commission, dated 30 June 2011, provided by CGU Insurance Limited in response to the Commission Requirement, 14 October 2011.

246 Exhibit 742, Statutory Declaration of James Merchant (CGU Insurance Limited), 22 September 2011 [p8: para 6].

247 See Exhibit 717, Statutory Declaration of James Merchant (CGU Insurance Limited), 3 October 2011, Annexure 3. A file note dated 22 January 2011 states that the policy-holder's broker ‘was already told on 18/1 that the flood team would be up and running on 20/1…’

248 Statutory Declaration of Dion Gooderham (CGU Insurance Limited), 21 November 2011 [p5: para 29].

249 Exhibit 742, Statutory Declaration of James Merchant (CGU Insurance Limited), 22 September 2011, Annexure 3 [p11: para 12.2].

250 Transcript, James Merchant, 6 October 2011 [p3804: line 22].

251 Transcript, James Merchant, 6 October 2011 [p3806: line 41].

252 Transcript, James Merchant, 6 October 2011 [p3806: line 57].

253 Exhibit 742, Statutory Declaration of James Merchant (CGU Insurance Limited), 22 September 2011, Annexure 3 [p8: para 6]; Transcript, James Merchant, 6 October 2011, Brisbane [p3804: lines 30-42].

254 Transcript, James Merchant, 6 October 2011, Brisbane [p3807: lines 10-32].

255 CGU Insurance Limited, Queensland Floods Claims Reference Document, provided in response to the Commission Requirement, 14 October 2011. It appears from a note of a telephone conversation between a CGU Insurance Limited staff member and a policy-holder's broker that, as at 18 January 2011, CGU Insurance Limited was not appointing assessors to inspect properties the subject of claims (Exhibit 717, Statutory Declaration of James Merchant (CGU Insurance Limited), 3 October 2011, Annexure 3 [p1]).

256 CGU Insurance Limited, 'Validation process Brisbane and surrounding area’s [sic]’, provided in response to the Commission Requirement, 14 October 2011.

257 A file note in CGU Insurance Limited’s records for one policy-holder, dated 1 February 2011, states:

‘-await call from [policy-holder]
-ask flood scripting – check with [policy-holder] which house is hers on near map
-if clearly flood – advise [policy-holder] no cover & arrange decline letter
-determine if assessing is required.’

(Exhibit 662, Statutory Declaration of James Merchant (CGU Insurance Limited), 22 September 2011, Annexure 2.)

258 Exhibit 716, Statutory Declaration of Peter Harmer (CGU Insurance Limited), 3 October 2011 [p3: para 14.3].

259 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3780: line 25].

260 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3780: lines 5-55].

261 Exhibit 742, Statutory Declaration of James Merchant (CGU Insurance Limited), 22 September 2011, Annexure 3 [p11: para 12.1.2, 12.2.4]. This information was given in response to a question in a Requirement, issued on 2 September 2011, which asked: ‘At what stage of the claims handling process were site assessments/inspections carried out?’ Mr Merchant’s answer to this question did not include the information Mr Harmer gave in evidence.

262 Transcript, James Merchant, 6 October 2011, Brisbane [p3807: line 37; p3815: line 20].
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265 Transcript, Judith Dobrowa, 27 September 2011, Brisbane [p3284: lines 27-32].

266 Transcript, Judith Dobrowa, 27 September 2011, Brisbane [p3282: line 12; p3284: line 27; p3293: line 32; p3294: line 29].

267 Transcript, Judith Dobrowa, 27 September 2011, Brisbane [p3293: line 50; p3294: line 30].

268 Transcript, Judith Dobrowa, 27 September 2011, Brisbane [p3284: lines 27, 55].

269 Transcript, Judith Dobrowa, 27 September 2011, Brisbane [p3294: line 30].

270 Exhibit 664, Notes made by Judith Dobrowa.


272 Exhibit 662, Statutory Declaration of James Merchant (CGU Insurance Limited), 22 September 2011, Annexure 2; Exhibit 663, Transcript of conversation between CGU Insurance Limited consultant and Judith Dobrowa.


276 Transcript, James Merchant, 6 October 2011, Brisbane [p3809: line 55]. See also Transcript, James Merchant, 6 October 2011, Brisbane [p3810: line 50; p3811: lines 5-10].

277 Transcript, James Merchant, 6 October 2011, Brisbane [p3808: lines 7-32].

278 Exhibit 717, Statutory Declaration of James Merchant (CGU Insurance Limited), 3 October 2011, Annexure 3 [p3-4].

279 Transcript, Sallyanne Doyle, 5 October 2011, Brisbane [p3636: line 1; p3637: lines 3-20, 45-50; p3658: line 20].


283 Transcript, Sallyanne Doyle, 5 October 2011, Brisbane [p3666: line 55 – p3667: line 17].


285 The second note of the conversation, the one provided to Ms Doyle in March 2011, does not refer to any discussion about getting further information from the property manager or tenant: Exhibit 715, Statement of Sallyanne Doyle, 5 October 2011, Attachment 4. Mr Merchant gave evidence that Ms Doyle said that ‘she would provide [CGU Insurance Limited] with details of her tenant so that further information could be gathered about the claim’: Exhibit 717, Statutory Declaration of James Merchant (CGU Insurance Limited), 3 October 2011 [p3: para 26].


287 Exhibit 717, Statutory Declaration of James Merchant (CGU Insurance Limited), 3 October 2011, Annexure 3; Annexure 15. See also para 30-32.


290 Exhibit 715, Statement of Sallyanne Doyle, 5 October 2011 [p5: para 25]; Transcript,
Correspondence from CGU Insurance Limited to the Australian Securities and Investments Commission, dated 13 May 2011, provided by CGU Insurance Limited in response to the Commission Requirement, 14 October 2011.

Statutory Declaration of Dion Gooderham (CGU Insurance Limited), 21 November 2011 [para 33.2 and 42].

Correspondence from CGU Insurance Limited to the Australian Securities and Investments Commission, dated 30 June 2011, provided by CGU Insurance Limited in response to the Commission Requirement, 14 October 2011.

Statutory Declaration of Dion Gooderham (CGU Insurance Limited), 21 November 2011 [p7: para 44].

Exhibit 715, Statement of Sallyanne Doyle, 5 October 2011 [p5: para 26].

Exhibit 716, Statutory Declaration of Peter Harmer (CGU Insurance Limited), 3 October 2011, Annexure 2.

Transcript, Peter Harmer, 6 October 2011, Brisbane [p3783: lines 18-30].

Transcript, Sallyanne Doyle, 5 October 2011 [para 30]; Transcript, Peter Harmer, 6 October 2011, Brisbane [p3783: lines 56-58].

Transcript, Sallyanne Doyle, 5 October 2011 [p7: para 34]; Transcript, Sallyanne Doyle, 5 October 2011, Brisbane [p3638: line 55]; Transcript, Peter Harmer, 6 October 2011, Brisbane [p3783: lines 21-28].

Transcript, James Merchant, 6 October 2011, Brisbane [p3805: lines 34, 55; p3806: lines 15-20].


The Commission was concerned to see all scripts used by CGU Insurance Limited staff dealing with flood claims. Two scripts were exhibited to Mr Merchant’s main statutory declaration (Exhibit 742): one used by claims lodgement staff (Annexure 5 to his statutory declaration) and the standard set of questions (Annexure 7 to his statutory declaration). Mr Merchant confirmed in evidence that these were the only scripts used: Transcript, 6 October 2011, Brisbane [p3806: lines 21-28]. The document dated 16 February 2011 refers to ‘customer scripting when communicating the decision to deny the claim’. If this is a reference to another script, it has not been provided to the Commission and Mr Merchant did not mention it when asked if all scripts had been provided to the Commission.

Transcript, Peter Harmer, 6 October 2011, Brisbane [p3805: line 30].

Exhibit 715, Statement of Sallyanne Doyle, 5 October 2011 [p7-8: para 34]; Transcript, Sallyanne Doyle, 5 October 2011, Brisbane [p3638: line 25]. In his statutory declaration, dated 3 October 2011 (Exhibit 716), Mr Harmer said, at page 6, paragraph 27: ‘Ms Doyle told us that we had not made it clear to her that an assessor would be appointed by CGU Insurance Limited if the customer did not agree with our assessment of their claim and sought for the claim to be assessed’.

Transcript, Peter Harmer, 6 October 2011, Brisbane [p3781: line 2].

Exhibit 716, Statutory Declaration of Peter Harmer (CGU Insurance Limited), 3 October 2011 [p5: para 26].
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Statement of Sallyanne Doyle, 5 October 2011 [p8: para 36].

315 Exhibit 715, Statement of Sallyanne Doyle, 5 October 2011 [p8: para 36].


321 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3790: lines 15, 37].

322 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3791: line 6; p3794: lines 28, 43]; Exhibit 716, Statutory Declaration of Peter Harmer (CGU Insurance Limited), 3 October 2011 [p4: para 21.3].

323 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3787: line 1].

324 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3785: lines 48-58].

325 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3786: line 5].

326 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3786: line 30]; Exhibit 716, Statutory Declaration of Peter Harmer (CGU Insurance Limited), 3 October 2011 [p5: para 21.4].

327 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3785: line 53; p3786: lines 15-20; p3795: lines 35-45].

328 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3786: line 25].


331 Exhibit 716, Statutory Declaration of Peter Harmer (CGU Insurance Limited), 3 October 2011, Annexure 1.

332 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3785: lines 20-30].

333 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3785: line 31].


335 Transcript, Peter Harmer, 5 October 2011, Brisbane [p3787: line 25].

336 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3792: lines 5-17; p3796: lines 5-15].

337 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3796: lines 9-13].

338 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3795: line 50; p3796: line 18].


340 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3797: lines 42-51].

341 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3796: line 35; p3792: line 55].

342 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3788: lines 20-30].

343 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3789: lines 8, 30-35].


345 Exhibit 715, Statement of Sallyanne Doyle, 5 October 2011, Attachment 3.

346 Transcript, Peter Harmer, 6 October 2011, Brisbane [p3790: line 37].


348 Transcript, Sallyanne Doyle, 5 October 2011, Brisbane [p3643: lines 1-24].
Statutory Declaration of Dion Gooderham (CGU Insurance Limited), 21 November 2011 [p9: para 58].


Determination 239347. The ombudsman has found in favour of CGU Insurance Limited policy-holders in four other cases, two on the basis that the insurer could not prove it clearly informed the policy-holder of the exclusion; and two on the basis that stormwater run-off had initially inundated the property.


Transcript, Graham Dale (RACQ Insurance Limited), 27 October 2011, Brisbane [p4451: line 4; p4558: lines 15-31].


Exhibit 892, Second Affidavit of Graham Dale (RACQ Insurance Limited), 19 September 2011, Exhibit 8.


Exhibit 892, Second affidavit of Graham Dale (RACQ Insurance Limited), 19 September 2011 [para 172-173].


Exhibit 901, RACQ Media Release dated 2 August 2011.

Transcript, Graham Dale (RACQ Insurance Limited), 27 October 2011, Brisbane [p4513: line 3].

Transcript, Graham Dale (RACQ Insurance Limited), 27 October 2011, Brisbane [p4512: line 54 – p4530: line 3].

Exhibit 824, First Affidavit of Bradley Heath (RACQ Insurance Limited), 23 September 2011 [Exhibit 3: p6-11].

Exhibit 824, First Affidavit of Bradley Heath (RACQ Insurance Limited), 23 September 2011 [Exhibit 4: p120-122].

Exhibit 824, First Affidavit of Bradley Heath (RACQ Insurance Limited), 23 September 2011 [Exhibit 2: p6-11].

Exhibit 824, First Affidavit of Bradley Heath, 23 September 2011 [Exhibit 4: p120-122].

Exhibit 824, First Affidavit of Bradley Heath, 23 September 2011 [Exhibit 4, p127]. See also: Exhibit 902, Bundle of correspondence.
374 Exhibit 824, First Affidavit of Bradley Heath, 23 September 2011 [Exhibit 4, p150]. See also: Exhibit 902, Bundle of correspondence.

375 Exhibit 824, First Affidavit of Bradley Heath, 23 September 2011 [Exhibit 4, p157]. See also: Exhibit 902, Bundle of correspondence.


377 Exhibit 824, First Affidavit of Bradley Heath, 23 September 2011 [Exhibit 4, p170]. See also exhibit 902, Bundle of correspondence.

378 Exhibit 824, First Affidavit of Bradley Heath, 23 September 2011 [para 43(o)-(p)]. See also Transcript, Graham Dale, 28 October 2011, Brisbane [p4563: lines 5-40].

379 Thirty-five claims were declined on 7 April 2011, 60 on 15 April 2011 and 5 on 21 April 2011 (Exhibit 824, First Affidavit of Bradley Heath, 23 September 2011, Exhibit 2).

380 Exhibit 902, Bundle of correspondence.

381 Exhibit 824, First Affidavit of Bradley Heath, 23 September 2011, Exhibit 2.

382 Transcript, Graham Dale (RACQ Insurance Limited), 28 October 2011, Brisbane [p4540, lines 1-10].

383 Transcript, Graham Dale (RACQ Insurance Limited), 28 October 2011, Brisbane [p4541: lines 50-57].


385 Transcript, Graham Dale, 27 October 2011, Brisbane [p4464: line 53 – p4466: line 20; p4467: line 50; p4468: lines 5-56].

386 Transcript, Graham Dale, 27 October 2011, Brisbane [p4465: lines 24-51]. In his second affidavit, the insurer’s general manager, personal insurance claims, acknowledged that Water Technology ‘required more complete data’ in order to ‘accurately estimate’ the effect of the Brisbane River on the flooding in Ipswich, and that the modelling Water Technology had done was based on the ‘(limited) information then at its disposal’. He said the report adopted a ‘cautious approach with respect to the data then available to it’ (Exhibit 892, Second Affidavit of Graham Dale, 19 September 2011 [para 175, 178]). See also Exhibit 824, First Affidavit of Bradley Heath, 23 September 2011 [para 17(a)].


388 Exhibit 824, First Affidavit of Bradley Heath (RACQ Insurance Limited), 23 September 2011 Exhibit 2 [p6-11].

389 Transcript, Graham Dale (RACQ Insurance Limited), 28 October 2011, Brisbane [p4547: line 50].

390 Exhibit 824, First Affidavit of Bradley Heath, 23 October 2011 [para 20].

391 Exhibit 824, First Affidavit of Bradley Heath, 23 September 2011 [para 26].

392 Transcript, Graham Dale, 28 October 2011, Brisbane [p4563: line 47].

393 Exhibit 824, First Affidavit of Bradley Heath, 23 September 2011, Exhibit 4 [p193].

394 Exhibit 587, General Insurance Code of Practice [section 3.4.5(a)]. The same expectation applies when insurers notify policy-holders of the outcome of disputes (Exhibit 587, General Insurance Code of Practice [section 6.9]). These standards are presently subject to section 4.3 of the Code which has the effect of relieving insurers of their obligations under the Code when dealing with a high volume of claims as a result of a natural disaster (Exhibit 587, General Insurance Code of Practice [section 4.3]).

395 See, for example, Exhibit 593, Statutory Declaration of Shaun Standfield (QBE Insurance (Australia) Limited), 14 September 2011, Attachment 7. See also Exhibit 873, Statement of James Higgins (AAMI), 14 September 2011 [para 167, 171].

396 See, for example, Exhibit 662, Statutory Declaration of James Merchant (CGU Insurance Limited), 22 September 2011, Annexure 5.

397 Transcript, James Merchant (CGU Insurance Limited), 6 October 2011, Brisbane [p3817: line 31].

398 Exhibit 662, Statutory Declaration of James Merchant (CGU Insurance Limited), 22 September 2011 [para 7].
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399 Exhibit 662, Statutory Declaration of James Merchant (CGU Insurance Limited), 22 September 2011, Annexure 2.


401 Transcript, James Merchant (CGU Insurance Limited), 6 October 2011, Brisbane [p3818: lines 35-40].

402 Exhibit 892, Second Affidavit of Graham Dale (RACQ Insurance Limited), 19 September 2011 [p31: para 158]; Exhibit 17 [p367, 369]; Exhibit 897, Seventh Affidavit of Graham Dale (RACQ Insurance Limited), 13 October 2011, Exhibit 33 [p864-865]; Exhibit 851, Eighth Affidavit of Graham Dale (RACQ Insurance Limited), Exhibit 26 [p317]; Transcript, Graham Dale (RACQ Insurance Limited), 27 October 2011, Brisbane [p4482: lines 19-36]. The script another insurer used when informing a policy-holder that his or her claim had been denied, by contrast, stated that the assessment of the claim had involved ‘a physical assessment of [the] property’ and a review of ‘aerial photos taken during the flood, utilising a QLD Government website mapping areas that were impacted by flooding, along with an external hydrology report specific to your property’ (Exhibit 745, Statutory Declaration of Dominic Dower (NRMA Insurance), 23 September 2011 [p356]).

403 See, for example, Exhibit 898, Ninth Affidavit of Graham Dale (RACQ Insurance Limited), 19 October 2011, Exhibit 17 [p190-191]; Exhibit 897, Seventh Affidavit of Graham Dale (RACQ Insurance Limited), 13 October 2011, Exhibit 22 [p184-185]; Exhibit 851, Eighth Affidavit of Graham Dale (RACQ Insurance Limited), Exhibit 19 [p203-204].

404 Transcript, Graham Dale (RACQ Insurance Limited), 27 October 2011, Brisbane [p4486: lines 1-40]. The insurer similarly defended the standard letter which advised policy-holders of the outcome of internal reviews. That letter did not give reasons for a decision to maintain the initial denial of the claim (Transcript, Graham Dale (RACQ Insurance Limited), 27 October 2011, Brisbane [p4500: line 55]). It stated no more than the review had been completed and the result of it. The insurer’s general manager of claims could not think of any other information which might be included in the letter for a policy-holder’s benefit. More detailed reasons were given, however, if a lawyer had made a submission to the insurer on a policy-holder’s behalf.


406 Exhibit 587, General Insurance Code of Practice [section 3.4.3].

407 The footnote in the code then sets out some examples of special circumstances. They are ‘where information is subject to privacy laws, where information is protected from disclosure by law, or where the release of the information may be prejudicial to us in relation to a dispute about your claim’.

408 Exhibit 587, General Insurance Code of Practice [section 6.1.4].

409 QBE Insurance (Australia) Limited provided copies of all relevant material on which it had relied (Statutory Declaration of Shaun Standfield (QBE Insurance (Australia) Limited), 23 September 2011, Annexure B [para 15-16] and Exhibit 593, Statutory Declaration of Shaun Standfield (QBE Insurance (Australia) Limited), 14 September 2011, Annexure B [para 7.4]). AAMI provided a copy of the loss assessor’s report and any site-specific hydrology report with letters to policy-holders confirming denial of their claims. Where an Insurance Council hydrology report was relied on, AAMI informed the policy-holder and told the policy-holder that it was available on the Insurance Council’s website (Exhibit 872, Statement of James Higgins (AAMI), 14 September 2011 [para 170]). NRMA Insurance provided a copy of the hydrology report (general area or site-specific) which it commissioned and relied on to make the claim decision. Policy-holders were advised on how to access documents relied on which were in the public domain (Exhibit 745, Statutory Declaration of Dominic Dower (NRMA Insurance), 23 September 2011 [para 100] and see Transcript, Dominic Dower (NRMA Insurance), 6 October 2011, Brisbane [p3834: line 50 – p3835: line 56]).
276]; see also Exhibit 662, Statutory Declaration of James Merchant (CGU Insurance Limited), 22 September 2011 [para 8] and Transcript, Judith Dobrowa, Brisbane, 27 September 2011 [p3286: lines 35-43].

411 Submission by the Financial Ombudsman Service to the Natural Disaster Insurance Review, July 2011 [p15]. The submission does not state the insurer or insurers in respect of whom such complaints were made. The Commission is not otherwise aware of the identity of the insurer/s to which this submission relates.


413 Exhibit 892, Second Affidavit of Graham Dale (RACQ Insurance Limited), 19 September 2011 [para 163].

414 Under its terms of reference, the Financial Ombudsman Service ‘must identify systemic issues and refer [them] to the relevant [insurer] for remedial action’. It must also report systemic issues to ASIC. A systemic issue is ‘an issue that will have an effect on other persons... beyond the parties to the Dispute’.


416 The Daniels Corporation International Pty Ltd v Australian Competition and Consumer Commission (2002) 213 CLR 543 at 563 per McHugh J.

417 A similar sentiment is expressed by the ombudsman in its submission to the Natural Disaster Insurance Review, at page 12:

Delays by some insurers in exchanging information in particular hydrologists reports, or requiring multiple reports prior to making a claim decision has caused significant disputes between consumer, advisors and insurers. The provision of information relied upon need to be strengthened to ensure all information relied upon is exchanged with a consumer so that consumer/advisor can make an informed decision as to whether to dispute a claim decision or not.


419 Exhibit 878, Statement of James Higgins (AAMI), 13 October 2011 [para 60-61]; Statement of Garry Townsend (Allianz Australia Insurance Ltd), 16 September 2011[para 5.2]; Statutory Declaration of Shaun Standfield (QBE Insurance (Australia) Limited), 14 September 2011, Annexure B [para 6.4 and 10.2].

420 Statement of Garry Townsend (Allianz Australia Insurance Ltd), 16 September 2011 [para 5.1-5.2]; Attachment 3.3.

421 Statutory Declaration of Shaun Standfield (QBE Insurance (Australia) Limited), 14 September 2011, Annexure B [para 12].


425 Exhibit 1027, Statement of Robert Hazell (AAMI), 8 November 2011 [para 12].

426 Letter from Corrs Chambers Westgarth Lawyers, 11 January 2012.

427 Exhibit 1027, Statement of Robert Hazell (AAMI), 8 November 2011 [para 6, 10].


429 Exhibit 1027, Statement of Robert Hazell (AAMI), 8 November 2011 [para 11].