

Queensland Floods Commission of Inquiry

CROWN LAW-(DERM – Peter Allen)
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Statement of Peter Hugh Allen

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**QUEENSLAND FLOODS
COMMISSION OF INQUIRY**

STATEMENT OF PETER HUGH ALLEN

I, **PETER HUGH ALLEN**, of c/- 41, George Street, Brisbane in the State of Queensland, Project Director (Dam Safety), Office of the Water Supply Regulator, Department of Environment and Resource Management, state on oath:

Requirement from Queensland Floods Commission of Inquiry

1. I have seen a copy of a letter dated 23 August 2011, which is attachment **PHA-18**, from the Commissioner, Queensland Floods Commission of Inquiry (the Commission) to me requiring a written statement under oath or affirmation, and which details the topics my statement should cover.
2. I have previously provided statements to the Commission dated 4 April 2011, an addendum to it dated 11 April 2011 and a supplementary statement dated 13 May 2011.

Role

3. My substantive position is the Director, Dam Safety (Water Supply) in the Office of the Water Supply Regulator, Environment and Natural Resource Regulation division, Operations and Environmental Regulator business group, Department of Environment and Resource Management (DERM). For the duration of the Commission of Inquiry I have been moved to a temporary position entitled "Project Director, Dam Safety". This was done as it was considered that I could not be expected to both perform the duties of the Director, Dam Safety as well as assist the Commission of Inquiry. Mr Norman John McKenna is currently the A/Director, Dam Safety until the Commission of Inquiry no longer requires my assistance. I will then resume my substantive position. Mr McKenna is not an engineer.

Item 1: The general process of review by Department of Environment and Resource Management officers of flood event reports submitted by operators of referable dams.

4. Two types of 'flood event reports' need to be submitted to DERM by the owners (not operators) of referable dams following a flood event and the general process of reviewing them will differ depending on the type of report required to be submitted.
5. **The owners of all referable dams** have a requirement to produce a flood event report if their Emergency Action Plan (EAP) is triggered during a flood event. If it is not triggered, NO flood event report is required. It should be noted that there are no legislative requirements regarding EAP's and they are not approved by

DERM's Dam Safety unit. Chapter 9 of the Queensland Dam Safety Management Guidelines sets out what should be in an EAP. Based on that the dam owner of a referable dam drafts an EAP and submits it to the Dam Safety unit for information.

This requirement is a result of the dam safety condition applied to the owners of all referable dams. Typically the current dam safety condition DS13 deals with Emergency Action Plans and Event Reports. Part 10 of DS13 would typically contain the following provision:

10. Within thirty (30) days of the event the Dam Owner must prepare an Emergency Event Report and provide a copy of the report to the Dam Safety Regulator. The Emergency Event Report must include:

- a. A description of the event.*
- b. Instrumentation readings (where appropriate).*
- c. Description of any observed damage.*
- d. Photographs.*
- e. Details of communication and actions which took place during the emergency.*
- f. How the EAP was implemented during the event and comment on the adequacy of the EAP and any changes proposed.*

6. This part of DS13 is primarily about reporting the performance of the dam during the flood event from a dam safety perspective. It is not so much about assessing the downstream flood impacts of normal spillway discharges and is primarily imposed to cover extreme flood events where the safety of the dam might be at risk.
7. Not all referable dam owners trigger their EAPs at the same time. Some referable dam owners only trigger their EAPs for extreme events while others trigger them for more frequent events. Additionally, the duration of flood events at dams can be quite variable so that the timing requirement for the submission of the report can be difficult to determine. This is especially the case when no automatic discharge gauging is available on inflows or outflows (although most major dams at least have manually read staff gauges). Flood events for dams with smaller catchments tend to finish sooner while larger catchment dams can run much longer. For instance, as reported in the press, Burdekin Falls Dam with a catchment of 114,000 km² flowed over the spillway this year for a reported 321 days.
8. There is no formal set work procedure for reviewing these flood event reports. It is likely to be different for different dams and will depend very much on the magnitude of the event and the consequences of the event. The following is the process adopted for the 2010-2011 wet season:
 - a) Firstly, it had to be determined whether the EAP had been triggered to determine whether there was a requirement for an event report. This was done through direct contact with 30 dam owners either via email or by telephone. (Theoretically, under part 9 of DS13 it is a requirement that the Dam Safety Regulator be notified within 48 hours that the EAP has been triggered but this is done inconsistently. However, from a practical perspective once the EAP is triggered it is far more important that any necessary warnings be issued and

inspections be undertaken to ensure the dam is operating satisfactorily than it is to notify the Director, Dam Safety (in Brisbane) who, being remote to the dam location, will probably not play a part in the emergency response and is not in a position to directly assist.)

- b) Once Dam Safety, DERM determined that the EAP had been triggered, it was noted and the dam owner was reminded of the need to produce an event report.
 - c) Dam Safety staff then followed this up to ensure that the flood event report was submitted. There were 24 EAPs activated as a result of the 2011 floods. The EAP event reports are at attachment **PHA-19**.
 - d) Once submitted, a dam safety engineer reviewed the report and advised the Director Dam Safety if there was a need for follow-up activity. As far as I am aware, there were no reports of serious damage to any dam other than in the Wivenhoe Dam spillway chute.
 - e) The follow-up action would have depended on the issue. For instance, if there were reports of damage, a Special Inspection under dam safety condition DS9 may have been required. If there were reports of difficulty with the EAP, Emergency Management Queensland could have been asked to assist.
 - f) However, for the 2010-2011 wet season, there was only one report of significant damage. This was the report of erosion in the Wivenhoe Dam spillway chute. I was notified of the erosion at 5:30 am on 19 January 2011 and I immediately arranged for one of the engineers from my Dam Safety group (Russ McConnell who had a role in the original design of the dam) to attend the inspection of the spillway chute by Seqwater that morning. Mr McConnell's report on that inspection, the associated incident report and the final Seqwater report are attached as **PHA-20**.
 - g) While the DERM Dam Safety group is well qualified to address dam safety issues, the same is not the case for EAPs. This is really the domain of the Local Disaster Management Group and the Commission of Inquiry's recommendation 4.15 concerning the attendance of referable dam owners at Local Disaster Management meetings should significantly improve coordination of the Local Counter Disaster Management Plans and EAPs.
9. The owners of referable dams having flood mitigation manuals under the provisions of the *Water Supply (Safety and Reliability) Act 2008* are also required to produce flood event reports. This requirement is detailed in the flood mitigation manual and is triggered whenever there are flood releases from the dams. The flood mitigation manual flood event report is essentially in addition to the DS13 requirements and means that a much more comprehensive report is produced.
10. As stated in paragraph 26 of my Statement of 4 April 2011, currently this requirement only applies to Wivenhoe, Somerset and North Pine dams.

11. Again, there is no set work procedure for reviewing flood mitigation manual flood event reports because I have not previously reviewed any major flood event reports for Wivenhoe, Somerset or North Pine dams. This is because there have been no major flood events that have required significant spillway discharges from these dams since the February March 1999 flood events (I did not review the 1999 flood event report because as I was working in the Flood Operations Centre during the event there would have been a perceived conflict of interest). For instance, the previous May to July 2009 flood events which had a peak discharge from Somerset Dam of 875 m³/sec and no significant discharge from Wivenhoe Dam, had a much more concise flood event report. Because of the infrequency and magnitude of flooding events over the last 12 years, no set work procedure has been developed for reviewing flood mitigation manual flood event reports.

Item 2: The specific process of review undertaken by DERM officers of the flood event reports produced by Seqwater regarding the January 2011 flood event at Wivenhoe, Somerset and North Pine dams

12. The specific process of reviewing the Seqwater January 2011 flood event reports for Wivenhoe, Somerset and North Pine Dams is detailed below.

Wivenhoe and Somerset Dams

- a) DERM received the Wivenhoe/Somerset flood event report at 4pm on 2 March 2011. This was the due date specified in the Manual.
At this time, I was already aware of Mr Brian Cooper's review (Cooper, January 2011) conducted on behalf of the South East Queensland Water Grid Manager of the flood operations during the January floods which concluded that "*...The strategies in the Flood Mitigation Manual have been followed, allowing for the discretion given to make variations in order to maximise flood mitigation effects. The actions taken and decisions made during the Flood Event appear to have been prudent and appropriate in the context of the available knowledge available to these responsible for flood operations and the way events unfolded...*" (p.3 of Mr Cooper's final report).
I was also advised by a number of Seqwater officers that Seqwater had arranged for a number of internal reviews of the report prior to submission to DERM. However, I have not seen the results of these internal reviews. I understand they were provided to the Commission of Inquiry.
- b) Once the Wivenhoe/Somerset flood event report was received, I made a brief examination of it myself (which did not reveal any major deficiencies or errors) and a copy was provided by the then Director-General, DERM to the Commission on 2 March 2011. It was also placed on the DERM internet website.
- c) Given the interest in the flood operations, I then developed an EXCEL spreadsheet model to examine gate operations. This spreadsheet has been used to examine how Somerset and Wivenhoe dams would have been operated for a whole range of historical and design floods with a view to examining potential future variations to the FMM. Some of the results of this

modelling were contained in the Commission of Inquiry's Exhibit 400.

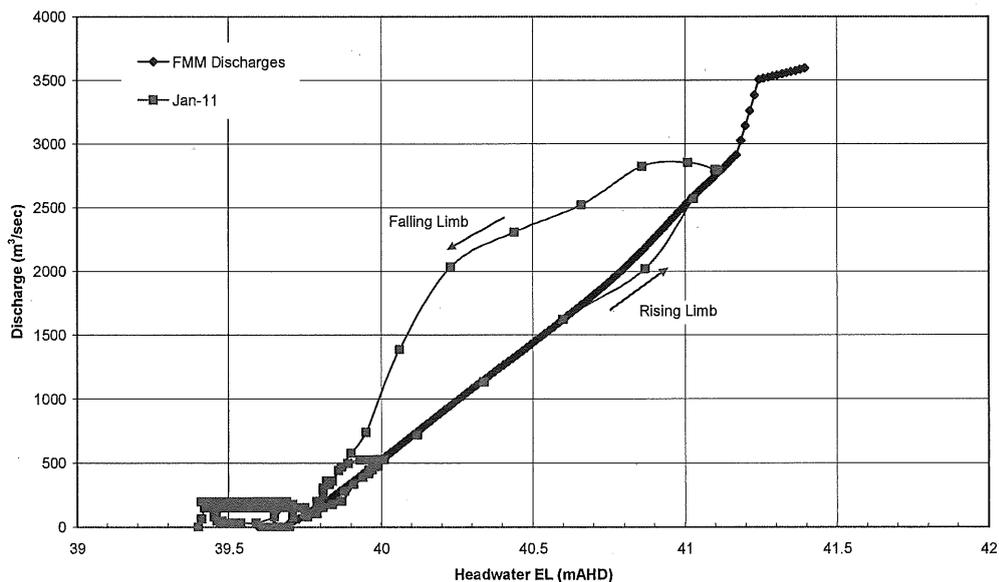
- d) I started my review of the performance of Wivenhoe Dam soon after the submission of the Seqwater flood event report and it has been ongoing. As part of this process, the Office of the Water Supply Regulator (OWSR) engaged an independent engineer, Mr David Murray from engineering company, SMEC, to participate in and observe the review so that he could provide an independent assessment if needed. This process has not yet been completed.
- e) I am aware that the Commission of Inquiry has engaged its own consultants (such as Mark Babister) to comment on different aspects of the flood operations and I am aware of the reports that they have produced. In particular, I note Mr Babister's (WMA Water, 2011) comments in his report to the Commission. This tends to support the view that the procedures already in the existing manuals worked tolerably well during the January 2011 flood event.
- f) In addition to these, I have also undertaken a number of relatively simple assessments of the performance of the Wivenhoe/Somerset dams and their ability to pass a range of design flood events and historical flood events. In addition to this, I have also examined options for reducing the Wivenhoe Dam Full Supply Level from EL 67.0 mAHD to EL 64.0 mAHD following the 'Late December' flood event.
- The outcomes of these analyses are attached as follows:
- | | |
|---------------|---|
| PHA-17 | Document provided to the Commission as Exhibit 400 during my appearance before the Commission on 17 May 2011. |
| PHA-21 | Examining the potential drawdown of Wivenhoe Dam following the Late December 2010 flood event |
- g) Due to my ongoing dealings with this Commission of Inquiry and in implementing the recommendations contained in the Interim Report, I have not had sufficient time to devote to my detailed review of the report and therefore I have been unable to draw specific conclusions on the adequacy of the January 2011 flood operations and of compliance with the Flood Mitigation Manual. It is also unlikely that the current commitments that I have in reviewing the Interim Flood Manuals will permit finalising this review in the near future.
- h) I have also taken note of the comments on the flood operations and the flood mitigation manual during the Commission hearings and the recommendations made in the Commission's Interim Report.
- i) The reality now is that no previous flood event report has ever been the subject of greater review or comment.

North Pine Dam

The process for the review of the North Pine Dam flood event report was as follows:

- (a) While preparing their flood event report, Seqwater identified a number of issues relating to the performance of the dam which raised questions about the current understanding of design flood hydrology for North Pine Dam. These were discussed in paragraphs 149 to 151 of my Statement of 4 April 2011.
- (b) On the morning of 18 May 2011, there was a meeting held between Seqwater and DERM to discuss the apparent shortcomings of the performance of the dam during the January 2011 flood event. The outcomes of this meeting were confirmed in an email that I sent to Jim Pruss of Seqwater that afternoon which is attachment **PHA-22**.
- (c) Seqwater then engaged consultants URS to undertake a review of the performance of the dam during the January 2011 flood event.
- (d) DERM received the North Pine Dam flood event report at 11:30am on 31 May 2011. Seqwater was originally required to submit their report within six weeks of the flood event. However, the then Director General, DERM granted Seqwater an extension to 31 May 2011 due to the workload Seqwater was experiencing on dam safety and flood mitigation issues at the time.
- (e) The then Director General, DERM provided a copy of the report to the Queensland Floods Commission of Inquiry on 1 June 2011. It was also placed on the DERM internet website.
- (f) I prepared a spreadsheet to examine the performance of North Pine Dam during the January 2011 event. This allowed me to make a comparison between the actual operations of North Pine Dam and the way it might have operated if the minimum gate openings specified in the flood mitigation manual had been applied. The results of this analysis are summarised below. In comparing these results it is important to note that the way the dam was actually operated during the flood event produced lower discharges than might have resulted if the minimum gate openings had been applied.

January 2011 - Comparison of Discharges



In summary, this figure indicates:

- i. Early in the event, there were greater releases than the target gate openings nominated in the manual. This effectively held the storage levels lower for longer while the event was building and it would have had a similar effect as a pre-release.
 - ii. Later in the event as headwater levels were rising, discharges were in accordance with the target gates openings for most of the rising limb. However, when the headwater level rose to about EL 40.6 mAHD, there was a brief period when the operators appear to have had some difficulty keeping up with the target gate openings.
 - iii. On the falling limb, the discharges were higher than the targets but that was probably appropriate given the problems that had occurred during the peak of the flood.
- (g) The Dam Safety group has received several reports from Seqwater on the studies being carried out by consultants URS (who are reviewing the North Pine Dam hydrology on the behalf of Seqwater). The reports include:

PHA-23	Memo from URS to Seqwater 12 May 2011 re: North Pine Dam – Spillway rating curve assessment
	Memo from URS to Seqwater re: North Pine Dam – Spillway Bridge and Radial Gates Preliminary Structural Evaluation
	Memo from URS to Seqwater re: North Pine Dam Acceptable Flood Capacity Review by URS
	Memo from URS to Seqwater 19 June 2011 re: Review of the North Pine Dam Storage Rating Curve
	Memo from URS to Seqwater re: Detailed Review of 11 January 2011 Rainfall
	Interim Draft Report on North Pine Dam Spillway Flood Capacity Assessment - Mechanical

- (h) The final results of this study are expected by early September 2011. Ultimately the outcomes of the URS studies will inform actions which might be necessary in relation to North Pine Dam.

Item 3: The assessment and opinion of the DERM officer as to the flood event reports produced by Seqwater regarding the January 2011 flood event at Wivenhoe, Somerset and North Pine dams (any relevant correspondence or other documents should be attached)

Wivenhoe and Somerset Dams

13. The Wivenhoe/Somerset dams report was quite comprehensive in terms of what was contained in it and in the extent of the detail that Seqwater has provided on the event. The quality of the report is far in excess of that which I put together

following the 1999 flood events which in itself was far more comprehensive than any previous report. In my opinion Seqwater were quite open as to how they operated the dams.

14. I have given some comment on the adequacy of the flood operations in Item 2.

North Pine Dam

15. The North Pine Dam report was also quite comprehensive in terms of what was contained in it and in the extent of the detail that Seqwater has provided on the event.

16. The report also highlighted deficiencies identified in the flood hydrology for North Pine and enabled these deficiencies to be suitably addressed prior to the 2011-2012 wet season.

Item 4: Any action taken by any DERM officer as a result of the review of the flood event reports produced by Seqwater regarding the January 2011 flood event at Wivenhoe, Somerset and North Pine dams

Wivenhoe and Somerset Dams

17. As stated above, the OWSR Dam Safety review of this report has not been completed. However, as indicated above, these reports have been the subject of extensive review by others including the Commission of Inquiry. Action has been considered but to date has been found unnecessary as the Commission of Inquiry interim report has dealt with all necessary actions.

North Pine Dam

18. Paragraph 150 of my Statement dated 4 April 2011 noted that discussions had been held with Seqwater and that Seqwater were to prepare a program of works to be undertaken to remedy the identified problems referred to in Item 2 above. Since then the following actions have been taken by me and other DERM officers:

- Spreadsheet modelling looking at performance of gate operations during the January 2011 event (refer to Item 2).
- Monitoring reports from URS via Seqwater on the North Pine Dam hydrology review.

Item 5: A detailed description of the current process for the consideration, review and approval of flood mitigation manuals under the Water Supply (Safety and Reliability) Act 2008(Qld), including:

19. A distinction needs to be made between the person who approves the Manual (approver) as opposed to the person who assesses the Manual (assessor). The assessor reviews a Manual which is provided to DERM by the dam owner to assess whether it meets DERM's requirements for a manual. Technically speaking, however, one person can assume both roles.

20. Under Section 371 (2) of the *Water Supply (Safety and Reliability) Act 2008* the chief executive may by gazette notice, approve the manual. The chief executive has delegated the authority to approve the manuals under the *Water Supply (Chief Executive) Delegation (No.1) 2011 (PHA-23a)* to the holders of four (4) offices within the Department. I am the holder of one of the offices. In the past I have approved Revisions 5, 6 and 7 of the Wivenhoe and Somerset Manual and Revisions 4 and 5 of the North Pine Manual. I have acted as the assessor for various Revisions of the Wivenhoe and Somerset Manual and the North Pine Manual. For the current short term review and long term review of both Manuals I will be the assessor. I believe it is currently intended that the Director-General will be the approver of both the amended Manuals.

1. how it is determined who will assess the Manual

21. I determine who will assess the manuals within the Dam Safety group. The reality though is that Ron Guppy and I are the only persons in the group who have the necessary expertise to undertake such an assessment.

22. The manuals will also be assessed/reviewed by DERM lawyers.

2. how, if at all, the assessor would be involved in the preparation of the manual for submission by the operator

23. Neither Ron Guppy nor I have been involved in the preparation of a Manual. However, we have both in the past had a limited involvement in the review of the manuals before they were formally submitted by the dam owner (not operator) to DERM for approval. In the past we have attended meetings with Seqwater staff when discussing changes to be made to the manuals. Such meetings were designed to ensure that there was a common understanding of what was said or implied in the manual. We also provide advice on such things as what needed to be included in the manuals. The content of the manuals and what was submitted for approval remained at the complete control of Seqwater. In the past when a manual has been submitted for approval we do not accept it without question and still subject the manual to a rigorous assessment.

24. The process for approval of both manuals will be in accordance with the OWSR DERM work procedures for the consideration of the Flood Mitigation Manuals. At the time of the initial Commission of Inquiry hearings this was procedure DS 5.1. However, as indicated in Item 6 below, following our review of the work procedure, this has been renumbered and the relevant procedure is now DS 5.3.

25. Given the extremely short time frame that is available to have the Interim Flood Manuals ready for the 2011-12 wet season, it is important that the action officers of DS 5.3 liaise directly with Seqwater and get some prior agreement on what should be included in the version submitted for approval. This will maximise the chance that they will be approved before 1 October 2011.

26. Seqwater submitted their initial draft of the Interim Manual to DERM for comment on 19th August 2011. DERM Dam Safety and Legal Services officers

undertook an initial review of the draft manual and provided comments back to Seqwater at a meeting on 26th August 2011.

27. Seqwater agreed to consider the issues/amendments raised and for particular issues to be resolved out of session by myself and John Tibaldi (of Seqwater). I agreed to meet John Tibaldi at the new Flood Operations Centre (in 340 Adelaide Street, Brisbane) on 30th August 2011. I also involved Ron Guppy of my group in these discussions.
28. Seqwater provided an update of the draft Interim Somerset/Wivenhoe Manual to DERM on 2 September 2011.
29. It was indicated that Seqwater had considered our comments in generating this version of the Manual.
30. A further up-dated version was received on 7 September 2011. Negotiations are continuing.

3. in what circumstances, if any, advice would be sought from an advisory council under s 371(4) Water Supply (Safety and Reliability) Act 2008 (Qld)

31. The initial draft of the revised North Pine Dam Manual was received from Seqwater on 7 September 2011. It is currently being reviewed.
32. Section 371(4) of the *Water Supply (Safety & Reliability) Act* enables the chief executive to get advice from an advisory council before approving the manual. However, the mechanism for establishing an advisory council is contained in section 570 of the Act. It provides that the Minister (not the chief executive) may establish advisory councils as the Minister considers appropriate for the administration of the Act including, for example (a) flood mitigation (b) referable dams. The advisory council is to have the functions the Minister decides.
33. If the chief executive decided advice from an advisory council was necessary, the chief executive would have to request the Minister to establish such a council.
34. In my opinion, the chief executive would only seek advice from such an advisory council if there were issues that could not be resolved satisfactorily either within DERM or between DERM and Seqwater. However, that is a decision for the chief executive.
35. As stated in paragraph 28 of my Statement dated 4 April 2011, no advisory panel has been established since the commencement of the *Water Act 2000*.

4. in what circumstances, if any, an expert independent peer review would be obtained

36. In my opinion, an independent peer review panel might be engaged by DERM if there were issues that could not be resolved satisfactorily either within DERM or between DERM and Seqwater.

5. the involvement of the Director-General in the review of the Manual

- 37. That is entirely up to the Director General.
- 38. However, to the best of my knowledge no previous Director-General has been directly involved in the review of a manual.
- 39. Prior to the *Water Act 2000*, the flood mitigation manuals were approved by the Minister. The Director-General (or the Commissioner of Water Resources when the function was the role of the Queensland Water Resources Commission) would have had to endorse any briefing note to the Minister to approve the Manuals.

Item 6: A description of any review or redrafting of the DERM publication DS 5.1 Flood mitigation manual for a dam since 1 January 2011, or any planned review or redrafting (any relevant correspondence or other documents should be attached)

- 40. The DERM work procedures addressing flood mitigation manuals have been extensively reviewed and updated to take into account the Interim report recommendations of the Queensland Floods Commission of Inquiry and the lessons learnt from events of January 2011. It is expected that a further review may be required to incorporate any further suggested changes recommended in the final report of this Commission of Inquiry.
- 41. The current review has been conducted within the Office of the Water Supply Regulator with assistance from departmental lawyers. These are general work procedures which do not require regulatory approval.
- 42. It is expected that DS 5.3 will be approved and ready for use to assess the Interim Flood Mitigation Manuals for Wivenhoe/Somerset and North Pine Dams which are due to be submitted to DERM in mid-September 2011. The main changes to the previous version were:

- a. a reordering of the work procedures. The new numbering is as follows:

DS5.1	When a manual is required to be written and submitted for a dam that has just been listed in a regulation as requiring a flood mitigation manual (s.371)
DS 5.2	When the chief executive directs the owner of a dam already having a flood mitigation manual to make particular amendments to the existing manual (s.372)
DS 5.3	When a flood mitigation manual is reviewed so that the reviewed manual can replace an existing manual. It effectively replicates the equivalent provisions in DS 5.1. (This work procedure will therefore apply to the approvals of the Interim North Pine Dam and Somerset/Wivenhoe Dam Manuals.)

- b. allowance for the direct approval of the Manuals by the chief executive.

- c. provision for greater documentation of the review of the manual by DERM and the decision by the decision maker
 - d. provision for legal review of the manual if required
 - e. provision for a more detailed examination of the decision making process
 - f. Each work procedure was written as a stand-alone document so that it could be used independently of the others.
43. Overall, work procedure DS 5.3 requirements are more specific than the previous version and provide for a more robust, better documented procedure for the approval of the flood mitigation manuals. A copy of the new work practice DS 5.3 (subject to internal approval for use within OWSR) is attached as **PHA-24**.

Item 7: A detailed description of the specific process of consideration, review and approval of the flood mitigation manuals for Wivenhoe and Somerset Dams (Seventh Revision, 2009) and North Pine Dam (Fifth Revision, 2010), including all reasoning and opinions and attaching all relevant documents created during the process of consideration and approval

44. A copy of documentation for the decision approving Revision 7 - Wivenhoe and Somerset Dams Flood Mitigation Manual was attached to my 4 April 2011 Statement as **PHA-06**.
45. A copy of Seqwater notes on the amendments made to produce Revision 7 was also attached to my 4 April 2011 Statement as **PHA-07**.
46. Additional copies of correspondence and documents for Revision 7 of the Wivenhoe and Somerset Dams Flood Mitigation Manual are attached to this statement as **PHA-25**.
47. Copies of the same documents for Revision 5 of the North Pine Dam Flood Mitigation Manual are attached to this statement as **PHA-26**.

Item 8: In particular, an explanation of why certain amendments (including those outlined in the table comprising Exhibit 399 of the Queensland Floods Commission of Inquiry) suggested by Mr Ron Guppy with respect to the Seventh Revision of the Wivenhoe and Somerset Dams flood mitigation manual were not required of Seqwater prior to approval of the flood mitigation manual submitted

48. In general terms, Revision 7 of the manual for Wivenhoe and Somerset dams was the first attempt to introduce 'predicted' levels and discharges into the gate operating strategies. While Revision 6 had been based on actual headwater levels, there were predictions of downstream flow rates in the Lockyer and the Bremer applied when determining the actual releases within a strategy.
49. The comments made by Mr Ron Guppy relate to the introduction of these headwater predictions. A table comparing comments made by DERM and sent to Seqwater by e-mail dated 13 October 2009 (Annexure 18 and 19 to Statement of

Ronald Guppy) that were not incorporated into final version of the Seventh Revision of Wivenhoe/Somerset Flood Mitigation Manual and which includes my response is attached as **PHA-27**.

Item 9: Opinion as to any suggested change to the process of consideration, review and approval of flood mitigation manuals

50. As stated in Item 6 above, the work procedures for consideration, review and approval of revised flood mitigation manuals have already been significantly reviewed to make the decisions more robust and better documented. The Commission of Inquiry recommendations for an interim review of the manual and a longer term review of the manuals have also been adopted.

51. Any further recommendations made by the Commission of Inquiry will also be seriously considered.

Item 10: an account of actions taken by officers of DERM in response to the endorsement of the briefing note provided to the Honourable Stephen Robertson MP, Minister for Natural Resources, Mines and Energy and Minister for Trade on 22 October 2010 (CTS No 19311/10); in particular, whether the draft letter under the hand of Mr Allen attached to the briefing note about confirmation of the currency of emergency action plans was in fact sent to the owners of large water supply dams (any relevant correspondence or other documents should be attached)

52. Further advice was provided to Minister Robertson on 15 November 2010 in CTS 19928/10 attached as **PHA-28**. This briefing note attached the details of what was being done. These actions included:

- a. Letters were sent to dam owners of 69 referable dams requiring written confirmation that the EAPs for these dams were current by 30 November 2010. Copies of these letters are also attached as **PHA-28**. These dams are listed below.

Dam Owner	Dams	
SunWater	Leslie Dam Bjelke-Petersen Dam Boondooma Dam Burdekin Falls Dam Callide Dam Cania Dam Coolmunda Dam Eungella Dam EJ Beardmore Dam Fairbairn Dam Fred Haigh Dam Julius Dam Kinchant Dam	Peter Faust Dam Tinaroo Falls Dam Wuruma Dam Kroombit Dam Teemburra Dam Paradise Dam Woongarra Balancing Storage Moura Offstream Storage Isis Balancing Storage Claude Wharton Weir (not currently a referable dam)
Queensland Bulk Water Supply Authority	Lake MacDonald Dam Atkinson Dam Baroon Pocket Dam Bill Gunn Dam Borumba Dam Cedar Pocket Dam Clarendon Dam Cooloolabin Dam	Gold Creek Dam Hinze Dam Lake Manchester Dam Leslie Harrison Dam Poona Dam Wappa Dam Bromelton Off-Stream Storage

	Enoggera Dam Ewen Maddock Dam Little Nerang Dam Maroon Dam Moogerah Dam Sideling Creek Dam	Somerset Dam, Wivenhoe Dam, North Pine Dam (These three were not sent letters because of the Flood Mitigation Manuals)
DERM	Ibis Dam Copperfield R Gorge Dam	Corella Dam Crooks Dam Wyndham Dam
Others	Tallebudgera Creek Dam Connolly Dam Cooby Creek Dam Copperlode Falls Dam Cressbrook Creek Dam Lenthalls Dam Paluma Dam Perseverance Creek Dam Ross River Dam Theresa Creek Dam Biggera Creek Flood Detention Basin	Eli Creek Effluent Reuse Storage Dam Wild River Dam Splityard Creek Dam Koombooloomba Dam Loders Creek Flood Detention Basin Rosewood Detention Basin Marburg Detention Basin

- b. There are only really four (4) EAP's for the five (5) referable dams owned by DERM as the EAP for Wyndham Dam and Crooks Dam are combined into the one document.
- c. No letter was sent to the following referable dam owners:
- i. for nine dams, because the population at risk was confined to property owned by the dam owner and there was no downstream community that needed to be notified by the relevant local government or emergency management agency in an emergency situation;
 - o Bundoora Dam
 - o Gap Creek Dam
 - o Dashwood Property Dam
 - o Dalrymple Bay Coal Terminal – Quarry Dam
 - o Newlands Coal Mine – Cerito Creek Dam
 - o Cubbie Station – Top Shed Dam
 - o Russell Property Irrigation Dam
 - o Andrew Deguara Holdings Pty Ltd Dam
 - o South Walker Mine – Down Dip Dam
 - ii. the owners of a further 16 dams because the owners had already informed DERM within the previous four months that they had produced/updated or reviewed their EAPs.
- d. Additionally there were ten referable dams that had no EAPs because:
- i. safety condition DS 13 required an EAP to be prepared by 30/11/2010 (which was after the nominated reporting time) for Crystal Waters Estate (Upper and Lower) Dams;
 - ii. construction of Gillens Dam owned by Kupapipi Pastoral Pty Ltd had not yet commenced;
 - iii. Town Dam Lakeland owned by Cook Shire Council was to be modified so that it no longer had a population at risk and therefore will not require an EAP (this modification has now been completed and the updated Failure Impact Assessment for the dam to determine if it remains 'referable' is

- being considered); and
- iv. in the case of the seven referable dams listed below in Item 11, compliance action had been initiated as the dam owners have failed to produce their EAP by the date required.

The current status of Emergency Action Plans is listed in **PHA-29**.

Item 11: An account of any enforcement actions taken by officers of DERM in response to any non-compliance with the request to dam owners for confirmation as to the currency of emergency action plans. Such account should include an explanation as to why such enforcement actions were selected (any relevant correspondence or other documents should be attached)

53. As indicated above, compliance action was initiated against seven dam owners for failing to provide updates of the Emergency Action Plans. The following summarises communication/compliance action by the Dam Safety unit in respect of the seven dams:

2016 - Springfield Lakes - High Level Dam (has current EAP)

- a. 4/11/10 - email to dam owner enquiring about status of preparation of EAP
- b. 30/11/10 - email from dam owner advising draft EAP available for download on Water Solutions website
- c. 30/11/10 - Dam Safety downloaded draft EAP
- d. 13/03/11 - finalised EAP received in Dam Safety unit.

2277 Springfield Lakes - Low Level Dam (has current EAP)

- e. As above

1946 - Moody Creek Detention Dam (has current EAP)

- f. 13/12/10 - Dam Safety unit contacted dam owner's consultant who advised EAP to be prepared by January 2011
- g. 11/01/11 - Contacted dam owner's consultant - EAP preparation in progress, anticipate completion in next couple of weeks
- h. 20/01/11 - Contacted dam owner's consultant - EAP preparation in progress
- i. 21/02/11 - Contacted dam owner's consultant - draft EAP progress delayed by Cyclone Yasi
- j. 2/03/11 - Dam Safety unit asked dam owner if EAP activated following flood events in Qld from Dec 2010 onwards

- k. 8/03/11 - Dam owner unit advised EAP not activated as there had been no problems and no reason to activate EAP
- l. 18/03/11 - Dam Safety unit issues 'Show Cause Notice' on 18/03/11 - breach of safety/development condition for failure to submit EAP
- m. 9/05/11 - Dam Owner (Cairns Regional Council) advises consultant heavily involved in work for Qld Reconstruction Authority in Tully area since Cyclone Yasi. EAP for Moody Creek Detention Dam and EAP for McKinnon Creek Detention Dam (also owner by CRC) to be submitted by end May 2011
- n. 22/06/11 - EAP for Moody Creek received in Dam Safety unit

521 - Lake Mitchell Dam (has current EAP)

- o. 9/11/10 - email to dam owner's consultant seeking progress with EAP
- p. 22/12/10 - email from dam owner's consultant with electronic version of EAP attached

651 - Forest Lake Dam (has current EAP)

- q. 4/11/10 - email to dam owner requesting EAP by the end of November 2010
- r. 6/12/10 - email from dam owner advising EAP referred to key disaster management areas before final sign off and submission
- s. 23/12/10 - EAP for Forest Lake Dam received in Dam Safety unit

657 - Gordonbrook Dam (has Interim EAP only)

- t. 29/02/08 - Comprehensive Inspection report prepared by Worley Parsons in February 2008 noted no EAP for Gordonbrook Dam
- u. 28/09/10 - email to South Burnett Regional Council (SBRC) informing the council that Director, Dam Safety required acceptable EAP be ready for implementation before coming wet season - (meaning Nov/Dec 2010)
- v. 25/11/10 - email from SBRC advising consultants (Cardno) engaged to develop EAP for Gordonbrook Dam - final draft to be ready by end Dec 2010
- w. 22/12/10 - final draft of EAP submitted by SBRC
- x. 31/01/11 - email from DERM (Ken Nguyen) to SBRC advising that current draft EAP can be adopted as Interim EAP until SOP is finalised in Sept 2011 when Interim EAP can be reviewed and updated and submitted with SOP
- y. 19/07/11 - email to SBRC regarding status of Interim EAP
- z. Discussions are ongoing.

222 - Environment Dam (no EAP)

- aa. 8/11/1999 - Water Licence 38929F authorising Environmental Dam renewed to 31/01/2004 - included special conditions relating to dam safety including decommissioning the dam (Licence Term 5 - Schedule B)
 - bb. 14/11/07 - email to dam owner advising acceptance of Failure Impact Assessment for Environmental Dam on 13/11/2007 as category 1 referable dam (Population at Risk - 3) and that dam safety conditions will be applied to the dam
 - cc. 23/12/09 - safety conditions prepared including covering letter - no evidence that letter and conditions forwarded to dam owner
 - dd. 8/11/10 - email to dam owner providing a copy of the safety conditions dated January 2010 - DS13 required EAP to be prepared and submitted by 31/10/2010
 - ee. 8/11/10 - dam owner sends reply email advising that the company has no record of these documents in its site records
 - ff. 11/11/10 - email to dam owner advising that new safety conditions with revised dates for submission of EAP and other documents to be prepared
 - gg. 23/06/11 - email from dam owner applying to remove Environmental Dam embankment that is licensed under Water Licence 38929F. Application supported by Decommissioning Final Rehabilitation Plan prepared for dam owner by Water Solutions Pty Ltd
 - hh. 5/07/11 - email from Manager, ES - Mining, Emerald (Chris Loveday) to Kirsty Meacle, Snr Advisor, Regulatory Services, CW Region Rockhampton advising that OWSR doesn't have any concern about the proposed actions around decommissioning other than what is to be done with the water in the dam to allow decommissioning to occur
 - ii. 5/09/11 - email to Kirsty Meacle seeking update of proposal to decommission. Kirsty advised the dam owner will be asked to provide more information including explanation about how dam is to be dewatered.
54. The copies of all the referenced documents are contained in attachment PHA-30.

Item 12: If officers of DERM did not take any enforcement action in response to dam owners failing to provide assurances about the currency of emergency action plans, an account as to why enforcement action was not taken, and a description of any other action taken in response to failure to comply with the request to provide confirmation as to the currency of emergency action plans (any relevant correspondence or other documents should be attached).

55. The necessary compliance action is summarised in Item 11. There was no need to take further compliance action.

Item 13: An account, excepting matters addressed in his statement of 4 April 2011, of any other actions taken by officers of DERM relating to dam safety and flood mitigation issues for all or any referable dams and any other large water storage dams in Queensland in readiness for the 2010/2011 wet season (any relevant correspondence or other documents should be attached)

56. Under the provisions of the *Water Supply (Safety and Reliability) Act 2008*, DERM has no regulatory control over the safety of water dams that are not referable dams. As such, it has no control over 'other large water supply dams'.
57. Aside from the specific follow-up activity prior to the 2010-2011 wet season on Emergency Action Plans there has been a lot of ongoing dam safety activity to improve the safety of referable dams. This involves a wide range of activities such as identifying the dams that might put population at risk through to the periodic inspections, safety reviews etc. required by the dam safety conditions and audits to make sure that dam owners are aware of their responsibilities and audits to improve compliance.
58. Part of this ongoing process is the spillway adequacy program. In this program, DERM is targeting improvement in the spillway adequacy of all referable dams. The required upgrade schedule is set out in the *DERM Guidelines on Acceptable Flood Capacity for dams* (NRM, 2007). The spillway capacity of a number of dams has been increased since about 2004. These include:
- a. Tallebudgera Creek Dam
 - b. Fred Haigh Dam
 - c. Borumba Dam
 - d. Bjelke Petersen Dam
 - e. Wivenhoe Dam
 - f. Tinaroo Falls Dam
 - g. Crooks Dam
 - h. Wyndham Dam
 - i. Gold Creek Dam
 - j. Lake Manchester Dam
 - k. Hinze Dam (as part of an overall upgrade)
 - l. Ross River Dam (as part of other remedial works).
59. The spillway adequacy of Middle Creek Dam was improved just prior to the 2010-2011 wet season by the removal of a nib wall on the spillway crest. By doing this, the Mackay Regional Council was able to increase the spillway capacity from a totally inadequate 1:40 AEP flood event to a 1:500 AEP event. This was required under Dam Safety condition DS 16 for the dam. A further increase in capacity to 50% of the Acceptable Flood Capacity is required by October 2015.
60. The risks of failure of Storm Creek Dam and Kinchant Dam are being reduced by current works. Further information on each of these upgrades can be provided upon request.

61. Operationally, Townsville Regional Council who own Ross River Dam asked whether they could pre-release water from the dam prior to Cyclone Yasi. I had no objection to this pre-release from a dam safety perspective so long as the risks to people downstream were appropriately managed.
62. I am not aware of any other specific preparations by dam owners for the 2010/2011 wet season. From a dam safety perspective, referable dams need to be designed and constructed to a high standard and the design floods used for the design of the dam are far greater than any flooding that occurred over the 2010/2011 wet season.
63. Irrespective of the above, the safety of a dam remains the responsibility of the dam owner. The dam safety conditions applied by DERM are essentially the framework for an owner's effective dam safety management program.
64. I am not aware of any other actions that may have been taken by other DERM officers.

Item 14: Opinion as to any suggested change to the relationship between the flood operations centre in control of Wivenhoe and Somerset dams and the operators of the Splityard Creek dam to increase efficiency of operating all three dams and flood mitigation benefits provided by those dams

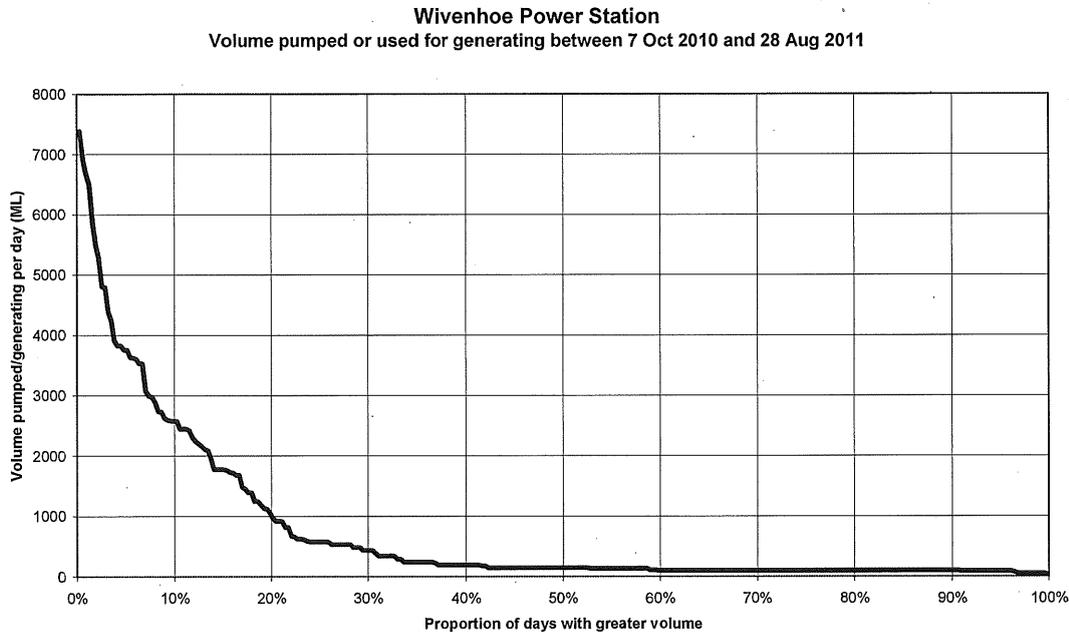
65. Given that the total volume of Splityard Creek Dam translates to about 1% of the January 2011 flood event which passed through Wivenhoe Dam, I do not see any necessity to change the relationship between the flood operations centre and the operators of Splityard Creek Dam as I do not consider that it will result in any significant increased flood mitigation efficiency in major floods.
66. The operating range of Splityard Creek Dam is of the order of 28,700 ML. The pumping time to fill this storage from empty is 14 hours and the generating time to drain the storage from full is 10 hours. Thus if all this volume is added to, or taken from, Wivenhoe Dam this translates to the following rises and falls in Wivenhoe Dam:

Headwater level in Wivenhoe mAHD	Rate of increase in Wivenhoe level during generating	Rate of decrease in Wivenhoe level during pumping	Total variation over cycle
EL 67.0	27 mm/hr	19 mm/hr	± 270 mm
EL 74.0	19 mm/hr	13 mm/hr	± 190 mm
EL 80.0	14 mm/hr	10 mm/hr	± 140 mm

67. On top of this examination of the available headwater levels in Splityard Creek Dam over the period from 7 October 2010 to 28 August 2011 indicate that:
- On only about 20% of days is more than 2000 ML pumped into or drained out of Splityard Creek Dam
 - The maximum pumped into or drained out of Splityard Creek Dam over the

period was about 7,500 ML or about 25% of the total available storage.

68. As such, Splityard Creek Dam cannot have much effect on flood mitigation for areas downstream of Wivenhoe Dam. The graph below shows the volume of water pumped or used for power generation between 7 October 2010 and 28 August 2011.



69. However, a rise or fall of about 270mm near Full Supply Level of Wivenhoe Dam can have a significant effect if Wivenhoe is operating in strategy W1 or during the final drainage phase. This occurred during the drainage phase of the February 1999 flood event when I was the Senior Flood Operations Engineer for the event and it caused problems until what was causing the unexpected rise and fall in the reservoir was identified.
70. The Flood Event Report for the February 1999 flood event recommended (in Section 18.5 of SWP, 1999) that a headwater gauge be installed to measure headwater elevations in Splityard Creek Dam to enable Wivenhoe headwaters to be adjusted for the volume stored in Splityard. This recommendation was implemented by the then South East Queensland Water Board.
71. Splityard Dam was not discussed in the Seqwater January 2011 flood event report for Wivenhoe and Somerset dams.

Item 15: In particular, in what circumstances it would be beneficial for the flood operations centre in control of Wivenhoe and Somerset dams to have control over releases from Splityard Creek dam and pumping of water from Wivenhoe dam into Splityard Creek dam

72. As it stands, there seems to be a good working relationship between Seqwater and the operators of the Wivenhoe Power Station. While this relationship remains good, there should be no need for any direct control over the levels in Splityard Creek Dam. However, this may not always be the case.

73. The circumstances that I can foresee where there might be a role for the flood operations centre to have some control over the releases from Splityard Creek dam and pumping of water from Wivenhoe dam into Splityard Creek dam would be when:
- a. drainage of water from Splityard Creek Dam might trigger a fuse plug or cause overtopping of the dam or overtopping of the gates; or when
 - b. pumping of water into Splityard Creek Dam might reduce the headwater level in Wivenhoe just enough to prevent such events occurring.
74. These should be rare events with the headwater level in Wivenhoe Dam only being expected to exceed EL 74 on average about once in every 50 to 100 years with the current operating rules.
75. There is of course a significant limit to what can be achieved using Splityard Creek Dam and the Flood Operators Engineers might also need to ensure that the storage is relatively low at the start of an event or, if it has significant volumes already in storage that it is drained in the early part of the event when the consequences are lower.
76. This all presumes that the State can do without the power provided by the power station during a major flood event. This electric power might have much greater life saving potential than the restriction of some flooding. It therefore needs to be considered with care and in association with the owners of the power station.

Item 16: A detailed description of any involvement of any DERM officer in any investigation or consideration or the preparation of any report or briefing note about the full supply level of North Pine Dam, including in relation to a temporary or permanent alteration of its full supply level since 2000.

77. I do not believe I was involved and I am not aware of any consideration of varying the full supply level of North Pine Dam, including in relation to a temporary or permanent alteration of its full supply level prior to the January 2011 flood event. I am aware that there is currently an initiative to consider a reduction in the full supply level of the North Pine Dam.

Item 17: A brief description of his role and responsibility to regulate the safety of dams on mining sites

78. I only have regulatory decision making delegations in relation to referable dams in relation to the 'referable' dam provisions of the *Water Supply (Safety and Reliability) Act 2008*. I do not have any delegated powers under the provisions of the *Environmental Protection Act 1994* (EP Act) in relation to 'regulated' dams.
79. The essential difference between 'referable dams' and 'regulated dams' is that regulated dams are those that contain hazardous waste. From a practical perspective, it relates to whether an environmental approval is required for the

dam and whether there are controls over the release of contaminants from the dam. If this is the case, then the dams effectively come under the provisions of the EP Act and are not the subject of regulation as referable dams.

80. Since October 2010 the containment systems group has been relocated into the OWSR Dam Safety group. The containment systems group provide technical advice to DERM decision makers in the regions. Technically the Director, Dam Safety is responsible for that advice.
81. This has not resulted in any significant confusion in the past and with the two groups now coming under the Office of the Water Supply Regulator umbrella there should be smoothed even further.
82. As such, I only have the power to regulate the safety of referable dams on mining sites. The referable dams connected to mines are listed in the following table. These dams are regulated in the same manner to all other referable dams.

Referable Dam No.	Name of Dam	Dam Owner	Mining Lease
174	Leichhardt River Dam	Mount Isa Mines Limited (Xstrata)	
222	Environmental Dam, Blair Athol Coal Pty Ltd	Rio Tinto	
235	Bundoora Dam	Anglo Coal (Capcoal Management) Pty Ltd	ML 1831
406	Rockland Creek Dam, Blackwater Coal Mine	South Blackwater Coal Limited (BMA Blackwater Mine)	
416	Perry River Dam	LGL Mount Rawdon Property Holdings Pty Ltd	
701	Rifle Creek Dam	Mount Isa Mines Limited (Xstrata)	
766	Cerito Creek Dam, Newlands Coal Mine	Xstrata Coal Queensland Pty Ltd	ML 4774
1822	Down Dip Dam, South Walker Coal Mine	BHP Billiton Mitsubishi Alliance	ML 4750
1952	Suhrs Creek Dam	Charters Towers Regional Council	

Item 18: A description of the actions taken or directed by him in preparation for and during the 2010/2011 wet season with respect to the safety of dams on mining sites.

83. Again I have no regulatory role over 'regulated dams' on mining sites. That role is delegated to regional DERM personnel. Members of the Containment Systems group of the Office of the Water Supply regulator provide technical advice. I believe that Mike Birchley, the Assistant Director-General, Regional Service Delivery will be addressing this issue in his statement to the Commission.

References

84. Cooper (2011), Letter to Water Grid Manager dated 12 January 2011 presenting the results of his review of the operation of Wivenhoe Dam between 12 December 2010 and 12 January 2011.

I make this solemn statement on oath conscientiously believing the same to be true, and by virtue of the provisions of the *Oaths Act 1867*.

Signed 

Peter Hugh Allen

Taken and declared before me, at Brisbane this 12th day of September 2011


Solicitor/Barrister/Justice of the
Peace/Commissioner for Declarations

