

Recommendations

Chapter 2 Dams

- 2.1 Seqwater should review all arrangements for the operation of the dams during flood events for the entire wet season by 30 September each year, and ensure that all parties are adequately prepared, in the process ensuring that:
- Seqwater can comply with every aspect of the Wivenhoe and North Pine manuals
 - the flood operations centre is ready and capable of operating during any flood event of whatever duration, including in terms of communications, equipment, rostering of and facilities for staff
 - the flood operations centre has available to it all tools, studies, equations and data necessary for it to be fully appraised of the consequences of its operation of the dams, including:
 - hydrodynamic model of the Brisbane River downstream of the Wivenhoe Dam
 - hydrodynamic model of the Bremer River
 - copy of damage curves from Brisbane Valley Damage Minimisation Study 2007
 - equations for flow out of fuse plugs, if initiated.
- 2.2 It should be accepted that control over temporary alteration of the full supply level of Wivenhoe, Somerset and North Pine dams is solely the function of the Queensland Government acting through the responsible Minister.
- 2.3 The regulatory framework by which the responsible Minister can effect a temporary alteration to full supply level should be simplified.
- 2.4 For the purposes of making any decision about a temporary alteration to full supply level, the Minister should receive advice from:
1. Seqwater, as to the flood mitigation impacts of such an alteration
 2. the Water Grid Manager, as to the security of water supply implications of such an alteration
 3. the Water Commission, as to both the flood mitigation impacts and the security of water supply implications of such an alteration
 4. DERM as to an analysis of the above advice, its own advice as to dam safety, the regulatory framework and any other matter within its expertise.
- 2.5 If the Bureau of Meteorology makes a similar seasonal forecast to that made for the 2010/2011 wet season, expressed with equal or greater confidence, for the 2011/2012 wet season, the Queensland Government should temporarily reduce the full supply level of Wivenhoe Dam to 75 per cent, with a concomitant adjustment to the trigger levels for the strategies in the Wivenhoe manual.
- 2.6 The requirements of the chief executive of DERM as to training of operational personnel should be provided to Seqwater on a regular and formal basis.
- 2.7 Seqwater should ensure all staff and engineers who may be involved in flood operations are involved in formal training exercises which address the full range of possible operating situations.
- 2.8 Seqwater should:
1. conduct an interim review of the Wivenhoe manual
 2. have the draft manual assessed by independent expert peer reviewers
 3. consider the expert peer reviews
 4. submit the draft manual to DERM for approval under the Act so that it can be approved before 1 October 2011.
- 2.9 The following matters require particular attention during the interim review of the Wivenhoe manual:
- definition of what ‘best forecast rainfall’ means
 - prescription about how forecast rainfall information is to be used by the flood engineers

- definition of 'predicted lake level' and the use of consistent language throughout the Wivenhoe manual about predicted lake levels
- clarification of options for transition to strategies W2 or W3 from strategy W1
- clarification of the rules for drawdowns of the dams following flood events
- removal of the term 'non-damaging flows' (and similar terms) to describe flows below 4000 m³/s at Moggill
- clarification of whether W3 allows the flood engineers to release water which would create a flow at Moggill of over 4000 m³/s
- precise definition of the maximum mechanical capability of the gate opening mechanism
- clarification of how part 8.6 should be followed in strategy W4, including clarifying the use of the word 'generally'.

2.10 Seqwater should act immediately to establish:

1. a steering committee to oversee the long term review of the Wivenhoe manual including senior representatives of at least DERM, Seqwater, the Water Commission, the Water Grid Manager, Brisbane City Council, Ipswich City Council and Somerset Regional Council
2. a technical review committee comprised of independent experts in at least hydrology, meteorology and dam operations to examine all technical work completed as part of the review.

2.11 The steering committee should ensure the scientific investigations and modelling outlined in recommendation 2.12 and 2.13 are completed. It should also assess the need for any other work to be done, and instigate any other investigations or work considered necessary for a full and proper review of the Wivenhoe manual.

2.12 The following scientific investigations should be carried out prior to modelling work under the supervision of the steering committee and reviewed by the technical review committee:

1. review of the design hydrology:
 - a. using a stochastic or Monte Carlo or probabilistic approach
 - b. taking into account observed variability in temporal and spatial patterns of rainfall
 - c. taking into account observed variability in relative timings of inflows from the dams and downstream tributaries.
2. production of a digital terrain model incorporating a bathymetric survey of all critical sections of creeks and rivers upstream and downstream of the dam relevant to flood modelling
3. assessment of the reliability of the 24 hour, the three day and the five day rainfall forecasts
4. consideration of whether and how weather radar can be incorporated into decision making
5. requesting information from the Bureau of Meteorology as to its willingness to provide ensemble forecasts
6. consideration as to whether and how ensemble forecasts can be incorporated into decision making.

2.13 The following modelling work should be carried out under the supervision of the steering committee and reviewed by the technical review committee:

1. modelling across the range of full supply levels, operating strategies and flood events (historical, design and synthetic) in each case assessing the consequences in terms of risk to life and safety and economic, social and environmental damage. In terms of operating strategies, using a full range of strategies including:
 - a. a stepped change from W3 to W4
 - b. moving to a higher rate of release earlier in W1
 - c. bypassing W1
 - d. altering maximum release rates under W3
 - e. operating the gates in conjunction with the initiation of any of the fuse plugs in order to achieve a lower rate of discharge
2. simulations to test the robustness of relying on the 24 hour, the three day and the five day rainfall forecasts

3. development of a probability distribution for the time between closely spaced flood peaks in the catchment using historical records.
- 2.14 The Commission recommends that a review be conducted of the number and distribution of ALERT gauges within the Wivenhoe and Somerset catchments. This review should include an assessment of the usefulness and cost effectiveness of installing more gauges, particularly at high elevations in the catchment. Such an assessment would appropriately involve the Bureau of Meteorology, DERM and Seqwater, and the relevant local councils.
 - 2.15 Seqwater should:
 - immediately recruit and train additional flood engineers to ensure at least five flood engineers are available for flood operations
 - establish a formal flood event operation training program for junior engineers to ensure the flood operations centre will be staffed by appropriately qualified and experienced personnel in the medium and long term.
 - 2.16 In addition to the on duty flood engineer(s), Seqwater should ensure that the flood operations centre is staffed by a trainee flood engineer on each shift (in addition to the technical assistants) to conduct the modelling.
 - 2.17 Seqwater should ensure that, during major flood events, flood engineers do not have responsibility for, and are not required to, organise food, sleeping arrangements or access to facilities, such as power supply and communications equipment.
 - 2.18 An accurate record should be kept of reasons for key decisions, including changes in strategy and releases. Documents relevant to key decisions should also be kept, including:
 - each version of the gate operations spreadsheet which contains a different input gate operation scenario
 - all graphical depictions of model runs produced
 - a version of the gate operations spreadsheet which contains the gate operation scenario which will be implemented marked so that it is clear it is the one agreed to be implemented.
 - 2.19 Seqwater should ensure that all telephone calls within the flood operations centre are digitally recorded to create an accurate record of decision-making during major flood events.
 - 2.20 Seqwater should develop procedures which require the flood engineers to check the entries in the flood operations centre's flood event log at a near contemporaneous time, such as the end of their shift, to ensure accuracy and the recording of significant events. Seqwater should make sure that the operation of the flood operations centre enables the flood engineers to comply with that procedure.
 - 2.21 Seqwater should produce a template situation report in consultation with the flood engineers and recipient agencies. As part of this process, consideration should be given as to whether the quality and timeliness of the dissemination of information about flood operations would be improved if a single document, rather than a situation report and a technical situation report, were used for the purpose of communicating flood operations to all concerned parties. The template situation report should include, at a minimum, dedicated space for the following:
 - meteorological observations and situation, including forecasts
 - identification of the current operating strategy
 - the strategy, aims and objectives of the flood engineers
 - actual and expected releases
 - any other comments.
 - 2.22 Seqwater should create a regular forum for discussion between all operational staff of the flood operations centre and Bureau staff to:
 - increase the knowledge of flood operations centre staff about the Bureau's products, abilities, advice and operations
 - reach agreement as to the frequency and type of information to be shared between the Bureau and the flood operations centre during a flood event

- discuss advances in technology and science in areas including forecasting, data collection and modelling
 - build relationships between the staff of both organisations.
- 2.23 Seqwater should give consideration to creating a communications position within the flood operations centre filled by an engineer with experience in dam operations and emergency management processes.
- 2.24 Seqwater should give consideration to posting information about current and future releases on its website during flood events as one method of ensuring accurate and timely information is available to the public.
- 2.25 Seqwater should:
1. conduct an interim review of the North Pine manual
 2. have the draft manual assessed by independent expert peer reviewers
 3. consider the expert peer reviews
 4. submit the draft manual to DERM for approval under the Act so that it can be approved before 1 October 2011.
- 2.26 Particular attention should be paid during the interim review of the North Pine manual to clarifying the circumstances in which pre-releases under part 8.4 are permitted.
- 2.27 Seqwater should act immediately to establish:
1. a steering committee to oversee the long term review of the North Pine manual including senior representatives of at least DERM, Seqwater, the Water Commission, the Water Grid Manager, Brisbane City Council and the Moreton Bay Regional Council
 2. a technical review committee comprised of independent experts in at least hydrology, meteorology and dam operations to examine all technical work completed as part of the review.
- 2.28 The steering committee should:
1. oversee the continuation of Seqwater's *North Pine Dam Acceptable Flood Study Investigations* in accordance with the scope and program of activities advised to the Commission as at 6 May 2011
 2. determine whether any hydrological studies, in addition to those undertaken as part of the *North Pine Dam Acceptable Flood Study Investigations*, are required
 3. ensure that modelling across a range of full supply levels and operating strategies, including variations of the gate increments and gate opening intervals is undertaken
 4. ensure all of the above work is reviewed by the technical review committee.
- 2.29 The Moreton Bay Regional Council should investigate options for the upgrade of Youngs Crossing and undertake a cost-benefit analysis of these to determine an outcome which best serves the public interest.
- 2.30 The Moreton Bay Regional Council should consult with Seqwater and the local police, ambulance and fire and rescue services to make arrangements for emergency vehicles to access Vores Road and Grant Street, Whiteside, when Vores Road is closed by the flooding of Whiteside Creek.

Chapter 3 Disaster frameworks, preparation and planning

- 3.1 The state disaster management group should include representatives of the Australian Defence Force and the Australian Red Cross in its planning and preparation for the next wet season.
- 3.2 Risk management is fundamentally important to disaster management. The Queensland Government should, before the next wet season, ensure that the state-wide natural hazard risk assessment is completed and its results provided to local governments.
- 3.3 Emergency Management Queensland should, as part of its review of local disaster management planning guidelines, consider whether consistent activation terminology should be adopted.
- 3.4 Every local government susceptible to flooding should ensure that, before the next wet season, its local disaster management plan:
 - is consistent with the *Disaster Management Act 2003*

- addresses local risks and circumstances
 - can be used easily in the event of a disaster.
- 3.5 Every person who is required to work under a local disaster management plan should be familiar with the plan before the next wet season.
- 3.6 Every local government should publish its disaster management plan (and relevant sub-plans) on its website before the next wet season.
- 3.7 Emergency Management Queensland should proceed with its proposed reviewing system before the next wet season.
- 3.8 Each district disaster co-ordinator should ensure that, before the next wet season, the disaster management plan of every local government in the co-ordinator's district susceptible to flooding:
- is consistent with the *Disaster Management Act 2003*
 - addresses local risks and circumstances
 - can be used easily in the event of a disaster.
- 3.9 In order to assist district disaster co-ordinators in this task, and to ensure consistency and effectiveness, Emergency Management Queensland should:
- provide a standardised approach for district disaster co-ordinators to follow, with all necessary guidance
 - generally oversee the reviewing process
 - before the next wet season, review a selection of local disaster management plans of local governments susceptible to flooding, which have already been reviewed at the district level.
- 3.10 Emergency Management Queensland should assess the effectiveness of the review system before the end of 2011, and report its results to the Commission by 31 December 2011.
- 3.11 Emergency Management Queensland should endeavour to ensure that before the next wet season:
- training is provided to those involved in disaster management at the local and district levels to ensure that the respective roles of all agencies, and in particular local government and the Queensland police, during an event are clearly understood
 - training is provided to all local disaster co-ordinators
 - training is provided to SES volunteers
 - local disaster management groups are given practical training based on the event of large-scale flooding across different local government regions (as in Exercise Orko).
- 3.12 If training cannot be provided to every local government and disaster district before the next wet season, priority should be given according to each region's susceptibility to flooding.
- 3.13 Before the next wet season, local governments susceptible to flooding should conduct community education programs which provide local information about (at least) the following topics:
- the measures households should take to prepare for flooding
 - the roles and functions of the SES and details of how to contact and join it
 - whom to contact if assistance is needed during a flood
 - contact details for emergency services in the area
 - the types of warnings that are used in the area, what they mean and what to do in the event of a warning
 - where and how to obtain information before, during and after a disaster
 - what is likely to happen during a disaster (for example, power outages and road closures)
 - evacuation
 - measures available for groups who require particular assistance (for example, the elderly, ill and people with a disability).
- 3.14 To ensure consistency, the Queensland Government should assist local governments to develop and deliver the community education programs.

- 3.15 Before the next wet season, the Queensland Government should conduct a public education campaign about the dangers of driving into floodwaters.
- 3.16 The campaign should use various media and be designed to reach as many people as possible.
- 3.17 The National Emergency Management Committee should, as part of its education initiatives, consider developing a national public education campaign about the dangers of driving into floodwaters, using various media and commencing, if possible, before the next wet season.
- 3.18 The Queensland and Commonwealth governments should liaise to ensure a consistent message is delivered to the public.

Chapter 4 Forecasts, warnings and information

- 4.1 In issuing warnings for a district or region, local and state authorities should use a range of different warning mechanisms effective for the particular district or region, including methods which do not rely on electricity.
- 4.2 Councils should prepare SMS alert templates covering a range of different flood scenarios before the wet season.
- 4.3 SMS alerts should direct recipients to websites or contact numbers providing more detailed information about flood locations and predictions, the location of evacuation centres and evacuation routes.
- 4.4 Councils and Emergency Management Queensland should work together to ensure the approval process does not cause delays in delivering SMS alerts.
- 4.5 Wherever possible, Emergency Management Queensland should consult with local disaster management groups before sending emergency alerts to residents. Emergency Management Queensland should inform the local disaster management group, as soon as it can, about any message already sent to residents in that local disaster management group's area.
- 4.6 Individuals and businesses should be encouraged to acquire battery operated radios for use in emergencies.
- 4.7 Councils should ensure that residents are aware of the frequency of the radio station or stations in their local area that will disseminate flood warnings and other information during disasters.
- 4.8 Councils that have not already done so should consider how social media may be used effectively to provide accurate information about flood levels and local conditions to residents during a flood event.
- 4.9 A siren may be appropriate in smaller towns or rural communities susceptible to flash flooding. If councils rely on sirens to warn residents, they should ensure that the community understands the meaning of the siren.
- 4.10 Councils, with the assistance of the Bureau of Meteorology, should examine the feasibility of and priorities for installing additional river height and rainfall gauges in areas of identified need.
- 4.11 Councils, with the assistance of the Bureau of Meteorology, should consider the susceptibility of their regions to flash flooding, and whether it is feasible and necessary to acquire and operate an automated local evaluation in real time system (ALERT system) for particular waterways.
- 4.12 The Queensland Government should consider assisting less well-resourced councils to fund the installation of an ALERT system where a case is made for its adoption.
- 4.13 Councils should ensure that residents and businesses can clearly understand the impact of predicted flood levels on their property. This may include one or more of the following methods:
 - information on rates notices about flooding at individual properties
 - geospatial mapping, available to the public, that depicts inundation at certain river heights
 - flood markers
 - flood flag maps and floodwise property reports
 - colour coded maps
 - information that relates gauge heights with the level of flooding to be expected at a property.

- 4.14 In the course of flood events, warnings referring to gauge heights should include information about the location of the gauge.
- 4.15 Each local disaster management group should include in its meetings a representative of the operator of any dam upstream of its region which contributes water to flooding.
- 4.16 Dam operators should plan to contact people identified by their emergency action plans about dam outflow in sufficient time for them to be able to respond to the information.
- 4.17 Dam operators should ensure each emergency action plan includes a clear statement as to the frequency of, and circumstances in which, warnings will be issued to people listed in the emergency action plan.
- 4.18 Dam operators should assess the effectiveness of using SMS and/or email as a bulk instantaneous communication to all people on the notification list while individually contacting those whom it is essential to inform immediately.
- 4.19 Seqwater should consider consolidating its communication arrangements and responsibilities in a single document for each dam it operates.
- 4.20 The operator of each dam should, upon request, provide to any person on the notification list in the emergency action plan an explanation of the arrangements as to the type and frequency of communications required by that plan.
- 4.21 Operators of dams should assess their current compliance with the DERM *Queensland Dam Safety Management Guidelines* (February 2002), the ANCOLD *Guidelines on Dam Safety Management* (August 2003), and the Australian Government *Emergency Management Planning for Floods Affected by Dams* (2009) and if appropriate, comply with those guidelines.
- 4.22 Operators should include in their emergency action plan a description of the type of information that will be provided to those on the notification list.
- 4.23 Operators of dams should publicise, in a newspaper circulating in the local area and by posting a notice on its website every year before the wet season, the opportunity for local residents immediately downstream of a dam to be included on the existing notification list, and:
 - consider whether an applicant for notification is so close to the dam that the warning time before water from the dam affects them is less than that available through the emergency management system
 - consider whether they can be effectively notified by SMS or email
 - if it is necessary to contact the applicant personally, agree with him or her a mode for that communication.
- 4.24 The operator of any referable dam and the local disaster management group should develop a common understanding as to their respective roles in a flood event and the type and frequency of information the dam operator will provide to it and local residents.
- 4.25 The Department of Transport and Main Roads, in its capacity as the primary provider of information about road conditions to the public, should continue to improve the accuracy of road condition information and the timeliness of its distribution to the public and other agencies.
- 4.26 The Department of Transport and Main Roads should identify and include local road names when reporting road conditions.
- 4.27 The Queensland Government should work with the New South Wales Government to co-ordinate road condition reporting procedures to inform local councils and road users of interstate road conditions in a variety of different ways.
- 4.28 In rural and remote areas where telecommunications are not effective, measures that do not rely on internet and mobile telephone services should be implemented to inform the travelling public of road conditions ahead, for example:
 - signs with detailed information
 - providing tourist information centres and tourist radio stations with information on road conditions.

- 4.29 The Bureau of Meteorology should endeavour to make clear the areas actually covered by its warnings, and specify what may be expected in particular areas, so that the relevance and significance of any warning is obvious to residents of the area at risk.
- 4.30 Councils should continue to take responsibility for issuing flash flooding warnings. However, where the Bureau of Meteorology becomes aware of weather conditions likely to cause flash flooding that is likely to endanger life or property in a particular council's region, it should, performing its functions in the public interest, directly communicate that information to the relevant council.
- 4.31 Councils should advise the Bureau of Meteorology of any information they possess about flash flooding (or the immediate prospect of it) likely to endanger life or property in their region, and of any warnings they issue about such flash flooding. The Bureau of Meteorology should consider in each case whether any such warning should be re-published (whether as a warning emanating from the Bureau itself or as attributed to the relevant council) on the Bureau's website, or whether it should provide a link to any council warning or other information regarding flash flooding provided by councils or disaster management agencies.
- 4.32 Where the Bureau of Meteorology has information which leads it to anticipate flash flooding likely to endanger life or property in a specific area, it should publish a warning to that effect on its website.
- 4.33 The Bureau of Meteorology should do its best to develop working relationships with all councils, particularly for the purpose of exchanging information in severe weather and flood events.
- 4.34 The Bureau of Meteorology should expand its volunteer rainfall and river height networks to incorporate residents of the Lockyer Valley, particularly property owners living on watercourses who can provide manually obtained readings of water heights where no automatic gauge is available, or can confirm automatic gauge readings where there is concern about their accuracy.
- 4.35 The Bureau of Meteorology should consider identifying amateur weather-watch groups it considers credible and likely to have useful local knowledge, and establish means (similar to those available to the storm spotters) by which they can expeditiously communicate with the Bureau.
- 4.36 Somerset Regional Council, in consultation with Seqwater and the Bureau of Meteorology, should consider how warnings can be provided to residents living near the Brisbane River at Fernvale about the expected level of flooding in their area.

Chapter 5 Emergency response

- 5.1 When a local government cannot effectively manage its response to a disaster, disaster management personnel from local governments in a position to assist should be deployed to help the local disaster management group.
- 5.2 Local governments should consider adopting uniform disaster management software, to enable inter-council assistance to be given more easily and effectively.
- 5.3 To ensure effective co-ordination in larger-scale disasters, deployment of personnel (and other resources) between local governments should be facilitated through the Council to Council (C2C) program.
- 5.4 The C2C program should be incorporated into the state disaster management arrangements and operate within the structure of the state disaster co-ordination centre.
- 5.5 The state disaster management group, Emergency Management Queensland and the Local Government Association of Queensland should do further work before the next wet season to ensure that during a disaster:
 - the C2C program meets requests for assistance as efficiently as possible
 - local governments and other prospective participants understand how the C2C program works.
- 5.6 As part of their planning before the next wet season, local disaster management groups should identify communities which, because of distance, the potential for isolation by disaster, or any other reason, may require specific disaster management arrangements, and take steps to establish them. Such arrangements may include forming disaster management sub-groups in those communities.
- 5.7 Whatever form arrangements take, they should seek to ensure that, in the event that flooding causes isolation:

- there are lines of communication between the local disaster management group and the community
 - the community has the basic resources it needs to cope with its situation
 - the local disaster management group is aware of what supplies the community may need in prolonged disaster, and can respond to requests for assistance in a timely way
 - potential evacuation routes and centres are known.
- 5.8 Where a local government forms a sub-group of its disaster management group:
- the responsibilities of the sub-group must be clearly defined within the local disaster management arrangements
 - each member of the sub-group must clearly understand his or her role.
- The Commission recommends that sub-groups and local disaster management groups set out their respective roles and responsibilities in writing.
- 5.9 Until the All Hazards Information Management System is in place and allows the status of requests for assistance to be tracked, other means should be used to keep local disaster management groups informed of the progress of requests for assistance.
- 5.10 A clear protocol should be developed for managing the participation of local and district disaster management groups in the state level teleconferences, to govern and make more efficient participation in the teleconferences.
- 5.11 The Queensland Fire and Rescue Service should increase the number of swift water technicians (Level 2) to at least meet the quota for the approved number of rescue technicians in each region.
- 5.12 The Queensland Fire and Rescue Service should consider whether the approved number of swift water technicians in each region is appropriate to meet the demands of that region.
- 5.13 The Queensland Fire and Rescue Service should revise the Operations Doctrine to clarify:
- how many Level 2 swift rescue technicians and Level 1 support personnel are required to safely perform a swift water rescue
 - the options available to an incident controller at a swift water incident with fewer than the required personnel and what considerations they should take into account in their decision-making.
- 5.14 The Queensland Fire and Rescue Service should consider providing Level 1 swift water rescue training to all auxiliary firefighters stationed in areas susceptible to flooding.
- 5.15 The Queensland Fire and Rescue Service should ensure all rural fire service volunteers and auxiliary firefighters stationed outside areas susceptible to flooding receive Awareness Level swift water rescue training.
- 5.16 The Queensland Fire and Rescue Service should identify areas that are likely to require, but do not have, swift water capability during the wet season and consider how it can best provide a permanent capability to any such area.
- 5.17 The memorandum of understanding between the Queensland Fire and Rescue Service and Emergency Management Queensland should be finalised.
- 5.18 The joint helicopter operations training program contemplated by the memorandum should be devised and provided to all relevant staff of the Queensland Fire and Rescue Service and Emergency Management Queensland.
- 5.19 The Queensland Fire and Rescue Service should purchase waterproof radio equipment that:
- is appropriate for swift water and normal fire fighting environments
 - will attach securely to firefighters in a way that does not hamper their operations.
- 5.20 The Queensland Fire and Rescue Service should work towards providing hands-free means of communications to swift water technicians for in-water operations.
- 5.21 The Queensland Fire and Rescue Service should ensure that rescue technicians on deployment are provided with individual radios, rather than sharing a communications pack.

- 5.22 Permanent urban appliances should carry at least five personal floatation devices to ensure there is a floatation device for each firefighter and a spare for rescues.
- 5.23 Every rescue appliance should carry personal floatation devices suitably sized for children or infants.
- 5.24 The Queensland Fire and Rescue Service should consider upgrading all personal floatation devices to a type which allows the firefighter to release himself or herself from an attached rope in the event of getting caught, or in other life threatening situations.
- 5.25 The Queensland Fire and Rescue Service should investigate the feasibility of acquiring motorised inflatable work platforms with guarded propellers to improve the safety of swift water rescue.
- 5.26 Queensland Fire and Rescue Service should review whether it has enough vehicles capable of traversing floodwaters.
- 5.27 The Queensland Fire and Rescue Service should ensure all station officers are informed about the locations and availability of additional equipment and how to obtain it.
- 5.28 The Queensland Fire and Rescue Service should ensure that staff in Ipswich can rapidly obtain additional swift water rescue equipment in the case of an emergency.
- 5.29 The Queensland Fire and Rescue Service should consider isolating repeaters during a large scale emergency response. If this solution is found to be feasible, it should be implemented as protocol as soon as possible. If it is not, the Queensland Fire and Rescue Service should explore other solutions to the issue of the fire communications network being overloaded and firefighters resorting to localised networks during large scale emergency response situations.
- 5.30 The Queensland Fire and Rescue Service needs to define clearly what its protocol is for volunteer firefighters in disaster scenarios other than fire when they are the only or primary rescue service in a community.
- 5.31 The Queensland Fire and Rescue Service should clarify in practical terms the role of firefighters in sandbagging, the provision of road blocks and similar activities.
- 5.32 Before the next wet season, councils, SES controllers and Emergency Management Queensland should work together to identify and address deficiencies in the ability of the SES to respond effectively to flooding. At the very least, suitable flood boats and flood boat training should be provided to SES units which require them.
- 5.33 The Queensland Government and councils should take measures, as soon as possible, to attract more SES volunteers, particularly in areas susceptible to flooding which do not have sufficient numbers. New SES units should be established where possible.
- 5.34 The Commission acknowledges that it may not be possible to recruit and train sufficient numbers of SES volunteers to the extent needed before the next wet season. However, this should not prevent steps being taken as soon as possible to identify the factors impeding the recruitment and retention of SES volunteers, action being taken to address them, and the commencing of recruitment activity.
- 5.35 Before the next wet season, the Department of Public Works should ensure that Smart Service Queensland can manage a significant increase in calls to the 132 500 number, to at least the level that occurred during the 2010/2011 floods.
- 5.36 As a matter of priority, the Emergency Helicopter Network requires a system of 'single point tasking'; that is, a central organisation exercising command and control of all helicopters in the Emergency Helicopter Network, according to availability, task, priority and location. This is a change, which will require all the government agencies concerned to consider the operational needs, resources, protocols, guidelines and training required for its implementation. Ideally, those steps should be completed and the change made before the next wet season.
- 5.37 At the very least, by the beginning of the wet season, an interim structure needs to be formally in place under which one organisation is informed of the status, location, capabilities and allocated task of each helicopter in the Emergency Helicopter Network at any given time. The deployment of helicopters should be made through this organisation.
- 5.38 Queensland Police Service call-takers across the state should be trained to a uniform standard, consistent with the standard of the training provided by the Brisbane Police Communications Centre.

- 5.39 Emergency Management Queensland should finalise the draft evacuation guidelines for approval by the state disaster management group as soon as possible, addressing the issues identified from the 2010/2011 floods.
- 5.40 Each council should develop an evacuation sub-plan in accordance with the Emergency Management Queensland guidelines. This includes involving local groups and people in the planning process.
- 5.41 Councils with existing evacuation sub-plans should review them to ensure they address the issues identified from the 2010/2011 floods.
- 5.42 Where flooding is governed by a particular watercourse, the evacuation sub-plan should identify triggers in the form of those water level heights at which it is known that preparation for evacuation will be necessary.
- 5.43 It is a matter for councils whether or not they choose to publicise the location of evacuation centres before a disaster but there is a good deal to be said for doing so, particularly in smaller communities where the options are limited. Whether or not councils publicise the location of evacuation centres before a disaster, they should include in their disaster education programs information on evacuation procedures, and how to ascertain evacuation centre locations and safe evacuation routes.
- 5.44 During floods, councils should as quickly as possible provide people in the relevant areas with advice as to the location of and routes to evacuation centres.
- 5.45 That advice should be given using as many mechanisms as appropriate, including text message, radio and door knocking.
- 5.46 Councils should identify a range of evacuation centres as part of their disaster preparation and planning.
- 5.47 Councils should audit identified evacuation centres to ensure the facilities and location are appropriate, preferably in consultation with the Australian Red Cross and the Department of Communities.
- 5.48 Councils should be aware of what facilities are available at each evacuation centre, at particular times of the year.
- 5.49 Councils should identify areas that are susceptible to isolation, including locations in which community groups established informal evacuation centres during the 2010/2011 floods, with a view to incorporating evacuation centres at those locations into their evacuation sub-plans.
- 5.50 Councils should identify community groups who may take responsibility for establishing and operating evacuation centres in the future.
- 5.51 The identified groups and councils should, before the next wet season, establish cooperative arrangements as to how the centres should operate, and to ensure the centres have appropriate facilities.
- 5.52 Councils should recognise that community groups may establish makeshift evacuation centres during a disaster. When this occurs, councils need to identify and establish communications with the centres as soon as possible.
- 5.53 Councils should develop plans for the effective and timely re-supply of makeshift centres.
- 5.54 The Queensland Government should investigate the possibility of providing indemnity or obtaining insurance for makeshift evacuation centres established in good faith, and in the absence of official alternatives, to meet community needs.
- 5.55 All councils should consider entering a memorandum of understanding for evacuation centres with the Australian Red Cross which clearly sets out the roles and responsibilities of the parties in planning and responding to evacuation requirements in a disaster.
- 5.56 Each council with a memorandum of understanding with the Australian Red Cross should consider undertaking practice exercises with the Australian Red Cross to ensure both parties understand their respective roles and responsibilities.
- 5.57 Local disaster management groups and district disaster management groups of which the Australian Red Cross is not currently a member should include the Australian Red Cross in disaster preparation and planning as well as response, whether as a member or otherwise (see also recommendation 3.1).

- 5.58 Local and district disaster management groups should notify the Australian Red Cross of their evacuation needs as soon as possible in a disaster.
- 5.59 Disaster response agencies should use the National Registration Inquiry System.
- 5.60 During a disaster, councils and the Queensland Police Service should encourage individuals to self-register with the National Registration Inquiry System.
- 5.61 Councils should include information about the National Registration Inquiry System as part of their community education.
- 5.62 In areas susceptible to flooding, councils should identify facilities housing people who may require assistance to evacuate. Councils should work with the operators of these facilities to ensure they have appropriate evacuation plans and that they are aware of the council's disaster management arrangements.
- 5.63 Councils should identify the specific evacuation needs of these facilities, such as increased timeframes for withdrawal or transport by ambulance.
- 5.64 Councils should include the location, contact details, and specific evacuation needs of these facilities in their evacuation sub-plans.
- 5.65 Councils should identify organisations (for example, Meals on Wheels and Bluecare) that provide services to people in the community who may be unable to evacuate without assistance. Councils should include the contact details of these organisations in their evacuation sub-plans.
- 5.66 Councils should work with these service providers to identify: the number of people who may require assisted evacuation; the general nature of their needs, including any necessary medical supplies and equipment; warning message formats and dissemination; increased timeframes needed for evacuation; transportation requirements; and shelter requirements. Councils should include this information in their evacuation sub-plans.
- 5.67 Facilities housing people who may be unable to evacuate without assistance should develop evacuation plans to ensure residents are provided with appropriate transportation, emergency accommodation, trained carers and medical support if necessary. Where possible, residents of those facilities should be relocated to other similar facilities or accommodation other than evacuation centres. These plans should be developed in consultation with councils and relevant agencies such as Queensland Health.
- 5.68 Facilities housing people who may be unable to evacuate without assistance should prepare disaster recovery plans, particularly for the provision of back up power and emergency supplies, including medical oxygen and common medications, to minimise the need for evacuation where there is no direct threat from natural disaster.
- 5.69 The Queensland Government and councils should ensure information about emergency preparedness, warnings and evacuation is available in the different languages of ethnic groups in the community and in Auslan.
- 5.70 As part of their community education strategy, councils should ensure tourists are made aware of evacuation procedures, how to ascertain evacuation centre locations and safe evacuation routes. That may be done through tourism boards, operators and accommodation providers.
- 5.71 Councils, as part of their community education program for disaster preparation, should encourage pet owners to consider what they will do with their pets if they need to evacuate.
- 5.72 Councils should work with the RSPCA to develop plans about transporting and sheltering pets should they need to be evacuated with their owners.
- 5.73 Animal shelters, zoos, stables, and similar facilities should develop plans for evacuating or arranging for the care of animals in consultation with their local council. Local disaster co-ordinators should be aware of what plans exist.
- 5.74 Alignment of police district boundaries, disaster district boundaries and local government boundaries is unlikely to be feasible in the short-term. However, where police district boundaries are being re-assessed for other reasons, conformity between boundaries of police districts, disaster districts and local government regions, should be a major objective.

- 5.75 Before the 2011/2012 wet season, all local and district disaster management groups should formally adopt the Queensland Re-supply Guidelines and have arrangements in place for the prompt re-supply of towns, properties and residents isolated by floodwaters.
- 5.76 The Department of Employment, Economic Development and Innovation should establish, preferably with the assistance of AgForce, procedures to co-ordinate fodder drops to isolated landowners in future flood events.
- 5.77 The Department of Employment, Economic Development and Innovation should ensure rural communities are aware of the processes and the payment arrangements for fodder drops.
- 5.78 Local governments should investigate the feasibility of permitting local landowners to carry out temporary repairs on flood-damaged public roads to allow access to their properties.
- 5.79 Local governments and the Queensland Government should work with their New South Wales counterparts to set up procedures for co-ordinating emergency responses in the region of the Queensland/New South Wales border.

Chapter 6 Essential services

- 6.1 Local, district and state disaster management groups should include essential services providers in their disaster planning and preparation and in their meetings at an early stage during disasters.
- 6.2 Power distributors should review network switching options before next wet season (to optimise switching arrangements) so that, where possible, power is disconnected only to those who are flooded.
- 6.3 Power distributors should consider pre-emptively installing generators in areas known to become isolated (but not inundated) during flooding, if the power supply cannot otherwise be maintained.
- 6.4 The control and coordination centre for Water Grid operations should be located where, at the least, it is not susceptible to flooding or to its power supply being interrupted.
- 6.5 Essential service providers should continue to develop ways to share available resources within their respective industries during disasters.
- 6.6 Essential service providers should formalise arrangements to share information about the status of services during a disaster.
- 6.7 Brisbane Markets Limited should contact the Brisbane City Council on a regular basis in the lead-up to and during flooding to seek local flood information. In response, the council should provide readily understood information which, as far as possible, explains the level of flooding to be expected at the Rocklea Markets site.
- 6.8 The Brisbane City Council should attend to the clearing of the flood mitigation channel on the western side of the market site before the next wet season.

Chapter 7 Lockyer Valley and Toowoomba

- 7.1 The Toowoomba Regional Council should consider amending stage one of the Cooby Dam emergency action plan to extend the five kilometre limit for alerting residents downstream of the Cooby Dam.
- 7.2 Lockyer Valley Regional Council should investigate the feasibility of installing alarm-activating gauges in the creeks at Spring Bluff, Murphys Creek and other communities where communication systems are poor and there is a risk of rapid and unexpected water rise.
- 7.3 Lockyer Valley Regional Council should identify those areas vulnerable to flooding within its region, should identify appropriate evacuation collection points and centres accordingly, and consider whether it should make those known to the community.
- 7.4 Lockyer Valley Regional Council should immediately develop a plan for the removal of debris, man-made and natural, from waterways in the Lockyer Valley and put it into effect so as to minimise the risk should flooding recur in the coming wet season.