Advice of John Jerrard QC concerning examination of material provided to the Crime and Misconduct Commission pursuant to Recommendation 16.1 of the Queensland Floods Commission of Inquiry's final report

1. I refer to your letter dated 15 June 2012, appointing me under section 256 of the *Crime and Misconduct Act 2001* to advise you regarding the matters referred to the CMC in recommendation 16.1 of the Final Report (Volume 2) of the Queensland Flood Commission of Inquiry ('the Flood Inquiry').

2. In December 2010 and in January 2011, the State of Queensland experienced extremely heavy rainfall and associated flooding. The flooding was so extensive, and caused such a loss of life and damage to property, that on Monday 17 January 2011 the State Government commissioned an inquiry into the preparation and planning by Federal, State and Local Governments, Emergency Services and the Community, for the 2010/2011 floods in Queensland; all aspects of the response to the 2010/2011 flood events; particular measures taken to inform the community, and measures to protect life and private and public property including:

    - immediate management, response and recovery;
    - resourcing, overall coordination and deployment of personnel and equipment;
    - adequacy of equipment and communication systems, and
    - the adequacy of the community's response.

3. The Flood Inquiry reported that:

    > "33 people died in the 2010/2011 floods; three remain missing. More than 78% of the State (an area bigger then France and Germany combined) was declared a disaster zone; over 2.5 million people were affected. Some 29,000 homes and

businesses suffered some form of inundation. The Queensland Reconstruction Authority had estimated the cost of flooding events will be in excess of $5 billion".[1]

4. Other matters nominated for inquiry included the performance of private insurers in meeting their claims responsibilities; the measures to manage the supply of essential services such as power, water and communication during the 2010/2011 flood events; all aspects of land use planning through local and regional planning systems to minimise infrastructure and property impact from floods; and, relevantly to this advice to you:

> "implementation of the systems operation plans for dams across the State and in particular Wivenhoe and Somerset release strategy and an assessment of compliance with, and the suitability of the operational procedures relating to flood mitigation and dam safety".

History of the Wivenhoe Dam

5. Shortly after the 1974 flood in Brisbane, a project to construct a dam at Wivenhoe was approved by the Coordinator General, and design commenced in 1974 by the then Irrigation and Water Supply Commission. Construction began in 1977 under the control of that commission, and the embankment and spillway were completed by 1984. The spillway gates were completed and commissioned by 1986[2]. There was a spillway upgrade at Wivenhoe Dam completed in 2005, which involved the construction of a three bay fuse plug near the right abutment, a raised concrete parapet wall along the length of the dam, and some strengthening of the spillway structure with post tension anchors. The upgrade was intended to improve the safety of the dam and reduce the risk of its failing.

The Manual

6. Wivenhoe Dam was built to supplement Brisbane's water supply, and to provide flood mitigation for the Brisbane River. Its catchment area is approximately 7,000 square

[1] This appears in the introduction to Volume 1 of the Final Report of the Flood Inquiry.
[2] See the statement of Peter Allen, 4 April 2011, Exhibit 397 in the Flood Inquiry

kilometres, and the surface area of the lake, at full supply level, is approximately 10,820 hectares. The seventh revision of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam[3] (the Manual) describes Wivenhoe Dam as predominantly a central core rockfill dam, and remarks that "Such dams are not resistant to overtopping and are susceptible to breaching should such an event occur. Overtopping is considered a major threat to the security of Wivenhoe Dam." The Manual goes on to advise that the structural safety of Wivenhoe Dam is of paramount importance, and that structural failure of Wivenhoe Dam would have catastrophic consequences.

7. Revision 7 of that Manual also describes the dam having a full supply level of EL 67m AHD. The Manual defines those terms to mean the level of the water surface when the reservoir is at maximum operating level, excluding periods of flood discharge, which is at 67m elevation AHD, meaning the Australian Height Datum. Other information before the Flood Inquiry was that the capacity of the dam at full supply level of EL 67m AHD was 1,165,000 megalitres, with a reservoir volume available for use as temporary flood storage of 1,420,000 megalitres, totalling 2,585,000 megalitres in storage and flood mitigation capacity. That means (the Manual advises) the full supply level is approximately 45 percent of the total capacity. The evidence to the Flood Inquiry was that that the full supply level for the Wivenhoe, Somerset, and North Pine Dams respectively, were settled upon at the time of their original construction.

8. The Flood Inquiry was given a lengthy statement from Mr Peter Allen, the Director of Dam Safety within the Department of Environment and Resource Management ('DERM'). He advised that currently in Queensland only the owners of three dams, those being Wivenhoe, Somerset and North Pine (all owned by Seqwater), are required to submit a Manual to the Chief Executive, who is defined as the Director-General of DERM, for approval. He explained the primary reasons that those dams have Manuals is that they are used for flood mitigation purposes, and have gates from which water outflow can be controlled. Statutory provisions relating to those Manuals are contained in the *Water Supply (Safety and Reliability) Act*

[3] Exhibit 21 before the Flood Inquiry

2008 (the Water Supply Act). Section 370 of that Act provides that a regulation may require dam owners to prepare a Manual, and section 371 provides that the Chief Executive has the power to approve, by Gazette notice, a Manual for a dam. Section 374 provides that the owner of a dam "does not incur civil liability for an act done, or omission made, honestly and without negligence in observing the procedures" in the Manual.

9. The most recently approved dates for Manuals, as at the time of the January 2011 floods, for the Wivenhoe and Somerset Dams (being one Manual for both dams), was an approval Gazetted on 22 January 2010. Mr Allen's statement explains that the impetus to have a Manual for Wivenhoe in particular was due to the requirements to produce quite a range of discharges, and it was designed to be able to vary the discharge from the dam to match variations, for instance, in the discharge from Lockyer Creek and from the Bremer River, both of which enter the Brisbane River downstream of Wivenhoe Dam. The need to regulate discharges from the dam, which take into account the inflows into the Brisbane River from that creek and that other river, is because of the number of bridges downstream which can be rendered untrafficable by too large releases from the Wivenhoe Dam.

10. Mr Allen's statement describes, in all, nine previous versions of that operating Manual which was approved in 2010, and for some reason, was entitled "Revision 7," and given the date November 2009.

11. The evidence before the commission was that the Manual was redrafted after a series of discussions between Officers of the Dam Safety group within DERM, Officers of Seqwater, and Dam Flood Operations Engineers. The people involved were Mr Allen, Mr Guppy and Mr Nguyen (from DERM), Mr Tibaldi, Mr Malone and Mr Drury (from Seqwater), and Mr Ayre and Mr Ruffini (Dam Flood Operations Engineers). The evidence before the Inquiry was that the Manual was actually written by Mr Tibaldi, who produced various drafts of it, relying on his understanding of the results of the discussions between the various interested persons. The Manual requires, in Part 2.2, that Seqwater ensure during what is called a "Flood Event", that a Duty Flood Operations Engineer is on call at all times, and that a Senior Flood

Operations Engineer is designated to be in charge of Flood Operations at all times during a Flood Event. The Manual provides in 2.3 that "when rostered on duty during a Flood Event, the responsibilities of the Senior Flood Engineer include to:

> "Set the overall strategy for management of the Flood Event in accordance with the objectives of this Manual".

12. The Manual lists at 3.1 the following objectives, described as listed in descending order of importance:

- Ensure the structural safety of the dams;
- Provide optimum protection of urbanised areas from inundation;
- Minimise disruption to rural life in the valleys of the Brisbane and Stanley Rivers;
- Retain the storage at Full Supply Level at the conclusion of the Flood Event.
- Minimise impacts to riparian flora and fauna during the drain down phase of the Flood Event.

13. It states in 3.2 that the structural safety of the dams must be the first consideration in the operation of the dams for the purpose of flood mitigation, and in 3.3 that the prime purpose of incorporating flood mitigation measures into Wivenhoe Dam and Somerset Dam is to reduce flooding in the urban areas of the flood plains below Wivenhoe Dam. It remarks that the peak flows of floods emanating from the upper catchments of Brisbane and Stanley Rivers can be reduced by controlling flood releases from the dams, while taking into account flooding derived from the lower Brisbane River catchments. It also advises in 3.2 that "the aim during a Flood Event should be to empty stored flood waters within seven days after the flood peak has passed through the dams. In a very large flood, this time frame may not be achievable because of downstream flood conditions and it may be necessary to extend the emptying period by several days."

14. In chapter 8 of the Manual, which deals with Wivenhoe Dam flood operations, the Manual records that Wivenhoe Dam is capable of being operated in a number of ways to reduce

flooding in the Brisbane River downstream of the dam, depending on the origin, magnitude and spatial extent of the flood. Maximum overall mitigation effect will be achieved by operating Wivenhoe Dam in conjunction with Somerset Dam. In paragraph 8.4 it provides that "There are four strategies (W1 to W4) used when operating Wivenhoe Dam during a flood event as outlined below. These strategies are based on the Flood Objectives of this Manual. As outlined in Section 3, the objectives, listed in descending order of importance are as follows" (the objectives are listed). It goes on to state that "Within any strategy, consideration is always given to these objectives in this order, when making decisions on dam releases." It remarks that "the strategy chosen at any point in time will depend on the actual levels in the dams and the following predictions, which are to be made using the best forecast rainfall and stream flow information available at the time:

- Maximum storage levels in Wivenhoe and Somerset Dams.
- Peak flow rate at the Lowood Gauge (excluding Wivenhoe Dam releases).
- Peak flow rate at the Moggill Gauge (excluding Wivenhoe Dam releases)."

15. It continues by observing that when determining dam outflows within all strategies, peak outflow should generally not exceed peak inflow. It then provides that "a flowchart showing how best to select the appropriate strategy to use at any point in time is shown below". That flowchart appears at page 23 of the Manual. It advises the reader that if the Wivenhoe level is not likely to exceed EL 68.5m AHD, strategy W1 should be used.

16. The Manual defines a "flood event" as a situation where the Duty Flood Operations Engineer expects the water level in either of the Dams to exceed the Full Supply Level, which at Wivenhoe Dam is EL 67m AHD. Strategy W1, which the Manual advises using (which must be from the beginning of a flood event) until the predicted or likely level of the dam exceeds EL 68.5m AHD, is described in the Manual as having an intent not to submerge the bridges downstream of the dam prematurely. A map is provided at page 24 of the Manual showing the bridges downstream of Lake Wivenhoe, and the rate of flow from the dam which will submerge the various bridges. The bridge at Twin Bridges (northeast of Lowood) is submerged when the combined flow from Wivenhoe Dam and Lockyer Creek

reaches a maximum of 50 cubic metres per second (a unit of measurement of flow referred to throughout in the Manual, and hereafter described by the term "cumecs"[4]). The Manual advises that the limiting condition for Strategy W1 is the submergence of Mt Crosby Weir Bridge that occurs at approximately 1900 cumecs. It advises that for situations where flood rains are occurring on the catchment upstream of Wivenhoe Dam, and only minor rainfall is occurring downstream of the dam, releases are to be regulated to limit, as much as appropriate in the circumstances, downstream flooding. It advises, and I quote:

> "The following strategies require a great deal of control over releases and knowledge of discharges from Lockyer Creek. In general, the releases from Wivenhoe Dam are controlled such that the combined flow from Lockyer Creek and Wivenhoe Dam is less than the limiting values to delay the submergence of particular bridges. The diagram above shows the location of the impacted bridges and the approximate river flow rate at which they are closed to traffic".

17. That diagram, and the accompanying explanation of the various parts of Strategy W1, describes Twin Bridges being submerged when the combined flow is at 50 cumecs, Savages Crossing when the combined flow is at 130 cumecs, Colleges Crossing when the combined flow is 175-200 cumecs, Burtons Bridge when the combined flow is at 430 cumecs, Kholo Bridge when the combined flow is 550 cumecs, Mt Crosby Weir when the combined flow is at 1900 cumecs, and the Fernvale Bridge when the combined flow is at 2000 cumecs. The various parts of Strategy W1 require the engineers to endeavour firstly to maintain the Twin Bridges as trafficable, by limiting the combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 50 cumecs, and then once Twin Bridges is closed to traffic, to endeavour to maintain Savages Crossing as trafficable by limiting the combined flows to a maximum of 110 cumecs, then when Savages Crossing is closed maintain Colleges Crossing as trafficable by limiting those combined flows to a maximum of 175 cumecs (with a note that Colleges Crossing can be impacted by tidal influences), then to maintain Burtons Bridge as trafficable by limiting the combined flows to a maximum of 430 cumecs, then the Kholo

[4] This was the term used throughout the Flood Inquiry

Bridge by limiting the combined flows to a maximum of 550 cumecs, and then focusing in turn on the Mt Crosby Weir Bridge and the Fernvale Bridge. The Manual advises that "if the level reaches EL 68.5m AHD in Wivenhoe Dam, switch to Strategy W2 or W3 as appropriate." (This appears at page 26.)

The Flood Inquiry

18. An issue that concerned the Flood Inquiry was whether, when the level reached EL68.5m AHD in Wivenhoe Dam, the engineers had switched to Strategy W3 (as the engineers were certain they had, in the report which became Exhibit 24 before the Flood Inquiry, a report dated 2 March 2011 on the operation of Somerset Dam and Wivenhoe Dam ["the March Report"]), or whether they had actually remained in Strategy W1, or switched to Strategy W2. Strategy W2 is described in the Manual as "a Transition Strategy where the primary consideration changes from Minimising Impact to Downstream Rural Life to Protecting Urban Areas from Inundation". The conditions and intent of the strategy are described at page 27 of the Manual, and require its application when the Wivenhoe Storage Level is predicted to be between 68.50 and 74.00m AHD, and the Maximum Release is predicted to be less than 3500 cumecs. It requires that "lower level objectives" still be considered when making decisions on water releases, and that objectives always be considered in order of importance.

19. After the description of the conditions applicable for use of Strategy W2, the Manual advises that "The intent of Strategy W2 is limit the flow in the Brisbane River to less than the naturally occurring peaks at Lowood and Moggill, while remaining within the upper limit of non-damaging floods at Lowood (3500 cumecs). In these instances, the combined peak river flows should not exceed those shown in the following table:"

20. The table advises that the "target maximum flow in the Brisbane River" at Lowood is the lesser of –

    - The natural peak flow at Lowood excluding Wivenhoe Dam releases, and;
    - 3500 cumecs.

For Moggill, the combined peak river flows should not exceed the lesser of –

- The natural peak flow at Moggill excluding Wivenhoe Dam releases, and;
- 4000 cumecs.

21. The statement of Mr Peter Allen dated 4 April 2011[5] advises at paragraph 75 that the limits of 3500 cumecs at Lowood and 4000 cumecs at Moggill were based largely on experienced based limits supported by flood modelling in the 1980s, and that those were "essentially confirmed" by studies undertaken as part of a Brisbane Valley Flood Minimisation Study project for Brisbane, Ipswich and Esk Shire Councils in 2006 and 2007. I mention that because the evidence before the Flood Inquiry includes that at 12:45am on Monday 10 January 2011, when the flood event had been underway for four days, the Brisbane City Council contacted the Flood Operation Centre (in Turbot Street, Brisbane) to advise that the upper safe level at Moggill was less than 4000 cumecs. The evidence generally given by the engineers to the Inquiry was that until 2:30pm that same afternoon on Monday 10 January 2011, they had deliberately limited the outflow at Moggill to below 3500 cumecs, because of that advice, but by 2:30pm that day were obliged, because of the level of water in Wivenhoe Dam, to increase the rate of out flow. The engineers all suggested that the issue of the upper safe level at Moggill be clarified in the next version of the Manual.

22. Returning to the descriptions of the strategies in the Manual, the description on page 28 of the Manual of Strategy W3 advises that the intent of that strategy "is to limit the flow in the Brisbane River at Moggill to less than 4000 cumecs, noting that 4000 cumecs at Moggill is the upper limit of non-damaging floods downstream." The Manual advises that depending on natural flow, it may not be possible to limit the flow at Moggill to below 4000 cumecs. In these instances the flow at Moggill is to be kept as low as possible. The heading for Strategy W3 advises "The primary consideration is Protecting Urban Areas from Inundation". It also advises that lower level objectives are still considered when making decisions on water releases and those objectives are always considered in order of importance. That last observation also appears in the description of Strategy W4, which has as its heading "The

[5] Exhibit 397 before the Flood Inquiry

primary consideration is Protecting the Structural Safety of the Dam". The conditions applicable for use are described as being when the Wivenhoe Storage Level is predicted to exceed 74m AHD; there is no limit on the Maximum Release Rate, and the primary consideration is protecting the structural safety of the dam.

The January Floods

23. The statement of Robert Ayre, dated 23 March 2011,[6] advises that he was the Senior Flood Engineer during the January 2011 flood event for the Wivenhoe, Somerset, and North Pine Dams. It describes[7] there having been three separate flood events at the Wivenhoe and Somerset Dams in December 2010, of which the first resulted in a 75,000 megalitres release from Wivenhoe Dam between 13 and 16 December 2010, the second a 150,000 megalitres release of water between 17 and 24 December 2010, and the last a 470,000 megalitres release between 26 December 2010 and 2 January 2011. His statement notes that there were only four days between the flood event that ended on 2 January 2011 and the flood event that began on 6 January 2011 at 7:42am.

24. The email that declared that event was Appendix H to the March Flood Event Report,[8] and that email was sent by the Duty Engineer, and stated "with Wednesday nights rainfall and further totals up to 150 millimetres expected during the next 2 days, please mobilise staff for aid operations at North Pine, Somerset and Wivenhoe Dams." Mr Ayre's statement says[9] that at that stage all three dams were above their full supply level and more rain was predicted. The March Flood Event Report records comment at page 153, that the flood release from Wivenhoe Dam associated with the Flood Event prior to the January 2011 Flood Event was completed at 9:00am on 2 January 2011, and the lake level at Wivenhoe Dam at that time was 67.10m. It also advises that following gate closure, the Dam continued to release over 4000 megalitres per day, to account for base flow into the dam from the previous flood event, with the expectation being that the dam would slowly fall below Full

[6] Exhibit 17 before the Flood Inquiry
[7] At paragraph 335
[8] Exhibit 24 before the Flood Inquiry
[9] At paragraph 50

Supply Level in the days following 2 January 2011. Due to rainfall and further dam inflows, the lake level rose steadily after 2 January 2011, and it was above gate trigger level at the commencement of the Event. In accordance with Strategy W1 and the intent of that Strategy, releases did not immediately commence to ensure that the bridges downstream of the Dam were not prematurely submerged.

25. A table in Part 9 of the March Report records that at 9:00am on 6 January 2011 the storage volume of the dam was calculated to be 1,200,019 megalitres, and the dam height was at 67.32m AHD. That chart at Part 9 reveals that the first discharge from the dam began at 3:00pm on Friday 7 January, when gate 3 was opened to 0.5 of a metre, releasing 50 cumecs. Thereafter gate 3 was progressively opened by 0 .5 of a metre each hour until 10:00pm, where gate 2 was opened to 0.5 of a metre; and the total outflow became 403 cumecs. By that stage the dam height was at 68.26m AHD. A third gate was opened at 11:00pm on Friday 7 January, a fourth gate at 2:00am on Saturday 8 January 2011, and a fifth gate at 3:00am on the 8th. By 8:00am on Saturday 8 January the dam height had reached 68.52m AHD, and the March Flood Event Report recorded that the engineers moved from Strategy W1 to Strategy W3 at that time (whereas the Flood Inquiry Report concluded that transition to Strategy W3 did not occur until the evening of Sunday 9 January 2011, at about 7:00pm that night. At that latter time, the dam height was 69.24m AHD, all five gates were partly opened, and the total outflow was 1428 cumecs).

26. Mr Ayre's statement of 23 March 2011 describes in paragraphs 350 – 356 how there were two separate flood peaks 30 hours apart in the January 2011 flood event. The first peak was on the morning of Monday 10 January, and the second peak on the afternoon of Tuesday 11 January. At paragraph 358 he describes how in his opinion the dam absorbed the first inflow, and the peak outflow was kept below 4000 cumecs from that inflow, but could not absorb the second, higher, peak on Tuesday 11 January.

27. Paragraph 6.2 of that March Flood Report records how the Bureau of Meteorology supplied Qualitative Precipitation Forecasts (QPF) for the dam catchments that, for the period from 4:00pm on Saturday 8 January 2011 to 10:00am on Tuesday 11 January 2011, in five

forecasts, underestimated the actual rainfall by an average of 225%. The actual rainfall in those two and a half days was in the order of 300 millimetres (or 12 inches in imperial measurements) and an average of 120 millimetres (or 4 inches 80 points in imperial measurements) per day. The March Report states that the underestimated forecasts did not support an increase in the flood releases above those which were actually undertaken.

28. The table at Part 9 of that report records a steady raising of the level in Lake Wivenhoe on Tuesday 11 January 2011 until it reached 74.97m AHD at 7:00pm, holding 200,270,030 megalitres, and that level remained static at 8:00pm that night, but had fallen by 0.02m to 74.95m AHD at 9:00pm that night. All five gates had been opened to 12m at 7:00pm and remained at that setting until 10:00pm, releasing 7500 cumecs in those three hours.

29. The March Report records, and the Flood Inquiry accepted, that the engineers transitioned to Strategy W4 at 8:00am on Tuesday 11 January, when the dam level was 73.7m AHD, and the total outflow was 2753 cumecs. Thereafter gate openings were increased progressively until, as described they reached 12 metres at each gate at 7:00pm, and were progressively narrowed from 10:00pm onwards on 11 January until 8:00am on Wednesday 12 January, when they were held constant at an outflow of 2500 cumecs for a number of hours.

30. The horrendous flooding to Brisbane suburbs occurred, as it was understood it would, once Strategy W4 was adopted and the gate openings were increased to allow a maximum outflow of more than 4000 cumecs. That rate of flow was first recorded as happening in chart 9 at 1:00pm on Tuesday 11 January, when all five gates were opened to seven metres.

31. The Flood Inquiry Report did not criticise the engineers for their adoption of Strategy W4, with this inevitable flooding of parts of metropolitan Brisbane, that strategy having been adopted when the dam levels were rising and were predicted or estimated likely to peak at between 74.5m AHD and 75.1m AHD. The reconstruction work on the dam, completed in 2005, included building fuse plugs, of which at least one would be triggered if the water height reached EL75.7m AHD. The evidence before the Flood Inquiry was that the triggering of a fuse plug would release approximately 2000 cumecs thereafter of uncontrolled flow

until (as I understand it), the water level in the day drained down to full supply level. The engineers were anxious to avoid having that happen, or to have the dam wall fail. I note that by 7:00pm on 11 January 2011 the water stored in the dam was almost twice the amount stored at the start of the flood event, which was already at (or slightly above) the described full supply level. The engineers were apparently taken by surprise by the second peak inflow, principally because the Bureau of Meteorology had underforecast the heavy rain which fell on Tuesday 11 January. As well, Senior Flood Engineer Ayre wrote at paragraph 195 of his statement dated 23 March 2011 that on that day (11 January 2011), a period of intense rainfall on Wivenhoe Lake occurred, which resulted in a rapid raise in the lake level, and which rainfall was not "captured in gauges". He explained that that meant there were no rain gauges over the lake. He estimated that in the nine hours between 5:00am and 2:00pm on that day, some 610 millimetres (*24 inches on the imperial scale*) fell on the lake.

Rainfall Predictions

32. The evidence of the engineers was that they rarely consider predicted rainfall in making strategy choices about dam management, because of their shared view that Bureau of Meteorology forecasts – almost always - are unreliable. In that regard it is interesting to read the document which was Exhibit 68 before the Inquiry, a report by Anthony Cornelius, who holds a Science degree majoring in Climatology from the University of Southern Queensland, and who is employed by a private company trading as WeatherWatch. That company provides weather information, forecasts and data to clients across Australia and New Zealand. His statement describes how on Monday 10 January 2011 he issued to his clients in Southeast Queensland at 9:56am a warning that:

> "falls in excess of 100-150 millimetres are expected today in parts...of which some of this rain is expected to not only be consistent but also of high intensity at times. This is still a very serious flooding situation for Southeast Queensland and it may not be until late tomorrow (Tuesday afternoon) when the rainfall situation is expected to significantly improve as the system weakens and moves inland."

His statement describes how he observed that at about 7:30am on the morning of 10 January 2011 a small band of small, disorganised storms approached Moreton Island and moved West/Southwest over the Southeast Coast region and crossed to mainland at approximately 9:30am. Other showers and storms developed north of that location and at about 11:00am those cells began to merge over the Esk-Somerset region.

33. The slow moving nature of those storms indicated a potential for flash flooding, in his opinion, in the Esk region, and his statement also remarked that in the Lockyer Valley the river catchments were all incredibly saturated and "primed" for a significant event, and that by the morning of Monday 10 January 2011 only a small amount of heavy rain would have been more than sufficient to create further flash flooding, let alone significant amounts of heavy rain. At 16 minutes past midday EST he predicted concern for the Gatton – Grantham area, and at 2:34 predicted that there would be a "near wall of water flowing down into the communities through there". His statement records that he had observed just after 3:00pm that afternoon, a huge spike in the Helidon flood gauge on Lockyer Creek, something "I saw because I was looking out for it", which recorded an 8 metre increase in water height in a period of ten's of minutes at that gauge, before failing. Despite this occurring, the Bureau of Meteorology made no mention of this – according to Mr Cornelius – and an hour later at 4:16pm issued a generic "moderate to major" flood warnings for areas further downstream in Lockyer Creek with no mention of the towns in the upper Lockyer Creek catchments, and it was not until 5:00pm when a more urgent warning was issued in response to the extreme flash flooding in the upper Lockyer Creek region.

34. It seems obvious that if Mr Cornelius could observe those matters, the Bureau of Meteorology should have the same ability. It would no doubt assist Dam Managers and Flood Engineers to get more accurate predictions. The Flood Inquiry referred to the observations of Mr Cornelius (although not by name) at paragraph 4.2.10 of the Flood Inquiry's Interim Report. It recommended, in paragraph 4.35, that "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". That Interim Report noted (in paragraph 4.2.8, at page 148) that the Bureau operate a network of "storm spotters" who could report to it, if they observe or hear of a severe thunder storm in their local areas. There are nine registered "storm spotters" in the Toowoomba/Lockyer Valley region but the Bureau had no volunteers in the Lockyer Valley to inform it of events there or at Murphy's Creek, Postman's Ridge or Withcott, which might have put it on alert for abnormal rises in the Lockyer Creek.

The Interim Report

35. The Flood Inquiry published an Interim Report on 1 August 2011. Section 2.7 of the Interim Report contained a chronology of the flood event that occurred at Wivenhoe and Somerset Dams in January 2011, and as part of that chronology, the times at which each operational strategy was engaged during the January 2011 flood event was given, in which the commission relied on the contents of the March Report. It explained in the Final Report (at paragraph 16.1) that in doing so it relied on the evidence of the engineers, who gave sworn evidence that the official report was accurate, and who gave accounts of their involvement in the flood event consistent with that report. That chronology described each operational strategy being engaged at the following times:

- Strategy W1 from the start of the flood event on 6 January (Thursday) to 8:00am on 8 January (Saturday)
- Strategy W3 from 8:00am on 8 January (Saturday) to 8:00am on 11 January (Tuesday)
- Strategy W4 from 8:00am to 9:00pm on 11 January (Tuesday)
- The drawdown of the lake beginning from 9:00pm on 11 January and lasting till 19 January

36. The Final Report of the Flood Inquiry records that Seqwater had commissioned peer reviews of the operational decisions made during the flood event, and the Commissioner was provided with the reports prepared by Professor Apelt, Mr Greg Roads, and Mr Leonard

McDonald. Seqwater also provided a report by Mr Brian Shannon, in a supplementary submission to the Flood Inquiry, on 4 April 2011. The Final Report records:

> "All of these experts concluded that, but for possible minor deviations turning on the Manual's interpretation, Wivenhoe Dam was operated in accordance with the Manual. None of them raised any concerns about the account of events given in Seqwater's March flood event report."[10]

37. The Final Report then described how on 23 January 2012, *The Australian* newspaper published a story about the results of an investigation it had conducted into the strategies used at the dam in the January 2011 flood, and the article pointed to documents produced by the flood engineers that suggested that the transition to Strategy W3 had not occurred at 8:00am on 8 January 2011, as recorded in the March Flood Event Report, and the Flood Inquiry's Interim Report.

38. The Flood Inquiry accordingly held an additional 10 days of hearings in February 2012. It sought to resolve the following questions:

- Which operational strategies were engaged at Wivenhoe Dam during the January 2011 floods and when were those strategies engaged?
- Did the engagement of operational strategies at Wivenhoe Dam during the January 2011 floods comply with the Manual?
- Was the account given in Seqwater's March Flood Event Report of the choice and timing of operational strategies used at Wivenhoe Dam during the January 2011 floods accurate?
- If the account given in the March Flood Event Report was not accurate:
  - Why was it not accurate?
  - Who was responsible for it being inaccurate?
  - Who in Seqwater knew, or should have known, of the inaccuracy?
  - Who in Government knew, or should have known, of the inaccuracy?

[10] Queensland Flood Commission of Inquiry Final Report Volume 2 at 16.1 page 439

- If the engagement of operational strategies at Wivenhoe Dam during the January 2011 floods did not comply with the Manual, and/or if the March Flood Event Report was not accurate, why was this not identified by the expert peer reviewers?
- If the engagement of operational strategies at Wivenhoe Dam during the January 2011 floods did not comply with the Manual, was that non-compliance consequential?[11]

The Resumed Inquiry

39. The important individuals from whom the commission heard further evidence included Robert Ayre, a Senior Flood Operations Engineer, John Ruffini, another Senior Flood Operations Engineer, Mr Terry Malone, a Flood Operations Engineer and John Tibaldi, a Flood Operations Engineer. The final report concludes (in part paragraph 16.3) that:

> "An analysis of the manual leads to two conclusions: firstly, that the flood engineers must consciously choose or adopt the strategies (W1, W2, W3 or W4) under which Wivenhoe Dam operates; and, secondly, that the engineer on duty at any point during the flood event must recognise the strategy under which he is acting in the operation of the dam."

40. The Inquiry Report rejected as untenable the proposition that release rates from the dam, once the height reached EL68.5 metres, would determine whether Strategy W2 or Strategy W3 was engaged. The report remarked:

> "section 8.4 of the Manual makes it clear that decisions as to release rates are made within the governing strategy, not the other way around".

The Final Report concluded that the combined effect of the language of the Manual, the prescription in section 8.4, the flowchart, and the conditions for application of each of the strategies, which in each case involved prediction of the lake level, and for W1 and W2 of

[11] Queensland Flood Commission of Inquiry Final Report Volume 2 at 16.1 page 440

the likely maximum release rate, and the need for a decision as to which of W2 and W3 were the appropriate strategy, made it clear that:

> "what is needed is the flood engineer's application of contemporary judgement to both the existing conditions (so far as the dam level and inflows and outflows are concerned) and the likely evolution (including the results of likely rainfall). A flood engineer cannot sit back and let the strategy be dictated by the lake level."[12]

41. The Final Report went on:

> "...and when the lake level reaches 68.5 metres the flood engineer must consider which of Strategies W2 and W3 is appropriate and take action accordingly to meet the intent of the strategy chosen. A failure to do so constitutes a breach of the Manual."

The Final Report also concluded (in part 16.3.5, at page 451) that:

> "a flood engineer must be aware throughout his shift of the strategy under which he is operating the dam. If that was not the case throughout the course of the January 2011 flood, that was a breach of the Manual."

42. The Flood Inquiry considered the contents of the March Report in detail, and its description of how different of the W Strategies were applied at different stages during the flood event, and its general description of how the "operational decisions were made in accordance with the Manual", how the dam was operated "in accordance with the Manual", and how the "data collection and flood modelling systems...assisted and formed decision making, in accordance with the Manual". It noted that Mr Tibaldi had drafted the 'Executive Summary' and a 'Flood Event Summary', and other critical parts of the March Report. The Flood Inquiry concluded that the March Report represented that actions were carried out in recognition of and compliance with the W Strategies, and that in particular, it repeatedly alluded to

[12] Conclusion in paragraph 16.3.4 page 450 of The Inquiry Report Volume 2

undertaking considerations and steps needed to meet Strategy W3. The Final Report then considered the evidence of each of the engineers, given both in March 2011 and then in February 2012. Dealing first with Mr Ruffini, it concluded that Mr Ruffini's evidence as to his state of mind, in so far as it related to strategies during the occasion of the flood event, was not an actual and independent recollection but the product, after the event, of Mr Ruffini's examination of the data, and of Mr Tibaldi's analysis (in documents prepared by Mr Tibaldi).[13]

43. Next, the evidence of Mr Ayre was considered, and his contention that Strategy W3 was actually engaged at 5:00am on 8 January when Mr Ruffini issued a gate opening directive, to increase the flows above the naturally occurring ones. Mr Ayre explained in that evidence that the strategy still remained a W1 Strategy until the lake level exceeded 68.5m, at which point it became a W3 Strategy, because Mr Ruffini had selected a release rate higher than the naturally occurring flow at Lowood.[14] The Final Report records that Mr Ayre recalled that when Mr Tibaldi was drafting his sections of the March Report, Mr Tibaldi commented to the effect that Strategy W2 had not been implemented, and that looking at the flow data that Mr Tibaldi had before him on his computer screen, Mr Ayre had concurred, because Mr Ayre recognised that the dam release rate was higher than the naturally occurring flood at Lowood. Mr Ayre's evidence was that this conversation was a couple of weeks after the actual event. The Flood Inquiry found that the effect of Mr Ayre's evidence was overwhelmingly that he had made no conscious adoption of Strategy W3, and that he did not appreciate, in operating the dam, a need to draw a distinction between Strategies W2 and W3.

44. Regarding Mr Tibaldi, the Final Report concluded that Mr Tibaldi's view that the dam had been operated in Strategy W3 from 8:00am on 8 January 2011 was based on a process of reconstruction from the data, although the March Report which he drafted gave a different impression.

[13] These conclusions are drawn at the end of part 16.6.1 of Volume 2 of the Final Report

[14] Mr Ayre evidence on 3rd February 2012 at page 5210 of the Inquiry Transcript

45. Regarding Mr Malone, the Flood Inquiry concluded that his evidence in February 2012 raised doubts about whether the engineers consciously adverted to or adopted a particular strategy during 8 January 2011, and his evidence about his own state of mind, as at the start of his shift on 9 January 2011, did not suggest that he had then attempted any differentiation between W2 or W3.

Contemporaneous Documents

46. The Flood Inquiry then considered a schedule of documents (tendered as Exhibit 1046) which summarised four situation reports, two technical situation reports, and 23 flood event log entries, those being contemporaneous documents from which inferences might be drawn as to what operating strategies were engaged, and when, during the January 2011 flood event. The Flood Inquiry accepted that the flood event log, and the situation reports, were places which would have been appropriate to record the operating strategy in place at any given time, and that none of those documents mentioned operating Strategy W3, nor, until late on 9 January 2011 (Sunday), the prioritisation of the prevention of urban inundation. Two of the items listed in Exhibit 1046, a situation report issued of 5:53pm on 8 January 2011 (Saturday) and a flood event log entry of 3:30pm on 9 January 2011 (Sunday) refer to other operating strategies (W1 and W2)[15]. The Final Report records that there were six situation reports issued between 4:00am on 8 January and 4:00am on 10 January (Monday), and in part 16.7.1 of the Flood Report, Volume 2, it is noted that a situation report issued at 5:53pm on 8 January by Mr Ayre was not included in Appendix E to the March Report. Appendix E purported to be a copy of the situation reports issued during that flood event. However, I note that Appendix M to that March Report, the flood event log, did refer to that situation report being issued by "Engineer 1" (Mr Ayre) at 5:53pm that day, and Mr Ayre's statement to the Flood Inquiry dated 29 March 2011 (Exhibit 18 before the Inquiry), quoted that situation report in full.

47. The relevant part of that situation report, quoted at page 465 of the Final Report of the Flood Inquiry, reads as follows:

[15] This description appears at part 16.7 at page 463 of the Flood Inquiry Report Volume 2

"Assessments have been undertaken to determine possible increases to releases given the high likelihood of significant inflows in the next few days. The interaction with runoff from the Bremer River and Warrill Creek catchment is an important consideration as the event magnitude will require the application of Wivenhoe Dam flood operation Strategy W2 (Transition strategy between minimizing downstream impacts and maximizing protection to urban areas)."

48. The Flood Inquiry considered in detail the contents of six situation reports issued between 4:00am on 8 January 2011 (Saturday) and 4:00am on 10 January 2011 (Monday). Those included the situation report issued at 5:53pm on 8 January by Mr Ayre. The Flood Inquiry concluded as follows:

"It is clear from the text of the situation reports, as early as the one issued at 5:57pm on 7 January, that the flood engineers were considering the effects of the releases they would make from the dam on the closure of bridges and on tide heights and flows in the lower Brisbane River. There were references to those issues both before and after the time at which W3 was said to have been engaged. That is unsurprising given the Manual's direction that, in every strategy, all the objectives must be considered in order of priority, so that in each of strategies W1, W2 and W3, disruption to rural life and inundation of urban areas should be considered. It is also clear that the bridges were a greater focus up till 9:00pm on 9 January, when inundation of urban areas was given greater emphasis. While, if the flood engineers were operating the dam in strategy W3, protecting urban areas from inundation had to be their primary consideration, it does not follow that it would have been necessary to highlight it in situation reports while there was no immediate risk of urban flooding and it was still feasible that some, at least, of the bridges could be kept open."[16]

[16] Page 468 of the Flood Inquiry Report Volume 2 in part 16.7.1

49. The Flood Inquiry then considered the gate opening directives, issued on and after 5:00am on Saturday 8 January 2011. In its Final Report, at page 469, the Flood Inquiry concluded that:

> "...the gate openings directed by Mr Ruffini and Mr Ayre are consistent with management of the dam in either of Strategies W1 and W3 (or neither)."

50. The Flood Inquiry considered the rate of releases from the Wivenhoe Dam during the period from 4:00am on Saturday 8 January 2011 up to 11:00am on Monday 10 January 2011, recording the gradual increase in the rate of release from 720 (719) cumecs at 4:00am on Saturday morning to 2000 (2044) cumecs by 11:00am on Monday morning. The Final Report notes that the experts who had peer reviewed the Seqwater Flood Event Report, and Mr Babister, had:

> "unanimously agreed that the release rates chosen by the flood engineers were appropriate for being in W3 and holding the primary consideration of the protection of urban areas from inundation. But none of them said that the releases were inconsistent with operation in W1; indeed, one of them, Mr Roads, said they were consistent. No expert said that the releases were inconsistent with the primary consideration of preventing the submergence of bridges. That was obvious. Strategy W1 has a maximum release rate of 1900 cumecs. Strategy W3 has a maximum release rate of 4000 cumecs and no minimum release rate. Until releases exceeded 1900 cumecs at 8:00am on 10 January, the release rates were consistent with both W1 and W3. The plan to increase releases over 1900 cumecs is first evidenced in a contemporaneous gate operations spreadsheet ..., which is the subject of a flood event log entry at 7:00pm on 9 January; shortly after, calls were made to councils, Seqwater's chief executive officer and the dam safety regulator advising that, given the rainfall,

high releases from Wivenhoe, with the prospect of damaging flooding, were likely to be necessary."[17]

The Final Report records that "The release rates are intractably neutral as to whether the flood engineers were operating the dam in W1, or W3, or outside of any strategy and concentrating only on objectives."

51. The Final Report records Mr Ayre had appeared before it over the days from 11 April 2011 to 13 April 2011, and at that appearance, when asked about the reference to W2 in the situation report at 5:53pm on 8 January 2011, he had said that "that was an error on my behalf". He described his recording Strategy W2 at that point in time as inadvertent, and that this was not correct because "we had transitioned into W3 earlier in the day."

On 3 February 2012, when recalled to the witness box, his evidence was that the situation report described his foreseeing the possibility that the lake level would fall below 68.5m, based on the distribution of the forecast rainfall and the current release rates, in which case they would be back in Strategy W1, and then with predicted rainfall coming in on Sunday and Monday, might progress back up into W2. The Final Report concluded:

- If Mr Ayre's understanding was that the strategy in place at the time he wrote the situation report was W1, it was a breach of the Manual;
- His most recent explanation could not be accepted because it was inconsistent with the explanation he gave for the entry in April 2011 (a mistake);
- The fact that he was willing to invent an account to explain the 5:53pm situation report weighed heavily against his credibility more generally. [18]

[17] Page 474 of the Flood Inquiry Final Report, Volume 2
[18] These findings appear in paragraph 16.7.2 of the Final Report

52. The next contemporaneous document to be considered was a flood event log entry at 3:30pm on Sunday 9 January 2011, which recorded a conference held between the four flood engineers, with Mr Ruffini, Mr Ayre, and Mr Malone physically present, and with Mr Tibaldi attending by telephone. The entry in the flood event log was written, the Final Report found, by a Neville Ablitt, a Flood Officer, as to the time, and the words "Duty Engineer conference held at the FOC: Attended by RA, JR, TM, with JT on conf phone". Mr Ablitt swore that the remainder of the words in the entry were not his, and the Flood Inquiry accepted his evidence, and that the remainder of the body of the text was written by one of the three flood engineers physically present at the conference. The opening sentence of that entry reads as follows "At this stage operating at the top end of W1 and the bottom end of W2". The Final Report concluded that "The only satisfactory and reasonable interpretation is that the words mean what they say. They record the recognition by one or more of the flood engineers in their conference on the afternoon of Sunday, 9 January 2011 that they were at a point of transition out of W1 and into W2".[19]

53. Another document to which the Flood Inquiry gave its attention was an email from the Director of Operations, Seqwater (Mr Daniel Spiller) to the Dam Operations Manager (Mr Robert Drury) at 8:13am on Monday 10 January, which asked "Are you now operating under release strategy W2 or W3?". Mr Drury replied, at 8:23am, by email, "W2". Mr Drury could not identify the source of that information. The Flood Inquiry was not prepared to draw the inference that he obtained it from a flood engineer.

54. On Tuesday 11 January the engineers, as described, moved to Strategy W4 at 8:00am (as appears in the Interim Report, the Final Report, and the March Report). During that day the then Premier instructed the Seqwater Grid Manager (the CEO, Mr Barry Dennien) to urgently independently review the operation of the Wivenhoe Dam. A Mr Cooper was engaged to do this. At 10:22am on the morning of Wednesday 12 January 2011, Mr Cooper sent an email to Mr Allen, attaching his draft report. That draft relevantly stated "over the last couple of days, the storage level in Wivenhoe Dam has increased to above EL74.0... This situation would demand Strategy W3 for Wivenhoe Dam".

[19] This conclusion is drawn at page 481 in paragraph 16.7.3 of Volume 2 of the Flood Inquiry Report

Mr Allen replied to Mr Cooper at 10:57am, saying:

> "Just a couple of comments after a very quick read of your report. 2nd page: Strategy W1 applies until the reservoir exceeds 68.5 and then it moves into W2 or W3. For the last day or so before yesterday's big rise, it would have been in W2. It moved into W4 at about EL73.5."

55. Mr Allen said in evidence that this email was his understanding at the time, but he did not know from where he had gotten it. He swore that he had not made his own assessment, and had not turned his mind to which of the W Strategies might have been employed. The Flood Inquiry concluded that it was more probable than not that Mr Allen gained his understanding that the dam "would have been in W2" from one of the flood engineers.

56. The Final Report concludes [20] that:

> "None of the contemporaneous documents supports the contention that the flood engineers began operating under the W3 Strategy at 8:00am on Saturday 8 January 2011. Instead:
>
> a. Mr Ayre's reference to W2 as a possible future and higher strategy on the afternoon of 8 January 2011 is evidence that no transition had been made from Strategy W1.
>
> b. The 3:30pm entry for the flood engineers conference on 9 January 2011 referring to being at the top of W1 and the bottom of W2 shows that the flood engineers then believed they were operating under W1, on the cusp of moving to W2.
>
> c. Mr Allen's understanding, expressed in the email to Mr Cooper, that Strategy W2 would have been in place before Strategy W4 came into

[20] At 16.7.8 in Volume 2 of the Final Report at page 485

effect, supports the view that at least one of the flood engineers with whom he was in communication believed that strategy to have been applied."

57. The Flood Inquiry then examined the various documents produced soon after the event; in which strategy choices had been recorded or purportedly recorded. There were three of these, and the Final Report records that each document told a different version of strategy choice and timing, and that all three recorded that Strategy W2 was engaged during the January 2011 flood event. By contrast, the March Report recorded that there were only two changes in W Strategy: the transition from W1 to W3 and from W3 to W4; W2 was skipped entirely. The Final Report remarks at 16.8 on page 485, that "One might reasonably expect the engineers to have had a clear recollection of both, at least in mid-January 2011. It is surprising, then, that conflicting and apparently erroneous records were prepared so soon after the January 2011 flood event."

58. The first document considered, a "Summary of Manual" document, was a Microsoft word document written by Mr Malone, on Saturday 15 January 2011 between 11:30am and 1:02pm that same day. He forwarded it to the other flood engineers as an attachment to an email, in which he advised that the Chief Executive Officer of Seqwater had asked for a two page summary of the Manual. In his email, he asked for comments before the document was passed on to Mr Drury.

59. In paragraph 16.8.1 of the Final Report, the following appeared:

> "The Summary of Manual gives an overview of the Wivenhoe Manual and includes a precis of the W Strategies. Importantly, incorporated into that precis of strategies are the times at which different W Strategies were "exceeded" during the January flood event. The relevant entries, with typographical errors, are:
>
> *The Flood Operations Centre was mobilised at 8:00am Saturday 6 January 2011.*

[W1] was exceeded at 8:00am Saturday 6 January 2011.

[W2] was exceeded approximately 6:00pm Saturday 8 January 2011.

[W3] was exceeded approximately 9:00am Tuesday 11 January 2011."

60. The Final Report remarks that this chronology differs from all other versions of when strategy changes took place, and is significant as the first written record of the strategies used and when they became applicable. It concludes that the Summary's real divergence from the March Report lies in it showing Strategy W2 as in effect from 8:00am till 6:00pm on 8 January, a period when Mr Malone was not on shift. The Final Report concluded that not only did Mr Malone not know, as was asserted in the March Report, that Strategy W2 was bypassed, but at the time, he believed that none of the engineers did know that. This was in the context in which the four engineers had conferred on 9 January about objectives and release strategies, and the Summary of Manual document was evidence that Mr Malone, at any rate, did not think there had been any clear and conscious adoption of, or adherence to, strategy, and that this document was an early exercise in reconstruction of the flood event. [21]

61. The second document examined was an Excel spreadsheet titled Strategy Summary Log, also produced on 15 January 2011, and emailed to Mr Tibaldi at 6:57pm. The Final Report at page 488 remarks that the evidence as to how the Strategy Summary Log come into existence and was circulated was extraordinarily limited; most witnesses denied any recall of it, and further concluded (at page 491) that Mr Ayre was involved at least to the extent of giving instructions for the preparation of the document. The Final Report records (at page 487):

"As its name suggests, the document purports to record the times that the different operational strategies were engaged at Wivenhoe Dam. It shows the following:

- Strategy W1 was engaged at/or around 7:00am on 6 January 2011

[21] This appears at page 487 of the Flood Inquiry Report, Volume 2.

- Strategy W2 was engaged at/or around 3:30pm on 9 January 2011
- Strategy W3 was transitioned to at/or around 7:15pm and was engaged by 9:04pm on 9 January 2011
- Strategy W4 was engaged between 6:12am and 12:00pm on 11 January 2011."

The Final Report noted that the times of the changes in operating strategies indicated in that document differed from all other versions.

62. The next document was a brief for the then Minister for Natural Resources, Mines and Energy and the Minister for Trade, who requested a briefing note about the flood event and Wivenhoe Dam operations during it. He asked for it to be provided to him on 16 January 2011, for an emergency Cabinet meeting to be held on 17 January 2011. That briefing note was provided to the Minister by the CEO of SEQWater Grid Manager, Mr Barry Dennien, through the Director-General of DERM, Mr John Bradley, on 16 January 2011. The briefing note had five attachments, and attachment A was a ministerial briefing note from Seqwater; attachment D was the Flood Mitigation Manual compliance review by Mr Brian Cooper; and Mr Cooper's curriculum vitae. [22]

63. Attachment A, Seqwater's ministerial briefing note, provided information to the Minister about five topics, one of which was "the flood event report". The last section advised of Seqwater's intention to produce a comprehensive flood event report, in accordance with its obligation under the Wivenhoe Manual, and attached a report titled "January 2011 Flood Event".

64. The Final Report notes that the January 2011 Flood Event report appears to be the first account of the choice and timing of the strategies used at Wivenhoe dam during the January 2011 flood event, produced for scrutiny by external agencies. An account of W strategies used in this January 2011 flood event is contained in a table under the heading "Event

[22] This appears at page 491, in part 16.8.3 of the Final Report Volume 2

Decision Making". That table records that releases from the dam began, with operational strategies W1, at 3pm on Friday 7 January 2011, and that the operational strategy had progressed to W2 by 7pm on Sunday 9 January 2011. It records that by 6:30am on Monday 10 January, the operational strategy had progressed to W3, and that by 8am on Tuesday 11 January, the strategy had progressed to W4. [23]

65. The Final Report records that:

> "The account given in the briefing note of the choices and times of W Strategies used in January 2011 is inconsistent with those that appear in the Summary of the Manual document, the Strategy Summary Log and, as will be explored in section 16.10, various drafts of the March 2011 flood event report.
>
> A striking feature of the account given in the briefing note is that the dam is shown as having been operated in strategy W1 until after the duty engineers' conference held at 3:30pm on 9 January 2011, when the transition from W1 to W2 is said to have been "apparent" by 7pm."[24]

66. The Flood Inquiry found that:

- Mr Tibaldi wrote the text of the "January 2011 Flood Event Report" including the table of "Event Decision Making".
- Mr Malone did some modelling work to produce the graphs that appear on page 4 of attachment A.
- Mr Ayre spent time gathering background documents and adding comments and annotations of gate directives to a gate operations spreadsheet relevant to the morning of 11 January 2011.
- Mr Ruffini was not involved in preparing the briefing note during the evening of 15 January because he was the duty engineer.

[23] This is at page 492 of the Flood Inquiry Report, Volume 2

[24] This appears at page 494

The Flood Inquiry concluded that Mr Ayre must in fact have read the brief to the minister on either 15 or 16 January 2011 or, at least, as he suggested, at some later stage. [25] The Flood Inquiry also noted that:

> "If the flood engineers believed the account in the March flood event report to be correct, it is remarkable that at no stage did Mr Tibaldi, who had prepared the summary, or Mr Ayre or Mr Malone, who must have read it, attempt to notify anyone of the errors in the document". (at page 495 of the Final Report)

And

> "the conclusion must be that at least the three flood engineers involved in (the creation of the Summary of Manual, the Strategy Summary Log, and the table Mr Tibaldi prepared for the ministerial brief) did not themselves have a clear understanding of what strategies were adopted and when, or have any confidence that the other flood engineers did". (also at page 495)

67. The next document considered was a gate operations spreadsheet prepared by Mr Ayre and last modified by him on 19 February 2011 at 11:27:55am. Comments appear on that document (when viewed electronically), most of which have "Rob Ayre" as the author, which suggested that "strategy W2 was engaged at 5am on 8 January by Wivenhoe (gate) directive 3 'as Level was greater than 68.5', and that it remained in force at the time of the flood engineers' conference on 9 January. Another annotation was, "Revise strategy to transition into W3 due to heavy rain in UB and Stanley"; a later comment suggested that strategy W3 was "adopted" at 9pm on 9 January." [26]

68. The Final Report concluded that there was no evidence that any of the other flood engineers were ever shown or made aware of the spreadsheet, but that like the Strategy Summary Log and the ministerial briefing note, the spreadsheet was consistent with Mr

[25] This finding appear on page 493 of Volume 2 of the Final Report

[26] Flood Inquiry Volume 2 at page 495

Ayre's having believed, in the weeks following the flood event, that strategy W2 had been used on the weekend of 8-9 January (at page 496).

69. The next document considered was Mr Brian Cooper's report provided (very promptly) on 12 January 2011, which formed part of the briefing given to the Minister on 17 January 2011. The Final Report remarks "It is of particular interest in the context of the Commission's investigation because it contains the statement that 'for the last day or so before yesterday's big rise, Strategy W2 would be in place'." The Flood Inquiry concluded:

> "The evidence establishes that all four flood engineers were aware of the content of Mr Cooper's report. The contention of Mr Malone, Mr Tibaldi, and Mr Ayre that there was no need to raise the reference to the use of strategy W2 as an error, because the March flood event report would give a correct account, cannot be accepted. This was a report, prepared at the Premier's request, which was relied on to confirm that the dam had been properly managed, and it did so on what must have been, on the flood engineers' account, a completely wrong premise. It is not credible that they would say nothing of the mistake, simply because they knew a different account would eventually be produced. It is far more likely that they did not react to the report either because they still believed that strategy W2 had been applied, or because they were in a state of uncertainty about it." [27]

70. The Flood Inquiry then considered the contents of the March Report, most of which was written by Mr Tibaldi, who said he began work on that report on 24 January 2011, and was working on it up to the end of February 2011, Mr Malone wrote parts, as did Mr Ayre. In Mr Tibaldi's statement to the Commission,[28] Mr Tibaldi said that he looked at source data available to him in the flood operation centre to prepare drafts of the report; that data would have included the situation reports, the lake levels, release rates, technical situation reports, directives and the flood event log. He said he believed that he was creating an

[27] Page 497 of the Volume 2 of the Final Report

[28] Exhibit 1036, a statement dated 1 February 2012

account of what actually happened. The Flood Inquiry considered that reasoning process "inherently flawed": "It started from the assumption that the flood engineers complied with the Manual, and then worked back to ascertain what strategy transitions must have occurred to be consistent with that assumption; rather than setting out what did, in fact, occur, and then allowing conclusions to be drawn as to whether there was compliance with the Manual." [29]

71. Mr Tibaldi prepared various drafts of that March Report. The first draft, sent out on 24 January 2011, showed :

- a transition from strategy W1 to strategy W2 had occurred at some time between 3pm on Friday 7 January 2011 and 2pm on Saturday 8 January 2011;
- a transition to W3 occurred at some time between 7pm on 9 January 2011 and 1am on Monday 10 January 2011;
- transition to W4 occurred at some time between 4am on Tuesday 11 January 2011 and 10am on Tuesday 11 January 2011.

Another draft dispatched on 25 January 2011 (to the Duty Engineer email account) changes the time period in which the transition from W2 to W3 occurred to between 2pm on Sunday 9 January 2011 and 7pm on Sunday 9 January 2011, an earlier time than that recorded the day before. The Final Report notes that:

> "These two drafts show that, at the start of the process, Mr Tibaldi thought that W2 had been used during the flood event." [30]

72. The Final Report notes that a draft sent by Mr Tibaldi on 28 January 2011 was the first draft that connected the transition from W1 to W2 with the lake's level exceeding 68.5meters, and on 31 January 2011 Mr Tibaldi sent a draft indicating that W2 had been bypassed, the first draft to do so. On that draft, the transition from W1 to W3 took place between 3pm on Friday 7 January and 2pm on Saturday 8 January 2011. Later drafts attached to Mr Tibaldi's

[29] Inquiry report Volume 2 page 499

[30] This appears on page 499 of Volume 2 of the Flood Inquiry Report

statement in February 2012 all reflect the Final Report (a transition from W1 to W3 at 8am on Saturday 8 January).

73. The Final Report concluded (at page 500) that examination of the drafts of the March Report confirms that Mr Tibaldi changed his views about when the flood engineers moved out of strategy W1 and whether, when they did, they transitioned to W2 or W3. The Final Report quotes Mr Tibaldi declaring in his statement that he believed that he had recorded W2 as being used in earlier drafts because the strategy selection flowchart in the Manual (at page 23) required the transition from W1 to W2 when a maximum flow at Lowood is expected to be below 3,500 cumecs and the maximum flow at Moggill expected to be below 4,000 cumecs. Both those conditions applied when the lake level exceeded 68.5m, the trigger for a transition from strategy W1 to W2 or W3 at 8am on 8 January. He considered that the flowchart did not allow a transition to W3 in those circumstances (when the maximum flow at Lowood was expected to be below 3,500 cumecs and that at Moggill was expected to be below 4,000 cumecs). On the other hand, he regarded the amount of water being released from the dam at the time the lake level exceeded 68.5m as too high for strategy W2.

74. It is apparent to me that Mr Tibaldi's view (when drafting the March Report) that strategy W2 had not been applied as at 8am on Saturday 8 January 2011 came from his having studied the description of that strategy at page 27 of the Manual.

75. The Final Report records (at page 500) that Mr Tibaldi's conclusion, that the releases from the dam indicated that it was being operated in W3 from 8am on 8 January, gave rise to what he described as a "dilemma". The "dilemma" Mr Tibaldi described in his evidence (on 2 February 2012) at page 5035 of the transcript, was that the flowchart (at page 23 of the Manual) which he had drafted was "erroneous", in that it did not allow for a transition directly from W1 to W3.

The Page 23 Flowchart

76. Mr Tibaldi's statement to the Flood Inquiry, dated 1 February 2012, explains in paragraph 24 that he had written the earliest draft of the Flood Event Summary, and in paragraph 25 that he believed he had used Strategy W2 as a starting point in those early drafts "because the flowchart on page 23 of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam (the Manual) requires transition from Strategy W1 to Strategy W2 in circumstances where the maximum flow at Lowood is likely to be less than 3500 cumecs and a maximum flow at Moggill is likely to be less than 4000 cumecs. This flowchart does not provide for a transition directly from Strategy W1 to Strategy W3 in these circumstances."

77. Mr Tibaldi's statement explains, in paragraph 26, that both of the conditions required in the flowchart for Strategy W2 (once the lake level exceeded EL 68.5m) – namely that the maximum flow at Lowood was likely to be less than 3500 cumecs and a maximum flow at Moggill was likely to be less than 4000 cumecs – were satisfied during the January 2011 Flood Event when the lake level first exceeded EL 68.5m. His statement goes on to say that:

> "Despite this, it appeared to me that Strategy W2 had not been implemented since the flow of water being released from the dam exceeded the maximum flow allowed by Strategy W2."

The Manual at page 27

78. His statement then refers to the Manual at page 27, and to the table appearing therein, quoted in paragraph 20 herein, above. That statement then presents a table in which he calculated the peak flows at Lowood (excluding the Wivenhoe Dam releases) and at Moggill (again excluding the Wivenhoe Dam releases) from 8:00am on 8 January 2011 to 8:00am on Tuesday 11 January 2011. He arrived at calculated peak flows at Lowood and Moggill from Appendix A of the March Report, and that chart records that the flows at Lowood were calculated to be static at 530 cumecs from 8:00am on 8 January until 7:00pm on Sunday 9 January, when they increased to 620 cumecs rising to 780 cumecs on Monday 10 January at 9:00am and remaining at that rate until 4:00pm on Tuesday 11 January 2011. His table then

calculated the maximum allowable releases from the Wivenhoe Dam during that period, if the dam was being operated in Strategy W2 (as described at page 27 of the Manual). His table compared those calculated peak flows at Lowood and Moggill respectively with the range of actual releases from the dam during that period, which were always considerably more. Thus the releases on 8 January between 8:00am and 2:00pm began at 927 cumecs and rose to 1239 cumecs. Had Strategy W2 (as defined on page 27) been applied it would have been necessary to reduce the releases from the dam to "80 to 153" cumecs.

79. Mr Tibaldi's statement of 1 February 2012 recorded (at paragraph 31) that he was troubled by the fact that the flowchart in the Manual had not been followed. He felt that may have been a noncompliance with the Manual. Ultimately, he decided it was not a noncompliance with the intent of the Manual, because it would not have been "sensible to adopt Strategy W2 at that time, as it would have significantly reduced the outflow from the dam. I felt strongly that the Flood Event Report should be accurate. Accordingly, I made it clear in the draft Flood Event Summary what I believed the data indicated – that it is, that a transition had occurred directly from Strategy W1 to Strategy W3 when the lake level first exceeded EL68.5 metres. I believed that if I had left a reference in the Flood Event Report that there had been a transition from Strategy W1 to Strategy W2, this would have been incorrect."

80. Mr Tibaldi added (in paragraph 33 of that statement) that he had "later referred the inconsistency associated with the flowchart on page 23 of the Manual to the Flood Commission of Inquiry in my statement dated 1 April 2011." If one turns to that statement, what Mr Tibaldi said in paragraph 8.(g) was as follows

> "In recent months I have become aware of minor corrections that may be required to the Manual. I consider that there is an ambiguity in the flowchart which appears on page 23 of Revision 7. The box in the centre of the page deals with the circumstances in which you should adopt Strategy W2 or Strategy W3. In my view, a note should be inserted to read "in situations where the intent of Strategy W2 cannot be met, Strategy W3 should be used".

The Problem with the Manual

81. An examination of the terms of the definition of Strategy W2 at page 27 and of the flowchart at page 23 (both drafted by Mr Tibaldi) reveals the problem he faced. The conditions in the page 27 definition (quoted earlier in paragraph (20) herein) requires that the "combined peak river flows" (presumably, the combination of the naturally occurring peak at Lowood and Moggill with the outflow from the Wivenhoe Dam) should not exceed – at Lowood – the "lesser of

    - The natural peak flow at Lowood excluding Wivenhoe Dam releases and
    - 3500 cumecs."

    (At Moggill the relevant figure is 4000 cumecs.)

82. Some immediate problems are caused by the drafting of that definition of Strategy W2. "Combined" peak river flows – as interpreted by me – will always exceed any individual component which, in combination with something else, produces the "combined" peak river flow. That is, the combined peak river flows will always exceed both the natural peak flow at Lowood, excluding Wivenhoe Dam releases, and the natural peak flow at Moggill, excluding Wivenhoe Dam releases. It would have been better to leave out the word "combined". Further, the requirement that the flow (whether combined or not) should not exceed the natural peak flow makes it almost irrelevant to contemplate using Strategy W2. This is because of the figures which appear in Mr Ayre's statement of 1 February 2012, at paragraph 37, where he explains how at 6:00am on 8 January 2011 the Wivenhoe Dam was 68.45m AHD, and there had been an estimated 380,000 megalitres flood inflow, of which 50,000 megalitres had been released overnight, leaving 330,000 megalitres which needed to be released (over seven days) (to reduce the dam to full supply level), which Mr Ayre explained required a minimum release rate of 680 cumecs.

83. Something very close to that will always be the position where the dam has filled from the full supply level of 67m AHD to 68.5m AHD. Mr Ayre's figures were not challenged, and they mean that the minimum release rate required once 68.5m is reached, to comply with the requirements of the Manual as it was then, was a release rate likely in fact to exceed the

naturally occurring flow at Lowood, making Strategy W2 as defined merely an example of wishful thinking. It may have been better if the boxes at page 27, defining Strategy W2, had read the "greater of" rather than "the lesser of"; or either description, and the first bullet point (the reference to the "natural peak flow") in each box, could have been omitted entirely; leaving the target maximum flow as 3500 cumecs at Lowood and 4000 at Moggill.

84. That is what actually appears in the flowchart at page 23, also drafted by Mr Tibaldi. It asked only the question suggested by the second bullet point on the definition at page 27, and rephrased it to ask the question "Is the maximum flow at Lowood likely to be less than 3500 cumecs **AND** the maximum flow at Moggill likely to be less than 4000 cumecs?" The reader is advised that if the answer is "yes", Strategy W2 should be used and if the answer is "no", Strategy W3. This applies until the likely level of the Wivenhoe Dam will exceed EL74.0m.

Mr Ayre saw the problem

85. For all his descriptions of a "dilemma", and the difficulty that the definitions (which he had drafted) caused him, Mr Tibaldi did not at any stage identify any contradiction between what was required by the flowchart at page 23 and the description of Strategy W2 at page 27. The only engineer who actual did identify a contradiction was Mr Ayre, in his statement dated 23 March 2011, at paragraph 301. It read:

> "The W&S Manual indicates a flowchart of when each strategy is invoked. A copy of this flowchart is on page 23 of the W & S Manual. I believe that there is an error in this flowchart in the centre box. The questions in the centre box, which ask the reader to determine whether or not to use strategy W2 or strategy W3 should be separated by the word "or" rather than "and" plus the centre box should refer to the need of the Duty Flood Operations Engineer to consider the natural occurring peak at Lowood and whether strategy W2 can in fact be implemented. In my experience, the Duty Flood Operations Engineers do not rely on the flowchart for direction as to the operation of Wivenhoe Dam, but they refer to the description of strategy W2 found on page 27 of the W&S Manual. Page 27 of the W&S Manual does refer to the consideration of the

natural peak flow at Lowood excluding Wivenhoe Dam releases. Therefore, the error in the flowchart did not have an impact on the decision making process during the January 2011 Flood Event. I will seek to have this flowchart amended at the next review of the W&S Manual."

86. Mr Ayre was taken to that paragraph, by number, by Mr Callaghan SC, Senior Counsel appearing to assist the Inquiry, on 12 April 2011, and contented himself with saying of that paragraph that:

> "yes, there is certainly a tension develops in those particular strategies (W2 and W3) where we're trying to set target flow releases to meet mitigation requirements, be that either trying to prevent the inundation of bridges or maximise protection to the urban areas, which is countered by the requirements to drain the flood storage within seven days. The Manual doesn't necessarily indicate which of those two requirements takes precedence. So I think a clarification on that point would be good." Mr Dunning SC, Senior Counsel for the Brisbane City Council, also referred Mr Ayre to that paragraph by number, but that was in the context of a cross examination intended to establish Mr Ayre's agreement with the proposition – with which he did agree – that the relevant point of inquiry for a flood engineer was how low releases could be held to achieve flood mitigation, as an indication of efficiency. In the event, neither Senior Counsel challenged Mr Ayre's statement that what he described as the "error" in the flowchart had "no impact on the decision making process during the January 2011 Flood Event."

87. I consider it likely that the conflicting descriptions of the requirements for Strategy W2 appearing respectively at page 23 in the flowchart, and at page 27 in the fuller strategy description, did have an impact on the decision making process during the January 2011 Flood Event. An engineer who referred to the flowchart at page 23 when the Wivenhoe level was likely to exceed 68.5m would have felt confident that Strategy W2 was appropriate (as all the engineers seem to have felt). An engineer who turned four pages and

read of the requirement to keep "combined" peak river flows below the natural peak flow at Lowood and Moggill (as Mr Tibaldi did when preparing the March Report) would have thought Strategy W2 inapplicable. An example of two different engineers adopting different approaches after the event appears below.

88. Exhibits 411 and 412 in the Flood Inquiry are reports by two engineers (Mr BJ Shannon and Mr LA McDonald, respectively), on compliance with the Manual for the dams during the 2011 floods. Both reviews were based on the March Report. Mr Shannon (who clearly read page 27 of the Manual) wrote that: "In the event, Strategy W2 was not feasible because intermediate-level river crossings had already been broached. Hence Strategy W3 was immediately invoked, as suggested by the Manual; gates were opened progressively.

Close reading of the Manual is somewhat confusing and the resulting impracticality of Strategy W2 is predictable." He added:

> "The short circuiting of Strategy W2 was unavoidable; it would have been feasible only when flooding is minor and predominantly below Wivenhoe Dam."

His findings, apart from remarking that the Manual was followed closely during the whole flood event, included that "The irrelevance of Strategy W2 was predictable."

89. Mr McDonald saw it differently. He wrote, at page four of his report, that:

> "Another ambiguity in the Manual relates to the selection of strategy W2. In paragraph 3 of subsection 8.4 of the Manual it is said that selection will be based, inter alia, on peak flow rates at Lowood and peak flow rates at Moggill (both excluding Wivenhoe releases). A responsible person would conclude that these are actual, not predicted, flow rates. The flowchart on page 23 refers to "likely" (meaning predicted to most people) flow rates at these places and does not say whether or not the threshold values include Wivenhoe releases. The note under the "Conditions" box on page 27 makes it clear that the aim is to keep the flow between 3500 cumecs at Lowood, from which can be inferred that

> the flowchart question intends to include Wivenhoe releases. The conclusion is that the flowchart is to be applied using total flow at Lowood and Moggill to select the operating strategy. But the table at the bottom of page 27 then confuses the selection of a strategy because the first bullet limits the total flow at Lowood to the natural peak – if that peak is less than 3500 cumecs. A reasonable conclusion is that the Wivenhoe discharge must be progressively reduced to zero at Lowood to conclude with the passage of the natural peak (if the peak is less than 3500 cumecs) or for the period for which the natural hydrograph exceeds 3500 cumecs. Did the Manual envisage such a tedious adjustment of Wivenhoe Dam releases? During the January 2011 flood event the operators thought not but that interpretation of the Manual is widely at variance with the flowchart. This is the ambiguity."

90. Then, at page nine of his report, he refers to what the March Report described as "Period 4 of 20 – 1500H on 7 January to 1400H on 8 January - Strategy (W1D, W1E, W3)/S2", referring to the critical part of the "Flood Event Summary, (section two of the March Report) where that report described how the operating strategy transitioned from W1 to W3 "as it became apparent Wivenhoe Dam level was likely to exceed 68.5 metres and Strategy W2 couldn't be applied." As to that, Mr McDonald concluded that:

> "It appears that the decision not to implement strategy W2 does not comply with the flowchart on page 23 of the Manual. There is uncertainly because of ambiguity in the Manual requirements. The releases complied with the Manual for strategies W1D, W1E, and W3. It is not clear why strategy W2 was by-passed. ...It seems clear that the question in the flow-chart on page 23 of the Manual, concerning flow at Lowood and Moggill, should have been answered in the affirmative because predicted flow at Lowood of 530 cumecs – plus the flow from Wivenhoe releases – would have been less than 3500 cumecs **and** predicted flow at Moggill of 770 cumecs – plus Wivenhoe flow – would have been less than 4000 cumecs. An answer in the affirmative indicates selection of Strategy W2. Had that been done, it is not clear whether there would have been

any change to the Wivenhoe Dam releases. This issue may apply to some succeeding periods but will not be address again."

91. Those remarks demonstrate that Mr McDonald was following the flowchart at page 23 with care, and unable to grasp why it did not apply. He appears to have overlooked his own remarks in his report, some pages earlier, about the ambiguity in the Manual. I have not been able to find any statement, or portion of the evidence, in which any other engineer referred to the conflict between the description of Strategy W2 at page 27 of the Manual, and the flowchart at page 23.

92. The evidence before the Flood Inquiry included evidence of the considerable effort that had gone into redrafting the Manual before Version 7 was produced. None of the various suggestions for redrafting the Manual picked up the conflict I have described. Mr Tibaldi's statement dated 1 April 2011 (Exhibit 52) describes the process which produced Revision 7 of the Manual dated November 2009. His statement annexes to it a copy of a five page paper in which he had explained proposed amendments to the then existing Manual, and in which he described having reviewed the flood mitigation objectives, in previous versions of the Manual, retaining the first three of the original five, and substituting two new ones to replace the old numbers four and five. The replaced objectives were (4) "minimise disruption and impact upon Wivenhoe Power Station", and (5) "minimise disruption to navigation in the Brisbane River."

93. The engineers clearly devoted a lot of effort to redrafting the Manual, but unfortunately approved a version which included a flowchart conflicting with the rather badly drafted definition of Strategy W2. That conflict still seems not to have been grasped by Mr Tibaldi, although it has been by Mr Ayre. I also note that Exhibit 408 in the Inquiry, a list of suggested work to be done to review the Manual, apparently prepared by the Queensland Floods Commission of Inquiry, while containing extensive suggestions, did not suggest changing the terms of either W2 or the flowchart.

94. The Flood Inquiry made recommendations, including a recommendation 2.18 that 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," and, in recommendation 2.21, that:

> "Seqwater should produce a template situation report in consultation with the flood engineers and the 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 situations, including forecasts
> - Identification of the current operating strategy
> - The strategy aims and objectives of the flood engineers
> - Actual and expected releases
> - Any other comments"

95. In part 17.1.3 of the Final Report, there is a discussion of some of the contents of Revision 9 of the Wivenhoe Manual, dated November 2011, which does not seem to have been made an exhibit in the Flood Inquiry. The discussion includes criticism of various flowcharts introduced into Revision 9, but not the definition of Strategy W2 in Revision 7.

96. An engineer from within DERM (Mr Ronald Guppy) had suggested some amendments to Revision 7 of the Manual, on 13 October 2009, those being both to the flowchart and to the criteria for procedures W2 and W3. As to the latter, he had written "I think there needs to be another criterion under Procedures W2 and W3 of not less than 1900 cumecs given for the target maximum flows. Otherwise if for example the natural peak flow at Lowood

excluding Wivenhoe releases was only 1000 cumecs that becomes a target maximum flow there."

The response of Mr Allen, Director of Dam Safety, DERM, was to advise Engineer Guppy that there were no minimum flow rates under Strategy W2 or Strategy W3 (directing Mr Guppy's attention to pages 27 and 28 of the Manual). Neither Mr Guppy's comments, nor Mr Allen's responses, identified the problem of the conflict between the flowchart and the definition in Strategy W2.

97. The Flood Inquiry concluded (paragraph 16.11.2 at page 505 of the Final Report) that the Manual plainly required conscious adoption and recognition of strategies, and secondly, that the March Report did portray adoption of strategies. Then, considering the state of mind of each engineer, it concluded about Mr Ayre (in paragraph 16.11.3 at page 505) that Mr Ayre understood that the Manual required a conscious course of strategy, requiring the exercise of judgement involving a number of factors. He knew how the March Report had been produced, and he recognised that it purported to be a record of what happened. On his own account, his confirmation of Mr Tibaldi's opinion as to the bypassing of Strategy W2 was not based on any independent memory, but on the result of checking Mr Tibaldi's data, yet he had sworn that he considered the report to be an "accurate record" of the January 2011 flood event.

98. Regarding Mr Tibaldi, the Flood Inquiry concluded that sections 2 and 10 of the March Report were worded so as to convey that they gave an account of decisions actually made, and Mr Tibaldi could have had no illusion that that was what he represented in the March Report. Nevertheless, he gave evidence that the report was a "fair and accurate account" of the flood event. Regarding Mr Malone, the Flood Inquiry concluded that he must have had at the very least, a strong suspicion that the March Report was not a genuine account of conscious strategy choices. Accordingly the Flood Inquiry concluded (at paragraph 16.11.4 at page 507) that "Mr Tibaldi and Mr Ayre knew, and that Mr Malone had a basis for suspecting, that the March Flood Event Report was misleading". It also concluded that Mr Ayre, Mr Malone and Mr Tibaldi each had a level of understanding that the report was

misleading and each of them, in his own way, contributed to acceptance of the report. It also found (at page 508) that

> "When Mr Tibaldi pointed out to Mr Ayre that W2 had been bypassed and Mr Ayre agreed, he did not do so through any personal belief in the correctness of the proposition but as a result of looking at the data Mr Tibaldi was examining on his computer screen. It must have been obvious to both that they were engaging in a recreation of events divorced from what actually occurred."

The Flood Inquiry went on to conclude that both Mr Ayre and Mr Tibaldi must have shared the understanding that the ensuing drafts of the March Report were intended to present an account which indicated a precise and manufactured account of an engagement of strategies, and that Mr Tibaldi and Mr Ayre were each aware of the other's state of mind in that regard.

99. One matter in which the Manual was not followed to the letter was in respect of a requirement at page 5, in paragraph 2.2 that Seqwater ensure that a Senior Flood Operations Engineer was designated to be in charge of flood operations at all times during a flood event, and in paragraph 2.3, where the requirement appears that "when rostered on duty during a Flood Event, the responsibilities of the Senior Flood Engineer are as follows:

- Set the overall strategy for management of the Flood Event in accordance with the objectives of this Manual."

100. Mr Ayre's evidence and statements identified him as the Senior Flood Engineer for the January flood event, and while the flood event log does record Mr Ayre's deciding issues of strategy – or saying he had – he does not appear to have set the overall strategy for management of the flood event, as required by 2.3 of the Manual. Instead, his description of what happened involves his accepting that Mr Ruffini had decided upon a strategy moving out of W1, by directing, at 4:50am on 8 January 2011, a gate opening strategy permitting releases greater than the naturally occurring flow at Lowood. Then, when the engineers

transitioned to Strategy W4 at 8:00am on Tuesday 11 January 2011, Mr Ayre was not on duty at that time, having ended his shift at 7:00am. If Mr Ayre had set the overall strategy and had announced – and recorded – that fact, a great deal of time could have been saved.

101. Having said that, Mr Ayre did return to the flood operation centre at about midday on 11 January, to assist Mr Malone and Mr Tibaldi, the rostered Deputy Flood Operations Engineers on their shift, and then he began a shift at 7:00pm that day, with Mr Ruffini, although both had been at the flood operation centre helping in operations since midday. When that shift finished at 7:00am on 12 January, he had a short sleep and returned to the flood operation centre at about 2:00pm that day. He began another shift at 7:00pm which finished at 7:00am on Thursday 13 January 2011. Once again he returned to the flood operation centre at about 2:15pm on 13 January, and began another shift at 7:00pm. So if he did not declare himself as setting an overall strategy, he certainly did attempt to be at or in charge of the flood operation centre, at all times.

102. In summary (accepting the findings of the Flood Inquiry) the engineers at the Flood Operation Centre represented to each other and to the outside world that in the January 2011 flood event, in respect of Saturday 8 January and Sunday 9 January, the dam was being operated in Strategy W2. They made the same representations in reports and documents prepared during or immediately after the January 2011 flood event. It was only on 31 January 2011, when Mr Tibaldi published a draft of what became the March Flood Report, that he first stated that Strategy W3 was engaged from 8:00 a.m. on Saturday 8 January 2011. All the engineers accepted this was accurate, and endorsed that account (in the March Flood Event Report), by their statements and their evidence. In so doing they presented a (reconstructed) picture of a well staged transition from strategy W1 to strategy W3, at 8:00 a.m. on Saturday 8 January 2011.

103. In fact the dam management was more chaotic, and conducted at that time with either little or no regard to strategy choices and numbers, but with a due regard to all of the stated objectives in the Manual. The Manual at that time contained inconsistent advice about

when to use Strategy W2. The flowchart on page 23 justified the representation made, on and after 8 January and 9 January, that Strategy W2 was then engaged. The definition at page 27 of Strategy W2 did not justify that representation, and its contents meant W2 was not available. Mr Ayre had recognised the contradiction between page 23 and page 27, by 23 March 2011, when his statement was prepared. There was no evidence before the Flood Inquiry of his telling any other engineers about it. Mr Tibaldi very likely realised he had drafted a flowchart that was inconsistent with the page 27 description of Strategy W2, but did not explicitly say so. There was no evidence before the Flood Inquiry of his telling any other engineers about the contradiction. On Saturday 8 January to Monday 10 January 2011, the engineers concentrated on the objectives in the Manual, but not on naming a strategy, although they were all aware of the move to Strategy W4 on Tuesday 11 January 2011, the first time the dam had ever been operated under that strategy. The Flood Inquiry Report, which essentially concluded that the engineers had colluded to present a manufactured account of the engagement of appropriate strategies, did not speculate as to why that had happened.

104. Instead, the Flood Inquiry found that the inference was open "that the concealment of the true nature of the March Flood Event Report was a joint effort to which each was a party"; and the Flood Inquiry recommended that 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."

I note that on 16 March 2012 the Premier of Queensland referred those same matters to you for the CMC's investigation.

105. The Premier's referral was presumably made under section 38 of the *Crime and Misconduct Act 2001*. Your Commission's obligation under section 35 (1) of that Act, with the respect to the matter of misconduct, is to expeditiously assess complaints or, as here, information notified to the Commission involving misconduct. Section 45 places a primary responsibility on your Commission "for dealing with" information involving official misconduct, and section 46 provides that your Commission may "deal with" information involving misconduct by expeditiously assessing "each complaint" about misconduct notified to it, or otherwise coming to its attention, and by taking the action that your Commission considers most appropriate in the circumstances. Section 46 (2)(g) provides that if your Commission is satisfied that dealing with a complaint would be an unjustified use of resources, it may take no action or discontinue any action taken, and section 46 (3) requires the Commission to respond to "a person" who "makes a complaint" which is dealt with by the Commission, if no action is taken by the Commission, stating the reason for not taking action or discontinuing the action.

106. Assuming, without having a concluded view, that in section 46 (2)(g) of the Act, the reference to a "complaint" includes "information" involving "misconduct " (an expression used in section 36 (1) and in section 46 (1), in which latter section information involving misconduct is equated to a "complaint"), it appears that your Commission is obliged to assess the information about misconduct notified to it by each of the Flood Inquiry and the Office of the Premier, and, if it be considered appropriate, take no action. In that event, the Commission is obliged to give the person holding the Office of Premier a response stating the reason for taking no action.

107. If the engineers were intending to mislead by a manufactured account in the March Report, to which they adhere, a prosecution for perjury, or official misconduct, would be justified. But if the engineers were simply attempting to follow the instructions in the Manual (both during the events of 8 and 9 January 2011, and later when reporting on those), any prosecution would be oppressive.

108. On the evidence of which I am aware the conduct of the engineers is consistent with their having honestly attempted to follow the Manual's instructions, without grasping at that time that there was an essential inconsistency in those. This applies both to the two day period of 8 and 9 January 2011, at which at the time, they reported using Strategy W2 (which accorded with page 23 of the Manual), and to the claim made later that – in that same period – they were applying Strategy W3 (which accorded with page 27, and with the knowledge that the dam was over 68.5 metres deep, and the belief that they had tried to follow the Manual).

109. An honest belief that the engineers had always intended to comply with the Manual would justify the engineers describing themselves as adopting Strategy W3, when Strategy W2 was not appropriate, even when they had earlier thought W2 was appropriate, and had said that they were in it. If the engineers believed they had followed the Manual, it is not dishonest, criminal, or misconduct, for any of them to say that they did.

110. Nor is it dishonest, criminal, or misconduct, to misunderstand what the Manual required. That applies to failure to grasp that the Manual required that the senior flood operations engineer should declare – and the duty flood operations engineers should know – the currently declared strategy. The engineers overlooked the Manual's requirement that a strategy be decided upon and declared, and focused instead on the flood mitigation objectives declared in paragraph 3.1 of the Manual.

111. I have descended into detail of your Commission's obligations under the Act, because my advice to you, after considering the Final Report of the Flood Inquiry and various documents submitted to the Flood Inquiry, and some of the oral testimony given to it, that it would be an unjustifiable use of resources to take any further action because:

- There is no evidence that I have seen which suggests that the conduct of Mr Tibaldi, Mr Ayre and Mr Malone relating to the preparation of documents surrounding the January 2011 Flood Event, and oral testimony given to the Flood

Inquiry, evidences offences against the Criminal Code or official misconduct under the *Crime and Misconduct Act 2001*;

- If the engineers had been following the flowchart, they could have honestly believed they were in Strategy W2 until the contradictory terms of the definition at page 27 were adverted to;
- This contradiction in the Manual would provide an explanation for all of the engineers' inconsistent statements and descriptions of what they had done at the time of the January 2011 Flood Event, and is not evidence of either the commission of a criminal offence or official misconduct;
- Recommendations made by the Flood Inquiry in Chapter 17 of the Final Report (particularly recommendations 17.4, 17.7, 17.8 and 17.13) request Seqwater to review/create a new Manual, with the assistance of experts such as technical writers and legal review, to ensure compliance with the Manual during any future Flood Event. Implementing these recommendations should remove any inconsistency or ambiguity.

112. This conclusion is consistent with the remarks in the prefix to Volume 1 of the Final Report (at page 30) which includes, in the penultimate paragraph, the statement:

> "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."

Yours faithfully

J.A. Jerrard
BA, LLB, LLM, QC