

QUEENSLAND FLOODS COMMISSION OF INQUIRY

FINAL SUBMISSIONS ON BEHALF OF THE FERVALE RESIDENTS

Introduction

1. There was a cover up. The cover up was of the fact that the flood operations engineers operated Wivenhoe Dam in breach of the Manual by failing to use the strategies prescribed by the Manual.
2. It is natural to feel sympathy for the flood operations engineers. They worked hard and did what they thought was right. In the end, however, the public interest must prevail over any sympathy. Thousands of Queenslanders experienced misery and hardship as a result of the flooding of their homes and businesses. They deserve an answer as to whether the damage could have been avoided or reduced. If the engineers failed to operate the dam in accordance with the Manual and then tried to cover it up, then the public interest demands that this be exposed. Otherwise, it will leave open the chance of similar conduct occurring in the future and reduce confidence in public administration.
3. In the March Report, Seqwater and the flood operations engineers represented that W3 was engaged at 8am on Saturday, 8 January 2011 and maintained that position before the Commission. Their conduct was misleading and raises significant issues as to why they engaged in this cover up, what was the truth of how they really operated Wivenhoe and whether the extent of the downstream flooding could have been less severe. The significance of these issues falls to be considered in the context that the engineers had the control of what the Commission has described as “*the most valuable and dangerous piece of public infrastructure in Queensland.*”
4. When the Wivenhoe lake level reached 68.5m, the flood operations engineers were required to make a decision to change the strategy from W1 to either W2

SUBMISSIONS

Filed on behalf of the Fernvale Residents

Maurice Blackburn
Lawyers
Level 3, 193 North Quay
BRISBANE QLD 4000
Ph: (07) 3016 0300
Fax: (07) 3236 1966
Ref: Paul Watson

or W3. The engineers would then have been required to operate the dam with the primary objective of protecting urban areas from inundation.

5. However, it now seems clear that the engineers ignored the Manual's requirements to choose a strategy and operate the dam using that strategy. The problem caused by failing to operate the dam using the chosen strategy was that they concentrated on release rates and flow rates without focusing on the primary objective of the releases.
6. As a result, at critical times when W3 should have been engaged, the engineers placed too much emphasis on releases and flows that would keep the rural bridges open when their focus should have been on what releases and flows would best achieve the objective of protecting urban areas from inundation. This contention was made on behalf of the Fernvale residents in written submissions of 28 June 2011 (copy attached) and the evidence adduced during the present round of hearings significantly strengthens that case.
7. The Fernvale residents agree generally with the written submissions of Counsel Assisting. These submissions will not repeat the thorough analysis of the evidence contained in their written submissions, but will highlight certain issues and seek to explain how the engineers operated the dam during the flood event and why they attempted to mislead the public and the Commission afterwards.
8. A critical issue is whether the engineers engaged strategy W3 at 8am on 8 January 2011 as they and Seqwater have claimed. It seems clear that they did not do so because of:
 - (a) the absence of any contemporaneous evidence demonstrating that W3 was engaged when claimed; and
 - (b) the significant weight of evidence indicating that any strategy engaged at relevant times after 8am on Saturday, 8 January 2011 was not W3.

The absence of contemporaneous evidence

9. Some indication that W3 was engaged at 8am on 8 January 2011 could have come from any document at or around that time referring to "W3" or stating or otherwise indicating that the primary consideration was protecting urban areas

from inundation. Alternatively, the indication could have come from objective evidence such as release rates demonstrating that the strategy must have been changed from W1. Alternatively, it could have come from discussions between the engineers or the engineers and others to the effect that W3 was engaged or that the primary consideration was protecting urban areas from inundation.

10. However, there are no contemporaneous documents evidencing the engagement of W3 at 8am on 8 January 2011. There is no reference to this in the Flood Event Log. Neither is the engagement of that strategy recorded in any gate operations directives, any situation report or any technical situation report.
11. The records of releases from Wivenhoe on 8 January 2011 do not provide evidence of any change of strategy on that day. For example, the directive at 8.15am that day was aimed at releasing 1,247m³/s [Exhibit 24, Appendix L p.5]. It was not until the releases exceeded 1,900m³/s for the first time at 8am on Monday, 10 January that the release rates provided unequivocal evidence of a change of strategy.
12. The engineers did not even tell each other that they had engaged W3. Neither did they tell anyone else, such as Robert Drury, that they had [Transcript pp. 5489/48, 5540/58, 5299/5, 5056/1-10,5387/47-49,5427/31-33,5469/11-15].
13. In short, there was no oral communication or written record or communication made by the engineers during the flood event indicating that W3 was engaged when they say it was.
14. It is farcical for the engineers to claim that they were at all times operating Wivenhoe using the prescribed strategies and had in mind the principal consideration under each strategy yet to have failed to record or communicate this to anyone during the flood event.
15. The Manual requires the engineers to have “chosen” a prescribed strategy and to “use” the strategy to manage the dam [Exhibit 21 Manual p.22].
16. The first document indicating that W3 was engaged at 8am on Saturday, 8 January 2011 was Seqwater’s *Report on the Operation of Somerset and Wivenhoe Dams* (“the Flood Report”) published on 2 March 2011 [Exhibit 24].

17. Situation Report 9 prepared for 12 noon on Saturday, 8 January does refer to water levels in the lower Brisbane River [Exhibit 24 March Report App E p.15]. However, that does not indicate that Wivenhoe Dam was then being operated with the primary consideration of protecting urban areas from inundation. Situation Report 6, prepared for 6am on Saturday 8 January, at a time when the only possible strategy could have been W1, also refers to water levels in the lower Brisbane River [Exhibit 24 App E p.11].
18. The only direct evidence that W3 was engaged at 8am on Saturday 8 January 2011 comes from Robert Ayre [Transcript pp.156/1-15]. It could only come from Mr Ayre because he was the only engineer then on duty and the others could have no direct knowledge of its engagement at that time. Mr Ayre's evidence is not credible for the reasons set out later.

The weight of contemporaneous evidence

19. The Schedule attached to these submissions describes relevant documents produced during the flood event itself. A number of the documents produced after 8am on Saturday, 8 January are inconsistent with W3 being engaged at that time. The cumulative effect of these documents is overwhelming. The contrast is stark with the absence of any persuasive contemporaneous evidence that it was engaged at the time claimed.
20. The Situation Report for 5pm on Saturday, 8 January (emailed at 5.53pm) is important [Exhibit 1047]. It was written by Mr Ayre, the engineer on duty when W3 is said to have been engaged, and contains the notation "*the event magnitude will require the application of Wivenhoe Dam flood operation strategy W2*". Mr Ayre's recent evidence concerning this notation was that he meant to indicate that it was possible that on the following Tuesday, 11 January the lake level might drop below 68.5m and that the strategy might change to W1 and then back to W2 [Transcript 5185/42-50].
21. This aspect of Mr Ayre's evidence is implausible for at least the following reasons:
 - (a) If that is what he meant he would have said it.

- (b) He said “*the event magnitude will require*” the application of W2. This is quite inconsistent with any mere possibility of a shift through strategies to W2 the following Tuesday;
- (c) His explanation is inconsistent with the context of the surrounding words. In the preceding sentence he talked about increasing inflows and releases. This is what he meant by the reference to “*magnitude*”. This is not consistent with suggesting a decreasing lake level that might require going back to W1.

The weather forecasts were for heavy rain on the Sunday and Monday, with decreasing rainfall but still 50 – 100mm on Tuesday. In Situation Report 9 [Exhibit 24 March Report App E p.15], Mr Ayre had recorded that “*advice from BOM indicates that South East Queensland can expect further high rainfall totals over the next four days*”. There is no reference in the 5pm Situation Report to the lake level dropping below 68.5m and then rising again.

- (d) When cross-examined about that passage in the Situation Report on 12 April 2011, Mr Ayre’s response was “*that was an error on my behalf*” [Transcript 172/15]. There was no suggestion of the convoluted explanation he gives now.
- (e) Later in the transcript for 12 April 2011, Mr Ayre said:

“I was certainly contemplating, at the time I wrote that, that we were in transition between Strategy W1 and W3”[Transcript 172/21].

- (f) In his supplementary statement [Exhibit 18, para 51] Mr Ayre specifically addressed his intention in writing the passage in question. There was no suggestion there of an intention to give a “*heads up*” to the other engineers of the possibility that the strategy could later change from W3 to W1 then W2.

22. Mr Ayre’s lack of credibility in giving his evidence about the passage in the 5pm Situation Report affects his credibility on other issues, including whether he was conscious of the strategy he was operating under and the primary

objective required under such strategy. It is also important to note that Mr Ayre has given four versions of how the transition from W1 to W3 is supposed to have taken place (even leaving aside the various versions contained in the draft Seqwater report, the January Seqwater report and in other documents).

23. The first version, contained in the March report, is to the effect that Mr Ayre made a definite decision made to transition from strategy W1 to W3 and to consciously bypass W2 [Exhibit 24, p.13, p.190].
24. In the second version, given in oral evidence on 12 and 13 April 2011, Mr Ayre consistently maintained that he had engaged in a process of gradually transitioning the strategies from W1 to W2 or W3 [Supplementary Statement Exhibit 18, para 34, Transcript 155/1-20, 192/35-50, 194/20].
25. In the third version, and more recently, there Mr Ayre asserted that “*I also noted that the lake level had exceeded 68.5mAHD at 08.00 8 January 2011 and so therefore the strategy had transitioned out of W1 and progressed to W3.*” [Seventh Statement, Exhibit 1049, para 53]. This suggests an automatic transition rather than the making of a decision.
26. The fourth version is that there was a transition but Mr Ayre does not consciously recall knowing whether he was in strategy W2 or W3 [Transcript 5188/10].
27. The differences in these versions would cause the Commission to seriously doubt that any of them are true. What is far more likely is that Mr Ayre did not think about what strategy was required under the Manual and, as a result, did not think about the primary objective that he was required to try to achieve (this point is developed later in these submissions).
28. Apart from the reasons referred to in the written submissions of Counsel Assisting, the credibility of all four engineers’ evidence is questionable because other examples of misleading statements are evident from the March report [Exhibit 24]. At page (i) of the Executive Summary it was stated that the objective followed and the strategy chosen at any point in time depends on matters including “*forecast rainfall*”. It was also noted that objectives and strategies change as, inter alia, “*forecast rainfall predictions change*”. At page

(iii) it was said that “*Rainfall forecast in the early stages of the Event did not support flood releases being made from Wivenhoe Dam, greater than those that occurred*”.

29. All of this gives the misleading impression that forecast rainfall was taken into account in making decisions concerning strategies. The engineers were cross-examined about this in April 2011. Mr Tibaldi gave a lengthy and unsatisfactory explanation for these passages that he wrote [Transcript 448/50-51/30].

How did the flood operations engineers treat the manual and the prescribed strategies?

30. There can be no doubt that the engineers, led by Mr Tibaldi, retrospectively reconstructed an account of when they engaged particular strategies. They decided what strategies *should have been* engaged, not what strategies *were* engaged. The question is why they would bother to do that.
31. The answer is that the engineers had simply failed to apply or ignored the requirements of the Manual that they make a “choice” of strategies and “use” the strategies to manage the dam.
32. That is a startling proposition, but, in retrospect, it is not as startling as it once might have been. It is quite clear that the engineers ignored the requirement of the Manual to use rainfall forecasts making decisions as to which strategies to use. The Commission has found as much. If the engineers were prepared to ignore the requirement to use forecast rainfall, then it is unsurprising that they would also ignore the requirement to use prescribed strategies.
33. The seventh statement of Mr Ayre [Exhibit 1049] is revealing. He said:
- “28. *Strategy levels are generally only attributed after the event as part of the reporting process.*
29. *The Flood Engineer selects the strategy during flood event by testing different release rates and then assessing the suitability of the release rates in respect of achieving objectives. The action that informs the choice of strategy is in fact the gate release rate and how that manages the lake levels and the downstream flows*”.
34. These passages demonstrate two things. Firstly, “strategy labels” held no significance for the engineers when operating the dam during the flood event,

or, in other words, that they did not consider whether they were or should be in W1, W2, W3 or W4 while operating the dam. Secondly, they incorrectly indicate that gate release rates inform the choice of strategy, when in fact it is the choice of strategy and the objectives under the strategy that must determine gate release rates (the exception is in making the choice as to whether to go from W1 to W2).

35. These passages provide a clear indication as to how Mr Ayre and the other engineers operated the dam. They chose the release rates that they thought were appropriate to meet whatever objective they had in mind; but did not choose the appropriate strategy and then choose the release rates appropriate to meet the primary objective required by the strategy. It may certainly be the case that even if the strategies change from, say, W1 to W3, the release rates will stay the same. But, there must be a strategy consciously chosen by the engineers, not merely a conscious choice of release rates.
36. There were suggestions that the engineers did not need to choose a strategy, because the strategy chooses itself. For example, it was suggested that once the lake level exceeded 68.5m then W2 or W3 was automatically engaged [Tibaldi Transcript 5088/43-49]. There are two difficulties with this reasoning. Firstly, the Manual specifically requires the engineers to make a choice of strategy. Secondly, at least when the lake level reaches 68.5m, the choice has to be made between W2 or W3.
37. All this is consistent with the engineers operating the dam during the January 2011 flood event by applying what they considered to be the appropriate release rates to achieve the objects they considered pressing at the time, rather than choosing a strategy which determines the primary objective and selecting release rates to achieve that objective.
38. In many floods, and for a significant part of the January 2011 flood event, failing to apply the Manual in this respect would not make any difference. For example, soon after the lake level reached 68.5m, there was no need to change the release rates. The engineers' aim was to avoid inundation of rural bridges and this still appeared achievable.

39. However, there was a real and tangible problem with not deliberately choosing the W3 strategy and not operating the dam with the primary object of avoiding urban inundation. The dam operators were required to structure releases to attempt to achieve the primary object of avoiding urban inundation. It was only if they could be assured that this object would be achieved that they were permitted to consider minimising disruption to rural life. That is because the Manual requires that “*consideration is always given to those objectives in this order*” [Exhibit 21 p.21] and “*objectives are always considered in order of importance*” [Exhibit 21, p.28]. It was not a case of considering all of the considerations together and trying to achieve all the objectives together. The way the flood engineers operated the dam even after the Wivenhoe level reached 68.5m was to try to avoid flooding the rural bridges. It was only when this object could not be achieved that they focussed on attempting to avoid further inundation as their primary goal.
40. The difficulty with adopting this approach, and not adopting the approach required under the Manual, is this. If the engineers had been operating the dam with the primary consideration firmly in mind, then at some point in time their thinking would have crossed over to the realisation that they could no longer be assured that Brisbane and Ipswich would not be inundated. At that point in time it would have been necessary to increase the release rates to optimise protection of the urban areas even if it meant flooding the remaining rural bridges. By not focussing on the primary objective of protecting urban areas from inundation and instead of focussing on keeping the rural bridges open, the engineers missed their opportunity. They delayed closing the bridges and they delayed significantly increasing the release rates for an inordinate time.
41. The point in time at which the engineers should have realised that they could not have been assured that Brisbane and Ipswich would not be inundated was probably at about lunchtime on Sunday, 9 January 2011 [Shannon Transcript 5833/40-47, Babister Transcript 5892/5, 5898/40, Roads Transcript 5773/29, Apelt Transcript 5736/30].

42. However, the engineers were then still focussed on keeping the rural bridges open for as long as possible. This is demonstrated by the following:

- Supplementary
statement of Mr Ayre [Exhibit 18, para 64]:

During the 3.30pm meeting on Sunday, 9 January 2011 the engineers *“discussed maintaining releases from Wivenhoe Dam at 1,400 m³/s so as to try and keep Fernvale Bridge and Mt Crosby Weir Bridge open ... Even though the strategy for Wivenhoe Dam was above W1, it is still necessary to consider the lower level objectives of minimising bridge closures and disruption to rural communities.”*

However, what Mr Ayre did not say is that it is only if the engineers were sure that Brisbane and Ipswich would not be flooded that they could consider the lower level objectives [see also para 63].

- Flood Event Log
(Exhibit 23) Sunday 9 January 2011, 4.15pm, 4.20pm, 4.27pm:

“The current strategy is to maintain a flow in the Brisbane River such that the Fernvale Bridge and the Mt Crosby Bridge could be kept open ... Closure next Tuesday is a real possibility at this stage.” (underlining added)

Even at that stage there was no chance that the release rates would be increased to above 1900 cumecs on the Sunday night.

- Flood Event Log (Exhibit 23), 5.25pm, 5.45pm, Sunday 9 January 2011:

References for the potential for the Fernvale Bridge and Mt Crosby Bridge to be closed from Tuesday or mid-week.

- Situation Report 11, 5pm Sunday 9 January 2011:

‘At this stage Fernvale and Mt Crosby Weir Bridge will not be affected for the next 24 hours but there is a strong possibility that, if the predicted rainfall totals eventuate in the next 12 to 24 hours, higher releases from Wivenhoe Dam will be necessary. This may adversely impact upon Fernvale and Mt Crosby Weir Bridges as early as Tuesday morning.’

- Situation Report 12, 9pm Sunday 9 January 2011:

‘The projected Wivenhoe Dam releases combined with Lockyer flows and local run off will mean that all crossings downstream of Wivenhoe (Queen Bridges, Fernvale, Savages’ Crossing, Bevan’s Bridge, Kohlo Bridge, Mt Crosby Weir and College’s Crossing) will be adversely impacted until at least Saturday 15 January in varying degrees.’

- Flood Event Log, 10.15pm Sunday 9 January:

‘Fernvale closure likely to be required in view of probable releases from Somerset to Wivenhoe’.

However, the Fernvale Bridge and Mt Crosby Weir Bridge were still not closed at that stage. It seems that the aim was still to keep them open as long as possible.

- Flood Event Log (Exhibit 23), 10.30pm, Sunday 9 January 2011:

‘RA recommended getting the rails taken off [Mt Crosby Weir Bridge] in view of increasing flow expectations overnight.’

This is the first evidence of serious thought being given to closing Fernvale Bridge, but it was still not definite that increased flow rates would inundate Mt Crosby Weir Bridge and Fernvale Bridge.

- Third statement of Mr Ayre [Exhibit 19, para 10]

‘The Situation Report issued ... at 9.04pm on Sunday evening ... refers to the fact that releases from Wivenhoe Dam would be increased to 2,600m³/s by the morning of Tuesday, 11 January 2011. These gradual increases commenced with Wivenhoe directive 8 at 2am on Monday, 10 January once bridge closures were achieved safely’.

- Situation Report 13, 1.14am Monday, 10 January 2011:

'The objective for dam operations will be to minimise the impact of urban flooding'. (underlining added).

This is the first time the objective of minimising the impact of urban flooding was mentioned in any document. It certainly indicates that until at least then the objective had been something else, namely avoiding closure of the rural bridges.

- Situation Report 14, 6.30am Monday, 10 January 2011:

'The objective for dam operations will be to minimise the impact of urban flooding ...' (underlining added)

- Situation Report 15, 12pm Monday, 10 January 2011:

'The objective for dam operations is to minimise the impact of urban flooding ...' (underlining added).

43. These records indicate that the times when the primary objective should have been protecting urban areas from inundation from about lunchtime on Sunday, 9 January 2011, the engineers were firmly focussed upon trying to keep Mt Crosby Weir Bridge and Fernvale Bridge open for as long as possible. Even at 10.15pm on Sunday, 9 January 2011 it was still being contemplated that Fernvale Bridge might not be inundated. At best, they were considering the objective of preventing urban inundation and avoiding disruption of rural communities together, whereas the Manual required the primary consideration to be considered first. It was only if that primary consideration would be satisfied, that attention could then focus on lower level considerations. However, the reality is that they were not operating in accordance with the Manual.

Consequences

44. Brian Shannon, an expert engineer, considered that if preparations to close the bridges were not in train at 2pm on Sunday, 9 January 2011, that would be “extraordinary” [Transcript p.5,835/30]. He also agreed that at 2pm it would be “common sense” to close the rural bridges as soon as possible and significantly

increase releases [Transcript p.5,834/40-5,835/5]. He also, of course, accepted that proposition with respect to 5pm [Transcript p.5,833/40-48].

45. Mr Babister stated that it would have been realistic on the afternoon of 9 January 2011 to have increased flows above what was released [Transcript p.5,892/1-10].
46. It was impossible for Mr Babister to model the infinite variety of scenarios [Transcript 5882/20]. What appears indisputable is that earlier, higher releases in the afternoon of Sunday, 9 January 2011 would have resulted in lower peak releases later [Transcript 5892/30]. The extent of the difference that realistic, higher releases then would have made to the peak flood level at key locations has not been determined. Further, the exercise of translating difference in peak flood levels at key locations into damaged properties has not been done [Transcript 5092/50].
47. Mr Babister's view that the engineers achieved close to the best possible result cannot possibly be supported. It must be qualified by his inability to say what practical difference alternative releases would have made. For example, how many hundreds or thousands of houses between Moggill and Brisbane might have been safe from inundation if the peak flood level at Moggill had been 0.8m lower and the level at the Brisbane City Gauge had been 0.3m lower?
48. The effect of all of this is that if the engineers had operated the dam from lunchtime on Sunday, 9 January 2011 with the primary objective of avoiding urban inundation, they would have closed the rural bridges much earlier and started significantly increasing releases much earlier. Instead, they did not start increasing the release rates until Fernvale Bridge was closed at about 2am on Monday, 10 January 2011 and did not achieve releases sufficient to close the Fernvale Bridge until about 8am on Monday, 10 January 2011. This would have made a difference to the peak level of the flood and to damage to houses, although precisely what difference it would have made cannot presently be determined. The reason for their delay was that they did not operate the dam using the strategies prescribed under the Manual and instead decided release rates based on their own view of the relevant objectives, which was keeping rural bridges open for as long as possible. Therefore the failure of the engineers

to actively engage strategy W3 at 8am on 8 January 2011, had practical and adverse consequences for the management of the flood event.

Why did the engineers fails to comply with the Manual?

49. The Manual itself required the flood engineers to comply with it. Why then would the engineers ignore the requirements of the Manual to choose a strategy and use that strategy to operate the dam? It was because a culture of complacency prevailed between the Dam Safety Regulator, Seqwater, Sunwater and the engineers and, as a result, the requirements of the Manual were ignored.
50. The Fernvale residents advanced three contentions in their written submissions dated 28 June 2011, namely:
 - (a) that the Manual and the process by which the Manual was developed and revised was grossly inadequate;
 - (b) the Manual was breached because the engineers focussed too much in keeping the rural bridges open instead of the primary consideration of preventing urban inundation;
 - (c) the Manual was breached by the engineers' failure to take into account forecast rainfall to decide strategies.
51. These issues are interrelated. The reason why the engineers ignored relevant requirements of the Manual was probably that the Manual was woefully inadequate. Mr Allen (the Dam Safety Regulator and the delegate of the Chief Executive responsible for approving revisions of the Manual) and the engineers (who were employed by Seqwater, Sunwater and DERM) enjoyed a close, clubby relationship. They were all responsible for the five yearly review of the Manual in 2009, but the revision was "relatively minor" and ignored problems of which Mr Allen and the engineers were aware. The sensible changes suggested by Mr Guppy were ignored.
52. The suggestion by Mr Allen that it would only be necessary to conduct a major review of the Manual after a major flood event is breathtaking. It seems to have been induced by the complacency of years of drought and the cosy familiarity of an insular club of dam engineers that excluded outside influence.

53. The Fernvale residents reiterate their submission that the Commission should consider whether the Manual was followed and why it was not. The Commission's recommendations will assist to ensure that the next five year review of the Manual is not just another dangerous waste of time.

D.C. Rangiah SC
Counsel for the Fernvale Residents

16 February 2012