6 Essential services

6.1 Essential services in the disaster management framework

Essential services encompass the provision of electrical power, drinking water and telecommunications. The large-scale distribution of fresh food and produce, which is facilitated by the Rocklea Markets, is discussed separately in *6.3 Rocklea Markets* below.

6.1.1 Power

Electrical power is distributed to people in Queensland by Energex Limited and Ergon Energy Corporation Limited. Energex supplies power to customers in south-east Queensland (including the regions of Brisbane, Ipswich, Gympie and the Lockyer Valley), while Ergon supplies power to the rest of the state.[1] Under the *Electricity Industry Code*, both entities were obliged to prepare and submit Summer Preparedness Plans for the 2010/2011 summer season, which had to address various matters including measures to minimise power outages and improve emergency responsiveness.[2] These plans were complemented, in the case of Energex, by Corporate Emergency Management, Business Continuity and Flood Risk Management Plans,[3] and by Disaster Management and Regional Emergency Management Plans in the case of Ergon.[4] Furthermore, both organisations have formal understandings in place for reciprocal use of each other's contact centres and sharing resources in response to severe weather.[5] Trials and simulations designed to test these plans occurred prior to the 2010/2011 wet season.[6]

Having considered those facts, the Commission is satisfied that Energex and Ergon prepared appropriately.

In response to the 2010/2011 floods, both Energex and Ergon pre-emptively disconnected power to buildings and customers in areas where flooding was expected to occur.[7] This was done for reasons of safety and to assist in the later reconnection of power supplies by reducing the potential for damage to electrical infrastructure. Where possible, movable plant and equipment were withdrawn before flooding, so that power supplies could be re-connected more quickly once the floodwaters subsided.[8] The Commission appreciates the necessity of these actions in areas where flooding is anticipated. It also understands the need to balance the desirability of earlier disconnection, to allow sufficient time for critical equipment to be removed, against that of later disconnection, to minimise public inconvenience.

However, particular community concern was expressed regarding the practice of pre-emptive power cutting when it affected areas that were not flooded.[9] Power disconnection in this circumstance most often occurs when the electricity supply comes from, or passes through, an area that is flooded and has had its electricity cut off.[10] Power can be restored to areas that are not flooded only if the necessary power lines remain undamaged and the flood-affected part of the network is capable of being switched off or isolated. Isolating such an area itself depends on there being switching equipment in place that is physically accessible to the technicians performing the relevant work.[11]

There is no doubt that the community suffers an additional burden when areas that are not flooded lose their power. Minimising this type of inconvenience could be achieved by carefully reviewing the available network switching options and by taking steps to protect vital electrical infrastructure from damage caused by flooding.[12] The Commission understands it is feasible for Energex to review its network switching arrangements before the next wet season. However, measures to protect major equipment, such as substations, must be for the longer term, because of the technical and financial constraints involved. Power distributors are encouraged, nonetheless, to examine what protective steps can be taken.

A related concern that emerged during the Commission's proceedings was the loss of power in communities that were isolated, but not inundated, by floodwaters. This occurred, for example, in the far western suburbs of Brisbane, including Bellbowrie, Karana Downs and Moggill. Deploying generators in such locations is a means of overcoming this problem, with the generators acting as temporary sub-stations, separate from the network, until regular supply is restored; but, of course, it requires that the equipment be in place before isolation occurs.[13] Although Energex was aware that isolation was a possibility in Brisbane's far western suburbs, the loss of power there was not reasonably to be expected because electricity is supplied by five separate high-voltage feeders. By the time all of these transmission lines were damaged, floodwaters prevented access to the area to install a generator.[14]

Good decision-making about pre-emptive power supply cuts depends, largely, on the availability of timely and accurate flooding forecasts. Ergon conducted daily disaster management committee meetings in its flood-affected regions to review flood levels. Decisions about the disconnection of supply were made by operational staff based on flood forecasts, patrols and consultation with local disaster management groups.[15] In Ipswich and Brisbane, Energex primarily relied on information from the Bureau of Meteorology and the Brisbane City Council about expected flood levels, and prepared disconnection plans accordingly.[16] However, during the course of Tuesday 11 January 2011, the predicted flood levels were revised upwards throughout the day, culminating in a warning from the Brisbane City Council that a flood peak similar to that of 1974 was to be expected in the early hours of Thursday.[17] The opportunity to remove critical equipment in Ipswich was much more limited, because of the rapid and earlier flood peak there.[18]

The Commission considers that plans for the pre-emptive disconnection of power should be communicated to disaster managers and the general public as quickly as possible. For this to occur, power distributors should be involved in disaster management group meetings at an early stage, and their media and communication strategies should be in place, so that they are ready to inform the public of developments. Although Energex released a media statement at 5.00 pm on 11 January 2011, and maintained both a broad public information campaign and an operational call centre over the following days, it did not attend its first state disaster management group meeting until Wednesday 12 January 2011, by which time the pre-emptive disconnection of power had commenced in both Ipswich and Brisbane. The Commission notes that Energex's attendance at this meeting was by invitation.[19]

By comparison, it seems that Energex attended various disaster management group meetings during and after the flood peaks in Ipswich and Brisbane. This enabled information to be shared, and priorities more clearly identified, concerning the restoration of power within these communities.[20] The efforts to restore power involved many extra crews, made up of private contractors and personnel from other electricity providers, being sent to the flood affected areas.[21]

The Commission considers the responses of the power distributors to the 2010/2011 floods were appropriate and effective given the circumstances faced by each of them. For the future, however, power distributors' early involvement in disaster management group meetings could give them a better understanding of what electrical infrastructure is likely to be affected by flooding.[22] That information, passed to the wider community, would allow better preparation for any power disruptions to follow. The meetings themselves would provide a forum for communicating information about the restoration of power supplies.

6.1.2 Water

In south-east Queensland, the delivery of drinking water to the communities in the region involves a three-tiered structure which is collectively known as the Water Grid. At the time of the 2010/2011 floods, Seqwater (which operates major dam storages and water treatment plants) and WaterSecure (which operated desalination and water recycling plants)[23] each supplied bulk water to LinkWater, which transports the water around the grid through a network of bulk pipelines. The water is delivered by way of the grid to three water distributors: Queensland Urban Utilities (which supplies customers in the Brisbane, Ipswich, Lockyer Valley, Scenic Rim and Somerset council

areas), Unity Water (which serves customers in the Sunshine Coast and Moreton Bay council areas) and Allconnex Water (which supplies customers in the Gold Coast, Logan and Redlands council areas).[24]

Each of these entities comes under the regulatory framework governing the operation of the Water Grid, including the Market Rules.[25] The rules require the Water Grid Manager to prepare and maintain an overarching emergency response plan that provides all of the grid participants with guidance in responding to emergencies affecting the grid. As well, each grid participant is obliged to have its own emergency response plan that aligns with that of the manager. The plans must be approved by the Water Grid Manager and reviewed at least annually.[26] Queensland Urban Utilities also has business continuity plans to assist with recovery after an emergency or disaster.[27] Prior to the 2010/2011 wet season, these arrangements were complemented by various forms of training.[28] LinkWater also conducted a series of risk assessment workshops, which resulted in the development of contingency plans designed to mitigate the effects of particular hazards, including the loss of water supply from treatment plants or a reduction in water quality.[29]

Against this background, the Commission is satisfied that the existing emergency and disaster planning framework was adequate, and the preparations appropriate. However, the Commission notes that the Market Rules also require the Water Grid Manager to prepare a Water Grid Risk Management Plan designed to allow particular risks to the operation of the water grid to be identified and mitigated. While a draft plan was submitted to the Queensland Water Commission, as the rules administrator, for approval on 14 May 2010, the administrator requested changes on 21 January 2011, which are still the subject of negotiation. This plan should be finalised, so that all the water grid participants can then formulate their own corresponding risk management strategies, as required by the rules.[30]

During the 2010/2011 floods, the supply of drinking water was maintained to meet the demands of the water distributors in south-east Queensland. This was achieved despite the flooding of the Mt Crosby Water Treatment Plant's East Bank raw water pump stations and the interruption of water treatment operations at both Mt Crosby West Bank and North Pine dam due to water turbidity and other problems.[31] The daily drinking water requirements of the greater Brisbane area are significant, and the supply constraints caused by the suspension of water treatment operations at Mt Crosby and North Pine dam constituted a major challenge, especially given the volume of treated water ordinarily produced by Mt Crosby.[32] Extensive modelling, and adjustments to the level of production at other water treatment plants, allowed available drinking water to be moved around the grid to meet system demand while water treatment operations at Mt Crosby and North Pine dam were being restored.[33] Although water supplies were lost to various townships in the Lockyer Valley, and parts of western Brisbane and the Somerset region, these were progressively restored, with Queensland Urban Utilities providing alternative water supplies in the meantime.[34]

The quality of drinking water supplies in south-east Queensland was generally maintained during the floods. Within the system of bulk water pipelines, in-built instrumentation allowed water quality to be tested remotely. This form of monitoring remained fully operational during the floods, but was verified by physical sampling where access to the bulk water pipelines was possible. Appropriate water pressures were also maintained through careful monitoring.[35] No positive *E.coli* test results were returned for water in the grid's bulk transportation pipelines.[36] However, contamination was detected in some local drinking water supplies, which were not connected to the bulk distribution network. This occurred in some communities in the Ipswich, Somerset and Lockyer Valley council regions. Queensland Urban Utilities responded to these threats by issuing 'boil water' notices in these places. It also supplied bottled water to affected parts of the Lockyer Valley and Somerset regions.[37]

The Commission considers that the response demonstrated by those involved in the provision of drinking water in south-east Queensland was appropriate in all the circumstances. It is worth noting that a key feature of the ability to maintain bulk drinking water supplies during the floods was the continuous operation of LinkWater's control room. Representatives of the Water Grid Manager and Seqwater relocated to LinkWater's premises on Wednesday 12 January 2011 after they evacuated their own premises because of flooding.[38] (LinkWater's premises have many practical features which make it an ideal centre of operations, including its elevated location in Spring Hill and access to electrical power that is separate from Brisbane's central business district grid.[39]) Those premises became the hub of water grid operations for the duration of the response to the floods in south-east Queensland.[40] Having representatives at the one location is thought to have enhanced the coordination of the response.[41]

In areas outside south-east Queensland, councils are responsible for the provision of drinking water to residents in main population centres. The ability of regional councils to maintain this service during the 2010/2011 floods was mixed. Some councils managed the crisis appropriately, as in the case of the Central Highlands. Its preparations included identifying water pumps vulnerable to flooding and putting in place barriers to protect them, filling all

reservoirs in Emerald to capacity prior to the floods, and establishing additional or alternative water supplies for outlying communities such as Rolleston, Springsure and Duaringa.[42]

The Western Downs Regional Council experienced difficulties once the Dalby water treatment plant was flooded. Faced with two days' remaining water supply, the council responded by imposing severe water restrictions which it communicated to residents by a series of emergency alerts, obtaining (with state-level assistance) additional water by tanker from surrounding towns, and activating a reverse osmosis plant to replenish water stores.[43] In Chinchilla, *E.coli* was found in the water. A 'boil water' alert was prematurely withdrawn before full testing had been completed, but as it happened, the water was safe to drink. The Commission notes that the council is ensuring that in future appropriate testing procedures are completed before the withdrawal of any warning.[44]

Other councils experienced water quality problems, rather than supply constraints. Southern Downs Regional Council advised its residents to boil their drinking water after several of its water treatment plants became inoperable and were unable to be quickly repaired because of their isolation by floodwaters.[45]

Despite these difficulties, it appears that water supplies were maintained. Where water quality was affected, it was restored as quickly as possible after floodwaters receded.

6.1.3 Telecommunications

Telecommunications services take multiple forms comprising fixed line (or land line), mobile (or wireless), radio, data and satellite mobile networks.[46] The continued operation of these services, and their speedy restoration where they have been lost, is critical to the community's ability to respond and recover in the event of disaster.

During the 2010/2011 floods, interruptions to telecommunications services were mostly caused by the loss of mains electrical power to network components or damage as a result of telecommunications equipment being flooded.[47] Depending on the nature of the disruption, telecommunications providers were able to respond in a variety of ways. In some cases, generators were used to keep power supplied to telephone exchanges and mobile base stations. In other cases, temporary mobile base stations and telephone exchanges replaced lost services, or telecommunications traffic was re-routed. In some of the worst affected areas, such as Murphys Creek and parts of the Lockyer Valley, satellite phones and base stations were used to provide mobile coverage.[48]

Effective response required adequate information about network functioning, the existence of power outages and the location of flooding. Other practical concerns included having the authority and means to get service technicians and back-up equipment into the flood-affected areas that were experiencing telecommunications problems. Where these issues could be addressed quickly, the response was better.

Telstra has an established emergency management framework, and recognises that a key factor in its successful operation is the organisation's ability to co-operate with government and emergency services. The company has an emergency services liaison officer, who works closely with Emergency Management Queensland, and its regional director of service delivery liaises with the state disaster management group. With these arrangements in place, Telstra found that it was better able to direct its response in accordance with state group and emergency services priorities.[49]

In contrast, Optus found that during and immediately after the floods, it was difficult to obtain information from various government agencies so that it could assess the extent and severity of flooding and its potential impact upon its telecommunications infrastructure. It was instead reliant to a large extent on media reports. However, once Optus became aware that it could participate in state group meetings, it did so regularly, enabling it to provide updates and gather critical information. For the future, such information would, Optus said, allow it to predict more readily the likelihood of an outage and to reconfigure its network components to limit the extent of any outage.[50] Moreover, Optus suggested, active participation at state level could speed its access to affected areas and allow it more quickly to procure specialised equipment, such as heavy machinery and aircraft from the state government or the Australian Defence Force.[51]

The Commission notes that the state disaster management group has recognised that the earlier essential services providers were included in its meetings, the better placed they were to respond effectively.[52]

Recommendations

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.

6.2 Communications and assistance between essential services providers

The maintenance of power supply is critical to the continued operation of all essential services. Telecommunications were disrupted in many locations by reason only of the loss of power, and not as a result of any direct impact by flooding. Telstra lost mains power to 375 of its network sites. Optus's fixed home and internet services were interrupted in parts of Brisbane and Ipswich primarily as a result of power outages to components of its fibre cable network.[53] Queensland Urban Utilities also recognises that its services are highly dependent on the provision of power.[54]

When essential services providers were informed about prospective power outages, they were able to protect and restore services more effectively. Better information about the location and duration of proposed mains power outages would have assisted Optus to deploy generators and provision its network to cater for the outages. It would also have facilitated the faster restoration of services.[55] Similarly, Queensland Urban Utilities considers that a more formal relationship with Energex, including a co-ordinated approach to emergency planning, would be advantageous in responding to disasters.[56]

The Commission also notes that some essential services providers drew on resources from other industry members to minimise disruption to services. For example, Energex and Ergon have an established memorandum of understanding which outlines how resources are shared during severe weather events. Under this agreement, Energex provided support to Ergon prior to the Brisbane flood. Following the flooding of the Brisbane and Bremer Rivers, Ergon employees, along with crews from interstate electricity entities Energy Australia, Integral, Jemena and Country Energy, assisted Energex to reconnect power in Brisbane and Ipswich.[57] In the same vein, Queensland Urban Utilities received significant assistance from Allconnex, Unity Water and Sydney Water under the Mutual Aid Guidelines for the water sector. The guidelines are designed to speed the process of requesting, co-ordinating and despatching additional specialist personnel and equipment during emergencies and disasters.[58]

Recommendations

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.

6.3 Rocklea Markets

The Brisbane Markets at Rocklea (Rocklea Markets) occupies a 77 hectare site which accommodates 51 primary wholesaling businesses and another 100 ancillary tenant businesses. It constitutes Queensland's wholesale marketing and distribution hub for fresh fruit and vegetables, with an annual turnover in excess of 600 000 tonnes of produce valued at over $1 billion. As Rocklea Markets businesses supply some 65-70 per cent of the wholesale fresh produce consumed in Queensland, the food distribution services provided at the site constitute an essential service to the broader community.[59]

On Tuesday 11 January 2011, Brisbane Markets Limited, the owner and manager of the Rocklea Markets, monitored both the Bureau of Meteorology website and the Brisbane City Council's text message warning service in relation to predicted flood levels. Early that morning, the available information suggested that moderate levels of flooding around the lower parts of the site could be expected, while higher parts, such as the covered unloading area and selling floors, would not be affected by floodwaters. The magnitude of the impending flood was not properly understood until late Tuesday morning, when the Premier made a televised announcement to the effect that severe flooding could be expected similar to that which was experienced in 1974. Up until this time, Brisbane Markets Limited and its tenants had found it difficult to interpret the forecast information and to grasp the likely impact on the site.[60]

Brisbane Markets Limited issued warnings to its tenants throughout the morning consistent with the information available to it, and made preparations for the possible inundation of the site. It removed some equipment, ordered replacement components for electrical distribution boards and engaged contractors to assist in any necessary recovery operation. However, by the time the flood projections changed to severe, market tenants had limited opportunity to respond. The situation was further complicated by the fact that many tenants start work early in the day and finish work at about midday, so that by the time the magnitude of the flood event became known, few people were left on site. Before leaving, many tenants had moved vehicles and produce to the covered unloading area, believing it would not be flooded. Return to the area became increasingly problematic as the day progressed, with road access to the markets cut off from the early hours of Wednesday morning. Transport vehicles needed to remove equipment from the site became virtually unobtainable as demand for them spiked across the city.[61]

Flooding at the Rocklea Markets reached a level of approximately 9.17 metres. The entire site was inundated; the selling floor areas, which are located at the higher part of the site, were immersed to a depth of approximately 1.5 metres.[62] All tenant businesses were flooded; they lost produce (in excess of 10 000 tonnes), and their vehicles (more than 300 of them, including 200 forklifts) and infrastructure (offices, cold rooms and other equipment) were submerged.[63] Most, if not all, food holding areas and food stock, machinery and equipment were significantly water damaged, with floodwater movement within the site dislodging and scattering produce across many hectares.[64] Consequently, the site was rendered incapable of functioning, so that ordinary business activity was completely disrupted.

The Rocklea Markets remained under water from the night of Tuesday 11 January 2011 until Friday 14 January 2011.[65] It seems that the significance of the markets as an essential service was well appreciated by all those involved in the response that followed. Brisbane Markets Limited and numerous local and state agencies, as well as Australian Defence Force personnel and volunteers, mounted a co-ordinated effort to clean and repair the site so that at least limited trading activities could recommence as quickly as possible.[66] On Monday 17 January 2011, within 60 hours of the floodwaters receding, operations on the selling floor resumed, enabling the receipt and distribution of fresh produce once more.[67]

Re-locating the Rocklea Markets is not considered to be a feasible option in the short to medium term, given its estimated cost ($300-$350 million).[68] The site is low lying, and is consequently unsuitable for residential use, but it has been regarded as ideal for warehousing because of the size of its land area, its proximity to Brisbane and major freight routes and its capacity to conduct round-the-clock operations with little impact on surrounding residential areas.[69]

In reacting to the flood, Brisbane Markets Limited considered re-locating trading floor operations to a temporary site. However, the possibility was rejected, having regard to the unsuitability, for various reasons, of the alternative sites proposed, and the critical assessment that partial operations could be restored at the Rocklea Markets site in a reasonable time, particularly as the raised selling floor offices had not been flooded.[70] The company has recognised

the importance of making contingency plans for priority access to alternative sites, although it has yet to identify any suitable locations.[71]

Brisbane Markets Limited is considering a range of possible flood mitigation strategies in the future management and development of the Rocklea Markets site. Some of these measures, (such as raising an access road and commissioning a flood assessment study to evaluate, among other things, the potential of levees or raising parts of the site) would need the involvement of and financial contribution from government.[72] These are longer-term plans outside the compass of this report.

For the short term, the Commission understands that a flood mitigation channel constructed following the 1974 flood, running across the western side of the site, has over time become layered with debris. It should be cleaned in order to maintain its effectiveness as a mitigation channel.[73]

Because of the Rocklea Markets' importance in food supply, it should be a focus of emergency planning by local and state government and given priority (as it was on this occasion) in the making of response arrangements.[74] Where flooding is expected, Brisbane Markets Limited and the Brisbane City Council should be in regular contact with each other about the flood risk to the markets site.

Recommendations

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.

(Endnotes)

1 Exhibit 366, Statement of Christopher Arnold, 5 April 2011 [p1: para 6; Attachment CJA-1]; Submission of Ergon Energy, 11 March 2011 [p4: para 3.4; Schedule 1].

2 Exhibit 366, Statement of Christopher Arnold, 5 April 2011 [p9: paras 67-68]; Submission of Ergon Energy, 11 March 2011 [p6: para 4.13; Schedule 6].

3 Exhibit 366, Statement of Christopher Arnold, 5 April 2011 [p8-13].

4 Submission of Ergon Energy, 11 March 2011 [p6: paras 4.8-4.12; Schedules 4 and 5].

5 Submission of Ergon Energy, 11 March 2011 [p10: para 6.4].

6 Exhibit 366, Statement of Christopher Arnold, 5 April 2011 [p9: para 70]; Submission of Ergon Energy, 11 March 2011 [p10: para 6.8].

7 Exhibit 366, Statement of Christopher Arnold, 5 April 2011 [p3: para 17]; Submission of Ergon Energy, 11 March 2011 [p8: para 5.6].

8 Exhibit 366, Statement of Christopher Arnold, 5 April 2011 [p3: paras 18-23].

9 Exhibit 447, Submission of Ipswich City Council, 23 March 2011 [p31: paras 9.61-9.62]; Exhibit 445, Statement of Anthony Trace, 6 April 2011 [p36-37: paras 126-127].

10 Exhibit 366, Statement of Christopher Arnold, 5 April 2011 [p18: para 133]; Transcript, 13 May 2011, Brisbane [p1971 line 58 – p1972 line 7].

11 Exhibit 366,Statement of Christopher Arnold, 5 April 2011 [p18: paras 134-135].

12 Exhibit 366,Statement of Christopher Arnold, 5 April 2011 [p22: paras 180, 183-184]; Transcript, 13 May 2011, Brisbane [p1961: line 36 – p1963: line 34; p1965: lines 19-39; p1967: lines 40-45].

13 Exhibit 366,Statement of Christopher Arnold, 5 April 2011 [p19: paras 150-151]; Transcript, 13 May 2011, Brisbane [p1965: lines 29-47].

14 Exhibit 366,Statement of Christopher Arnold, 5 April 2011 [Annexure CJA-6, *Energex Flood Risk*

Management Plan 2010/11, p11]; Transcript, 13 May 2011, Brisbane [p1967: lines 1-38].

15 Submission of Ergon Energy, 11 March 2011 [p8: para 5.6].

16 Exhibit 366, Statement of Christopher Arnold, 5 April 2011 [p4: paras 24-27, 77]. See also: Transcript, 13 May 2011, Brisbane [p1965: line 1].

17 Exhibit 366, Statement of Christopher Arnold, 5 April 2011 [p4: para 28];

18 Exhibit 367, Statement of Christopher Arnold, 29 April 2011 [p1: para 11(a) and footnote]; Transcript, 13 May 2011, Brisbane [p1970: line 41].

19 Exhibit 366, Statement of Christopher Arnold, 5 April 2011 [p4-5: paras 30-33; p10: para 70(e); pp13-16: paras 99-121]; Transcript, 13 May 2011, Brisbane [p1963 line 56 – p1964 line23; p1973 line 57 – p1974 line 27]; Exhibit 368.

20 Statement of Christopher Arnold, 29 April 2011 [p1: para 10; p7: paras 37-39]; Transcript, 13 May 2011, Brisbane [p1965: line 50 – p1966: line 9]; Exhibit 495, State Disaster Management Group, *Ordinary Meeting Minutes*, 2 March 2011 [p9-10, 13].

21 Exhibit 367, Statement of Christopher Arnold, 29 April 2011 [p4-5: paras 27-28].

22 Exhibit 366, Statement of Christopher Arnold, 5 April 2011 [p22: para 185].

23 On 1 July 2011, WaterSecure merged with Seqwater, so that Seqwater now owns the Western Corridor Recycled Water Scheme and the Gold Coast Desalination Plant: Submission of Seqwater, 11 March 2011 [p16: para 59].

24 *See*, generally: Statement of Peter McManamon, 13 May 2011 [p5-9: paras 17-34].

25 Submission of Queensland Urban Utilities, 11 March 2011 [p2: paras 8, 10 and 13]; Statement of Robin Lewis, 4 May 2011 [p3: paras 13, 15].

26 Submission of Queensland Urban Utilities, 11 March 2011 [paras 27-36]; Statement of Robin Lewis, 4 May 2011 [p5-7: paras 26-33].

27 Statement of Robin Lewis, 4 May 2011 [p7-8: paras 40-42].

28 Statement of Robin Lewis, 4 May 2011 [p8: paras 43-45; p10: para 57].

29 Statement of Peter McManamon, 13 May 2011 [p11-15: paras 41-54].

30 Statement of Robin Lewis, 4 May 2011 [p7: paras 34-38].

31 Statement of Peter McManamon, 13 May 2011 [p24-25: paras 87-89]; Submission of LinkWater, 11 March 2011 [p7: para 4.2]; Supplementary Submission of Seqwater, 4 April 2011 [p17: para 65].

32 Statement of Peter McManamon, 13 May 2011 [p22-23: paras 81-84]; Supplementary Submission of Seqwater, 4 April 2011 [p17: para 66].

33 Statement of Peter McManamon, 13 May 2011 [p25: paras 90-91]; Submission of LinkWater, 11 March 2011 [p7: paras 4.3-4.4]; Supplementary Submission of Seqwater, 4 April 2011 [p17: paras 67-70; p20-21: paras 91-95].

34 Submission of Queensland Urban Utilities, 11 March 2011 [paras 75-77]; Statement of Robin Lewis, 4 May 2011 [p12-13: paras 77, 79]; Exhibit 321, Statement of Anthony Jacobs, 5 April 2011 [p7: para 8(m)].

35 Statement of Peter McManamon, 13 May 2011 [p26-27: paras 93-98].

36 Statement of Peter McManamon, 13 May 2011 [p27: para 100].

37 Statement of Peter McManamon, 13 May 2011 [p27: para 99]; SEQ Water Grid, *Situation Report 8*, 17 January 2011; Exhibit 321, Statement of Anthony Jacobs, 5 April 2011 [p7: paras 8(n) and 8(o)]; Exhibit 449, Statement of Superintendent Garth Pitman, 9 March 2011 [p4].

38 Submission of LinkWater, 11 March 2011 [p6: para 3.10]; Statement of Peter McManamon, 13 May 2011 [p27: para 101].

39 Submission of LinkWater, 11 March 2011 [p6: para 3.12]; Statement of Peter McManamon, 13 May 2011 [p28-31: paras 106-107(a)-(k)].

40 Statement of Peter McManamon, 13 May 2011 [p28: para 102-103 and 105].

41 Statement of Peter McManamon, 13 May 2011 [p35: para 125(c)].

42 Exhibit 481, Statement of William Wilkinson, undated [p10: paras 8(b)-(d), (f) and (g)].

43 Transcript, Senior Sergeant Simon Chase, 20 April 2011, Dalby [p740 line 43 – p741 line 30].

44 Transcript, Philip Berting, 20 April 2011, Dalby [p787: lines 1-39].

45 Exhibit 249, Statement of Rodney Ferguson, 14 April 2010 [p3: paras 28-30].

46 Exhibit 215, Supplementary Submission of Telstra Corporation Ltd, 8 April 2011 [p2: para 9; p8: para 38].

47 Exhibit 215, Supplementary Submission of Telstra Corporation Ltd, 8 April 2011 [p9: para 41]; Exhibit 213, Submission of Optus, 4 April 2011 [p7: para 3.9].

48 Exhibit 215, Supplementary Submission of Telstra Corporation Ltd, 8 April 2011 [p9: para 44; p19: para 74; p20: para 77(b)]; Exhibit 213, Submission of Optus, 4 April 2011 [p6-7: para 3.8; p8-9: para 3.10]; Exhibit 463, Statement of Collin Head, 5 April 2011 [p11: para 8(b)(ii); p23: para 17(e)].

49 Exhibit 215, Supplementary Submission of Telstra Corporation Ltd, 8 April 2011 [p12-14: paras 58-65; p20: para 77(a)].

50 Exhibit 213, Submission of Optus, 4 April 2011 [p10: paras 4.4-5.3].

51 Exhibit 213, Submission of Optus, 4 April 2011 [p10-11: paras 5.6-5.7 and 5.10].

52 Exhibit 495, State Disaster Management Group, *Ordinary Meeting Minutes*, 2 March 2011 [p3; p10-11: section 5].

53 Exhibit 215, Supplementary Submission of Telstra Corporation Ltd, 8 April 2011 [p15: para 67; p9-10: paras 42-45]; Exhibit 213, Submission of Optus, 4 April 2011 [p8: para 3.9].

54 Statement of Robin Lewis, 4 May 2011 [p34: para 137; p12: para 73].

55 Exhibit 213, Submission of Optus, 4 April 2011 [p10: paras 5.3-5.4; p11: paras 6.2-6.3].

56 Statement of Robin Lewis, 4 May 2011 [p34: para 137].

57 Submission of Ergon Energy, 11 March 2011 [p10: para 6.4; p11: para 6.9]; Exhibit 366, Statement of Christopher Arnold, 29 April 2011 [p4: para 27(c)].

58 Statement of Robin Lewis, 4 May 2011 [p29: paras 106-109].

59 Exhibit 287, Statement of Andrew Young, 14 April 2011 [p1: paras 1-4].

60 Exhibit 287, Statement of Andrew Young, 14 April 2011 [p3: para 29; p5: para 45]; Transcript, 5 May 2011, Brisbane [p1370: line 40; p1371: lines 10-28].

61 Exhibit 287, Statement of Andrew Young, 14 April 2011 [p2: paras 16-19; pp3-4: paras 24-26, 28, 30-33]; Transcript, 5 May 2011, Brisbane [p1370: lines 35-58].

62 Exhibit 287, Statement of Andrew Young, 14 April 2011 [p2: para 14]; Transcript, 5 May 2011, Brisbane [p1370: line 20].

63 Exhibit 287, Statement of Andrew Young, 14 April 2011 [p4: paras 34-38].

64 Exhibit 338, Statement of Air Vice-Marshal Kevin Paule, 10 May 2011 [p13: para 55].

65 Exhibit 287, Statement of Andrew Young, 14 April 2011 [p2: para 15]; Transcript, 5 May 2011, Brisbane [p1372: line 50].

66 Exhibit 287, Statement of Andrew Young, 14 April 2011 [p5: paras 47-48; p6: 52-56]; Exhibit 289, Statement of Colin Jensen, 19 April 2011 [pp44-46]; Exhibit 302, 303, Statements of Peter Martin, 9 March 2011 [paras 46, 72 & 76] and 3 May 2011 [paras 59-62]; Exhibit 338, Statement of Air Vice-Marshal Kevin Paule, 10 May 2011 [p14-15: paras 56-61].

67 Exhibit 287, Statement of Andrew Young, 14 April 2011 [p5: para 49]; Transcript, 5 May 2011, Brisbane [p1372: lines 20-30].

68 Exhibit 287, Statement of Andrew Young, 14 April 2011 [p7: paras 59-61 & 63].

69 Exhibit 287, Statement of Andrew Young, 14 April 2011 [pp6-7: paras 57-58].

70 Andrew Young, Transcript, 5 May 2011, Brisbane [pp1373 line 50 – 1374 line 31].

71 Exhibit 287, Statement of Andrew Young, 14 April 2011 [p9: para 76]; Transcript, 5 May 2011, Brisbane [pp1374 line 38 – 1375 line 3].

72 Exhibit 287, Statement of Andrew Young, 14 April 2011 [pp7-9: paras 66-71, 73-75]; Transcript, 5 May 2011, Brisbane [p1375: lines 5-11].

73 Exhibit 287, Statement of Andrew Young, 14 April 2011 [p8: para 72]; Transcript, 5 May 2011, Brisbane [p1375: lines 13-25].

74 Exhibit 287, Statement of Andrew Young, 14 April 2011 [p9: para 77].