
Third Statement of Daniel Spiller

1 February 2012

*In the matter of the Commissions of Inquiry Act 1950, Commissions of
Inquiry Order (No 1) 2011*

Queensland Floods Commission of Inquiry

Volume 1 of 2



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SEQ WATER GRID MANAGER

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2011 BRISBANE FLOODS

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FD: Third Statement of Daniel Spiller Volume 1

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Intro FE: MMC



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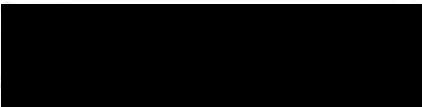
Statement by Daniel Thomas Spiller, affirmed on 1 February 2012

I, Daniel Thomas Spiller of Level 15, 53 Albert Street, Brisbane, Queensland, Director, Operations, of the SEQ Water Grid Manager (**Water Grid Manager**), affirm the following:

1. In this statement to the Queensland Floods Commission of Inquiry, as required in the letter to me dated 30 January 2012 (**letter**), I:
 - a. have provided all information in my possession and identified the source or sources of that information; and
 - b. make commentary and provide opinions that I am qualified to give as to the appropriateness of particular actions or decisions and the basis of that commentary or opinion,in relation to the matters outlined in Topics 1 to 6 in the letter.
2. I address each of the topics to be dealt with separately below.
3. In this statement, I have also been asked to provide details of various discussions, meetings, briefings and other communications. I have done so to the best of my recollection. Where I do not have an exact or verbatim recollection of the words used in any of the discussions, meetings or briefings, I have recorded my recollection about the effect of those discussions as best I can, where possible indicating who said what in any discussions.
4. I have previously provided two statements to the Commission, they having been made on 13 May 2011 (**First Statement**) and 17 May 2011 (**Supplementary Statement**). Those statements annexed a large volume of material. To the extent that that material is relevant to the Topics the subject of the letter, I have, for the Commission's convenience and ease of reference, also annexed them to this statement.

Signed:  ..

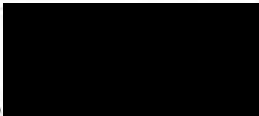
Daniel Thomas Spiller

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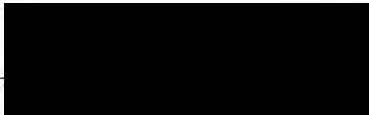
[Justice of the Peace/Solicitor]

BACKGROUND

5. Before responding to the specific questions asked of me in the letter, I should explain the positions which I occupied and the roles which I played during the relevant periods.
6. During the period 7 January 2011 to 12 January 2011 I held the position of Director, Operations of the Water Grid Manager. That position is described in paragraphs 20 to 26 of my First Statement. In summary, it relates to the efficient and effective operation of the Water Grid as a system. It does not include responsibility for the operation of individual assets within that system. In particular, I have, and had, no responsibility in relation to the operations of dams, including Wivenhoe Dam.
7. From 25 December 2010 to 9 January 2011 I was also the acting Chief Executive Officer (**CEO**) of the Water Grid Manager.
8. I had a number of specific roles during the flood events. These included:
 - a. I was responsible for ensuring that the Water Grid Manager complied with the draft Communications Protocol. The draft protocol states that the Water Grid Manager is the State's lead communication agency in respect of flood water releases. It is responsible for distributing the Technical Situation Reports (**TSRs**) provided by Seqwater to others, and for liaising with key stakeholders. It is also responsible for coordinating responses to any questions from the public or the media relating to the release of flood water. I personally distributed many of the TSRs and liaised with key stakeholders about them. While I provided commentary on the format in which TSRs were provided, I was not ultimately responsible for the drafting of their technical content.
 - b. From 10 January 2011, I was also Emergency Manager for the water supply incidents arising from the flood events. In this role I was responsible for

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Daniel Thomas Spiller

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managing the whole of Grid response in accordance with the Water Grid Emergency Response Plan. Individual service providers were responsible for managing asset specific issues in accordance with any instructions from the Water Grid Emergency Management Team and with their own emergency response plans. These functions are described in detail in paragraphs 27 to 68 of my First Statement.

- c. In addition, I was one of two media spokespeople for the Water Grid and responsible for approving public communications more generally, including in relation to water supply and water quality. The Water Grid Manager is responsible for providing cohesive and coordinated public communications in relation to all matters connected to the Water Grid.

TOPIC 1: My understanding, in the period between 7 January 2011 to 12 January 2011, of which flood operations strategies, referred to in the ‘Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam’, were used in the operation of Wivenhoe Dam between 7 January 2011 and 12 January 2011 and the times at which each strategy was in use.

9. I was not in direct communication with the Flood Operation Centre (**FOC**) at any time and cannot comment on the decisions made by it.
10. I also cannot recall being advised specifically when the transition between strategies occurred.
11. However, I did receive information from Seqwater (usually through its Dam Operations Manager, Mr Robert Drury) advising about current and potential release rates that reflected upon these strategies. That advice informed, and is reflected in, my various

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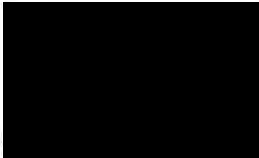
Daniel Thomas Spiller

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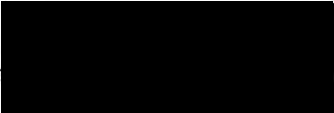
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emails to key stakeholders. It is my understanding that there may have been a delay in when the FOC made decisions and when that advice was provided by Mr Drury to me.

12. Mr Barry Dennien, the CEO of the Water Grid Manager, and I often sought more detail about the strategy being used, in order to comply with our responsibilities under the draft Communications Protocol. In particular, we regularly sought advice about current and potential release rates, as that reflected on the operating strategy being applied or expected to be applied.
13. I note that the Flood Mitigation Manual states that the operating strategy must be selected taking into account a range of factors, including the current and forecast levels of Wivenhoe and Somerset Dams, current and forecast release rates from the dams, and flow rates without dam releases at the Lowood and Moggill gauges. Of these factors, most of the TSRs during the relevant period only provided quantitative information about current dam levels and release rates.
14. Finally, I note that I did not usually specify the current operating strategy in my communications about dam releases. I did not do so because that information was not required by the people that I was advising, who were primarily focused on emergency management. I was aware that the FOC was in direct communication with key technical people from the Office of the Water Supply Regulator, the Bureau of Meteorology (**BoM**) and local councils, as was repeatedly stated in the TSRs. I assumed that those technical officers were regularly advised which strategy was being used.
15. With these qualifications, my understanding of what flood operations strategies were used in the operation of Wivenhoe Dam between 7 January 2011 and 12 January 2011, and the times at which each strategy was in use, is as follows:

Signed: ........

Daniel Thomas Spiller

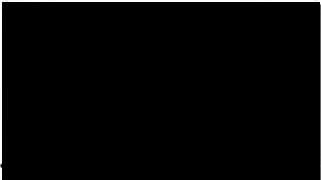
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- a. the transition from strategy W1 to strategy W2 occurred on the evening of Sunday, 9 January 2011;
- b. the transition from strategy W2 to strategy W3 occurred around midday on Monday, 10 January, 2011; and
- c. the transition from strategy W3 to strategy W4 occurred around midday on Tuesday, 11 January 2011.

The basis for my understanding is as follows.

- 16. In relation to the transition from strategy W1 to strategy W2, I understand that revision 7 of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe and Somerset Dams (**Flood Mitigation Manual**) stated that the primary consideration of strategy W1 was to minimise disruption to downstream rural life. Among other considerations, I understand that the maximum release rate is predicted to be less than 1,900 m³/sec. Within strategy W1 are a number of progressive 'sub-strategies', ranging from strategy W1A to strategy W1E, which are based on flows under 1,900 m³/sec and which are referable to the closure of specific bridges and crossings.
- 17. I also understand that the Flood Mitigation Manual stated that strategy W2 is a transitional strategy where the maximum release is expected to be less than 3,500 m³/sec (among other considerations).
- 18. On that basis, my understanding is that the transition from strategy W1 to strategy W2 occurred on the evening of Sunday, 9 January 2011, as that was the first time it was made clear to me that the Fernvale and Mt Crosby Weir Bridges (being the subject of strategy W1E) would be affected. Previous communications had indicated that this was not expected.

Signed: 

Daniel Thomas Spiller

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19. Over the morning of Monday, 10 January 2011, I clarified whether the strategy then being used was strategy W2. I did so via an email exchange with Mr Drury and during a subsequent teleconference that morning in which he and Mr Peter Borrows, the CEO of Seqwater, were involved.
20. In relation to the transition from strategy W2 to strategy W3, I understand that the primary consideration of strategy W3 is to protect urban areas from inundation.
21. My understanding is that the transition from strategy W2 to strategy W3 occurred around midday on Monday 10 January, 2011. This is based on my participation in a teleconference with representatives of Government agencies, local councils, Seqwater and the Water Grid Manager. In that teleconference, Mr Borrows flagged that the then strategy would need to change to increase releases. He agreed that an updated strategy would be provided by 2.30pm that day. At 3.16pm that day, I was advised of that strategy by a TSR that stated that the objective for dam operations was currently to minimise the impact of urban flooding in areas downstream of the dam and to keep river flows in the lower Brisbane River below 4,000 m³/sec, if possible.
22. In relation to the transition from strategy W3 to strategy W4, I understand that the primary consideration of strategy W4 is to protect the structural safety of the dam. I understand that it is implemented when the Wivenhoe Dam storage level is predicted to exceed 74 m AHD.
23. My understanding is that the transition to strategy W4 occurred around midday on 11 January, based on the time when I received TSR 39. That TSR states that the current objective had changed to be to '*maintain releases to keep Wivenhoe below fuse plug initiation*'.

Signed:

Daniel Thomas Spiller

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24. For the assistance of the Commission, I have prepared a detailed chronology of my communications relating to the flood operations strategies during the relevant period. That chronology is **Annexure A** to this statement. Copies of relevant written communications are contained in **Annexure B** to this statement.

TOPIC 2: How, if at all, that understanding changed since 12 January 2011 and the reason for the change in understanding.

25. To the extent that I do have a view on the operating strategies used between 7 January 2011 and 12 January 2011, that view has not since changed.
26. I am aware that the Commission took detailed evidence on this issue, through statements and hearings undertaken over more than a week. I am unaware of the content of much of this evidence, having only listened to or read small parts of it.
27. While I have not reviewed much of the related evidence, I am aware that the Commission hearings highlighted ambiguity about the strategies in use at particular times and the times at which the transition between strategies occurred.
28. This ambiguity is reflected in the Commission's Interim Report, which highlighted ambiguities in relation to the use of strategy W3 and recommended remedies to address those.
29. To the limited extent I have considered the matter since 12 January 2011, I assumed that the evidence contained in my earlier statements had been taken into account by the Commission in forming its views as to the lack of clarity concerning strategies and the transition between them.

Signed:

Daniel Thomas Spiller

Taken by:

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TOPIC 3: My understanding of any differences between the account of the choice and timing of the dam operations strategies employed to manage the flood event in the SEQ Water Grid Manager and Seqwater Ministerial Briefing Note to the Minister for Natural Resources, Mines and Energy and Minister for Trade that appears as attachment SR-12 to Exhibit 11 before the Queensland Floods Commission of Inquiry ('January Report') and the Seqwater report titled 'January 2011 Flood Event – Report on the operation of Somerset Dam and Wivenhoe Dam' and dated 2 March 2011 that appears as Exhibit 24 before the Queensland Floods Commission of Inquiry ('March Report').

30. On 15 and 16 January 2011, the Water Grid Manager coordinated the preparation of briefing material for a special Cabinet meeting. That meeting occurred on 17 January 2011.
31. One of the attachments to that brief was a report titled *January 2011 Flood Event (January Seqwater report)*.
32. The report was the responsibility of, and prepared by, officers of Seqwater. Officers from the Water Grid Manager provided some comments in relation to issues that should be addressed or matters that should be clarified, however none of those comments related to the dam operations strategies used during the event.
33. I note that, in relation to the operating strategies used during the event, the January Seqwater report includes statements (at page 8) to the effect that:
 - a. by 7pm on Sunday, 9 January 2011, '*... it was apparent that both Fernvale Bridge and Mt Crosby Weir Bridge would be inundated by the combined dam releases and Lockyer Creek flows and that the operational strategy had progressed to W2*';

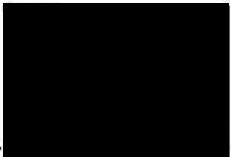
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Daniel Thomas Spiller

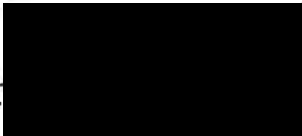
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- b. by 6.30am Monday, 10 January 2011, '*... based on rainfall on the ground it was apparent the operational strategy had progressed to W3*';
 - c. by 8am on Tuesday, 11 January 2011, '*... based on rainfall on the ground it was apparent the operational strategy would soon progress to W4 with Wivenhoe Dam exceeding 8.00 m AHD above FSL*'; and
 - d. by 11am on Tuesday, 11 January 2011, '*Releases were increased until the dam level stabilised in accordance with Strategy W4*'.
34. Since receiving the letter, I have reviewed the relevant sections of the Seqwater report titled *January 2011 Flood Report – Report on the operation of Somerset Dam and Wivenhoe Dam (March Seqwater report)*. Relevantly, I note that it includes statements to the effect that:
- a. at 8am on Saturday, 8 January 2011, there was an '*attempt to transition to Strategy W2*' (refer page 190);
 - b. from 8am on Saturday, 8 January 2011, strategy W3 was used (refer page 190); and
 - c. from 8am on Tuesday, 11 January 2011, strategy W4 was used (at page 194).
35. I can provide no explanation or insight as to the extent and reason for any differences between the statements in the January Seqwater report and the March Seqwater report.

Signed: ... 

Daniel Thomas Spiller

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TOPIC 4: When I first became aware of the differences, if any, referred to in Topic 3 above.

36. I first became aware of the differences between the January Seqwater report and the March Seqwater report on 25 January 2012, when it was highlighted by an article in *The Australian* newspaper titled *Dam bursts on new evidence*.

TOPIC 5: All discussions, correspondence, meetings or briefings I participated in, in relation to the January Report and the March Report, and in respect of those, identifying any that related to the differences between the reports referred to in Topic 3 above.

January Seqwater report

37. On the morning of Friday, 14 January 2011, I ceased to be the Emergency Manager for the various flood related water supply incidents. From the morning of Saturday, 15 January, Mr Dennien and I shared the responsibilities of the liaison and spokesperson role.
38. At that time we were responding to an increasing number of media enquires about the operation of Wivenhoe Dam during the flood event.
39. Within that context, we commenced preparation of communications material on key aspects of the dam and its operation. Those materials formed part of the Ministerial Briefing Note dated 16 January 2011 to the Minister for Natural Resources, Mines and Energy and Minister for Trade (which is attachment SR-12 to Exhibit 11 before the Commission of Inquiry).
40. The Water Grid Manager's involvement in the preparation of the Ministerial Briefing Note was in consultation with Mr John Bradley, the then Director General of DERM.

Signed:

Daniel Thomas Spiller

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As part of that consultation, at 8.32am on 15 January 2011, I forwarded to Mr Bradley a copy of the Seqwater advice provided in response to the Minister's request of 25 October 2010.

41. At 10.34am, on 15 January 2011, Mr Lance McCallum, a Ministerial adviser, sent an email to Mr Bradley and me which stated:


The Minister has asked that preparation be done over the weekend that will enable him to go to the Emergency Cabinet meeting on Monday with a position on how the Govt is going to handle the issues of reviewing operational decisions made by SEQwater and SEQWGM in relation to releases from the dams.

42. At 10.34am, Mr Bradley replied:


Thanks Lance - we have anticipated the need for something like this - seqwgm work underway - I will talk to SEQWGM when out of SDMG now on.

43. By about 12.30pm that day, Ms Elaina Smouha, Director, Governance and Risk of the Water Grid Manager, had developed a proposed outline of the advice, in consultation with Mr Dennien and me. Ms Smouha distributed that outline prior to a 2.00pm teleconference.

44. At 2.00pm on Saturday, 15 January 2011, a teleconference was held to discuss the structure of the advice to the Minister. Mr Dennien, Ms Smouha and I participated for the Water Grid Manager. Other participants included Mr Bradley, Mr Reilly (General Manager, Office of the Water Supply Regulator), Mr Borrowes and the Seqwater Duty Engineer. During the teleconference, I forwarded an email to the Duty Engineer, who at around the same time, sent to me, for information, a copy of the table of contents from a previous flood event report. The participants discussed the proposed outline of the advice and agreed who was responsible for each part of it.

Signed:.....

Daniel Thomas Spiller

Taken by: .....

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45. At 5.03pm, Ms Smouha distributed an email with an updated version of the proposed content of the Ministerial brief (see Annexure C page 617). The email listed who was responsible for each part of the advice.
46. On Sunday, 16 January 2011, Mr Dennien and I made some suggestions to Seqwater about data and information that I considered would be useful to include in the communications materials.
47. At 11.58am, Mr Peter Allen, Director Dam Safety, via email, provided text regarding the regulatory context (see Annexure C page 620). His email explained that both Mr Reilly and Mr Borrows had reviewed that text and were happy with it.
48. At 2.45pm on Sunday, 16 October 2011, I was invited to a pre-Cabinet briefing with the Minister at 9.00am the following day (see Annexure C page 629). Mr Dennien attended that briefing, due to it being scheduled at the same time as a meeting of the Brisbane District Disaster Management Group, which I attended.
49. At 3.59pm, Mr Borrows distributed a draft version of the items for which Seqwater was responsible. At 4.28pm, Mr Borrows provided an updated version of that draft (see Annexure C page 637).
50. At 6.00pm, Mr Reilly sent comments to Mr Borrows on that draft (see Annexure C page 675).
51. At 6.05pm, Ms Smouha emailed some further questions about the draft. (see Annexure C page 680).
52. Mr Dennien and I discussed progress with Mr Bradley on at least one occasion that day. He was included on the distribution of the Seqwater draft, but, as far as I am aware, did not provide written comments.

Signed:

Daniel Thomas Spiller

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53. At 7.41pm, Mr Bradley sent an email to Mr McCallum that apologised for the delay. He stated that Seqwater has struggled to provide its input in a cogent form.
54. At 9.26pm, I sent Mr Bradley proposed talking points that become Attachment E to the Ministerial briefing note. He replied at 9.57pm with a suggestion that the response to one issue be clearer (see Annexure C page 724).
55. At 9.33pm, Mr Borrows sent Mr Dennien the final version of the Seqwater parts of the January Seqwater report (see Annexure C page 766).
56. At 10.14pm, Ms Smouha sent Mr Bradley the final brief and attachments (see Annexure C page 843).
57. At 10.35pm, Mr Bradley acknowledged that email (see Annexure C page 873).
58. Copies of the relevant documents referred to above are contained in **Annexure C** to this statement.

March Seqwater report

59. I have a faint recollection that I had a telephone conversation with Mr Reilly about a statement that Seqwater proposed to include in the March Seqwater report. The statement related to the Water Grid Manager's communications function. My recollection is that I advised Mr Reilly that I had no objection to the proposed statement.
60. With that exception, I was not involved in any discussions, correspondence, meetings or briefings in relation to the March Seqwater report.
61. On 7 March 2011, Mr Reilly forwarded a copy of the final report to me, together with an extract from the media statement that had been publicly released.

Signed:

Daniel Thomas Spiller

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Discussions, correspondence, meetings or briefings identifying differences between the reports.

62. I have not been involved in any discussions, correspondence, meetings or briefings in relation to differences between the January Seqwater report and the March Seqwater report.

TOPIC 6: Any decision made, or action taken, by me in relation to the differences, if any, referred to in Topic 3 above.

63. I have taken no action in relation to the differences referred to in Topic 3.

All the facts and circumstances deposed to herein are within my own knowledge, save such as are deposed to from information only, and my means of knowledge and sources of knowledge appear in this my statement to the Commission.

Affirmed by Daniel Thomas
Spiller on 1 February 2012 in the presence of:

▲

Signature of Daniel Thomas Spiller

Signature of witness

▲

Cindy Jane Hulsey

Name of witness (print)

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Statement of Daniel Spiller sworn 1 February 2012

Queensland Floods Commission of Inquiry

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1	Chronology	undated	N/A
Annexure B			
Topic 1 – His understanding, in the period between 7 January 2011 to 12 January 2011, of which flood operation strategies, referred to in the 'Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam' were used in the operation of Wivenhoe Dam between 7 January 2011 and 12 January 2011 and the times at which each strategy was in use.			
2	Email Dan Spiller to various re recommencement of Wivenhoe Dam gate releases and attached Technical Situation Report W28	06.01.2011 at 1.17pm	1 – 4
3	Email Petula Martinz to various re Wivenhoe Dam release update and attached Technical Situation Report W40	11.01.2011 at 4.19pm	5 - 8
4	Email Rob Drury to Dan Spiller re technical report W29 and attached technical situation report W29	07.01.2011 at 6.41am	9 - 14
5	Technical Situation Report W29	07.01.2011 at 7.00am	15 - 18
6	Email Paul Bird Dan Spiller re Operating Strategy over the next week	07.01.2011 at 8.09am	19 - 20
7	Email Dan Spiller to various re update on dam gate releases and attach Technical Situation Report W29	07.01.2011 at 8.27am	21 - 26
8	Email Paul Bird to various re release update	07.01.2011 at 8.28am	27 - 28
9	Technical Situation Report W30	07.01.2011 at 3.00pm	29 - 31
10	Email Paul Bird to various re release update	07.01.2011 at 3.28pm	32 - 34
11	Email Rob Drury to Dan Spiller re Technical Report W30 and attached Technical Situation Report W30	07.01.2011 at 4.05pm	35 – 40
12	Email Dan Spiller to various re update on Wivenhoe Dam releases and attached Technical Situation Report W30	07.01.2011 at 4.24pm	41 - 45
13	Technical Situation Report W31	08.01.2011 at 7.00am	46 - 49
14	Email Rob Drury to Dan Spiller re Technical Report W31	08.01.2011 at 7.46am	50 - 55

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15	Email Paul Bird to SEQWGM Media, Barry Dennien, Dan Spiller and Scott Denner re water release update	08.01.2011 at 7.54am	56 - 57
16	Email Dan Spiller to various re water grid operations update: 8.1.11 and attached Technical Situation Report W31	08.01.2011 at 9.00am	58 - 62
17	Email Dan Spiller to Gary Humphrys, Gordon Jardine, Teresa Dyson, Dr David Cunliffe and Jamie Quinn re update on water grid operations	08.01.2011 at 9.24am	63 - 64
18	Email Dan Spiller to Debbie Best re water grid operations update: 8/1/11	08.01.2011 at 9.48am	65 - 67
19	Email Debbie Best to Dan Spiller re water grid operations update: 8/1/11	08.01.2011 at 10.11am	68 - 71
20	Technical Situation Report W32	09.01.2011 at 7.00am	72 - 75
21	Email Rob Drury to Dan Spiller re Technical Report W32 and attached Technical Situation Report W32	09.01.2011 at 7.50am	76 - 82
22	Email Paul Bird to various re water release update	09.01.2011 at 7.57am	83 - 85
23	Email Dan Spiller to various re water grid operations update: 9/1 and attached Technical Situation Report W32	09.01.2011 at 8.14am	86 - 90
24	Technical Situation Report W33	09.01.2011 at 6.00pm	91 - 94
25	Email Rob Drury to Dan Spiller re Technical Report W31	09.01.2011 at 6.13pm	95 - 99
26	Email Dan Spiller to Rob Drury	09.01.2011 at 8.56pm	100
27	Technical Situation Report W34	09.01.2011 at 9.00pm	101 - 103
28	Email Rob Drury to Dan Spiller re Technical Report W34 and attached Technical Situation Report W34	09.01.2011 at 9.18pm	104 - 109
29	Email Dan Spiller to Rob Drury, Barry Dennien, Michael Lyons, SEQWGM Media, Debbie Best, Scott Denner, Paul Bird, Stan Stevenson re Technical Report W34 and attached Technical Situation Report W34	09.01.2011 at 9.27pm	110 - 115
30	Email Dan Spiller to various re updated Wivenhoe Dam and attached Technical Situation Report W34	09.01.2011 at 11.07pm	116 - 120
31	Email Dan Spiller to Colin Jensen re Wivenhoe Dam Operations update	09.01.2011 at 11.23pm	121 - 122
32	Email Dan Spiller to Barry Dennien, Debbie Best, Michael Lyons, SEQWGM Media and Geoff Stead re Mt Crosby going under now. Need a new release	10.01.2011 at 12.04am	123
33	Email Colin Jensen to Dan Spiller re Wivenhoe Dam operations update	10.01.2011 at 12.15am	124 - 125
34	Email Rob Drury to Dan Spiller, Barry Dennien, Michael Lyons,	10.01.2011 at	126 - 128

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35	Email Dan Spiller to various re updated Wivenhoe Dam release strategy	10.01.2011 at 5.31am	129 - 130
36	Email Rob Drury to Dan Spiller and Barry Dennien re FOC situation report at 01:00 HS on Monday 10 January 2011	10.01.2011 at 6.14am	131 - 133
37	Email Barry Dennien to Michael Lyons re FOC situation report at 01:00 HS on Monday 10 January 2011	10.01.2011 at 6.17am	134 - 136
38	Email Rob Drury to Paul Bird, Dan Spiller, Barry Dennien re FOC situation report at 01:00 hrs on Monday, 10 January 2011	10.01.2011 at 6.20am	137 - 141
39	Email Dan Spiller to Barry Dennien re FOC situation report at 01:00 HRS on Monday, 10 January 2011	10.01.2011 at 6.21am	142 - 147
40	Email Rob Drury to Paul Bird and Dan Spiller	10.01.2011 at 6.36am	148
41	Technical situation report W35	10.01.2011 at 7.00am	149 - 152
42	Email Rob Drury to Dan Spiller, Barry Dennien, Michael Lyons, SEQWGM Media, Debbie Best, Scott Denner, Paul Bird, Stan Stevenson and Peter Burrows re Technical Report W35 and attached Technical Situation Report W35	10.01.2011 at 7.53am	153 - 156
43	Technical situation report W36	10.01.2011 at 8.00am	157 - 160
44	Email Rob Drury to Dan Spiller, Paul Bird, Stan Stevenson, Peter Burrows and Peter Allen re Technical Report W36 and attached Technical Situation Report W36	10.01.2011 at 8.06am	161 - 166
45	Email Dan Spiller to Rob Drury re Technical Report W36	10.01.2011 at 8.13am	167 - 168
46	Email Rob Drury to Dan Spiller re Technical Report W36	10.01.2011 at 8.23am	169 - 170
47	Email Dan Spiller to various re water grid operations update and attached Technical Situation Report W36	10.01.2011 at 9.46am	171 - 176
48	Email Dan Spiller to Barry Dennien re water grid operations update and attached technical situation report W36	10.01.2011 at 9.51am	177 - 182
49	Email Dan Spiller to Rob Drury and Peter Burrows re Technical Situation Report W36 and attached amended Technical Situation Report W36	10.01.2011 at 9.57am	183 - 187
50	Email Rob Drury to Dan Spiller and Barry Dennien re answers to questions from teleconference	10.01.2011 at 10.02am	188 - 189
51	Email Peter Borrows to Barry Dennien re answers to questions from teleconference	10.01.2011 at 10.02am	190 – 191
52	Email Rob Drury to Dan Spiller and Peter Burrows re Technical Situation Report W36 and attached amended Technical Situation Report W36	10.01.2011 at 10.05am	192 – 197

No.	Document	Date	Page no.
53	Email Barry Dennien to Dan Spiller re answers to questions from teleconference	10.01.2011 at 10.07am	198 - 199
54	Email Dan Spiller to Colin Jensen re Technical Situation Report and attached Technical Situation Report W37	10.01.2011 at 10.09am	200 - 205
55	Email Lee Hutchison to Dan Spiller, Barry Dennien, Scott Denner and Michael Lyons re 0830H and attached teleconference notes	10.01.2011 at 10.21am	206 - 208
56	Email Gina O'Driscoll to Carl Wulff, Colin Jensen and Bob Bain re Wivenhoe Dam release strategy and attached Technical Situation Report W37	10.01.2011 at 10.23am	209 - 214
57	Email Barry Dennien to Scott Denner, Dan Spiller and Michael Lyons re actions from Minister's meeting	10.01.2011 at 11.32am	215
58	Transcript of meeting (teleconference)	10.01.2011 at 12.30pm	216 - 232
59	Email Paul Bird to various re release update	10.01.2011 at 1.55pm	233 - 234
60	Technical situation report W37	10.01.2011 at 3.00pm	235 - 237
61	Email Jade Simmons to Barry Dennien, Dan Spiller, Scott Denner, Michael Lyons and SEQWGM communication staff re FOC situation report at 12:00 on Monday 10 January 2011	10.01.2011 at 3.11pm	238 - 240
62	Email Rob Drury to Dan Spiller, Paul Bird, Stan Stevenson, Peter Burrows and Peter Allen re Technical Report W37 and attached Technical Situation Report W37	10.01.2011 at 3.16pm	241 - 245
63	Email Michael Lyons to Barry Dennien re Wivenhoe now at 153.9%	10.01.2011 at 3.21pm	246
64	Email Dan Spiller to Barry Dennien, Michael Lyons and SEQ WGM Media re technical situation report W37 and attachments	10.01.2011 at 3.29pm	247 - 259
65	Email Dan Spiller to Barry Dennien re technical situation report W37 and attached technical situation report W37	10.01.2011 at 4.09pm	260 - 263
66	Email Dan Spiller to Gregory Matthies and Michelle Sounderson re contact details for BCC re water effects and attached Technical Situation Report W37	10.01.2011 at 5.48pm	264 – 266
67	Email Ken Smith to Barry Dennien re BCC inundation map at 4000 cumecs and attachments	10.01.2011 at 6.12pm	267 - 269
68	Email Ken Smith to Barry Dennien re list of suburbs impacted by inundation from a 4000 cumec river flow	10.01.2011 at 6.24pm	270 - 271
69	Email Dan Spiller to Debbie Best re impact of Lockyer flows and attachments	11.01.2011 at 6.29am	272 – 279
70	Email Barry Dennien to Dan Spiller re levels	11.01.2011 at 8.33am	280 – 281
71	Email John Adcock re Water Grid Update – Dam releases – 11 January 2011	11.01.2011 at 8.39am	282 – 284

No.	Document	Date	Page no.
72	Email Colin Jensen to Barry Dennien, Dan Spiller and Ken Smith re BCC inundation maps for 5000 m3/s and attachments	11.01.2011 at 9.27am	285 – 289
73	Email Dan Spiller to various re Wivenhoe Dam release update and attached technical situation report W39	11.01.2011 at 1.18pm	290 - 293
74	Email Stan Stevenson to SEQWGM Emergency re technical situation report W40 and attached technical situation report W40	11.01.2011 at 3.58pm	294 – 297
75	Email Dan Spiller to Barry Dennien re technical situation report W40 and attached technical situation report W40	11.01.2011 at 4.00pm	298 - 303
76	Email Bob Riley to Dan Spiller and Barry Dennien re Wivenhoe Dam release	11.01.2011 at 4.19pm	304
77	Technical Situation Report W41	11.01.2011 at 6.00pm	305 - 307
78	Email Paul Bird to various re release update	11.01.2011 at 6.19pm	308
79	Email Rob Drury to Dan Spiller, Paul Bird, Stan Stevenson, Peter Borrows and Peter Allen re technical report and attached technical situation report W41	11.01.2011 at 6.28pm	309 - 316
80	Email Petula Martinz to various re updated Technical Situation Report and attached Technical Situation Report W41	11.01.2011 at 6.44pm	317 – 320
81	Technical Situation Report W42	11.01.2011 at 7.00pm	321 - 323
82	Email Rob Drury to Dan Spiller, Paul Bird, Stan Stevenson, Peter Borrows and Peter Allen re technical report and attached technical situation report W42	11.01.2011 at 7.29pm	324 - 327
83	Technical Situation Report W43	11.01.2011 at 8.00pm	328 – 330
84	Technical Situation Report W44	11.01.2011 at 8.00pm	331 - 333
85	Email Rob Drury to Dan Spiller, Paul Bird, Stan Stevenson, Peter Borrows and Peter Allen re technical report and attached technical situation report W43	11.01.2011 at 8.20pm	334 - 337
86	Email Dan Spiller to Barry Dennien re technical report and attachments	11.01.2011 at 8.25pm	338 -344
87	Email Barry Dennien to Dan Spiller re technical report	11.01.2011 at 8.31pm	345
88	Email Paul Bird to various re release update	11.01.2011 at 8.33pm	346
89	Email Rob Drury to Dan Spiller, Paul Bird, Stan Stevenson, Peter Borrows and Peter Allen re technical report and attached technical situation report W44	11.01.2011 at 9.16pm	347 – 350
90	Email Rob Drury to Dan Spiller re technical report and attached technical situation report W44	11.01.2011 at 9.51pm	351 – 357

No.	Document	Date	Page no.
91	Technical Situation Report W45	11.01.2011 at 10.00pm	358 – 360
92	Email Rob Drury to Dan Spiller, Paul Bird, Stan Stevenson, Peter Borrows and Peter Allen re technical report and attached technical situation report W45	11.01.2011 at 10.07pm	361 – 364
93	Email Dan Spiller to various re Wivenhoe Dam update and attached technical situation report W44	11.01.2011 at 10.19pm	365 – 368
94	Email Paul Bird to various re release update	11.01.2011 at 10.21pm	369
95	Email Dan Spiller to John Bradley re Wivenhoe Dam update	11.01.2011 at 10.48pm	370 – 371
96	Technical Situation Report W46	11.01.2011 at 11.00pm	372 – 374
97	Email Rob Drury to Dan Spiller, Paul Bird, Stan Stevenson, Peter Borrows and Peter Allen re technical report and attached technical situation report W46	11.01.2011 at 11.21pm	375 – 378
98	Email Dan Spiller to various re updated Wivenhoe Dam releases and attached technical situation report W46	11.01.2011 at 11.43pm	379 – 383
99	Email Dan Spiller to Colin Jensen re dam release update	11.01.2011 at 11.49pm	384
100	Email Barry Dennien to Peter Baddiley re Tech Report and attached Technical Situation Report W37	10.01.2011 at 4.11pm	385 – 387
101	Email Dan Spiller to John Bradley re Wivenhoe Dam update	11.01.2011 at 10.48pm	388 – 392
102	Email Rob Drury to Dan Spiller, Paul Bird, Stan Stevenson, Peter Borrows and Peter Allen re technical report and attached technical situation report W46	11.01.2011 at 11.21pm	393 – 396
103	Email Dan Spiller to various re updated Wivenhoe Dam releases and attached technical situation report W48	11.01.2011 at 11.43pm	397 – 401
104	Email Dan Spiller to Colin Jensen re dam release update	11.01.2011 at 11.49pm	402
105	Email Barry Dennien to Peter Baddiley re Tech Report and attached Technical Situation Report W37	10.01.2011 at 4.11pm	403 – 406
106	Email Rob Drury to Barry Dennien and Dan Spiller re FLDWARN for lower Brisbane and Bremer Rs	10.01.2011 at 4.24pm	407 – 410
107	Email Peter Baddiley to Barry Dennien re Tech Report and attached Technical Situation Report W37 (with BOM additions)	10.01.2011 at 4.33pm	411 – 415
108	Email Barry Dennien to various re FLDWARN for Lower Brisbane and Bremer Rs	10.01.2011 at 4.37pm	416 – 418
109	Email Barry Dennien to Darren Madgwick, Kerry Dunn and Peter Martin and attached Technical Situation Report W37	10.01.2011 at 6.45pm	419 - 425
110	Email Paul Bird to various re release update	10.01.2011 at 7.31pm	426 – 427

No.	Document	Date	Page no.
111	Email Rob Drury to Dan Spiller re impact of Lockyer flows	11.01.2011 at 6.18am	428 - 431
112	Email Dan Spiller to Debbie Best re impact of Lockyer flows and attachments	11.01.2011 at 6.29am	432 – 443
113	Email Rob Drury to Dan Spiller, Paul Bird, Stan Stevenson, Peter Burrows and Peter Allen re Technical Report and attached Technical Situation Report W38	11.01.2011 at 6.36am	444 – 447
114	Technical situation report W38	11.01.2011 at 6.30am	448 – 451
115	Email Paul Bird to various re release update	11.01.2011 at 6.47am	452 – 453
116	Email Barry Dennien to Darren Madgwick, Kerry Dunn and Peter Martin re Wivenhoe releases – Monday PM	11.01.2011 at 6.57am	454 - 457
117	Email Dan Spiller to various re water grid dam release strategy and attached technical situation report W38	11.01.2011 at 7.17am	458 - 465
118	Email Paul Bird to various re release update	11.01.2011 at 6.47am	466 - 467
119	Email Barry Dennien to Darren Madgwick, Kerry Dunn and Peter Martin re Wivenhoe releases – Monday PM	11.01.2011 at 6.57am	468 - 471
120	Email Dan Spiller to various re water grid dam release strategy and attached technical situation report W38	11.01.2011 at 7.17am	472 – 479
121	Email Elaina Smouha to Tim Watts re flood mitigation manual review and attachments	13.01.2011 at 4.45pm	480 - 488
VOLUME 2			
122	Email Rob Drury to Dan Spiller re technical report	11.01.2011 at 7.58am	489 – 492
123	Email Barry Dennien to Dan Spiller re levels	11.01.2011 at 8.32am	493 – 494
124	Email Barry Dennien to Dan Spiller re levels	11.01.2011 at 8.33am	495 – 497
125	Email Tim Watts to Dan Spiller, Debbie Best, Lance McCallum, Geoff Stead, Peter Borrows and Barry Dennien re water grid dam release strategy	11.01.2011 at 8.52am	498 – 500
126	Email Dan Spiller to Barry Dennien re levels	11.01.2011 at 9.06am	501 – 503
127	Email Barry Dennien to Dan Spiller and Michael Lyons re levels	11.01.2011 at 9.13am	504 – 507
128	Technical situation report W39	11.01.2011 at 12.00pm	508 – 510
129	Email Stan Stevenson to Dan Spiller and SEQWGM Emergency re technical situation report W39 and attached technical situation report W39	11.01.2011 at 12.46pm	511 – 514
130	Email Paul Bird to various re release update	11.01.2011 at	515 – 519

No.	Document	Date	Page no.
		1.02pm	
131	Email Dan Spiller to various re dam release update and attached technical situation report W47	12.01.2011 at 5.37am	520 – 524
132	Email Paul Bird to various re release update	12.01.2011 at 6.05am	525
133	Email Barry Dennien to Dan Spiller and Colin Jensen re dam release update	12.01.2011 at 6.15am	526 – 527
134	Email Rob Drury to Dan Spiller re dam release update	12.01.2011 at 7.58am	528 – 532
135	Email Dan Spiller to Barry Dennien re dam release update	12.01.2011 at 7.59am	533 – 535
136	Technical Situation Report W48	12.01.2011 at 8.00am	536 – 538
137	Email Rob Drury to Dan Spiller, Paul Bird, Stan Stevenson, Peter Borrows and Peter Allen re technical report W48 and attached technical situation report W48	12.01.2011 at 8.21am	539 – 542
138	Email Paul Bird to various re release update	12.01.2011 at 8.26am	543 – 544
139	Email Dan Spiller to various re Dam release update and attached Technical Situation Report W48	12.01.2011 at 9.00am	545 – 548
140	Email Dan Spiller to Colin Jensen re dam release update and attached technical situation report W48	12.01.2011 at 9.01am	549 – 552
141	Email Barry Dennien to Dan Spiller and Peter Borrows re Wivenhoe Dam flood operations and attached SEQ WGM Prelim Rep 12012011	12.01.2011 at 9.24am	553 – 555
142	Email Barry Dennien to Peter Borrows re Wivenhoe Dam flood operation	12.01.2011 at 9.39am	556 – 558
143	Technical Situation Report W49	12.01.2011 at 11.00am	559 – 561
144	Email Rob Drury to Dan Spiller, Paul Bird, Stan Stevenson, Peter Borrows and Peter Allen re technical report W49 and attached technical situation report W49	12.01.2011 at 11.24am	562 – 565
145	Technical Situation Report W50	12.01.2011 at 3.00pm	566 – 568
146	Email Robert Drury to Dan Spiller and attached technical situation report W50	12.01.2011 at 3.36pm	569 – 572
147	Email Dan Spiller to various re dam release update and attached technical situation report W50	12.01.2011 at 3.52pm	573 – 576
148	Technical Situation Report W51	12.01.2011 at 6.00pm	577 – 579
149	Email Water Grid Emergency Manager to Dan Spiller re technical report and attached technical situation report W51	12.01.2011 at 7.12pm	580 – 583
150	Email Dan Spiller to various re dam release update and	12.01.2011 at	584 - 587

No.	Document	Date	Page no.
	attached technical situation report W51	8.34pm	
Annexure C			
Topic 2 – How, if at all, that understanding changed since 12 January 2011 and the reason for the change in understanding			
151	n/a		
Topic 3 – His understanding of any differences between the account of the choice and timing of the dam operations strategies employed to manage the flood event in the SEQ Water Grid Manager and Seqwater Ministerial Briefing Note to the Minister for Natural Resources, Mines and Energy and Minister for Trade that appears as attachment SR-12 to Exhibit 11 before the Queensland Floods Commission of Inquiry (January Report) and the Seqwater report titled 'January 2011 Flood Event – Report on the Operation of Somerset Dam and Wivenhoe Dam' and dated 2 March 2011 that appears as Exhibit 24 before the Queensland Floods Commission of Inquiry (March Report)			
152	n/a		
Topic 4 – When he first became aware of the differences, if any, referred to in paragraph 3 above			
153	n/a		
Annexure D			
Topic 5 – All discussions, correspondence, meetings or briefings he participated in, in relation to the January Report and the March Report, and in respect of these identifying any that related to the differences between the reports referred to in Topic 3 above			
154	Email Dan Spiller to John Bradley re the discussion paper on dam full supply level investigations Seqwater gated storages and attachment	15.01.2011 at 8.32am	588 – 595
155	Email Lance McCallum to Dan Spiller and John Bradley re urgent - Cabinet-in-Confidence	15.01.2011 at 10.31am	596
156	Email John Bradley to Lance McCallum and Dan Spiller re urgent - Cabinet-in-Confidence	15.01.2011 at 10.34am	597
157	Email Barry Dennien to Dan Spiller re urgent - Cabinet-in-Confidence	15.01.2011 at 10.41am	598 – 599
158	Email Elaina Smouha to John Bradley re Cabinet-in-Confidence – discussions points and attachment	15.01.2011 at 1.42pm	600 – 601
159	Email Duty Engineer to Peter Borrows, Rob Drury and Terry Malone re March 2010 report index and attachment	15.01.2011 at 2.08pm	602 – 606
160	Email Dan Spiller to Water Grid Media re March 2010 report index and attachment	15.01.2011 at 2.14pm	607 – 611
161	Email Dan Spiller to Duty Engineer re Cabinet-in-Confidence – discussion points and attachment	15.01.2011 at 2.21pm	612 – 613
162	Email Elaina Smouha to Barry Dennien, Dan Spiller and Michael Lyons re Ministerial Brief – outline and attachment	15.01.2011 at 4.37pm	614 – 616
163	Email Elaina Smouha to Mike Foster, Peter Allen, Bob Reilly, Peter Borrows, Rob Drury re cabinet in confidence – ministerial brief outline and attachment	15.01.2011 at 5.03pm	617 – 619

No.	Document	Date	Page no.
164	Email Peter Allen to various re cabinet in confidence – ministerial brief outline – regulatory context and attachment	16.01.2011 at 11.58am	620 - 622
165	Email Barry Dennien to Dan Spiller re Cabinet-in-Confidence – Ministerial Brief – outline – regulatory context and attachment	16.01.2011 at 12.25pm	623 – 626
166	Email John Bradley to Barry Dennien and Dan Spiller re should Wivenhoe have been bigger?	16.01.2011 at 12.55pm	627 – 628
167	Email Lance McCallum to John Bradley, Dan Spiller, Barry Dennien and Dan Hunt re special Cabinet meeting – Monday, 17 January 2010 – pre-brief	16.01.2011 at 2.45pm	629
168	Email Peter Borrows to Bob Reilly, Rob Drury, Duty SEQ, John Bradley, Barry Dennien and Dan Spiller re Cabinet-in-Confidence – Ministerial Brief – outline and attachment	16.01.2011 at 3.59pm	630 – 633
169	Email Elaina Smouha to Dan Spiller and Barry Dennien re Cabinet-in-Confidence – regulatory context and attachment	16.01.2011 at 4.07pm	63 – 636
170	Email Peter Borrows to Bob Reilly, Rob Drury, Duty SEQ, John Bradley, Barry Dennien and Dan Spiller re Cabinet-in-Confidence – Ministerial Brief – outline and attachments	16.01.2011 at 4.28pm	637 – 674
171	Email Kathryn Reilly to Bob Reilly, Peter Borrows, John Bradley, Barry Dennien, Dan Spiller, Peter Allen re cabinet in confidence – ministerial brief outline	16.01.2011 at 6.00pm	675 – 679
172	Email Elaina Smouha to Peter Borrows re Cabinet-in-Confidence – Ministerial Brief – outline and attachments	16.01.2011 at 6.05pm	680 - 719
173	Email Barry Dennien to Dan Spiller re river height calculation	16.01.2011 at 7.36pm	720 – 721
174	Email John Bradley to Lance McCallum and Dan Spiller re urgent - Cabinet-in-Confidence	16.01.2011 at 7.41pm	722 – 723
175	Email Dan Spiller to John Bradley re talking points – Wivenhoe Dam releases and attachment	16.01.2011 at 9.26pm	724 – 765
176	Email Peter Borrows to Barry Dennien re cabinet in confidence – ministerial brief outline and attachments	16.01.2011 at 9.33pm	766 – 840
177	Email John Bradley to Dan Spiller re talking points – Wivenhoe Dam releases	16.01.2011 at 9.57pm	841 – 842
178	Email Elaina Smouha to John Bradley re Cabinet-in-Confidence – Ministerial Brief – flood event and Wivenhoe Dam and attachments	16.01.2011 at 10.14pm	843 – 872
179	Email John Bradley to Elaina Smouha re Cabinet-in-Confidence – Ministerial Brief – flood event and Wivenhoe Dam	16.01.2011 at 10.35pm	873 – 874
180	Email Barry Dennien to John Bradley re public inquiry discussion points –Brief – Cabinet-in-Confidence and attachment	25.01.2011 at 4.32pm	875 – 876
181	Email Dan Spiller to John Bradley, Debbie Best, Bob Reilly re summary of report and attached January 2011 Flood Event – Summary of Dam Operations January 2011	07.03.2011 at 6.19pm	877 – 962
182	Email Bob Reilly to Dan Spiller, Jim Pruss, Mike Foster and	08.03.2011 at	963 - 964

No.	Document	Date	Page no.
	Peter Allen re Seqwater report Wivenhoe and Somerset Dams: DRERM media release with attachment	7.39am	
Topic 6 – Any decision made, or action taken, by him in relation to the differences, if any, referred to in Topic 3 above			
183	n/a		

‘Annexure A’

Chronology of Dan Spiller communications 6 January 2011 to 11 January 2011

Thursday, 6 January

- 1 At 12.13pm, I received TSR number 28 from Mr Robert Drury, Dam Operations Manager, Water Delivery, Seqwater. The TSR stated that releases would commence from Wivenhoe Dam. The TSR also stated that the aim was to manage releases so as to not inundate Burtons Bridge (combined flows 450 m³/s).
- 2 At 1.17pm, I distributed TSR number 28 to key stakeholders, as specified in the draft Communications Protocol (see page 1). Those recipients included Minister Robertson, Ms Best (the then Acting Director General, DERM) and Assistant Commissioner Martin, of Queensland Police Service (**Key Stakeholders**). I noted that the release rate would be about 25,000 ML/day, compared to peak of about 115,000 ML/day the previous week. I also noted that the strategy would be reviewed and may change, depending upon rainfall.
- 3 In relation to the water supply emergency, an Alert level incident was declared as a result of planned releases from Wivenhoe Dam.

Friday, 7 January

- 4 At 6.41am, I received TSR number 29 from Mr Drury (see page 9). The TSR stated that releases would commence late Friday/early Saturday and may be as high as 1,200 m³/s. It also stated that, *‘...at this stage, there are not expected to be any adverse impacts upon Fernvale Bridge or Mt Crosby Weir Bridge’*.
- 5 At 8.09am, Mr Paul Bird, Senior Communications Advisor of Seqwater, forwarded a document from the Flood Operations Centre (**FOC**) titled ‘Operating strategy over the next week’ (see page 19). This formed the basis for comments that I made subsequently, including in emails to Mr Ken Smith, the then Director General of the Department of Premier and Cabinet.
- 6 At 8.27am, I distributed TSR number 29 to Key Stakeholders (see page 21).

- 7 There were a number of water supply emergencies current at this time, including Mt Crosby water treatment plant (WTP) ceasing production due to high raw water turbidity. I chaired separate teleconferences on those topics and provided advice to the Key Stakeholders about them.
- 8 At 4.05pm, I received TSR number 30 from Mr Drury (see page 35). The TSR stated that releases would be slowly increased to about 1,200 m³/sec, and that the Bureau of Meteorology (BoM) and Seqwater concurred that they would only add about 50mm to the expected water levels on the City Reach on the high tide.
- 9 At 4.24am, I distributed TSR number 30 to the Key Stakeholders (see page 41).

Saturday, 8 January

- 10 At 7.46am, I received TSR number 31 from Mr Drury (see page 50). It included the following extract:
- At 0600 Saturday, Wivenhoe Dam was 68.45 m AHD and rising steadily with all five gates open and releasing about 890 m³/s. River levels upstream of Wivenhoe Dam were rising again, generating further inflow to the dam. It is intended to ramp up the release from Wivenhoe to 1,200m³/s by midday Saturday 08/01/2011. Further assessments will be undertaken to determine increases above this level. However, given the high likelihood of significant inflows in the next week, this may be increased.
- 11 At 9.00am, I distributed TSR number 31 to the Key Stakeholders (see page 58). My covering email included an update on water treatment status.
- 12 At 9.16am, Ms Best forwarded an email to Mr Smith, advising that there was '*...a bit of action in SE that you need to be aware of*'. Mr Smith asked for advice on the '*likelihood of localised flooding*'.
- 13 At 9.48am, I emailed Ms Best that advice (see page 65). As well as responding to the query, my email highlighted that the key risk was if forecast high rainfall occurred, again based on information contained in the TSR.

Sunday, 9 January

- 14 At 7.50am, I received TSR number 32 from Mr Drury (see page 76). That TSR included the following statements:

The dam level is currently falling slowly, with the current level being 68.58m AHD. River levels upstream of the dam are receding, however further inflows will result from any additional rainfall. The current gate operation strategy will maintain flows of around 1,600m³/s in the mid-Brisbane River. The current release rate from Wivenhoe Dam is 116,000ML/day. Since the commencement of the event on 02/01/2011 approximately 150,000ML has been released from the dam, with a total of at least 450,000ML to be released based on the currently recorded rainfall. The total release for the event is likely to increase over the next few days based on the current rainfall forecasts. At this stage, releases will continue until at least Wednesday.

...

The current Wivenhoe Dam release combined with Lockyer flows and local runoff will mean that all low level crossings downstream of Wivenhoe (Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing) will be adversely impacted until at least Wednesday 12 January. At this stage Fernvale and Mt Crosby Weir Bridge are not expected to be affected, but this may be revised if the predicted rainfall totals eventuate and higher releases from Wivenhoe Dam are considered necessary.

- 15 At 8.14am, I distributed TSR number 32 to the Key Stakeholders (see page 86). My covering email included an update on water treatment status.
- 16 At 4.19pm, I emailed Mr Drury seeking advice as to whether there had been any change to the strategy. He advised that the engineers were meeting that afternoon. At 6.13pm, he emailed me stating that an update would be provided within an hour (see page 95).
- 17 At around 7.00pm, I believe that Mr Drury advised that there was a strong possibility that higher releases from Wivenhoe Dam would be necessary and that this might impact upon Fernvale and Mt Crosby Weir Bridges. I subsequently advised key stakeholders, including Ms Best. I understand this information may have been contained in TSR number 33, however I have no record of receiving or distributing it.
- 18 At 8.56pm, I asked Mr Drury for an update, prior to scheduling a teleconference (see page 100).
- 19 At around 9.00pm, I rang Assistant Commissioner Martin to advise him that the Mt Crosby Weir Bridge and Fernvale Bridge would need to be closed.
- 20 At 9.18pm, I received TSR number 34 from Mr Drury (see page 104). The TSR stated that the strategy was to continue releases until noon the next day when they would be increased to impact Mt Crosby and Fernvale Bridges.

- 21 The TSR also stated that the objective for dam operations would be to minimise the impact of urban flooding in areas downstream of the dam and, at that stage, releases would be kept below 3,500 m³/sec and the combined flows in the lower Brisbane River would be limited to 4,000 m³/sec.
- 22 At 9.30pm, I initiated and chaired a teleconference with Seqwater and Ms Best to discuss the impacts of the increased releases. Mr Drury provided an overview of the current situation and planned releases. He explained that it was possible the increased releases could be delayed until midday the following day, providing time for people to be advised. We discussed communications options and strategies, and had draft material prepared for use by 7.00am the next morning. Water supply mitigations were also agreed, such as increasing the amount of water in storage.
- 23 Over the next hour and a half, I had telephone conversations with a range of stakeholders, including Mr Colin Jensen, CEO Brisbane City Council, and Mr Geoff Stead, media adviser to Minister Robertson.
- 24 At around 10.45pm, Mr Brett Myatt, Manager Water Treatment Operations South, Seqwater, rang to advise that the Mt Crosby Weir Bridge would be closed as a safety precaution due to rapidly rising river levels.
- 25 At 11.07pm, I distributed TSR number 34 to the Key Stakeholders (see page 116). My covering email outlined actions to date, including notifying police and councils and increasing treated water storage.
- 26 At 11.23pm, I provided similar advice to Mr Jensen (see page 121).

Monday, 10 January

- 27 At 12.04am, I emailed Mr Dennien, Ms Best and various others advising that the weir bridge was closed. (see page 123)
- 28 At 12.15am, Mr Jensen advised me via email that the weir bridge had closed 10 minutes previously (see page 124)
- 29 At 1.28am, Mr Drury also advised that the weir bridge had closed and that releases from Wivenhoe Dam were now being increased (see page 126).

- 30 At 5.31am, I emailed the Key Stakeholders to advise that the weir bridge had been closed overnight (see page 129).
- 31 At 6.14am, Mr Drury forwarded to me a FOC report from 1.00am that morning. The report included a statement that the objective for dam operations would be to minimise the impact of urban flooding in areas downstream of the dam and, that at this stage, releases would be kept below 3,500 m³/sec and the combined flows in the lower Brisbane River would be limited to 4,000 m³/sec, if possible.
- 32 From 6.00am, I had numerous telephone conversations with Ms Best, Mr Jensen and others.
- 33 At 7.53am, I received TSR number 35 (see page 153). On my initial reading of it, some of the numbers appeared to be superseded. Therefore I rang Mr Drury and asked for confirmation as to some of the numbers.
- 34 At 8.06am, I received TSR number 36 from Mr Drury (see page 161) as a replacement for TSR number 35. Consistent with the FOC report, the TSR stated that the levels of Wivenhoe and Somerset Dams were again rising, due to heavy rain. The TSR explained that the objective for dam operations would be to minimise the impact of urban flooding in areas downstream of the dam and, at that stage, releases would be kept below 3,500 m³/sec and the combined flows in the lower Brisbane River would be limited to 4,000 m³/sec if possible.
- 35 The TSR also stated that the current release rate from Wivenhoe Dam was 1,753 m³/sec (150,000 ML/day) and that this was expected to increase to at least 2,600 m³/sec in the next 12 to 24 hours.
- 36 At 8.13am, I asked Mr Drury via email '*are you now operating under release strategy W2 or W3?*'. (see page 167) I did so because I was aware that strategy W1 was no longer in use and that the release rates under higher level strategies would be significantly higher. While I did not generally specify the strategy in my covering emails to the Key Stakeholders, I considered that the step change in release rates warranted some further explanation.
- 37 At 8.23am, Mr Drury replied with '*W2*' (see page 169).

38 At 8.30am, a teleconference was held with the CEOs and other key staff from Seqwater and the Water Grid Manager. The teleconference discussed matters related to dam releases and water supply. In relation to dam releases, the meeting notes stated that:

- 3.5 and 4
 - Seqwater - Manual - 4,000m³/s but aiming for 3,500m³/s - 4,000m³/s in the river
 - Will adjust timings based on what is happening downstream
 - Release at 3,500m³/s - currently at 2,000m³/s
 - 2,500m³/s in next 12-24hrs
 - Objective is to minimise urban impacts
 - Barry - @ 3,500m³/s comfortable through Moggill. Point between W2 and W3 is critical. Need to engage BCC at highest level when decision is made
 - Dan - above 3.5 - flooding attributable to dam releases - Comms need to be clear
 - Peter Burrows - 8,800-9,000m³/s inflows
 - Barry - Team talks to BCC and Bom (planned above 3.5), check concerns (not input into model), document any concerns
 - Peter - how much notice can we give that we are moving from 3,500m³/s to 4,000m³/s at Moggill - **Key question.**

Scenarios -

- W2
- BCC second scenario - river at 3,500m³/s with local rainfall causing localised/flash flooding.
- Barry - inflows in calcs?
- Dan - could it go over 4,000m³/s?

39 In particular, it was agreed that Seqwater would subsequently provide confirmation of the release strategy and advice about whether releases may need to be increased to about 4,000 m³/sec and advice about potential higher flow scenarios and the amount of timing that could be provided prior to increasing flows from 3,500 m³/sec to 4,000 m³/sec at Moggill.

40 In relation to the water supply emergency, I was appointed Emergency Manager for related water supply emergencies. Risks and mitigations were discussed.

41 At 9.46am, I distributed TSR number 36 to Key Stakeholders (see page 171). My covering email included a summary, based on advice from Seqwater by email and in the teleconference.

42 At 9.57am, I sent an updated version of TSR number 36 to Mr Borrows and Mr Drury seeking their endorsement (see page 183). The updated version included changes to reflect the strategy outlined by Seqwater at the 8.30am teleconference, prior to my sending it to Council CEOs. Mr Drury replied at 10.05am, accepting those changes and suggesting some others (see page 192).

43 At 10.02am, Mr Drury replied to the key questions asked at the 8.30am teleconference (see page 188). The reply was that:

- The current operational strategy is to aim for a flow of no greater than 3,500cumecs in the lower Brisbane River. Accordingly, the current outflow from Wivenhoe Dam will be held at its current level of 2000 cumecs for the next 12 to 24 hours to allow for potential high flows from the Lockyer, Bremer and local area catchments to pass downstream. However this strategy may need to be revised at short notice if further significant rainfall occurs.
- It would require in the order of 50mm of rain across the Brisbane River Basin (this includes the Brisbane, Stanley, Lockyer and Bremer catchments) to go beyond the current operational strategy, however this depends on the spatial distribution, intensity and duration of the rainfall. This amount of rain is possible under current BOM forecasts.
- If there is a need to go beyond 3,500cumecs in the lower Brisbane around 24 hours notice should be able to be provided to BOM and BCC.

44 At 10.09am, I emailed the updated TSR number 36 to Mr Jensen (see page 200). My covering email explained that:

Seqwater has previously had verbal conversations with BCC staff regarding impacts. However, given the significance of this event, and consistent with the draft protocol, we are seeking formal BCC input to this version. This advice would relate to the impact of releases, based on the type of scenario analysis that you described this morning.

Our preference would be to finalise the report, including your input, before or at the 12.30 teleconference with Council CEOs and the BoM. This timing means that it can underpin all media messaging this afternoon.

45 Mr Dennien's executive assistant then forwarded my email to the CEOs of Ipswich City Council and Somerset Regional Council (see page 209).

46 At 10.30am, Mr Borrows and Mr Dennien briefed Minister Robertson and Ms Best on the situation. I did not participate in that briefing, but received an email from Mr Dennien following the meeting with the actions listed, including alternate release scenarios that were to be modelled by Seqwater (see page 215).

47 At 11.00am, I chaired a teleconference with the six Grid service providers in relation to the water supply emergency. Mr Stevenson (the Acting Executive General

Manager of Water Delivery, Seqwater) and I provided a brief update on releases from Wivenhoe Dam. By that time, treatment at some isolated towns had been interrupted.

48 At 12.30pm, a teleconference was held with Minister Robertson, Mr Smith, Mr Borrows, Mr Dennien, Mr Jensen, representatives from the BoM, Ipswich City Council (**ICC**) and Somerset Regional Council (**SRC**), and others..

49 At the teleconference, Mr Borrows advised that the strategy would need to change to increase releases from Wivenhoe Dam. He also advised that this would be provided within an hour. He flagged that there was a risk of the dam reaching a level from which time dam integrity would become the primary concern.

50 At that teleconference, a process was agreed whereby:

- (a) Seqwater would update its release strategy by 2.30pm;
- (b) BoM would then update its forecasts of river levels based on that release strategy, in consultation with the FOC and BCC, providing the basis for the BoM flood warning to be issued at about 3.30pm;
- (c) BCC would separately provide flood inundation maps and advice for the relevant flow rates; and
- (d) ICC would model impacts of 11m AHD plus, and continue to work with officers from SRC.

51 That teleconference was recorded (I understand for the purpose of preparing minutes) by Mr Scott Denner, Director, Risk and Technology of the Water Grid Manager. For the purposes of preparing this statement, the Water Grid Manager lawyers compiled a transcript of that teleconference (see page 216). Having read that transcript, it appears to me to accurately reflect what was discussed at the teleconference. I am not aware of formal minutes having been produced, but am aware that the recording still exists electronically.

52 At 3.00pm, Mr Dennien attended a meeting with the Premier and staff from the Premier's office in order to provide an update as to the water releases from Wivenhoe Dam and the communications being managed by the Water Grid Manager at that

stage, as noted in the Water Grid Manager's submission to the Commission of Inquiry dated 4 April 2011.

53 Also at 3.00pm, I chaired a teleconference with Seqwater and Queensland Urban Utilities in relation to the water supply emergency. The meeting addressed supply status of stand-alone towns, several of which were isolated and offline.

54 At 3.11pm, I received a copy of a 3pm FOC report via communications officers (see page 238). The report stated that:

The dam level is 72.41m AHD and rising quickly. The rainfall experienced over the last 2 to 3 hours will result in significant further inflows into the dam and releases from the dam will need to be increased in accordance with Flood Mitigation procedures and to ensure that a fuse plug is not initiated. The initiation of a fuse plug will result in a rapid uncontrolled outflow from the dam of 2,000m³/s being added to the gate release outflow. Outflows into the Brisbane River from both Lockyer Creek and the Bremer River are also increasing.

Five radial gates are currently open at the dam releasing about 2,000m³/s into the Brisbane River and this will need to be increased steadily to an outflow of 2,800m³/s over the next 9 hours (commencing at 1500). At this stage, the dam will reach about 73.8m AHD during Tuesday morning.

The objective for dam operations is currently to minimise the impact of urban flooding in areas downstream of the dam and to keep river flows in the lower Brisbane River below 4,000m³/s if possible. This is significantly less than the current estimated combined pre-dam peak inflow of 12,000m³/s. If further rainfall occurs, dam releases may need to be increased further and this may result in river flows in the lower Brisbane River approaching or exceeding 5,000m³/s.

55 At 3.16pm, I received TSR number 37 from Mr Drury (see page 241). The TSR stated that dam levels were again rising, due to heavy rain. The TSR also contained the text from the FOC report that is quoted above.

56 I forwarded the TSR to Mr Dennien for action (see page 247), due to my then being in a teleconference. In accordance with the actions agreed at the teleconference, Mr Dennien then sought advice from BoM. Mr Baddiley of BoM replied with that advice at 4.33pm.

57 At 4.00pm, I chaired a teleconference with all Grid participants in relation to the water supply emergency. A general situation update was provided, with a range of water supply incidents discussed.

58 At 5.00pm, Mr Dennien attended a meeting of the State Disaster Management Group.

59 After that meeting, I understand that Mr Dennien attended a meeting with the Premier and Mr Smith. I understand that, at that meeting, there was a discussion regarding the prospect of an independent review being undertaken with respect to the operation of

Wivenhoe Dam. Following that discussion, Mr Dennien agreed that he would arrange an independent review.

60 Mr Brian Cooper was subsequently engaged to undertake the review, on the recommendation of Mr Borrows and Mr Allen, the Dam Safety Regulator, DERM. Mr Cooper's final report was provided on 13 January to Minister Robertson, copied to the Department of Premier and Cabinet and DERM. Mr Cooper's conclusions were that, in summary:

- (a) the TSRs complied with the requirements of the new communication protocol introduced in late 2010, but that some more consistency in the information presented could be achieved;
- (b) the strategies set out in the Flood Mitigation Manual had been followed, allowing for the discretion given to making variations in order to maximise flood mitigation effects; and
- (c) the actions taken and decisions made during the flood event appear to have been prudent and appropriate in the context of the knowledge available to those responsible for flood operations and the way events unfolded.

61 At 5.48pm, I forwarded the updated TSR number 37 to key police contacts (see page 264). I recall that I had a conversation with them about the coordinated advice that had been discussed at the 12.30pm teleconference and that Mr Dennien was then compiling.

62 I was aware that Mr Drury and the FOC were in communication with Mr Allen, including by copying him when TSRs were emailed to me.

63 By emails at 6.12pm and 6.24pm Mr Smith forwarded to Mr Dennien information from Mr Jensen about the consequences of river flows of 4,000 m³/sec (see pages 267 and 270), .

64 At 6.45pm, Mr Dennien distributed to the Key Stakeholders consolidated advice on dam releases, BoM forecasts of river heights and BCC forecasts of properties inundated (See page 419).

Tuesday, 11 January

65 At 6.18am, I emailed Mr Drury seeking advice about the impact of the Lockyer Valley flows. (see page 428)

66 At 6.17am, Mr Drury provided preliminary advice (see page 272). That advice included that:

Basically the FOC was going to try to slow our releases last night to give a small window for the Lockyer flood to go through however we again received and are still receiving heavy rain in the catchments.

...

The strategy is now to keep releases as is to not worsen the situation downstream as the Lockyer recorded levels higher than any on record. However we may still need to increase releases depending on what happens through the day.

67 At 6.19am, I emailed that advice to key contacts, including Assistant Commissioner Martin, Mr Dennien, Ms Best and a Ministerial adviser (see page 272).

68 At 6.36am, I received TSR number 38 from Mr Drury (see page 444). He also forwarded the 4.00am BoM flood warning. For the first time, the TSR highlighted the risk of total flows in the Brisbane River approaching or exceeding 5,000m³/sec. It included the following extracts:

Current objectives	<ul style="list-style-type: none">• Maintain releases to keep Wivenhoe below RL74 at which significant releases need to be made to ensure the dam security and minimise flood impacts downstream if possible
Strategy	<ul style="list-style-type: none">• Maintain current release of 2750cumecs as long as possible but it may need to be increased

...

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

The dam level is 73.51m AHD and rising at about 25 mm/hour. Releases from the dam have been held at a rate of 2,750 m³/s since 19:30 hours on Monday 10 January 2011. Outflows into the Brisbane River from both Lockyer Creek and the Bremer River are also increasing.

The BoM has provided further advice about the flash flooding experienced in the upper areas of Lockyer Creek. The rainfall responsible for this event was not observed at any rainfall stations but it is considered to be extreme. Flood levels in the Lockyer Creek catchment will exceed maximum recorded levels in some stations in the upper catchment. This flow will result in increases in Brisbane River levels below the junction of Lockyer Creek.

Five radial gates are currently open at the dam releasing about 2,750m³/s into the Brisbane River. At this stage, the dam will reach just over 74.0m AHD during Tuesday evening.

Above EL 74.0m AHD the objective for dam operations is to maintain the security of the dam and minimise downstream flood flows if possible.

If further rainfall occurs, dam releases may need to be increased further and this may result in river flows in the lower Brisbane River approaching or exceeding 5,000m³/s.

- 69 At 7.17am, I distributed TSR number 38 and the BoM flood warning to the Key Stakeholders . I summarised key points from the TSR. I also proposed to Ms Best and Mr Timothy Watts, advisor to Minister Robertson, that a briefing to the Minister would be appropriate.
- 70 At 7.30am, I chaired a teleconference with all Grid participants in relation to the water supply emergency. A general situation update was provided, with a range of water supply incidents discussed. Working groups were expanded and prioritised, due to the range of incidents then being addressed.
- 71 At 8.00am, Mr Dennien attended a meeting of the State Disaster Management Group. During the meeting, BoM representatives forecast that there would be flows of 6,000 m³/sec or greater at the Port Office Gauge and that river level would reach 4 metres. During the meeting, the Premier requested that Mr Jensen be advised immediately. At 8.39am, Mr Dennien emailed this information to me (see page 493).
- 72 I spoke to Mr Jensen around 9.00am, having previously left messages and sent an email. During that conversation, I informed him of the current forecasts. He advised me that BCC had compiled mapping for river flows of 5,000 m³/sec and was commencing work on mapping for flows of 6,000 m³/sec. At 9.27am, Mr Jensen provided the inundation maps for flows of 5,000 m³/sec (see page 285).

- 73 Around that time, I specifically sought advice from Seqwater about potential worst case scenarios for emergency planning purposes. This request is reflected in my email to Mr Dennien at 9.06am, which states that Seqwater was closing out this strategy and would then start work on worst case scenarios for the afternoon. I stated that we would then provide this to BoM to model river levels and then to BCC to model inundation impacts.
- 74 Around that time, I offered to arrange staff to assist Seqwater in the preparation of TSRs, working to its officers and from its offices. I made available one of my officers for that purpose. I also confirmed the availability of two experienced consultants and an officer from the Queensland Water Commission. I reiterated this offer of assistance following receipt of TSR number 39.
- 75 At 12.46pm, I received TSR number 39 from Mr Stevenson on behalf of Mr Drury, who was isolated on the road (see page 511). The TSR advised that the strategy was being reviewed every three hours. It also included the following extract:

Current objectives	<ul style="list-style-type: none">• Maintain releases to keep Wivenhoe below fuse plug initiation and releases need to be made to ensure the dam security and minimise flood impacts downstream if possible
Strategy	<ul style="list-style-type: none">• Maintain current release of 3970cumecs as long as possible but it may need to be increased• Close sluices at Somerset Dam to store more water however will affect upstream areas.• Current estimate of peak dam level is between EL74.5 and EL74.8 (assuming no further significant rainfall). However it is noted that rainfall is continuing across the catchment.• Further rainfall in the next 3 hours will require releases to be increased in accordance with Strategy W4, page 29 of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam (Flood Operations Manual)

- 76 At 1.18pm, I distributed TSR number 39 to the Key Stakeholders (see page 290). Prior to doing so we had reiterated to Seqwater the need for a worst case scenario for emergency management planning purposes. This is reflected in the statement in my covering email that further inflows would require further releases, and that Seqwater was considering worst case scenarios to provide to BoM and BCC to model impacts.

- 77 At 2.15pm, I chaired a teleconference with representatives from bulk water entities in relation to the water supply emergency. We were advised that Mt Crosby East Bank WTP had been isolated with about two and a half days supply of chemicals onsite, depending upon the rate of production.
- 78 At or about 3.00pm, Mr Dennien received a telephone call from Mr Borrows. During that call, Mr Borrows advised, for the first time, that releases of up to 10,000 m³/sec may be possible in light of developing weather conditions.
- 79 At approximately 3.12pm, immediately after that call concluded, Mr Dennien telephoned Mr Smith to relay this news. At approximately 3.24pm, he was placed on a telephone call to Mr Smith and the Premier at the Disaster Management Centre at Kedron when he passed on this information.
- 80 At 3.58pm, I received TSR number 40 from Mr Stevenson on behalf of Mr Drury (see page 294).

Current objectives	<ul style="list-style-type: none"> • Maintain releases to keep Wivenhoe below fuse plug initiation and releases need to be made to ensure the dam security and minimise flood impacts downstream if possible
Strategy	<ul style="list-style-type: none"> • Inflows into Wivenhoe in excess of 12000 cumecs. • Maintain current release 5700 cumecs as long as possible but due to the high level in the dam may change frequently due to inflows, this is being reviewed every 30 minutes and releases adjusted accordingly.

- 81 At 4.19pm, my executive assistant sent TSR number 40 to Key Stakeholders.
- 82 At 4.20pm, Mr Dennien and I received an email from Mr Bob Reilly, General Manager, Office of the Water Supply Regulator. The email stated that Mr Allen '*... had asked Seqwater to provide a concise summary of the flood release strategy. I can confirm though that they are taking into account estimated inflows over the next 24 hours and have a release strategy that addresses that scenario*'.
- 83 At 5.00pm, Mr Dennien attended a meeting of the State Disaster Management Group.
- 84 At 6.28pm, I received TSR number 41 from Mr Drury (see page 309). It included the following extracts:

Current objectives	<ul style="list-style-type: none"> • Maintain releases to keep Wivenhoe below fuse plug initiation and releases need to be made to ensure the dam security and minimise flood impacts downstream if possible
Strategy	<ul style="list-style-type: none"> • Peak inflows into Wivenhoe in excess of 12000 cumecs. • Increase releases to maintain fuse plug and dam integrity.

...

The current expectation is that the dam will reach a steady state (outflow equals inflow) within the next 3 hours without further significant rainfall. At this time, release from the dam will be about 8,000 m³/s.

If there is no further rainfall, it may be possible to then slowly reduce this release overnight.

85 At 6.45pm, my executive assistant distributed TSR number 41 to Key Stakeholders.

86 At 7.29pm, I received TSR number 42 from Mr Drury (see page 324). The description of objectives and strategy were unchanged. In addition, it included the following extract:

At 1900 Wivenhoe Dam was 74.97m AHD holding 2,227,000ML and 191.1% and rising slowly and releasing about 7,500m³/s.

Since the last update, there has only been an increase in release to 7,500cumecs. At this stage there is no planned increase in releases unless there are further inflows.

If there is no further rainfall, it may be possible to then slowly reduce this release overnight.

87 I did not distribute TSR number 41 to the Key Stakeholders as it was similar to the TSR that had been distributed less than an hour earlier, and because Mr Dennien was providing regular telephone updates to most of those stakeholders.

88 At 8.20pm, I received TSR number 43 from Mr Drury (see page 334). The description of objectives and strategy were unchanged. It also stated that:

At 2000 Wivenhoe Dam was 74.97m AHD holding 2,227,000ML and 191.1% and steady and releasing about 7,500m³/s.

The levels have stayed the same for an hour so there are no planned increases in releases.

As soon as the levels show they are dropping, releases will be reduced.

89 At 8.30pm, Mr Dennien requested that I not distribute TSR number 43 at that time. I understand that he did so because he was in conversation with Mr Borrowes and had more recent information.

90 At 9.16pm, I received TSR number 44 from Mr Drury. At 9.33pm, I requested that Mr Drury update the advice to specify release rates. At 9.51pm, Mr Drury supplied that updated version (see page 351). In that TSR, the current objective was changed to initiating the gradual reduction of releases from Wivenhoe Dam.

91 I did not distribute this TSR, due to the information having become dated while Mr Drury was updating it to specify release rates.

92 At 10.07pm, I received TSR number 45 from Mr Drury (see page 361).

93 At 10.19pm, I distributed TSR number 45 to the Key Stakeholders (see page 365).

94 At 10.44pm, I received the following email from Mr Bradley:

As an aside, I think we need to try to maintain the protocol on these through these most serious of events - I notice if/rep's lately have had no comment from bom/councils or just 'has been advised'.

Wouldn't bear much scrutiny in an ex post review, noting recipients (Min, DsG, etc)

Happy to take your and Barry's advice as to how this can be achieved.

95 At 11.43pm, I distributed TSR number 46 to the Key Stakeholders (see page 379).

96 At 11.49pm, I emailed Mr Jensen providing an update on dam operations.

Litsupport Brisbane

From: Dan Spiller
Sent: Thursday, 6 January 2011 1:17 PM
To: stephen.robertson [REDACTED]; lance.mccallum [REDACTED];
Tim.Watts [REDACTED]; Geoff.Stead [REDACTED];
Lauren.Sims [REDACTED]; Best Debbie; 'Martin.PeterJ [REDACTED];
'Dunn.KerryG [REDACTED]
Cc: Rob Drury; Mike Foster; SEQWGM Media; Reilly Bob
Subject: Recommencement of Wivenhoe Dam gate releases
Attachments: Technical Situation Report W28.docx

All,

We expect to begin gate release from Wivenhoe Dam this evening, to release water accumulated in the dams over the last 24 hours. The technical situation report is attached.

The release rate will be about 25,000 ML/day, compared to the peak last week of about 115,000 ML/day. We will aim to manage releases so as to avoid inundating Burtons Bridge and isolating up to 50 houses. However, depending upon rainfall, the bridge may be inundated by other flows.

The release strategy will be reviewed over the next 24 hours, and may change depending upon the amount of rainfall in the catchment.

We are consulting with Councils and the BoM about the release strategy.

A short media update is being issued, in consultation with the Minister's office.

Please contact me if you require any further information.

Regards,
Dan

Daniel Spiller

Director, Operations

SEQ Water Grid Manager

Phone: (07) [REDACTED] | Fax: (07) [REDACTED] | Mobile: [REDACTED]

Email: daniel.spiller@seqwater.qld.gov.au
Visit: Level 15, 53 Albert Street Brisbane
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ABN: 14783 317 630

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TECHNICAL SITUATION REPORT

TSR Number	W28	Date of TSR release	6.1.2011	Time of TSR release	12.00pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Monitor inflows and begin releases later today depending on Lockyer flows 										
Strategy	<ul style="list-style-type: none"> Monitor and develop release strategy 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Ongoing inflows</td></tr> <tr> <td>Rainfall:</td><td></td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>No impact as yet</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Ongoing inflows	Rainfall:		Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	No impact as yet
Storage levels:	Above FSL										
Inflows:	Ongoing inflows										
Rainfall:											
Lockyer/Bremer:	Monitoring their inflows										
Brisbane River:	No impact as yet										

Rainfall

Since 9am Wednesday, there have been widespread falls of 30mm with isolated heavy falls up to 50mm in the Somerset and Wivenhoe catchments. Totals in the North Pine catchment have generally been below 10mm. Falls up to 60mm were recorded in the Leslie Harrion catchment.

The forecast for the next 24 to 48 hours is for totals up to 150mm in SE Qld.

The catchments remain wet and are likely to generate additional runoff in the event of rain.

Somerset Dam

At 0700 Thursday, Somerset Dam was 99.34m, 0.34m above FSL, and rising slowly. The rain in the Stanley River catchment has produced a small amount of runoff in the upper Stanley but there have been significant rises in Kilcoy Ck. Further regulator operations will be required later Thursday.

Wivenhoe Dam

At 0700 Thursday, Wivenhoe Dam was 67.31m and rising slowly. This is 0.31m above FSL and above the gate trigger level of 67.25m. There have been rises recorded at rivers and stream upstream of Wivenhoe Dam. Gates will be opened in the next 24 hours to manage the inflows from the upper Brisbane River and the outflow from Somerset.

Impacts of Wivenhoe Dam Releases

Based upon rain to date, expecting about 70,000ML from upper Brisbane. Lockyer Ck peak of about 100m³/s Friday afternoon. This will take out Twin Bridges and nearly inundate Savages Crossing. Colleges Crossing could be taken out by a combined Lockyer and local runoff.

Current strategy is to keep Burton Bridge free. On this basis, we will commence opening Wivenhoe at 1800 Thursday and ramp up to about 300m³/s by 2200. This would limit mid Brisbane flows to just

under 400m³/s (Burtons capacity 450m³/s).

If rainfall increases and Lockyer and local runoff also increase, we can close/reduce Wivenhoe accordingly to ensure that that 450m³/s is not exceeded unless necessary.

Councils have been advised of this strategy and are contacting residents.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager
Seqwater Technical Officer contact details	[REDACTED]

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	[REDACTED]

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	Time	or Event	Gate opening
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Súzie Emery

From: Petula Martinz
Sent: Tuesday, 11 January 2011 4:19 PM
To: Barry Dennien; Bob Reilly; Damien Brown; Darren Madgwick; Geoff Stead; Ken Smith; Kerry Dunn; Lance McCallum; Lauren Sims; Peter Borrows; Peter Martin; Rob Drury; SEQWGM Emergency; Stephen Robertson; Terry Wall; Tim Watts
Subject: Wivenhoe Dam release update
Attachments: Technical Situation Report W40.docx

All,

Current strategy from Flood Control Centre attached.

Dan

TECHNICAL SITUATION REPORT

TSR Number	W40	Date of TSR release	11.1.2011	Time of TSR release	4.00pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Maintain releases to keep Wivenhoe below fuse plug initiation and releases need to be made to ensure the dam security and minimise flood impacts downstream if possible 										
Strategy	<ul style="list-style-type: none"> Inflows into Wivenhoe in excess of 12000 cumecs. Maintain current release 5700 cumecs as long as possible but due to the high level in the dam may change frequently due to inflows, this is being reviewed every 30 minutes and releases adjusted accordingly. Close sluices at Somerset Dam to store more water however will affect upstream areas. 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected around 1,500,000ML which is close to 1974 event.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
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Rainfall:	Continuing										
Lockyer/Bremer:	Monitoring their inflows										
Brisbane River:	Impact as below.										

Somerset/Wivenhoe Dam

Our strategy revolves ensuring dam security and is around trying to prevent initiation of the first fuse plug at EL 75.6m. If this happens we will get a rapid increase of about 2,000m³/s in outflow from the dam in addition to the gate release which could be as high as 10,000m³/s at the time. Sluices have been closed at Somerset and this will result in high upstream water levels affecting Kilcoy.

Wivenhoe Dam is rising very quickly and rapid gate openings are required to manage this increase. Based on the current rate of rise, inflow rate is in excess of 12,000m³/s. The situation is being revised constantly and releases will be increased hourly until the water level starts to stabilize. It is possible that the releases will be as high as 10,000m³/s in the next few hours. Heavy rainfall continues in the catchment especially around the dam.

It should be noted that the flow in the lower Brisbane R in 1974 was about 9,500m³/s.

Travel time to Lower Brisbane River is 24 hours.

North Pine

Inflows and outflows are at record levels and increasing within inflows nearing 3,000m³/s, and is approaching an extreme event (possibly as high as 1 in 10,000 AEP)

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time	PM	or Event	
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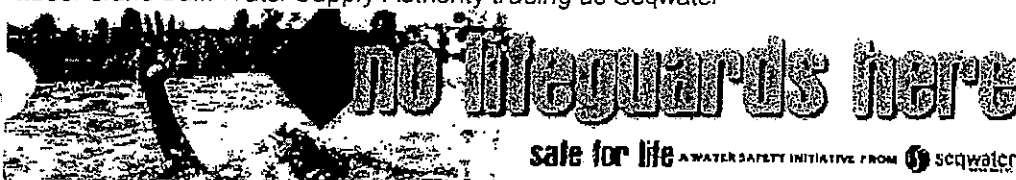
Dan Spiller

From: Rob Drury [rdrury [REDACTED]]
Sent: Friday, 7 January 2011 6:41 AM
To: Dan Spiller
Cc: Peter Borrows; Stan Stevenson; Mike Foster; Paul Bird; David Roberts
Subject: RE: Technical Report W29
Attachments: image001.jpg; image002.png; Technical Situation Report W29.docx

Attached is Report W29

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and
flowing water is FA1

rethink



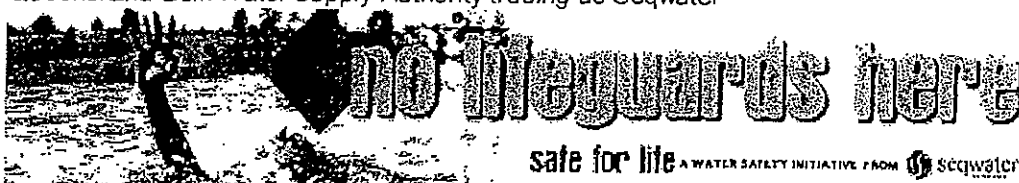
[REDACTED] | E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

From: Rob Drury
Sent: Thursday, 6 January 2011 12:13 PM
To: 'Dan Spiller'
Cc: Peter Borrows; Stan Stevenson; Mike Foster; Paul Bird; David Roberts; 'Scott Denner'
Subject: Technical Report W28

Attached Technical Report W28.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and
flowing water is FA1

rethink

Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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TECHNICAL SITUATION REPORT

TSR Number	W29	Date of TSR release	7.1.2011	Time of TSR release	7.00am
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Rainfall

There have been general totals around 30 to 50 mm with isolated heavy falls up to 75mm in the Somerset and Wivenhoe catchments since the event commenced on Wednesday 5 January 2011. There have been significant rainfalls in the Lockyer Ck catchment in the last 72 hours with widespread falls of 50mm and isolated falls up to 100mm.

Totals in the North Pine catchment have generally been about 35mm.

Falls between 20 and 30mm were recorded in the Leslie Harrison catchment.

The forecast for the next five days is for totals between 100 and 200mm in SE Qld. Given the saturated condition of the catchments further runoff will most likely be generated from this rainfall.

North Pine Dam

At 0600 Friday, North Pine Dam was at 39.48m, 0.12m below FSL. Gate operations commenced at 1915 on Thursday 6 January and are expected to continue until at least mid-day Friday 7 January when North Pine Dam is expected to be at 39.40m. These releases have impacted upon Youngs Crossing. Moreton Bay Regional Council was advised and they closed Youngs Crossing prior to gate operations commencing. Based upon the forecast rainfall, gate operations may continue into Saturday, but at this stage it is anticipated that gate operations will cease at around mid-day on Friday 7 January 2011.

Somerset Dam

At 0600 Friday, Somerset Dam was at 99.59m, 0.59m above FSL, and rising slowly. The rain in the Stanley River catchment has produced a small amount of runoff in the Upper Stanley but there have been significant rises in Kilcoy Creek, contributing to the Somerset inflows. Somerset Dam is currently releasing at a rate of 35 cumecs and further regulator/sluice operations will be required in the next 24 to 72 hours.

The estimated event inflow volume into Somerset Dam is around 50,000ML.

Wivenhoe Dam

At 0600 Friday, Wivenhoe Dam was at 67.64m and rising slowly. This is 0.64m above FSL and above the gate trigger level of 67.25m. Upstream of the dam river levels have peaked at the Linville and Gregors Ck gauges. The estimated event inflow volume into Wivenhoe Dam is 230,000ML including Somerset Dam outflow.

A peak of about 470 cumecs is expected from Lockyer Creek by mid-afternoon on Friday 7 January. At this stage there is some uncertainty associated with this estimate but it may be of sufficient magnitude to inundate Burtons Bridge.

Wivenhoe gate releases will occur after the impact of Lockyer flows on Burtons Bridge has been ascertained and flood levels in the lower Lockyer subside. It is possible that Wivenhoe releases will commence late Friday/early Saturday and may be as high as 1,200 cumecs (similar but slightly smaller to recent events), and the releases are expected to continue over the weekend through to Monday or Tuesday.

Impacts of Downstream of Wivenhoe

Somerset Regional Council, Ipswich City Council and Brisbane City Council have been advised of the potential for gate operations during the next 24 hours.

The relatively high Lockyer flows will adversely impact upon Twin Bridges, Savages Crossing, and Colleges Crossing for several days and may impact upon Burtons Bridge from Friday mid-day and Kholo Bridge later on Friday evening. At this stage, there are not expected to be any adverse impacts upon Fernvale Bridge or Mt Crosby Weir Bridge.

Councils have been advised of this strategy and are contacting residents.

Leslie Harrison Dam

Following the heavy rainfall Wednesday night, gate operations commenced at Leslie Harrison Dam late Wednesday night and are continuing. It is possible operations may cease later today with no further rainfall however, given the forecast rainfall, gate operations are expected to continue for some time.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

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ICC Technical Officer contact details	[REDACTED]

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SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	[REDACTED]

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date		Time		or Event	Gate opening decision
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TECHNICAL SITUATION REPORT

TSR Number	W29	Date of TSR release	7.1.2011	Time of TSR release	7.00a m
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Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

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BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

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(to include predicted local inundation areas and depths of inundation based on the information)

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BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

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(to include predicted local inundation areas and depths of inundation based on the information)

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ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	[REDACTED]

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

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SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	[REDACTED]

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury

Contact Officer position title	Dam Operations Manager
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Next TSR due	Date		Time		or Event	Gate opening decision
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Dan Spiller

From: Paul Bird [pbird [REDACTED]]
Sent: Friday, 7 January 2011 8:09 AM
To: Dan Spiller
Subject: FW: Operating Strategy over the next week

Importance: High

FYI

From: Duty Engineer [mailto:dutysed [REDACTED]]
Sent: Friday, 7 January 2011 08:05
To: David Roberts; flood.qld [REDACTED]; Mike Foster; Paul Bird; Rob Drury; Rohan Thorogood; Craig Duncan; Ken.Price [REDACTED]; kim.hang [REDACTED]; Al Navaruk; Bill Stephens; David Pokanier; John West; Louw Van Blerk; Mark Tan; Neville Ablitt; John.Ruffini@derm.qld.gov.au; John Tibaldi; Rob.ayre@sunwater.com.au; Terry Malone; Brett Schultz; Glenn Patterson; Malcolm Lane; Murray Dunstan; Rob Goran; Agg Dagan; Doug Grigg; Graham Keegan; Graham Francis; Jayam Tennakoon; Matthew O'Reilly
Subject: Operating Strategy over the next week
Importance: High

Advice from BoM indicates that SE Qld can expect some high rainfall totals over the next 5 days.

Friday: Rain at times 15-50mm with higher falls along the coast
Saturday: Rain light at times 10-50mm with higher falls along the coast
Sunday: Widespread rain with totals between 50-100mm
Monday: Widespread rain again with totals between 50-100mm
Tuesday: Rain easing with totals between 25-50mm

Given the saturated conditions of the dam catchments, significant volumes of inflows to our dams will be generated.

On this basis, the operating strategy for Somerset, Wivenhoe and North Pine needs to consider the current state of the storages and the project inflows.

North Pine

North Pine currently has 5 gates open releasing runoff from rain on Wed/Thursday. Given the very high likelihood of significant runoff during the next 5 days, it is recommended to keep gates open for the period, rather than opening and closing at various times with short notice. It will not be practical or may not be possible to adopt the usual strategy of opening and closing overnight to minimise the impact on Youngs Crossing.

Somerset

Somerset Dam currently has a regulator open 50%. At this stage, it is expected to open 1 or 2 sluices on Saturday. However, this may need to be reviewed if significant runoff occurs in the Stanley and Upper Brisbane. Under circumstances of high inflows to Somerset and Wivenhoe, it is the usual practice to hold flood water in Somerset until there is a high level of confidence in the estimated inflows to Wivenhoe.

Wivenhoe

As outlined in this morning's SitRep, it is intended to ramp up the release from Wivenhoe to about 1,200m³/s later today. However, given the high likelihood of significant inflows in the next week, this may be increased to 1,500m³/s in order to drain the current temporarily stored flood waters as soon as possible.

This will mean that all of the crossing downstream of Wivenhoe with the exception of Fernvale and Mt Crosby Weir Bridge will be adversely impacted.

Leslie Harrison

Given its proximity to the coast Leslie Harrison is likely to be most impacted by the forecast rain over the next 5 days.

It is likely that the releases from North Pine and Leslie Harrison will continue until the middle of next week and from Wivenhoe until next Friday. Staffing for the Flood Operations Centre will be arranged accordingly. Co-originators should start to plan for prolonged operations at dams.

Terry Malone
Duty Engineer
Flood Operations Centre

Phone: [REDACTED]

Fax: [REDACTED]

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Litsupport Brisbane

From: Dan Spiller
Sent: Friday, 7 January 2011 8:27 AM
To: stephen.robertson [REDACTED]; lance.mccallum [REDACTED];
Tim.Watts [REDACTED]; Geoff.Stead [REDACTED];
Lauren.Sims [REDACTED]; Best Debbie; 'Martin.PeterJ [REDACTED];
'Dunn.KerryG [REDACTED]
Cc: Rob Drury; Mike Foster; SEQWGM Media; Reilly Bob
Subject: Update on dam gate releases
Attachments: Technical Situation Report W29.docx

All,

Attached is the updated technical situation report.

There has been widespread rainfall in most of the dam catchments. These inflows have triggering the need for gate releases, with forecasts of between 100 and 200 mm of further rainfall over the next five days.

For Wivenhoe and Somerset dams, key points are:

- There has been general falls of around 30 to 50 mm since Wednesday, with isolated peaks of up to 75mm. About 230,000 ML will need to be released, based on estimated flows into the dam.
- There has been heavier rainfall in the Lockyer Creek catchment, which flows into the Brisbane River below the dam wall. Without dam releases, these flows are likely to result in Burtons Bridge being inundated by mid afternoon today – again isolating up to 50 households.
- Dam releases are expected to commence late tonight or early tomorrow, once existing Lockyer Valley flows have peaked – minimising downstream impacts and deferring the inundation of Burtons Bridge.
- At this stage, releases are expected to be at a similar rate to the recent events (up to about 105,000 ML/day) and continue until Monday or Tuesday next week (depending on further rainfall).

North Pine and Leslie Harrison dams are also making gate releases. Youngs Crossing has been inundated.

Councils have been advised. Somerset is contacting key affected residents.

We will provide an update once the timing of releases has been fixed.

Please contact me if you require any further information.

Regards,
Dan

Daniel Spiller
Director, Operations
SEQ Water Grid Manager

Phone: [REDACTED] | Fax: [REDACTED] | Mobile: [REDACTED]

Email: daniel.spiller@seqwater.com.au

Visit: Level 15, 53 Albert Street Brisbane

Post: PO Box 16205, City East QLD 4002

ABN: 14783 317 630

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If not an intended recipient of this email, you must not copy, distribute or take any action(s) that relies on it; any form of disclosure, modification, distribution and/or publication of this email is also prohibited. While all care has been taken, the SEQ Water Grid Manager disclaims all liability for loss or damage to person or property arising from this message being infected by a computer virus or other contamination. Unless stated otherwise, this email represents only the views of the sender and not the views of the SEQ Water Grid Manager and/or the Queensland Government.

TECHNICAL SITUATION REPORT

TSR Number	W29	Date of TSR release	7.1.2011	Time of TSR release	7.00am
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Impacts of Downstream of Wivenhoe

Somerset Regional Council, Ipswich City Council and Brisbane City Council have been advised of the potential for gate operations during the next 24 hours.

The relatively high Lockyer flows will adversely impact upon Twin Bridges, Savages Crossing, and Colleges Crossing for several days and may impact upon Burtons Bridge from Friday mid-day and Kholo Bridge later on Friday evening. At this stage, there are not expected to be any adverse impacts upon Fernvale Bridge or Mt Crosby Weir Bridge.

Councils have been advised of this strategy and are contacting residents.

Leslie Harrison Dam

Following the heavy rainfall Wednesday night, gate operations commenced at Leslie Harrison Dam late Wednesday night and are continuing. It is possible operations may cease later today with no further rainfall however, given the forecast rainfall, gate operations are expected to continue for some time.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	[REDACTED]

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	[REDACTED]

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date		Time		or Event	Gate opening decision
--------------	------	--	------	--	----------	-----------------------

From: Paul Bird <pbird [REDACTED]>
Sent: Friday, January 7, 2011 8:28 AM
To: SEQWGM Media <media [REDACTED]>; aroebuck [REDACTED];
greg.swain [REDACTED]; GSTUBBS [REDACTED]; Kathy
Petrik <Kathy.Petrik [REDACTED]>;
lisa.m.martin [REDACTED] Paula Weston
<paula.weston [REDACTED]>; tjacobs [REDACTED]
Dennien <Barry.Dennien [REDACTED]>; Dan Spiller
<Daniel.Spiller [REDACTED]>; Scott Denner
<Scott.Denner [REDACTED]>; Arminda Roberts
<aroberts [REDACTED]>; Bec Middlemiss
<bmiddlemiss [REDACTED]>; Michael Fiechtner
<MFiechtner [REDACTED]>; Mike Foster <mfoster [REDACTED]>;
Tara King <tking [REDACTED]>
Cc: Mike Foster <mfoster [REDACTED]>; Michael Lyons
<Michael.Lyons [REDACTED]>; Geoff Stead
<Geoff.Stead [REDACTED]>; ELT <ELT [REDACTED]>
Subject: Release Update

As of 9.00 am 7 January, the following applies:

SOMERSET DAM:

Water is being released into Wivenhoe through a regulator valve and may be increased to manage rainfall and inflows. Sluice gates may be operated during the weekend.

WIVENHOE DAM:

Gate operations will commence when flood levels in the lower Lockyer Creek subside. Releases may be around 130,000 megalitres per day.

Local Councils are being advised that local flows, and the expected Wivenhoe release, may impact upon Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing for several days.

At this stage, no adverse impacts are expected for Fernvale Bridge, or Mt Crosby Weir Bridge

NORTH PINE DAM:

Gate operations commenced during the evening of Thursday 6 January and may continue until next week.

The local Council was advised prior to the gate operation commencing that Youngs Crossing may be inundated.

LESLIE HARRISON DAM:

Due to rainfall, a release is underway and may continue until next week.

HINZE DAM:

No releases. There is no public access to the spillway.

For detailed information on road crossing closures and other potential impacts, always contact your local council.

RECREATION UPDATE:

Due to water levels, Wivenhoe is closed to all water based recreational activities as from this morning, and

this will most likely extend over the weekend.

At this point, Somerset is open to water based recreational activities, however this could change at short notice.

Moogerah is open to water based recreational activities, while Maroon remains open, but swimming and skiing should be avoided.

The following recreation sites are closed to the public –

- O'Sheas Crossing
- Hamon Cove
- Logan Inlet
- Captain Logan Camp
- River access at Atkinson's Crossing
- Billies Bay/Hays Landing

Lake Baroon has been closed to on-water recreation activities due to the current lake level.

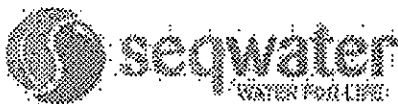
The recreation areas at Lake Baroon are open for land based activities, such as picnicking and barbequing. Care should be taken at the recreation sites, as the ground may be very wet. Vehicles must be parked only in designated parking areas, and should not be driven onto grassed areas.

This information will be updated if any significant changes occur.

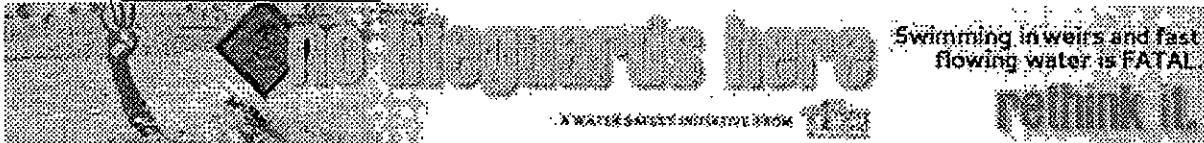
Paul Bird

Senior Communications Advisor

Queensland Bulk Water Supply Authority *trading as Seqwater*



P [REDACTED] M [REDACTED] E pbird@seqwater.com.au
Level 3, 240 Margaret St, Brisbane City QLD 4000
PO Box 16146, City East QLD 4002
Website | www.seqwater.com.au



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TECHNICAL SITUATION REPORT

TSR Number	W30	Date of TSR release	7.1.2011	Time of TSR release	3.00pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Begin discharging stored floodwaters
Strategy	<ul style="list-style-type: none"> Start releasing at 3pm today and increase up to 1200cumecs.
Key considerations	Storage levels: Above FSL
	Inflows: Ongoing inflows
	Rainfall:
	Lockyer/Bremer: Monitoring their inflows
	Brisbane River: No impact as yet

North Pine Dam

Ongoing operations.

Somerset Dam

Somerset Dam is currently releasing at a rate of 35 cumecs and further regulator/slucice operations will be required in the next 24 to 72 hours.

The estimated event inflow volume into Somerset Dam is around 50,000ML.

Wivenhoe Dam

Wivenhoe releases commenced at 1500 Friday and will be slowly increased to about 1,200 m³/s by 1400 Saturday. It will initially be held around this level until Sunday morning at which time the release strategy will be reviewed and be dependent upon further rainfall.

Impacts of Downstream of Wivenhoe

This will mean that all of the crossings downstream of Wivenhoe with the exception of Fernvale and Mt Crosby Weir Bridge will be adversely impacted.

Councils have been advised of this strategy and are contacting residents.

Conversations have just taken place between BCC, Seqwater and BoM re impact of flows in the lower Brisbane R

Seqwater and BoM concur that a flow of a 1,500m³/s in the lower Brisbane R will only add about 50mm to the expected water levels in the City Reach on the recorded high tides. This has been demonstrated by a

comparison of the recorded water levels at Whyte Is and Brisbane City gauges during periods of no flow and periods of higher flows in the last few months.

However, it should be noted that this impact varies during the tidal cycle and is more pronounced on the low tide level than the high tide level.

It is recognized that current recorded high tide levels are 0.4 to 0.5 metres higher than predicted tides due to atmospheric conditions.

Leslie Harrison Dam

Following the heavy rainfall Wednesday night, gate operations commenced at Leslie Harrison Dam late Wednesday night and are continuing.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	8.1.2011	Time		or Event	
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From: Paul Bird <pbird[REDACTED]>
Sent: Friday, January 7, 2011 3:28 PM
To: SEQWGM Media <media[REDACTED]>; aroebuck[REDACTED];
greg.swain[REDACTED]; GSTUBBS[REDACTED]; Kathy
Petrik <Kathy.Petrik[REDACTED]>;
lisa.m.martin[REDACTED]; Paula Weston
<paula.weston[REDACTED]>; tjacobs[REDACTED]; Barry
Dennien <Barry.Dennien[REDACTED]>; Dan Spiller
<Daniel.Spiller[REDACTED]>; Scott Denner
<Scott.Denner[REDACTED]>; Arminda Roberts
<aroberts[REDACTED]>; Bec Middlemiss
<bmiddlemiss[REDACTED]>; Michael Fiechtner
<MFiechtner[REDACTED]>; Mike Foster <mfoster[REDACTED]>;
Tara King <tking[REDACTED]>
Cc: Mike Foster <mfoster[REDACTED]>; Michael Lyons
<Michael.Lyons[REDACTED]>; ELT <ELT[REDACTED]>
Subject: Release Update

As of 3.30 pm on 7 January, the following applies:

SOMERSET DAM:

Water is being released into Wivenhoe through a regulator valve and may be increased to manage rainfall and inflows. Sluice gates may be operated during the weekend.

WIVENHOE DAM:

Gate operations have commenced and releases are expected to reach around 100,000 megalitres a day by the afternoon of Saturday 8 January. Releases will be reviewed and may change according to rainfall, inflows and river flows.

Local Councils are being advised that Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing may be inundated for several days.

At this stage, no adverse impacts are expected for Fernvale Bridge, or Mt Crosby Weir Bridge

NORTH PINE DAM:

Gate operations commenced during the evening of Thursday 6 January and may continue until next week.

The local Council was advised prior to the gate operation commencing that Youngs Crossing may be inundated.

LESLIE HARRISON DAM:

Due to rainfall, a release is underway and may continue until next week.

HINZE DAM:

A release through the emergency gates is expected during the weekend. There is no public access to the spillway.

For detailed information on road crossing closures and other potential impacts, always contact your local council.

RECREATION UPDATE:

Lake Wivenhoe

Lake Wivenhoe is currently closed to water based recreation activities, and is expected to remain closed for some days, due to the high water levels.

The following recreation sites at Lake Wivenhoe are currently closed due to submerged infrastructure, or dangerous conditions –

- O'Sheas Crossing
- Hamon Cove
- Logan Inlet
- Captain Logan Camp
- River access at Atkinson's Crossing
- Billies Bay/Hays Landing

Other recreation areas at Lake Wivenhoe are open for land based recreation activities.

The Spillway Lookout recreation area is open, however visitors are advised that there may be long delays due to the numbers of people on site. Security staff and traffic controllers will be on site to assist with visitor management – all visitors must comply with the reasonable directions of security staff and traffic controllers.

Lake Somerset

Lake Somerset will be temporarily closed to water based recreation activities from 6.00pm Friday 7 January due to the high water levels.

Lake Somerset is expected to remain closed over the weekend, and possibly into next week, depending upon the conditions.

Lake Borumba

Yabba Creek Road between Imbil and Borumba Dam is currently closed, meaning that access to the lake is not available. Even if there is no further rain, it is expected that access to Borumba Dam will be closed for several days.

Lake Baroon

Lake Baroon has been closed to on-water recreation activities due to the current lake level. The recreation areas at Lake Baroon are open for land based activities.

Lake Maroon

Lake Maroon remains closed to water skiing and swimming but is open to boating and fishing.

Care should be taken at the recreation sites that are open, with the ground being totally saturated. Vehicles must be parked only in designated parking areas, and should not be driven onto grassed areas.

This information will be updated if any significant changes occur.

Paul Bird

Senior Communications Advisor

Queensland Bulk Water Supply Authority *trading as Seqwater*



E pbird

Level 3, 240 Margaret St, Brisbane City QLD 4000

PO Box 16146, City East QLD 4002

Website | www.seqwater.com.au



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Dan Spiller

From: Rob Drury [rdrury@seqwater.com.au]
Sent: Friday, 7 January 2011 4:05 PM
To: Rob Drury; Dan Spiller
Cc: Peter Borrows; Stan Stevenson; Mike Foster; Paul Bird; David Roberts
Subject: RE: Technical Report W30
Attachments: image001.jpg; image002.png; Technical Situation Report W30.docx

Attached is report W30.
Basically advising the first gate is opened at Wivenhoe as at 3.00pm.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and
flowing water is FA1

rethink



Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

From: Rob Drury
Sent: Friday, 7 January 2011 6:41 AM
To: 'Dan Spiller'
Cc: Peter Borrows; Stan Stevenson; Mike Foster; Paul Bird; David Roberts
Subject: RE: Technical Report W29

Attached is Report W29

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and
flowing water is FA1

rethink

[REDACTED] | E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

From: Rob Drury
Sent: Thursday, 6 January 2011 12:13 PM
To: 'Dan Spiller'
Cc: Peter Borrows; Stan Stevenson; Mike Foster; Paul Bird; David Roberts; 'Scott Denner'
Subject: Technical Report W28

Attached Technical Report W28.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and
flowing water is FA1

rethink

[REDACTED] | E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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TECHNICAL SITUATION REPORT

TSR Number	W30	Date of TSR release	7.1.2011	Time of TSR release	3.00pm
-------------------	------------	----------------------------	-----------------	----------------------------	---------------

Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Begin discharging stored floodwaters
Strategy	<ul style="list-style-type: none"> Start releasing at 3pm today and increase up to 1200cumecs.
Key considerations	Storage levels: Above FSL
	Inflows: Ongoing inflows
	Rainfall:
	Lockyer/Bremer: Monitoring their inflows
	Brisbane River: No impact as yet

North Pine Dam

Ongoing operations.

Somerset Dam

Somerset Dam is currently releasing at a rate of 35 cumecs and further regulator/slucce operations will be required in the next 24 to 72 hours.

The estimated event inflow volume into Somerset Dam is around 50,000ML.

Wivenhoe Dam

Wivenhoe releases commenced at 1500 Friday and will be slowly increased to about 1,200 m³/s by 1100 Saturday. It will initially be held around this level until Sunday morning at which time the release strategy will be reviewed and be dependent upon further rainfall.

Impacts of Downstream of Wivenhoe

This will mean that all of the crossings downstream of Wivenhoe with the exception of Fernvale and Mt Crosby Weir Bridge will be adversely impacted.

Councils have been advised of this strategy and are contacting residents.

Conversations have just taken place between BCC, Seqwater and BoM re impact of flows in the lower Brisbane R

Seqwater and BoM concur that a flow of a 1,500m³/s in the lower Brisbane R will only add about 50mm to the expected water levels in the City Reach on the recorded high tides. This has been demonstrated

by a comparison of the recorded water levels at Whyte Is and Brisbane City gauges during periods of no flow and periods of higher flows in the last few months.

However, it should be noted that this impact varies during the tidal cycle and is more pronounced on the low tide level than the high tide level.

It is recognized that current recorded high tide levels are 0.4 to 0.5 metres higher than predicted tides due to atmospheric conditions.

Leslie Harrison Dam

Following the heavy rainfall Wednesday night, gate operations commenced at Leslie Harrison Dam late Wednesday night and are continuing.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	8.1.2011	Time		on Event	
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Litsupport Brisbane

From: Dan Spiller
Sent: Friday, 7 January 2011 4:24 PM
To: stephen.robertson; lance.mccallum; Tim.Watts; Geoff.Stead; Lauren.Sims; Best Debbie; 'Martin.PeterJ'; 'Dunn.KerryG'
Cc: Rob Drury; Mike Foster; SEQWGM Media; Reilly Bob
Subject: Update on Wivenhoe Dam releases
Attachments: Technical Situation Report W30.docx

All,

Attached is the updated technical situation report.

For Wivenhoe Dam, key points are:

- The first of the gates has opened. The release rate is planned to be increased to about 1,200 m³/s by 1400 Saturday. This is a similar release rate to last week.
- Burtons Bridge is again inundated, isolating some residents.
- Councils have been advised of this strategy and are contacting residents as necessary.
- The releases will have a minimal impact on the level of the Brisbane River in the City Reach. Seqwater and BoM concur that a total flow of a 1,500m³/s adds about 50mm to the expected water levels at that location.
- Due to atmospheric conditions, current recorded high tide levels are 0.4 to 0.5 metres higher than predicted tides.

North Pine and Leslie Harrison dams are also making gate releases. Releases from Hinze Dam are likely to be required over the weekend.

Please contact me if you require any further information.

Regards,
Dan

Daniel Spiller
Director, Operations
SEQ Water Grid Manager

Email: daniel.spiller
Visit: Level 15, 53 Albert Street Brisbane
Post: PO Box 16205, City East QLD 4002
ABN: 14783 317 630

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otherwise, this email represents only the views of the sender and not the views of the SEQ Water Grid Manager and/or the Queensland Government.

TECHNICAL SITUATION REPORT

TSR Number	W30	Date of TSR release	7.1.2011	Time of TSR release	3.00pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Begin discharging stored floodwaters
Strategy	<ul style="list-style-type: none"> Start releasing at 3pm today and increase up to 1200cumecs.
Key considerations	Storage levels: Above FSL
	Inflows: Ongoing inflows
	Rainfall:
	Lockyer/Bremer: Monitoring their inflows
	Brisbane River: No impact as yet

North Pine Dam

Ongoing operations.

Somerset Dam

Somerset Dam is currently releasing at a rate of 35 cumecs and further regulator/slucice operations will be required in the next 24 to 72 hours.

The estimated event inflow volume into Somerset Dam is around 50,000ML.

Wivenhoe Dam

Wivenhoe releases commenced at 1500 Friday and will be slowly increased to about 1,200 m3/s by 1400 Saturday. It will initially be held around this level until Sunday morning at which time the release strategy will be reviewed and be dependent upon further rainfall.

Impacts of Downstream of Wivenhoe

This will mean that all of the crossings downstream of Wivenhoe with the exception of Fernvale and Mt Crosby Weir Bridge will be adversely impacted.

Councils have been advised of this strategy and are contacting residents.

Conversations have just taken place between BCC, Seqwater and BoM re impact of flows in the lower Brisbane R

Seqwater and BoM concur that a flow of a 1,500m3/s in the lower Brisbane R will only add about 50mm to the expected water levels in the City Reach on the recorded high tides. This has been demonstrated

by a comparison of the recorded water levels at Whyte Is and Brisbane City gauges during periods of no flow and periods of higher flows in the last few months.

However, it should be noted that this impact varies during the tidal cycle and is more pronounced on the low tide level than the high tide level.

It is recognized that current recorded high tide levels are 0.4 to 0.5 metres higher than predicted tides due to atmospheric conditions.

Leslie Harrison Dam

Following the heavy rainfall Wednesday night, gate operations commenced at Leslie Harrison Dam late Wednesday night and are continuing.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	8.1.2011	Time		or Event	
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TECHNICAL SITUATION REPORT

TSR Number	W31	Date of TSR release	8.1.2011	Time of TSR release	7.00a m
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue increasing releases to discharge floodwater as quickly as possible
Strategy	<ul style="list-style-type: none"> Continue to increase releases from 890cumecs this morning to 1200cumecs by lunchtime This should keep Fernvale and Mt Crosby bridges clear however further predicted rainfall may impact.
Key considerations	Storage levels: Above FSL
	Inflows: Ongoing inflows
	Rainfall:
	Lockyer/Bremer: Monitoring their inflows
	Brisbane River: Minimal impact as per previous discussions and releases.

Rainfall

Since 0900 Friday, there has been widespread 20 to 40mm throughout North Pine, Somerset and Wivenhoe catchments with isolated higher totals of 70mm in the upper reaches of the Brisbane R. No significant rain has fallen in the past 12 hours.

Advice from BoM indicates that SE Qld can expect further high rainfall totals over the next 4 days.

Saturday: Rain light at times 5-50mm with higher falls along the coast
 Sunday: Widespread rain with totals between 50-100mm
 Monday: Widespread rain again with totals between 50-100mm
 Tuesday: Rain easing with totals between 25-50mm

Given the saturated conditions of the catchments, significant inflows to Seqwater dams will be generated, especially following the forecast rainfall on Sunday/Monday

North Pine (Full Supply Level 39.60 m AHD)

At 0600 Saturday, North Pine Lake Level was 39.46 m AHD and slowly rising. Currently 3 gates are open to release runoff from rain on Wed/Thursday/Friday. Given the very high likelihood of significant runoff during the next 4 days, gates will be kept open to match inflows over the next few days, rather than opening and closing at various times with short notice. Youngs Crossing will remain adversely impacted for the duration of the gates being open. Moreton Bay Regional Council has been advised and concurs with this strategy.

Somerset (Full Supply Level 99.00 m AHD)

At 0500 Saturday, Somerset Dam level was 100.42m AHD and rising. The Dam is releasing into Wivenhoe through one open sluice gate. Water will be temporarily held in Somerset to allow the inflow from the upper Brisbane is passed through the system. However, this strategy may need to be reviewed if significant runoff occurs in the Stanley and Upper Brisbane. Under circumstances of high inflows to Somerset and Wivenhoe, it is the usual practice to hold flood water in Somerset until there is a high level of confidence in the estimated inflows to Wivenhoe.

Since the commencement of the event on 02/01/2011, approximately 85,000ML has flowed into Somerset Dam with a further 20,000ML expected based on the recorded rainfall to date. Approximately 25,000ML has been released into Wivenhoe.

Wivenhoe (Full Supply Level 67.00 m AHD)

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Impacts downstream of Wivenhoe

The projected Wivenhoe release of 1,200m³/s combined with Lockyer flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing) will be adversely impacted for several days. At this stage Fernvale and Mt Crosby Weir Bridge are not expected to be affected but they could potentially be affected if the predicted rainfall totals eventuate.

The current available assessments indicate that the combined flow in the lower Brisbane R would only add 50mm to an upper limit of 100mm to the recorded water levels in the City Reach of the Brisbane Rive. However, it is noted that tides in the lower Brisbane R will be 0.4 to 0.5 metres higher than predicted tides

Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the Wivenhoe operating strategy.

Leslie Harrison Dam

Following the heavy rainfall Wednesday night, gate operations commenced at Leslie Harrison Dam late Wednesday night and closed late last night but further operations are likely.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	[REDACTED]

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	[REDACTED]

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date		Time		or Event	Change in strategy
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Dan Spiller

From: Rob Drury [rdrury [REDACTED]]
Sent: Saturday, 8 January 2011 7:46 AM
To: Rob Drury; Dan Spiller
Cc: Peter Borrows; Stan Stevenson; Mike Foster; Paul Bird; David Roberts
Subject: RE: Technical Report W31
Attachments: image001.jpg; image002.png; Technical Situation Report W31.docx

Attached report number W31.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and
flowing water is FA

rethink



[REDACTED] | E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

Important information: This email and any attached information is intended only for the addressee and may contain confidential and/or privileged information. If you are not the addressee, you are notified that any transmission, distribution, or other use of this information is strictly prohibited. The confidentiality attached to this email is not waived, lost or destroyed by reasons of mistaken delivery to you. If you have received this email in error please contact the sender immediately and delete the material from your email system. QLD Bulk Water Supply Authority ABN75450239876 (Trading as Seqwater).

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TECHNICAL SITUATION REPORT

TSR Number	W31	Date of TSR release	8.1.2011	Time of TSR release	7.00am
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue increasing releases to discharge floodwater as quickly as possible 										
Strategy	<ul style="list-style-type: none"> Continue to increase releases from 890cumecs this morning to 1200cumecs by lunchtime This should keep Fernvale and Mt Crosby bridges clear however further predicted rainfall may impact. 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Ongoing inflows</td></tr> <tr> <td>Rainfall:</td><td></td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Minimal impact as per previous discussions and releases.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Ongoing inflows	Rainfall:		Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Minimal impact as per previous discussions and releases.
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Rainfall

Since 0900 Friday, there has been widespread 20 to 40mm throughout North Pine, Somerset and Wivenhoe catchments with isolated higher totals of 70mm in the upper reaches of the Brisbane R. No significant rain has fallen in the past 12 hours.

Advice from BoM indicates that SE Qld can expect further high rainfall totals over the next 4 days.

~~Saturday: Rain light at times 5-50mm with higher falls along the coast~~

~~Sunday: Widespread rain with totals between 50-100mm~~

~~Monday: Widespread rain again with totals between 50-100mm~~

~~Tuesday: Rain easing with totals between 25-50mm~~

~~Given the saturated conditions of the catchments, significant inflows to Seqwater dams will be generated, especially following the forecast rainfall on Sunday/Monday~~

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At 0600 Saturday, North Pine Lake Level was 39.46 m AHD and slowly rising. Currently 3 gates are open to release runoff from rain on Wed/Thursday/Friday. Given the very high likelihood of significant runoff during the next 4 days, gates will be kept open to match inflows over the next few days, rather than opening and closing at various times with short notice. Youngs Crossing will remain adversely impacted for the duration of the gates being open. Moreton Bay Regional Council has been advised and concurs with this strategy.

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Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the Wivenhoe operating strategy.

Leslie Harrison Dam

Following the heavy rainfall Wednesday night, gate operations commenced at Leslie Harrison Dam late Wednesday night and are continuing.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	[REDACTED]

Somerset Regional Council (SRC) assessment (if required)

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Council has been advised and do not have a problem with the new strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	[REDACTED]

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date		Time		or Event	Change in strategy
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John Adcock

From: Paul Bird [pbird@seqwgm.com.au]
Sent: Saturday, 8 January 2011 7:54 AM
To: SEQWGM Media; Barry Dennien; Dan Spiller; Scott Denner
Cc: Geoff Stead [gstead@seqwgm.com.au]; Michael Lyons; ELT
Subject: Water Release Update

As at 8.00 on Saturday 8 January, the following applies:

SOMERSET DAM:

Water is being released into Wivenhoe through a sluice gate.

WIVENHOE DAM:

Gate operations have commenced and releases are expected to reach around 100,000 megalitres a day by the afternoon of Saturday 8 January. Releases will be reviewed and may change according to rainfall, inflows and river flows.

Local Councils are being advised that Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing may be inundated for several days.

At this stage, no adverse impacts are expected for Fernvale Bridge, or Mt Crosby Weir Bridge, although this may change depending on rainfall.

NORTH PINE DAM:

Gate operations commenced during the evening of Thursday 6 January and may continue until next week.

The local Council was advised prior to the gate operation commencing that Youngs Crossing may be inundated.

LESLIE HARRISON DAM:

Due to rainfall, a release is underway and may continue until next week.

HINZE DAM:

A release through the emergency gates is expected during the weekend. There is no public access to the spillway.

For detailed information on road crossing closures and other potential impacts, always contact your local council.

RECREATION UPDATE:

Lake Wivenhoe

Lake Wivenhoe is currently closed to water based recreation activities, and is expected to remain closed for some days, due to the high water levels.

Lake Somerset

Lake Somerset will be temporarily closed to water based recreation activities from 6.00pm Friday 7 January due to the high water levels and is expected to remain closed over the weekend, and possibly into next week, depending upon the conditions.

The following recreation sites are currently closed due to submerged infrastructure, or dangerous conditions –

- O'Sheas Crossing
- Hamon Cove

- Logan Inlet
- Captain Logan Camp
- River access at Atkinson's Crossing
- Billies Bay/Hays Landing
- The Spit
- Lake Somerset Holiday Park Kirkleagh [Boat ramps only]

Other recreation areas at Lake Wivenhoe are open for land based recreation activities.

The Spillway Lookout recreation area is open, however visitors are advised that there may be long delays due to the numbers of people on site. Security staff and traffic controllers will be on site to assist with visitor management – all visitors must comply with the reasonable directions of security staff and traffic controllers.

Lake Borumba

Yabba Creek Road between Imbil and Borumba Dam is currently closed, meaning that access to the lake is not available and be closed for several days.

Lake Baroon

Lake Baroon has been closed to on-water recreation activities due to the current lake level. The recreation areas at Lake Baroon are open for land based activities.

Lake Maroon

Lake Maroon remains closed to water skiing and swimming but is open to boating and fishing.

Care should be taken at the recreation sites that are open, with the ground being totally saturated. Vehicles must be parked only in designated parking areas, and should not be driven onto grassed areas.

This information will be updated if any significant changes occur.

Paul Bird

Senior Communications Advisor

Queensland Bulk Water Supply Authority trading as Seqwater



E pbird

Level 3, 240 Margaret St, Brisbane City QLD 4000

PO Box 16146, City East QLD 4002

Website | www.seqwater.com.au



Swimming in weirs and fast flowing water is FATAL.

rethink it.

Important information: This email and any attached information is intended only for the addressee and may contain confidential and/or privileged information. If you are not the addressee, you are notified that any transmission, distribution, or other use of this information is strictly prohibited. The confidentiality attached to this email is not waived, lost or destroyed by reasons of mistaken delivery to you. If you have received this email in error please contact the sender immediately and delete the material from your email system. QLD Bulk Water Supply Authority ABN75450239876 (Trading as Seqwater).

Litsupport Brisbane

From: Dan Spiller
Sent: Saturday, 8 January 2011 9:00 AM
To: stephen.robertson [REDACTED]; Lance McCallum (lance.mccallum [REDACTED]); Tim Watts (tim.watts [REDACTED]); Geoff Stead (geoff.stead [REDACTED]); lauren.sims [REDACTED]; Debbie Best (debbie.best [REDACTED]); Martin.PeterJ [REDACTED]; Dunn.KerryG [REDACTED]
Cc: Rob Drury (rdrury [REDACTED]); mfoster [REDACTED]; SEQWGM Media; Damien Brown (damien.brown [REDACTED]); bob.reilly [REDACTED]; Madgwick.DarrenT [REDACTED]; Scott Denner
Subject: Water Grid operations update: 8/1/11
Attachments: Technical Situation Report W31.docx

All,

Dam releases

Attached is the current technical situation report.

Releases are being made from Somerset, Wivenhoe, North Pine and Leslie Harrison dams, with forecasts of high rainfall totals over the next four days.

For Wivenhoe Dam:

- All five gates are now open with the release rate planned to increase to 1200 cubic metres per second by midday today. This release rate is less than peak release from October 2010.
- The release strategy will continue to be reviewed based on actual rainfall. With significant inflows, it may need to be increased.
- As advised yesterday, a number of local bridges have been inundated by releases and local flows. The Fernvale and Mt Crosby Weir Bridges could potentially also be affected if predicted rainfall totals eventuate.
- The BoM and Seqwater concur that current releases will increase the level of the lower Brisbane River by about 50 to 100mm. There is currently a 40 to 50mm atmospheric anomaly.

Releases from North Pine and Leslie Harrison dams are continuing. Releases from Hinze Dam are expected to be required over the weekend.

Water treatment

In terms of operations, Lockyer Valley flows have again caused a turbidity spike in the Brisbane River. Impacts are expected to peak today at Mt Crosby today, before being diluted by dam releases. There are similar issues at some other locations.

Despite the spike, all key plants are currently operating within critical limits with any impacts being monitored. Seqwater and Linkwater have prepared for potential issues by increasing treated water storage and staffing at some treatment plants. Desalination is at one-third capacity and ready to increase production within two hours of an instruction (but is unlikely to be required in this event).

With forecast rainfall, these type of issues are likely to recur over the remainder of the wet season.

Please call me on [REDACTED] if you require any further information.

Regards,
Dan

TECHNICAL SITUATION REPORT

TSR Number	W31	Date of TSR release	8.1.2011	Time of TSR release	7.00am
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Seqwater status of inflows and dam operations

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Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the Wivenhoe operating strategy.

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Following the heavy rainfall Wednesday night, gate operations commenced at Leslie Harrison Dam late Wednesday night and are continuing.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

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ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	[REDACTED]

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SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	[REDACTED]

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date		Time		on Event	Change in strategy
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Gina O'Driscoll

From: Dan Spiller
Sent: Saturday, 8 January 2011 9:24 AM
To: Gary Humphrys; Gordon Jardine; Teresa Dyson; Dr David Cunliffe; Jamie Quinn
Cc: Barry Dennien; Elaina Smouha; Aleisha Paine; Scott Denner; Joanne Collins; SEQWGM Media
Subject: Update on Water Grid operations

Board,

After a couple of dry days, we are back in operational mode. Below is a summary of current status. Apologies that my updates have not been more regular.

Dam releases

Releases are being made from Somerset, Wivenhoe, North Pine and Leslie Harrison dams, with forecasts of high rainfall totals over the next four days.

For Wivenhoe Dam:

- All five gates are now open with the release rate planned to increase to 1200 cubic metres per second by midday today. This release rate is less than peak release from October 2010 (1500 cubic metres per second).
- The release strategy will continue to be reviewed based on actual rainfall. With significant inflows, it may need to be increased. Widespread rainfall of up to 200mm is forecast over four days, potentially resulting in major inflows.
- A number of local bridges have been inundated by releases and local flows. The Fernvale and Mt Crosby Weir Bridges could potentially also be affected if predicted rainfall totals eventuate.
- The BoM and Seqwater concur that current releases will increase the level of the lower Brisbane River by about 50 to 100mm. There is currently a 40 to 50mm atmospheric anomaly.

Releases from North Pine and Leslie Harrison dams are continuing. Releases from Hinze Dam are expected to be required over the weekend.

Councils have been consulted and agree with the release strategy. Somerset Regional Council now provides early advice to residents who will be isolated by the inundation of Burtons Bridge.

We are preparing a proposal to Somerset Regional Council for the Grid to pay for resupply of residents, should they be isolated for more than five days (with Council to arrange the supply). I will provide more details next week.

Water treatment

In terms of operations, Lockyer Valley flows have again caused a turbidity spike in the Brisbane River. Impacts are expected to peak today at Mt Crosby today, before being diluted by dam releases. There are similar issues at some other locations.

Despite the spike, all key plants are currently operating within critical limits, with impacts being monitored. Seqwater and Linkwater have prepared for potential issues by increasing treated water storage and staffing at some treatment plants. Desalination is at one-third capacity and ready to increase production to two-thirds within two hours of an instruction (but is unlikely to be required in this event).

There continue to be very few taste and odour complaints.

We are having daily operational teleconferences with all Grid Participants.

With forecast rainfall, these type of issues are likely to recur over the remainder of the wet season. Our key concern are towns with stand alone supplies, such as Lowood.

For interest only, Seqwater is managing a range of entity specific operational issues across the region. For example, Noosa is being operated remotely due to the causeway to the plant having been inundated. At Beaudesert, bank stabilisation is underway because the pump station was being undermined. Many of these issues are being managed by transferring staff around the region, which was not possible prior to the reforms (for example, from the Caboolture and South Maclean WTPs, which are shutdown).

Media

There has been renewed interest in gate releases and the operation of the desalination facility. I have done some television and radio interviews and we are again putting out daily updates on releases.

Going forward, Robert Macdonald from the Courier Mail has asked to do a "day in the life" article on dam operations from our Emergency Management Room. We have sought approval. There has also been a request as to whether the Premier could do media updates on the flood situation from our Emergency Management Room - which I doubt will eventuate.

Please call me on [REDACTED] if you require any further information.

Regards,
Dan

Dan Spiller

From: Dan Spiller
Sent: Saturday, 8 January 2011 9:48 AM
To: Best Debbie
Subject: RE: Water Grid operations update: 8/1/11

Debbie,

We expect river levels to be similar to yesterday, and again due to tides rather than releases.

River yesterday peaked at about 1.85 metres at the Port Office gauge. The high peak was due almost entirely due to tides and a 0.4 to 0.5 metre atmospheric anomaly.

BoM and Seqwater agree that flows of 1500 cumecs over Mt Crosby will contribute about 0.05m (50mm) to peak river levels at the Port Office gauge. We are planning to release at 1200 cumecs from midday, with an allowance for Lockyer Valley flows (which peaked at about 500 cumecs this week and are reducing). For interest only, the impact on low tide levels is greater - meaning that there is less variation in river levels.

The key risk will be if the high rainfall eventuates (200mm over four days). We will review as this occurs, but in the meantime it is important that we get the flood storage compartment down to give ourselves some flexibility.

Looking forward, we are preparing a more detailed brief on potential scenarios with the upcoming January and February peak tides. The challenge is that river levels are due to about five different factors, of which only tides can be predicted this far out. Atmospheric anomalies can only be predicted a few days out.

Short answer is that we expect ongoing low level flooding (defined by BCC as 1.7m at the Port Office gauge). Moderate Brisbane River flooding as defined by BCC would still require significantly larger releases than have been made at any time since Wivenhoe Dam was completed, potentially combined with another large atmospheric anomaly. Note that local flooding can occur for a range of other reasons, as flagged in the CM today.

Hope this helps.

an

From: Best Debbie [Debbie.Best [REDACTED]]
Sent: Saturday, 8 January 2011 9:28 AM
To: Dan Spiller
Subject: Fw: Water Grid operations update: 8/1/11

Dan you give detail?
Debbie

----- Original Message -----

From: Ken Smith <Ken.Smith [REDACTED]>
To: Best Debbie
Sent: Sat Jan 08 09:26:23 2011
Subject: Re: Water Grid operations update: 8/1/11

Thanks Deb. Can't access the attachment at home. Likelihood of localised flooding?

----- Original Message -----

From: Best Debbie <Debbie.Best [REDACTED]>

To: Ken Smith
Sent: Sat Jan 08 09:16:40 2011
Subject: Fw: Water Grid operations update: 8/1/11

Ken

A bit of action in SE which you need to be aware of. WGM is liaising with the LDMG. Debbie

----- Original Message -----

From: Dan Spiller <Daniel.Spiller[REDACTED]>
To: stephen.robertson[REDACTED] <stephen.robertson[REDACTED]>;
Lance McCallum (lance.mccallum[REDACTED])
<lance.mccallum[REDACTED]>; Tim Watts (tim.watts[REDACTED])
<tim.watts[REDACTED]>; Geoff Stead (geoff.stead[REDACTED])
<geoff.stead[REDACTED]>; lauren.sims[REDACTED]
<lauren.sims[REDACTED]>; Best Debbie; Martin.PeterJ[REDACTED]
<Martin.PeterJ[REDACTED]>; Dunn.KerryG[REDACTED]
<Dunn.KerryG[REDACTED]>
Cc: Rob Drury (rdrury[REDACTED] <rdrury[REDACTED]>; mfoster[REDACTED]
<mfoster[REDACTED]>; Media @ SEQWGM; Brown Damien; Reilly Bob;
Madgwick.DarrenT[REDACTED] <Madgwick.DarrenT[REDACTED]>; Denner Scott @
SEQWGM
Sent: Sat Jan 08 08:59:30 2011
Subject: Water Grid operations update: 8/1/11

All,

Dam releases

Attached is the current technical situation report.

Releases are being made from Somerset, Wivenhoe, North Pine and Leslie Harrison dams, with forecasts of high rainfall totals over the next four days.

For Wivenhoe Dam:

* All five gates are now open with the release rate planned to increase to 1200 cubic metres per second by midday today. This release rate is less than peak release from October 2010.

* The release strategy will continue to be reviewed based on actual rainfall. With significant inflows, it may need to be increased.

As advised yesterday, a number of local bridges have been inundated by releases and local flows. The Fernvale and Mt Crosby Weir Bridges could potentially also be affected if predicted rainfall totals eventuate.

* The BoM and Seqwater concur that current releases will increase the level of the lower Brisbane River by about 50 to 100mm. There is currently a 40 to 50mm atmospheric anomaly.

Releases from North Pine and Leslie Harrison dams are continuing. Releases from Hinze Dam are expected to be required over the weekend.

Water treatment

In terms of operations, Lockyer Valley flows have again caused a turbidity spike in the Brisbane River. Impacts are expected to peak today at Mt Crosby today, before being diluted by dam releases. There are similar issues at some other locations.

Despite the spike, all key plants are currently operating within critical limits with any impacts being monitored. Seqwater and Linkwater have prepared for potential issues by increasing treated water storage and staffing at some treatment plants. Desalination is at one-third capacity and ready to increase production within two hours of an instruction (but is unlikely to be required in this event).

With forecast rainfall, these type of issues are likely to recur over the remainder of the wet season.

Please call me on [REDACTED] if you require any further information.

Regards,
Dan

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+-----+
Think B4U Print
1 ream of paper = 6% of a tree and 5.4kg CO2 in the atmosphere
3 sheets of A4 paper = 1 litre of water
+-----+

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Suzie Emery

From: Best Debbie [Debbie.Best [REDACTED]]
Sent: Saturday, 8 January 2011 10:11 AM
To: Dan Spiller
Subject: Fw: Water Grid operations update: 8/1/11

Fyi

----- Original Message -----

From: Ken Smith <Ken.Smith [REDACTED]>
To: Best Debbie
Sent: Sat Jan 08 10:09:48 2011
Subject: Re: Water Grid operations update: 8/1/11

Thanks Deb. Let Dan know his analysis was quite helpful.

----- Original Message -----

From: Best Debbie <Debbie.Best [REDACTED]>
To: Ken Smith
Sent: Sat Jan 08 09:52:47 2011
Subject: Fw: Water Grid operations update: 8/1/11

A summary of impacts

----- Original Message -----

From: Dan Spiller <Daniel.Spiller [REDACTED]>
To: Best Debbie
Sent: Sat Jan 08 09:47:48 2011
Subject: RE: Water Grid operations update: 8/1/11

Debbie,

We expect river levels to be similar to yesterday, and again due to tides rather than releases.

River yesterday peaked at about 1.85 metres at the Port Office gauge. The high peak was due almost entirely due to tides and a 0.4 to 0.5 metre atmospheric anomaly.

CM and Seqwater agree that flows of 1500 cumecs over Mt Crosby will contribute about 0.05m (50mm) to peak river levels at the Port Office gauge. We are planning to release at 1200 cumecs from midday, with an allowance for Lockyer Valley flows (which peaked at about 500 cumecs this week and are reducing). For interest only, the impact on low tide levels is greater - meaning that there is less variation in river levels.

The key risk will be if the high rainfall eventuates (200mm over four days). We will review as this occurs, but in the meantime it is important that we get the flood storage compartment down to give ourselves some flexibility.

Looking forward, we are preparing a more detailed brief on potential scenarios with the upcoming January and February peak tides. The challenge is that river levels are due to about five different factors, of which only tides can be predicted this far out. Atmospheric anomalies can only be predicted a few days out.

Short answer is that we expect ongoing low level flooding (defined by BCC as 1.7m at the Port Office gauge). Moderate Brisbane River flooding as defined by BCC would still require significantly larger releases than have been made at any time since Wivenhoe Dam was completed, potentially combined with another large atmospheric anomaly. Note that local flooding can occur for a range of other reasons, as flagged in the CM today.

Hope this helps.

Dan

From: Best Debbie [Debbie.Best [REDACTED]]
Sent: Saturday, 8 January 2011 9:28 AM
To: Dan Spiller
Subject: Fw: Water Grid operations update: 8/1/11

Dan you give detail?
Debbie

----- Original Message -----

From: Ken Smith <Ken.Smith [REDACTED]>
To: Best Debbie
Sent: Sat Jan 08 09:26:23 2011
Subject: Re: Water Grid operations update: 8/1/11

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Sent: Sat Jan 08 09:16:40 2011
Subject: Fw: Water Grid operations update: 8/1/11

Ken

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----- Original Message -----

From: Dan Spiller <Daniel.Spiller [REDACTED]>
To: stephen.robertson [REDACTED] <stephen.robertson [REDACTED]>; Lance McCallum (lance.mccallum [REDACTED]) <lance.mccallum [REDACTED]>; Tim Watts (tim.watts [REDACTED]) <tim.watts [REDACTED]>; Geoff Stead (geoff.stead [REDACTED]) <geoff.stead [REDACTED]>; Lauren Sims (lauren.sims [REDACTED]) <lauren.sims [REDACTED]>; Best Debbie; Martin, Peter (martin.peter [REDACTED]) <Martin.Peter [REDACTED]>; Dunn, KerryG (dunn.kerryg [REDACTED]) <Dunn.KerryG [REDACTED]>
Cc: Rob Drury (rdrury [REDACTED]) <rdrury [REDACTED]>; mfoster [REDACTED] <mfoster [REDACTED]>; Media @ SEQWGM; Brown Damien; Reilly Bob; Madgwick, DarrenT (madgwick.darrent [REDACTED]) <Madgwick.Darrent [REDACTED]>; Denner Scott @ SEQWGM
Sent: Sat Jan 08 08:59:30 2011
Subject: Water Grid operations update: 8/1/11

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Please call me on [REDACTED] if you require any further information.

Regards,
Dan

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TECHNICAL SITUATION REPORT

TSR Number	W32	Date of TSR release	9.1.2011	Time of TSR release	7.00a m
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue current releases to discharge floodwater as quickly as possible
	<ul style="list-style-type: none"> Continue the current releases of around 1350cumecs or 116,000ML per day, however this may change slightly depending on other flows to maintain around 1600cumecs in the mid Brisbane River This should keep Fernvale and Mt Crosby bridges clear however if further predicted rainfall occurs there may be impacts on these bridges too
Key considerations	Storage levels: Above FSL
	Inflows: Ongoing inflows
	Rainfall:
	Lockyer/Bremer: Monitoring their inflows
	Brisbane River: Minimal impact as per previous discussions and releases.

Rainfall

Catchment average rainfall for the past 12 hours is; North Pine Dam (less than 10 mm); Somerset Dam (40 mm); Wivenhoe Dam (less than 10 mm). The bulk of the rain that has fallen in the Somerset Dam catchment has occurred in the last two hours, with recorded falls exceeding 60mm in some areas. The BOM forecast for the next seven days issued at 0450 this morning is:-

Sunday:	Rain periods.
Monday:	Rain periods.
Tuesday:	Rain periods.
Wednesday	A few showers.
Thursday	A shower or two.
Friday	A shower or two.
Saturday	Mostly fine.

A severe weather warning remains current for heavy rainfall in the dam catchment areas. The dam catchments are relatively saturated and significant inflows will be generated if the forecast rainfall eventuates.

North Pine Dam (Full Supply Level 39.60 m AHD)

The dam level is currently 39.47 m AHD and steady. Two radial gates remain open to release runoff generated from recent rainfall. Based on rainfall forecasts, the radial gates have been kept open in anticipation of further inflows over the next few days. However unless significant rain falls today, consideration will be given to closing the gates late this afternoon or early tomorrow morning and discussions to finalise a decision on the timing of radial gate closure will be held with the Moreton Bay Regional Council later today. Youngs crossing will remain closed while releases are in progress.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level is currently falling slowly, with the current level being 100.27m AHD. However the rain that has fallen in the dam catchment over the last two hours (recorded falls exceed 60mm in some areas) will result in significant inflows later today. The current release rate into Wivenhoe Dam is 35,000ML/day. Since the commencement of the event on 02/01/2011 approximately 56,000ML has been released from the dam, with a total of at least 150,000ML to be released based on the currently recorded rainfall. The total release for the event is likely to increase significantly over the next few days based on the current rainfall forecasts. At this stage, releases will continue until at least Tuesday.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

The dam level is currently falling slowly, with the current level being 68.58m AHD. River levels upstream of the dam are receding, however further inflows will result from any additional rainfall. The current gate operation strategy will maintain flows of around 1,600m³/s in the mid-Brisbane River. The current release rate from Wivenhoe Dam is 116,000ML/day. Since the commencement of the event on 02/01/2011 approximately 150,000ML has been released from the dam, with a total of at least 450,000ML to be released based on the currently recorded rainfall. The total release for the event is likely to increase over the next few days based on the current rainfall forecasts. At this stage, releases will continue until at least Wednesday.

Impacts downstream of Wivenhoe Dam

The current Wivenhoe Dam release combined with Lockyer flows and local runoff will mean that all low level crossings downstream of Wivenhoe (Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing) will be adversely impacted until at least Wednesday 12 January. At this stage Fernvale and Mt Crosby Weir Bridge are not expected to be affected, but this may be revised if the predicted rainfall totals eventuate and higher releases from Wivenhoe Dam are considered necessary.

Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the Wivenhoe operating strategy.

Leslie Harrison Dam

Following the heavy rainfall Wednesday night, gate operations commenced at Leslie Harrison Dam late Wednesday night and closed late last night. However further releases are likely.

Hinze Dam

The gate opening of 300mm continues today and may for several days depending on inflows.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	[REDACTED]

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	[REDACTED]

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date		Time		or Event	Change in strategy
---------------------	-------------	--	-------------	--	-----------------	---------------------------

Litsupport Brisbane

From: Rob Drury [rdrury]
Sent: Sunday, 9 January 2011 7:50 AM
To: Rob Drury; Dan Spiller
Cc: Peter Borrows; Stan Stevenson; Mike Foster; Paul Bird; David Roberts; Arminda Roberts
Subject: RE: Technical Report W31
Attachments: Technical Situation Report W32.docx

Would like to blame the computer system but purely operator error.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast
flowing water is FATAL

rethink it



[Redacted] | E rdrury [Redacted]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

From: Rob Drury
Sent: Sunday, 9 January 2011 7:26 AM
To: Rob Drury; 'Dan Spiller'
Cc: Peter Borrows; Stan Stevenson; Mike Foster; Paul Bird; David Roberts; Arminda Roberts
Subject: RE: Technical Report W31

Please find attached Report W31.

Basically continuing releases to maintain 1600 cumecs total flow in the mid Brisbane but watching predicted rainfall as the strategy may change. Fernvale and Mt Crosby bridges still should be unaffected but does depend on what rain we get today or tomorrow.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast flowing water is FATAL

rethink it



[REDACTED] | E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

From: Rob Drury
Sent: Saturday, 8 January 2011 7:46 AM
To: Rob Drury; 'Dan Spiller'
Cc: Peter Borrows; Stan Stevenson; Mike Foster; Paul Bird; David Roberts
Subject: RE: Technical Report W31

Attached report number W31.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast flowing water is FATAL

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[REDACTED] | E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
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Seqwater Technical Officer position title	Dam Operations Manager

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BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

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BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

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ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	[REDACTED]

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SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	[REDACTED]

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	Time	or Event	Change in strategy
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From: Paul Bird <pbird[REDACTED]>
Sent: Sunday, January 9, 2011 7:57 AM
To: SEQWGM Media <media[REDACTED]>; aroebuck[REDACTED];
greg.swain[REDACTED]; GSTUBBS[REDACTED]; Kathy
Petrik <Kathy.Petrik[REDACTED]>;
lisa.m.martin[REDACTED]; Paula Weston
<paula.weston[REDACTED]>; tjacobs[REDACTED] Barry
Dennien <Barry.Dennien[REDACTED]>; Dan Spiller
<Daniel.Spiller[REDACTED]>; Scott Denner
<Scott.Denner[REDACTED]>; Armina Roberts
<aroberts[REDACTED]>; Bec Middlemiss
<bmiddlemiss[REDACTED]>; Michael Fiechtner
<MFiechtner[REDACTED]>; Mike Foster <mfoster[REDACTED]>;
Tara King <tking[REDACTED]>
Cc: Mike Foster <mfoster[REDACTED]>; Michael Lyons
<Michael.Lyons[REDACTED]>; ELT <ELT[REDACTED]>;
Geoff.Stead[REDACTED]
Subject: Water Release Update

As at 8.00 on Sunday 9 January, the following applies:

SOMERSET DAM:

Water is being released into Wivenhoe through sluice gates and the release will continue until early next week.

WIVENHOE DAM:

Gate Releases of around 116,000 megalitres a day are underway and are likely to continue until mid next week.

Local Councils have been advised that Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing may be inundated for several days.

At this stage, no adverse impacts are expected for Fernvale Bridge, or Mt Crosby Weir Bridge, although this may change depending on rainfall.

NORTH PINE DAM:

Gate operations are being reviewed and the gates may be closed today or tomorrow morning however any further rain may mean continued releases.

The local Council is being kept informed regarding Youngs Crossing.

LESLIE HARRISON DAM:

Releases ceased last night but may be required at short notice due to further inflows.

HINZE DAM:

A minor release through the emergency gates is underway. There is no public access to the spillway.

For detailed information on road crossing closures and other potential impacts, always contact your local council.

RECREATION UPDATE:

Lake Wivenhoe

Lake Wivenhoe is currently closed to water based recreation activities, and is expected to remain closed for some days, due to the high water levels.

Lake Somerset

Lake Somerset is closed to water based recreation activities due to the high water levels and is expected to remain closed into next week, depending upon the conditions.

The following recreation sites are currently closed due to submerged infrastructure, or dangerous conditions

- O'Sheas Crossing
- Hamon Cove
- Logan Inlet
- Captain Logan Camp
- River access at Atkinson's Crossing
- Billies Bay/Hays Landing
- The Spit
- Lake Somerset Holiday Park Kirkleagh [Boat ramps only]

Other recreation areas at Lake Wivenhoe are open for land based recreation activities.

The Spillway Lookout recreation area is open; however visitors are advised that there may be long delays due to the numbers of people on site. Security staff and traffic controllers will be on site to assist with visitor management – all visitors must comply with the reasonable directions of security staff and traffic controllers.

Lake Borumba

Yabba Creek Road between Imbil and Borumba Dam is currently closed; meaning that access to the lake is not available and be closed for several days.

Lake Baroon

Lake Baroon has been closed to on-water recreation activities due to the current lake level. The recreation areas at Lake Baroon are open for land based activities.

Lake Maroon

Lake Maroon remains closed to water skiing and swimming but is open to boating and fishing.

Care should be taken at the recreation sites that are open, with the ground being totally saturated. Vehicles must be parked only in designated parking areas, and should not be driven onto grassed areas.

This information will be updated if any significant changes occur.

Paul Bird

Senior Communications Advisor
Queensland Bulk Water Supply Authority *trading as Seqwater*

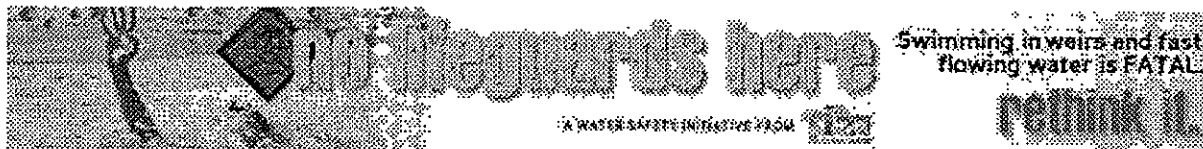


E pbird

Level 3, 240 Margaret St, Brisbane City QLD 4000

PO Box 16146, City East QLD 4002

Website | www.seqwater.com.au



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Litsupport Brisbane

From: Dan Spiller
Sent: Sunday, 9 January 2011 8:14 AM
To: stephen.robertson [REDACTED]; Lance McCallum (lance.mccallum [REDACTED]); Tim Watts (tim.watts [REDACTED]); Geoff Stead (geoff.stead [REDACTED]); lauren.sims [REDACTED]; Debbie Best (debbie.best [REDACTED]); Martin.PeterJ [REDACTED]; Dunn.KerryG [REDACTED]
Cc: Rob Drury (rdrury [REDACTED]); pbird [REDACTED]; SEQWGM Media; Damien Brown (damien.brown [REDACTED]); bob.reilly [REDACTED]; Madgwick.DarrenT [REDACTED]
Subject: Water Grid operations update: 9/1
Attachments: Technical Situation Report W32.docx

All,

Current technical situation report.

Key points are:

- Wivenhoe Dam is continuing releases at about 116,000 ML/day. Releases are expected to continue until at least Wednesday.
- A severe weather warning remains current for dam catchments. There has been heavy rainfall in the Somerset Dam catchment over the past two hours.
- The release strategy will continue to be reviewed based on actual rainfall.
- Releases are being made so as to avoid inundating the Fernvale and Mt Crosby Weir Bridges. Other flows may impact on the bridges, should the forecast rainfall eventuate.
- North Pine Dam may cease releases today or tomorrow morning, depending upon actual rainfall.
- Many dams and recreation areas are closed.

Please call me on [REDACTED] if you require any further information.

Regards,
Daniel Spiller

TECHNICAL SITUATION REPORT

TSR Number	W32	Date of TSR release	9.1.2011	Time of TSR release	7.00am
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue current releases to discharge floodwater as quickly as possible 										
Strategy	<ul style="list-style-type: none"> Continue the current releases of around 1350cumecs or 116,000ML per day, however this may change slightly depending on other flows to maintain around 1600cumecs in the mid Brisbane River This should keep Fernvale and Mt Crosby bridges clear however if further predicted rainfall occurs there may be impacts on these bridges too 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Ongoing inflows</td></tr> <tr> <td>Rainfall:</td><td></td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Minimal impact as per previous discussions and releases.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Ongoing inflows	Rainfall:		Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Minimal impact as per previous discussions and releases.
Storage levels:	Above FSL										
Inflows:	Ongoing inflows										
Rainfall:											
Lockyer/Bremer:	Monitoring their inflows										
Brisbane River:	Minimal impact as per previous discussions and releases.										

Rainfall

Catchment average rainfall for the past 12 hours is; North Pine Dam (less than 10 mm); Somerset Dam (40 mm); Wivenhoe Dam (less than 10 mm). The bulk of the rain that has fallen in the Somerset Dam catchment has occurred in the last two hours, with recorded falls exceeding 60mm in some areas. The BOM forecast for the next seven days issued at 0450 this morning is:-

Sunday:	Rain periods.
Monday:	Rain periods.
Tuesday:	Rain periods.
Wednesday	A few showers.
Thursday	A shower or two.
Friday	A shower or two.
Saturday	Mostly fine.

A severe weather warning remains current for heavy rainfall in the dam catchment areas. The dam catchments are relatively saturated and significant inflows will be generated if the forecast rainfall eventuates.

North Pine Dam (Full Supply Level 39.60 m AHD)

The dam level is currently 39.47 m AHD and steady. Two radial gates remain open to release runoff generated from recent rainfall. Based on rainfall forecasts, the radial gates have been kept open in anticipation of further inflows over the next few days. However unless significant rain falls today,

consideration will be given to closing the gates late this afternoon or early tomorrow morning and discussions to finalise a decision on the timing of radial gate closure will be held with the Moreton Bay Regional Council later today. Youngs crossing will remain closed while releases are in progress.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level is currently falling slowly, with the current level being 100.27m AHD. However the rain that has fallen in the dam catchment over the last two hours (recorded falls exceed 60mm in some areas) will result in significant inflows later today. The current release rate into Wivenhoe Dam is 35,000ML/day. Since the commencement of the event on 02/01/2011 approximately 56,000ML has been released from the dam, with a total of at least 150,000ML to be released based on the currently recorded rainfall. The total release for the event is likely to increase significantly over the next few days based on the current rainfall forecasts. At this stage, releases will continue until at least Tuesday.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

The dam level is currently falling slowly, with the current level being 68.58m AHD. River levels upstream of the dam are receding, however further inflows will result from any additional rainfall. The current gate operation strategy will maintain flows of around 1,600m³/s in the mid-Brisbane River. The current release rate from Wivenhoe Dam is 116,000ML/day. Since the commencement of the event on 02/01/2011 approximately 150,000ML has been released from the dam, with a total of at least 450,000ML to be released based on the currently recorded rainfall. The total release for the event is likely to increase over the next few days based on the current rainfall forecasts. At this stage, releases will continue until at least Wednesday.

Impacts downstream of Wivenhoe Dam

The current Wivenhoe Dam release combined with Lockyer flows and local runoff will mean that all low level crossings downstream of Wivenhoe (Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing) will be adversely impacted until at least Wednesday 12 January. At this stage Fernvale and Mt Crosby Weir Bridge are not expected to be affected, but this may be revised if the predicted rainfall totals eventuate and higher releases from Wivenhoe Dam are considered necessary.

Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the Wivenhoe operating strategy.

Leslie Harrison Dam

Following the heavy rainfall Wednesday night, gate operations commenced at Leslie Harrison Dam late Wednesday night and closed late last night. However further releases are likely.

Hinze Dam

The gate opening of 300mm continues today and may for several days depending on inflows.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	[REDACTED]

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised and do not have a problem with the new strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	[REDACTED]

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date		Time		or Event	Change in strategy
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TECHNICAL SITUATION REPORT

TSR Number	W33	Date of TSR release	9.1.2011	Time of TSR release	6.00p m
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue current releases however event is increasing in magnitude and may require increased releases.
Strategy	<ul style="list-style-type: none"> Continue the current releases however there may be a need to increase releases above current levels and impact Mt Crosby and Fernvale Bridges.
Key considerations	Storage levels: Above FSL
	Inflows: Inflows may approach 1,000,000ML which is close to outflow in 1999 and two thirds of 1974 event.
	Rainfall: Continuing
	Lockyer/Bremer: Monitoring their inflows
	Brisbane River: Minimal impact as per previous discussions and releases.

Rainfall

Catchment average rainfall for the past 12 hours is; North Pine Dam (60 mm); Somerset Dam (150 mm); Wivenhoe Dam (80 mm). The bulk of the rain that has fallen in the upper reaches of the Stanley and Brisbane Rivers.

The BOM rainfall forecast for the next few days is:-

Monday:	Very heavy rain periods with totals up to 300mm centred around North Pine.
Tuesday:	Rain periods with totals up to 150mm centred around North Pine.
Wednesday	A few showers less than 10mm
Thursday	A shower or two.
Friday	A shower or two.
Saturday	Mostly fine.

A severe weather warning remains current for heavy rainfall in the dam catchment areas. The dam catchments are relatively saturated and significant inflows will be generated if the forecast rainfall eventuates.

North Pine Dam (Full Supply Level 39.60 m AHD)

The dam level is currently 39.65 m AHD and rising at 1600. Following the rain in the 9 hours, the number of open gates has been increased from 2 to 5 which are expected to remain open for the next 12 hours. Youngs Crossing will remain closed while releases are in progress.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level is 100.75 m AHD and rising quickly. Estimated peak inflow to the dam is about 3,000m³/s. Five sluice gates are open releasing about 1,100m³/s (95,000ML/d) into Wivenhoe Dam. At this stage the dam will reach at least 101.5 during early Tuesday morning.

Since the commencement of the event on 02/01/2011 approximately 80,000ML has been released from the dam, with an event total of at least 320,000ML based on the recorded rainfall to date. The event total is expected to increase significantly due to the forecast rain in the next 24 to 48 hours. At this stage, releases will continue until at least Wednesday.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

The dam level is currently rising again, with the current level being 68.70m AHD. Estimated peak inflow to the dam just from the Upper Brisbane R is about 5,000m³/s and, at this stage, the dam will reach at least 72.5 m AHD during Wednesday morning. River levels upstream of the dam are rising quickly with significant inflow being generated from the intense heavy rainfall. The current gate operation strategy will maintain flows of around 1,600m³/s in the mid-Brisbane River for the next 24 hours. This may mean temporarily reducing releases from Wivenhoe Dam as Lockyer flows increase. However, releases may have to be increased significantly during Monday depending on the rain in the next 12 to 24 hours. The current release rate from Wivenhoe Dam is 1,400m³/s (120,000ML/day).

Since the commencement of the event on 02/01/2011 approximately 210,000ML has been released from the dam, with an event total approaching 1,000,000ML (including Somerset outflow) based on the recorded rainfall to date. The total release for the event is likely to increase over the next few days based on the current rainfall forecasts. At this stage, releases will continue until at least Saturday 15th January 2011.

Impacts downstream of Wivenhoe Dam

The current Wivenhoe Dam release combined with Lockyer flows and local runoff will mean that all low level crossings downstream of Wivenhoe (Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing) will be adversely impacted until at least Saturday 15 January.

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.

Water levels in the lower Brisbane R will be impacted by the combined flows of Lockyer Ck, Bremer River, local runoff and releases from Wivenhoe Dam.

Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the Wivenhoe operating strategy.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	[REDACTED]

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	[REDACTED]

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury

Contact Officer position title			Dam Operations Manager			
Next TSR due	Date	9.1.2011	Time		or Event	Change in strategy

Litsupport Brisbane

From: Rob Drury [rdrury [REDACTED]]
Sent: Sunday, 9 January 2011 6:13 PM
To: Dan Spiller
Subject: RE: Technical Report W31

Will send an update in next hour or so.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority *trading as Seqwater*



Swimming in weirs and fast
flowing water is FATAL

rethink it



[REDACTED] | E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

From: Dan Spiller [mailto:Daniel.Spiller [REDACTED]]
Sent: Sunday, 9 January 2011 4:43 PM
To: Rob Drury
Subject: Re: Technical Report W31

Thanks. Appreciate any advice, especially from BCC about city flooding. Anticipate we may get asked soon.

Dan

On 09/01/2011, at 4:28 PM, "Rob Drury" <rdrury [REDACTED]> wrote:

Not yet. Duty engineers meeting this afternoon to discuss strategies. Will advise if any change but you are right, we are getting big inflows. Rob

From: Dan Spiller <Daniel.Spiller [REDACTED]>
To: Rob Drury
Sent: Sun Jan 09 16:19:14 2011
Subject: Re: Technical Report W31

Rob,

Seems to have been a lot of rain in the catchments, and more heading for Bris Any changes to strategy?

Dan

On 09/01/2011, at 7:50 AM, "Rob Drury" <[rdrury](#)> wrote:

Would like to blame the computer system but purely operator error.

Rob

Robert Drury

Dam Operations Manager

Water Delivery

Queensland Bulk Water Supply Authority *trading as Seqwater*

<image001.jpg>

<image002.png>

| E [rdrury](#)

Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306

Website | www.seqwater.com.au

From: Rob Drury

Sent: Sunday, 9 January 2011 7:26 AM

To: Rob Drury; 'Dan Spiller'

Cc: Peter Borrows; Stan Stevenson; Mike Foster; Paul Bird; David Roberts; Arminda Roberts

Subject: RE: Technical Report W31

Please find attached Report W31.

Basically continuing releases to maintain 1600 cumecs total flow in the mid Brisbane but watching predicted rainfall as the strategy may change. Fernvale and Mt Crosby bridges still should be unaffected but does depend on what rain we get today or tomorrow.

Rob

Robert Drury

Dam Operations Manager

Water Delivery

Queensland Bulk Water Supply Authority *trading as Seqwater*

<image001.jpg>

<image002.png>

| E rdrury

Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306

Website | www.seqwater.com.au

From: Rob Drury

Sent: Saturday, 8 January 2011 7:46 AM

To: Rob Drury; 'Dan Spiller'

Cc: Peter Borrows; Stan Stevenson; Mike Foster; Paul Bird; David Roberts

Subject: RE: Technical Report W31

Attached report number W31.

Rob

Robert Drury

Dam Operations Manager

Water Delivery

Queensland Bulk Water Supply Authority *trading as Seqwater*

<image001.jpg>

<image002.png>

| E rdrury

Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306

Website | www.seqwater.com.au

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<Technical Situation Report W32.docx>

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Cindy Hulsey

From: Dan Spiller
Sent: Sunday, 9 January 2011 8:56 PM
To: 'Rob Drury'
Subject: Update

Categories: T8

Rob,

How are you tracking?

We are proposing to have a short teleconference tonight to start planning for impacts and communication. I also need to advise upwards.

Dan

TECHNICAL SITUATION REPORT

TSR Number	W34	Date of TSR release	9.1.2011	Time of TSR release	9.00p m
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue current releases however event is increasing in magnitude and will require increased releases.
Strategy	<ul style="list-style-type: none"> Continue the current releases until tomorrow noon when releases will be increased to impact Mt Crosby and Fernvale Bridges.
Key considerations	Storage levels: Above FSL
	Inflows: Inflows may approach 1,500,000ML which is close to 1974 event.
	Rainfall: Continuing
	Lockyer/Bremer: Monitoring their inflows
	Brisbane River: Impact as below.

Rainfall

Very heavy rainfall has been recorded in the upper reaches of the Brisbane and Stanley in the last 6 hours with totals up 100 to 140mm. Totals for the last 24 hours range from 100 to 300mm.

Rainfall of similar magnitudes is expected in the 12 to 24 hours, especially around the Bremer/Warrill catchments as the system tracks south.

A severe weather warning remains current for heavy rainfall in the dam catchment areas.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level is 101.68 m AHD (about 500,000ML currently in storage) and rising quickly. Peak inflow to the dam is estimated to be about 4,000 m³/s based on observed rainfall and could be as high as 5,000m³/s with additional forecast rainfall. Five sluice gates are open releasing about 1,100m³/s (95,000ML/d) into Wivenhoe Dam. At this stage the dam will reach at least 103.5 early Tuesday morning which will adversely impact areas around Kilcoy.

Since the commencement of the event on 02/01/2011 approximately 100,000ML has been released from the dam into Wivenhoe, with an event total of the order of 520,000ML expected. This may increase due to the forecast rain in the next 24 to 48 hours. At this stage, releases will continue until at least Thursday.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

River levels upstream of the dam are rising quickly with significant inflow being generated from the intense heavy rainfall. Flows in the Brisbane River at Gregor's Ck have already reached 6,700m³/s and the river is still rising.

The dam level is rising again, with the current level being 69.10m AHD (1,410,000ML with about 300,00 of flood storage). Estimated peak inflow to the dam just from the Upper Brisbane R alone may reach as high as 7,500m³/s and, at this stage, the dam will reach at least 73.0 m AHD during Tuesday morning. Given the rapid increase in inflow volumes, it will be necessary to increase the release from Wivenhoe Monday morning.

The objective for dam operations will be to minimise the impact of urban flooding in areas downstream of the dam and, at this stage, releases will be kept below 3,500m³/s and the combined flows in the lower Brisbane will be limited to 4,000m³/s. This is below the limit of urban damages in the City reaches.

The current release rate from Wivenhoe Dam is 1,400m³/s (120,000ML/day). Gate opening will start to be increased from noon Monday and the release is expected to increase to at least 2,600m³/s during Tuesday morning.

Since the commencement of the event on 02/01/2011 approximately 220,000ML has been released from the dam, with an event total approaching 1,000,000ML without further rain and as much as 1,500,000ML with forecast rainfall of (both including Somerset outflow). At this stage, releases will continue until at least Sunday 16th January 2011.

Impacts downstream of Wivenhoe Dam

The projected Wivenhoe Dam releases combined with Lockyer flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Saturday 15 January in varying degrees.

Water levels in the lower Brisbane R will be impacted by the combined flows of Lockyer Ck, Bremer River, local runoff and releases from Wivenhoe Dam.

Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the updated Wivenhoe operating strategy.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	10.1.2011	Time		or Event	Change in strategy
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Litsupport Brisbane

From: Rob Drury [rdrury]
Sent: Sunday, 9 January 2011 9:18 PM
To: Rob Drury; Dan Spiller
Cc: Peter Borrows; Stan Stevenson; Mike Foster; Paul Bird; David Roberts; Arminda Roberts
Subject: RE: Technical Report W34
Attachments: Technical Situation Report W34.docx

See attached report W34.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast
flowing water is FATAL

rethink it



[REDACTED] | E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

From: Rob Drury
Sent: Sunday, 9 January 2011 7:26 AM
To: Rob Drury; 'Dan Spiller'
Cc: Peter Borrows; Stan Stevenson; Mike Foster; Paul Bird; David Roberts; Arminda Roberts
Subject: RE: Technical Report W31

Please find attached Report W31.

Basically continuing releases to maintain 1600 cumecs total flow in the mid Brisbane but watching predicted rainfall as the strategy may change. Fernvale and Mt Crosby bridges still should be unaffected but does depend on what rain we get today or tomorrow.

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email in error please contact the sender immediately and delete the material from your email system. QLD Bulk Water Supply Authority ABN75450239876 (Trading as Seqwater).

TECHNICAL SITUATION REPORT

TSR Number	W34	Date of TSR release	9.1.2011	Time of TSR release	9.00pm
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Rainfall of similar magnitudes is expected in the 12 to 24 hours, especially around the Bremer/Warrill catchments as the system tracks south.

A severe weather warning remains current for heavy rainfall in the dam catchment areas.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level is 101.68 m AHD (about 500,000ML currently in storage) and rising quickly. Peak inflow to the dam is estimated to be about 4,000 m³/s based on observed rainfall and could be as high as 5,000m³/s with additional forecast rainfall. Five sluice gates are open releasing about 1,100m³/s (95,000ML/d) into Wivenhoe Dam. At this stage the dam will reach at least 103.5 early Tuesday morning which will adversely impact areas around Kilcoy.

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River levels upstream of the dam are rising quickly with significant inflow being generated from the intense heavy rainfall. Flows in the Brisbane River at Gregor's Ck have already reached 6,700m³/s and the river is still rising.

The dam level is rising again, with the current level being 69.10m AHD (1,410,000ML with about 300,00 of flood storage). Estimated peak inflow to the dam just from the Upper Brisbane R alone may reach as high as 7,500m³/s and, at this stage, the dam will reach at least 73.0 m AHD during Tuesday morning. Given the rapid increase in inflow volumes, it will be necessary to increase the release from Wivenhoe Monday morning.

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Water levels in the lower Brisbane R will be impacted by the combined flows of Lockyer Ck, Bremer River, local runoff and releases from Wivenhoe Dam.

Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the updated Wivenhoe operating strategy.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

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ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

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SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
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Contact Officer position title	Dam Operations Manager

Next TSR due	Date	10.1.2011	Time		or Event	Change in strategy
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Litsupport Brisbane

From: Dan Spiller
Sent: Sunday, 9 January 2011 9:27 PM
To: 'Rob Drury'; Barry Dennien; Michael Lyons; SEQWGM Media; Debbie Best (debbie.best@seqwater.com.au); Scott Denner; pbird@seqwater.com.au; 'sstevenson@seqwater.com.au'
Subject: FW: Technical Report W34
Attachments: Technical Situation Report W34.docx

Technical report below.

Teleconference at 9.30.

Details are:

Phone: [REDACTED]

PIN: [REDACTED]

Regards,
Dan

From: Rob Drury [mailto:rdrury@seqwater.com.au]
Sent: Sunday, January 09, 2011 9:18 PM
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TECHNICAL SITUATION REPORT

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D128

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Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the updated Wivenhoe operating strategy.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

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Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

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SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

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Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	10.1.2011	Time	or event	Change in strategy
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Litsupport Brisbane

From: Dan Spiller
Sent: Sunday, 9 January 2011 11:07 PM
To: stephen.robertson [REDACTED]; Ken Smith (ken.smith [REDACTED]);
Lance McCallum (lance.mccallum [REDACTED]); Tim Watts
(tim.watts [REDACTED]); Geoff Stead (geoff.stead [REDACTED]);
lauren.sims [REDACTED]; Debbie Best (debbie.best [REDACTED]);
Martin.PeterJ [REDACTED]; Dunn.KerryG [REDACTED];
Cc: 'Rob Drury'; pbird [REDACTED]; 'sstevenson [REDACTED]; SEQWGM Media;
Scott Denner; Madgwick.DarrenT [REDACTED]; Damien Brown
(damien.brown [REDACTED]); bob.reilly [REDACTED]
Subject: Updated Wivenhoe Dam release strategy
Attachments: Technical Situation Report W34.docx

All,

Latest advice from the Flood Control Centre attached.

There has been 100 to 300mm of rainfall in the Wivenhoe and Somerset dam catchments over the past 24 hours. Rainfall of similar magnitudes is expected over the next 12 to 24 hours.

At this time, including forecast rainfall, total inflows will exceed 1,000,000 ML and may approach 1,500,000 ML - in the order of the 1974 flood volume.

To date, the primary objective for this event has been managing to prevent inundation of the Mt Crosby Weir and Fernvale Bridges.

With the forecast volumes, this primary objective is being changed to minimizing the risk of urban inundation. This involves larger releases now, minimizing the risk of even larger releases later (were the flood compartment to reach high levels).

Urban inundation in the City reaches generally commences at total river flows of about 3,500 cubic metres per second (dam releases plus Lockyer and Bremer). At this time, and depending upon overnight rainfall, the Flood Control Centre is proposing to increase releases from around 1,200 to 2,500 cubic metres per second from midday tomorrow. This provides an allowance for other flows.

The Mt Crosby Weir and Fernvale bridges will certainly be inundated - isolating or inconveniencing many Brisbane Valley residents. The timing will depend largely on local flows, with the river having recently increased to be about one foot below the deck. Seqwater is preparing the bridge to be inundated, and may need to close it tonight. However, other flows permitting, we will delay inundating the bridge until tomorrow night - providing notice for impacted residents.

Actions to date:

- Notified Councils (up to the CEO level at BCC)
- Notified Police (Assistant Commissioner)
- Increasing treated water storage and preparing treatment plants, should there again be increased turbidity levels or other operational issues.

A media advice is being prepared now, for review and issue by 7am. The advice will address the closure of the bridges, with the intent of providing as much notice as possible to impacted residents (if not already closed). Impacts on the City reaches will be addressed following further consultation with Council (with there being a 20+ hour transit time).

It is important to note that the dams are managing impacts by delaying and reducing releases. For comparison, peak flows into the dam are forecast to reach up to 7,500 cubic metres per second - excluding any downstream flows.

Please call me on [REDACTED] if you require any further information.

Regards,
Daniel Spiller

TECHNICAL SITUATION REPORT

TSR Number	W34	Date of TSR release	9.1.2011	Time of TSR release	9.00pm
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Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the updated Wivenhoe operating strategy.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager
0410378740	

BoM assessment

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BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

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Next TSR due	Date	10.1.2011	Time	or Event	Change in strategy
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From: Dan Spiller [Daniel.Spiller@brisbane.qld.gov.au]
Sent: Sunday, 9 January 2011 11:23 PM
To: 'ced@brisbane.qld.gov.au'
Cc: Barry Dennien; 'Debbie Best (debbie.best@brisbane.qld.gov.au)'
Subject: Wivenhoe Dam operations update

Colin,

Further to our conversation, our latest advice is as follows.

There has been 100 to 300mm of rainfall in the Wivenhoe and Somerset dam catchments over the past 24 hours. Rainfall of similar magnitudes is expected over the next 12 to 24 hours. Total inflows will exceed 1,000,000 ML, based on rainfall to date.

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With the forecast volumes, this primary objective is being changed to minimizing the risk of urban inundation. This involves larger releases now, minimizing the risk of even larger releases later (were the flood compartment to reach high levels).

Urban inundation in the City reaches generally commences at total river flows of about 3,500 cubic metres per second (dam releases plus Lockyer and Bremer). At this time, and depending upon overnight rainfall, the Flood Control Centre is proposing to increase releases from around 1,200 to 2,500 cubic metres per second from midday tomorrow. This provides an allowance for other flows.

The Mt Crosby Weir and Fernvale bridges will certainly be inundated - isolating or inconveniencing many Brisbane Valley residents. The timing will depend largely on local flows, with the river having recently increased to be about one foot below the deck. Seqwater is preparing the bridge to be inundated, and may need to close it tonight. However, other flows permitting, we will delay inundating the bridge until tomorrow night - providing notice for impacted residents.

We propose to issue a media advice about the increases and potential impact on bridges early tomorrow morning (about 7am). A draft is below. I would appreciate any comments, but understand time is limited. We will finalize it before issue, based on the status of the Weir Bridge at that time. Obviously, it is irrelevant if other flows result in closure before releases are increased.

The advice does not address urban impacts at this time. We would prefer to review the situation in the morning and consult with Councils before finalising the strategy. This includes reviewing where the rainfall occurs.

As you know, the dams are managing impacts by delaying and reducing releases. For comparison, peak flows into the dam are forecast to reach up to 7,500 cubic metres per second - excluding any downstream flows.

I will speak to you tomorrow. In the meantime, please call me on [REDACTED] if you require any further information.

Regards,
Daniel Spiller

Media update - 10 January 2011

Wivenhoe Dam releases

Significant rainfall received across the catchment has pushed Wivenhoe Dam's capacity to approximately _%. In order to relieve the dam's flood storage compartment, controlled releases will be increased today, utilising a strategy designed to minimise impacts downstream.

Increased releases, combined with other flows, are expected to result in the closure of the Fernvale Bridge and Mt Crosby Weir Bridge. This could occur this morning, but will be delayed until tonight if possible.

A number of other bridges have already been impacted, including Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing.

Residents are urged to contact local councils for detailed information on road crossing closures and other impacts.

Telephone - 1800 613 122 has been established for members of the public seeking information on which dams are spilling in South East Queensland.

ENDS

Suzie Emery

From: Dan Spiller
Sent: Monday, 10 January 2011 12:04 AM
To: Barry Dennien; Best Debbie; Michael Lyons; SEQWGM Media; Geoff Stead
Subject: Mt Crosby going under now. Need a new release

Cindy Hulse

From: Colin Jensen [CEO [REDACTED]]
Sent: Monday, 10 January 2011 12:15 AM
To: Dan Spiller
Cc: Chris Lavin; Michael Bell
Subject: Re: Wivenhoe Dam operations update

Categories: T8

Thanks Dan

CC Chris and Michael - for your consideration

The BMTMC has advised that about ten minutes ago, the Mt Crosby Weir has now closed. Not sure how this equates - must be stream flows are greater than otherwise being figured on. Accordingly, the media release should be further worked on in the morning.

Thanks

Colin Jensen
Chief Executive Officer
Brisbane City Council
GPO Box 1434 | Brisbane Qld 4001
Level 23, Brisbane Square | 266 George Street, Brisbane, Qld 4000
Phone: [REDACTED] | Fax: [REDACTED]
Email: colin.jensen@brisbanecitycouncil.qld.gov.au
>>> Dan Spiller <Daniel.Spiller@brisbanecitycouncil.qld.gov.au> 09/01/11 11:22 PM >>>
Colin,

Further to our conversation, our latest advice is as follows.

There has been 100 to 300mm of rainfall in the Wivenhoe and Somerset dam catchments over the past 24 hours. Rainfall of similar magnitudes is expected over the next 12 to 24 hours. Total inflows will exceed 1,000,000 ML, based on rainfall to date.

To date, the primary objective for this event has been managing to prevent inundation of the Mt Crosby Weir and Fernvale Bridges.

With the forecast volumes, this primary objective is being changed to minimizing the risk of urban inundation. This involves larger releases now, minimizing the risk of even larger releases later (were the flood compartment to reach high levels).

Urban inundation in the City reaches generally commences at total river flows of about 3,500 cubic metres per second (dam releases plus Lockyer and Bremer). At this time, and depending upon overnight rainfall, the Flood Control Centre is proposing to increase releases from around 1,200 to 2,500 cubic metres per second from midday tomorrow. This provides an allowance for other flows.

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ENDS

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Please direct all enquiries to the message author.

This message has passed through an insecure network.

Please direct all enquiries to the message author.

Litsupport Brisbane

From: Rob Drury [rdrury [REDACTED]]
Sent: Monday, 10 January 2011 1:28 AM
To: Dan Spiller; Barry Dennien; Michael Lyons; SEQWGM Media; debbie.best [REDACTED]; Scott Denner; Paul Bird; Stan Stevenson; Peter Borrows; Peter.Allen [REDACTED]
Subject: Re: Technical Report W34

Since earlier discussions, further rain and local flooding have closed Mt Crosby and Fernvale bridges. Releases will now be ramped up overnight rather than tomorrow since these bridges are now closed and due to increasing inflows. Councils have been notified and are on site. Media messages in morning need to be adjusted accordingly. Rob

From: Dan Spiller <Daniel.Spiller [REDACTED]>
To: Rob Drury; Barry Dennien <Barry.Dennien [REDACTED]>; Michael Lyons <Michael.Lyons [REDACTED]>; SEQWGM Media <media [REDACTED]>; Debbie Best (debbie.best [REDACTED]) <debbie.best [REDACTED]>; Scott Denner <Scott.Denner [REDACTED]>; Paul Bird; Stan Stevenson
Sent: Sun Jan 09 21:27:23 2011
Subject: FW: Technical Report W34

Technical report below.

Teleconference at 9.30.

Details are:

[REDACTED]

Regards,
Dan

From: Rob Drury [mailto:rdrury [REDACTED]]
Sent: Sunday, January 09, 2011 9:18 PM
To: Rob Drury; Dan Spiller
Cc: Peter Borrows; Stan Stevenson; Mike Foster; Paul Bird; David Roberts; Arminda Roberts
Subject: RE: Technical Report W34

See attached report W34.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast
flowing water is FATAL

rethink it

[REDACTED] | E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

From: Rob Drury
Sent: Sunday, 9 January 2011 7:26 AM
To: Rob Drury; 'Dan Spiller'
Cc: Peter Borrows; Stan Stevenson; Mike Foster; Paul Bird; David Roberts; Arminda Roberts
Subject: RE: Technical Report W31

Please find attached Report W31.

Basically continuing releases to maintain 1600 cumecs total flow in the mid Brisbane but watching predicted rainfall as the strategy may change. Fernvale and Mt Crosby bridges still should be unaffected but does depend on what rain we get today or tomorrow.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast
flowing water is FATAL

rethink it.

[REDACTED] | E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

From: Rob Drury
Sent: Saturday, 8 January 2011 7:46 AM
To: Rob Drury; 'Dan Spiller'
Cc: Peter Borrows; Stan Stevenson; Mike Foster; Paul Bird; David Roberts
Subject: RE: Technical Report W31

Attached report number W31.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast
flowing water is FATAL

rethink it.



[REDACTED] | E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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Litsupport Brisbane

From: Dan Spiller
Sent: Monday, 10 January 2011 5:31 AM
To: Dan Spiller; 'stephen.robertson'; 'Ken Smith (ken.smith)'; 'Lance McCallum (lance.mccallum)'; Tim Watts (tim.watts); 'Geoff Stead (geoff.stead)'; 'lauren.sims'; 'Debbie Best (debbie.best)'; 'Martin.PeterJ'; 'Dunn.KerryG'
Cc: 'Rob Drury'; 'pbird'; 'sstevenson'; SEQWGM Media; Scott Denner; 'Madgwick.DarrenT'; 'Damien Brown (damien.brown)'; 'bob.reilly'
Subject: RE: Updated Wivenhoe Dam release strategy

The Mt Crosby Weir and Fernvale Bridges were both inundated by other flows last night. Councils were advised and are on site.

Dam releases began to be increased overnight, brought forward because the bridges were already and with increasing inflows to storages.

We are preparing communications and technical information.

Regards,
Dan

From: Dan Spiller
Sent: Sunday, January 09, 2011 11:07 PM
To: stephen.robertson; Ken Smith (ken.smith); Lance McCallum (lance.mccallum); Tim Watts (tim.watts); Geoff Stead (geoff.stead); lauren.sims; Debbie Best (debbie.best); Martin.PeterJ; Dunn.KerryG
Cc: 'Rob Drury'; 'pbird'; 'sstevenson'; SEQWGM Media; Scott Denner; Madgwick.DarrenT; Damien Brown (damien.brown); bob.reilly
Subject: Updated Wivenhoe Dam release strategy

All,

atest advice from the Flood Control Centre attached.

There has been 100 to 300mm of rainfall in the Wivenhoe and Somerset dam catchments over the past 24 hours. Rainfall of similar magnitudes is expected over the next 12 to 24 hours.

At this time, including forecast rainfall, total inflows will exceed 1,000,000 ML and may approach 1,500,000 ML - in the order of the 1974 flood volume.

To date, the primary objective for this event has been managing to prevent inundation of the Mt Crosby Weir and Fernvale Bridges.

With the forecast volumes, this primary objective is being changed to minimizing the risk of urban inundation. This involves larger releases now, minimizing the risk of even larger releases later (were the flood compartment to reach high levels).

Urban inundation in the City reaches generally commences at total river flows of about 3,500 cubic metres per second (dam releases plus Lockyer and Bremer). At this time, and depending upon overnight rainfall, the Flood Control Centre is proposing to increase releases from around 1,200 to 2,500 cubic metres per second from midday tomorrow. This provides an allowance for other flows.

The Mt Crosby Weir and Fernvale bridges will certainly be inundated - isolating or inconveniencing many Brisbane Valley residents. The timing will depend largely on local flows, with the river having recently increased to be about one foot below the deck. Seqwater is preparing the bridge to be inundated, and may need to close it tonight. However, other flows permitting, we will delay inundating the bridge until tomorrow night - providing notice for impacted residents.

Actions to date:

- Notified Councils (up to the CEO level at BCC)
- Notified Police (Assistant Commissioner)
- Increasing treated water storage and preparing treatment plants, should there again be increased turbidity levels or other operational issues.

A media advice is being prepared now, for review and issue by 7am. The advice will address the closure of the bridges, with the intent of providing as much notice as possible to impacted residents (if not already closed). Impacts on the City reaches will be addressed following further consultation with Council (with there being a 20+ hour transit time).

It is important to note that the dams are managing impacts by delaying and reducing releases. For comparison, peak flows into the dam are forecast to reach up to 7,500 cubic metres per second - excluding any downstream flows.

Please call me on [REDACTED] if you require any further information.

Regards,
Daniel Spiller

Gina O'Driscoll

From: Rob Drury [rdrury [REDACTED]]
Sent: Monday, 10 January 2011 6:14 AM
To: Dan Spiller; Barry Dennien
Cc: Paul Bird; Peter Borrows; David Roberts
Subject: FW: FOC Situation Report at 01:00 hrs on Monday 10 January 2011
Attachments: image001.jpg; image002.png

See below FOC report as at 1am.

Will send a technical report in hour or so when I get an update off the FOC.

As at 6am this morning the levels are

Wivenhoe now 70.77m and 140.9% holding 1,641,685ML or 480,000ML above FSL.

Somerset 150.9% and holding 573,067ML or 193,000ML above FSL.

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and
flowing water is FAT

rethink



[REDACTED] | E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

From: Duty Engineer [mailto:dutysed [REDACTED]]
Sent: Monday, 10 January 2011 1:14 AM
To: David Roberts; flood.qld [REDACTED]; Mike Foster; Paul Bird; Peter Allen; Rob Drury; Rohan Thorogood; Ken Price [REDACTED]; kim.hang [REDACTED]; Al Navaruk; Bill Stephens; David Pokarier; John West; Louw Van Blerk; Mark Tan; Neville Ablitt; John.Ruffini [REDACTED]; John Tibaldi; Rob.ayre [REDACTED]; Terry Malone; Brett Schultz; Glenn Patterson; Malcolm Lane; Murray Dunstan; Rob Gorian; Agg Dagan; Doug Grigg; Graham Keegan; Graham Francis; Jayam Tennakoon; Matthew O'Reilly
Cc: Andy Bickerton; Deb Chandler; Mailbox; Chris Lavin; Craig Logan; Don Carroll; Evan Caswell; James Charalambous; Ken Morris; Robert McGlinn; Santina Pennisi; Tony Trace
Subject: FOC Situation Report at 01:00 hrs on Monday 10 January 2011

Rainfall

Very heavy rainfall has been recorded in the Upper Brisbane and Stanley Rivers in the last 12 hours with totals up 100 to 240mm. Totals for the last 24 hours range from 100 to 300mm.

Rainfall of similar magnitudes is expected in the 12 to 24 hours around the downstream catchments as the system tracks south.

A severe weather warning remains current for heavy rainfall in the dam catchment areas.

North Pine Dam (Full Supply Level 39.60 m AHD)

The dam level was 39.95 m and steady. Five gates are open releasing 445 m³/s. The inflow into the dam since the commencement of the event is 42,000 ML. Estimated event volume is 57,000 ML assuming no further rainfall. Gate operations will continue until at least Tuesday 11 January 2011.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level is 102.22 m AHD and rising quickly (storing 157,000 ML above FSL). Peak inflow to the dam is estimated to be about 4,200 m³/s based on observed rainfall and could be as high as 5,000 m³/s with additional forecast rainfall. Five sluice gates are open releasing about 1,100 m³/s (95,000 ML/d) into Wivenhoe Dam. At this stage the dam will reach at least 103.5 on Monday afternoon which will adversely impact areas around Kilcoy.

Since the commencement of the event on 02/01/2011 approximately 115,000 ML has been released from the dam into Wivenhoe, with an event total of the order of 520,000 ML expected. This is expected to increase due to the forecast rain in the next 24 to 48 hours. At this stage, releases will continue until at least Thursday.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

River levels upstream of the dam are rising quickly with significant inflow being generated from the intense heavy rainfall. Flows in the Brisbane River at Gregor's Ck have already reached 7,350 m³/s and the river has just peaked at 7:30 on Sunday 9 January.

The dam level is rising quickly, with the current level being 69.60 m AHD (storing 301,000 ML). Estimated peak inflow to the dam just from the Upper Brisbane R alone may reach as high as 8,800 m³/s and, at this stage, the dam will reach at least 73.3 m AHD during Tuesday morning. Given the rapid increase in inflow volumes, it will be necessary to increase the release from Wivenhoe during Monday morning.

The objective for dam operations will be to minimise the impact of urban flooding in areas downstream of the dam and, at this stage, releases will be kept below 3,500 m³/s and the combined flows in the lower Brisbane will be limited to 4,000 m³/s if possible.

Fernvale Bridge approaches and Mt Crosby Weir Bridge have been inundated and both bridges are now closed or are in the process of being closed.

The current release rate from Wivenhoe Dam is 1,400 m³/s (120,000 ML/day). Gate opening will start to be increased during early Monday morning and the release is expected to increase to at least 2,600 m³/s.

Since the commencement of the event on 02/01/2011 approximately 240,000 ML has been released from the dam, with an event total approaching 1,500,000 ML without further rain and as much as 2,100,000 ML with forecast rainfall of (both including Somerset outflow). At this stage, releases will continue until at least Sunday 16th January 2011.

Impacts downstream of Wivenhoe Dam

The projected Wivenhoe Dam releases combined with Lockyer flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Saturday 15 January in varying degrees.


Water levels in the lower Brisbane R will be impacted by the combined flows of Lockyer Ck, Bremer River, local runoff and releases from Wivenhoe Dam. If the predicted rainfall eventuates in the downstream tributary catchments the resultant combined flows in the lower Brisbane may exceed the threshold of damaging discharge in the urban areas within the next 24 to 48 hours.

Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the updated Wivenhoe operating strategy.

Regards

John Ruffini

Duty Engineer
Flood Operations Centre



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Gina O'Driscoll

From: Barry Dennien
Sent: Monday, 10 January 2011 6:17 AM
To: Michael Lyons
Cc: Dan Spiller
Subject: FW: FOC Situation Report at 01:00 hrs on Monday 10 January 2011

From: Paul Bird [mailto: [REDACTED]]
Sent: Monday, 10 January 2011 6:16 AM
To: Rob Drury; Dan Spiller; Barry Dennien
Cc: Peter Borrows; David Roberts
Subject: RE: FOC Situation Report at 01:00 hrs on Monday 10 January 2011

Thanks Rob,

Working on update now

Cheers

Paul

From: Rob Drury
Sent: Monday, 10 January 2011 06:14
To: 'Dan Spiller'; 'Barry Dennien'
Cc: Paul Bird; Peter Borrows; David Roberts
Subject: FW: FOC Situation Report at 01:00 hrs on Monday 10 January 2011

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Dam Operations Manager
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[REDACTED] | E: rdrury [REDACTED]

Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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To: David Roberts; flood.qld [REDACTED]; Mike Foster; Paul Bird; Peter Allen; Rob Drury; Rohan Thorogood; Ken Price [REDACTED]; kim.hang@sunwater.com.au; Al Navaruk; Bill Stephens; David Pokarier; John West; Louw Van Blerk; Mark Tan; Neville Ablitt; John Ruffini [REDACTED]; John Tibaldi; Rob Ayre [REDACTED]; Terry Malone; Brett Schultz; Glenn Patterson; Malcolm Lane; Murray Dunstan; Rob Gorian; Agg Dagan; Doug Grigg; Graham Keegan; Graham Francis; Jayam Tennakoon; Matthew O'Reilly
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Wivenhoe Dam (Full Supply Level 67.00 m AHD)

River levels upstream of the dam are rising quickly with significant inflow being generated from the intense heavy rainfall. Flows in the Brisbane River at Gregor's Ck have already reached 7,350 m³/s and the river has just peaked at 23:00 on Sunday 9 January.

The dam level is rising quickly, with the current level being 69.60 m AHD (storing 301,000 ML). Estimated peak inflow to the dam just from the Upper Brisbane R alone may reach as high as 8,800 m³/s and, at this stage, the dam will reach at least 73.3 m AHD during Tuesday morning. Given the rapid increase in inflow volumes, it will be necessary to increase the release from Wivenhoe during Monday morning.

The objective for dam operations will be to minimise the impact of urban flooding in areas downstream of the dam and, at this stage, releases will be kept below 3,500 m³/s and the combined flows in the lower Brisbane will be limited to 4,000 m³/s if possible.

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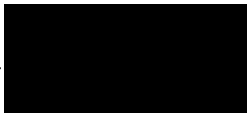
Water levels in the lower Brisbane R will be impacted by the combined flows of Lockyer Ck, Bremer River, local runoff and releases from Wivenhoe Dam. If the predicted rainfall eventuates in the downstream tributary catchments the resultant combined flows in the lower Brisbane may exceed the threshold of damaging discharge in the urban areas within the next 24 to 48 hours.

Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the updated Wivenhoe operating strategy.

Regards

John Ruffini

Duty Engineer
Food Operations Centre



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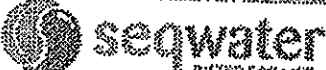
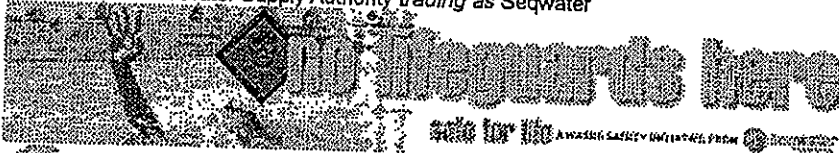
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Sent: Monday, January 10, 2011 6:20 AM
To: Paul Bird <pbird[REDACTED]>; Dan Spiller <Daniel.Spiller[REDACTED]>;
Barry Dennien <Barry.Dennien[REDACTED]>
Subject: RE: FOC Situation Report at 01:00 hrs on Monday 10 January 2011

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Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



[REDACTED] | E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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To: Rob Drury; 'Dan Spiller'; 'Barry Dennien'
Cc: Peter Borrows; David Roberts
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Thanks Rob,

Working on update now

Cheers

Paul

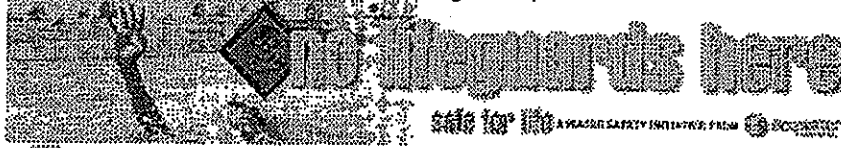
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The dam level was 39.95 m and steady. Five gates are open releasing 445 m3/s. The inflow into the dam since the commencement of the event is 42,000 ML. Estimated event volume is 57,000 ML assuming no further rainfall. Gate operations will continue until at least Tuesday 11 January 2011.

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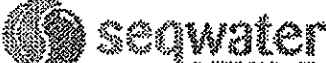
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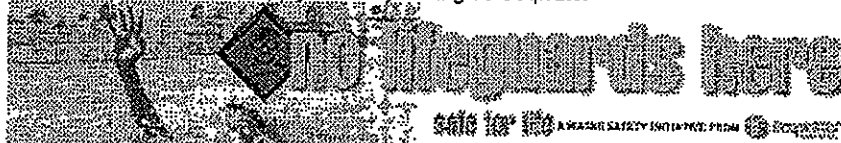
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Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the updated Wivenhoe operating strategy.

Regards

John Ruffini

Duty Engineer
Flood Operations Centre



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Sent: Monday, January 10, 2011 6:21 AM
To: SEQWGM Media <media[REDACTED]>; Barry Dennien
<Barry.Dennien[REDACTED]>
Subject: Fwd: FOC Situation Report at 01:00 hrs on Monday 10 January 2011
Attach: Seqwater_No-Lifeguards-Here_email_strap.png; ATT00001.htm;
cid:image001.png@01CA24E1.BDB90020; ATT00002.htm

Begin forwarded message:

From: Rob Drury <rdrury[REDACTED]>
Date: 10 January 2011 6:14:16 AM GMT+10:00
To: Dan Spiller <Daniel.Spiller[REDACTED]>, Barry Dennien
<Barry.Dennien[REDACTED]>
Cc: Paul Bird <pbird[REDACTED]>, Peter Borrows
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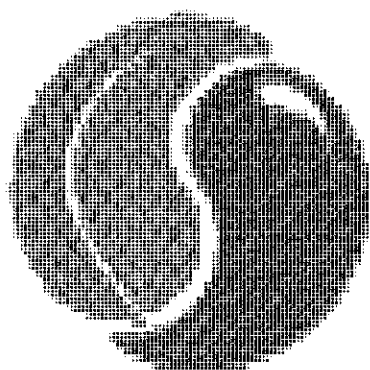
Queensland Bulk Water Supply Authority *trading as Seqwater*



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seqwater
WATER FOR LIFE

[REDACTED] E rdruy [REDACTED]

Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306

Website | www.seqwater.com.au

From: Duty Engineer [mailto:dutysed [REDACTED]]
Sent: Monday, 10 January 2011 1:14 AM
To: David Roberts; flood.gld [REDACTED]; Mike Foster; Paul Bird; Peter Allen; Rob Drury; Rohan Thorogood; Ken Price [REDACTED]; Kim Hand [REDACTED]; Al Navaruk; Bill Stephens; David Pokarier; John West; Louw Van Blerk; Mark Tan; Neville Ablitt; John Ruffini [REDACTED]; John Tibaldi; Rob Ayres [REDACTED]; Terry Malone; Brett Schultz; Glenn Patterson; Malcolm Lane; Murray Dunstan; Rob Goran; Agg Dagan; Doug Grigg; Graham Keegan; Graham Francis; Jayam Tennakoon; Matthew O'Reilly
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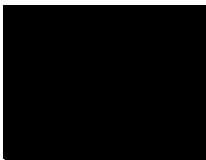
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Cindy Hulsey

From: Rob Drury [rdrury]
Sent: Monday, 10 January 2011 6:36 AM
To: Paul Bird; Dan Spiller

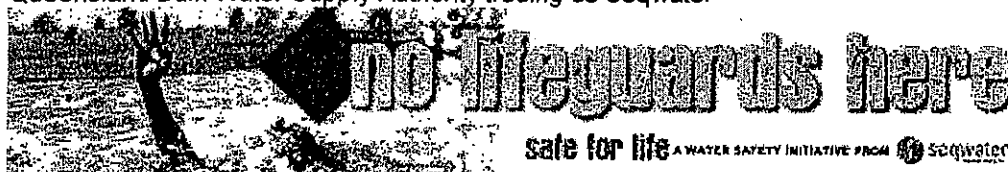
Categories: T8

Two things

- Current release rate is 1,753m³/s (150,000ML/day) but ramping up
- Our Flood Centre has been keeping BCC flood centre informed which BCC mobilised. The issue so far is that our manual has the threshold of damage to urban areas as around 4,000cumecs in the upper Brisbane River, they advised they think it is more like 3,500cumecs. We are aiming for the 4,000cumecs as per the approved manual so it would be good if we could still get a consolidated message out through all parties. Maybe advising flows of 3,500 to 4,000 cumecs which may cause some minor impacts downstream, of course this also depends on further rainfall in local areas. Of course if we need to go higher then the message would change.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming
flo

In weirs and
water is FA1

think



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TECHNICAL SITUATION REPORT

TSR Number	W35	Date of TSR release	10.1.2011	Time of TSR release	7am
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue increasing releases to discharge flood waters but keep impact downstream to minimum. 										
Strategy	<ul style="list-style-type: none"> All bridges are now inundated. Aiming to release 3,500cumecs to keep flow in lower Brisbane River around 4,000cumecs. 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected around 1,500,000ML which is close to 1974 event.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows.</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows.	Brisbane River:	Impact as below.
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Rainfall.

Moderate to heavy rainfall has been recorded in the Upper Brisbane and Stanley Rivers in the last 12 hours with totals up to 90 mm. Totals for the last 24 hours range from 100 to 325mm.

Mt Glorious recorded 100 mm in the last 12 hours.

Rainfall of similar magnitudes is expected in the 12 to 24 hours around the downstream catchments as the system tracks south.

A severe weather warning remains current for heavy rainfall in the dam catchment areas.

North Pine Dam (Full Supply Level 39.60 m AHD)

The dam level was 39.97 m and steady. Five gates are open releasing 475 m³/s. The inflow into the dam since the commencement of the event is 52,000 ML. Estimated event volume is 72,000 ML assuming no further rainfall. Gate operations will continue until at least Tuesday 11 January 2011.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level at 05:00 was 102.84 m AHD and rising (storing 193,000 ML above FSL). Peak inflow to the dam is estimated to be about 4,200 m³/s based on observed rainfall and could be as high as 5,000m³/s with additional forecast rainfall. Five sluice gates are open releasing about 1,100m³/s (95,000ML/d) into Wivenhoe Dam. At this stage the dam lake level will reach about 103.5 m AHD on Monday afternoon. Areas around Kilcoy will continue to be adversely affected.

Since the commencement of the event on 02/01/2011 approximately 142,000ML has been released from the dam into Wivenhoe, with an event total of the order of 520,000ML expected. This is expected to increase due to the forecast rain in the next 24 to 48 hours. At this stage, releases will continue until at least Thursday.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

River levels upstream of the dam have peaked and are falling slowly with significant inflow being generated from the intense heavy rainfall. Flows in the Brisbane River at Gregor's Ck have peaked at 7,350m³/s at 23:00 on Sunday 9 January. This peak is bigger than January 1974 and February 1999 at this location.

The dam level is rising quickly, with the current level being 70.77m AHD (storing 450,000 ML). Estimated peak inflow to the dam just from the Upper Brisbane R is around 8,800m³/s and, at this stage, the dam will reach at least 73.3 m AHD during Tuesday morning. Given the rapid increase in inflow volumes, it was necessary to start to increase the release from Wivenhoe during Monday morning.

The objective for dam operations will be to minimise the impact of urban flooding in areas downstream of the dam and, at this stage, releases will be kept below 3,500m³/s and the combined flows in the lower Brisbane will be limited to 4,000m³/s if possible. This is significantly less than the current estimated combined pre-dam peak inflow of 12,000 m³/s.

Fernvale Bridge approaches and Mt Crosby Weir Bridge have been inundated and both bridges are now closed.

The current release rate from Wivenhoe Dam is 1,753m³/s (150,000ML/day). Gate opening will continue to be increased during Monday and the release is expected to increase to at least 2,600m³/s in the next 12 to 24 hours.

Since the commencement of the event on 02/01/2011 approximately 275,000ML has been released from the dam, with an event total approaching 1,600,000ML without further rain and as much as 2,100,000ML with forecast rainfall of (both including Somerset outflow). At this stage, releases will continue until at least Sunday 16th January 2011.

Impacts downstream of Wivenhoe Dam

The projected Wivenhoe Dam releases combined with Lockyer flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Saturday 15 January in varying degrees.

Water levels in the lower Brisbane R will be impacted by the combined flows of Lockyer Ck, Bremer River, local runoff and releases from Wivenhoe Dam. If the predicted rainfall eventuates in the downstream tributary catchments the resultant combined flows in the lower Brisbane may exceed the threshold of damaging discharge in the urban areas within the next 24 to 48 hours. Currently the estimate peak flow in the lower Brisbane River will be the highest since Wivenhoe Dam was completed in 1984 but still well below flows the 1974 levels.

Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the updated Wivenhoe operating strategy.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager
Seqwater Technical Officer contact details	[REDACTED]

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	[REDACTED]

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
-----------------------------------	-------------

SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time		or Event	Change in strategy
---------------------	-------------	-----------	-------------	--	-----------------	---------------------------

Litsupport Brisbane

From: Rob Drury [rdrury]
Sent: Monday, 10 January 2011 7:53 AM
To: Rob Drury; Dan Spiller; Barry Dennien; Michael Lyons; SEQWGM Media; debbie.best; Scott Denner; Paul Bird; Stan Stevenson; Peter Borrows; Peter.Allen
Subject: RE: Technical Report W35
Attachments: Technical Situation Report W35.docx

Attached report W35.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast flowing water is FATAL

rethink it



[Redacted] E rdrury [Redacted]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

Important information: This email and any attached information is intended only for the addressee and may contain confidential and/or privileged information. If you are not the addressee, you are notified that any transmission, distribution, or other use of this information is strictly prohibited. The confidentiality attached to this email is not waived, lost or destroyed by reasons of mistaken delivery to you. If you have received this email in error please contact the sender immediately and delete the material from your email system. QLD Bulk Water Supply Authority ABN75450239876 (Trading as Seqwater).

TECHNICAL SITUATION REPORT

TSR Number	W35	Date of TSR release	10.1.2011	Time of TSR release	7am
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue increasing releases to discharge flood waters but keep impact downstream to minimum. 										
Strategy	<ul style="list-style-type: none"> All bridges are now inundated . 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected around 1,500,000ML which is close to 1974 event.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
Storage levels:	Above FSL										
Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.										
Rainfall:	Continuing										
Lockyer/Bremer:	Monitoring their inflows										
Brisbane River:	Impact as below.										

Rainfall

Very heavy rainfall has been recorded in the upper reaches of the Brisbane and Stanley in the last 6 hours with totals up 100 to 140mm. Totals for the last 24 hours range from 100 to 300mm.

Rainfall of similar magnitudes is expected in the 12 to 24 hours, especially around the Bremer/Warrill catchments as the system tracks south.

A severe weather warning remains current for heavy rainfall in the dam catchment areas.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level is 101.68 m AHD (about 500,000ML currently in storage) and rising quickly. Peak inflow to the dam is estimated to be about 4,000 m³/s based on observed rainfall and could be as high as 5,000m³/s with additional forecast rainfall. Five sluice gates are open releasing about 1,100m³/s (95,000ML/d) into Wivenhoe Dam. At this stage the dam will reach at least 103.5 early Tuesday morning which will adversely impact areas around Kilcoy.

Since the commencement of the event on 02/01/2011 approximately 100,000ML has been released from the dam into Wivenhoe, with an event total of the order of 520,000ML expected. This may increase due to the forecast rain in the next 24 to 48 hours. At this stage, releases will continue until at least Thursday.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

River levels upstream of the dam are rising quickly with significant inflow being generated from the intense heavy rainfall. Flows in the Brisbane River at Gregor's Ck have already reached 6,700m³/s and the river is still rising.

The dam level is rising again, with the current level being 69.10m AHD (1,410,000ML with about 300,00 of flood storage). Estimated peak inflow to the dam just from the Upper Brisbane R alone may reach as high as 7,500m³/s and, at this stage, the dam will reach at least 73.0 m AHD during Tuesday morning. Given the rapid increase in inflow volumes, it will be necessary to increase the release from Wivenhoe Monday morning.

The objective for dam operations will be to minimise the impact of urban flooding in areas downstream of the dam and, at this stage, releases will be kept below 3,500m³/s and the combined flows in the lower Brisbane will be limited to 4,000m³/s. This is below the limit of urban damages in the City reaches.

The current release rate from Wivenhoe Dam is 1,400m³/s (120,000ML/day). Gate opening will start to be increased from noon Monday and the release is expected increase to at least 2,600m³/s during Tuesday morning.

Since the commencement of the event on 02/01/2011 approximately 220,000ML has been released from the dam, with an event total approaching 1,000,000ML without further rain and as much as 1,500,000ML with forecast rainfall of (both including Somerset outflow). At this stage, releases will continue until at least Sunday 16th January 2011.

Impacts downstream of Wivenhoe Dam

The projected Wivenhoe Dam releases combined with Lockyer flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Saturday 15 January in varying degrees.

Water levels in the lower Brisbane R will be impacted by the combined flows of Lockyer Ck, Bremer River, local runoff and releases from Wivenhoe Dam.

Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the updated Wivenhoe operating strategy.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time		on Event	Change in strategy
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TECHNICAL SITUATION REPORT

TSR Number	W36	Date of TSR release	10.1.2011	Time of TSR release	8am
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Seawater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue increasing releases to discharge flood waters but keep impact downstream to minimum. 										
Strategy	<ul style="list-style-type: none"> All bridges are now inundated. 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected around 1,500,000ML which is close to 1974 event.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
Storage levels:	Above FSL										
Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.										
Rainfall:	Continuing										
Lockyer/Bremer:	Monitoring their inflows										
Brisbane River:	Impact as below.										

Rainfall

Moderate to heavy rainfall has been recorded in the Upper Brisbane and Stanley Rivers in the last 12 hours with totals up to 90 mm. Totals for the last 24 hours range from 100 to 325mm.

Mt Glorious recorded 100 mm in the last 12 hours.

Rainfall of similar magnitudes is expected in the 12 to 24 hours around the downstream catchments as the system tracks south.

A severe weather warning remains current for heavy rainfall in the dam catchment areas.

North Pine Dam (Full Supply Level 39.60 m AHD)

The dam level was 39.97 m and steady. Five gates are open releasing 475 m³/s. The inflow into the dam since the commencement of the event is 52,000 ML. Estimated event volume is 72,000 ML assuming no further rainfall. Gate operations will continue until at least Tuesday 11 January 2011.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level at 05:00 was 102.84 m AHD and rising (storing 193,000 ML above FSL). Peak inflow to the dam is estimated to be about 4,200 m³/s based on observed rainfall and could be as high as 5,000m³/s with additional forecast rainfall. Five sluice gates are open releasing about 1,100m³/s (95,000ML/d) into Wivenhoe Dam. At this stage the dam lake level will reach about 103.5 m AHD on Monday afternoon. Areas around Kilcoy will continue to be adversely affected.

Since the commencement of the event on 02/01/2011 approximately 142,000ML has been released from the dam into Wivenhoe, with an event total of the order of 520,000ML expected. This is expected to increase due to the forecast rain in the next 24 to 48 hours. At this stage, releases will continue until at least Thursday.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

River levels upstream of the dam have peaked and are falling slowly with significant inflow being generated from the intense heavy rainfall. Flows in the Brisbane River at Gregor's Ck have peaked at 7,350m³/s at 23:00 on Sunday 9 January. This peak is bigger than January 1974 and February 1999 at this location.

The dam level is rising quickly, with the current level being 70.77m AHD (storing 450,000 ML). Estimated peak inflow to the dam just from the Upper Brisbane R is around 8,800m³/s and, at this stage, the dam will reach at least 73.3 m AHD during Tuesday morning. Given the rapid increase in inflow volumes, it was necessary to start to increase the release from Wivenhoe during Monday morning.

The objective for dam operations will be to minimise the impact of urban flooding in areas downstream of the dam and, at this stage, releases will be kept below 3,500m³/s and the combined flows in the lower Brisbane will be limited to 4,000m³/s if possible. This is significantly less than the current estimated combined pre-dam peak inflow of 12,000 m³/s.

Fernvale Bridge approaches and Mt Crosby Weir Bridge have been inundated and both bridges are now closed.

The current release rate from Wivenhoe Dam is 1,753m³/s (150,000ML/day). Gate opening will continue to be increased during Monday and the release is expected to increase to at least 2,600m³/s in the next 12 to 24 hours.

Since the commencement of the event on 02/01/2011 approximately 275,000ML has been released from the dam, with an event total approaching 1,600,000ML without further rain and as much as 2,100,000ML with forecast rainfall of (both including Somerset outflow). At this stage, releases will continue until at least Sunday 16th January 2011.

Impacts downstream of Wivenhoe Dam

The projected Wivenhoe Dam releases combined with Lockyer flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Saturday 15 January in varying degrees.

Water levels in the lower Brisbane R will be impacted by the combined flows of Lockyer Ck, Bremer River, local runoff and releases from Wivenhoe Dam. If the predicted rainfall eventuates in the downstream tributary catchments the resultant combined flows in the lower Brisbane may exceed the threshold of damaging discharge in the urban areas within the next 24 to 48 hours. Currently the estimate peak flow in the lower Brisbane River will be the highest since Wivenhoe Dam was completed in 1984 but still well below flows the 1974 levels.

Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the updated Wivenhoe operating strategy.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.

Seqwater Technical Officer name

Robert Drury

Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator

SRC Technical Officer contact details

Collated and distributed by (Agency).

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time		or Event	Change in strategy
--------------	------	-----------	------	--	----------	--------------------

Litsupport Brisbane

From: Rob Drury [rdrury [REDACTED]]
Sent: Monday, 10 January 2011 8:06 AM
To: Rob Drury; Dan Spiller; Paul Bird; Stan Stevenson; Peter Borrows;
Peter.Allen [REDACTED]
Subject: RE: Technical Report W36
Attachments: Technical Situation Report W36.docx

Please disregard the previous report, it was based on older information, this is the latest update.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast
flowing water is FATAL

rethink it.



[REDACTED] | E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

From: Rob Drury
Sent: Monday, 10 January 2011 7:53 AM
To: Rob Drury; 'Daniel.Spiller [REDACTED]'; 'Barry.Dennier [REDACTED]'; 'Michael.Lyons [REDACTED]';
'media [REDACTED]'; 'debbie.best [REDACTED]'; 'Scott.Denner [REDACTED]'; Paul Bird; Stan Stevenson;
Peter Borrows; 'Peter.Allen [REDACTED]'
Subject: RE: Technical Report W35

Attached report W35.

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Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



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[REDACTED] | E rdury [REDACTED]
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TECHNICAL SITUATION REPORT

TSR Number	W36	Date of TSR release	10.1.2011	Time of TSR release	8am
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue increasing releases to discharge flood waters but keep impact downstream to minimum. 										
Strategy	<ul style="list-style-type: none"> All bridges are now inundated . 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected around 1,500,000ML which is close to 1974 event.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
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Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level at 05:00 was 102.84 m AHD and rising (storing 193,000 ML above FSL). Peak inflow to the dam is estimated to be about 4,200 m³/s based on observed rainfall and could be as high as 5,000m³/s with additional forecast rainfall. Five sluice gates are open releasing about 1,100m³/s (95,000ML/d) into Wivenhoe Dam. At this stage the dam lake level will reach about 103.5 mAHD on Monday afternoon. Areas around Kilcoy will continue to be adversely affected.

Since the commencement of the event on 02/01/2011 approximately 142,000ML has been released from the dam into Wivenhoe, with an event total of the order of 520,000ML expected. This is expected to increase due to the forecast rain in the next 24 to 48 hours. At this stage, releases will continue until at least Thursday.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

River levels upstream of the dam have peaked and are falling slowly with significant inflow being generated from the intense heavy rainfall. Flows in the Brisbane River at Gregor's Ck have peaked at 7,350m³/s at 23:00 on Sunday 9 January. This peak is bigger than January 1974 and February 1999 at this location.

The dam level is rising quickly, with the current level being 70.77m AHD (storing 450,000 ML). Estimated peak inflow to the dam just from the Upper Brisbane R is around 8,800m³/s and, at this stage, the dam will reach at least 73.3 m AHD during Tuesday morning. Given the rapid increase in inflow volumes, it was necessary to start to increase the release from Wivenhoe during Monday morning.

The objective for dam operations will be to minimise the impact of urban flooding in areas downstream of the dam and, at this stage, releases will be kept below 3,500m³/s and the combined flows in the lower Brisbane will be limited to 4,000m³/s if possible. This is significantly less than the current estimated combined pre-dam peak inflow of 12,000 m³/s.

Fernvale Bridge approaches and Mt Crosby Weir Bridge have been inundated and both bridges are now closed.

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Since the commencement of the event on 02/01/2011 approximately 275,000ML has been released from the dam, with an event total approaching 1,600,000ML without further rain and as much as 2,100,000ML with forecast rainfall of (both including Somerset outflow). At this stage, releases will continue until at least Sunday 16th January 2011.

Impacts downstream of Wivenhoe Dam

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Water levels in the lower Brisbane R will be impacted by the combined flows of Lockyer Ck, Bremer River, local runoff and releases from Wivenhoe Dam. If the predicted rainfall eventuates in the downstream tributary catchments the resultant combined flows in the lower Brisbane may exceed the threshold of damaging discharge in the urban areas within the next 24 to 48 hours. Currently the estimate peak flow in the lower Brisbane River will be the highest since Wivenhoe Dam was completed in 1984 but still well below flows the 1974 levels.

Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the updated Wivenhoe operating strategy.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.

Segwater Technical Officer name

Robert Drury

Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator

SRC Technical Officer contact details

Collated and distributed by (Agency)

Contact Officer signature						
Contact Officer name	Rob Drury					
Contact Officer position title	Dam Operations Manager					
Next TSR due	Date	11.1.2011	Time		or Event	Change in strategy

Jy Hulsey

From: Dan Spiller
Sent: Monday, 10 January 2011 8:13 AM
To: Rob Drury
Subject: RE: Technical Report W36

Categories: T8

Rob,

Are you now operating under release strategy W2 or W3?

Dan

From: Rob Drury [mailto:rdrury] [REDACTED]
Sent: Monday, 10 January 2011 8:06 AM
To: Rob Drury; Dan Spiller; Paul Bird; Stan Stevenson; Peter Borrows; Peter.Allen [REDACTED]
Subject: RE: Technical Report W36

Please disregard the previous report, it was based on older information, this is the latest update.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority *trading as Seqwater*



Swimming in weirs and flowing water is **FA1**

rethink



[REDACTED] | E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

From: Rob Drury
Sent: Monday, 10 January 2011 7:53 AM
To: Rob Drury; 'Daniel.Spiller [REDACTED]'; 'Barry.Dennier [REDACTED]'; 'Michael.Lyons [REDACTED]'; 'media [REDACTED]'; 'debbie.best [REDACTED]'; 'Scott.Denner [REDACTED]'; Paul Bird; Stan Stevenson; Peter Borrows; 'Peter.Allen [REDACTED]'
Subject: RE: Technical Report W35

Attached report W35.

Rob

Jert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority *trading as Seqwater*



Swimming in weirs and
flowing water is FAT

rethink



[REDACTED] | E rdru [REDACTED]

Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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support Brisbane

From: Rob Drury [rdrury [REDACTED]]
Sent: Monday, 10 January 2011 8:23 AM
To: Dan Spiller
Subject: Re: Technical Report W36

W2

From: Dan Spiller <Daniel.Spiller [REDACTED]>
To: Rob Drury
Sent: Mon Jan 10 08:13:29 2011
Subject: RE: Technical Report W36

Rob,

Are you now operating under release strategy W2 or W3?

Dan

From: Rob Drury [mailto:rdrury [REDACTED]]
Sent: Monday, 10 January 2011 8:06 AM
To: Rob Drury; Dan Spiller; Paul Bird; Stan Stevenson; Peter Borrows; Peter.Allen [REDACTED]
Subject: RE: Technical Report W36

Please disregard the previous report, it was based on older information, this is the latest update.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast
flowing water is FATAL

rethink it



[REDACTED] | E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

From: Rob Drury
Sent: Monday, 10 January 2011 7:53 AM
To: Rob Drury; 'Daniel.Spiller'; 'Barry.Dennier'; 'Michael.Lyons'; 'media'; 'debbie.best'; 'Scott.Denner'; Paul Bird; Stan Stevenson; Peter Borrowes; 'Peter.Aller'
Subject: RE: Technical Report W35

attached report W35.

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast flowing water is FATAL

rethink it



[Redacted] | E: rdrury@seqwater.com.au
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale QLD 4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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-----Safe Stamp-----
Your Anti-virus Service scanned this email. It is safe from known viruses.

For more information regarding this service, please contact your service provider.

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From: Dan Spiller <dan.spiller [REDACTED]>
Sent: Monday, January 10, 2011 9:46 AM
To: stephen.robertson [REDACTED]; ken.smith [REDACTED];
lance.mccallum [REDACTED]; Tim. Watts [REDACTED];
Geoff.Stead [REDACTED]; Lauren.Sims [REDACTED];
Best Debbie <Debbie.Best [REDACTED]>
'Martin.Peter [REDACTED]'; 'Dunn.KerryG [REDACTED]';
Cc: Rob Drury <rdrury [REDACTED]>; Paul Bird <pbird [REDACTED]>;
SEQWGM Media <media [REDACTED]>;
damien.brown [REDACTED]; Reilly Bob <Bob.Reilly [REDACTED]>;
Madgwick.DarrenI [REDACTED]; 'Stan Stevenson'
<sstevenson [REDACTED]>
Subject: Water Grid operations update
Attach: Technical Situation Report W36.docx

All,

Current situation report attached. We are distributing this version of the Technical Support Report to Councils and BoM now. We are seeking their formal input and endorsement by 1pm, prior to finalising and speaking publicly to our release strategy.

For dam operations, key points are:

- There is continuing heavy rainfall in catchments. Total inflows will be at least 1,500,000 ML and probably above 2,100,000 ML.
- As a result, Wivenhoe Dam is above 140% of capacity and Somerset is above 150%, with both rising fast.
- As specified in the approved Operational Procedures, the primary objective is now to minimizing the risk of urban inundation (release strategy W2). This involves larger releases now, minimizing the risk of even larger releases later (were the flood compartment to reach high levels).
- Consistent with this release strategy, dam releases have increased to 1,750 cubic metres per second (150,000 ML/day). It is expected to increase to 2,600 cubic metres per second by midday tomorrow.
- As specified in the approved Operational Manual, we are targeting maximum flow in the Brisbane River of 3,500 cumecs at Moggill. This is the levels above which urban inundation begins.
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- Key facilities are operating and reservoir levels are high. Mt Crosby WTP is producing at 250 ML/day and desalination at one-third of capacity.
- There are a range of smaller plants that have been impacts, due to inundation of infrastructure, connections or stranding of operators. We are working through these issues and will advise if any become critical.

Please call me on [REDACTED] if you require any further information.

Regards,
Dan

Daniel Spiller
Director, Operations
SEQ Water Grid Manager
[REDACTED]

D202

Email: daniel.spiller [REDACTED]
Visit: Level 15, 53 Albert Street Brisbane
Post: PO Box 16205, City East QLD 4002
ABN: 14783 317 630

Please consider the environment before printing this email. It takes 10 litres of water to make one sheet of A4 paper.

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D203

TECHNICAL SITUATION REPORT

TSR Number	W36	Date of TSR release	10.1.2011	Time of TSR release	8am
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue increasing releases to discharge flood waters but keep impact downstream to minimum.
Strategy	<ul style="list-style-type: none"> All bridges are now inundated .
Key considerations	Storage levels: Above FSL
	Inflows: Inflows expected around 1,500,000ML which is close to 1974 event.
	Rainfall: Continuing
	Lockyer/Bremer: Monitoring their inflows
	Brisbane River: Impact as below.

Rainfall

Moderate to heavy rainfall has been recorded in the Upper Brisbane and Stanley Rivers in the last 12 hours with totals up to 90 mm. Totals for the last 24 hours range from 100 to 325mm.

Mt Glorious recorded 100 mm in the last 12 hours.

Rainfall of similar magnitudes is expected in the 12 to 24 hours around the downstream catchments as the system tracks south.

A severe weather warning remains current for heavy rainfall in the dam catchment areas.

North Pine Dam (Full Supply Level 39.60 m AHD)

The dam level was 39.97 m and steady. Five gates are open releasing 475 m³/s. The inflow into the dam since the commencement of the event is 52,000 ML. Estimated event volume is 72,000 ML assuming no further rainfall. Gate operations will continue until at least Tuesday 11 January 2011.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level at 05:00 was 102.84 m AHD and rising (storing 193,000 ML above FSL). Peak inflow to the dam is estimated to be about 4,200 m³/s based on observed rainfall and could be as high as 5,000m³/s with additional forecast rainfall. Five sluice gates are open releasing about 1,100m³/s (95,000ML/d) into Wivenhoe Dam. At this stage the dam lake level will reach about 103.5 m AHD on Monday afternoon. Areas around Kilcoy will continue to be adversely affected.

Since the commencement of the event on 02/01/2011 approximately 142,000ML has been released from the dam into Wivenhoe, with an event total of the order of 520,000ML expected. This is expected to increase due to the forecast rain in the next 24 to 48 hours. At this stage, releases will continue until at least Thursday.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

River levels upstream of the dam have peaked and are falling slowly with significant inflow being generated from the intense heavy rainfall. Flows in the Brisbane River at Gregor's Ck have peaked at 7,350m³/s at 23:00 on Sunday 9 January. This peak is bigger than January 1974 and February 1999 at this location.

The dam level is rising quickly, with the current level being 70.77m AHD (storing 450,000 ML). Estimated peak inflow to the dam just from the Upper Brisbane R is around 8,800m³/s and, at this stage, the dam will reach at least 73.3 m AHD during Tuesday morning. Given the rapid increase in inflow volumes, it was necessary to start to increase the release from Wivenhoe during Monday morning.

The objective for dam operations will be to minimise the impact of urban flooding in areas downstream of the dam and, at this stage, releases will be kept below 3,500m³/s and the combined flows in the lower Brisbane will be limited to 4,000m³/s if possible. This is significantly less than the current estimated combined pre-dam peak inflow of 12,000 m³/s.

Fernvale Bridge approaches and Mt Crosby Weir Bridge have been inundated and both bridges are now closed.

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Impacts downstream of Wivenhoe Dam

The projected Wivenhoe Dam releases combined with Lockyer flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Saturday 15 January in varying degrees.

Water levels in the lower Brisbane R will be impacted by the combined flows of Lockyer Ck, Bremer River, local runoff and releases from Wivenhoe Dam. If the predicted rainfall eventuates in the downstream tributary catchments the resultant combined flows in the lower Brisbane may exceed the threshold of damaging discharge in the urban areas within the next 24 to 48 hours. Currently the estimate peak flow in the lower Brisbane River will be the highest since Wivenhoe Dam was completed in 1984 but still well below flows the 1974 levels.

Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the updated Wivenhoe operating strategy.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.

Seqwater Technical Officer name

Robert Drury

Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator

SRC Technical Officer contact details	
---------------------------------------	--

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time		or Event	Change in strategy
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From: Dan Spiller <Daniel.Spiller [REDACTED]>
Sent: Monday, January 10, 2011 9:51 AM
To: Barry Dennien <Barry.Dennien [REDACTED]>
Subject: FW: Water Grid operations update
Attach: Technical Situation Report W36.docx

From: Dan Spiller
Sent: Monday, 10 January 2011 9:46 AM
To: 'stephen.robertson [REDACTED]'; 'ken.smith [REDACTED]';
'lance.mccallum [REDACTED]'; 'Tim.Watts [REDACTED]';
'Geoff.Stead [REDACTED]'; 'Lauren.Sims [REDACTED]'; 'Best Debbie';
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Cc: 'Rob Drury'; Paul Bird; SEQWGM Media; 'damien.brown [REDACTED]'; 'Reilly Bob';
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Regards,
Dan

Daniel Spiller

Director, Operations
SEQ Water Grid Manager

Email: daniel.spiller

Visit: Level 15, 53 Albert Street Brisbane

Post: PO Box 16205, City East QLD 4002

ABN: 14783 317 630

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Sequater Technical Officer name

Robert Drury

Seawater Technical Officer position title	Dam Operations Manager

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BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

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SRC Technical Officer position title	Local Disaster Response Coordinator

SRCTechnical Officer contact details



Collated and distributed by (Agency)

Contact Officer signature

Contact Officer name

Rob Drury

Contact Officer position title

Dam Operations Manager

Next TSR due

Date

11.1.2011

Time

or Event

Change in
strategy

Litsupport Brisbane

From: Dan Spiller
Sent: Monday, 10 January 2011 9:57 AM
To: Rob Drury; Peter Borrows
Cc: Barry Dennien
Subject: Technical Situation Report W36 (3)
Attachments: Technical Situation Report W36 (3).docx

Rob and Peter,

I am about to send the TSR to Colin Jensen for BCC input. Before doing so, I have amended it based on my understanding of our conversation. Can you please confirm that the changes reflect your strategy?

Dan

TECHNICAL SITUATION REPORT

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The projected Wivenhoe Dam releases combined with Lockyer flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Saturday 15 January in varying degrees.

Water levels in the lower Brisbane R will be impacted by the combined flows of Lockyer Ck, Bremer River, local runoff and releases from Wivenhoe Dam. If the predicted rainfall eventuates in the downstream tributary catchments the resultant combined flows in the lower Brisbane may exceed the threshold of damaging discharge in the urban areas within the next 24 to 48 hours. Currently the estimate peak flow in the lower Brisbane River will be the highest since Wivenhoe Dam was completed in 1984 but still well below flows the 1974 levels.

Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the updated Wivenhoe operating strategy.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/camments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
----------------------------	-------------

SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time		or Event	Change in strategy
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Litsupport Brisbane

From: Rob Drury [rdrury@seqwater.com.au]
Sent: Monday, 10 January 2011 10:02 AM
To: Dan Spiller; Barry Dennien
Subject: FW: Answers to questions from teleconference

Peter Borrows asked me to forward these on.

In response to the queries raised

- The current operational strategy is to aim for a flow of no greater than 3,500cumecs in the lower Brisbane River. Accordingly, the current outflow from Wivenhoe Dam will be held at its current level of 2000 cumecs for the next 12 to 24 hours to allow for potential high flows from the Lockyer, Bremer and local area catchments to pass downstream. However this strategy may need to be revised at short notice if further significant rainfall occurs.
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- If there is a need to go beyond 3,500cumecs in the lower Brisbane around 24 hours notice should be able to be provided to BOM and BCC.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast flowing water is FATAL.

rethink it



[Redacted] | E rdrury [Redacted]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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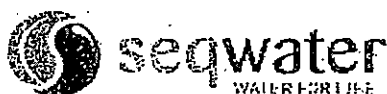
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Gina O'Driscoll

From: Peter Borrows [pborrows@seqwater.com.au]
Sent: Monday, 10 January 2011 10:02 AM
To: Barry Dennien
Subject: FW: Answers to questions from teleconference
Attachments: image001.jpg; image002.png; image003.jpg

Regards, Peter.

Peter Borrows
Chief Executive Officer
Queensland Bulk Water Supply Authority trading as Seqwater



E pborrows@seqwater.com.au

Level 3, 240 Margaret St, Brisbane City QLD 4000
PO Box 16146, City East QLD 4002
Website | www.seqwater.com.au



From: Rob Drury
Sent: Monday, 10 January 2011 9:56 AM
To: Peter Borrows; Stan Stevenson; Paul Bird
Subject: Answers to questions from teleconference

Peter, If you want to forward to the WGM. Apologies for delay but they were in discussions with Councils.

In response to the queries raised

- The current operational strategy is to aim for a flow of no greater than 3,500cumecs in the lower Brisbane River. Accordingly, the current outflow from Wivenhoe Dam will be held at its current level of 2000 cumecs for the next 12 to 24 hours to allow for potential high flows from the Lockyer, Bremer and local area catchments to pass downstream. However this strategy may need to be revised at short notice if further significant rainfall occurs.
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Robert Drury

Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and
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E rdruy

Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
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Litsupport Brisbane

From: Rob Drury [rdrury [REDACTED]]
Sent: Monday, 10 January 2011 10:05 AM
To: Dan Spiller; Peter Borrows
Subject: FW: Technical Situation Report W36 (3)
Attachments: Technical Situation Report W36 (3).docx

Dan,
Some slight changes based on what I sent in response to the questions and updating the release rates as now.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast
flowing water is FATAL

rethink it



[REDACTED] E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

From: Dan Spiller [mailto:Daniel.Spiller [REDACTED]]
Sent: Monday, 10 January 2011 9:57 AM
To: Rob Drury; Peter Borrows
Cc: Barry Dennien
Subject: Technical Situation Report W36 (3)

Rob and Peter,

I am about to send the TSR to Colin Jensen for BCC input. Before doing so, I have amended it based on my understanding of our conversation. Can you please confirm that the changes reflect your strategy?

Dan

This email, together with any attachments, is intended for the named recipient(s) only; and may contain privileged and confidential information. You understand that any privilege or confidentiality attached to this message is not waived, lost or destroyed because you have received this message in error. If received in error, you are asked to inform the sender as quickly as possible and delete this email and any copies of this from your computer system network. If not an intended recipient of this email, you must not copy, distribute or take any action(s) that relies on it; any form of disclosure, modification, distribution and/or publication of this email is also prohibited. While all care has been taken, the SEQ Water Grid Manager disclaims all liability for loss or damage to person or property arising from this message being

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TECHNICAL SITUATION REPORT

TSR Number	W36	Date of TSR release	10.1.2011	Time of TSR release	8am
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue increasing releases to discharge flood waters but keep impact downstream to minimum. 										
Strategy	<ul style="list-style-type: none"> All bridges are now inundated . 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected around 1,500,000ML which is close to 1974 event.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
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Rainfall:	Continuing										
Lockyer/Bremer:	Monitoring their inflows										
Brisbane River:	Impact as below.										

Rainfall

Moderate to heavy rainfall has been recorded in the Upper Brisbane and Stanley Rivers in the last 12 hours with totals up to 90 mm. Totals for the last 24 hours range from 100 to 325mm.

Mt Glorious recorded 100 mm in the last 12 hours.

Rainfall of similar magnitudes is expected in the 12 to 24 hours around the downstream catchments as the system tracks south.

A severe weather warning remains current for heavy rainfall in the dam catchment areas.

North Pine Dam (Full Supply Level 39.60 m AHD)

The dam level was 39.97 m and steady. Five gates are open releasing 475 m³/s. The inflow into the dam since the commencement of the event is 52,000 ML. Estimated event volume is 72,000 ML assuming no further rainfall. Gate operations will continue until at least Tuesday 11 January 2011.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level at 05:00 was 102.84 m AHD and rising (storing 193,000 ML above FSL). Peak inflow to the dam is estimated to be about 4,200 m³/s based on observed rainfall and could be as high as 5,000m³/s with additional forecast rainfall. Five sluice gates are open releasing about 1,100m³/s (95,000ML/d) into Wivenhoe Dam. At this stage the dam lake level will reach about 103.5 mAHD on Monday afternoon. Areas around Kilcoy will continue to be adversely affected.

Since the commencement of the event on 02/01/2011 approximately 142,000ML has been released from the dam into Wivenhoe, with an event total of the order of 520,000ML expected. This is expected to increase due to the forecast rain in the next 24 to 48 hours. At this stage, releases will continue until at least Thursday.

D217

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

River levels upstream of the dam have peaked and are falling slowly with significant inflow being generated from the intense heavy rainfall. Flows in the Brisbane River at Gregor's Ck have peaked at 7,350m³/s at 23:00 on Sunday 9 January. This peak is bigger than January 1974 and February 1999 at this location.

The dam level is rising quickly, with the current level being 70.77m AHD (storing 450,000 ML). Estimated peak inflow to the dam just from the Upper Brisbane R is around 8,800m³/s and, at this stage, the dam will reach at least 73.3 m AHD during Tuesday morning. Given the rapid increase in inflow volumes, it was necessary to start to increase the release from Wivenhoe during Monday morning.

The objective for dam operations will be to minimise the impact of urban flooding in areas downstream of the dam and, at this stage, ~~releases will be kept below 3,500m³/s and the aim is to keep combined flows in the lower Brisbane to 3,500cumecs~~ will be limited to 3,500m³/s if possible. Consistent with the approved Operating Procedures, these target combined flows may need to be increased to 4,000m³/s, and potentially higher. In either case, This is significantly less than the current estimated combined pre-dam peak inflow of 12,000 m³/s.

Fernvale Bridge approaches and Mt Crosby Weir Bridge have been inundated and both bridges are now closed.

The current release rate from Wivenhoe Dam is around 2,000-2,500m³/s (17,250,000ML/day). Gate opening will continue to be increased during Monday and the release is expected to increase to at least 2,600m³/s in the next 12 to 24 hours and further depending on downstream flows.

Since the commencement of the event on 02/01/2011 approximately 275,000ML has been released from the dam, with an event total approaching 1,600,000ML without further rain and as much as 2,100,000ML with forecast rainfall of (both including Somerset outflow). At this stage, releases will continue until at least Sunday 16th January 2011.

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Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the updated Wivenhoe operating strategy.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
----------------------------	-------------

SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time		or Event	Change in strategy
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From: Barry Dennien </O=SOUTH EAST QUEENSLAND WATER GRID
MANAGER/OU=EXCHANGE ADMINISTRATIVE GROUP
(FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BARRY.DENNEN>
Sent: Monday, January 10, 2011 10:07 AM
To: Dan Spiller <Daniel.Spiller@seqwater.com.au>
Subject: FW: Answers to questions from teleconference

Can you come in

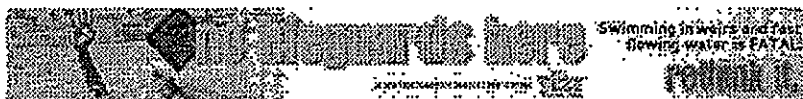
From: Peter Borrows [mailto:pborrows@seqwater.com.au]
Sent: Monday, 10 January 2011 10:02 AM
To: Barry Dennien
Subject: FW: Answers to questions from teleconference

Regards, Peter.

Peter Borrows
Chief Executive Officer
Queensland Bulk Water Supply Authority trading as Seqwater



Level 3, 240 Margaret St, Brisbane City QLD 4000
PO Box 16146, City East QLD 4002
Website | www.seqwater.com.au



From: Rob Drury
Sent: Monday, 10 January 2011 9:56 AM
To: Peter Borrows; Stan Stevenson; Paul Bird
Subject: Answers to questions from teleconference

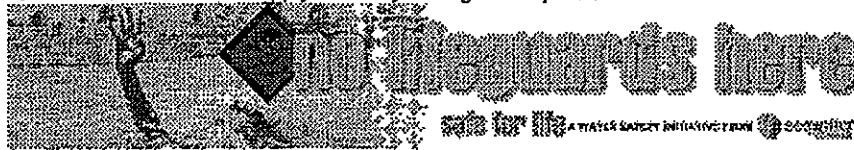
Peter, If you want to forward to the WGM. Apologies for delay but they were in discussions with Councils.

In response to the queries raised

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- If there is a need to go beyond 3,500cumecs in the lower Brisbane around 24 hours notice should be able to be provided to BOM and BCC.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast
flowing water is FATAL

Return it.



Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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From: Dan Spiller <Daniel.Spiller [REDACTED]>
Sent: Monday, January 10, 2011 10:09 AM
To: ceo [REDACTED]
Cc: Barry Dennien <Barry.Dennien [REDACTED]>; Peter Borrowows
<pborrows [REDACTED]>
Subject: Technical Situation Report
Attach: Technical Situation Report W37.docx

Colin,

Further to our discussion, attached is the Technical Situation Report drafted by Seqwater following consultation with BoM and Councils.

Key points are:

- There is continuing heavy rainfall in catchments. Total inflows over the event will be at least 1,500,000 ML and probably above 2,100,000 ML.
- As a result, Wivenhoe Dam is above 140% of capacity and Somerset is above 150%, with both rising fast.
- As specified in the approved Operational Procedures, the primary objective is now to minimizing the risk of urban inundation (release strategy W2). This involves larger releases now, minimizing the risk of even larger releases later (were the flood compartment to reach high levels).
- Consistent with this release strategy, dam releases have increased to 2,000 cubic metres per second (172,000 ML/day). It is expected to increase to 2,600 cubic metres per second by midday tomorrow.
- As specified in the approved Operational Manual, we are targeting maximum flow in the Brisbane River of 3,500 cumecs at Moggill. This is the levels above which urban inundation begins.
- For comparison, flows would be up to 12,000 cumecs without the dams.

Seqwater has previously had verbal conversations with BCC staff regarding impacts. However, given the significance of this event, and consistent with the draft protocol, we are seeking formal BCC input to this version. This advice would relate to the impact of releases, based on the type of scenario analysis that you described this morning.

Our preference would be to finalise the report, including your input, before or at the 12.30 teleconference with Council CEOs and the BoM. This timing means that it can underpin all media messaging this afternoon.

I appreciate your assistance. Please call me if I can be of any assistance.

Regards,
Dan

Daniel Spiller
Director, Operations
SEQ Water Grid Manager
[REDACTED]

Email: [daniel.spiller \[REDACTED\]](mailto:daniel.spiller [REDACTED])
Visit: Level 15, 53 Albert Street Brisbane
Post: PO Box 16205, City East QLD 4002
ABN: 14783 317 630

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If not an intended recipient of this email, you must not copy, distribute or take any action(s) that relies on it; any form of disclosure, modification, distribution and/or publication of this email is also prohibited. While all care has been taken, the SEQ Water Grid Manager disclaims all liability for loss or damage to person or property arising from this message being infected by a computer virus or other contamination. Unless stated otherwise, this email represents only the views of the sender and not the views of the SEQ Water Grid Manager and/or the Queensland Government.

TECHNICAL SITUATION REPORT

TSR Number	W36	Date of TSR release	10.1.2011	Time of TSR release	8am
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue increasing releases to discharge flood waters but keep impact downstream to minimum. 										
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The objective for dam operations will be to minimise the impact of urban flooding in areas downstream of the dam and, at this stage, the aim is to keep combined flows in the lower Brisbane to 3,500m³/sec if possible. Consistent with the approved Operating Procedures, these target combined flows may need to be increased to 4,000m³/s, and potentially higher. In either case, this is significantly less than the current estimated combined pre-dam peak inflow of 12,000 m³/s.

Femvale Bridge approaches and Mt Crosby Weir Bridge have been inundated and both bridges are now closed.

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Impacts downstream of Wivenhoe Dam

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Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the updated Wivenhoe operating strategy.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.

Sequencer Technical Officer name

Robert Drury

Seawater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator

SRC Technical Officer contact details



Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time		or Event	Change in strategy
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Gina O'Driscoll

From: Lee Hutchison
Sent: Monday, 10 January 2011 10:21 AM
To: Dan Spiller; Barry Dennien; Scott Denner; Michael Lyons
Cc: Aleisha Coote; SEQWGM Emergency
Subject: 0830h Teleconference Notes
Attachments: Flooding 0830 10JAN11 Teleconference.docx

Colleagues,

Attached are the notes as taken during the teleconference today.

Lee Hutchison
Risk and Emergency Manager
SEQ Water Grid Manager

Email: lee.hutchison

Post: PO Box 16205, BRISBANE CITY EAST, QLD 4002

Unit: Level 15, 53 Albert St, BRISBANE

PN: 14 783 317 630

Teleconference 0830h 10 January 2011 – Dam Releases and Flooding

In attendance

Barry Dennien

Dan Spiller

Scott Denner

Michael Lyons

Lee Hutchison.

Seqwater – Peter Burrows, Rob Dury, Paul Bird, Stan Stevenson

Agenda

Review the current release strategy

- 3.5 and 4
 - Seqwater – Manual – 4,000m³/s but aiming for 3,500m³/s – 4,000m³/s in the river
 - Will adjust timings based on what is happening downstream
 - Release at 3,500m³/s – currently at 2,000m³/s
 - 2,500m³/s in next 12-24hrs
 - Objective is to minimise urban impacts
 - Barry - @ 3,500m³/s comfortable through Moggill. Point between W2 and W3 is critical. Need to engage BCC at highest level when decision is made
 - Dan – above 3.5 – flooding attributable to dam releases – Comms need to be clear
 - Peter Burrows – 8,800-9,000m³/s inflows
 - Barry – Team talks to BCC and Bom (planned above 3.5), check concerns (not input into model), document any concerns
 - Peter – how much notice can we give that we are moving from 3,500m³/s to 4,000m³/s at Moggill – Key question.

Scenarios –

- W2
- BCC second scenario – river at 3,500m³/s with local rainfall causing localised/flash flooding.
- Barry – inflows in calcs?
- Dan – could it go over 4,000m³/s?

Action - Seqwater will come back with some further modelling info next hour.

How long at 3,500m³/s

Trigeer to go from 4,000m³/s and up

Grid Operations

- WTP
- Stan – Somerset – some facilities shut down.
- Site access – emerging issues
- Landslips – emerging issue

- Landers Shute – landslide issues***
- Kenilworth – 36hrs
- Mt Crosby – OK.
- More detail at 1100h
- Need to max sys storage. Linkwater comfortable
- Staff unable to return from leave or access workplace – is resourcing a risk?

Coordination –

- 1000h Min
- 1030h Min
- 1100h Grid OPs
- 12PM meeting BCC/BoM (telecon)
- TSRs - BoM and BCC – update with issues and expectations
- W37 post 1200h teleconference as technical basis for media comms

Communications

- 1400h TV
- Short advisory am hrs earlier today

Level 3 Emergency Escalation

- Emergency Manager appointed - Dan
- Comms Manager appointed – Michael

Teleconference end at 0902h.

Tipping point discussion – how long can we hold for and what are the risks

SEQWGM Actions

- Distribute TSR to BCC and Bom for formal input and endorsement
- Communicate TSR to Gov't stakeholders

Dan Spiller

From: Gina O'Driscoll
Sent: Monday, 10 January 2011 10:23 AM
To: Carl Wulff (cwulff [REDACTED]); colin.jensen [REDACTED]
bbair [REDACTED]
Cc: fernvalefutures [REDACTED]
Subject: FW: Wivenhoe Dam release strategy
Attachments: Technical Situation Report W37.docx

Importance: High

From: Dan Spiller
Sent: Monday, 10 January 2011 10:11 AM
Subject: Wivenhoe Dam release strategy

Carl and Rob,

Attached is the Technical Situation Report drafted by Seqwater following consultation with BoM and Councils.

Key points are:

- There is continuing heavy rainfall in catchments. Total inflows over the event will be at least 1,500,000 ML and probably above 2,100,000 ML
- As a result, Wivenhoe Dam is above 140% of capacity and Somerset is above 150%, with both rising fast.
- As specified in the approved Operational Procedures, the primary objective is now to minimizing the risk of urban inundation (release strategy W2). This involves larger releases now, minimizing the risk of even larger releases later (were the flood compartment to reach high levels).
- Consistent with this release strategy, dam releases have increased to 2,000 cubic metres per second (172,000 ML/day). It is expected to increase to 2,600 cubic metres per second by midday tomorrow.
- As specified in the approved Operational Manual, we are targeting maximum flow in the Brisbane River of 3,500 cumecs at Moggill. This is the levels above which urban inundation begins.
- For comparison, flows would be up to 12,000 cumecs without the dams.

Seqwater has previously had verbal conversations with Council staff regarding impacts. However, given the significance of this event and consistent with the draft protocol, we are seeking formal Council input to this version. This advice would relate to the impact of releases, based on the type of scenario analysis that you described this morning.

(NO RESPONSE RECEIVED)

Our preference would be to finalise the report by 12.00pm today or at the 12.30 teleconference with Council CEOs and the BoM. This timing means that it can underpin all media messaging this afternoon.

I appreciate your assistance. Please call me if I can be of any assistance.

Regards,
Dan

Daniel Spiller
Director, Operations
SEQ Water Grid Manager

Email: daniel.spiller@seqwater.com.au
Visit: Level 15, 53 Albert Street Brisbane
Post: PO Box 16205, City East QLD 4002
ABN: 14783 317 630

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TECHNICAL SITUATION REPORT

TSR Number	W36	Date of TSR release	10.1.2011	Time of TSR release	8am
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue increasing releases to discharge flood waters but keep impact downstream to minimum. 										
Strategy	<ul style="list-style-type: none"> All bridges are now inundated . 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected around 1,500,000ML which is close to 1974 event.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
Storage levels:	Above FSL										
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Rainfall:	Continuing										
Lockyer/Bremer:	Monitoring their inflows										
Brisbane River:	Impact as below.										

Rainfall

Moderate to heavy rainfall has been recorded in the Upper Brisbane and Stanley Rivers in the last 12 hours with totals up to 90 mm. Totals for the last 24 hours range from 100 to 325mm.

Mt Glorious recorded 100 mm in the last 12 hours.

Rainfall of similar magnitudes is expected in the 12 to 24 hours around the downstream catchments as the system tracks south.

A severe weather warning remains current for heavy rainfall in the dam catchment areas.

North Pine Dam (Full Supply Level 39.60 m AHD)

The dam level was 39.97 m and steady. Five gates are open releasing 475 m³/s. The inflow into the dam since the commencement of the event is 52,000 ML. Estimated event volume is 72,000 ML assuming no further rainfall. Gate operations will continue until at least Tuesday 11 January 2011.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level at 05:00 was 102.84 m AHD and rising (storing 193,000 ML above FSL). Peak inflow to the dam is estimated to be about 4,200 m³/s based on observed rainfall and could be as high as 5,000m³/s with additional forecast rainfall. Five sluice gates are open releasing about 1,100m³/s (95,000ML/d) into Wivenhoe Dam. At this stage the dam lake level will reach about 103.5 m AHD on Monday afternoon. Areas around Kilcoy will continue to be adversely affected.

Since the commencement of the event on 02/01/2011 approximately 142,000ML has been released from the dam into Wivenhoe, with an event total of the order of 520,000ML expected. This is expected to increase due to the forecast rain in the next 24 to 48 hours. At this stage, releases will continue until at least Thursday.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

River levels upstream of the dam have peaked and are falling slowly with significant inflow being generated from the intense heavy rainfall. Flows in the Brisbane River at Gregor's Ck have peaked at 7,350m³/s at 23:00 on Sunday 9 January. This peak is bigger than January 1974 and February 1999 at this location.

The dam level is rising quickly, with the current level being 70.77m AHD (storing 450,000 ML). Estimated peak inflow to the dam just from the Upper Brisbane R is around 8,800m³/s and, at this stage, the dam will reach at least 73.3 m AHD during Tuesday morning. Given the rapid increase in inflow volumes, it was necessary to start to increase the release from Wivenhoe during Monday morning.

The objective for dam operations will be to minimise the impact of urban flooding in areas downstream of the dam and, at this stage, the aim is to keep combined flows in the lower Brisbane to 3,500m³/sec if possible. Consistent with the approved Operating Procedures, these target combined flows may need to be increased to 4,000m³/s, and potentially higher. In either case, this is significantly less than the current estimated combined pre-dam peak inflow of 12,000 m³/s.

Fernvale Bridge approaches and Mt Crosby Weir Bridge have been inundated and both bridges are now closed.

The current release rate from Wivenhoe Dam is around 2,000m³/s (172,000ML/day). Gate opening will continue to be increased during Monday and the release is expected to increase to at least 2,600m³/s in the next 12 to 24 hours and further depending on downstream flows..

Since the commencement of the event on 02/01/2011 approximately 275,000ML has been released from the dam with an event total approaching 1,000,000ML without further rain and as much as 2,000,000ML with forecast rainfall of (both including Somerset inflow). At this stage, releases will continue until at least Sunday 16/ January 2011.

Impacts downstream of Wivenhoe Dam

The projected Wivenhoe Dam releases combined with Lockyer flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Saturday 15 January in varying degrees.

Water levels in the lower Brisbane R will be impacted by the combined flows of Lockyer Ck, Bremer River, local runoff and releases from Wivenhoe Dam. If the predicted rainfall eventuates in the downstream tributary catchments the resultant combined flows in the lower Brisbane may exceed the threshold of damaging discharge in the urban areas within the next 24 to 48 hours. Currently the estimate peak flow in the lower Brisbane River will be the highest since Wivenhoe Dam was completed in 1984 but still well below flows the 1974 levels.

Somerset Regional, Ipswich City and Brisbane City Councils have been advised of the updated Wivenhoe operating strategy.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.

Seqwater Technical Officer name

Robert Drury

Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator

SRC Technical Officer contact details	
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Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time		Given	Change in strategy
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Gina O'Driscoll

From: Barry Dennien
Sent: Monday, 10 January 2011 11:32 AM
To: Scott Denner; Dan Spiller; Michael Lyons
Cc: Barry Dennien
Subject: Actions form Minister's meeting
Attachments: image001.gif

Gents

Note assigned actions:

1. Contact DIP and get the status of Wyaralong – Dan's team
2. Manage Somerset Council!!! Re folks affected by the Burtons Bridge closure – Mick / Scott
 - a. Check they have been contacted
 - b. Check that provisions are provided
3. BCC meeting – Dan Barry
 - a. Joint press statement
 - b. Sharing of modelled resident impacts at river levels above 2.6m
 - c. Increased River levels due to releases at 2800, 3500, 4000, >4000 – BOM
 - d. 74 map and river height / comparison to above scenarios
4. 74 flood river flow rate - Seqwater

Regards

Barry Dennien
Chief Executive Officer
SEQ Water Grid Manager

Email: barry.dennien
Visit: Level 15, 53 Albert Street, Brisbane
Post: PO Box 16205, City East Qld 4002
ABN: 14783 317 630

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Transcript of meeting on 10 January 2011 – 12.30pm.

Attendees (in person and via teleconference):

SEQ Water Grid Manager: Barry Dennien (**BD**), Daniel Spiller (**DS**), Scott Denner, Michael Lyons, John Adcock

Seqwater: Peter Borrows (**PBor**),

Brisbane City Council: Colin Jensen (**CJ**), Shane McLeod

State: Ken Smith (**KS**), Karl Walsh

Bureau of Meteorology: Peter Baddiley (**PBad**), Jimmy Stewart (**JS**)

Office of the Water Supply Regulator, Department of Environment and Resource Management (DERM): Bob Reilly

DERM: Debbie Best

Ipswich City Council: Ipswich City Council representative (**ICC**)

Somerset Regional Council: Bob Bain (**BB**), Graeme Lehmann, Tony Jacobs

Minister Robertson's office: Minister Robertson

BD	...is being proposed around addressing those forecasts. So to kick off I'd like Peter – if you like, Peter Borrows – just to give us an update on dam levels, current release rates.
PBor	Wivenhoe Dam is currently 52% above full water supply level and Somerset Dam is 210,000 megalitres above full supply level so that would be discharging – and is discharging now into Wivenhoe. Currently the release strategy is to design the releases – and we're releasing about 2,000 mega – cubic metres a second out of Wivenhoe into the river and that's designed to have a flow rate at the Moggill gauge of about 3,500 megalitres a second. So that's the current arrangement.
BD	The – thanks, Peter. Peter, just a few additional facts. In the – in the course of the last 24 hours some of the inflows into Wivenhoe Dam peaked at around 12,000 cumecs, just to give a comparison, the release rates at that stage were about 1,300 cumecs. At the moment, Peter, they're going to about 2,800 cumecs, I believe, out of Wivenhoe.
PBor	We're increasing it to that.
BD	Yes.
PBor	But still – we're not there yet.
BD	Okay.
PBor	But the inflows, as Barry said, combining Somerset and Wivenhoe together is around the 12,000 cumecs.
BD	The – and we're trying to – strategy at the moment is to try and maintain the river, which is the combination of the dam releases, and Lockyer Creek, Bremer, et cetera, and overland flow at Moggill at 3,500 cumecs. So that's the current strategy. So is there any questions on information on where the current state of

	play is with the dams, before we talk about forecasts?
CJ	Yeah, Colin Jensen here. I understand our offices were talking this morning and actually there was a revised strategy down from 3,500. Is that not correct?
PBor	What do you mean ' <i>down from 3,500</i> ', Col? Lower?
CJ	As at – as at midmorning I was told that Seqwater was proposing a revised strategy which was 2,000 cumecs released from Wivenhoe plus 500 of river inflows making a total at Moggill of 2,5000 cumecs.
PBor	No, the target – the target's still 3,500, Col. But when we get onto the revised strategies, there's been a lot of rain in the catchment in the last few hours again so – but we'll wait until the BOM come in on that.
CJ	Okay. So to be clear, the 3,500 is the target?
PBor	That is the current target.
CJ	And will you give me the timetable of ramping up to that again, please?
PBor	Well...
CJ	'Cause this is different to what my flood information people are actually modelling right this moment.
KS	Yeah, Peter, it's Ken here. Can you break up that 3,500 in terms of the components? What's – what's released from Wivenhoe and what would the local – you know, the – you know, the water flow outside of Wivenhoe?
PBor	Yeah, I'm just checking something.
Voice in background	3,800 out of Wivenhoe...
Unknown	Mmm.
Voice in background	...700 out of the others.
CJ	It's Colin here. My understanding was 3,000 out of Wivenhoe, 500 out of river catchments below Wivenhoe, making a total of 3,500 at Moggill.
BD	So – so, Peter, that's not what you just said – 3,500 at Moggill was the...
PBor	3,500 at Moggill.
BD	Yeah.
PBor	That's the same number, isn't it, Col?
BD	That's the same number, isn't it, Col?
CJ	Yes.
KS	Yeah, it's the question of how much out of Wivenhoe. How does that...
PBor	Oh, yeah, okay. Righto. Well it was 2,000 ramping up as the...
BD	Yeah.
PBor	...as the projections came down. As projections out of Lockyer and Bremer came down, Wivenhoe was ramping up to try and maintain the 3,500 at Moggill.
CJ	Yeah, Colin here. So my understanding was that you're currently at about 2,000. You'll be ramping up to 3,000 as the other inflows drop to 500, maintaining 3,500 at Moggill.

PBor	That's the current release strategy, yes.
CJ	Yeah.
BD	Just of note...
CJ	My...
BD	...in the technical report, Col, that came out earlier this morning it was 2,000 ramping up to 2,600, still maintaining 3,500 at Moggill but that may have changed, as Peter's just said, as – as the inflows from Lockyer even decrease lower they'll increase Wivenhoe a bit more but still maintain 3,500 at Moggill.
PBor	But just to restate, that's the current release strategy.
BD	Yeah.
CJ	Yeah, can I just check, is there a proposed lower release strategy, because that's what I was being advised this morning.
PBor	No.
CJ	Okay. So that – for us, that's actually a confusion based on advice that officers have been told at about 10.00 this morning.
KS	Who – who advised you, Colin?
PBor	Yeah.
CJ	I haven't got names, but it's out of Seqwater to the Flood Information Centre at BCC.
BD	So...
Unknown male on phone	That's what I said.
BD	Okay. So what we'll do – we'll just – we'll – Peter Borrows is going to run that one to ground, if there was a miscommunication but what was in the technical report basically was the strategy as of his morning and – but even that we'd like to revise now and if everyone's happy with that base information, what we'd like to do is just talk about this – the change in the catchment and what's going on with the rainfall and to get the BOM to come in here, if they could, and give us two things – one is a bit of an update on what's occurred maybe in the last three or four hours and then secondly, what the forecast is in the catchment over the next coming 12/24 hour period.
PBad	Yeah, morning – good afternoon, all. Peter Baddiley – just speaking initially – I think just listening to that discussion the – the situation is changing hour by hour so a – a TSR of 8.00am – technical situation report of 8.00am is dated within hours after – within a few hours after its written, so it's old information but if I just bring an update. The last three hours there's continuing significant rainfall. There is increase in the upper Brisbane catchments and in parts of the Lockyer. Flows are increasing through the system. Currently we are operating with an expected peak of 3,700 in the Brisbane city reach but that's based on an – on a – on a, if you like, scenario of release strategy of a few hours ago and as I understand it that would be modified fairly soon. Just take account of the increasing - continuing higher rainfalls into the catchment. In terms of forecast rain, we gave on the briefing this morning to a State Disaster Coordination Centre, a further 50-100 millimetres over 24 hours with possible 150 millimetres in locations and as – as we speak now the rain is continuing with some of the three hourly totals above – above Wivenhoe being up to about 60 millimetres in three hours in some places and fairly

	significant areas of rain over the – over the catchment.
BD	Thank you, Peter. Based on that information, Peter Borrows now has had his team reference the operational manual and have a look at a revised strategy which, my understanding, Peter, will take it possibly above 3,500 at Moggill gauge. Peter, do you want to give us an overview of the new revised strategy?
PBor	Yeah, the flood operation centre's currently going through that same information that Peter Baddiley has just conveyed to the – to the group and looking at what the revised release strategy should be. The release strategy that we have has that when Wivenhoe hits 78% above full supply level then the operating mode shifts to – to basically making sure the dam – the dam's safety becomes the paramount sort of number and the effects of the dam's safety and people downstream becomes the paramount. The predicted maximum level was going to get to within 75,000 cubic metres of the full supply level prior to this upgraded rainfall that we've experienced over the last three years – three – last three hours and we are also now only – and that level would've been 3,300 – 3,300 – 3,000 – 330,000 megalitres, sorry, below the – the peak that would trigger the first – first fuse plug. So essentially what we're now doing is revising that release strategy and that will be available within the next two hours but it is extremely likely that that would increase the releases significantly above the targeted figure at Moggill at 3,500.
CJ	Colin here. So to what sort of extent – just in the ball park?
PBor	We – we're still working that through, Colin. I haven't got the answer to that yet and I'll have it within the next hour or two.
KS	So – yeah, it's Ken here. In the next hour you'll have it?
PBor	Yes, correct. Yeah.
KS	Yep. Thanks, Peter.
PBor	And – yeah.
BD	So...
CJ	Colin here. Because even – and the confusion around the – being able to drop to 2,500 total stream flow rather than 3,500 – just the difference in those two numbers to us is actually several thousand properties inundated and it's the difference between actually us managing a property damage incident which didn't impact upon residents. At 3,500 we're now actually – will have to ramp up to probably evacuations.
KS	Sorry, Colin – Ken here. At 3,500?
CJ	Yeah, we were actually – in coming out of the meeting that – when you and I spoke, that I'd just come out of, we were working on a 2,500 as – as per some maths computing advice and we were looking at next week for the king tide, as we looked further ahead, just to be...
KS	That's the 21st
CJ	21 st , correct.
Male	Yes.
CJ	Our – if you like, our worst case planning on that was to work at 4,000 cumecs at Moggill and at that we're actually into the thousands of properties inundated. So now what I'm hearing is that I'm definitely at 3,500 by – and I have to check the time there, but by Wednesday high tide peak at 2.00pm and I'm possibly running up to my 4,000 number.

BD	Yes. Col, Barry Dennien here. Dan is going to shed a little bit of light on this confusion this morning around this – this lower figure that – that the officers were talking about. Dan, did you want to talk to that?
DS	Yeah, I – I just was speaking to Rob Drury. Rob advised that what he'd told the officers this morning is that because of flows in the Lockyer they were looking at that stage of holding the releases at 2,000 cumecs and doing so for a period of about ten hours to provide some time for the downstream impacts – downstream flows to peak but that – obviously that's subject to the rainfall that's occurring in the catchment now which is causing the – the review of strategy which Peter described. But at that time they were trying to hold at 2,000 rather than continue ramping up by – to 2,000...
CJ	Yep. Okay, well that explains it. And you're telling me, to be crystal clear, that strategy's definitely gone.
BD	That one's gone. And there's a...
CJ	And instead we're talking about ramping up beyond 3,500 total.
BD	What I'm hearing, Col, to be really clear, is from the BOM's forecast and from the inflows that we've just been briefed on in the last two hours, that the most likely scenario will be above 3,500 at Moggill and Peter Borrows is not willing to put a number on that at this point until that modelling's finished in the next hour and a half or so.
CJ	Okay.
KS	So in terms of – it's Ken here. Peter, in terms of Wivenhoe's history, have there been releases of amounts we've been talking about?
PBor	No. No, we haven't.
KS	It hasn't since – since – since the dam was put in place there haven't been releases of these amounts?
PBor	Well certainly not since the – the mid-80s and so – and I think the answer to your question, Ken, is no, there hasn't been any and certainly not since the mid-80s.
BB	Peter, it's Bob here from Somerset. Are you releasing from the Somerset Dam at the same rate you're releasing from Wivenhoe?
PBor	We're releasing at a lower rate from Somerset into Wivenhoe, but as you know, Bob, there's flooding from upstream of Somerset as well.
BB	That – that's right. There's going – that's backed up into the township of Kilcoy.
PBor	So we – we are releasing from Somerset. We've got the five sluice gates in Somerset open.
BB	Mmm-hmm.
CJ	Colin here. To assist, could you – 'cause I've actually had conflicting advice on this too so I might as well ask the experts, what's the maximum release rate in cumecs from Somerset and from Wivenhoe?
PBor	I can't give you that answer off the top of my head, sorry, Colin. I'll have to give you that answer.
CJ	That's okay. It's just the number keeps heading north.
PBor	Yeah.
CJ	I – I thought we'd passed the number a couple of times now so...

PBor	Yeah, well we certainly haven't passed the maximum release out of Wivenhoe.
CJ	No.
PBor	We're significantly below Wivenhoe.
BD	And just – Col, just on that, in that manual the – the flood manual, it clearly talks about releases above 4,000 and well above that in the manual, when the bigger inflows and the storages have – and the flood storage starts to fill. So I think going above 4,000 cumecs was always part of the original plan if required.
CJ	Yeah. Okay, but the...
PBad	Peter Baddiley – Peter Baddiley, if I could just make a comment at some stage.
BD	Yeah, go ahead, Peter.
CJ	Yeah, I'm willing to wait.
BD	Peter, when you're ready.
PBad	Oh okay. I was just going to comment that – with the current release strategies which was established several hours ago and it's about to be revised upwards, we were modelling about 3,700 cumecs through Brisbane anyway now because there's about a thousand cumecs of local inflow still increasing from Lockyer and Bremer so we're already up around the 3,700 level. What will now happen is that within the next hour or so Seqwater will give us their new release strategy, we will put that back into the model, we will re-crunch the numbers and we will come out with whatever the – with the current rainfalls, the increasing Lockyer and Bremer, Warril flows plus the new strategy, we'll be then looking – able to say what the new peak flow is through the Brisbane city reach. That – that will now depend on when the release strategy is given to us and then our warning is due for a re-issue at 3.30pm. We will talk then to Brisbane City Council's FIC to agree on what height – what flow and what height we'll be using in the public warning as per all of our arrangements.
BD	Col, Barry Dennien. Col, could you share with us a bit of your – you mentioned you had some scenarios modelled when we spoke this morning, that you were working up some scenarios and you mentioned then a little earlier that you had a scenario run at 4,000 cumecs at the spring tide?
CJ	Yep.
BD	Would you – would you have that information available to share on how many properties might be affected at that level?
CJ	I don't have the latter bit, in terms of how many properties are impacted at 4,000 simply because this morning inappropriately we've put that work aside and pursued a lower number than 4,000 cumecs at Moggill. So I don't have the number there but to give you some idea, at a river height of 3.1 metres which is what we're looking at the window achieving about now, in the next half hour, which is the level that we've achieved probably three or four times since late December, since just before Christmas. At that sort of level we have 6,500 properties – not houses, properties partially inundated due to the river and tidal creek.
BD	Mmm-hmm.
CJ	And some 221 of those fully inundated. So that's a 3.1 metre river height. My understanding is 3,500 cumecs at Moggill equates to a - tide height I'm talking here – of about 3.5 to 3.7 metres. And 4,000 cumecs obviously is somewhere north of that as well.

BD	Mmm-hmm.
CJ	So if I just put it into what have we dealt with recently, we've been dealing with tide heights of around 3.1 and below. Lower tides this week but higher stream flows from catchments - and including the dam releases has been keeping us at 3.1. We're now probably looking at somewhere higher than 3.7 by Wednesday, 2.00pm high tide. So we'll have to run those numbers. I have actually got some inundation maps that we've just produced at 4,000 cumecs and that's what I was referring to, saying that we were using that for our medium term planning for Friday the 21 st ...
BD	Right.
CJ	...in terms of the king tide effect.
BD	And...
KS	Are you able to share those maps, Colin? It's Ken.
CJ	Yeah, we can pump them out. I actually haven't got a set with me yet but they're very large obviously.
KS	Yep.
CJ	What we were planning - and I'll pause here and we'll come back to it no doubt at the end of this call, about lining our ducks up on communications - we were planning at going out mid-afternoon with the Lord Mayor to the city residents in terms of saying that as BOM and everyone's saying it is wet out there and we will be getting tides higher than we've been getting recently, we've been talking about getting - we're actually making sandbags only as fast as they're going out the door or putting it more practically, as fast as we can make them, they're leaving our depots at the moment. We're about to push staff onto sandbag marking rather than other activities and our target was to produce 30,000 bags by the time we got to Wednesday's high tide circa 2.00pm.
KS	Colin, Ken here again. The 3.1 and those figures on partially inundated and fully inundated - the fully inundated is water in the property, as opposed to water around the property?
CJ	To be clear, I'm using the word ' <i>property</i> ' not ' <i>residence</i> '.
KS	Yep.
CJ	So in fact people should just throw those numbers away, is my recommendation. Some of the 6,000, for example, will be council parklands and the like.
BD	Okay.
KS	Okay.
BD	Yeah.
CJ	So - so we use that for our response in terms of where do we actually have to do debris cleanup and - and the like, so...
KS	So not necessarily the buildings, per se?
CJ	Correct. The - the two measures that we're actually producing - and as soon as we get off this call I'll reorientate them back to the higher river height levels, rather than waste the time down at the lower ones - firstly is which houses and business premises have water into them.
KS	Yep.

CJ	And then secondly which houses actually have water into habitable areas.
BD	Mmm-hmm.
CJ	So we get concerned at the first one because people lose their washing machines and potentially cars should be shifted from under their house.
KS	Yep.
CJ	The second one is, they've enclosed under their house or they're only a ground floor dwelling and they get water into the home proper.
KS	And – and that's the distinction, Colin, that we've had at a – at a state level, looking at basically water above the floorboards and water into the – you know, the property but not affecting the – the building itself. It – can I just ask you, do you need any additional resources around the – the sandbagging production and filling of sandbags?
CJ	My answer an hour ago was no. I might actually now change that to a yes.
KS	I think...
CJ	We'll just work out exactly what we require and I'll come back to the district coordinator.
KS	Yeah. Yeah, okay. And come straight back to me and I'll get people through the SDCC, you know...
CJ	Okay.
KS	...to ensure we get that sorted.
CJ	Yep. Can I just be clear on that home inundation again because this is one that matters and I know the Premier and the Lord Mayor have already spoken about it and it's one that the media about immediately, when you said ' <i>floorboards</i> ', I'm actually being a little bit finer grained in my distinction there. My first category is water into the home...
KS	Yep.
CJ	...but being heartless about it, if it's not actually affecting their ability to live in the home - that is it's actually downstairs laundries, garages and the like – they still get to live there.
KS	Yep.
CJ	So that's water downstairs. My second category is water into the living area of the home, the habitable area...
BD	Yes.
CJ	...and hence we need to evacuate.
KS	Yep, yep.
CJ	So if I took a typical two storey Queensland home, my first category is water's downstairs, that they can live upstairs potentially without power or water supply or anything but they can live up there. The...
KS	Sure.
CJ	...second category is, they're on the kitchen table and I need to get them out.
KS	Yep.
BD	Col, Barry Dennien. Just clarifying the gauge heights you mentioned before, Col,

	what gauge was that that you were talking to - referring to?
CJ	I'm referring to Port Office.
BD	Port Office.
CJ	The gauge.
BD	Okay. And BOM – Peter, you still there?
PBad	Yes, I am. Yes.
BD	BOM – Peter, can you just clarify your process? You mentioned before you got Peter's release information, you then have your stream flow information and you calculate the river height at the Port Office as part of a process?
PBad	Definitely. We will take the new strategy in when it's released...
BD	Okay.
PBad	...rerun the model, but now I'm quite confused because – because the previous discussion was talking about three metres. In my – my rough thinking, 4,000 cumecs would give three metres AHD not three metres tide datum at the – at the gauge. So I think somehow or other – I'm not too sure. The 6,500 properties, 220 flooded at something like three metres, that sounds like AHD not tide datum.
BD	So...
CJ	No, I'm – I'm talking tide datum so yes, we have a real problem. If I add 1.24 to that we're in – we're in serious levels of inundation.
BD	So...
CJ	So, to be clear, if I looked out the window at the moment at the Brisbane River, we're kind of – haven't actually checked in the last couple of hours but with all the additional flow from the various sources, you know, the looking out the window test says we're at about three metres tide height datum. I haven't checked the gauge just at the moment.
Unknown male	No, it's at one point...
BD	The – sorry, just – I'm being...
CJ	Can I just say...
BD	Yeah.
PBad	Can I just say, to go from side datum to AHD we've got to subtract 1.24 metres.
KS	Yeah, it's Ken here. I think, Peter, once the – the estimates of the release arrangement are made, we really need the – the Bureau to give us the – you know, the estimated height at the Port Office. I mean, I – it is – this is a very difficult conversation but I think we'll need your estimate as quickly as we can after the – after the water grid manager has – and Seqwater have actually done their calcs on what needs to be released.
PBad	Yeah, thanks, Ken. And I'll just go through the process again that we've been following all day. What will happen is Seqwater will give us a new release strategy, we will run up the model which – that only takes ten minutes – and evaluate those results. We go back and discuss with Seqwater that we've got the right – we're in the same ball park with their releases, with – with what they've been modelling downstream. We – we get in the same ball park, then we make a phone call to Brisbane City Council FIC and indicate the sort of heights that we – our model is predicting and we will be using metres AHD at the Port Office. Following – following that discussion we – we update the Brisbane flood warning

	which is due for 3.30pm this afternoon with the revised height, metres AHD and that's a public – that's a public warning. So at that stage we've – we've got agreement with Seqwater on modelling upstream and downstream and we've got agreement with Brisbane City Council on the projected or predicted flood levels in AHD downstream and as – as our warnings did at 10.00 this morning or 10.30 this morning, we will give levels in metres AHD at Ipswich, Moggill, Jindalee and Brisbane city and you can see the format in the warning at 10.30 this morning. So there will be a revision this afternoon at approximately 3.30pm, if not before if the release strategy is significantly different.
BD	Just to - bit of background information, the current level as of 20 minutes ago is 1.6 metres, Col, at the Port Office.
CJ	Yep.
BD	So that's...
CJ	AHD?
BD	AHD.
CJ	2.84 therefore tide height.
BD	Okay. So are you concurring with that, Peter?
PBad	I – yeah, that's right. I mean, 1.6 metres AHD plus – correction the tide datum would give you that number plus 1.24. I think what – what I will do is just continue to talk - as we talk with the public and in all of these technical discussions – that we will talk in AHD, which is – which is the reference for the flood warning gauge at the Port Office.
CJ	Yeah, Colin here. Just to be clear, we know you do – to be clear, we will talk in tide because actually our experience is the public don't know what we're talking about when we talk in AHD. So I accept what you're saying but just to be clear, I'll talk in tide. So I'll keep adding 1.24 whenever I name a number and you'll keep subtracting it from mine, and vice versa. Can I just – perhaps, Peter Baddiley, it would be good if actually...
PBad	Yep.
CJ	...you could run through those – the 2.84 that we just talked about – 1.6 plus the tide correction...
BD	Mmm-hmm.
CJ	...giving you 2.84 20 minutes ago.
BD	Yeah.
CJ	Could we just run through how you believe that's made up, in terms of what the contributing flows are?
PBad	Yeah, we can – we can have a look at that and I'll have Jimmy look at that now. Could I just come back to the – if we're going to give two datums, this will be a change in our procedures that we've agreed with council. Do you think then – either we're going to use these two numbers consistently – in other words, the Bureau should – should give both numbers – I'm just concerned that there's going to be confusion with two numbers floating so I'm quite happy to do what – do – to make last minute changes to this, but I think we just need to be clear, you know, that we are doing this and whether the Bureau should give both numbers, the AHD value and the tide value which would – would now be a departure from the procedures we've agreed with – with the engineers in council over the last several years.

KS	It's Ken Smith here. Peter, look there is an issue here of statewide consistency and I'm – I'm assuming your levels, that you're issuing, are – when we talk about, you know, peak heights – are in fact not the tide heights. They are the – the – the – as you're saying, the consistent way of describing this across the state, whether this is in St George or Gympie, is the way that you've described?
PBad	Generally speaking, although tidal areas vary. In some cities – for example, Mackay, they want to use the tide gauge, but for Brisbane city all of the reference information we have for Brisbane's flood is against AHD and that was established shortly after the 1974 flood – the 1974 flood was 5.5 metres AHD and has – we've been using AHD levels since shortly after the '74 flood, from my knowledge...
CJ	Yeah, it's Colin here. To be clear, every engineer in council absolutely uses AHD. Everyone that does buildings and planning approvals and - everything else uses AHD. What I'm talking about is every time we issue a statement to the public, they don't know what AHD is and we actually therefore say you have to add – so if we talk about one of our alerts, it'll actually say it is actually just triggered stream height AHD, add 1.24 metres to actually get the tide height. So if you talk foreshore flooding at Sandgate, it'll say the gauge has just tripped one point whatever metre AHD and then it'll say <i>'(add 1.24 metres to get your tide height)'</i> . The reason being is that the public don't actually get AHD.
CJ	So...
Unknown male 2	Yeah.
CJ	Boaties, fisher people, surfers – they understand tides, they don't get the – particularly when we're talking tidal flooding here. I'm not talking, like, stream flows and flash flooding...
CJ	...up the top of the creek. We're just talking the river streams. But, look, I'm happy that we pursue that with you more offline as to what it does. Ken, I'm very happy to ensure that we have statewide consistency...
KS	Yep.
CJ	...in terms of the way alerts go out, but if we go out and actually talk about, you know, the Brisbane River outside our office here – and a quick visual check says that it's now just lapping the bottom of the boardwalk outside GOMA and the art gallery, which means she's just actually probably starting to push three metres or just below three metres – so that's why I was actually interested. Because when we did this on Friday, about the same time and we were actually on a different teleconference with my FIC – Flood Information Centre – people, what we were getting from the BOM information and the modelling – just to use one example, and this isn't criticism, it's just the difficulty that we're dealing with here – is that we were dealing with a 0.3 metre oceanic sort of correction or addition and then in the end it turned out to be 0.501. So we're actually having to track it reasonably closely. On Friday actually we were slightly flat footed in terms of the number of roads that we proactively closed because we actually had an eight inch tide height difference compared to what the model was saying and actually what we went out and did. So that's why I was interested as to how the 2.84 20 minutes ago actually is made up or – in terms of, from the base tide then plus how much is Wivenhoe adding, how much is Lockyer and Bremer adding and how much is local – if you like, Brisbane – adding to it? That's the way we've been calculating it, in terms of being able to work it up as a communication.
PBad	Ken and Col, could I just please add a comment that as we get increasing flows the 1.24 does not apply - as we get increasing flows the 1.24 only applies to

	Brisbane city at low flow. As we get higher flow, the tide is progressively drowned so you don't add 1.24 to it. The – all of the levels that we give are on AHD, partly for that reason. If we go through to – now to four and five thousand cumecs, whatever the number might be, we don't use 1.24, the tides become progressively drowned.
CJ	Okay, that makes sense.
KS	And thank you, Peter. I think that's really important and, I mean, clearly this is a discussion that – that has to occur between all of the parties and, Colin, any information that – that council puts out has to have regard to, you know, that bit of information, that it's not just, you know, adding the 1.24 to the AHD levels.
CJ	Yeah, really the information that we put out basically – so for example, mid-afternoon we'll be putting out something which actually – I'm getting more concerned about what we actually need to put out, in terms of the amount of inundation that we're now expecting with this. The reality is we won't be saying a metre level in that at all. Rather we'll be saying, look this amount of water's coming downstream...
KS	This is what it will be.
CJ	Yeah.
KS	And – and going back to your point, I think what we need, Barry and Peter, is a break-up of what's the effect of the release from Wivenhoe and what's the effect of tide and – and of other water coming into the – the system from, you know, other sources – yeah.
BD	Yep.
KS	On this side of the dam wall.
BD	Can, at this point, I just bring in Ipswich. Carl, you're still there?
ICC	I'm still here.
BD	And Peter, have you got any comments on Ipswich – the impacts on Ipswich with the releases – be they increased from Wivenhoe.
PBad	Yeah, re – re Ipswich, we're indicating to reach at least 9.5 metres during the early hours of Tuesday. This will now depend on how much run-off – how much rainfall and run-off we get in the Bremer Warril systems. We'll be revising that during the day according to the rainfall that's recorded. Ultimately when the flows reduce in that system, the heights at Ipswich will ultimately be similar to the heights at Moggill. So we'll go into a – a backwater flood situation...
BD	Mmm-hmm.
PBad	...for – for Ipswich ultimately but at the moment we've got fairly high inflows coming through to Ipswich and in terms of the break up of flows from – from releases from – from – the break up of the heights between what various contributions they are, that virtually changes hour by hour but right at the moment we're using about a 0.4 metre coastal anomaly - that's from the set up of the ocean - is adding 0.4 metre to the tide, then we model the combined flow through the Brisbane city against that predicted tide to get the levels upstream. In terms of – based on a previous strategy, we were looking at a maximum of about 3,700 in Brisbane – based on previous strategy – with 2,700 of that coming out of Wivenhoe. But at the moment we've got about 700 cumecs coming out of the Lockyer system, probably of the order of 500 coming out of the Bremer system – something of that order.

BD	Okay.
Carl	Well, if we get the 9.5 at Ipswich, we know what that looks like.
BD	Thanks...
PBad	It could potentially higher if we get heavy rains in there and we'll just keep looking at making predictions for Ipswich based on what rainfalls are in the catchment and based on what level is at Moggill.
KS	What is the – the impact at 9.5?
Carl	Ken, there was a problem for us – what'll happen if the Bremer gets up to 9.5 and we have significant rains, we won't be able to get water into the river so if we have the river up, but not rain we're probably not too badly off but, yeah, the combination of a high – high river level of 9.5 plus a lot of rain, then we'll have local flooding.
KS	Flash flooding. Yeah, okay.
PBad	Can I just add that while I've been speaking, Jimmy Stewart is here and he'll just comment on the effects of the last few hours of rain for Ipswich, which is now taking it up higher. So I'll ask Jimmy just to add that information.
JS	Yeah, g'day guys. I've just been running up – crunching some more numbers of the – the additional rainfall. We're probably looking at a level of above 11 metres at Ipswich, as we speak, but that's increasing all the time. The rainfall's still coming down.
ICC	Now what time – what time frame to get to 11?
JS	Early hours of Tuesday.
ICC	Okay.
JS	And that – that could change at again, both with further rainfall and the release strategy, if that alters this afternoon.
BD	Okay. Is there any comment now for Somerset while we're here, just to close the third council? Peter?
BB	No, I think we're right at this stage. The Lockyer is still rising here. Lowood Bend is just under it'll take out the main road if it rises about another couple of feet, but most of us are dry. The Wivenhoe's backed up and broke the Brisbane Valley Highway at Paddy Gully, it's gone over there so – but we're all dry.
BD	Thanks, Bob.
KS	Sorry, Barry, it's Ken here again. Just going back to Carl, what are the impacts then at 11, if we're looking at 11 tomorrow morning? Are we looking at evacuations, for example?
ICC	I'm not sure, Ken. I'll have to get my guys – they've been working on, sort of, a nine, 9.5 which we weren't too overly concerned about but...
KS	If we're looking at 11 – can you – can you give us a call separately?
BD	Yep.
ICC	Yeah, I'll get them to have a look at what the impact of – at 11.
KS	Okay, thank you.
JS	Excuse me. It's Jimmy Stewart at the BOM again. Could I just clarify that that 11 is likely to increase. The rainfall is still coming down so that's probably a minimum

	level.
ICC	Thanks, Jimmy.
ICC	I've written down '11 plus'.
BD	Okay. Thanks, Carl. I'm going to have an attempt, guys, to summarise some of the actions and if there's any further information, we'll close this because there's a series of things that need to happen fairly quickly. So summary of actions is – first cab is Peter Borrows is rapidly finishing off the release strategy and Peter, an estimated time when you'd submit that to everybody including the BOM to start their assessment?
PBor	Near enough, 3.00 – quarter to 3.
BD	Peter, I'm looking at you saying is there any quicker – BOM normally do a – a release at 3.30...
PBad	Yeah.
BD	...so is there – so I'm looking at Peter here and he's given me a half a nod so...
KS	Yeah, sorry, Barry...
BD	Yep.
KS	...if we – if we're going to keep to this timetable as – as Peter Baddiley suggested that they get information out by 3.30, it's absolutely essential – even if we're looking – Peter, I would've thought – at a release strategy that then is updated if necessary. There's going to have to be another interim release strategy to inform that – that – that announcement and then informing people about what the potential impacts are.
BD	So...
KS	Sorry, I – I just think – wait till that sort of time.
BD	Okay. So Peter Baddiley, how long do you need to run your model once you've got your input from SEQ?
PBad	Oh look, that – that only takes 15 minutes and we'll go through a round of – in that 15 minutes we'll go through a round of discussions firstly with Seqwater and then with Brisbane City Council. It then takes us about 20 minutes to run up a new warning for issue to the public, which will contain the new height. The 3.30pm update is what we've indicated that we will give a next warning at about 3.30pm but clearly if – if circumstances changing rapidly we're talking now about heights for Tuesday and Wednesday, I would just like to hit the – hit the media before too late so that we've got an update in place. Probably not later than about 4ish or 4.30 so we get – capture all the news channels and so on late in the day.
BD	So, Peter...
CJ	Colin here. I'd prefer it faster than that for us to actually get media here, 4.00 is, you know, starting to run pretty late for us to be able to do anything with it, in terms of community.
BD	Sounds like consensus to run earlier at, say, 3.30. So, Peter, how – when would you need Seqwater's information – be it interim now – to still meet the 3.30 deadline?
KS	It will take about 35 minutes to get the BOM work done.
BD	Yep.
KS	So I – I think we should finish this and, Peter, you need to get an estimate of

	getting it to – to the – the BOM, like, 2.30.
BD	Yeah, that's – we're sort of nodding at that, Ken, as well.
KS	Yep.
BD	So action 1, Peter Borrows and then BOM to – as soon as they can – do that model run and start that consultation process with – with all those involved in that consultation process. I had a second item here where BCC – Col, you were to share your flood maps with – with Ken and also Ipswich were to re-run their inundation sort of impacts and get that back to Ken as well, based on 11 plus metres.
Unknown male	Yep.
BD	And BCC had a mid-afternoon press conference. Col, I take it you were going to come out mid-afternoon?
CJ	Yeah, 'cause we actually really have to come back then at a suburb by suburb level, taking the action, so...
KS	Col, can we – can we talk so that I can get the – the Premier to talk to the Lord Mayor because clearly this will be, you know, quite significant, not only for Brisbane but also through Ipswich. And the timing – if this is Tuesday morning, then we've got to give people, you know, adequate notice.
BD	Yeah.
CJ	Yeah, they actually already have spoken but you and I should speak again.
KS	I – I just think - as a result of this information, I think the Lord Mayor and Premier were working on different assumptions...
CJ	Absolutely they were. They were working on the stuff that I said before.
KS	I know, Colin, and that's why I think we need to get this material and – to both the Lord Mayor and to the Premier so that they can now discuss this situation but also the – the other issue is with Mayor Pisasale.
CJ	That's right. Now I was going to actually offer – Carl, whether – I assume that you have your own stuff but we're happy to give you our map as well that shows our 4,000 cumecs and how it backs up the Bremer and what that means for you, but I assume you have your own stuff.
ICC	Yeah, I think my guys and your people are pretty much in contact with each other on this anyway, through that Floodwise...
CJ	Yeah.
ICC	...program.
CJ	Okay.
ICC	We've got all that.
KS	Okay. And look – Ken here again – I'll talk to both you, Carl and Colin, about any deployment of additional resources that you might – you might want so that – to get onto that quickly.
CJ	Yeah.
ICC	I'll come back to you again once I've got a better picture on what 11 plus metres looks like for us.
BD	Yeah.

CJ	Yeah.
KS	I'm just wondering – Jimmy, have you got any idea of what sort of plus we're talking about?
JS	Yeah, not at the moment, guys. It's – with the rain still coming down and there is an effect of – of backwater from the Brisbane River so the release strategy will affect that so, yeah, I wouldn't like to comment until we get that.
KS	Okay. Well...
PBad	Peter here. Offline with Ipswich City Council we can – as we normally do, we can run through some forecast rain scenarios – 11.7 is the threshold of major flood level at Ipswich and if I just sort of remind the group that in terms of response, Ipswich will be the first area of – of concern during the night and Brisbane follows, you know, some – some hours and more after that.
KS	Okay.
BD	Thanks, Peter.
KS	Barry, can I suggest we go off and do this work.
BD	Yes. Yes.
KS	'Cause obviously the – the release strategy is absolutely essential to get that into the system, if we're going to achieve this, you know, 3.30...
BD	Yes.
KS	...as the – the absolute deadline.
BD	Okay. And...
CJ	Colin here. Can I just ask – given a 11 metre plus for Ipswich, do you have an AHD spot height for me in Brisbane?
PBad	Hold on a minute. What you're asking really is - what's in the current model is a – is the old release strategy.
CJ	Yeah, that's okay. I just want...
PBad	For Brisbane now that takes us through to – let's just have a look – brings it up to around about the 2.4, 2.5 metres on Wednesday high tide early, but that – I must stress that that is with the...
CJ	I understand.
PBad	...strategy of a few hours ago so really it's probably can only go north from there.
KS	Yeah, let's get the updated information through.
BD	Yeah.
CJ	Yeah, that was more so that I can just check that we are calibrated, if you like, using the same stuff. And Ken, just for your early info, we – probably the best that we can work on is our flood mapping at 4,000 cumecs.
KS	Yep.
BD	Yes.
KS	Look, that - that'd be useful.
BD	Yes. Okay. We'll call this closed and we – if we need to get together again later this afternoon or early evening based on the information that comes out, we'll reorganise that meeting and get together again.

CJ	Excellent.
BD	Thanks, gentlemen.
PBad	Thank you.
KS	Thank you.
CJ	Thanks.
BD	Thank you.

Gina O'Driscoll

From: Paul Bird [pbird@seqwgm.com.au]
Sent: Monday, 10 January 2011 1:55 PM
To: SEQWGM Media; Reception; aroebuck@seqwgm.com.au; greg.swain@seqwgm.com.au; GSTUBBS@seqwgm.com.au; Kathy Petrik; lisa.m.martin@seqwgm.com.au; Paula Weston; tjacobs@seqwgm.com.au; Barry Dennien; Dan Spiller; Scott Denner; Arminda Roberts; Bec Middlemiss; Michael Fiechtner; Mike Foster; Tara King
Cc: Michael Lyons; Geoff Stead
Subject: Release Update

As at 1.00 pm on Monday 10 January, the following applies:

SOMERSET DAM:

As a result of rainfall and inflows, water is being released into Wivenhoe through five sluice gates at about 95,000 megalitres per day and is likely to continue until Thursday 13 January. Areas around Kilcoy are likely to be impacted as a result of the rising dam levels.

WIVENHOE DAM:

Upstream levels are rising quickly as a result of significant heavy rainfall. The objective for dam operations will be to minimise the impact of urban flooding in areas downstream of the dam.

Gate Releases of around 170,000 megalitres a day are underway and are likely to increase due ongoing inflows and predicted rainfall and are to continue until at least Sunday 16 January.

Local Councils have been advised that as a result of Lockyer Creek flows, local runoff and Wivenhoe releases, Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge Colleges Crossing, Fernvale Bridge, and Mt Crosby Weir Bridge may be inundated until at least the weekend.

NORTH PINE DAM:

Five gates are open, releasing around 43,000 megalitres a day and will continue until at least Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

LESLIE HARRISON DAM:

Gate releases are underway due to rainfall and inflows.

HINZE DAM:

A minor release of around 1200 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

For detailed information on road crossing closures and other potential impacts, always contact your local council.

RECREATION UPDATE:

Both Wivenhoe and Somerset are closed to all recreational activities, and will remain so for some days.

The following recreation sites are closed –

- O'Sheas Crossing
- Hamon Cove
- Logan Inlet
- Captain Logan Camp

- Lumley Hill
- Spillway Common/ Atkinson's Crossing
- Cormorant Bay
- Branch Creek
- Billies Bay/Hays Landing
- The Spit
- Lake Somerset Holiday Park Kirkleagh

Numerous roads are cut including the highway at Kilcoy and Fernvale, and conditions are extremely dangerous.

This information will be updated during the afternoon of Monday 10 January.

Paul Bird
Senior Communications Advisor
Queensland Bulk Water Supply Authority trading as Seqwater



Level 3, 240 Margaret St, Brisbane City QLD 4000
PO Box 16146, City East QLD 4002
Website | www.seqwater.com.au



NO NEGOTIABLES HERE

A WATER SAFETY INITIATIVE FROM SEQWATER

Swimming in weirs and fast flowing water is FATAL.

rethink it

Important information: This email and any attached information is intended only for the addressee and may contain confidential and/or privileged information. If you are not the addressee, you are notified that any transmission, distribution, or other use of this information is strictly prohibited. The confidentiality attached to this email is not waived, lost or destroyed by reasons of mistaken delivery to you. If you have received this email in error please contact the sender immediately and delete the material from your email system. QLD Bulk Water Supply Authority ABN75450239876 (Trading as Seqwater).

TECHNICAL SITUATION REPORT

TSR Number	W37	Date of TSR release	10.1.2011	Time of TSR release	3pm
-------------------	------------	----------------------------	------------------	----------------------------	------------

Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue increasing releases to discharge flood waters but keep impact downstream to minimum. 										
Strategy	<ul style="list-style-type: none"> All bridges are now inundated . Ramp up to 2800cumecs which will give a flow in the lower Brisbane River of around 4,000cumecs 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected around 1,500,000ML which is close to 1974 event.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
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Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.										
Rainfall:	Continuing										
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Brisbane River:	Impact as below.										

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Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level is 103.41m AHD and rising. Peak inflow to the dam is estimated to be about 4,200 m³/s. Five sluice gates are open releasing about 1,100m³/s (95,000ML/day) into Wivenhoe Dam. At this stage the dam lake level will reach about 103.5m AHD on Monday afternoon. Areas around Kilcoy will continue to be adversely affected.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

The dam level is 72.41m AHD and rising quickly. The rainfall experienced over the last 2 to 3 hours will result in significant further inflows into the dam and releases from the dam will need to be increased in accordance with Flood Mitigation procedures and to ensure that a fuse plug is not initiated. The initiation of a fuse plug will result in a rapid uncontrolled outflow from the dam of 2,000m³/s being added to the gate release outflow. Outflows into the Brisbane River from both Lockyer Creek and the Bremer River are also increasing.

Five radial gates are currently open at the dam releasing about 2,000m³/s into the Brisbane River and

this will need to be increased steadily to an outflow of 2,800m³/s over the next 9 hours (commencing at 1500). At this stage, the dam will reach about 73.8m AHD during Tuesday morning.

The objective for dam operations is currently to minimise the impact of urban flooding in areas downstream of the dam and to keep river flows in the lower Brisbane River below 4,000m³/s if possible. This is significantly less than the current estimated combined pre-dam peak inflow of 12,000m³/s. If further rainfall occurs, dam releases may need to be increased further and this may result in river flows in the lower Brisbane River approaching or exceeding 5,000m³/s.

Impacts downstream of Wivenhoe Dam

The projected Wivenhoe Dam releases combined with Lockyer Creek flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Sunday 16 January in varying degrees.

Water levels in the lower Brisbane River will be impacted by the combined flows of Lockyer Creek, Bremer River, local runoff and releases from Wivenhoe Dam.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time		or Event	Change in strategy
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Litsupport Brisbane

From: Jade Simmons
Sent: Monday, 10 January 2011 3:11 PM
To: Barry Dennien; Dan Spiller; Scott Denner; Michael Lyons; SEQWGM Communications Staff
Subject: FW: FOC Situation Report at 12:00 on Monday 10 January 2011

For your information, please find below the FOC Situation report sent at 3.00 pm today.

Kindest regards

Jade Simmons
Senior Correspondence Officer
SEQ Water Grid Communications Unit
SEQ Water Grid Manager

Email: jade.simmons@seq.wa.gov.au
Visit: Level 15, 53 Albert Street Brisbane
Post: PO Box 16205, City East QLD 4002

From: Paul Bird [mailto:pbird@seq.wa.gov.au]
Sent: Monday, 10 January 2011 3:05 PM
To: Jade Simmons
Subject: FW: FOC Situation Report at 12:00 on Monday 10 January 2011

From: Duty Engineer [mailto:dutyseq@seq.wa.gov.au]
Sent: Monday, 10 January 2011 14:58
To: Duty Seq; Ruffini24; David Roberts; flood.qld; Mike Foster; Paul Bird; Peter Allen; Rob Drury; Rohan Thorogood; Ken.Price; kim.hang; Al Navaruk; Bill Stephens; David Pokarier; John West; Louw Van Blerk; Mark Tan; Neville Ablitt; John.Ruffini; John Tibaldi; Rob.ayre; Terry Malone; Brett Schultz; Glenn Patterson; Malcolm Lane; Murray Dunstan; Rob Gorian; Agg Dagan; Doug Grigg; Graham Keegan; Graham Francis; Jayam Tennakoon; Matthew O'Reilly
Cc: Andy Bickerton; Deb Chandler; Mailbox; Tony Trace; Chris Lavin; Craig Logan; Don Carroll; Evan Caswell; James Charalambous; Ken Morris; Robert McGlinn; Santina Pennisi; Peter Borrows
Subject: RE: FOC Situation Report at 12:00 on Monday 10 January 2011

Rainfall

Significant rainfall has fallen in the Wivenhoe Dam catchment over the last 3 hours, with falls exceeding 100mm. This rainfall will significantly increase inflows into the dam. A severe weather warning remains current for heavy rainfall in the dam catchment areas. The QPF issued by BOM at 10:00 estimates rainfalls for the 24 hours to 10:00 Tuesday as North Pine Dam (75mm to 150mm); Wivenhoe/Somerset Dam Catchments (50mm – 100mm). Potentially significant rain moving towards the dam catchments is currently evident on the BOM radar.

Somerset Dam (Full Supply Level 99.00 m AHD)

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Water levels in the lower Brisbane River will be impacted by the combined flows of Lockyer Creek, Bremer River, local runoff and releases from Wivenhoe Dam.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.

Terry Malone
Duty Engineer
Flood Operations Centre

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-----Safe Stamp-----

Your Anti-virus Service scanned this email. It is safe from known viruses.

For more information regarding this service, please contact your service provider.

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Litsupport Brisbane

From: Rob Drury [rdrury [REDACTED]]
Sent: Monday, 10 January 2011 3:16 PM
To: Rob Drury; Dan Spiller; Paul Bird; Stan Stevenson; Peter Borrows; Peter.Allen [REDACTED]
Subject: RE: Technical Report W37
Attachments: Technical Situation Report W37.docx

Report W37 attached.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast flowing water is FATAL

rethink it



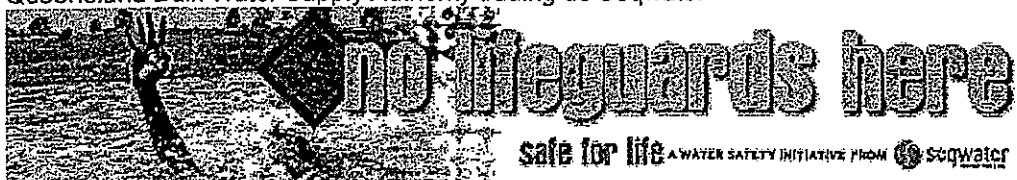
[REDACTED] | E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

From: Rob Drury
Sent: Monday, 10 January 2011 8:06 AM
To: Rob Drury; 'Daniel.Spiller [REDACTED]'; Paul Bird; Stan Stevenson; Peter Borrows; 'Peter.Allen [REDACTED]'
Subject: RE: Technical Report W36

Please disregard the previous report, it was based on older information, this is the latest update.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast flowing water is FATAL

rethink it



[REDACTED] | E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

From: Rob Drury
Sent: Monday, 10 January 2011 7:53 AM
To: Rob Drury; 'Daniel.Spiller [REDACTED]'; 'Barry.Dennien [REDACTED]'; 'Michael.Lyons [REDACTED]';
'media [REDACTED]'; 'debbie.best [REDACTED]'; 'Scott.Denner [REDACTED]'; Paul Bird; Stan Stevenson;
Peter Borrows; 'Peter.Allen [REDACTED]';
Subject: RE: Technical Report W35

Attached report W35.

Rob

Robert Drury
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[REDACTED] | E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time		or Event	Change in strategy
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Gina O'Driscoll

From: Michael Lyons
Sent: Monday, 10 January 2011 3:21 PM
To: Barry Dennien
Subject: Wivenhoe now at 153.9%

Michael Lyons
Director
SEQ Water Grid Communications Unit

Email: michael.lyons
Visit: Level 15, 53 Albert Street Brisbane
Post: PO Box 16205, City East QLD 4002

From: Dan Spiller <Daniel.Spiller[REDACTED]>
Sent: Monday, January 10, 2011 3:29 PM
To: Barry Dennien <Barry.Dennien[REDACTED]>; Michael Lyons
<Michael.Lyons[REDACTED]>; SEQWGM Media
<media[REDACTED]>
Subject: Fwd: Technical Report W37
Attach: Seqwater_No-Lifeguards-Here_email_strap.png; ATT00001.htm;
cidimage001.png@01CA24E1.BDB90020; ATT00002.htm; Seqwater_No-
Lifeguards-Here_email_strap.png; ATT00003.htm;
cidimage001.png@01CA24E1.BDB90020; ATT00004.htm; Seqwater_No-
Lifeguards-Here_email_strap.png; ATT00005.htm;
cidimage001.png@01CA24E1.BDB90020; ATT00006.htm; Technical
Situation Report W37.docx; ATT00007.htm

Begin forwarded message:

From: Rob Drury <rdrury[REDACTED]>
Date: 10 January 2011 3:15:37 PM GMT+10:00
To: Rob Drury <rdrury[REDACTED]>, Dan Spiller
<Daniel.Spiller[REDACTED]>, Paul Bird <pbird[REDACTED]>, Stan
Stevenson <sstevenson[REDACTED]>, Peter Borrows
<pborrows[REDACTED]>, "Peter.Allen[REDACTED]"
<Peter.Allen[REDACTED]>
Subject: RE: Technical Report W37

Report W37 attached.

Rob

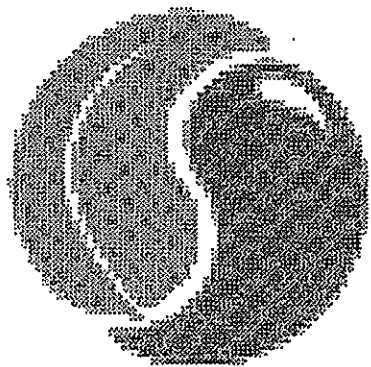
Robert Drury

Dam Operations Manager

Water Delivery

Queensland Bulk Water Supply Authority *trading as* Seqwater





sequwater
WATER FOR LIFE

[REDACTED] | E rdruy [REDACTED]

Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306

Website | www.seqwater.com.au

From: Rob Drury
Sent: Monday, 10 January 2011 8:06 AM
To: Rob Drury; 'Daniel.Spiller [REDACTED]'; Paul Bird; Stan Stevenson; Peter Borrows;
'Peter.Allen [REDACTED]'
Subject: RE: Technical Report W36

Please disregard the previous report, it was based on older information, this is the latest update.

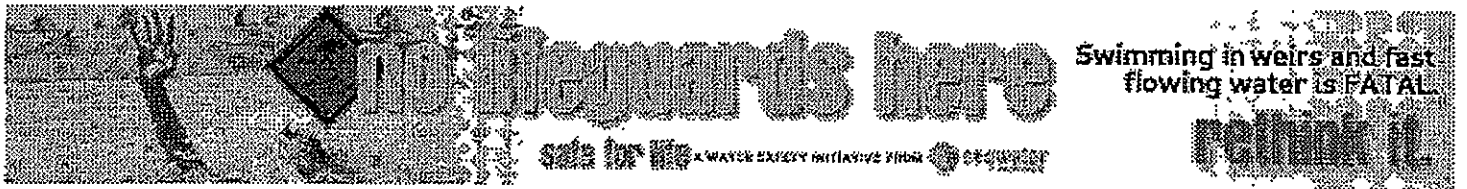
Rob

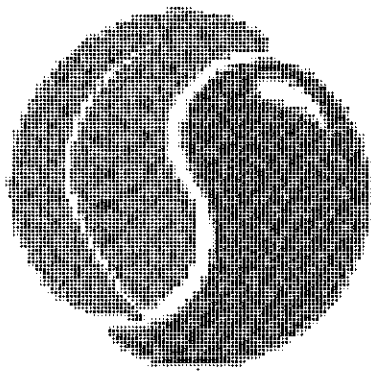
Robert Drury

Dam Operations Manager

Water Delivery

Queensland Bulk Water Supply Authority *trading as Seqwater*





sequwater
WATER FOR LIFE

Ph [REDACTED] | Fax [REDACTED] | [REDACTED] | E rdrury@seqwater.com.au

Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306

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From: Rob Drury
Sent: Monday, 10 January 2011 7:53 AM
To: Rob Drury; 'Daniel.Spiller@seqwater.com.au'; 'Barry.Dennier@seqwater.com.au';
'Michael.Lyons@seqwater.com.au'; 'media@seqwater.com.au'; 'debbie.best@seqwater.com.au';
'Scott.Denner@seqwater.com.au'; Paul Bird; Stan Stevenson; Peter Borrows;
'Peter.Allen@seqwater.com.au';
Subject: RE: Technical Report W35

Attached report W35.

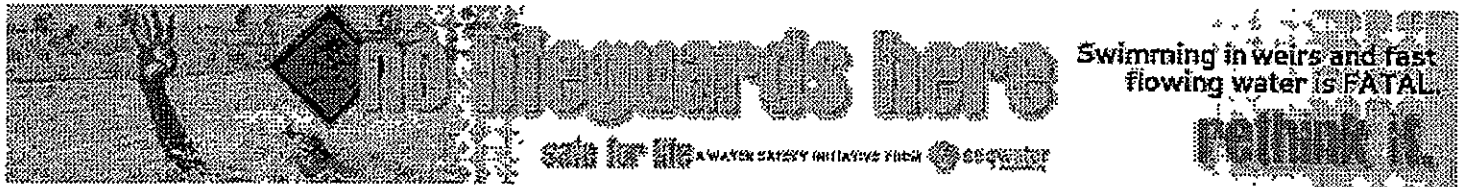
Rob

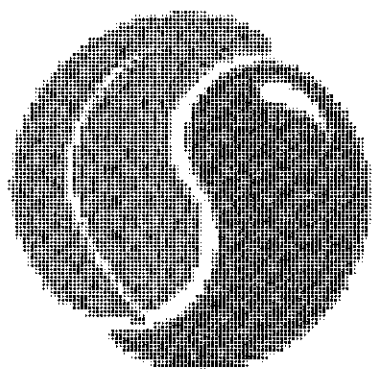
Robert Drury

Dam Operations Manager

Water Delivery

Queensland Bulk Water Supply Authority *trading as Seqwater*





seqwater
WATER FOR LIFE

Ph [REDACTED] | Fax [REDACTED] | M [REDACTED] | E rd@seqwater.com.au

Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306

Website | www.seqwater.com.au

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TECHNICAL SITUATION REPORT

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Current objectives	<ul style="list-style-type: none"> Continue increasing releases to discharge flood waters but keep impact downstream to minimum. 										
Strategy	<ul style="list-style-type: none"> All bridges are now inundated . Ramp up to 2800cumecs which will give a flow in the lower Brisbane River of around 4,000cumecs 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected around 1,500,000ML which is close to 1974 event.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
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Rainfall

Significant rainfall has fallen in the Wivenhoe Dam catchment over the last 3 hours, with falls exceeding 100mm. This rainfall will significantly increase inflows into the dam. A severe weather warning remains current for heavy rainfall in the dam catchment areas. The QPF issued by BOM at 10:00 estimates rainfalls for the 24 hours to 10:00 Tuesday as North Pine Dam (75mm to 150mm); Wivenhoe/Somerset Dam Catchments (50mm – 100mm). Potentially significant rain moving towards the dam catchments is currently evident on the BOM radar.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level is 103.41m AHD and rising. Peak inflow to the dam is estimated to be about 4,200 m³/s. Five sluice gates are open releasing about 1,100m³/s (95,000ML/day) into Wivenhoe Dam. At this stage the dam lake level will reach about 103.5m AHD on Monday afternoon. Areas around Kilcoy will continue to be adversely affected.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

The dam level is 72.41m AHD and rising quickly. The rainfall experienced over the last 2 to 3 hours will result in significant further inflows into the dam and releases from the dam will need to be increased in accordance with Flood Mitigation procedures and to ensure that a fuse plug is not initiated. The initiation of a fuse plug will result in a rapid uncontrolled outflow from the dam of 2,000m³/s being added to the gate release outflow. Outflows into the Brisbane River from both Lockyer Creek and the Bremer River are also increasing.

Five radial gates are currently open at the dam releasing about 2,000m³/s into the Brisbane River and

this will need to be increased steadily to an outflow of 2,800m³/s over the next 9 hours (commencing at 1500). At this stage, the dam will reach about 73.8m AHD during Tuesday morning.

The objective for dam operations is currently to minimise the impact of urban flooding in areas downstream of the dam and to keep river flows in the lower Brisbane River below 4,000m³/s if possible. This is significantly less than the current estimated combined pre-dam peak inflow of 12,000m³/s. If further rainfall occurs, dam releases may need to be increased further and this may result in river flows in the lower Brisbane River approaching or exceeding 5,000m³/s.

Impacts downstream of Wivenhoe Dam

The projected Wivenhoe Dam releases combined with Lockyer Creek flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Sunday 16 January in varying degrees.

Water levels in the lower Brisbane River will be impacted by the combined flows of Lockyer Creek, Bremer River, local runoff and releases from Wivenhoe Dam.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time		or Event	Change in strategy
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Gina O'Driscoll

From: Dan Spiller
Sent: Monday, 10 January 2011 4:09 PM
To: Barry Dennien
Subject: Technical Situation Report W37
Attachments: Technical Situation Report W37.docx

TECHNICAL SITUATION REPORT

TSR Number	W37	Date of TSR release	10.1.2011	Time of TSR release	3pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue increasing releases to discharge flood waters but keep impact downstream to minimum. 										
Strategy	<ul style="list-style-type: none"> All bridges are now inundated. Ramp up to 2800cumecs which will give a flow in the lower Brisbane River of around 4,000cumecs 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected around 1,500,000ML which is close to ~ 1974 event.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected around 1,500,000ML which is close to ~ 1974 event.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
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Rainfall

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Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level is 103.41m AHD and rising. Peak inflow to the dam is estimated to be about 4,200 m³/s. Five sluice gates are open releasing about 1,100m³/s (95,000ML/day) into Wivenhoe Dam. At this stage the dam lake level will reach about 103.5m AHD on Monday afternoon. Areas around Kilcoy will continue to be adversely affected.

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The dam level is 72.41m AHD and rising quickly. The rainfall experienced over the last 2 to 3 hours will result in significant further inflows into the dam and releases from the dam will need to be increased in accordance with Flood Mitigation procedures and to ensure that a fuse plug is not initiated. The initiation of a fuse plug will result in a rapid uncontrolled outflow from the dam of 2,000m³/s being added to the gate release outflow. Outflows into the Brisbane River from both Lockyer Creek and the Bremer River are also increasing.

Five radial gates are currently open at the dam releasing about 2,000m³/s into the Brisbane River and

this will need to be increased steadily to an outflow of 2,800m³/s over the next 9 hours (commencing at 1500). At this stage, the dam will reach about 73.8m AHD during Tuesday morning.

The objective for dam operations is currently to minimise the impact of urban flooding in areas downstream of the dam and to keep river flows in the lower Brisbane River below 4,000m³/s if possible. This is significantly less than the current estimated combined pre-dam peak inflow of 12,000m³/s. If further rainfall occurs, dam releases may need to be increased further and this may result in river flows in the lower Brisbane River approaching or exceeding 5,000m³/s.

Impacts downstream of Wivenhoe Dam

The projected Wivenhoe Dam releases combined with Lockyer Creek flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Sunday 16 January in varying degrees.

Water levels in the lower Brisbane River will be impacted by the combined flows of Lockyer Creek, Bremer River, local runoff and releases from Wivenhoe Dam.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time		or Event	Change in strategy
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Dan Spiller

From: Dan Spiller
Sent: Monday, 10 January 2011 5:48 PM
To: Matthies.GregoryM [REDACTED] Saunderson.MichelleA [REDACTED]
Subject: RE: contact details for BCC re water effects
Attachments: Technical Situation Report W37.docx

Updated report as discussed.

Please call me on [REDACTED] if you have any queries or require any further information.

Regards,
Dan

TO: BOM615

IDQ20805

Australian Government Bureau of Meteorology Queensland

PRIORITY

FLOOD WARNING FOR THE LOCKYER, BREMER, WARRILL AND BRISBANE RIVER BELOW WIVENHOE INCLUDING BRISBANE CITY Issued at 4:16 PM on Monday the 10th of January 2011 by the Bureau of Meteorology, Brisbane.

Stream level rises causing moderate to major flooding are being recorded in Lockyer Creek, Warrill Creek and along the Bremer River. Major flood levels are likely at Ipswich during Tuesday.

Wivenhoe dam is providing significant mitigation of upper Brisbane floods. River flows from the Bremer and Lockyer catchments combined with releases from Wivenhoe dam are expected to increase levels in Brisbane overnight and through Tuesday.

At the Brisbane City Gauge, a river levels of about 2.1 metres is expected with the afternoon high tide on Tuesday and about 3 metres is expected with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

LOCKYER CREEK:

Further rainfall during Monday has led to renewed rises in the Lockyer Creek catchment. Rainfall is forecast to continue this evening and a return to moderate to major flood levels is expected overnight and during Tuesday. Major flood levels are expected to continue at Lyons Bridge with rises above 15 metres likely during Tuesday.

BREMER RIVER:

Rainfall during Monday will lead to renewed rises and a return to moderate flood levels along the Bremer River to Walloon. Levels over 5 metres are expected at Rosewood overnight.

The Bremer River at Ipswich is expected to reach about 12.7 metres on Tuesday afternoon. Higher levels are possible.

WARRILL CREEK

Further rainfall during Monday will lead to increasing river levels along Warrill Creek with levels expected to reach above 6 metres at Amberley overnight.

MIDDLE AND LOWER BRISBANE:

SEQwater advises releases from Wivenhoe Dam will increase during Monday.

Moderate flooding is expected at Savages Crossing and at Mt Crosby Weir overnight tonight and during Tuesday.

The Brisbane River at the City Gauge (lower end of Edward Street and at Thornton Street) is expected to reach about 2.1 metres with the afternoon high tide on Tuesday and reach about 3 metres with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Predicted River Heights/Flows:

Ipswich: Reach about 12.7 metres (major) during Tuesday afternoon. Quicker rises and higher levels are possible depending on further rainfall tonight.

Moggill: Reach about 12 metres (minor) during Tuesday afternoon.

Jindalee: Reach about 7 metres (minor) overnight Tuesday.

Brisbane: Reach about 2.1 metres with the afternoon high tide on Tuesday.

Reach about 3 metres with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Further rises are possible at all four locations depending on further rain.

Next Issue:

The next warning will be issued at about 9pm Monday.

Latest River Heights:

Lockyer Ck at Gatton #	10.36m steady	03:04 PM MON 10/01/11
Laidley Ck at Laidley	6m rising	02:45 PM MON 10/01/11
Laidley Ck at Showground Weir #	6.98m rising	03:07 PM MON 10/01/11
Laidley Ck at Warrego Hwy *	5.43m falling	01:00 PM MON 10/01/11
Lockyer Ck at Glenore Grove #	11.36m falling	03:05 PM MON 10/01/11
Lockyer Ck at Lyons Br #	14.79m rising	03:02 PM MON 10/01/11
Lockyer Ck at Rifle Range Rd *	13.4m rising	08:20 AM MON 10/01/11
Brisbane R at Lowood Pump Stn #	14.13m falling	03:07 PM MON 10/01/11
Brisbane R at Savages Crossing #	14.15m rising	03:09 PM MON 10/01/11
Brisbane R at Burtons Br #	10.88m rising	03:05 PM MON 10/01/11
Brisbane R at Kholo Br #	6.23m rising	03:06 PM MON 10/01/11
Brisbane R at Mt Crosby #	14.26m rising	03:07 PM MON 10/01/11
Brisbane R at Colleges Crossing #	11.96m rising	03:09 PM MON 10/01/11
Bremer R at Spresters Br #	5.07m rising	03:09 PM MON 10/01/11
Bremer R at Rosewood #	4.94m rising	03:02 PM MON 10/01/11
Bremer R at Five Mile Br Walloon #	5.12m falling	03:09 PM MON 10/01/11
Warrill Ck at Harrisville #	3.82m rising	03:05 PM MON 10/01/11
Warrill Ck at Amberley DNR *	5.34m rising	08:10 AM MON 10/01/11
Bremer R at Ipswich #	6.6m rising	02:40 PM MON 10/01/11
Brisbane R at Moggill #	5.52m rising	02:59 PM MON 10/01/11
Brisbane R at Jindalee Br #	3.7m rising	02:50 PM MON 10/01/11
Brisbane R at City Gauge #	1.36m falling	03:09 PM MON 10/01/11

*automatic station

Warnings and River Height Bulletins are available at <http://www.bom.gov.au/qld/flood/> .
Flood Warnings are also available on telephone 1300 659 219 at a low call cost of 27.5 cents, more from mobile, public and satellite phones.

-----Safe Stamp-----

From: Matthies.GregoryM [REDACTED] Matthies.GregoryM [REDACTED]

Sent: Monday, 10 January 2011 10:54 AM

To: Dan Spiller

Subject: contact details for BCC re water effects

Dan

As per our conversation my email is attached and any further info will be great

Regards Greg Matthies

CONFIDENTIALITY: The information contained in this electronic mail message and any electronic files attached to it may be confidential information, and may also be the subject of legal professional privilege and/or public interest immunity. If you are not the intended recipient you are required to delete it. Any use, disclosure or copying of this message and any attachments is unauthorised. If you have received this electronic message in error, please inform the sender or contact securityscanner@police.qld.gov.au. This footnote also confirms that this email message has been checked for the presence of computer viruses.

Suzie Emery

From: Ken Smith [Ken.Smith [REDACTED]]
Sent: Monday, 10 January 2011 6:12 PM
To: Barry Dennien
Subject: FW: BCC Innundation Map at 4000 cumecs
Attachments: img-110173945-0001.jpg

Barry


FYI

Regards

Ken Smith
Director-General
Department of the Premier and Cabinet

Phone: [REDACTED] Fax: [REDACTED]
Mobile: [REDACTED]
Email: [Ken.Smith \[REDACTED\]](mailto:Ken.Smith [REDACTED])

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www.towardQ2.qld.gov.au

 Please consider the environment before printing this email (3 sheets of paper = 1 litre of water)

From: Colin Jensen [mailto:Colin.Jensen [REDACTED]]
Sent: Monday, 10 January 2011 6:09 PM
To: Ken Smith
Subject: BCC Innundation Map at 4000 cumecs

Ken

As discussed, please find attached a map showing the innundation in Brisbane that is estimated to result from a river flow of 4,000 cubic meters per second. Note that this only shows the river flooding not innundation from localised rain flooding.

Regards

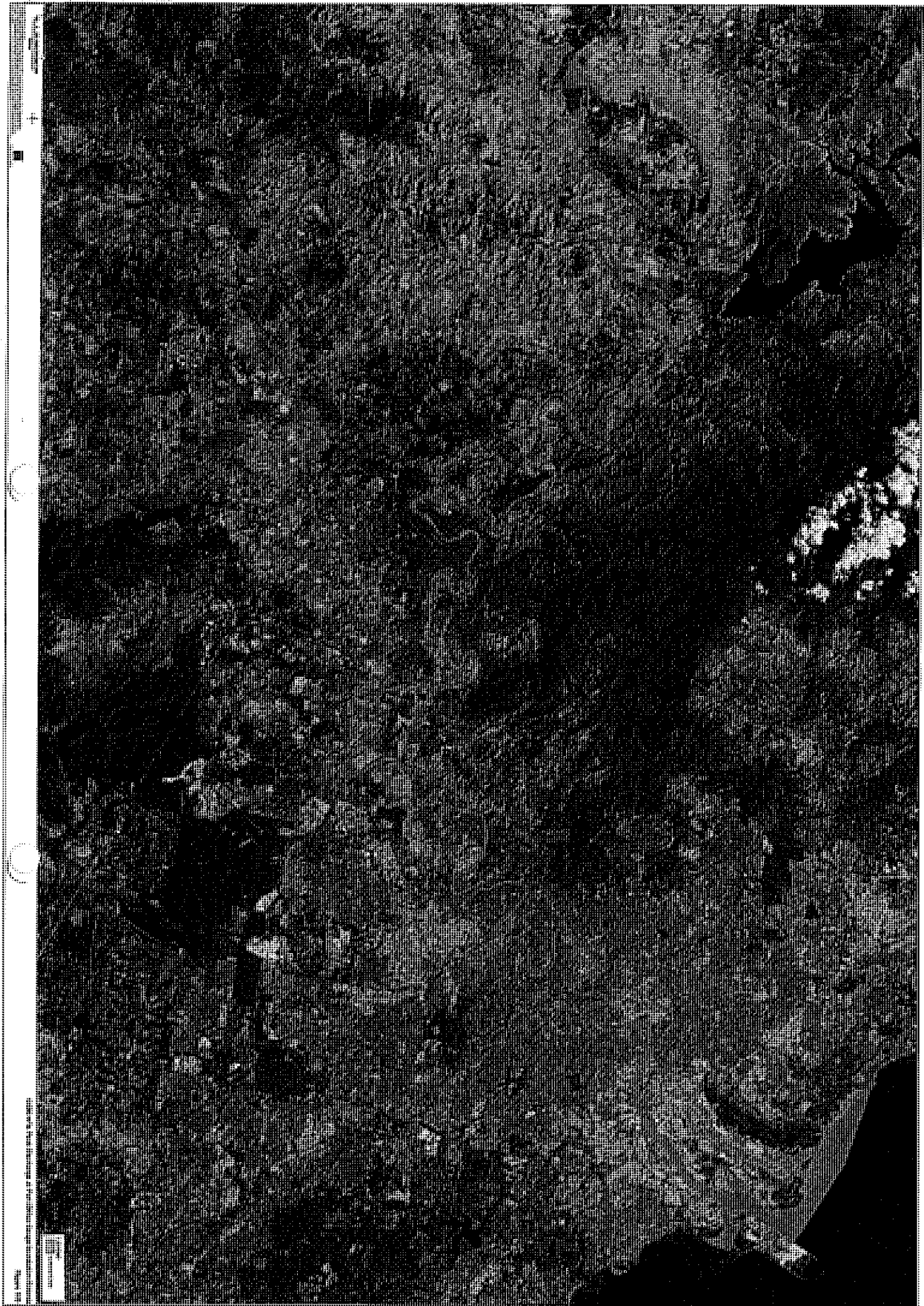
Colin Jensen
Chief Executive Officer
Brisbane City Council
GPO Box 1434 | Brisbane Qld 4001
Level 23, Brisbane Square | 266 George Street, Brisbane, Qld 4000
Phone: [REDACTED] | Fax: [REDACTED]
Email: [colin.jensen \[REDACTED\]](mailto:colin.jensen [REDACTED])

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Suzie Emery

From: Ken Smith [Ken.Smith [REDACTED]]
Sent: Monday, 10 January 2011 6:24 PM
To: Barry Dennien
Subject: FW: List of suburbs impacted by innundation from a 4,000 cumec river flow

Barry


At last. I will call you to discuss assumptions underpinning number of properties impacted at 4,000 cubic meters assumption

Regards

Ken Smith
Director-General
Department of the Premier and Cabinet

Phone: [REDACTED] Fax: [REDACTED]
Mobile: [REDACTED]
Email: [Ken.Smith \[REDACTED\]](mailto:Ken.Smith@[REDACTED])

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www.towardQ2.qld.gov.au

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From: Colin Jensen [mailto:Colin.Jensen [REDACTED]]
Sent: Monday, 10 January 2011 6:21 PM
To: Ken Smith
Subject: List of suburbs impacted by innundation from a 4,000 cumec river flow

Ken

Please find following, as discussed, some information on the consequence of river innundation likely to result from a river flow of 4,000 cubic meters per second.

Number of properties affected:

- 455 properties (parcels of land) have been identified as experiencing flooding on next Wednesday (at least 221 of these are homes and businesses)
- 7, 731 properties may see some flooding either on the land or outside the property
- More than 400 streets will be affected by flooding in some way

Below is the list of suburbs where the 455 properties that will be affected are located. In brackets is the number of properties/parcels of land that will be affected in each suburb. This is based on the data and modelling we have done to date and we may see increases in these numbers once figures are revised.

- Rocklea (80)
- Albion (49)

- Milton (49)
- Auchenflower (40)
- Norman Park (26)
- Pinkenba (26)
- 0- Oxley (19)
- New Farm (17)
- Kangaroo Point (16)
- Bulimba & Sherwood (14 each)
- Yeronga (10)
- Graceville (9)
- Newstead (8)
- Yeerongpilly (7)
- Bowen Hills (6)
- Indooroopilly, Windsor (5 each)
- Wacol, Brisbane City, Moggill, East Brisbane, Fortitude Valley (4 each)
- Chelmer, Hemmant, Tennyson (3 each)
- Fairfield, Fig Tree Pocket, Coorparoo, South Brisbane, Lytton, Murrarie (2 each)

7 Rapid Response Group teams will be working from both a map and a database to doorknock/letterbox drop a flyer to the 221 homes and businesses that are predicted as being likely to experience inundation. They will visually check using the map that none of the remaining parcels of land from the total 455 properties identified as experiencing flooding are actually homes or businesses also.

The locations where the 221 homes and businesses are located is Albion, Auchenflower, Brisbane City, Bowen Hills, Bulimba, Fortitude Valley, Graceville, Hemmant, Indooroopilly, Kangaroo Point, Lytton, Milton, New Farm, Newstead, Norman Park, Oxley, Pinkenba, Rocklea, Sherwood, Tennyson, Wacol, Windsor, Yeronga.

Regards

Colin Jensen
 Chief Executive Officer
 Brisbane City Council
 GPO Box 1434 | Brisbane Qld 4001
 Level 23, Brisbane Square | 266 George Street, Brisbane, Qld 4000
 Phone: [REDACTED]
 Email: colin.jensen@brisbanecity.qld.gov.au

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If you have received this email in error, please notify the author and delete this message immediately.

Litsupport Brisbane

From: Dan Spiller
Sent: Tuesday, 11 January 2011 6:29 AM
To: Debbie Best
Cc: Martin.PeterJ [REDACTED]; Dunn.KerryG [REDACTED]; Barry Dennien; Tim Watts
Subject: Fwd: Impact of Lockyer flows
Attachments: Seqwater_No-Lifeguards-Here_email_strap.png; ATT00001.htm; cidimage001.png@01CA24E1.BDB90020; ATT00002.htm

Debbie,

Preliminary advice below. Report being prepared and BoM remodeling.

Dan

Begin forwarded message:

From: Rob Drury <[rdrury@\[REDACTED\]](mailto:rdrury@[REDACTED])>
Date: 11 January 2011 6:17:48 AM GMT+10:00
To: Dan Spiller <[Daniel.Spiller@\[REDACTED\]](mailto:Daniel.Spiller@[REDACTED])>
Cc: Barry Dennien <[Barry.Dennien@\[REDACTED\]](mailto:Barry.Dennien@[REDACTED])>, Peter Borrows <[pborrows@\[REDACTED\]](mailto:pborrows@[REDACTED])>, Paul Bird <[pbird@\[REDACTED\]](mailto:pbird@[REDACTED])>, Michael Lyons <[Michael.Lyons@\[REDACTED\]](mailto:Michael.Lyons@[REDACTED])>
Subject: RE: Impact of Lockyer flows

Dan,

I will send a report shortly but below are words I was going to send. I have also attached the BoM warning for the Lockyer that they sent this morning.

They are reissuing their warning this morning based on new information.

Basically the FOC was going to try to slow our releases last night to give a small window for the Lockyer flood to go through however we again received and are still receiving heavy rain in the catchments.

Currently the FOC has shut some sluices at Somerset to store more water to keep Wivenhoe below RL74 at which we need to start increasing releases. The first fuse plug goes at about RL 75.7m

The strategy is now to keep releases as is to not worsen the situation downstream as the Lockyer recorded levels higher than any on record. However we may still need to increase releases depending on what happens through the day.

The FOC have given our release strategy (not really different in releases at this stage) to the BoM and they will reissue their flood warnings based on that and other flows in the Lockyer and Bremer.

The FOC have spoken to BCC and ICC and we will send them an update. BCC are having a LDMG meeting this morning. Dan, not sure if anyone from the WGM is going but Chris Lavin is the contact.

Rob

From: Aifs Operational Manager[SMTP:AIFSQLD@] [REDACTED]

Sent: Tuesday, January 11, 2011 4:06:54 AM

To: weather

Subject: BOM: FLDWARN for Lower Brisbane and Bremer Rs [SEC=UNCLASSIFIED] Auto forwarded by a Rule

TO::BOM615

IDQ20805

Australian Government Bureau of Meteorology Queensland

PRIORITY

FLOOD WARNING FOR THE LOCKYER, BREMER, WARRILL AND BRISBANE RIVER
BELOW WIVENHOE INCLUDING BRISBANE CITY Issued at 4:06 AM on Tuesday the 11th
of January 2011 by the Bureau of Meteorology, Brisbane.

The main flood waters in the Lockyer Creek are now arriving at Lyons Bridge, with strong stream rises expected during Tuesday.

Wivenhoe dam is providing significant mitigation of upper Brisbane floods. River flows from the Bremer and Lockyer catchments combined with releases from Wivenhoe dam are expected to increase levels in Brisbane during Tuesday.

At the Brisbane City Gauge, minor flood levels of about 2.1 metres are expected with the afternoon high tide on Tuesday and levels of about 3 metres are expected with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

LOCKYER CREEK:

Extremely heavy rainfall during Monday led to extreme rises in the Lockyer Creek catchment and Laidley Creek at Mulgowie. Record flood levels of 18.92 metres were recorded at Gatton Monday evening before the station failed. This level was well above the previous record peak of 16.33 metres from the February 1893 flood.

The main flood waters are currently arriving at Lyons Bridge, with strong stream rises expected in the next few hours. The Lockyer Creek at Glenore Grove peaked at 14.60 metres at 11:30pm, which is 0.3 metres below the 1974 flood.

Renewed stream rises have commenced in Lockyer Creek at Lyons Bridge with a peak between 16 and 16.5 metres expected Tuesday morning. This is likely to be similar in level to the 1996 flood.

BREMER RIVER:

The Bremer River at Walloon has exceeded the moderate flood level. The Bremer River at Rosewood peaked at 5.8 metres around midnight monday.

The Bremer River at Ipswich is expected to reach about 12.7 metres on Tuesday afternoon. Higher levels are possible.

WARRILL CREEK

Warrill Creek at Amberley peaked at 5.98 metres around 9pm Monday.

MIDDLE AND LOWER BRISBANE:

Moderate flooding is developing at Savages Crossing and at Mt Crosby Weir.

At the Brisbane City Gauge (lower end of Edward Street and at Thornton Street), minor flood levels of about 2.1 metres are expected with the afternoon high tide on Tuesday and levels of about 3 metres are expected with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Predicted River Heights/Flows:

Ipswich: Reach about 12.7 metres (major) during Tuesday afternoon.

Moggill: Reach about 12 metres (minor) during Tuesday afternoon.

Jindalee: Reach about 7 metres (minor) overnight Tuesday.

Brisbane: Reach about 2.1 metres (minor) with the afternoon high tide on Tuesday. Reach about 3 metres (moderate) with the high tides on Wednesday.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Further rises are possible at all four locations depending on further rain.

Next Issue:

The next warning will be issued at about 8am Tuesday.

Latest River Heights:

Lockyer Ck at Helidon #	12.68m steady	03:02 PM MON 10/01/11
Flagstone Ck at Brown-Zirbels Rd *	3.49m falling	02:10 AM TUE 11/01/11
Sandy Creek at Sandy Creek Road #	2.15m falling	03:19 AM TUE 11/01/11
Ma Ma Ck at Harm's *	3.26m rising	02:30 AM TUE 11/01/11
Tenthill Ck at Tenthill *	5.57m rising	02:40 AM TUE 11/01/11
Lockyer Ck at Gatton #	18.92m rising	06:30 PM MON 10/01/11
Laidley Ck at Mulgowie *	6.39m rising	02:20 AM TUE 11/01/11
Laidley Ck at Laidley	8.7m falling slowly	10:00 PM MON 10/01/11
Laidley Ck at Showground Weir #	7.84m rising	03:25 AM TUE 11/01/11
Laidley Ck at Warrego Hwy *	6.41m rising	02:00 AM TUE 11/01/11
Lockyer Ck at Glenore Grove #	13.8m falling	03:24 AM TUE 11/01/11
Lockyer Ck at Lyons Br #	15.55m rising	03:23 AM TUE 11/01/11
Lockyer Ck at Rifle Range Rd *	15.39m rising	02:40 AM TUE 11/01/11

Lockyer Ck at O'Reilly's Weir # 18m falling 03:28 AM TUE 11/01/11
 Brisbane R at Lowood Pump Stn # 15.93m falling 03:31 AM TUE 11/01/11
 Brisbane R at Savages Crossing # 15.89m rising 03:29 AM TUE 11/01/11
 Brisbane R at Burtons Br # 12.22m rising 03:29 AM TUE 11/01/11
 Brisbane R at Kholo Br # 7.99m rising 03:29 AM TUE 11/01/11
 Brisbane R at Mt Crosby # 15.82m steady 03:30 AM TUE 11/01/11
 Brisbane R at Mt Crosby # 14.08m falling 04:39 PM MON 10/01/11
 Brisbane R at Colleges Crossing # 13.91m rising 03:32 AM TUE 11/01/11
 Bremer R at Rosewood# 5.56m falling 03:11 AM TUE 11/01/11
 Bremer R at Five Mile Br Walloon # 6.4m rising 03:15 AM TUE 11/01/11
 Warrill Ck at Greens Rd Amberley # 5.84m falling 03:29 AM TUE 11/01/11
 Bremer R at One Mile Br # 13.75m rising 03:31 AM TUE 11/01/11
 Bremer R at Hancocks Br Brassall # 11.33m rising 03:22 AM TUE 11/01/11
 Bremer R at Ipswich # 8.55m rising 03:31 AM TUE 11/01/11
 Brisbane R at Moggill # 7.07m rising 03:29 AM TUE 11/01/11
 Brisbane R at Jindalee Br # 4.5m rising 03:29 AM TUE 11/01/11
 Brisbane R at City Gauge # 1.4m falling 03:15 AM TUE 11/01/11

*automatic station

Warnings and River Height Bulletins are available at <http://www.bom.gov.au/qld/flood/> . Flood
 Warnings are also available on telephone 1300 659 219 at a low call cost of 27.5 cents, more
 from mobile, public and satellite phones.

-----Safe Stamp-----

Your Anti-virus Service scanned this email. It is safe from known viruses.

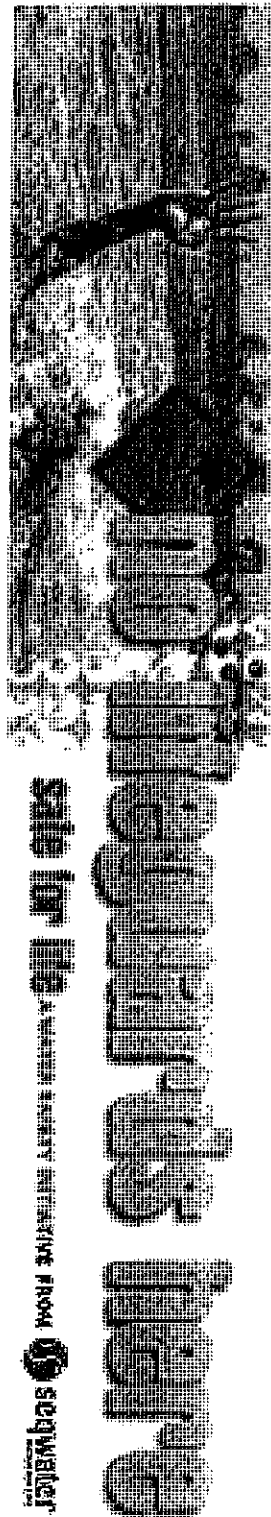
For more information regarding this service, please contact your service provider.

Robert Drury

Dam Operations Manager

Water Delivery

Queensland Bulk Water Supply Authority *trading as Seqwater*



Swimming in weirs and fast
flowing water is FATAL.



Cindy Hulsey

From: Barry Dennien
Sent: Tuesday, 11 January 2011 8:33 AM
To: Dan Spiller
Subject: Re: Levels

Categories: T8

Dan let quu know asap

Regards
Barry Dennien

On 11/01/2011, at 8:28 AM, "Dan Spiller" <[Daniel.Spiller](#)> wrote:

Based on 3700 cumecs release?

By when?

From: Barry Dennien
Sent: Tuesday, 11 January 2011 8:29 AM
To: Dan Spiller
Subject: Re: Levels

BOM forecast 6000 plus cumecs in river 4 plus meters at port office

74 flood 5.45m

Regards

Barry Dennien

On 11/01/2011, at 8:00 AM, "Dan Spiller" <[Daniel.Spiller](#)> wrote:

Wivenhoe Dam: 173%

Somerset Dam: 160%

Daniel Spiller

Director, Operations

SEQ Water Grid Manager

Phone: [REDACTED] | Fax: [REDACTED] | Mobile: [REDACTED]

Email: daniel.spiller@seqwater.com.au [REDACTED]

Visit: Level 15, 53 Albert Street Brisbane

Post: PO Box 16205, City East QLD 4002

ABN: 14783 317 630

Please consider the environment before printing this email. It takes 10 litres of water to make one sheet of A4 paper.

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Cindy Hulsey

From: John Adcock
Sent: Tuesday, 11 January 2011 8:39 AM
Subject: Water Grid Update - Dam Releases - 11 January 2011

Importance: High

Categories: T8

Water Grid update – 11 January 2011

Unprecedented Wivenhoe Dam releases

Significant rainfall received across catchments has caused waterways upstream of Somerset and Wivenhoe Dams to rise quickly overnight.

Wivenhoe Dam is currently at 173% and rising. Somerset Dam is at 160%.

Controlled releases through the five gates have been held at around 236,000 megalitres since early last night but will need to be increased further today. These releases will be made in consultation with the Bureau of Meteorology and local councils and aim to limit downstream impacts where possible. Note these large releases are necessary for the safe management of the dam.

Release levels will be progressively reviewed depending on rainfall across the catchments today.

Local Councils have been advised that as a result of Lockyer Creek flows, local runoff and Wivenhoe releases, Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge Colleges Crossing, Fernvale Bridge, and Mt Crosby Weir Bridge may be inundated until at Sunday 16 January. Residents are urged to contact local councils for detailed information on road crossing closures and other impacts.

All recreations areas around Somerset and Wivenhoe are closed, and given the dam levels and the need for safety around spillways, **we will not be able to facilitate any land-based media access to our sites today.**

While substantial amounts of water is being released into Wivenhoe from Somerset Dam, water levels in Somerset are expected to continue to rise today and areas around Kilcoy are likely to be impacted by these rising dam levels.

Five gates are open at North Pine Dam, releasing around 15,000 megalitres a day and will continue until at least Wednesday 12 January. The local Council is being kept informed regarding Youngs Crossing.

Gate releases at Leslie Harrison Dam are underway due to rainfall and inflows.

A minor release of around 1200 megalitres a day is being made through the emergency gates at Hinze Dam. There is no access to the spillway.

For detailed information on road crossing closures and other potential impacts, always contact your local council.

UPPER SOMERSET TOWNSHIPS URGED TO CONSERVE WATER

Residents in the upper Somerset townships of Kilcoy, Jimna and Linville are being urged to conserve water due to the impacts of local flooding on water infrastructure.

Water Grid spokesperson Dan Spiller said vital water infrastructure in these regions has been damaged by flood waters, cutting off the raw water supply.

"We have a limited supply in local reservoirs that is expected to last one to three days. However, we will ensure that critical supplies are maintained. In the meantime we are asking people to conserve water while we repair equipment and organise alternate supplies," he said.

The power is currently down at the main water treatment plant in Kilcoy, with flood water restricting access to rectify the situation.

In Jimna and Linville rising waters have impacted infrastructure that supports the region's supply.

Approximately 1,000 residents on town water across these three areas are impacted.

"We are asking people to restrict non-essential water use, including limiting shower times and considering alternative water supplies where possible," said Mr Spiller.

The Water Grid Manager is working closely with Emergency Management Queensland to gain access to the plants and to rectify all situations. Current demand and supply levels are being closely monitored and alternate water supplies are being considered.

"We are looking at trucking in tankers to fill the reservoirs and are also considering the supply of bottled water if necessary. Obviously we cannot truck in water while roads are closed," said Mr Spiller.

ENDS

Note to the Editor: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance: Please direct the community to contact **telephone - 1800 613 122**. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland.

Members of the public seeking information on **potential impacts in their local areas** should **direct inquiries to their local councils**.

About the SEQ Water Grid: Established in June 2008 in response to the crippling Millennium Drought, the SEQ Water Grid represents one of Australia's largest investments in water infrastructure.

Through a network of climate resilient water sources, treatment facilities, new two-way pipes and existing pipelines, the SEQ Water Grid gives the South East Queensland region the ability to support water demands, water quality, economic prosperity and lifestyle - regardless of climate change and population growth.

For further information on the Water Grid: www.watergrid.com.au

For further details contact the SEQ Water Grid Communications Unit on:

Ph: [REDACTED] | **Email:** media@watergrid.com.au



no lifeguards here

A WATER SAFETY INITIATIVE FROM



Swimming in weirs and flowing water is **FA**

rethink

This email, together with any attachments, is intended for the named recipient(s) only; and may contain privileged and confidential information. You understand that any privilege or confidentiality attached to this message is not waived, lost or destroyed because you have received this message in error. If received in error, you are asked to inform the sender as quickly as possible and delete this email and any copies of this from your computer system network. If not an intended recipient of this email, you must not copy, distribute or take any action(s) that relies on it; any form of disclosure, modification, distribution and/or publication of this email is also prohibited.

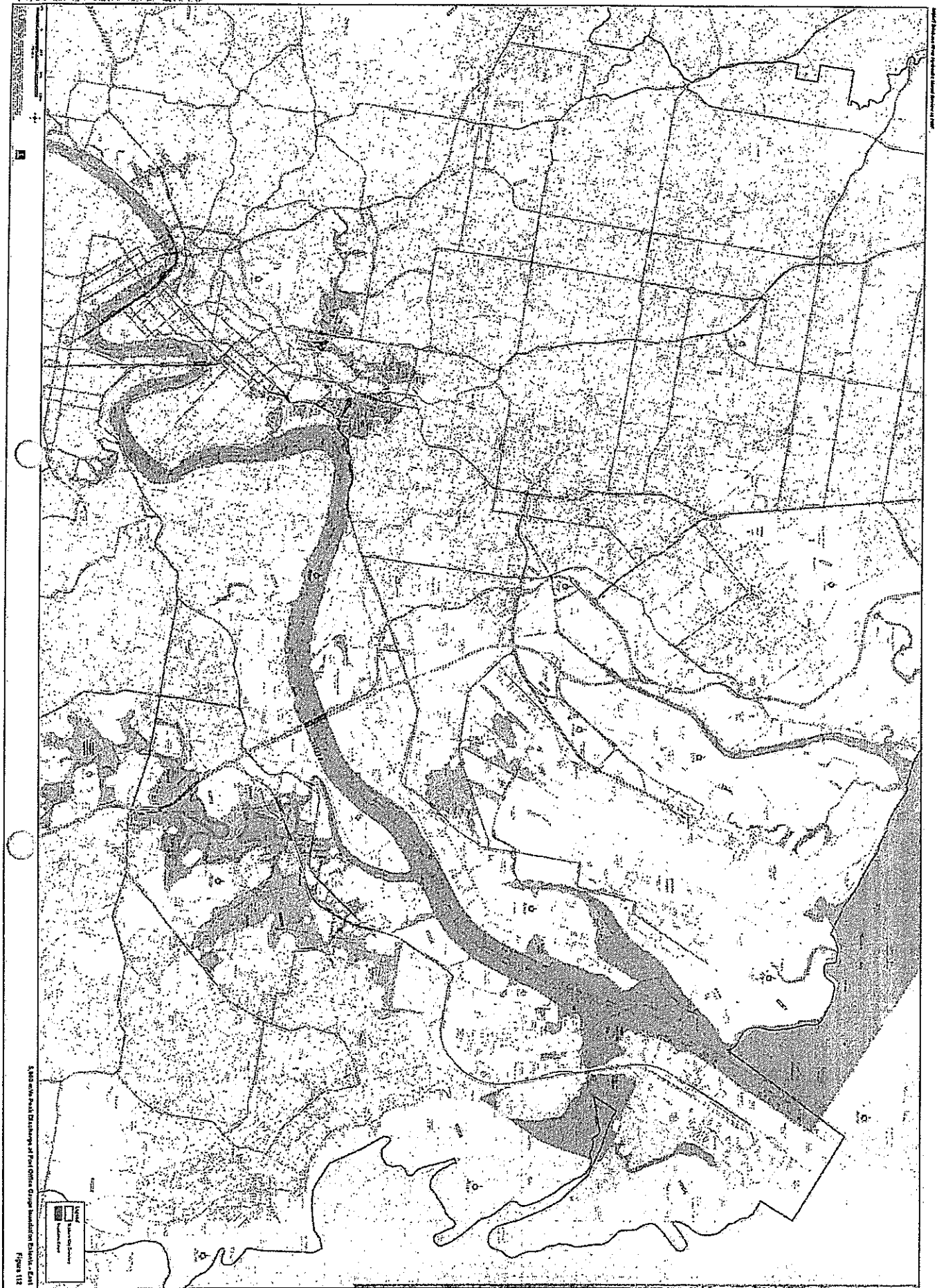
While all care has been taken, the SEQ Water Grid Manager disclaims all liability for loss or damage to person or property arising from this message being infected by a computer virus or other contamination. Unless stated otherwise, this email represents only the views of the sender and not the views of the SEQ Water Grid Manager and/or the Queensland Government.

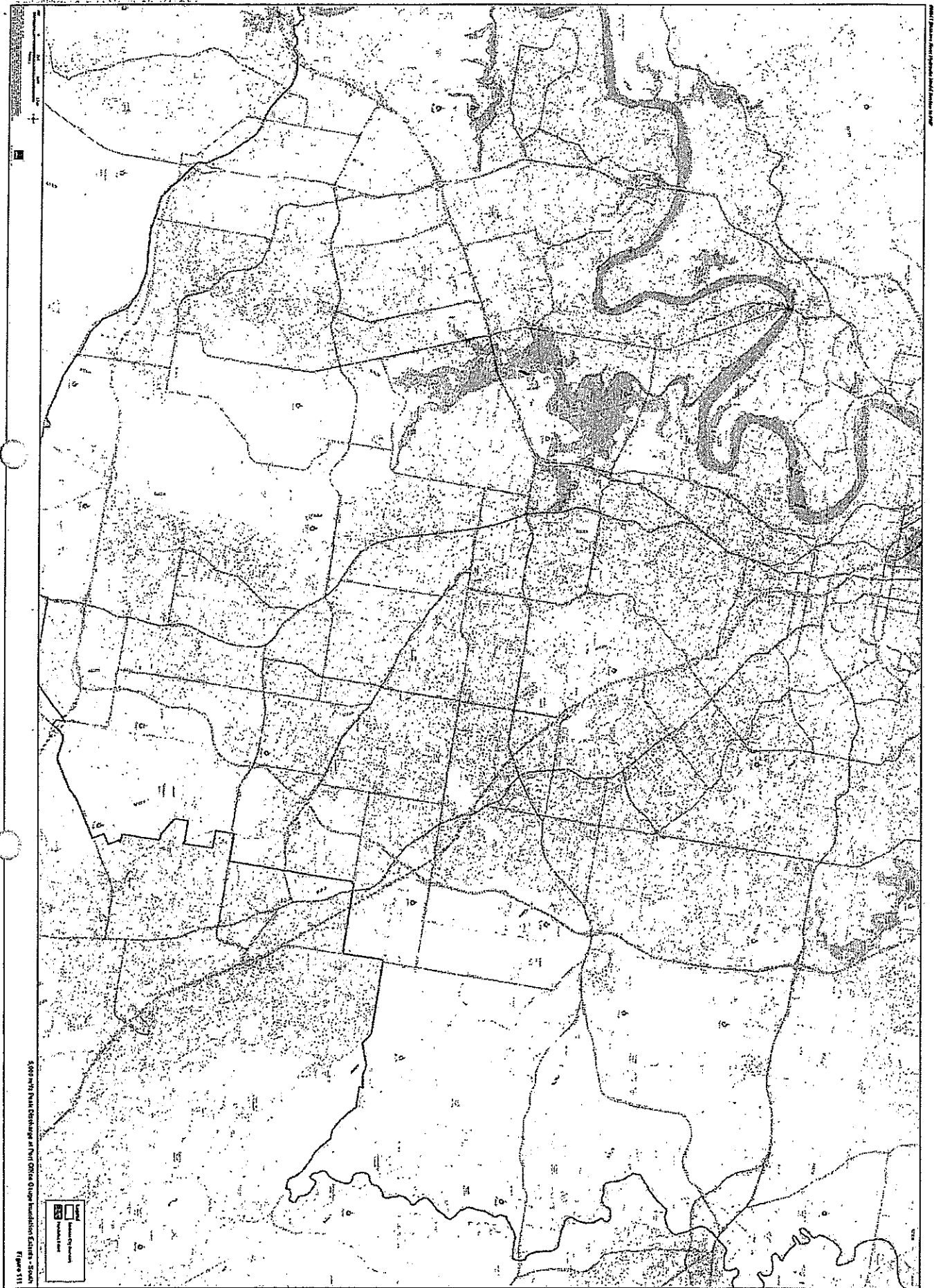
From: Colin Jensen [Colin.Jensen@brisbane.qld.gov.au]
Sent: Tuesday, 11 January 2011 9:27 AM
To: Barry Dennien; Dan Spiller; ken.smith@brisbane.qld.gov.au
Cc: Chris Lavin; John Cowie; Vicki Pethybridge
Subject: BCC Inundation Maps for 5000m3/s
Attachments: 5000 m3 Brisbane East.pdf; 5000 m3 Brisbane South.pdf; 5000 m3 Brisbane West.pdf; 5000 m3 Whole of Brisbane.pdf

Place: LDCC
Gentlemen

Regards

This message has passed through an insecure network.
Please direct all enquiries to the message author.









Cindy Hulsey

From: Dan Spiller
Sent: Tuesday, 11 January 2011 1:18 PM
To: Madgwick.DarrenT [REDACTED]; stephen.robertson [REDACTED]; Ken Smith (ken.smith [REDACTED]); Lance McCallum (lance.mccallum [REDACTED]); Tim Watts (tim.watts [REDACTED]); lauren.sims [REDACTED]; Martin.Peter [REDACTED]; Dunn.KerryG [REDACTED]; Debbie Best (debbie.best [REDACTED]); terry.wall [REDACTED]; Geoff Stead (geoff.stead [REDACTED]);
Cc: Barry Dennien; Peter Borrows; Rob Drury (rdrury [REDACTED]); Stan Stevenson; Madgwick.DarrenT [REDACTED]
Subject: Wivenhoe Dam release update
Attachments: image001.png; Technical Situation Report W39 (2).docx
Categories: T8

All,

Attached is the updated Technical Situation Report.

Releases from Wivenhoe Dam have needed to be increased to 3,970 cubic metres per second. BoM is modelling based on this strategy.

Based on these releases, Wivenhoe Dam will peak at between 74.5 and 74.8m with no further inflows.

Further inflows will require further releases. Seqwater is considering worst case scenarios to provide to BoM and BCC to model impacts.

Regards,
Daniel Spiller

TECHNICAL SITUATION REPORT

TSR Number	W39	Date of TSR release	11.1.2011	Time of TSR release	12.00pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Maintain releases to keep Wivenhoe below fuse plug initiation and releases need to be made to ensure the dam security and minimise flood impacts downstream if possible 										
Strategy	<ul style="list-style-type: none"> Maintain current release of 3970cumecs as long as possible but it may need to be increased Close sluices at Somerset Dam to store more water however will affect upstream areas. Current estimate of peak dam level is between EL74.5 and EL74.8 (assuming no further significant rainfall). However it is noted that rainfall is continuing across the catchment. Further rainfall in the next 3 hours will require releases to be increased in accordance with Strategy W4, page 29 of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam (Flood Operations Manual) 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected around 1,500,000ML which is close to 1974 event.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
Storage levels:	Above FSL										
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Rainfall:	Continuing										
Lockyer/Bremer:	Monitoring their inflows										
Brisbane River:	Impact as below.										

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level is 103.30 AHD and rising. Peak inflow to the dam is estimated to be about 4,200 m³/s. Volume stored above FSL is 240,00ML at 163.3%

The dam level peaked at 103.52m AHD at 19:00 on Monday 10 January 2011, (unless further significant rainfall is experienced). Areas around Kilcoy will continue to be adversely affected.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

The dam level is 74.1m AHD and rising at about 25 mm/hour. Holding 930,000ML above FSL and 179.5%. Releases from the dam are currently 3,970cumec/s. Outflows into the Brisbane River from both Lockyer Creek and the Bremer River are also increasing.

At this stage it is considered that without further rainfall the dam can be kept at around 74.8m.

The aim is to prevent fuse plug initiation.

Currently the situation is being assessed every 3 hours.

If further rainfall occurs, dam releases may need to be increased further.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate over the next 24 hours. The flood operation centre will continue to monitor the situation and provide situation reports every six hours until the situation stabilizes.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	11.1.2011	PM	
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Litsupport Brisbane

From: Stan Stevenson [sstevenson@seqwater.com.au]
Sent: Tuesday, 11 January 2011 3:58 PM
To: SEQWGM Emergency
Cc: Dan Spiller; Peter Borrows; Paul Bird; Rob Drury; Jim Pruss
Subject: Technical Situation Report W40.docx
Attachments: Technical Situation Report W40.docx

Latest update on releases from Wivenhoe

Regards

Stan Stevenson
Acting EGM Water Delivery
QLD Bulk Water Supply Authority *trading as Seqwater*



Ph [redacted] | Fax [redacted] Mobile [redacted] | E sstevenson@seqwater.com.au
Level 3, 240 Margaret St, Brisbane City QLD 4000 Australia
PO Box 16146, City East QLD 4002
Website | www.seqwater.com.au

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TECHNICAL SITUATION REPORT

TSR Number	W40	Date of TSR release	11.1.2011	Time of TSR release	4.00pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Maintain releases to keep Wivenhoe below fuse plug initiation and releases need to be made to ensure the dam security and minimise flood impacts downstream if possible 										
Strategy	<ul style="list-style-type: none"> Inflows into Wivenhoe in excess of 12000 cumecs. Maintain current release 5700 cumecs as long as possible but due to the high level in the dam may change frequently due to inflows, this is being reviewed every 30 minutes and releases adjusted accordingly. Close sluices at Somerset Dam to store more water however will affect upstream areas. 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected around 1,500,000ML which is close to 1974 event.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
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Rainfall:	Continuing										
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Brisbane River:	Impact as below.										

Somerset/Wivenhoe Dam

Our strategy revolves ensuring dam security and is around trying to prevent initiation of the first fuse plug at EL 75.6m. If this happens we will get a rapid increase of about 2,000m³/s in outflow from the dam in addition to the gate release which could be as high as 10,000m³/s at the time. Sluices have been closed at Somerset and this will result in high upstream water levels affecting Kilcoy.

Wivenhoe Dam is rising very quickly and rapid gate openings are required to manage this increase. Based on the current rate of rise, inflow rate is in excess of 12,000m³/s. The situation is being revised constantly and releases will be increased hourly until the water level starts to stabilize. It is possible that the releases will be as high as 10,000m³/s in the next few hours. Heavy rainfall continues in the catchment especially around the dam.

It should be noted that the flow in the lower Brisbane R in 1974 was about 9,500m³/s.

Travel time to Lower Brisbane River is 24 hours.

North Pine

Inflows and outflows are at record levels and increasing within inflows nearing 3,000m³/s, and is approaching an extreme event (possibly as high as 1 in 10,000 AEP)

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

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ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

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SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time	PM	or Event	
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From: Dan Spiller <Daniel.Spiller[REDACTED]>
Sent: Tuesday, January 11, 2011 4:00 PM
To: Barry Dennien <Barry.Dennien[REDACTED]>
Subject: Fwd: Technical Situation Report W40.docx
Attach: image.png; ATT00001.htm; Technical Situation Report W40.docx;
ATT00002.htm

Begin forwarded message:

From: Stan Stevenson <sstevenson[REDACTED]>
Date: 11 January 2011 3:58:25 PM GMT+10:00
To: SEQWGM Emergency <SEQWGM.Emergency[REDACTED]>
Cc: Dan Spiller <Daniel.Spiller[REDACTED]>, Peter Borrows
<pborrows[REDACTED]>, Paul Bird <pbird[REDACTED]>, Rob Drury
<rdrury[REDACTED]>, Jim Pruss <jpruss[REDACTED]>
Subject: Technical Situation Report W40.docx

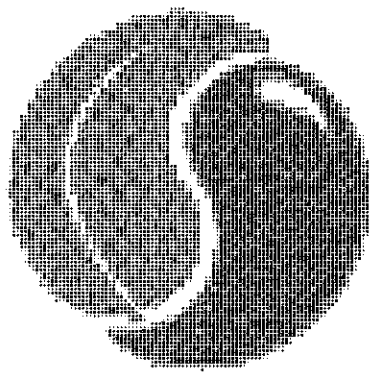
Latest update on releases from Wivenhoe

Regards

Stan Stevenson

Acting EGM Water Delivery

QLD Bulk Water Supply Authority *trading as* Seqwater



seqwater
WATER FOR LIFE

Ph [REDACTED] Fax [REDACTED] Mobile [REDACTED] | E
[REDACTED]

Level 3, 240 Margaret St, Brisbane City QLD 4000 Australia
PO Box 16146, City East QLD 4002

Website | www.seqwater.com.au

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TECHNICAL SITUATION REPORT

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Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager
0410378740	

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time	PM	or Event	
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Suzie Emery

From: Reilly Bob [Bob.Reilly [REDACTED]]
Sent: Tuesday, 11 January 2011 4:19 PM
To: Dan Spiller; Barry Dennien
Cc: Allen Peter
Subject: Wivenhoe Releases

Hi Dan, Barry

Peter Allen has asked Seqwater to provide a concise summary of the flood release strategy. I can confirm though that they are taking into account estimated inflows over the next 24 hours and have a release strategy that addresses that scenario.

Regards

Bob

Bob Reilly

General Manager, Office of the Water Supply Regulator

Telephone [REDACTED] Mobile [REDACTED] Facsimile: [REDACTED]

Email: bob.reilly@derm.qld.gov.au

www.derm.qld.gov.au

Department of Environment and Resource Management

Lvl 3 41 George Street, Brisbane Q 4000

GPO Box 2454, Brisbane Q 4001

Think B4U Print

1 ream of paper = 6% of a tree and 5.4kg CO2 in the atmosphere

3 sheets of A4 paper = 1 litre of water

TECHNICAL SITUATION REPORT

TSR Number	W41	Date of TSR release	11.1.2011	Time of TSR release	6pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Maintain releases to keep Wivenhoe below fuse plug initiation and releases need to be made to ensure the dam security and minimise flood impacts downstream if possible
Strategy	<ul style="list-style-type: none"> Peak inflows into Wivenhoe in excess of 12000 cumecs. Increase releases to maintain fuse plug and dam integrity. Close sluices at Somerset Dam to store more water however will affect upstream areas.
Key considerations	Storage levels: Above FSL
	Inflows: Inflows expected well over 1,500,000ML.
	Rainfall: Continuing
	Lockyer/Bremer: Monitoring their inflows
	Brisbane River: Impact as below.

Somerset/Wivenhoe

Our strategy revolves ensuring dam security and is around trying to prevent initiation of the first fuse plug at EL 75.6m. If this happens we will get a rapid increase of about 2,000m³/s in outflow from the dam in addition to the gate release which could be as high as 10,000m³/s at the time.

Sluices have been closed at Somerset and this will result in high upstream water levels affecting Kilcoy. Somerset is at 104.41m holding 671,000ML and 176.6%.

In the last twelve hours totals of up to 370mm have fallen in the area around Wivenhoe Dam. In the last hour, rainfalls between 15 and 30mm have been recorded in the same area. At 1600, the BoM advised that falls between 50 to 100mm are still forecast for the 24hrs to 1600 Wednesday 12 January 2011 for the North Pine and Somerset/Wivenhoe catchments. Current inflows are about 9,000cumecs.

At 1730 Wivenhoe Dam was 74.92m AHD holding 2,200,000ML and 190% and rising slowly and releasing about 6,700m³/s.

The current expectation is that the dam will reach a steady state (outflow equals inflow) within the next 3 hours without further significant rainfall. At this time, release from the dam will be about 8,000 m³/s.

If there is no further rainfall, it may be possible to then slowly reduce this release overnight.

The dam is expected to peak below 75.5m AHD which is 100mmm below the first fuse plug initiation level.

Note that the automatic recorder as indicated on the BoM website is affected by drawdown and is not reflecting the actual lake level and tendency.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes. The FOC is also maintaining close contact with warning agencies and local councils.

It should be noted that the flow in the lower Brisbane R in 1974 was about 9,500m³/s

North Pine Dam:

Five gates are open, and will continue until at least Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

Leslie Harrison Dam:

Gate releases are underway due to rainfall and inflows.

Hinze Dam:

A release of around 86cumecs or 7396 megalitres a day is being made through the emergency gates and this will increase to around 8,000 megalitres per day by 6.pm Tuesday 11 January. There is no public access to the spillway.

Wyalong Dam

As at 5:00pm today 9,680ML/day was passing over the spillway at Wyalong Dam. This represents a water depth of 0.59m over the spillway. The water level is continuing to rise. Wyalong Dam Alliance will continue to monitor and advise of water levels and flows.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [redacted]

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BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

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SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

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Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time	PM	for Event	
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Gina O'Driscoll

From: Paul Bird [pbird@seqwater.com.au]
Sent: Tuesday, 11 January 2011 6:19 PM
To: SEQWGM Media; aroe@seqwater.com.au; greg.swain@seqwater.com.au; GSTUBBS@seqwater.com.au; Kathy Petrik; lisa.m.martin@seqwater.com.au; Paula Weston; tjacobs@seqwater.com.au; Armina Roberts; Bec Middlemiss; Michael Fiechtner; Mike Foster; Tara King; Barry Dennien; Dan Spiller; Scott Denner
Cc: Michael Lyons; ELT
Subject: Release Update

As at 6.00 pm on Tuesday 11 January, the following applies:

SOMERSET DAM:

Releases have stopped, however levels in Somerset are expected to continue rising and areas around Kilcoy are likely to be impacted.

WIVENHOE DAM:

Wivenhoe Dam is rising slowly and releasing about 576,000 megalitres per day.

Current expectation is that the dam will reach a steady state (outflow equals inflow) within the next 3 hours without further significant rainfall.

At this time, release from the dam will be about, 688,000 megalitres.

If there is no further rainfall, it may be possible to then slowly reduce this release overnight.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes.

The Centre is also maintaining close contact with warning agencies and local councils.

NORTH PINE DAM:

Five gates are open, and will continue until at least Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

LIE HARRISON DAM:

Gate releases are underway due to rainfall and inflows.

HINZE DAM:

A minor release of around 8,000 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

For detailed information on river levels, road and crossing closures and other potential impacts, always contact your local council.

This information will be updated during the evening of Tuesday 11 January.

Important information: This email and any attached information is intended only for the addressee and may contain confidential and/or privileged information. If you are not the addressee, you are notified that any transmission, distribution, or other use of this information is strictly prohibited. The confidentiality attached to this email is not waived, lost or destroyed by reasons of mistaken delivery to you. If you have received this email in error please contact the sender immediately and delete the material from your email system. QLD Bulk Water Supply Authority ABN75450239876 (Trading as Seqwater).

Litsupport Brisbane

From: Rob Drury [REDACTED]
Sent: Tuesday, 11 January 2011 6:28 PM
To: Rob Drury; Dan Spiller; Paul Bird; Stan Stevenson; Peter Borrows; Peter.Allen [REDACTED]
Cc: David Roberts
Subject: RE: Technical Report
Attachments: Technical Situation Report W41.docx

Attached is the latest Technical Report.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast
flowing water is FATAL

rethink it.



Ph [REDACTED] | Fax [REDACTED] | M [REDACTED] | E rdrury@seqwater.com.au
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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TECHNICAL SITUATION REPORT

TSR Number	W41	Date of TSR release	11.1.2011	Time of TSR release	6pm
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Sluices have been closed at Somerset and this will result in high upstream water levels affecting Kilcoy. Somerset is at 104.41m holding 671,000ML and 176.6%.

In the last twelve hours totals of up to 370mm have fallen in the area around Wivenhoe Dam. In the last hour, rainfalls between 15 and 30mm have been recorded in the same area. At 1600, the BoM advised that falls between 50 to 100mm are still forecast for the 24hrs to 1600 Wednesday 12 January 2011 for the North Pine and Somerset/Wivenhoe catchments. Current inflows are about 9,000cumecs.

At 1730 Wivenhoe Dam was 74.92m AHD holding 2,200,000ML and 190% and rising slowly and releasing about 6,700m³/s.

The current expectation is that the dam will reach a steady state (outflow equals inflow) within the next 3 hours without further significant rainfall. At this time, release from the dam will be about 8,000 m³/s.

If there is no further rainfall, it may be possible to then slowly reduce this release overnight.

The dam is expected to peak below 75.5m AHD which is 100mmm below the first fuse plug initiation level.

Note that the automatic recorder as indicated on the BoM website is affected by drawdown and is not reflecting the actual lake level and tendency.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes. The FOC is also maintaining close contact with warning agencies and local councils.

It should be noted that the flow in the lower Brisbane R in 1974 was about 9,500m³/s

North Pine Dam:

Five gates are open, and will continue until at least Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

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A release of around 86cumecs or 7396 megalitres a day is being made through the emergency gates and this will increase to around 8,000 megalitres per day by 6pm Tuesday 11 January. There is no public access to the spillway.

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Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

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BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

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ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

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SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

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Contact Officer signature	
Contact Officer name	Rob Drury
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Next TSR due	Date	11.1.2011	Time	PM	on Event	
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Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast flowing water is FATAL

rethink it



Ph [REDACTED] | Fax [REDACTED] | M [REDACTED] | E rdrury@seqwater.com.au
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

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BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [redacted]

Brisbane City Council (BCC) assessment

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BCC Technical Officer position title	Disaster Operations Manager
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Contact Officer signature	
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Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time	PM	or Event	
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• **Suzie Emery**

From: Petula Martinz
Sent: Tuesday, 11 January 2011 6:44 PM
To: Barry Dennien; Bob Reilly; Damien Brown; Darren Madgwick; Geoff Stead; Ken Smith; Kerry Dunn; Lance McCallum; Lauren Sims; Peter Borrows; Peter Martin; Rob Drury; SEQWGM Emergency; Stephen Robertson; Terry Wall; Tim Watts ; SEQWGM Media; john.bradley [REDACTED]
Subject: Updated technical support report
Attachments: Technical Situation Report W41.docx

All,

Updated report attached.

Regards,
Dan

Petula Martinz
Executive Assistant to Daniel Spiller
Director Operations
SEQ Water Grid Manager

Phone: [REDACTED] | **Fax:** [REDACTED]
Email: petula.martinz@seqwater.com.au
Visit: Level 15, 53 Albert Street, Brisbane
Post: PO Box 16205, City East Qld 4002
ABN: 14783 317 630

Please consider the environment before printing this email. It takes 10 litres of water to make one sheet of A4 paper.

TECHNICAL SITUATION REPORT

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BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

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Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time	PM	or Event	
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TECHNICAL SITUATION REPORT

TSR Number	W42	Date of TSR release	11.1.2011	Time of TSR release	7pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Maintain releases to keep Wivenhoe below fuse plug initiation and releases need to be made to ensure the dam security and minimise flood impacts downstream if possible
Strategy	<ul style="list-style-type: none"> Peak inflows into Wivenhoe in excess of 12000 cumecs. Increase releases to maintain fuse plug and dam integrity. Close sluices at Somerset Dam to store more water however will affect upstream areas.
Key considerations	Storage levels: Above FSL
	Inflows: Inflows expected well over 1,500,000ML.
	Rainfall: Continuing
	Lockyer/Bremer: Monitoring their inflows
	Brisbane River: Impact as below.

Somerset/Wivenhoe

Our strategy revolves ensuring dam security and is around trying to prevent initiation of the first fuse plug at EL 75.6m. If this happens we will get a rapid increase of about 2,000m³/s in outflow from the dam in addition to the gate release which could be as high as 10,000m³/s at the time.

Sluices have been closed at Somerset and this will result in high upstream water levels affecting Kilcoy. Somerset is at 104.6m holding 684,000ML and 180.0%.

Somerset should peak at around 105.2m (1974 peak level was 106.5m).

At 1900 Wivenhoe Dam was 74.97m AHD holding 2,227,000ML and 191.1% and rising slowly and releasing about 7,500m³/s.

Since the last update, there has only been an increase in release to 7,500cumecs. At this stage there is no planned increase in releases unless there are further inflows.

If there is no further rainfall, it may be possible to then slowly reduce this release overnight.

The dam is expected to peak below 75.5m AHD which is 100mmm below the first fuse plug initiation level.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes. The FOC is also maintaining close contact with warning agencies and local councils.

It should be noted that the flow in the lower Brisbane R in 1974 was about 9,500m³/s

North Pine Dam:

Five gates are open and continuing to drop. Releases may still continue until Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

Leslie Harrison Dam:

Gate releases are underway due to rainfall and inflows.

Hinze Dam:

A release of around 8,000 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

Wyalong Dam

As at 5:00pm today 9,680ML/day was passing over the spillway at Wyalong Dam. This represents a water depth of 0.59m over the spillway. The water level is continuing to rise. Wyalong Dam Alliance will continue to monitor and advise of water levels and flows.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)
 (to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
 (to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time	PM	or Event	
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Litsupport Brisbane

From: Rob Drury [rdrury@seqwater.com.au]
Sent: Tuesday, 11 January 2011 7:29 PM
To: Rob Drury; Dan Spiller; Paul Bird; Stan Stevenson; Peter Borrows; Peter.Allen@seqwater.com.au
Cc: David Roberts
Subject: RE: Technical Report
Attachments: Technical Situation Report W42.docx

Attached is the latest Technical Report.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast
flowing water is FATAL

rethink it.



Ph [redacted] | Fax [redacted] | M [redacted] E [redacted]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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TECHNICAL SITUATION REPORT

TSR Number	W42	Date of TSR release	11.1.2011	Time of TSR release	7pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Maintain releases to keep Wivenhoe below fuse plug initiation and releases need to be made to ensure the dam security and minimise flood impacts downstream if possible
Strategy	<ul style="list-style-type: none"> Peak inflows into Wivenhoe in excess of 12000 cumecs. Increase releases to maintain fuse plug and dam integrity. Close sluices at Somerset Dam to store more water however will affect upstream areas.
Key considerations	Storage levels: Above FSL
	Inflows: Inflows expected well over 1,500,000ML.
	Rainfall: Continuing
	Lockyer/Bremer: Monitoring their inflows
	Brisbane River: Impact as below.

Somerset/Wivenhoe

Our strategy revolves ensuring dam security and is around trying to prevent initiation of the first fuse plug at EL 75.6m. If this happens we will get a rapid increase of about 2,000m³/s in outflow from the dam in addition to the gate release which could be as high as 10,000m³/s at the time.

Sluices have been closed at Somerset and this will result in high upstream water levels affecting Kilcoy. Somerset is at 104.6m holding 684,000ML and 180.0%.

Somerset should peak at around 105.2m (1974 peak level was 106.5m).

At 1900 Wivenhoe Dam was 74.97m AHD holding 2,227,000ML and 191.1% and rising slowly and releasing about 7,500m³/s.

Since the last update, there has only been an increase in release to 7,500cumecs. At this stage there is no planned increase in releases unless there are further inflows.

If there is no further rainfall, it may be possible to then slowly reduce this release overnight.

The dam is expected to peak below 75.5m AHD which is 100mmm below the first fuse plug initiation level.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes. The FOC is also maintaining close contact with warning agencies and local councils.

It should be noted that the flow in the lower Brisbane R in 1974 was about 9,500m³/s

North Pine Dam:

Five gates are open and continuing to drop. Releases may still continue until Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

Leslie Harrison Dam:

Gate releases are underway due to rainfall and inflows.

Hinze Dam:

A release of around 8,000 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

Wyalong Dam

As at 5:00pm today 9,680ML/day was passing over the spillway at Wyalong Dam. This represents a water depth of 0.59m over the spillway. The water level is continuing to rise. Wyalong Dam Alliance will continue to monitor and advise of water levels and flows.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy

BCC Technical Officer name	Chris Lavin
----------------------------	-------------

BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time	PM	or Event	
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TECHNICAL SITUATION REPORT

TSR Number	W43	Date of TSR release	11.1.2011	Time of TSR release	8pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Maintain releases to keep Wivenhoe below fuse plug initiation and releases need to be made to ensure the dam security and minimise flood impacts downstream if possible
Strategy	<ul style="list-style-type: none"> Peak inflows into Wivenhoe in excess of 12000 cumecs. Increase releases to maintain fuse plug and dam integrity. Close sluices at Somerset Dam to store more water however will affect upstream areas.
Key considerations	Storage levels: Above FSL
	Inflows: Inflows expected well over 1,500,000ML.
	Rainfall: Continuing
	Lockyer/Bremer: Monitoring their inflows
	Brisbane River: Impact as below.

Somerset/Wivenhoe

Our strategy revolves ensuring dam security and is around trying to prevent initiation of the first fuse plug at EL 75.6m. If this happens we will get a rapid increase of about 2,000m³/s in outflow from the dam in addition to the gate release which could be as high as 10,000m³/s at the time.

Sluices have been closed at Somerset and this will result in high upstream water levels affecting Kilcoy. Somerset is at 104.7m holding 691,500ML and 180.2%.

Somerset should peak at around 105.2m (1974 peak level was 106.5m).

At 2000 Wivenhoe Dam was 74.97m AHD holding 2,227,000ML and 191.1% and steady and releasing about 7,500m³/s.

The levels have stayed the same for an hour so there are no planned increases in releases.

As soon as the levels show they are dropping, releases will be reduced.

The dam is now expected to peak around 74.97m AHD which is around 600mm below the first fuse plug initiation level.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes. The FOC is also maintaining close contact with warning agencies and local councils.

It should be noted that the flow in the lower Brisbane R in 1974 was about 9,500m³/s

North Pine Dam:

Five gates are open and continuing to drop. Releases may still continue until Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

Leslie Harrison Dam:

Gate releases are underway due to rainfall and inflows.

Hinze Dam:

A release of around 8,000 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

Wyalong Dam

As at 5:00pm today 9,680ML/day was passing over the spillway at Wyalong Dam. This represents a water depth of 0.59m over the spillway. The water level is continuing to rise. Wyalong Dam Alliance will continue to monitor and advise of water levels and flows.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)
 (to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
 (to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time	PM	or Event	
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TECHNICAL SITUATION REPORT

TSR Number	W44	Date of TSR release	11.1.2011	Time of TSR release	8pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Initiate the gradual reduction of releases.
Strategy	<ul style="list-style-type: none"> Peak inflows into Wivenhoe were in excess of 12000 cumecs. Maintain controlled releases. Keep sluices closed at Somerset Dam to store more water however will affect upstream areas.
Key considerations	Storage levels: Above FSL
	Inflows: Inflows expected well over 1,500,000ML.
	Rainfall: Continuing
	Lockyer/Bremer: Monitoring their inflows
	Brisbane River: Impact as below.

Somerset/Wivenhoe

Our strategy revolves ensuring dam security and is around trying to prevent initiation of the first fuse plug at EL 75.6m. If this happens we will get a rapid increase of about 2,000m³/s in outflow from the dam in addition to the gate release which could be as high as 10,000m³/s at the time.

Sluices have been closed at Somerset and this will result in high upstream water levels affecting Kilcoy. Somerset is at 104.78m holding 697,400ML and 183.6%.

Somerset should peak at around 105.2m (1974 peak level was 106.5m).

At 2100 Wivenhoe Dam was 74.95m AHD holding 2,223,000ML and 190.8% and slowly dropping.

The levels have now stabilized and commenced to fall slowly.

The FOC has begun an appropriate closure sequence to reduce releases. Releases will be reduced slowly throughout the night to track dropping levels. First reduction will be to around 7,100cumecs.

Assuming no further rain, the dam has now peaked around 74.97m AHD which was around 600mm below the first fuse plug initiation level.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes. The FOC is also maintaining close contact with warning agencies and local councils.

It should be noted that the flow in the lower Brisbane R in 1974 was about 9,500m³/s

North Pine Dam:

Five gates are open and continuing to drop. Releases may still continue until Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

Leslie Harrison Dam:

Gate releases are underway due to rainfall and inflows.

Hinze Dam:

A release of around 8,000 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time	PM	or Event	
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Litsupport Brisbane

From: Rob Drury [rdrury [REDACTED]]
Sent: Tuesday, 11 January 2011 8:20 PM
To: Rob Drury; Dan Spiller; Paul Bird; Stan Stevenson; Peter Borrows;
Peter.Allen [REDACTED]
Cc: David Roberts
Subject: RE: Technical Report
Attachments: Technical Situation Report W43.docx

Attached report W43.

Levels at Wivenhoe now seem to be steady.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast
flowing water is FATAL

rethink it



Ph [REDACTED] | Fax [REDACTED] M [REDACTED] | E rdrury@seqwater.com.au
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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TECHNICAL SITUATION REPORT

TSR Number	W43	Date of TSR release	11.1.2011	Time of TSR release	8pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Maintain releases to keep Wivenhoe below fuse plug initiation and releases need to be made to ensure the dam security and minimise flood impacts downstream if possible 										
Strategy	<ul style="list-style-type: none"> Peak inflows into Wivenhoe in excess of 12000 cumecs. Increase releases to maintain fuse plug and dam integrity. Close sluices at Somerset Dam to store more water however will affect upstream areas. 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected well over 1,500,000ML.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected well over 1,500,000ML.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
Storage levels:	Above FSL										
Inflows:	Inflows expected well over 1,500,000ML.										
Rainfall:	Continuing										
Lockyer/Bremer:	Monitoring their inflows										
Brisbane River:	Impact as below.										

Somerset/Wivenhoe

Our strategy revolves ensuring dam security and is around trying to prevent initiation of the first fuse plug at EL 75.6m. If this happens we will get a rapid increase of about 2,000m³/s in outflow from the dam in addition to the gate release which could be as high as 10,000m³/s at the time.

Sluices have been closed at Somerset and this will result in high upstream water levels affecting Kilcoy. Somerset is at 104.7m holding 691,500ML and 180.2%.

Somerset should peak at around 105.2m (1974 peak level was 106.5m).

At 2000 Wivenhoe Dam was 74.97m AHD holding 2,227,000ML and 191.1% and steady and releasing about 7,500m³/s.

The levels have stayed the same for an hour so there are no planned increases in releases.

As soon as the levels show they are dropping, releases will be reduced.

The dam is now expected to peak around 74.97m AHD which is around 600mm below the first fuse plug initiation level.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes. The FOC is also maintaining close contact with warning agencies and local councils.

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North Pine Dam:

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Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager

BCC Technical Officer contact details

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

ICC Technical Officer name

Tony Trace

ICC Technical Officer position title

Local Disaster Response Coordinator

ICC Technical Officer contact details

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

SRC Technical Officer name

Tony Jacobs

SRC Technical Officer position title

Local Disaster Response Coordinator

SRC Technical Officer contact details

Collated and distributed by (Agency)

Contact Officer signature**Contact Officer name**

Rob Drury

Contact Officer position title

Dam Operations Manager

Next TSR due**Date**

11.1.2011

Time

PM

or Event

From: Dan Spiller <Daniel.Spiller [REDACTED]>
Sent: Tuesday, January 11, 2011 8:25 PM
To: Barry Dennien <Barry.Dennien [REDACTED]>
Subject: Fwd: Technical Report
Attach: Seqwater_No-Lifeguards-Here_email_strap.png; ATT00001.htm;
cidimage001.png@01CA24E1.BDB90020; ATT00002.htm; Technical
Situation Report W43.docx; ATT00003.htm

Begin forwarded message:

From: Rob Drury <[REDACTED]>
Date: 11 January 2011 8:19:49 PM GMT+10:00
To: Rob Drury <rdrury [REDACTED]>, Dan Spiller
<Daniel.Spiller [REDACTED]>, Paul Bird <pbird [REDACTED]>, Stan
Stevenson <sstevenson [REDACTED]>, Peter Borrows
<pborrows [REDACTED]>, "Peter.Allen [REDACTED]"
<Peter.Allen [REDACTED]>
Cc: David Roberts <drobot [REDACTED]>
Subject: RE: Technical Report

Attached report W43.

Levels at Wivenhoe now seem to be steady.

Rob

Robert Drury

Dam Operations Manager

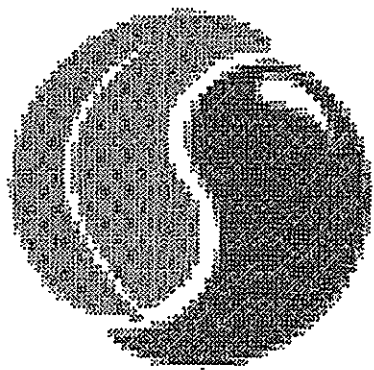
Water Delivery

Queensland Bulk Water Supply Authority *trading as* Seqwater



Swimming in weirs and fast
flowing water is FATAL

rethink it



sequwater
WATER FOR LIFE.

Ph [REDACTED] | Fax [REDACTED] | E rdurvy@seqwater.com.au

Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306

Website | www.seqwater.com.au

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TECHNICAL SITUATION REPORT

TSR Number	W43	Date of TSR release	11.1.2011	Time of TSR release	8pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Maintain releases to keep Wivenhoe below fuse plug initiation and releases need to be made to ensure the dam security and minimise flood impacts downstream if possible 										
Strategy	<ul style="list-style-type: none"> Peak inflows into Wivenhoe in excess of 12000 cumecs. Increase releases to maintain fuse plug and dam integrity. Close sluices at Somerset Dam to store more water however will affect upstream areas. 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected well over 1,500,000ML</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected well over 1,500,000ML	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
Storage levels:	Above FSL										
Inflows:	Inflows expected well over 1,500,000ML										
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Lockyer/Bremer:	Monitoring their inflows										
Brisbane River:	Impact as below.										

Somerset/Wivenhoe

Our strategy revolves ensuring dam security and is around trying to prevent initiation of the first fuse plug at EL 75.6m. If this happens we will get a rapid increase of about 2,000m³/s in outflow from the dam in addition to the gate release which could be as high as 10,000m³/s at the time.

Sluices have been closed at Somerset and this will result in high upstream water levels affecting Kilcoy. Somerset is at 104.7m holding 691,500ML and 180.2%.

Somerset should peak at around 105.2m (1974 peak level was 106.5m).

At 2000 Wivenhoe Dam was 74.97m AHD holding 2,227,000ML and 191.1% and steady and releasing about 7,500m³/s.

The levels have stayed the same for an hour so there are no planned increases in releases.

As soon as the levels show they are dropping, releases will be reduced.

The dam is now expected to peak around 74.97m AHD which is around 600mm below the first fuse plug initiation level.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes. The FOC is also maintaining close contact with warning agencies and local councils.

It should be noted that the flow in the lower Brisbane R in 1974 was about 9,500m³/s

North Pine Dam:

Five gates are open and continuing to drop. Releases may still continue until Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

Leslie Harrison Dam:

Gate releases are underway due to rainfall and inflows.

Hinze Dam:

A release of around 8,000 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

Wyaralong Dam

As at 5:00pm today 9,680ML/day was passing over the spillway at Wyaralong Dam. This represents a water depth of 0.59m over the spillway. The water level is continuing to rise. Wyaralong Dam Alliance will continue to monitor and advise of water levels and flows.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager

BCC Technical Officer contact details

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

ICC Technical Officer name

Tony Trace

ICC Technical Officer position title

Local Disaster Response Coordinator

ICC Technical Officer contact details

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

SRC Technical Officer name

Tony Jacobs

SRC Technical Officer position title

Local Disaster Response Coordinator

SRC Technical Officer contact details

Collated and distributed by (Agency)

Contact Officer signature

Contact Officer name

Rob Drury

Contact Officer position title

Dam Operations Manager

Next TSR due

Date

11.1.2011

Time

PM

or Event

From: Barry Dennien </O=SOUTH EAST QUEENSLAND WATER GRID
MANAGER/OU=EXCHANGE ADMINISTRATIVE GROUP
(FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BARRY.DENNIEN>
Sent: Tuesday, January 11, 2011 8:31 PM
To: Dan Spiller <Daniel.Spiller [REDACTED]>
Subject: RE: Technical Report

Do not send as yet

From: Dan Spiller
Sent: Tuesday, 11 January 2011 8:25 PM
To: Barry Dennien
Subject: Fwd: Technical Report

Begin forwarded message:

From: Rob Drury <rdrury [REDACTED]>
Date: 11 January 2011 8:19:49 PM GMT+10:00
To: Rob Drury <rdrury [REDACTED]>, Dan Spiller
<Daniel.Spiller [REDACTED]>, Paul Bird <pbird [REDACTED]>, Stan
Stevenson <sstevenson [REDACTED]>, Peter Borrowes
<pborrows [REDACTED]>, "Peter.Allen [REDACTED]>
<Peter.Allen [REDACTED]>
Cc: David Roberts <drobot [REDACTED]>
Subject: RE: Technical Report

Attached report W43.

Levels at Wivenhoe now seem to be steady.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority *trading as Seqwater*

Gina O'Driscoll

From: Paul Bird [pbird [REDACTED]]
Sent: Tuesday, 11 January 2011 8:33 PM
To: SEQWGM Media; aroebuck [REDACTED]; greg.swain [REDACTED];
GSTUBBS [REDACTED]; Kathy Petrik; lisa.m.martin [REDACTED];
Paula Weston; tjacobs [REDACTED]; Arminda Roberts; Bec Middlemiss; Michael
Fiechtner; Mike Foster; Tara King; Barry Dennien; Dan Spiller; Scott Denner
Cc: Michael Lyons; ELT
Subject: Release Update

As at 8.30 pm on Tuesday 11 January, the following applies:

SOMERSET DAM:

Releases have stopped, however levels in Somerset are expected to continue rising and areas around Kilcoy are likely to be impacted.

WIVENHOE DAM:

Wivenhoe Dam is currently releasing about 654,000 megalitres per day.

Levels have stayed the same for an hour so at this stage there are no planned increases in releases.

As soon as the levels show they are consistently dropping, releases will be reduced.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes.

The Centre is also maintaining close contact with warning agencies and local councils.

NORTH PINE DAM:

Five gates are open, and will continue until at least Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

LESLIE HARRISON DAM:

Gate releases are underway due to rainfall and inflows.

SIZE DAM:

A minor release of around 8,000 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

For detailed information on river levels, road and crossing closures and other potential impacts, always contact your local council.

This information will be updated in the event of a significant change.

Important information: This email and any attached information is intended only for the addressee and may contain confidential and/or privileged information. If you are not the addressee, you are notified that any transmission, distribution, or other use of this information is strictly prohibited. The confidentiality attached to this email is not waived, lost or destroyed by reasons of mistaken delivery to you. If you have received this email in error please contact the sender immediately and delete the material from your email system. QLD Bulk Water Supply Authority ABN75450239876 (Trading as Seqwater).

Litsupport Brisbane

From: Rob Drury [rdrury [REDACTED]]
Sent: Tuesday, 11 January 2011 9:16 PM
To: Rob Drury; Dan Spiller; Paul Bird; Stan Stevenson; Peter Borrows; Peter.Allen [REDACTED]
Cc: David Roberts
Subject: RE: Technical Report
Attachments: Technical Situation Report W44.docx

Attached report.

Dam has peaked (assuming no more rain) and release reduction has been initiated.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast
flowing water is FATAL

rethink it.



Ph [REDACTED] | Fax [REDACTED] | M [REDACTED] | E rdrury@seqwater.com.au
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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TECHNICAL SITUATION REPORT

TSR Number	W44	Date of TSR release	11.1.2011	Time of TSR release	8pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Initiate the gradual reduction of releases.
Strategy	<ul style="list-style-type: none"> Peak inflows into Wivenhoe were in excess of 12000 cumecs. Maintain controlled releases. Keep sluices closed at Somerset Dam to store more water however will affect upstream areas.
Key considerations	Storage levels: Above FSL
	Inflows: Inflows expected well over 1,500,000ML.
	Rainfall: Continuing
	Lockyer/Bremer: Monitoring their inflows
	Brisbane River: Impact as below.

Somerset/Wivenhoe

Our strategy revolves ensuring dam security and is around trying to prevent initiation of the first fuse plug at EL 75.6m. If this happens we will get a rapid increase of about 2,000m³/s in outflow from the dam in addition to the gate release which could be as high as 10,000m³/s at the time.

Sluices have been closed at Somerset and this will result in high upstream water levels affecting Kilcoy. Somerset is at 104.78m holding 697,400ML and 183.6%.

Somerset should peak at around 105.2m (1974 peak level was 106.5m).

At 2100 Wivenhoe Dam was 74.95m AHD holding 2,223,000ML and 190.8% and slowly dropping.

The levels have now stabilized and commenced to fall slowly.

The FOC has begun an appropriate closure sequence to reduce releases.

Assuming no further rain, the dam has now peaked around 74.97m AHD which was around 600mm below the first fuse plug initiation level.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes. The FOC is also maintaining close contact with warning agencies and local councils.

It should be noted that the flow in the lower Brisbane R in 1974 was about 9,500m³/s

North Pine Dam:

Five gates are open and continuing to drop. Releases may still continue until Wednesday 12 January.

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Leslie Harrison Dam:

Gate releases are underway due to rainfall and inflows.

Hinze Dam:

A release of around 8,000 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time	PM	or Event	
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Cindy Hulsey

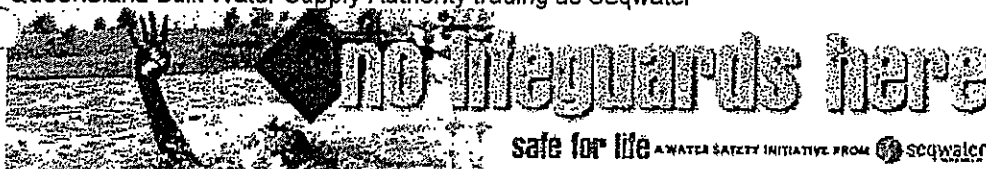
From: Rob Drury [rdrury@seqwater.com.au]
Sent: Tuesday, 11 January 2011 9:51 PM
To: Dan Spiller
Subject: RE: Technical Report
Attachments: Technical Situation Report W44.docx

Categories: T8

Dan,
Updated report.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and flowing water is **FA**

rethink



Ph [redacted] | Fax [redacted] | M [redacted] | E rdrury@seqwater.com.au
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

From: Dan Spiller [mailto:Daniel.Spiller@seqwater.com.au]
Sent: Tuesday, 11 January 2011 9:33 PM
To: Rob Drury
Subject: Re: Technical Report

Sorry, I meant release rates. You note the closure sequence, but not from what.

On 11/01/2011, at 9:31 PM, "Rob Drury" <rdrury@seqwater.com.au> wrote:

Sure,

I had the volumes of the dams in there, which volumes did you mean?

Rob

Robert Drury

Dam Operations Manager

Water Delivery

Queensland Bulk Water Supply Authority *trading as Seqwater*

<image001.jpg>

<image002.png>

Ph [REDACTED] | Fax [REDACTED] | M [REDACTED] | E [rdrury](mailto:rdrury@seqwater.com.au) [REDACTED]

Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306

Website | www.seqwater.com.au

From: Dan Spiller [mailto:Daniel.Spiller@seqwater.com.au]
Sent: Tuesday, 11 January 2011 9:28 PM
To: Rob Drury
Subject: Re: Technical Report

Rob,

We will distribute this version widely. Can you pls update to state volumes?

Dan

On 11/01/2011, at 9:15 PM, "Rob Drury" <rdrury@seqwater.com.au> wrote:

Attached report.

Dam has peaked (assuming no more rain) and release reduction has been initiated.

Rob

Robert Drury

Dam Operations Manager

Water Delivery

Queensland Bulk Water Supply Authority trading as Seqwater

<image001.jpg>

<image002.png>

Ph [REDACTED] | Fax [REDACTED] | M [REDACTED] E rdrury@seqwater.com.au

Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306

Website | www.seqwater.com.au

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<Technical Situation Report W44.docx>

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Your Anti-virus Service scanned this email. It is safe from known viruses.
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-----Safe Stamp-----

Your Anti-virus Service scanned this email. It is safe from known viruses.

For more information regarding this service, please contact your service provider.

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QLD Bulk Water Supply Authority ABN75450239876 (Trading as Seqwater).

TECHNICAL SITUATION REPORT

TSR Number	W44	Date of TSR release	11.1.2011	Time of TSR release	8pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Initiate the gradual reduction of releases. 										
Strategy	<ul style="list-style-type: none"> Peak inflows into Wivenhoe were in excess of 12000 cumecs. Maintain controlled releases. Keep sluices closed at Somerset Dam to store more water however will affect upstream areas. 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected well over 1,500,000ML.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected well over 1,500,000ML.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
Storage levels:	Above FSL										
Inflows:	Inflows expected well over 1,500,000ML.										
Rainfall:	Continuing										
Lockyer/Bremer:	Monitoring their inflows										
Brisbane River:	Impact as below.										

Somerset/Wivenhoe

Our strategy revolves ensuring dam security and is around trying to prevent initiation of the first fuse plug at EL 75.6m. If this happens we will get a rapid increase of about 2,000m³/s in outflow from the dam in addition to the gate release which could be as high as 10,000m³/s at the time.

Sluices have been closed at Somerset and this will result in high upstream water levels affecting Kilcoy. Somerset is at 104.78m holding 697,400ML and 183.6%.

Somerset should peak at around 105.2m (1974 peak level was 106.5m).

At 2100 Wivenhoe Dam was 74.95m AHD holding 2,223,000ML and 190.8% and slowly dropping.

The levels have now stabilized and commenced to fall slowly.

The FOC has begun an appropriate closure sequence to reduce releases. Releases will be reduced slowly throughout the night to track dropping levels. First reduction will be to around 7,100cumecs.

Assuming no further rain, the dam has now peaked around 74.97m AHD which was around 600mm below the first fuse plug initiation level.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes. The FOC is also maintaining close contact with warning agencies and local councils.

It should be noted that the flow in the lower Brisbane R in 1974 was about 9,500m³/s

North Pine Dam:

Five gates are open and continuing to drop. Releases may still continue until Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

Leslie Harrison Dam:

Gate releases are underway due to rainfall and inflows.

Hinze Dam:

A release of around 8,000 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time	PM	Day	
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TECHNICAL SITUATION REPORT

TSR Number	W45	Date of TSR release	11.1.2011	Time of TSR release	10pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Gradual reduction of releases.
Strategy	<ul style="list-style-type: none"> Peak inflows into Wivenhoe were in excess of 12000 cumecs. Maintain controlled releases. Keep sluices closed at Somerset Dam to store more water however will affect upstream areas.
Key considerations	Storage levels: Above FSL
	Inflows: Inflows expected well over 1,500,000ML.
	Rainfall: Continuing
	Lockyer/Bremer: Monitoring their inflows
	Brisbane River: Impact as below.

Somerset/Wivenhoe

Our strategy revolves ensuring dam security and is around trying to prevent initiation of the first fuse plug at EL 75.6m. If this happens we will get a rapid increase of about 2,000m³/s in outflow from the dam in addition to the gate release which could be as high as 10,000m³/s at the time.

Sluices have been closed at Somerset and this will result in high upstream water levels affecting Kilcoy. Somerset is at 104.85m holding 702,260ML and 185%.

Somerset should peak at around 105.2m (1974 peak level was 106.5m).

At 2200 Wivenhoe Dam was 74.95m AHD holding 2,223,000ML and 190.8%.

The FOC has begun an appropriate closure sequence to reduce releases. Releases will be reduced slowly throughout the night to track dropping levels. First reduction has been to around 7,100cumecs.

Assuming no further rain, the dam peaked around 74.97m AHD which was around 600mm below the first fuse plug initiation level.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes. The FOC is also maintaining close contact with warning agencies and local councils.

It should be noted that the flow in the lower Brisbane R in 1974 was about 9,500m³/s

North Pine Dam:

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Hinze Dam:

A release of around 8,000 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

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ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

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(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time	PM	or Event	
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Litsupport Brisbane

From: Rob Drury [rdrury@seqwater.com.au]
Sent: Tuesday, 11 January 2011 10:07 PM
To: Rob Drury; Dan Spiller; Paul Bird; Stan Stevenson; Peter Borrows; Peter.Allen@seqwater.com.au
Cc: David Roberts
Subject: RE: Technical Report
Attachments: Technical Situation Report W45.docx

Attached report W45.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast flowing water is FATAL

rethink it.



Ph [redacted] | Fax [redacted] | M [redacted] | E [redacted]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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TECHNICAL SITUATION REPORT

TSR Number	W45	Date of TSR release	11.1.2011	Time of TSR release	10pm
------------	-----	---------------------	-----------	---------------------	------

Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

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Strategy	<ul style="list-style-type: none"> Peak inflows into Wivenhoe were in excess of 12000 cumecs. Maintain controlled releases. Keep sluices closed at Somerset Dam to store more water however will affect upstream areas. 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected well over 1,500,000ML</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected well over 1,500,000ML	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
Storage levels:	Above FSL										
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Somerset/Wivenhoe

Our strategy revolves ensuring dam security and is around trying to prevent initiation of the first fuse plug at EL 75.6m. If this happens we will get a rapid increase of about 2,000m³/s in outflow from the dam in addition to the gate release which could be as high as 10,000m³/s at the time.

Sluices have been closed at Somerset and this will result in high upstream water levels affecting Kilcoy. Somerset is at 104.85m holding 702,260ML and 185%.

Somerset should peak at around 105.2m (1974 peak level was 106.5m).

At 2200 Wivenhoe Dam was 74.95m AHD holding 2,223,000ML and 190.8%.

The FOC has begun an appropriate closure sequence to reduce releases. Releases will be reduced slowly throughout the night to track dropping levels. First reduction has been to around 7,100cumecs.

Assuming no further rain, the dam peaked around 74.97m AHD which was around 600mm below the first fuse plug initiation level.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes. The FOC is also maintaining close contact with warning agencies and local councils.

It should be noted that the flow in the lower Brisbane R in 1974 was about 9,500m³/s

North Pine Dam:

Five gates are open and continuing to drop. Releases may still continue until Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

Leslie Harrison Dam:

Gate releases are underway due to rainfall and inflows.

Hinze Dam:

A release of around 8,000 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time	PM	or Event	
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Cindy Hulsey

From: Dan Spiller
Sent: Tuesday, 11 January 2011 10:19 PM
To: stephen.robertson [REDACTED]; Lance McCallum (lance.mccallum [REDACTED]); Tim Watts (tim.watts [REDACTED]); Geoff Stead (geoff.stead [REDACTED]); lauren.sims [REDACTED]; John Bradley (john.bradley [REDACTED]); Debbie Best (debbie.best [REDACTED]); Martin.PeterJ [REDACTED]; Dunn.KerryG [REDACTED]; Ken Smith (ken.smith [REDACTED])
Cc: Rob Drury (rdrury [REDACTED]); Barry Dennien; Peter Borrows; SEQWGM Media; SEQWGM Emergency; Madgwick.DarrenT [REDACTED]
Subject: Wivenhoe Dam update
Attachments: Technical Situation Report W44.docx
Categories: T8

All,

Attached is the most recent technical situation report.

Note that Wivenhoe Dam levels have stabilised and are now falling slowly. Without further rainfall, release rates will be reduced progressively. The first reduction will be to 7,100 cubic metres per second.

Regards,
Daniel Spiller

TECHNICAL SITUATION REPORT

TSR Number	W44	Date of TSR release	11.1.2011	Time of TSR release	8pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Initiate the gradual reduction of releases. 										
Strategy	<ul style="list-style-type: none"> Peak inflows into Wivenhoe were in excess of 12000 cumecs. Maintain controlled releases. Keep sluices closed at Somerset Dam to store more water however will affect upstream areas. 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected well over 1,500,000ML.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected well over 1,500,000ML.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
Storage levels:	Above FSL										
Inflows:	Inflows expected well over 1,500,000ML.										
Rainfall:	Continuing										
Lockyer/Bremer:	Monitoring their inflows										
Brisbane River:	Impact as below.										

Somerset/Wivenhoe

Our strategy revolves ensuring dam security and is around trying to prevent initiation of the first fuse plug at EL 75.6m. If this happens we will get a rapid increase of about 2,000m³/s in outflow from the dam in addition to the gate release which could be as high as 10,000m³/s at the time.

Sluices have been closed at Somerset and this will result in high upstream water levels affecting Kilcoy. Somerset is at 104.78m holding 697,400ML and 183.6%.

Somerset should peak at around 105.2m (1974 peak level was 106.5m).

At 2100 Wivenhoe Dam was 74.95m AHD holding 2,223,000ML and 190.8% and slowly dropping.

The levels have now stabilized and commenced to fall slowly.

The FOC has begun an appropriate closure sequence to reduce releases. Releases will be reduced slowly throughout the night to track dropping levels. First reduction will be to around 7,100cumecs.

Assuming no further rain, the dam has now peaked around 74.97m AHD which was around 600mm below the first fuse plug initiation level.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes. The FOC is also maintaining close contact with warning agencies and local councils.

It should be noted that the flow in the lower Brisbane R in 1974 was about 9,500m³/s

North Pine Dam:

Five gates are open and continuing to drop. Releases may still continue until Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

Leslie Harrison Dam:

Gate releases are underway due to rainfall and inflows.

Hinze Dam:

A release of around 8,000 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time	PM	or Even	
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Gina O'Driscoll

From: Paul Bird [pbird [REDACTED]]
Sent: Tuesday, 11 January 2011 10:21 PM
To: SEQWGM Media; aroebuck [REDACTED]; greg.swain [REDACTED];
GSTUBBS [REDACTED]; Kathy Petrik; lisa.m.martin [REDACTED];
Paula Weston; tjacobs [REDACTED]; Arminda Roberts; Bec Middlemiss; Michael
Fiechtner; Mike Foster; Tara King; Barry Dennien; Dan Spiller; Scott Denner
Cc: Michael Lyons; ELT
Subject: Release Update

For detailed information on river levels, road and crossing closures and other potential impacts, always contact your local council.

As at 10.30 pm on Tuesday 11 January, the following applies:

SOMERSET DAM:

Releases have stopped, however levels in Somerset are expected to continue rising and areas around Kilcoy are likely to be impacted.

OVENHOE DAM:

The Flood Operations Centre has begun an appropriate closure sequence to reduce releases.

Releases will be reduced slowly throughout the night to track dropping levels. First reduction has been to around 610,000 megalitres per day.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes.

The Centre is also maintaining close contact with warning agencies and local councils.

NORTH PINE DAM:

Five gates are open, and will continue until at least Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

ESLIE HARRISON DAM:

Releases are underway due to rainfall and inflows.

HINZE DAM:

A minor release of around 8,000 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

For detailed information on river levels, road and crossing closures and other potential impacts, always contact your local council.

This information will be updated in the event of a significant change.

Important information: This email and any attached information is intended only for the addressee and may contain confidential and/or privileged information. If you are not the addressee, you are notified that any transmission, distribution, or other use of this information is strictly prohibited. The confidentiality attached to this email is not waived, lost or destroyed by reasons of mistaken delivery to you. If you have received this email in error please contact the sender immediately and delete the material from your email system. QLD Bulk Water Supply Authority ABN75450239876 (Trading as Seqwater).

Litsupport Brisbane

From: Dan Spiller
Sent: Tuesday, 11 January 2011 10:48 PM
To: Bradley John
Cc: Barry Dennien
Subject: RE: Wivenhow Dam update

It warrants a discussion. On phone when suits you.

From: Bradley John [John.Bradley [REDACTED]]
Sent: Tuesday, 11 January 2011 10:44 PM
To: Dan Spiller
Cc: Barry Dennien
Subject: Re: Wivenhow Dam update

Thanks Dan

As an aside, I think we need to try to maintain the protocol on these through these most serious of events - I notice sitreps lately have had no comment from bom/councils or just "has been advised".

Wouldn't bear much scrutiny in an ex post review, noting recipients (Min, DsG, etc)

Happy to take your and barry's advice as to how this can be achieved.

John B

From: Dan Spiller [mailto:Daniel.Spiller [REDACTED]]
Sent: Tuesday, January 11, 2011 10:18 PM
To: stephen.robertson [REDACTED] <stephen.robertson [REDACTED]>; Lance McCallum (lance.mccallum [REDACTED]) <lance.mccallum [REDACTED]>; Tim Watts (tim.watts [REDACTED]) <tim.watts [REDACTED]>; Geoff Stead (geoff.stead [REDACTED]) <geoff.stead [REDACTED]>; lauren.sims [REDACTED] <lauren.sims [REDACTED]>; Bradley John; Best Debbie; Martin.Peter [REDACTED] <Martin.Peter [REDACTED]>; Dunn.KerryG [REDACTED] <Dunn.KerryG [REDACTED]>; Ken Smith (ken.smith [REDACTED]) <ken.smith [REDACTED]>
Cc: Rob Drury (rdrury [REDACTED]) <rdrury [REDACTED]>; Dennien Barry @ SEQWGM; Peter Borrows <pborrows [REDACTED]>; Media @ SEQWGM; SEQWGM Emergency <SEQWGM.Emergency [REDACTED]>; Madgwick.DarrenT [REDACTED] <Madgwick.DarrenT [REDACTED]>
Subject: Wivenhow Dam update

All,

Attached is the most recent technical situation report.

Note that Wivenhoe Dam levels have stabilised and are now falling slowly. Without further rainfall, release rates will be reduced progressively. The first reduction will be to 7,100 cubic metres per second.

Regards,
Daniel Spiller

This email, together with any attachments, is intended for the named recipient(s) only; and may contain privileged and confidential information. You understand that any privilege or confidentiality attached to this message is not waived, lost or destroyed because you have received this message in error. If received in error, you are asked to inform the sender as quickly as possible and delete this email and any copies of this from your computer system network. If not an intended recipient of this email, you must not copy, distribute or take any action(s) that relies on it; any form of disclosure, modification, distribution and/or publication of this email is also prohibited.

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+-----+
Think B4U Print

1 ream of paper = 6 $\frac{1}{2}$ of a tree and 5.4kg CO₂ in the atmosphere

3 sheets of A4 paper = 1 litre of water
+-----+

TECHNICAL SITUATION REPORT

TSR Number	W46	Date of TSR release	11.1.2011	Time of TSR release	11pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Gradual reduction of releases.
	<ul style="list-style-type: none"> Peak inflows into Wivenhoe were in excess of 12000 cumecs. Maintain controlled releases. Keep sluices closed at Somerset Dam to store more water however will affect upstream areas.
Key considerations	Storage levels: Above FSL
	Inflows: Inflows expected well over 1,500,000ML.
	Rainfall: Continuing
	Lockyer/Bremer: Monitoring their inflows
	Brisbane River: Impact as below.

Somerset/Wivenhoe

Our strategy revolves ensuring dam security and is around trying to prevent initiation of the first fuse plug at EL 75.6m. If this happens we will get a rapid increase of about 2,000m³/s in outflow from the dam in addition to the gate release which could be as high as 10,000m³/s at the time.

Sluices have been closed at Somerset and this will result in high upstream water levels affecting Kilcoy. Somerset is at 104.90m holding 705,730ML and 185.8%.

Somerset should peak at around 105.2m (1974 peak level was 106.5m).

At 2300 Wivenhoe Dam was 74.92m AHD holding 2,219,000ML and 190.4%.

The FOC has begun an appropriate closure sequence to reduce releases. Releases will be reduced throughout the night to track dropping levels. Another reduction will commence around 23:30 to 6,100cumecs. Further reductions will occur over night.

Assuming no further rain, the dam peaked around 74.97m AHD which was around 600mm below the first fuse plug initiation level.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes. The FOC is also maintaining close contact with warning agencies and local councils.

It should be noted that the flow in the lower Brisbane R in 1974 was about 9,500m³/s

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The local Council is being kept informed regarding Youngs Crossing.

Leslie Harrison Dam:

Gate releases are underway due to rainfall and inflows.

Hinze Dam:

A release of around 8,000 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	12.1.2011	Time	AM	of Event	
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Litsupport Brisbane

From: Rob Drury [rdrury [REDACTED]]
Sent: Tuesday, 11 January 2011 11:21 PM
To: Rob Drury; Dan Spiller; Paul Bird; Stan Stevenson; Peter Borrows; Peter.Allen [REDACTED]
Cc: David Roberts; Duty Seq
Subject: RE: Technical Report
Attachments: Technical Situation Report W46.docx

Attached report W46.

Next report will be 5am Wednesday 12.1.2011.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast flowing water is FATAL

rethink it.



Ph [REDACTED] | Fax [REDACTED] M [REDACTED] E [rdrury [REDACTED]]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

Important information: This email and any attached information is intended only for the addressee and may contain confidential and/or privileged information. If you are not the addressee, you are notified that any transmission, distribution, or other use of this information is strictly prohibited. The confidentiality attached to this email is not waived, lost or destroyed by reasons of mistaken delivery to you. If you have received this email in error please contact the sender immediately and delete the material from your email system. QLD Bulk Water Supply Authority ABN75450239876 (Trading as Seqwater).

TECHNICAL SITUATION REPORT

TSR Number	W46	Date of TSR release	11.1.2011	Time of TSR release	11pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Gradual reduction of releases. 										
Strategy	<ul style="list-style-type: none"> Peak inflows into Wivenhoe were in excess of 12000 cumecs. Maintain controlled releases. Keep sluices closed at Somerset Dam to store more water however will affect upstream areas. 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected well over 1,500,000ML</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected well over 1,500,000ML	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
Storage levels:	Above FSL										
Inflows:	Inflows expected well over 1,500,000ML										
Rainfall:	Continuing										
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Brisbane River:	Impact as below.										

Somerset/Wivenhoe

Our strategy revolves ensuring dam security and is around trying to prevent initiation of the first fuse plug at EL 75.6m. If this happens we will get a rapid increase of about 2,000m³/s in outflow from the dam in addition to the gate release which could be as high as 10,000m³/s at the time.

Sluices have been closed at Somerset and this will result in high upstream water levels affecting Kilcoy. Somerset is at 104.90m holding 705,730ML and 185.8%.

Somerset should peak at around 105.2m (1974 peak level was 106.5m).

At 2300 Wivenhoe Dam was 74.92m AHD holding 2,219,000ML and 190.4%.

The FOC has begun an appropriate closure sequence to reduce releases. Releases will be reduced throughout the night to track dropping levels. Another reduction will commence around 23:30 to 6,100cumecs. Further reductions will occur over night.

Assuming no further rain, the dam peaked around 74.97m AHD which was around 600mm below the first fuse plug initiation level.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes. The FOC is also maintaining close contact with warning agencies and local councils.

It should be noted that the flow in the lower Brisbane R in 1974 was about 9,500m³/s

North Pine Dam:

Five gates are open and continuing to drop. Releases may still continue until Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

Leslie Harrison Dam:

Gate releases are underway due to rainfall and inflows.

Hinze Dam:

A release of around 8,000 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	12.1.2011	Time	AM	or Event	
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Litsupport Brisbane

From: Dan Spiller
Sent: Tuesday, 11 January 2011 11:43 PM
To: 'stephen.robertson'; 'Ken Smith (ken.smith)'; 'john.bradley'; 'Lance McCallum (lance.mccallum)'; 'Tim Watts (tim.watts)'; 'Geoff Stead (geoff.stead)'; 'lauren.sims'; 'Martin.PeterJ'; 'Dunn.KerryG';
Cc: Barry Dennien; 'pborrows'; 'Rob Drury'; SEQWGM Media; SEQWGM Emergency; 'bob.reilly'; 'Damien Brown (damien.brown)'; 'Madgwick.DarrenT';
Subject: Updated Wivenhoe Dam releases
Attachments: image001.jpg; image002.png; Technical Situation Report W46.docx

All,

Updated report attached.

At 2300, Wivenhoe Dam was at 74.92m AHD (190.4%) and holding.

The Flood Operations Centre has commenced a closure sequence. At 2330, releases will be reduced to 6,100 cubic metres per second.

The centre will continue to monitor rainfall and inflows and adjust as necessary.

With releases having peaked, the next report will be provided at 0500.

Regards,
Dan

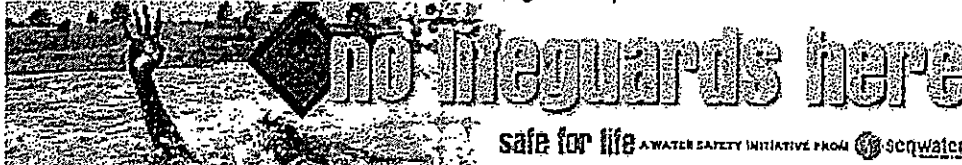
From: Rob Drury [mailto:rdrury];
Sent: Tuesday, January 11, 2011 11:21 PM
To: Rob Drury; Dan Spiller; Paul Bird; Stan Stevenson; Peter Borrows; Peter.Allen;
Cc: David Roberts; Duty Seq
Subject: RE: Technical Report

Attached report W46.

Next report will be 5am Wednesday 12.1.2011.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast
flowing water is FATAL

rethink it.

Ph [REDACTED] | Fax [REDACTED] | M [REDACTED] | E rdruv@seqwater.com.au
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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TECHNICAL SITUATION REPORT

TSR Number	W48	Date of TSR release	12.1.2011	Time of TSR release	8am
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Gradual reduction of releases. 										
Strategy	<ul style="list-style-type: none"> Peak inflows into Wivenhoe were in excess of 12000 cumecs. Develop and implement closing plan for next 7 or so days 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected well over 2,000,000ML.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected well over 2,000,000ML.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
Storage levels:	Above FSL										
Inflows:	Inflows expected well over 2,000,000ML.										
Rainfall:	Continuing										
Lockyer/Bremer:	Monitoring their inflows										
Brisbane River:	Impact as below.										

Rainfall

No significant rain has fallen over the catchments in the past twelve hours. Less than 10 to 15 millimeters of rainfall is expected over the next 24-48 hours.

Somerset/Wivenhoe

Somerset Dam has peaked at 105.11 m AHD at 08:00 on 12 January 2011 and the dam is discharging 1,230 m³/s over the spillway. Sluice gates will be utilised to assist the draining of the flood storage compartment commencing later Wednesday. At 8am Somerset was 105.11m and 720,400ML at 189.7%.

Wivenhoe Dam peaked at 74.97 m AHD at 19:00 on 11 January 2011 with a corresponding discharge of 7,450 m³/s. Wivenhoe Dam was 74.75 m AHD at 2,192,000ML and 188.1% at 07:30 and generally falling slowly.

The releases from Wivenhoe Dam have been temporarily reduced to 2,500 m³/s at 07:30 to allow the peak of Lockyer Creek to enter the Brisbane River. After the downstream peak in the lower Brisbane River has passed, releases will be increased to maximum of 3,500 m³/s. This release will then be maintained to drain the flood storage component within the required 7 days.

The combined flood event volume in Somerset and Wivenhoe Dams is estimated to be in excess of 2 million megalitres.

North Pine

At 07:00 North Pine Dam was 39.78 mAHD falling and releasing about 105 m³/s. North Pine has

peaked at 41.11 mAHD at 14:00 on 11 January 1974 with peak release of 2,800 m³/s. The event has a volume of around 200,000 ML. It is expected that gates will be close later Wednesday or early Thursday

Strategy

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes. The FOC is maintaining close contact with warning agencies and local councils.

Leslie Harrison Dam:

Gate releases are underway due to rainfall and inflows.

Hinze Dam:

A release of around 8,000 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	12.1.2011	Time	11am	or Event	
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From: Dan Spiller <Daniel.Spiller@[REDACTED]>
Sent: Tuesday, January 11, 2011 11:49 PM
To: 'ceo@[REDACTED]>
Cc: Barry Dennien <Barry.Dennien@[REDACTED]>
'john.bradley@[REDACTED]>
Subject: Dam release update

Colin,

A quick update on dam operations. I understand that the Flood Operations Centre has been speaking to your staff directly.

At 2300, Wivenhoe Dam was at 74.92m AHD (190.4%) and holding. Somerset is at 105.2m AHD (185.8%).

The Flood Operations Centre has commenced a closure sequence. At 2330, releases will be reduced to 6,100 cubic metres per second.

The centre will continue to monitor rainfall and inflows and adjust as necessary.

Please call on mobile if you have any queries.

Regards,
Dan

Cindy Mulsey

From: Barry Dennien
Sent: Monday, 10 January 2011 4:11 PM
To: Peter Baddiley (p.baddiley@seq.com.au)
Cc: Dan Spiller
Subject: Tech report
Attachments: Technical Situation Report W37.docx

Categories: T8

Barry Dennien
Chief Executive Officer
SEQ Water Grid Manager

Phone: [REDACTED] | **Fax:** [REDACTED] | **Mobile:** [REDACTED]

Email: barry.dennien@seq.com.au

Visit: Level 15, 53 Albert Street, Brisbane

Post: PO Box 16205, City East Qld 4002

ABN: 14783 317 630

Please consider the environment before printing this email. It takes 10 litres of water to make one sheet of A4 paper.

TECHNICAL SITUATION REPORT

TSR Number	W37	Date of TSR release	10.1.2011	Time of TSR release	3pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue increasing releases to discharge flood waters but keep impact downstream to minimum. 										
Strategy	<ul style="list-style-type: none"> All bridges are now inundated . Ramp up to 2800cumecs which will give a flow in the lower Brisbane River of around 4,000cumecs 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected around 1,500,000ML which is close to 1974 event.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
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Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.										
Rainfall:	Continuing										
Lockyer/Bremer:	Monitoring their inflows										
Brisbane River:	Impact as below.										

Rainfall

Significant rainfall has fallen in the Wivenhoe Dam catchment over the last 3 hours, with falls exceeding 100mm. This rainfall will significantly increase inflows into the dam. A severe weather warning remains current for heavy rainfall in the dam catchment areas. The QPF issued by BOM at 10:00 estimates rainfalls for the 24 hours to 10:00 Tuesday as North Pine Dam (75mm to 150mm); Wivenhoe/Somerset Dam Catchments (50mm – 100mm). Potentially significant rain moving towards the dam catchments is currently evident on the BOM radar.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level is 103.41m AHD and rising. Peak inflow to the dam is estimated to be about 4,200 m³/s. Five sluice gates are open releasing about 1,100m³/s (95,000ML/day) into Wivenhoe Dam. At this stage the dam lake level will reach about 103.5m AHD on Monday afternoon. Areas around Kilcoy will continue to be adversely affected.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

The dam level is 72.41m AHD and rising quickly. The rainfall experienced over the last 2 to 3 hours will result in significant further inflows into the dam and releases from the dam will need to be increased in accordance with Flood Mitigation procedures and to ensure that a fuse plug is not initiated. The initiation of a fuse plug will result in a rapid uncontrolled outflow from the dam of 2,000m³/s being added to the gate release outflow. Outflows into the Brisbane River from both Lockyer Creek and the Bremer River are also increasing.

Five radial gates are currently open at the dam releasing about 2,000m³/s into the Brisbane River and

this will need to be increased steadily to an outflow of 2,800m³/s over the next 9 hours (commencing at 1500). At this stage, the dam will reach about 73.8m AHD during Tuesday morning.

The objective for dam operations is currently to minimise the impact of urban flooding in areas downstream of the dam and to keep river flows in the lower Brisbane River below 4,000m³/s if possible. This is significantly less than the current estimated combined pre-dam peak inflow of 12,000m³/s. If further rainfall occurs, dam releases may need to be increased further and this may result in river flows in the lower Brisbane River approaching or exceeding 5,000m³/s.

Impacts downstream of Wivenhoe Dam

The projected Wivenhoe Dam releases combined with Lockyer Creek flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Sunday 16 January in varying degrees.

Water levels in the lower Brisbane River will be impacted by the combined flows of Lockyer Creek, Bremer River, local runoff and releases from Wivenhoe Dam.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

Litsupport Brisbane

From: Dan Spiller
Sent: Tuesday, 11 January 2011 10:48 PM
To: Bradley John
Cc: Barry Dennien
Subject: RE: Wivenhow Dam update

It warrants a discussion. On phone when suits you.

From: Bradley John [John.Bradley@...]
Sent: Tuesday, 11 January 2011 10:44 PM
To: Dan Spiller
Cc: Barry Dennien
Subject: Re: Wivenhow Dam update

Thanks Dan

As an aside, I think we need to try to maintain the protocol on these through these most serious of events - I notice itreps lately have had no comment from bom/councils or just "has been advised".

Wouldn't bear much scrutiny in an ex post review, noting recipients (Min, DsG, etc)

Happy to take your and barry's advice as to how this can be achieved.

John B

From: Dan Spiller [mailto:Daniel.Spiller@...]
Sent: Tuesday, January 11, 2011 10:18 PM
To: stephen.robertson@... <stephen.robertson@...>; Lance McCallum (lance.mccallum@...) <lance.mccallum@...>; Tim Watts (tim.watts@...) <tim.watts@...>; Geoff Stead (geoff.stead@...) <geoff.stead@...>; lauren.sims@... <lauren.sims@...>; Bradley John; Best Debbie; Martin.PeterJ@... <Martin.PeterJ@...>; Dunn.KerryG@... <Dunn.KerryG@...>; Ken Smith (ken.smith@...) <ken.smith@...>; Rob Drury (rdrury@...) <rdrury@...>; Dennien Barry <pborrow@...>; Media <...>; SEQWGM Emergency <SEQWGM.Emergency@...>; Madgwick.DarrenT@... <Madgwick.DarrenT@...>
Subject: Wivenhow Dam update

All,

Attached is the most recent technical situation report.

Note that Wivenhoe Dam levels have stabilised and are now falling slowly. Without further rainfall, release rates will be reduced progressively. The first reduction will be to 7,100 cubic metres per second.

Regards,
Daniel Spiller

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3 sheets of A4 paper = 1 litre of water
+-----+

TECHNICAL SITUATION REPORT

TSR Number	W46	Date of TSR release	11.1.2011	Time of TSR release	11pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Gradual reduction of releases.
	<ul style="list-style-type: none"> Peak inflows into Wivenhoe were in excess of 12000 cumecs. Maintain controlled releases. Keep sluices closed at Somerset Dam to store more water however will affect upstream areas.
Strategy	
Key considerations	Storage levels: Above FSL
	Inflows: Inflows expected well over 1,500,000ML.
	Rainfall: Continuing
	Lockyer/Bremer: Monitoring their inflows
	Brisbane River: Impact as below.

Somerset/Wivenhoe

Our strategy revolves ensuring dam security and is around trying to prevent initiation of the first fuse plug at EL 75.6m. If this happens we will get a rapid increase of about 2,000m³/s in outflow from the dam in addition to the gate release which could be as high as 10,000m³/s at the time.

Sluices have been closed at Somerset and this will result in high upstream water levels affecting Kilcoy. Somerset is at 104.90m holding 705,730ML and 185.8%.

Somerset should peak at around 105.2m (1974 peak level was 106.5m).

At 2300 Wivenhoe Dam was 74.92m AHD holding 2,219,000ML and 190.4%.

The FOC has begun an appropriate closure sequence to reduce releases. Releases will be reduced throughout the night to track dropping levels. Another reduction will commence around 23:30 to 6,100cumecs. Further reductions will occur over night.

Assuming no further rain, the dam peaked around 74.97m AHD which was around 600mm below the first fuse plug initiation level.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes. The FOC is also maintaining close contact with warning agencies and local councils.

It should be noted that the flow in the lower Brisbane R in 1974 was about 9,500m³/s

North Pine Dam:

Five gates are open and continuing to drop. Releases may still continue until Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

Leslie Harrison Dam:

Gate releases are underway due to rainfall and inflows.

Hinze Dam:

A release of around 8,000 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	12.1.2011	Time	AM	for Event	
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Litsupport Brisbane

From: Rob Drury [rdrury [REDACTED]]
Sent: Tuesday, 11 January 2011 11:21 PM
To: Rob Drury; Dan Spiller; Paul Bird; Stan Stevenson; Peter Borrows; Peter.Allen([REDACTED])
Cc: David Roberts; Duty Seq
Subject: RE: Technical Report
Attachments: Technical Situation Report W46.docx

Attached report W46.

Next report will be 5am Wednesday 12.1.2011.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast
flowing water is FATAL

rethink it.



Ph [REDACTED] | Fax [REDACTED] | M [REDACTED] | E rdrury@seqwater.com.au
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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TECHNICAL SITUATION REPORT

TSR Number	W46	Date of TSR release	11.1.2011	Time of TSR release	11pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Gradual reduction of releases. 										
Strategy	<ul style="list-style-type: none"> Peak inflows into Wivenhoe were in excess of 12000 cumecs. Maintain controlled releases. Keep sluices closed at Somerset Dam to store more water however will affect upstream areas. 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected well over 1,500,000ML</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected well over 1,500,000ML	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
Storage levels:	Above FSL										
Inflows:	Inflows expected well over 1,500,000ML										
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Brisbane River:	Impact as below.										

Somerset/Wivenhoe

Our strategy revolves ensuring dam security and is around trying to prevent initiation of the first fuse plug at EL 75.6m. If this happens we will get a rapid increase of about 2,000m³/s in outflow from the dam in addition to the gate release which could be as high as 10,000m³/s at the time.

Sluices have been closed at Somerset and this will result in high upstream water levels affecting Kilcoy. Somerset is at 104.90m holding 705,730ML and 185.8%.

Somerset should peak at around 105.2m (1974 peak level was 106.5m).

At 2300 Wivenhoe Dam was 74.92m AHD holding 2,219,000ML and 190.4%.

The FOC has begun an appropriate closure sequence to reduce releases. Releases will be reduced throughout the night to track dropping levels. Another reduction will commence around 23:30 to 6,100cumecs. Further reductions will occur over night.

Assuming no further rain, the dam peaked around 74.97m AHD which was around 600mm below the first fuse plug initiation level.

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes. The FOC is also maintaining close contact with warning agencies and local councils.

It should be noted that the flow in the lower Brisbane R in 1974 was about 9,500m³/s

North Pine Dam:

Five gates are open and continuing to drop. Releases may still continue until Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

Leslie Harrison Dam:

Gate releases are underway due to rainfall and inflows.

Hinze Dam:

A release of around 8,000 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/roin forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld@ [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	12.1.2011	Time	AM	or Event	
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Litsupport Brisbane

From: Dan Spiller
Sent: Tuesday, 11 January 2011 11:43 PM
To: 'stephen.robertson'; 'Ken Smith (ken.smith)'; 'john.bradley'; 'Lance McCallum (lance.mccallum)'; 'Tim Watts (tim.watts)'; 'Geoff Stead (geoff.stead)'; 'lauren.sims'; 'Martin.Peter'; 'Dunn.KerryG'
Cc: Barry Dennien; 'pborrows'; 'Rob Drury'; SEQWGM Media; SEQWGM Emergency; 'bob.reilly'; 'Damien Brown (damien.brown)'; 'Madgwick.DarrenT'
Subject: Updated Wivenhoe Dam releases
Attachments: image001.jpg; image002.png; Technical Situation Report W46.docx

All,

Updated report attached.

At 2300, Wivenhoe Dam was at 74.92m AHD (190.4%) and holding.

The Flood Operations Centre has commenced a closure sequence. At 2330, releases will be reduced to 6,100 cubic metres per second.

The centre will continue to monitor rainfall and inflows and adjust as necessary.

With releases having peaked, the next report will be provided at 0500.

Regards,
Dan

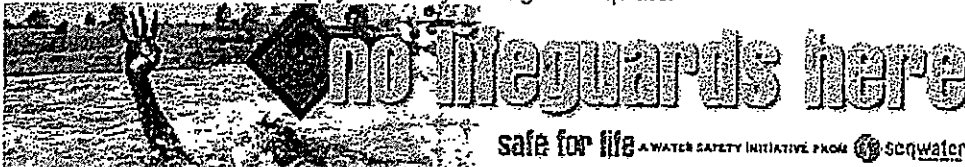
From: Rob Drury [mailto:rdrury]
Sent: Tuesday, January 11, 2011 11:21 PM
To: Rob Drury; Dan Spiller; Paul Bird; Stan Stevenson; Peter Borrows; Peter.Allen
Cc: David Roberts; Duty Seq
Subject: RE: Technical Report

Attached report W46.

Next report will be 5am Wednesday 12.1.2011.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast flowing water is FATAL

rethink it

Ph [REDACTED] E rdnrv [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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TECHNICAL SITUATION REPORT

TSR Number	W48	Date of TSR release	12.1.2011	Time of TSR release	8am
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Gradual reduction of releases. 										
Strategy	<ul style="list-style-type: none"> Peak inflows into Wivenhoe were in excess of 12000 cumecs. Develop and implement closing plan for next 7 or so days 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected well over 2,000,000ML.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected well over 2,000,000ML.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
Storage levels:	Above FSL										
Inflows:	Inflows expected well over 2,000,000ML.										
Rainfall:	Continuing										
Lockyer/Bremer:	Monitoring their inflows										
Brisbane River:	Impact as below.										

Rainfall

No significant rain has fallen over the catchments in the past twelve hours. Less than 10 to 15 millimeters of rainfall is expected over the next 24-48 hours.

Somerset/Wivenhoe

Somerset Dam has peaked at 105.11 m AHD at 08:00 on 12 January 2011 and the dam is discharging 1,230 m³/s over the spillway. Sluice gates will be utilised to assist the draining of the flood storage compartment commencing later Wednesday. At 8am Somerset was 105.11m and 720,400ML at 189.7%.

Wivenhoe Dam peaked at 74.97 m AHD at 19:00 on 11 January 2011 with a corresponding discharge of 7,450 m³/s. Wivenhoe Dam was 74.75 m AHD at 2,192,000ML and 188.1% at 07:30 and generally falling slowly.

The releases from Wivenhoe Dam have been temporarily reduced to 2,500 m³/s at 07:30 to allow the peak of Lockyer Creek to enter the Brisbane River. After the downstream peak in the lower Brisbane River has passed, releases will be increased to maximum of 3,500 m³/s. This release will then be maintained to drain the flood storage component within the required 7 days.

The combined flood event volume in Somerset and Wivenhoe Dams is estimated to be in excess of 2 million megalitres.

North Pine

At 07:00 North Pine Dam was 39.78 m AHD falling and releasing about 105 m³/s. North Pine has

peaked at 41.11 mAHd at 14:00 on 11 January 1974 with peak release of 2,800 m3/s. The event has a volume of around 200,000 ML. It is expected that gates will be close later Wednesday or early Thursday

Strategy

The Flood Operations Centre is continuing to monitor rainfalls and water levels through the Brisbane and Pine catchments and reviewing operating strategy every 30 minutes. The FOC is maintaining close contact with warning agencies and local councils.

Leslie Harrison Dam:

Gate releases are underway due to rainfall and inflows.

Hinze Dam:

A release of around 8,000 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current strategy.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	12.1.2011	Time	11am	or Event	
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From: Dan Spiller <Daniel.Spiller@[REDACTED]>
Sent: Tuesday, January 11, 2011 11:49 PM
To: 'ceo' [REDACTED]
Cc: Barry Dennien <Barry.Dennien@[REDACTED]>
'john.bradley' [REDACTED]
Subject: Dam release update

Colin,

A quick update on dam operations. I understand that the Flood Operations Centre has been speaking to your staff directly.

At 2300, Wivenhoe Dam was at 74.92m AHD (190.4%) and holding. Somerset is at 105.2m AHD (185.8%).

The Flood Operations Centre has commenced a closure sequence. At 2330, releases will be reduced to 6,100 cubic metres per second.

The centre will continue to monitor rainfall and inflows and adjust as necessary.

Please call on mobile if you have any queries.

Regards,
Dan

Cindy Mulsey

From: Barry Dennien
Sent: Monday, 10 January 2011 4:11 PM
To: Peter Baddiley (p.baddiley [REDACTED])
Cc: Dan Spiller
Subject: Tech report
Attachments: Technical Situation Report W37.docx

Categories: T8

Barry Dennien
Chief Executive Officer
SEQ Water Grid Manager

Phone: [REDACTED] | **Fax:** [REDACTED] | **Mobile:** [REDACTED]

Email: barry.dennien@seqwater.com.au

Visit: Level 15, 53 Albert Street, Brisbane

Post: PO Box 16205, City East Qld 4002

ABN: 14783 317 630

Please consider the environment before printing this email. It takes 10 litres of water to make one sheet of A4 paper.

TECHNICAL SITUATION REPORT

TSR Number	W37	Date of TSR release	10.1.2011	Time of TSR release	3pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue increasing releases to discharge flood waters but keep impact downstream to minimum. 										
Strategy	<ul style="list-style-type: none"> All bridges are now inundated . Ramp up to 2800cumecs which will give a flow in the lower Brisbane River of around 4,000cumecs 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected around 1,500,000ML which is close to 1974 event.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
Storage levels:	Above FSL										
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Rainfall:	Continuing										
Lockyer/Bremer:	Monitoring their inflows										
Brisbane River:	Impact as below.										

Rainfall

Significant rainfall has fallen in the Wivenhoe Dam catchment over the last 3 hours, with falls exceeding 100mm. This rainfall will significantly increase inflows into the dam. A severe weather warning remains current for heavy rainfall in the dam catchment areas. The QPF issued by BOM at 10:00 estimates rainfalls for the 24 hours to 10:00 Tuesday as North Pine Dam (75mm to 150mm); Wivenhoe/Somerset Dam Catchments (50mm – 100mm). Potentially significant rain moving towards the dam catchments is currently evident on the BOM radar.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level is 103.41m AHD and rising. Peak inflow to the dam is estimated to be about 4,200 m³/s. Five sluice gates are open releasing about 1,100m³/s (95,000ML/day) into Wivenhoe Dam. At this stage the dam lake level will reach about 103.5m AHD on Monday afternoon. Areas around Kilcoy will continue to be adversely affected.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

The dam level is 72.41m AHD and rising quickly. The rainfall experienced over the last 2 to 3 hours will result in significant further inflows into the dam and releases from the dam will need to be increased in accordance with Flood Mitigation procedures and to ensure that a fuse plug is not initiated. The initiation of a fuse plug will result in a rapid uncontrolled outflow from the dam of 2,000m³/s being added to the gate release outflow. Outflows into the Brisbane River from both Lockyer Creek and the Bremer River are also increasing.

Five radial gates are currently open at the dam releasing about 2,000m³/s into the Brisbane River and

this will need to be increased steadily to an outflow of 2,800m³/s over the next 9 hours (commencing at 1500). At this stage, the dam will reach about 73.8m AHD during Tuesday morning.

The objective for dam operations is currently to minimise the impact of urban flooding in areas downstream of the dam and to keep river flows in the lower Brisbane River below 4,000m³/s if possible. This is significantly less than the current estimated combined pre-dam peak inflow of 12,000m³/s. If further rainfall occurs, dam releases may need to be increased further and this may result in river flows in the lower Brisbane River approaching or exceeding 5,000m³/s.

Impacts downstream of Wivenhoe Dam

The projected Wivenhoe Dam releases combined with Lockyer Creek flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Sunday 16 January in varying degrees.

Water levels in the lower Brisbane River will be impacted by the combined flows of Lockyer Creek, Bremer River, local runoff and releases from Wivenhoe Dam.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	11.1.2011			Change in strategy
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Gina O'Driscoll

From: Rob Drury [rdrury [REDACTED]]
Sent: Monday, 10 January 2011 4:24 PM
To: Barry Dennien; Dan Spiller
Cc: Peter Borrows
Subject: FW: FLDWARN for Lower Brisbane and Bremer Rs [SEC=UNCLASSIFIED]

Attached is the BoM warning re levels that they develop in discussion with our FOC re releases and models and then they discuss with BCC.

This is what they then provide to everyone.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater

Ph [REDACTED] | Fax [REDACTED] | M [REDACTED] | E rdrury [REDACTED] Wivenhoe Dam,
Brisbane Valley Highway, via Fernvale Q4306 Australia PO Box 37, Fernvale QLD 4306 Website:]
www.seqwater.com.au

-----Original Message-----

From: weather
Sent: Monday, 10 January 2011 4:17 PM
To: DG-Ops Dam Levels; Murray Dunstan; Craig Duncan; Jayam Tennakoon; David Roberts; Jeff Lyddon; Glenn Patterson
Subject: FW: FLDWARN for Lower Brisbane and Bremer Rs [SEC=UNCLASSIFIED]

From: Aifs Operational Manager[SMTP:AIFSQLD [REDACTED]]
Sent: Monday, January 10, 2011 4:16:39 PM
To: weather
Subject: BOM: FLDWARN for Lower Brisbane and Bremer Rs [SEC=UNCLASSIFIED]
Auto forwarded by a Rule

TO::BOM615

IDQ20805

Australian Government Bureau of Meteorology
Queensland

PRIORITY

FLOOD WARNING FOR THE LOCKYER, BREMER, WARRILL AND BRISBANE RIVER BELOW WIVENHOE INCLUDING BRISBANE CITY

Issued at 4:16 PM on Monday the 10th of January 2011
by the Bureau of Meteorology, Brisbane.

Stream level rises causing moderate to major flooding are being recorded in Lockyer Creek, Warrill Creek and along the Bremer River. Major flood levels are likely at Ipswich during Tuesday.

Wivenhoe dam is providing significant mitigation of upper Brisbane floods. River flows from the Bremer and Lockyer catchments combined with releases from Wivenhoe dam are expected to increase levels in Brisbane overnight and through Tuesday.

At the Brisbane City Gauge, a river levels of about 2.1 metres is expected with the afternoon high tide on Tuesday and about 3 metres is expected with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

LOCKYER CREEK:

Further rainfall during Monday has led to renewed rises in the Lockyer Creek catchment. Rainfall is forecast to continue this evening and a return to moderate to major flood levels is expected overnight and during Tuesday. Major flood levels are expected to continue at Lyons Bridge with rises above 15 metres likely during Tuesday.

BREMER RIVER:

Rainfall during Monday will lead to renewed rises and a return to moderate flood levels along the Bremer River to Walloon. Levels over 5 metres are expected at Rosewood overnight.

The Bremer River at Ipswich is expected to reach about 12.7 metres on Tuesday afternoon. Higher levels are possible.

WARRILL CREEK

Further rainfall during Monday will lead to increasing river levels along Warrill Creek with levels expected to reach above 6 metres at Amberley overnight.

MIDDLE AND LOWER BRISBANE:

SEQwater advises releases from Wivenhoe Dam will increase during Monday. Moderate flooding is expected at Savages Crossing and at Mt Crosby Weir overnight tonight and during Tuesday.

The Brisbane River at the City Gauge (lower end of Edward Street and at Thornton Street) is expected to reach about 2.1 metres with the afternoon high tide on Tuesday and reach about 3 metres with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Predicted River Heights/Flows:

Ipswich: Reach about 12.7 metres (major) during Tuesday afternoon. Quicker rises and higher levels are possible depending on further rainfall tonight.

Moggill: Reach about 12 metres (minor) during Tuesday afternoon.

Jindalee: Reach about 7 metres (minor) overnight Tuesday.

Brisbane: Reach about 2.1 metres with the afternoon high tide on Tuesday.

Reach about 3 metres with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Further rises are possible at all four locations depending on further rain.

Next Issue:

The next warning will be issued at about 9pm Monday.

Latest River Heights:

Lockyer Ck at Gatton #	10.36m steady	03:04 PM MON 10/01/11
Laidley Ck at Laidley	6m rising	02:45 PM MON 10/01/11
Laidley Ck at Showground Weir #	6.98m rising	03:07 PM MON 10/01/11
Laidley Ck at Warrego Hwy *	5.43m falling	01:00 PM MON 10/01/11
Lockyer Ck at Glenore Grove #	11.36m falling	03:05 PM MON 10/01/11
Lockyer Ck at Lyons Br #	14.79m rising	03:02 PM MON 10/01/11
Lockyer Ck at Rifle Range Rd *	13.4m rising	08:20 AM MON 10/01/11
Brisbane R at Lowood Pump Stn #	14.13m falling	03:07 PM MON 10/01/11
Brisbane R at Savages Crossing #	14.15m rising	03:09 PM MON 10/01/11
Brisbane R at Burtons Br #	10.88m rising	03:05 PM MON 10/01/11
Brisbane R at Kholo Br #	6.23m rising	03:06 PM MON 10/01/11
Brisbane R at Mt Crosby #	14.26m rising	03:07 PM MON 10/01/11
Brisbane R at Colleges Crossing #	11.96m rising	03:09 PM MON 10/01/11
Bremer R at Spicers Br #	5.07m rising	03:09 PM MON 10/01/11
Bremer R at Rosewood #	4.94m rising	03:02 PM MON 10/01/11
Bremer R at Five Mile Br Walloon #	5.12m falling	03:09 PM MON 10/01/11
Warrill Ck at Harrisville #	3.82m rising	03:05 PM MON 10/01/11
Warrill Ck at Amberley DNR *	5.34m rising	08:10 AM MON 10/01/11
Bremer R at Ipswich #	6.6m rising	02:40 PM MON 10/01/11
Brisbane R at Moggill #	5.52m rising	02:59 PM MON 10/01/11
Brisbane R at Jindalee Br #	3.7m rising	02:50 PM MON 10/01/11
Brisbane R at City Gauge #	1.36m falling	03:09 PM MON 10/01/11

*automatic station.

Warnings and River Height Bulletins are available at
<http://www.bom.gov.au/qld/flood/> . Flood Warnings are also available on
telephone 1300 659 219 at a low call cost of 27.5 cents, more from mobile,
public and satellite phones.

-----Safe Stamp-----

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email in error please contact the sender immediately and delete the material from your email system.
QLD Bulk Water Supply Authority ABN75450239876 (Trading as Seqwater).

Cindy Hulsey

From: Peter Baddiley [P.Baddiley [REDACTED]]
Sent: Monday, 10 January 2011 4:33 PM
To: Barry Dennien
Cc: Dan Spiller; 'flood.qld' [REDACTED]
Subject: RE: Tech report [SEC=UNCLASSIFIED]
Attachments: Technical Situation Report W37_BOM.docx

Categories: T8

BOM additions as at 4:30pm Monday.

Peter Baddiley
Regional Hydrology Manager
Climate & Water Division
Bureau of Meteorology
Level 21, 69 Ann Street
PO Box 413, BRISBANE, QLD, AUSTRALIA 4001
Phone: [REDACTED] Fax: [REDACTED]
EMAIL: p.baddiley@bom.gov.au
EMAIL for flood matters: flood.qld@bom.gov.au
WWW : www.bom.gov.au

From: Barry Dennien [mailto:Barry.Dennien@seqwater.qld.gov.au]
Sent: Monday, 10 January 2011 4:11 PM
To: Peter Baddiley
Cc: Dan Spiller
Subject: Tech report

Barry Dennien
Chief Executive Officer
SEQ Water Grid Manager
Phone: [REDACTED]
Email: barry.dennien@seqwater.qld.gov.au
Visit: Level 15, 53 Albert Street, Brisbane
Post: PO Box 16205, City East Qld 4002
ABN: 14783 317 630

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TECHNICAL SITUATION REPORT

TSR Number	W37	Date of TSR release	10.1.2011	Time of TSR release	3pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue increasing releases to discharge flood waters but keep impact downstream to minimum. 										
Strategy	<ul style="list-style-type: none"> All bridges are now inundated . Ramp up to 2800cumecs which will give a flow in the lower Brisbane River of around 4,000cumecs 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected around 1,500,000ML which is close to 1974 event.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
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Rainfall

Significant rainfall has fallen in the Wivenhoe Dam catchment over the last 3 hours, with falls exceeding 100mm. This rainfall will significantly increase inflows into the dam. A severe weather warning remains current for heavy rainfall in the dam catchment areas. The QPF issued by BOM at 10:00 estimates rainfalls for the 24 hours to 10:00 Tuesday as North Pine Dam (75mm to 150mm); Wivenhoe/Somerset Dam Catchments (50mm – 100mm). Potentially significant rain moving towards the dam catchments is currently evident on the BOM radar.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level is 103.41m AHD and rising. Peak inflow to the dam is estimated to be about 4,200 m³/s. Five sluice gates are open releasing about 1,100m³/s (95,000ML/day) into Wivenhoe Dam. At this stage the dam lake level will reach about 103.5m AHD on Monday afternoon. Areas around Kilcoy will continue to be adversely affected.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

The dam level is 72.41m AHD and rising quickly. The rainfall experienced over the last 2 to 3 hours will result in significant further inflows into the dam and releases from the dam will need to be increased in accordance with Flood Mitigation procedures and to ensure that a fuse plug is not initiated. The initiation of a fuse plug will result in a rapid uncontrolled outflow from the dam of 2,000m³/s being added to the gate release outflow. Outflows into the Brisbane River from both Lockyer Creek and the Bremer River are also increasing.

Five radial gates are currently open at the dam releasing about 2,000m³/s into the Brisbane River and

this will need to be increased steadily to an outflow of 2,800m³/s over the next 9 hours (commencing at 1500). At this stage, the dam will reach about 73.8m AHD during Tuesday morning.

The objective for dam operations is currently to minimise the impact of urban flooding in areas downstream of the dam and to keep river flows in the lower Brisbane River below 4,000m³/s if possible. This is significantly less than the current estimated combined pre-dam peak inflow of 12,000m³/s. If further rainfall occurs, dam releases may need to be increased further and this may result in river flows in the lower Brisbane River approaching or exceeding 5,000m³/s.

Impacts downstream of Wivenhoe Dam

The projected Wivenhoe Dam releases combined with Lockyer Creek flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Sunday 16 January in varying degrees.

Water levels in the lower Brisbane River will be impacted by the combined flows of Lockyer Creek, Bremer River, local runoff and releases from Wivenhoe Dam.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

Refer to details in latest Brisbane River flood warning issued at 4:16pm Monday 10 Jan. Warning is to be updated at 9pm tonight.

Ipswich: Reach about 12.7 metres (major) during Tuesday afternoon. Quicker rises and higher levels are possible depending on further rainfall tonight.

Moggill: Reach about 12 metres (minor) during Tuesday afternoon.

Jindalee: Reach about 7 metres (minor) overnight Tuesday.

Brisbane: Reach about 2.1 metres with the afternoon high tide on Tuesday.

Reach about 3 metres with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Further rises are possible at all four locations depending on further rain.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	Supervising Hydrologist, Flood Warning Centre
BoM Technical Officer contact details	flood.qld [REDACTED] / [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	[REDACTED]

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due		11.1.2011				Change in strategy
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From: Barry Dennien </O=SOUTH EAST QUEENSLAND WATER GRID
MANAGER/OU=EXCHANGE ADMINISTRATIVE GROUP
(FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BARRY.DENNIEN>
Sent: Monday, January 10, 2011 4:37 PM
To: stephen.robertson [REDACTED]; ken.smith [REDACTED]
Lance McCallum (lance.mccallum [REDACTED]);
tim.watts [REDACTED]; geoff.stead [REDACTED];
lauren.sims [REDACTED]; Martin.PeterJ [REDACTED];
Dunn.KerryG [REDACTED]; debbie.best [REDACTED]
Cc: pbird [REDACTED]; SEQWGM Media <media [REDACTED]>;
damien.brown [REDACTED]; Bob.Reilly [REDACTED];
Madgwick.DarrenT [REDACTED]; sstevenson [REDACTED] Dan
Spiller <Daniel.Spiller [REDACTED]>; Scott Denner
<Scott.Denner [REDACTED]>
Subject: FW: FLDWARN for Lower Brisbane and Bremer Rs
[SEC=UNCLASSIFIED]

Folks

For information

Barry Dennien

TO::BOM615

IDQ20805

Australian Government Bureau of Meteorology
Queensland

PRIORITY

FLOOD WARNING FOR THE LOCKYER, BREMER, WARRILL AND BRISBANE RIVER BELOW WIVENHOE
INCLUDING BRISBANE CITY

Issued at 4:16 PM on Monday the 10th of January 2011
by the Bureau of Meteorology, Brisbane.

Stream level rises causing moderate to major flooding are being recorded in
Lockyer Creek, Warrill Creek and along the Bremer River. Major flood levels
are likely at Ipswich during Tuesday.

Wivenhoe dam is providing significant mitigation of upper Brisbane floods. River
flows from the Bremer and Lockyer catchments combined with releases from
Wivenhoe dam are expected to increase levels in Brisbane overnight and through
Tuesday.

At the Brisbane City Gauge, a river levels of about 2.1 metres is expected with
the afternoon high tide on Tuesday and about 3 metres is expected with the high
tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest
tide of the year at this location).

LOCKYER CREEK:

Further rainfall during Monday has led to renewed rises in the Lockyer Creek catchment. Rainfall is forecast to continue this evening and a return to moderate to major flood levels is expected overnight and during Tuesday. Major flood levels are expected to continue at Lyons Bridge with rises above 1.5 metres likely during Tuesday.

BREMER RIVER:

Rainfall during Monday will lead to renewed rises and a return to moderate flood levels along the Bremer River to Walloon. Levels over 5 metres are expected at Rosewood overnight.

The Bremer River at Ipswich is expected to reach about 12.7 metres on Tuesday afternoon. Higher levels are possible.

WARRILL CREEK

Further rainfall during Monday will lead to increasing river levels along Warrill Creek with levels expected to reach above 6 metres at Amberley overnight.

MIDDLE AND LOWER BRISBANE:

SEQwater advises releases from Wivenhoe Dam will increase during Monday. Moderate flooding is expected at Savages Crossing and at Mt Crosby Weir overnight tonight and during Tuesday.

The Brisbane River at the City Gauge (lower end of Edward Street and at Thomson Street) is expected to reach about 2.1 metres with the afternoon high tide on Tuesday and reach about 3 metres with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Predicted River Heights/Flows:

Ipswich: Reach about 12.7 metres (major) during Tuesday afternoon. Quicker rises and higher levels are possible depending on further rainfall tonight.

Moggill: Reach about 12 metres (minor) during Tuesday afternoon.

Jindalee: Reach about 7 metres (minor) overnight Tuesday.

Brisbane: Reach about 2.1 metres with the afternoon high tide on Tuesday.

Reach about 3 metres with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Further rises are possible at all four locations depending on further rain.

Next Issue:

The next warning will be issued at about 9pm Monday.

Latest River Heights:

Lockyer Ck at Gatton # 10.36m steady 03:04 PM MON 10/01/11
Laidley Ck at Laidley 6m rising 02:45 PM MON 10/01/11
Laidley Ck at Showground Weir # 6.98m rising 03:07 PM MON 10/01/11
Laidley Ck at Warrego Hwy * 5.43m falling 01:00 PM MON 10/01/11
Lockyer Ck at Glenore Grove # 11.36m falling 03:05 PM MON 10/01/11
Lockyer Ck at Lyons Br # 14.79m rising 03:02 PM MON 10/01/11
Lockyer Ck at Rifle Range Rd * 13.4m rising 08:20 AM MON 10/01/11
Brisbane R at Lowood Pump Stn # 14.13m falling 03:07 PM MON 10/01/11
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Brisbane R at Kholo Br # 6.23m rising 03:06 PM MON 10/01/11
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Bremer R at Spicers Br # 5.07m rising 03:09 PM MON 10/01/11
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Warrill Ck at Harrisville # 3.82m rising 03:05 PM MON 10/01/11
Warrill Ck at Amberley DNR * 5.34m rising 08:10 AM MON 10/01/11
Bremer R at Ipswich # 6.6m rising 02:40 PM MON 10/01/11
Brisbane R at Moggill # 5.52m rising 02:59 PM MON 10/01/11
Brisbane R at Jindalee Br # 3.7m rising 02:50 PM MON 10/01/11
Brisbane R at City Gauge # 1.36m falling 03:09 PM MON 10/01/11

*automatic station

Warnings and River Height Bulletins are available at

<http://www.bom.gov.au/qld/flood/>. Flood Warnings are also available on
telephone 1300 659 219 at a low call cost of 27.5 cents, more from mobile,
public and satellite phones.

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QLD Bulk Water Supply Authority ABN75450239876 (Trading as Seqwater).

Cindy Hulsey

From: Barry Dennien
Sent: Monday, 10 January 2011 6:45 PM
To: Madgwick.DarrenT [REDACTED] Dunn.KerryG [REDACTED]
Martin.Peter [REDACTED]
Cc: Dan Spiller; debbie.best [REDACTED]
Attachments: img-110173945-0001.jpg; Technical Situation Report W37.docx
Categories: T8

Folks

Please find latest Technical report on Wivenhoe releases, BOM forecast of river heights accounting for the releases and downstream flows, and BCC flood maps accounting for the releases and downstream flows. Brisbane forecasts of properties impacted.

Further updates will be issued tomorrow morning.

Australian Government Bureau of Meteorology Queensland

PRIORITY

FLOOD WARNING FOR THE LOCKYER, BREMER, WARRILL AND BRISBANE RIVER BELOW WIVENHOE INCLUDING BRISBANE CITY Issued at 4:16 PM on Monday the 10th of January 2011 by the Bureau of Meteorology, Brisbane.

Stream level rises causing moderate to major flooding are being recorded in Lockyer Creek, Warrill Creek and along the Bremer River. Major flood levels are likely at Ipswich during Tuesday.

Wivenhoe dam is providing significant mitigation of upper Brisbane floods. River flows from the Bremer and Lockyer catchments combined with releases from Wivenhoe dam are expected to increase levels in Brisbane overnight and through Tuesday.

At the Brisbane City Gauge, a river levels of about 2.1 metres is expected with the afternoon high tide on Tuesday and about 3 metres is expected with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

LOCKYER CREEK:

Further rainfall during Monday has led to renewed rises in the Lockyer Creek catchment. Rainfall is forecast to continue this evening and a return to moderate to major flood levels is expected overnight and during Tuesday. Major flood levels are expected to continue at Lyons Bridge with rises above 15 metres likely during Tuesday.

BREMER RIVER:

Rainfall during Monday will lead to renewed rises and a return to moderate flood levels along the Bremer River to Walloon. Levels over 5 metres are expected at Rosewood overnight.

The Bremer River at Ipswich is expected to reach about 12.7 metres on Tuesday afternoon. Higher levels are possible.

WARRILL CREEK

Further rainfall during Monday will lead to increasing river levels along Warrill Creek with levels expected to reach above 6 metres at Amberley overnight.

MIDDLE AND LOWER BRISBANE:

SEQwater advises releases from Wivenhoe Dam will increase during Monday.

Moderate flooding is expected at Savages Crossing and at Mt Crosby Weir overnight tonight and during Tuesday.

The Brisbane River at the City Gauge (lower end of Edward Street and at Thornton Street) is expected to reach about 2.1 metres with the afternoon high tide on Tuesday and reach about 3 metres with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Predicted River Heights/Flows:

Ipswich: Reach about 12.7 metres (major) during Tuesday afternoon. Quicker rises and higher levels are possible depending on further rainfall tonight.

Moggill: Reach about 12 metres (minor) during Tuesday afternoon.

Jindalee: Reach about 7 metres (minor) overnight Tuesday.

Brisbane: Reach about 2.1 metres with the afternoon high tide on Tuesday.

Reach about 3 metres with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Further rises are possible at all four locations depending on further rain.

Next Issue:

The next warning will be issued at about 9pm Monday.

Brisbane Properties affected

Number of properties affected:

- 455 properties (parcels of land) have been identified as experiencing flooding on next Wednesday (at least 221 of these are homes and businesses)
- 7, 731 properties may see some flooding either on the land or outside the property
- More than 400 streets will be affected by flooding in some way

Below is the list of suburbs where the 455 properties that will be affected are located. In brackets is the number of properties/parcels of land that will be affected in each suburb. This is based on the data and modelling we have done to date and we may see increases in these numbers once figures are revised.

- Rocklea (80)
- Albion (49)
- Milton (49)
- Auchenflower (40)
- Norman Park (26)
- Pinkenba (26)
- Oxley (19)
- New Farm (17)
- Kangaroo Point (16)
- Bulimba & Sherwood (14 each)
- Yeronga (10)

- Graceville (9)
- Newstead (8)
- Yeerongpilly (7)
- Bowen Hills (6)
- Indooroopilly, Windsor (5 each)
- Wacol, Brisbane City, Moggill, East Brisbane, Fortitude Valley (4 each)
- Chelmer, Hemmant, Tennyson (3 each)
- Fairfield, Fig Tree Pocket, Coorparoo, South Brisbane, Lytton, Murrarie (2 each)

7 Rapid Response Group teams will be working from both a map and a database to doorknock/letterbox drop a flyer to the 221 homes and businesses that are predicted as being likely to experience inundation. They will visually check using the map that none of the remaining parcels of land from the total 455 properties identified as experiencing flooding are actually homes or businesses also.

The locations where the 221 homes and businesses are located is Albion, Auchenflower, Brisbane City, Bowen Hills, Bulimba, Fortitude Valley, Graceville, Hemmant, Indooroopilly, Kangaroo Point, Lytton, Milton, New Farm, Newstead, Norman Park, Oxley, Pinkenba, Rocklea, Sherwood, Tennyson, Wacol, Windsor, Yeronga.

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- Yeerongpilly (7)
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Regards

Barry Dennien
Chief Executive Officer
SEQ Water Grid Manager

Phone: [REDACTED] | Fax: [REDACTED] Mobile: [REDACTED]

Email: barry.dennien [REDACTED]
Visit: Level 15, 53 Albert Street, Brisbane
Post: PO Box 16205, City East Qld 4002
ABN: 14783 317 630

Please consider the environment before printing this email. It takes 10 litres of water to make one sheet of A4 paper.

TECHNICAL SITUATION REPORT

TSR Number	W37	Date of TSR release	10.1.2011	Time of TSR release	3pm
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Continue increasing releases to discharge flood waters but keep impact downstream to minimum. 										
Strategy	<ul style="list-style-type: none"> All bridges are now inundated . Ramp up to 2800cumecs which will give a flow in the lower Brisbane River of around 4,000cumecs 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected around 1,500,000ML which is close to 1974 event.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
Storage levels:	Above FSL										
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Rainfall:	Continuing										
Lockyer/Bremer:	Monitoring their inflows										
Brisbane River:	Impact as below.										

Rainfall

Significant rainfall has fallen in the Wivenhoe Dam catchment over the last 3 hours, with falls exceeding 100mm. This rainfall will significantly increase inflows into the dam. A severe weather warning remains current for heavy rainfall in the dam catchment areas. The QPF issued by BOM at 10:00 estimates rainfalls for the 24 hours to 10:00 Tuesday as North Pine Dam (75mm to 150mm); Wivenhoe/Somerset Dam Catchments (50mm – 100mm). Potentially significant rain moving towards the dam catchments is currently evident on the BOM radar.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level is 103.41m AHD and rising. Peak inflow to the dam is estimated to be about 4,200 m3/s. Five sluice gates are open releasing about 1,100m3/s (95,000ML/day) into Wivenhoe Dam. At this stage the dam lake level will reach about 103.5m AHD on Monday afternoon. Areas around Kilcoy will continue to be adversely affected.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

The dam level is 72.41m AHD and rising quickly. The rainfall experienced over the last 2 to 3 hours will result in significant further inflows into the dam and releases from the dam will need to be increased in accordance with Flood Mitigation procedures and to ensure that a fuse plug is not initiated. The initiation of a fuse plug will result in a rapid uncontrolled outflow from the dam of 2,000m3/s being added to the gate release outflow. Outflows into the Brisbane River from both Lockyer Creek and the Bremer River are also increasing.

Five radial gates are currently open at the dam releasing about 2,000m3/s into the Brisbane River and

this will need to be increased steadily to an outflow of 2,800m³/s over the next 9 hours (commencing at 1500). At this stage, the dam will reach about 73.8m AHD during Tuesday morning.

The objective for dam operations is currently to minimise the impact of urban flooding in areas downstream of the dam and to keep river flows in the lower Brisbane River below 4,000m³/s if possible. This is significantly less than the current estimated combined pre-dam peak inflow of 12,000m³/s. If further rainfall occurs, dam releases may need to be increased further and this may result in river flows in the lower Brisbane River approaching or exceeding 5,000m³/s.

Impacts downstream of Wivenhoe Dam

The projected Wivenhoe Dam releases combined with Lockyer Creek flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Sunday 16 January in varying degrees.

Water levels in the lower Brisbane River will be impacted by the combined flows of Lockyer Creek, Bremer River, local runoff and releases from Wivenhoe Dam.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate rapidly over the next 24 hours. The flood operation centre will continue to monitor the situation and provide every six hours until the situation stabilizes.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	

Ipswich City Council (ICC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	

Somerset Regional Council (SRC) assessment (if required)
(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	11.1.2011			Change in strategy
---------------------	-----------	--	--	---------------------------

Gina O'Driscoll

From: Paul Bird [pbird [REDACTED]]
Sent: Monday, 10 January 2011 7:31 PM
To: SEQWGM Media; aroebuck [REDACTED]; greg.swain [REDACTED];
GSTUBBS [REDACTED]; Kathy Petrik; lisa.m.martin [REDACTED];
Paula Weston; tjacobs [REDACTED]; Arminda Roberts; Bec Middlemiss; Michael
Fiechtner; Mike Foster; Tara King; Barry Dennien; Dan Spiller; Scott Denner
Cc: ELT; Michael Lyons; Geoff.Stead [REDACTED]
Subject: Release update
Attachments: image001.jpg; image004.jpg

As at 7.00 pm on Monday 10 January, the following applies:

SOMERSET DAM:

As a result of rainfall and inflows, water is being released into Wivenhoe through five sluice gates at about 146,000 megalitres per day, reducing to 103,000 megalitres per day by late Tuesday 11 January, and is likely to continue until Thursday 13 January. Areas around Kilcoy are likely to be impacted as a result of the rising dam levels.

WIVENHOE DAM:

Stream levels are rising quickly as a result of significant heavy rainfall. The objective for dam operations will be to minimise the impact of urban flooding in areas downstream of the dam.

Gate Releases are being increased to 240,000 megalitres a day are underway and are to continue until at least Sunday 16 January.

Local Councils have been advised that as a result of Lockyer Creek flows, local runoff and Wivenhoe releases, Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge Colleges Crossing, Fernvale Bridge, and Mt Crosby Weir Bridge may be inundated until at least the weekend.

NORTH PINE DAM:

Five gates are open, releasing around 31,000 megalitres a day and will continue until at least Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

LESLIE HARRISON DAM:

Gate releases are underway due to rainfall and inflows.

HINZE DAM:

A minor release of around 1200 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

For detailed information on road crossing closures and other potential impacts, always contact your local council.

This information will be updated on the morning of Tuesday 11 January.

Paul Bird
Senior Communications Advisor
Queensland Bulk Water Supply Authority trading as Seqwater



P [REDACTED] M [REDACTED] E pbird [REDACTED]

Level 3, 240 Margaret St, Brisbane City QLD 4000
PO Box 16146, City East QLD 4002
Website | www.seqwater.com.au



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Gina O'Driscoll

From: Rob Drury [rdrury [REDACTED]]
Sent: Tuesday, 11 January 2011 6:18 AM
To: Dan Spiller
Cc: Barry Dennien; Peter Borrows; Paul Bird; Michael Lyons
Subject: RE: Impact of Lockyer flows
Attachments: image001.jpg; image002.png

Dan,

I will send a report shortly but below are words I was going to send. I have also attached the BoM warning for the Lockyer that they sent this morning.

They are reissuing their warning this morning based on new information.

Basically the FOC was going to try to slow our releases last night to give a small window for the Lockyer flood to go through however we again received and are still receiving heavy rain in the catchments.

Currently the FOC has shut some sluices at Somerset to store more water to keep Wivenhoe below RL74 at which we need to start increasing releases. The first fuse plug goes at about RL 75.7m.

The strategy is now to keep releases as is to not worsen the situation downstream as the Lockyer recorded levels higher than any on record. However we may still need to increase releases depending on what happens through the day.

The FOC have given our release strategy (not really different in releases at this stage) to the BoM and they will reissue their flood warnings based on that and other flows in the Lockyer and Bremer.

The FOC have spoken to BCC and ICC and we will send them an update. BCC are having a LDMG meeting this morning. Dan, not sure if anyone from the WGM is going but Chris Lavin is the contact.

Rob

From: Aifs Operational Manager[SMTP:AIF5QLD [REDACTED]]
Sent: Tuesday, January 11, 2011 4:06:54 AM
Subject: BOM: FLDWARN for Lower Brisbane and Bremer Rs [SEC=UNCLASSIFIED] Auto forwarded by a Rule

TO: BOM615

IDQ20805

Australian Government Bureau of Meteorology Queensland

PRIORITY

FLOOD WARNING FOR THE LOCKYER; BREMER, WARRILL AND BRISBANE RIVER BELOW WIVENHOE INCLUDING BRISBANE CITY Issued at 4:06 AM on Tuesday the 11th of January 2011 by the Bureau of Meteorology, Brisbane.

The main flood waters in the Lockyer Creek are now arriving at Lyons Bridge, with strong stream rises expected during Tuesday.

Wivenhoe dam is providing significant mitigation of upper Brisbane floods. River flows from the Bremer and Lockyer catchments combined with releases from Wivenhoe dam are expected to increase levels in Brisbane during Tuesday.

At the Brisbane City Gauge, minor flood levels of about 2.1 metres are expected with the afternoon high tide on Tuesday and levels of about 3 metres are expected with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

LOCKYER CREEK:

Extremely heavy rainfall during Monday led to extreme rises in the Lockyer Creek catchment and Laidley Creek at Mulgowie. Record flood levels of 18.92 metres were recorded at Gatton Monday evening before the station failed. This level was well above the previous record peak of 16.33 metres from the February 1893 flood.

The main flood waters are currently arriving at Lyons Bridge, with strong stream rises expected in the next few hours. The Lockyer Creek at Glenore Grove peaked at 14.60 metres at 11:30pm, which is 0.3 metres below the 1974 flood.

Renewed stream rises have commenced in Lockyer Creek at Lyons Bridge with a peak between 16 and 16.5 metres expected Tuesday morning. This is likely to be similar in level to the 1996 flood.

BREMER RIVER:

The Bremer River at Walloon has exceeded the moderate flood level. The Bremer River at Rosewood peaked at 5.8 metres around midnight Monday.

The Bremer River at Ipswich is expected to reach about 12.7 metres on Tuesday afternoon. Higher levels are possible.

WARRILL CREEK:

Warrill Creek at Amberley peaked at 5.98 metres around 9pm Monday.

MIDDLE AND LOWER BRISBANE:

Moderate flooding is developing at Savages Crossing and at Mt Crosby Weir.

At the Brisbane City Gauge (lower end of Edward Street and at Thornton Street), minor flood levels of about 2.1 metres are expected with the afternoon high tide on Tuesday and levels of about 3 metres are expected with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Predicted River Heights/Flows:

Ipswich: Reach about 12.7 metres (major) during Tuesday afternoon.

Moggill: Reach about 12 metres (minor) during Tuesday afternoon.

Jindalee: Reach about 7 metres (minor) overnight Tuesday.

Brisbane: Reach about 2.1 metres (minor) with the afternoon high tide on Tuesday. Reach about 3 metres (moderate) with the high tides on Wednesday.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Further rises are possible at all four locations depending on further rain.

Next Issue:

The next warning will be issued at about 8am Tuesday.

Latest River Heights:

Lockyer Ck at Helidon #	12.68m steady	03:02 PM MON 10/01/11
Flagstone Ck at Brown-Zirbels Rd *	3.49m falling	02:10 AM TUE 11/01/11
Sandy Creek at Sandy Creek Road #	2.15m falling	03:19 AM TUE 11/01/11
Ma Ma Ck at Harm's *	3.26m rising	02:30 AM TUE 11/01/11
Tenthill Ck at Tenthill *	5.57m rising	02:40 AM TUE 11/01/11
Lockyer Ck at Gatton #	18.92m rising	06:30 PM MON 10/01/11
Laidley Ck at Mulgowie *	6.39m rising	02:20 AM TUE 11/01/11
Laidley Ck at Laidley	8.7m falling slowly	10:00 PM MON 10/01/11
Laidley Ck at Showground Weir #	7.84m rising	03:25 AM TUE 11/01/11
Laidley Ck at Warrego Hwy *	6.41m rising	02:00 AM TUE 11/01/11
Lockyer Ck at Glenore Grove #	13.8m falling	03:24 AM TUE 11/01/11
Lockyer Ck at Lyons Br #	15.55m rising	03:23 AM TUE 11/01/11
Lockyer Ck at Rifle Range Rd *	15.39m rising	02:40 AM TUE 11/01/11
Lockyer Ck at O'Reilly's Weir #	18m falling	03:28 AM TUE 11/01/11
Brisbane R at Lowood Pump Stn #	15.93m falling	03:31 AM TUE 11/01/11
Brisbane R at Savages Crossing #	15.89m rising	03:29 AM TUE 11/01/11
Brisbane R at Burtons Br #	12.22m rising	03:29 AM TUE 11/01/11
Brisbane R at Kholo Br #	7.99m rising	03:29 AM TUE 11/01/11
Brisbane R at Mt Crosby #	15.82m steady	03:30 AM TUE 11/01/11
Brisbane R at Mt Crosby #	14.08m falling	04:39 PM MON 10/01/11
Brisbane R at Colleges Crossing #	13.91m rising	03:32 AM TUE 11/01/11
Bremer R at Rosewood#	5.56m falling	03:11 AM TUE 11/01/11
Bremer R at Five Mile Br Walloon #	6.4m rising	03:15 AM TUE 11/01/11
Warrill Ck at Greens Rd Amberley #	5.84m falling	03:29 AM TUE 11/01/11
Bremer R at One Mile Br #	13.75m rising	03:31 AM TUE 11/01/11
Bremer R at Hancocks Br Brassall #	11.33m rising	03:22 AM TUE 11/01/11
Bremer R at Ipswich #	8.55m rising	03:31 AM TUE 11/01/11
Brisbane R at Moggill #	7.07m rising	03:29 AM TUE 11/01/11
Brisbane R at Jindalee Br #	4.5m rising	03:29 AM TUE 11/01/11
Brisbane R at City Gauge #	1.4m falling	03:15 AM TUE 11/01/11

*automatic station

Warnings and River Height Bulletins are available at <http://www.bom.gov.au/qld/flood/>.

Flood Warnings are also available on telephone 1300 659 219 at a low call cost of 27.5 cents, more from mobile, public and satellite phones.

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Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and
flowing water is FA

rethink

Ph [REDACTED] Fax [REDACTED] M [REDACTED] E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

From: Dan Spiller [mailto:Daniel.Spiller@seqwater.com.au]
Sent: Tuesday, 11 January 2011 6:13 AM
To: Rob Drury
Cc: Barry Dennien; Peter Borrows; Paul Bird; Michael Lyons
Subject: Impact of Lockyer flows

Rob,

I am fielding calls from Gov seeking advice about the impact of the Lockyer Valley flows on Brisbane River levels and on overnight rainfall (I am told that there was 50mm in two hours in Lockyer).

Early advice would be good. There are many nervous people.

Thanks,
Dan

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QLD Bulk Water Supply Authority ABN75450239876 (Trading as Seqwater).

Litsupport Brisbane

From: Dan Spiller
Sent: Tuesday, 11 January 2011 6:29 AM
To: Debbie Best
Cc: Martin.Peter. [REDACTED]; Dunn.KerryG [REDACTED]; Barry Dennien; Tim Watts
Subject: Fwd: Impact of Lockyer flows
Attachments: Seqwater_No-Lifeguards-Here_email_strap.png; ATT00001.htm; cidimage001.png@01CA24E1.BDB90020; ATT00002.htm

Debbie,

Preliminary advice below. Report being prepared and BoM remodeling.

Dan

Begin forwarded message:

From: Rob Drury <rdrury [REDACTED]>
Date: 11 January 2011 6:17:48 AM GMT+10:00
To: Dan Spiller <Daniel.Spiller [REDACTED]>
Cc: Barry Dennien <Barry.Dennien [REDACTED]>, Peter Borrows <pborrows [REDACTED]>, Paul Bird <pbird [REDACTED]>, Michael Lyons <Michael.Lyons [REDACTED]>
Subject: RE: Impact of Lockyer flows

Dan,

I will send a report shortly but below are words I was going to send. I have also attached the BoM warning for the Lockyer that they sent this morning.

They are reissuing their warning this morning based on new information.

Basically the FOC was going to try to slow our releases last night to give a small window for the Lockyer flood to go through however we again received and are still receiving heavy rain in the catchments.

Currently the FOC has shut some sluices at Somerset to store more water to keep Wivenhoe below RL74 at which we need to start increasing releases. The first fuse plug goes at about RL 75.7m

The strategy is now to keep releases as is to not worsen the situation downstream as the Lockyer recorded levels higher than any on record. However we may still need to increase releases depending on what happens through the day.

The FOC have given our release strategy (not really different in releases at this stage) to the BoM and they will reissue their flood warnings based on that and other flows in the Lockyer and Bremer.

The FOC have spoken to BCC and ICC and we will send them an update. BCC are having a LDMG meeting this morning. Dan, not sure if anyone from the WGM is going but Chris Lavin is the contact.

Rob

From: Aifs Operational Manager[SMTP:AIFSQLD [REDACTED]]

Sent: Tuesday, January 11, 2011 4:06:54 AM

To: weather

Subject: BOM: FLDWARN for Lower Brisbane and Bremer Rs [SEC=UNCLASSIFIED] Auto forwarded by a Rule

TO::BOM615

IDQ20805

Australian Government Bureau of Meteorology Queensland

PRIORITY

**FLOOD WARNING FOR THE LOCKYER, BREMER, WARRILL AND BRISBANE RIVER
BELOW WIVENHOE INCLUDING BRISBANE CITY** Issued at 4:06 AM on Tuesday the 11th
of January 2011 by the Bureau of Meteorology, Brisbane.

The main flood waters in the Lockyer Creek are now arriving at Lyons Bridge, with strong stream rises expected during Tuesday.

Wivenhoe dam is providing significant mitigation of upper Brisbane floods. River flows from the Bremer and Lockyer catchments combined with releases from Wivenhoe dam are expected to increase levels in Brisbane during Tuesday.

At the Brisbane City Gauge, minor flood levels of about 2.1 metres are expected with the afternoon high tide on Tuesday and levels of about 3 metres are expected with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

LOCKYER CREEK:

Extremely heavy rainfall during Monday led to extreme rises in the Lockyer Creek catchment and Laidley Creek at Mulgowie. Record flood levels of 18.92 metres were recorded at Gatton Monday evening before the station failed. This level was well above the previous record peak of 16.33 metres from the February 1893 flood.

The main flood waters are currently arriving at Lyons Bridge, with strong stream rises expected in the next few hours. The Lockyer Creek at Glenore Grove peaked at 14.60 metres at 11:30pm, which is 0.3 metres below the 1974 flood.

Renewed stream rises have commenced in Lockyer Creek at Lyons Bridge with a peak between 16 and 16.5 metres expected Tuesday morning. This is likely to be similar in level to the 1996 flood.

BREMER RIVER:

The Bremer River at Walloon has exceeded the moderate flood level. The Bremer River at Rosewood peaked at 5.8 metres around midnight monday.

The Bremer River at Ipswich is expected to reach about 12.7 metres on Tuesday afternoon. Higher levels are possible.

WARRILL CREEK

Warrill Creek at Amberley peaked at 5.98 metres around 9pm Monday.

MIDDLE AND LOWER BRISBANE:

Moderate flooding is developing at Savages Crossing and at Mt Crosby Weir.

At the Brisbane City Gauge (lower end of Edward Street and at Thornton Street), minor flood levels of about 2.1 metres are expected with the afternoon high tide on Tuesday and levels of about 3 metres are expected with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Predicted River Heights/Flows:

Ipswich: Reach about 12.7 metres (major) during Tuesday afternoon.

Moggill: Reach about 12 metres (minor) during Tuesday afternoon.

Jindalee: Reach about 7 metres (minor) overnight Tuesday.

Brisbane: Reach about 2.1 metres (minor) with the afternoon high tide on Tuesday. Reach about 3 metres (moderate) with the high tides on Wednesday.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Further rises are possible at all four locations depending on further rain.

Next Issue:

The next warning will be issued at about 8am Tuesday.

Latest River Heights:

Lockyer Ck at Helidon #	12.68m steady	03:02 PM MON 10/01/11
Flagstone Ck at Brown-Zirbels Rd *	3.49m falling	02:10 AM TUE 11/01/11
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 Bremer R at Rosewood# 5.56m falling 03:11 AM TUE 11/01/11
 Bremer R at Five Mile Br Walloon # 6.4m rising 03:15 AM TUE 11/01/11
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 Brisbane R at City Gauge # 1.4m falling 03:15 AM TUE 11/01/11

*automatic station

Warnings and River Height Bulletins are available at <http://www.bom.gov.au/qld/flood/> . Flood
 Warnings are also available on telephone 1300 659 219 at a low call cost of 27.5 cents, more
 from mobile, public and satellite phones.

-----Safe Stamp-----

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For more information regarding this service, please contact your service provider.

Robert Drury

Dam Operations Manager

Water Delivery

Queensland Bulk Water Supply Authority *trading as Seqwater*



NO EQUALS HERE

Safe for life - A WATER SAFETY INSTITUTE FROM US SQUIBLET

Swimming in weirs and fast flowing water is FATAL

Return to

D415

TECHNICAL SITUATION REPORT

TSR Number	W38	Date of TSR release	11.1.2011	Time of TSR release	6.30am
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Maintain releases to keep Wivenhoe below RL74 at which significant releases need to be made to ensure the dam security and minimise flood impacts downstream if possible 										
Strategy	<ul style="list-style-type: none"> Maintain current release of 2750cumecs as long as possible but it may need to be increased Close sluices at Somerset Dam to store more water however will affect upstream areas. 										
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Brisbane River:	Impact as below.										

Rainfall

Rainfall continues in the North Pine Dam, Somerset Dam and Wivenhoe Dam catchments. Isolated falls in the Upper Brisbane River of up to 125 mm have been recorded with widespread falls of 40 to 70 mm in the Somerset Dam catchment. This rainfall will increase inflows into the dam.

There has also been 20 to 60 mm in the Lockyer Creek catchment in the last 12 hours with falls of up to 30 mm in the Bremer River.

A severe weather warning remains current for heavy rainfall in the dam catchment areas. The QPF issued by BOM at 16:00 estimates rainfalls for the 24 hours to 10:00 Tuesday as North Pine Dam (25mm to 50mm, with isolated falls to 100mm); Wivenhoe/Somerset Dam Catchments (25mm to 50mm, with isolated falls to 100mm).

North Pine Dam (Full Supply Level 39.60 m AHD)

The dam level is 39.80m AHD and has commenced rising again (storing 4,400ML above FSL). Five gates are open releasing 177 m³/s. The inflow into the dam since the commencement of the event is 77,000 ML. Estimated event volume is 88,000 ML assuming no further rainfall. Releases from the dam will continue until at least Wednesday 12 January 2011.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level is 103.27m AHD and falling slowly. Peak inflow to the dam is estimated to be about

4,200 m³/s. Total discharge into Wivenhoe Dam is currently 1400 m³/s and this discharge will be decreased in the next few hours to be around 500 m³/s later on Tuesday. This is to ensure that the combined flood mitigation capacity in Somerset and Wivenhoe Dam is maximized.

The dam level peaked at 103.52m AHD at 19:00 on Monday 10 January 2011, (unless further significant rainfall is experienced). Areas around Kilcoy will continue to be adversely affected.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

The dam level is 73.51m AHD and rising at about 25 mm/hour. Releases from the dam have been held at a rate of 2,750 m³/s since 19:30 hours on Monday 10 January 2011. Outflows into the Brisbane River from both Lockyer Creek and the Bremer River are also increasing.

The BoM has provided further advice about the flash flooding experienced in the upper areas of Lockyer Creek. The rainfall responsible for this event was not observed at any rainfall stations but it is considered to be extreme. Flood levels in the Lockyer Creek catchment will exceed maximum recorded levels in some stations in the upper catchment. This flow will result in increases in Brisbane River levels below the junction of Lockyer Creek.

Five radial gates are currently open at the dam releasing about 2,750m³/s into the Brisbane River. At this stage, the dam will reach just over 74.0m AHD during Tuesday evening.

Above EL 74.0m AHD the objective for dam operations is to maintain the security of the dam and minimise downstream flood flows if possible.

If further rainfall occurs, dam releases may need to be increased further and this may result in river flows in the lower Brisbane River approaching or exceeding 5,000m³/s.

Impacts downstream of Wivenhoe Dam

The projected Wivenhoe Dam releases combined with Lockyer Creek flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Sunday 16 January in varying degrees.

Water levels in the lower Brisbane River will be impacted by the combined flows of Lockyer Creek, Bremer River, local runoff and releases from Wivenhoe Dam.

The BoM will provide further information regarding the magnitude of the flash flood event occurring in Lockyer Creek early Tuesday morning. Consideration was given to modifying the releases from Wivenhoe Dam to try to moderate the peak flows emanating from Lockyer Creek but the rainfall in the past 12 hours in the catchment above the dam makes this option not possible. Therefore instead of decreasing releases to accommodate the Lockyer Creek flows, the strategy will endeavour to maintain the current releases until Lockyer Creek peaks.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate over the next 24 hours. The flood operation centre will continue to monitor the situation and provide situation reports every six hours until the situation stabilizes.

Seqwater Technical Officer name

Robert Drury

Seqwater Technical Officer position title

Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	[REDACTED]

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	[REDACTED]

Collated and distributed by (Agency)

Contact Officer signature						
Contact Officer name	Rob Drury					
Contact Officer position title	Dam Operations Manager					
Next TSR due	Date	11.1.2011	Time	PM	on Event	

Litsupport Brisbane

From: Rob Drury [rdrury, [REDACTED]]
Sent: Tuesday, 11 January 2011 6:36 AM
To: Rob Drury; Dan Spiller; Paul Bird; Stan Stevenson; Peter Borrows; Peter.Allen [REDACTED]
Cc: David Roberts
Subject: RE: Technical Report
Attachments: Technical Situation Report W38.docx

Attached is the latest report. Also below is the BoM warning with info on the Lockyer flood. The Somerset Council chambers had water through it and the library and they are working off site at the moment so communications with the Council may be impacted.

Basically the FOC was going to try to slow our releases last night to give a small window for the Lockyer flood to go through however we again received and are still receiving heavy rain in the catchments. Hence the best we can do at this stage is not increase releases.

Currently the FOC has shut some sluices at Somerset to store more water to keep Wivenhoe below RL74 at which we need to start increasing releases to ensure dam security and minimise downstream flood impacts if possible.

The strategy is now to keep releases at current levels so as to not worsen the situation downstream as the Lockyer recorded levels higher than any on record at some spots. However we may still need to increase releases depending on what happens through the day.

The FOC have given our release strategy (not really different in releases at this stage) to the BoM and they will reissue their flood warnings based on that and other flows in the Lockyer and Bremer and downstream.

The FOC have spoken to BCC and ICC and we will send them an update. BCC are having a LDMG meeting this morning.

Rob

From: Aifs Operational Manager[SMTP:AIFSQLD, [REDACTED]]
Sent: Tuesday, January 11, 2011 4:06:54 AM
To: weather
Subject: BOM: FLDWARN for Lower Brisbane and Bremer Rs [SEC=UNCLASSIFIED] Auto forwarded by a Rule

TO::BOM615

IDQ20805

Australian Government Bureau of Meteorology Queensland

PRIORITY
FLOOD WARNING FOR THE LOCKYER, BREMER, WARRILL AND BRISBANE RIVER BELOW WIVENHOE INCLUDING BRISBANE CITY Issued at 4:06 AM on Tuesday the 11th of January 2011 by the Bureau of Meteorology, Brisbane.

The main flood waters in the Lockyer Creek are now arriving at Lyons Bridge, with strong stream rises expected during Tuesday.

Wivenhoe dam is providing significant mitigation of upper Brisbane floods. River flows from the Bremer and Lockyer catchments combined with releases from Wivenhoe dam are expected to increase levels in Brisbane during Tuesday.

At the Brisbane City Gauge, minor flood levels of about 2.1 metres are expected with the afternoon high tide on Tuesday and levels of about 3 metres are expected with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

LOCKYER CREEK:

Extremely heavy rainfall during Monday led to extreme rises in the Lockyer Creek catchment and Laidley Creek at Mulgowie. Record flood levels of 18.92 metres were recorded at Gatton Monday evening before the station failed. This level was well above the previous record peak of 16.33 metres from the February 1893 flood.

The main flood waters are currently arriving at Lyons Bridge, with strong stream rises expected in the next few hours. The Lockyer Creek at Glenore Grove peaked at 14.60 metres at 11:30pm, which is 0.3 metres below the 1974 flood.

Renewed stream rises have commenced in Lockyer Creek at Lyons Bridge with a peak between 16 and 16.5 metres expected Tuesday morning. This is likely to be similar in level to the 1996 flood.

BREMER RIVER:

The Bremer River at Walloon has exceeded the moderate flood level. The Bremer River at Rosewood peaked at 5.8 metres around midnight Monday.

The Bremer River at Ipswich is expected to reach about 12.7 metres on Tuesday afternoon. Higher levels are possible.

WARRILL CREEK

Warrill Creek at Amberley peaked at 5.98 metres around 9pm Monday.

MIDDLE AND LOWER BRISBANE:

Moderate flooding is developing at Savages Crossing and at Mt Crosby Weir.

At the Brisbane City Gauge (lower end of Edward Street and at Thornton Street), minor flood levels of about 2.1 metres are expected with the afternoon high tide on Tuesday and levels of about 3 metres are expected with the high tides on Wednesday causing moderate flooding.

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Moggill: Reach about 12 metres (minor) during Tuesday afternoon.

Jindalee: Reach about 7 metres (minor) overnight Tuesday.

Brisbane: Reach about 2.1 metres (minor) with the afternoon high tide on Tuesday. Reach about 3 metres (moderate) with the high tides on Wednesday.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Further rises are possible at all four locations depending on further rain.

Next Issue:

The next warning will be issued at about 8am Tuesday.

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Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast
flowing water is FATAL

rethink it



Ph [REDACTED] | Fax [REDACTED] | M [REDACTED] | E [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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TECHNICAL SITUATION REPORT

TSR Number	W38	Date of TSR release	11.1.2011	Time of TSR release	6.30am
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Maintain releases to keep Wivenhoe below RL74 at which significant releases need to be made to ensure the dam security and minimise flood impacts downstream if possible 										
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Five radial gates are currently open at the dam releasing about 2,750m3/s into the Brisbane River. At this stage, the dam will reach just over 74.0m AHD during Tuesday evening.

Above EL 74.0m AHD the objective for dam operations is to maintain the security of the dam and minimise downstream flood flows if possible.

If further rainfall occurs, dam releases may need to be increased further and this may result in river flows in the lower Brisbane River approaching or exceeding 5,000m3/s.

Impacts downstream of Wivenhoe Dam

The projected Wivenhoe Dam releases combined with Lockyer Creek flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Sunday 16 January in varying degrees.

Water levels in the lower Brisbane River will be impacted by the combined flows of Lockyer Creek, Bremer River, local runoff and releases from Wivenhoe Dam.

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Outlook

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Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	[REDACTED]

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	[REDACTED]

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time	PM	or Event	
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Gina O'Driscoll

From: Paul Bird [pbird [REDACTED]]
Sent: Tuesday, 11 January 2011 6:47 AM
To: SEQWGM Media; Reception; aroe buck [REDACTED]; greg.swain [REDACTED]; GSTUBBS [REDACTED]; Kathy Petrik; lisa.m.martin [REDACTED]; Paula Weston; tjacobs [REDACTED]; Arminda Roberts; Béc Middlemiss; Michael Fiechtner; Mike Foster; Tara King; Barry Dennien; Dan Spiller; Scott Denner
Cc: Michael Lyons; Mike Foster; Geoff Stead
Subject: Release Update
Attachments: image001.jpg; image004.jpg

As at 7.00 am on Tuesday 11 January, the following applies:

SOMERSET DAM:

Water is being released into Wivenhoe; however the amount discharged can change as conditions change. Levels in Somerset are expected to continue rising.

Areas around Kilcoy are likely to be impacted as a result of the rising dam levels.

WIVENHOE DAM:

Upstream levels are rising quickly as a result of significant heavy rainfall. The objective for dam operations will be to minimise the impact of urban flooding in areas downstream of the dam.

Releases through five gates have been held at around 236,000 megalitres a day since early Monday night 10 January as a result of outflows into the Brisbane River from the Lockyer Creek and Bremer River.

If further rainfall occurs, dam releases may need to be increased further.

Local Councils have been advised that as a result of Lockyer Creek flows, local runoff and Wivenhoe releases, Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge Colleges Crossing, Fernvale Bridge, and Mt Crosby Weir Bridge may be inundated until at Sunday 16 January.

NORTH PINE DAM:

Five gates are open, releasing around 15,000 megalitres a day and will continue until at least Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

LESLIE HARRISON DAM:

Gate releases are underway due to rainfall and inflows.

HINZE DAM:

A minor release of around 1200 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

For detailed information on road crossing closures and other potential impacts, always contact your local council.

This information will be updated during Tuesday 11 January.

Paul Bird
Senior Communications Advisor
Queensland Bulk Water Supply Authority trading as Seqwater

[redacted] pbird [redacted]

Level 3, 240 Margaret St. Brisbane City QLD 4000

PO Box 16146, City East QLD 4002

Website | www.seqwater.com.au**NO NEGLECTED NEPS**

A WATER SAFETY INITIATIVE FROM

Swimming in weirs and fast
flowing water is FATAL.**rethink it.**

Important information: This email and any attached information is intended only for the addressee and may contain confidential and/or privileged information. If you are not the addressee, you are notified that any transmission, distribution, or other use of this information is strictly prohibited. The confidentiality attached to this email is not waived, lost or destroyed by reasons of mistaken delivery to you. If you have received this email in error please contact the sender immediately and delete the material from your email system. QLD Bulk Water Supply Authority ABN75450239876 (Trading as Seqwater).

Jina O'Driscoll

From: Barry Dennien
Sent: Tuesday, 11 January 2011 6:57 AM
To: Madgwick, Darren T; [REDACTED] Dunn, Kerry G; [REDACTED]
Subject: Wivenhoe releases - Monday PM
Attachments: img-110173945-0001.jpg; Technical Situation Report W37.docx

Folks,

Please find latest Technical report on Wivenhoe releases, BOM forecast of river heights accounting for the releases and downstream flows, and BCC flood maps accounting for the releases and downstream flows. Brisbane forecasts of properties impacted.

Further updates will be issued tomorrow morning.

Australian Government Bureau of Meteorology Queensland

PRIORITY

FLOOD WARNING FOR THE LOCKYER, BREMER, WARRILL AND BRISBANE RIVER BELOW WIVENHOE INCLUDING BRISBANE CITY Issued at 4:16 PM on Monday the 10th of January 2011 by the Bureau of Meteorology, Brisbane.

Stream level rises causing moderate to major flooding are being recorded in Lockyer Creek, Warrill Creek and along the Bremer River. Major flood levels are likely at Ipswich during Tuesday.

Wivenhoe dam is providing significant mitigation of upper Brisbane floods. River flows from the Bremer and Lockyer catchments combined with releases from Wivenhoe dam are expected to increase levels in Brisbane overnight and through Tuesday.

At the Brisbane City Gauge, a river levels of about 2.1 metres is expected with the afternoon high tide on Tuesday and about 3 metres is expected with the high tides on Wednesday causing moderate flooding.

metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

LOCKYER CREEK:

Further rainfall during Monday has led to renewed rises in the Lockyer Creek catchment. Rainfall is forecast to continue this evening and a return to moderate to major flood levels is expected overnight and during Tuesday. Major flood levels are expected to continue at Lyons Bridge with rises above 15 metres likely during Tuesday.

BREMER RIVER:

Rainfall during Monday will lead to renewed rises and a return to moderate flood levels along the Bremer River to Walloon. Levels over 5 metres are expected at Rosewood overnight.

The Bremer River at Ipswich is expected to reach about 12.7 metres on Tuesday afternoon. Higher levels are possible.

WARRILL CREEK

Further rainfall during Monday will lead to increasing river levels along Warrill Creek with levels expected to reach above 6 metres at Amberley overnight.

MIDDLE AND LOWER BRISBANE:

SEQwater advises releases from Wivenhoe Dam will increase during Monday.

Moderate flooding is expected at Savages Crossing and at Mt Crosby Weir overnight tonight and during Tuesday.

The Brisbane River at the City Gauge (lower end of Edward Street and at Thornton Street) is expected to reach about 2.1 metres with the afternoon high tide on Tuesday and reach about 3 metres with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Predicted River Heights/Flows:

Ipswich: Reach about 12.7 metres (major) during Tuesday afternoon. Quicker rises and higher levels are possible depending on further rainfall tonight.

Moggill: Reach about 12 metres (minor) during Tuesday afternoon.

Indalee: Reach about 7 metres (minor) overnight Tuesday.

Brisbane: Reach about 2.1 metres with the afternoon high tide on Tuesday.

Reach about 3 metres with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Further rises are possible at all four locations depending on further rain.

Next Issue:

The next warning will be issued at about 9pm Monday.

Brisbane Properties affected

Number of properties affected:

- 455 properties (parcels of land) have been identified as experiencing flooding on next Wednesday (at least 221 of these are homes and businesses)
- 7,731 properties may see some flooding either on the land or outside the property
- More than 400 streets will be affected by flooding in some way

Below is the list of suburbs where the 455 properties that will be affected are located. In brackets is the number of properties/parcels of land that will be affected in each suburb. This is based on the data and modelling we have done to date and we may see increases in these numbers once figures are revised.

- Rocklea (80)
- Albion (49)
- Milton (49)
- Auchenflower (40)
- Norman Park (26)
- Pinkenba (26)
- Oxley (19)
- New Farm (17)
- Kangaroo Point (16)
- Bulimba & Sherwood (14 each)
- Yeronga (10)
- Graceville (9)

- Newstead (8)
- Yeerongpilly (7)
- Bowen Hills (6)
- Indooroopilly, Windsor (5 each)
- Wacol, Brisbane City, Moggill, East Brisbane, Fortitude Valley (4 each)
- Chelmer, Hemmant, Tennyson (3 each)
- Fairfield, Fig Tree Pocket, Coorparoo, South Brisbane, Lytton, Murrarie (2 each)

7 Rapid Response Group teams will be working from both a map and a database to doorknock/letterbox drop a flyer to the 221 homes and businesses that are predicted as being likely to experience inundation. They will visually check using the map that none of the remaining parcels of land from the total 455 properties identified as experiencing flooding are actually homes or businesses also.

The locations where the 221 homes and businesses are located is Albion, Auchenflower, Brisbane City, Bowen Hills, Bulimba, Fortitude Valley, Graceville, Hemmant, Indooroopilly, Kangaroo Point, Lytton, Milton, New Farm, Newstead, Norman Park, Oxley, Pinkenba, Rocklea, Sherwood, Tennyson, Wacol, Windsor, Yeronga.

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- 455 properties (parcels of land) have been identified as experiencing flooding on next Wednesday (at least 221 of these are homes and businesses)
- 7,731 properties may see some flooding either on the land or outside the property
- More than 400 streets will be affected by flooding in some way

Below is the list of suburbs where the 455 properties that will be affected are located. In brackets is the number of properties/parcels of land that will be affected in each suburb. This is based on the data and modelling we have done to date and we may see increases in these numbers once figures are revised.

- Rocklea (80)
- Albion (49)
- Milton (49)
- Auchenflower (40)
- Norman Park (26)
- Pinkenba (26)
- Oxley (19)
- New Farm (17)
- Kangaroo Point (16)
- Bulimba & Sherwood (14 each)
- Yeronga (10)
- Graceville (9)
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- Yeerongpilly (7)
- Bowen Hills (6)
- Indooroopilly, Windsor (5 each)
- Wacol, Brisbane City, Moggill, East Brisbane, Fortitude Valley (4 each)
- Chelmer, Hemmant, Tennyson (3 each)
- Fairfield, Fig Tree Pocket, Coorparoo, South Brisbane, Lytton, Murrarie (2 each)

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The locations where the 221 homes and businesses are located is Albion, Auchenflower, Brisbane City, Bowen Hills, Bulimba, Fortitude Valley, Graceville, Hemmant, Indooroopilly, Kangaroo Point, Lytton, Milton, New Farm, Newstead, Norman Park, Oxley, Pinkenba, Rocklea, Sherwood, Tennyson, Wacol, Windsor, Yeronga.

Regards

Barry Dennien

Chief Executive Officer

SEQ Water Grid Manager

Phone: [REDACTED] | Fax: [REDACTED] | Mobile: [REDACTED]

Email: barry.dennien

Visit: Level 15, 53 Albert Street, Brisbane

Post: PO Box 16205, City East Qld 4002

ABN: 14783 317 630

Please consider the environment before printing this email. It takes 10 litres of water to make one sheet of A4 paper.

Litsupport Brisbane

From: Dan Spiller
Sent: Tuesday, 11 January 2011 7:17 AM
To: 'stephen.robertson'; 'Ken Smith (ken.smith)';
'Lance McCallum (lance.mccallum)'; 'Tim Watts
(tim.watts)'; 'Geoff Stead (geoff.stead)';
'lauren.sims'; 'Martin.PeterJ';
'Dunn.KerryG';
Cc: Barry Dennien; 'pborrows'; 'Rob Drury'; 'pbird';
'Damien Brown (damien.brown)'; 'bob.reilly';
'erry.wall'; 'Madgwick.DarrenT';
Subject: Water Grid dam release strategy
Attachments: Technical Situation Report W38.docx

All,

Attached is the latest report, with the BoM warning on the Lockyer flood below.

Key points are:

- Current releases are 2,750 cubic metres per second (about 240,000 ML/day). Due to heavy rainfall in the catchment, it was not possible to reduce releases to allow the Lockyer Valley flows to pass.
- Further rainfall may result in the need to increase releases.
- Wivenhoe Dam is at 73.51m AHD and rising at about 25mm/hour. Above 74m, the primary objective becomes maintaining the security of the dam. Releases would be increased at this level with less scope for consideration of downstream impacts.

The BoM is remodeling based on this release strategy. There is some uncertainty about the level of flows coming from the Lockyer.

Please call me on [REDACTED] if you require any further information.

Debbie and Tim: I recommend that a briefing for the Minister would be appropriate, perhaps around 10am.

Regards,
Daniel Spiller

Australian Government Bureau of Meteorology Queensland

PRIORITY

FLOOD WARNING FOR THE LOCKYER, BREMER, WARRILL AND BRISBANE RIVER BELOW WIVENHOE INCLUDING BRISBANE CITY Issued at 4:06 AM on Tuesday the 11th of January 2011 by the Bureau of Meteorology, Brisbane.

The main flood waters in the Lockyer Creek are now arriving at Lyons Bridge, with strong stream rises expected during Tuesday.

Wivenhoe dam is providing significant mitigation of upper Brisbane floods. River flows from the Bremer and Lockyer catchments combined with releases from Wivenhoe dam are expected to increase levels in Brisbane during Tuesday.

At the Brisbane City Gauge, minor flood levels of about 2.1 metres are expected with the afternoon high tide on Tuesday and levels of about 3 metres are expected with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

LOCKYER CREEK:

Extremely heavy rainfall during Monday led to extreme rises in the Lockyer Creek catchment and Laidley Creek at Mulgowie. Record flood levels of 18.92 metres were recorded at Gatton Monday evening before the station failed. This level was well above the previous record peak of 16.33 metres from the February 1893 flood.

The main flood waters are currently arriving at Lyons Bridge, with strong stream rises expected in the next few hours. The Lockyer Creek at Glenore Grove peaked at 14.60 metres at 11:30pm, which is 0.3 metres below the 1974 flood.

Renewed stream rises have commenced in Lockyer Creek at Lyons Bridge with a peak between 16 and 16.5 metres expected Tuesday morning. This is likely to be similar in level to the 1996 flood.

BREMER RIVER:

The Bremer River at Walloon has exceeded the moderate flood level. The Bremer River at Rosewood peaked at 5.8 metres around midnight Monday.

The Bremer River at Ipswich is expected to reach about 12.7 metres on Tuesday afternoon. Higher levels are possible.

WARRILL CREEK

Warrill Creek at Amberley peaked at 5.98 metres around 9pm Monday.

MIDDLE AND LOWER BRISBANE:

Moderate flooding is developing at Savages Crossing and at Mt Crosby Weir.

At the Brisbane City Gauge (lower end of Edward Street and at Thornton Street), minor flood levels of about 2.1 metres are expected with the afternoon high tide on Tuesday and levels of about 3 metres are expected with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Predicted River Heights/Flows:

Ipswich: Reach about 12.7 metres (major) during Tuesday afternoon.

Moggill: Reach about 12 metres (minor) during Tuesday afternoon.

Jindalee: Reach about 7 metres (minor) overnight Tuesday.

Brisbane: Reach about 2.1 metres (minor) with the afternoon high tide on Tuesday. Reach about 3 metres (moderate) with the high tides on Wednesday.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Further rises are possible at all four locations depending on further rain.

Next Issue:

The next warning will be issued at about 8am Tuesday.

Latest River Heights:

Lockyer Ck at Helidon #	12.68m steady	03:02 PM MON 10/01/11
Flagstone Ck at Brown-Zirbels Rd *	3.49m falling	02:10 AM TUE 11/01/11
Sandy Creek at Sandy Creek Road #	2.15m falling	03:19 AM TUE 11/01/11
Ma Ma Ck at Harm's *	3.26m rising	02:30 AM TUE 11/01/11
Tenthill Ck at Tenthill *	5.57m rising	02:40 AM TUE 11/01/11
Lockyer Ck at Gatton #	18.92m rising	06:30 PM MON 10/01/11
Laidley Ck at Mulgowie *	6.39m rising	02:20 AM TUE 11/01/11
Laidley Ck at Laidley	8.7m falling slowly	10:00 PM MON 10/01/11
Laidley Ck at Showground Weir #	7.84m rising	03:25 AM TUE 11/01/11
Laidley Ck at Warrego Hwy *	6.41m rising	02:00 AM TUE 11/01/11
Lockyer Ck at Glenore Grove #	13.8m falling	03:24 AM TUE 11/01/11
Lockyer Ck at Lyons Br #	15.55m rising	03:23 AM TUE 11/01/11
Lockyer Ck at Rifle Range Rd *	15.39m rising	02:40 AM TUE 11/01/11
Lockyer Ck at O'Reilly's Weir #	18m falling	03:28 AM TUE 11/01/11
Brisbane R at Lowood Pump Stn #	15.93m falling	03:31 AM TUE 11/01/11
Brisbane R at Savages Crossing #	15.89m rising	03:29 AM TUE 11/01/11
Brisbane R at Burtons Br #	12.22m rising	03:29 AM TUE 11/01/11
Brisbane R at Kholo Br #	7.99m rising	03:29 AM TUE 11/01/11
Brisbane R at Mt Crosby #	15.82m steady	03:30 AM TUE 11/01/11
Brisbane R at Mt Crosby #	14.08m falling	04:39 PM MON 10/01/11
Brisbane R at Colleges Crossing #	13.91m rising	03:32 AM TUE 11/01/11
Bremer R at Rosewood#	5.56m falling	03:11 AM TUE 11/01/11
Bremer R at Five Mile Br Walloon #	6.4m rising	03:15 AM TUE 11/01/11
Warrill Ck at Greens Rd Amberley #	5.84m falling	03:29 AM TUE 11/01/11
Bremer R at One Mile Br #	13.75m rising	03:31 AM TUE 11/01/11
Bremer R at Hancocks Br Brassall #	11.33m rising	03:22 AM TUE 11/01/11
Bremer R at Ipswich #	8.55m rising	03:31 AM TUE 11/01/11
Brisbane R at Moggill #	7.07m rising	03:29 AM TUE 11/01/11
Brisbane R at Jindalee Br #	4.5m rising	03:29 AM TUE 11/01/11
Brisbane R at City Gauge #	1.4m falling	03:15 AM TUE 11/01/11

*automatic station

Warnings and River Height Bulletins are available at <http://www.bom.gov.au/qld/flood/> . Flood Warnings are also available on telephone 1300 659 219 at a low call cost of 27.5 cents, more from mobile, public and satellite phones.

-----Safe Stamp-----

Your Anti-virus Service scanned this email. It is safe from known viruses.
For more information regarding this service, please contact your service provider.

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast
flowing water is FATAL

rethink it.

Ph [REDACTED] E rdruv [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

Important information: This email and any attached information is intended only for the addressee and may contain confidential and/or privileged information. If you are not the addressee, you are notified that any transmission, distribution, or other use of this information is strictly prohibited. The confidentiality attached to this email is not waived, lost or destroyed by reasons of mistaken delivery to you. If you have received this email in error please contact the sender immediately and delete the material from your email system. QLD Bulk Water Supply Authority ABN75450239876 (Trading as Seqwater).

TECHNICAL SITUATION REPORT

TSR Number	W38	Date of TSR release	11.1.2011	Time of TSR release	6.30am
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Maintain releases to keep Wivenhoe below RL74 at which significant releases need to be made to ensure the dam security and minimise flood impacts downstream if possible 										
Strategy	<ul style="list-style-type: none"> Maintain current release of 2750cumecs as long as possible but it may need to be increased Close sluices at Somerset Dam to store more water however will affect upstream areas. 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected around 1,500,000ML which is close to 1974 event.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
Storage levels:	Above FSL										
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Rainfall:	Continuing										
Lockyer/Bremer:	Monitoring their inflows										
Brisbane River:	Impact as below.										

Rainfall

Rainfall continues in the North Pine Dam, Somerset Dam and Wivenhoe Dam catchments. Isolated falls in the Upper Brisbane River of up to 125 mm have been recorded with widespread falls of 40 to 70 mm in the Somerset Dam catchment. This rainfall will increase inflows into the dam.

There has also been 20 to 60 mm in the Lockyer Creek catchment in the last 12 hours with falls of up to 30 mm in the Bremer River.

A severe weather warning remains current for heavy rainfall in the dam catchment areas. The QPF issued by BOM at 16:00 estimates rainfalls for the 24 hours to 10:00 Tuesday as North Pine Dam (25mm to 50mm, with isolated falls to 100mm); Wivenhoe/Somerset Dam Catchments (25mm to 50mm, with isolated falls to 100mm).

North Pine Dam (Full Supply Level 39.60 m AHD)

The dam level is 39.80m AHD and has commenced rising again (storing 4,400ML above FSL). Five gates are open releasing 177 m3/s. The inflow into the dam since the commencement of the event is 77,000 ML. Estimated event volume is 88,000 ML assuming no further rainfall. Releases from the dam will continue until at least Wednesday 12 January 2011.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level is 103.27m AHD and falling slowly. Peak inflow to the dam is estimated to be about

4,200 m³/s. Total discharge into Wivenhoe Dam is currently 1400 m³/s and this discharge will be decreased in the next few hours to be around 500 m³/s later on Tuesday. This is to ensure that the combined flood mitigation capacity in Somerset and Wivenhoe Dam is maximized.

The dam level peaked at 103.52m AHD at 19:00 on Monday 10 January 2011, (unless further significant rainfall is experienced). Areas around Kilcoy will continue to be adversely affected.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

The dam level is 73.51m AHD and rising at about 25 mm/hour. Releases from the dam have been held at a rate of 2,750 m³/s since 19:30 hours on Monday 10 January 2011. Outflows into the Brisbane River from both Lockyer Creek and the Bremer River are also increasing.

The BoM has provided further advice about the flash flooding experienced in the upper areas of Lockyer Creek. The rainfall responsible for this event was not observed at any rainfall stations but it is considered to be extreme. Flood levels in the Lockyer Creek catchment will exceed maximum recorded levels in some stations in the upper catchment. This flow will result in increases in Brisbane River levels below the junction of Lockyer Creek.

Five radial gates are currently open at the dam releasing about 2,750m³/s into the Brisbane River. At this stage, the dam will reach just over 74.0m AHD during Tuesday evening.

Above EL 74.0m AHD the objective for dam operations is to maintain the security of the dam and minimise downstream flood flows if possible.

If further rainfall occurs, dam releases may need to be increased further and this may result in river flows in the lower Brisbane River approaching or exceeding 5,000m³/s.

Impacts downstream of Wivenhoe Dam

The projected Wivenhoe Dam releases combined with Lockyer Creek flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Sunday 16 January in varying degrees.

Water levels in the lower Brisbane River will be impacted by the combined flows of Lockyer Creek, Bremer River, local runoff and releases from Wivenhoe Dam.

The BoM will provide further information regarding the magnitude of the flash flood event occurring in Lockyer Creek early Tuesday morning. Consideration was given to modifying the releases from Wivenhoe Dam to try to moderate the peak flows emanating from Lockyer Creek but the rainfall in the past 12 hours in the catchment above the dam makes this option not possible. Therefore instead of decreasing releases to accommodate the Lockyer Creek flows, the strategy will endeavour to maintain the current releases until Lockyer Creek peaks.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate over the next 24 hours. The flood operation centre will continue to monitor the situation and provide situation reports every six hours until the situation stabilizes.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	[REDACTED]

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	[REDACTED]

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time	PM	on Event	
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D435

From: Paul Bird [pbird]
Sent: Tuesday, 11 January 2011 6:47 AM
To: SEQWGM Media; Reception; aroe buck; greg.swain; GSTUBBS; Kathy Petrik; lisa.m.martin; Paula Weston; tjacobs; Arminda Roberts; Bec Middlemiss; Michael Fiechtner; Mike Foster; Tara King; Barry Dennien; Dan Spiller; Scott Denner
Cc: Michael Lyons; Mike Foster; Geoff Stead
Subject: Release Update
Attachments: image001.jpg; image004.jpg

As at 7.00 am on Tuesday 11 January, the following applies:

SOMERSET DAM:

Water is being released into Wivenhoe; however the amount discharged can change as conditions change. Levels in Somerset are expected to continue rising.

Areas around Kilcoy are likely to be impacted as a result of the rising dam levels.

WIVENHOE DAM:

Upstream levels are rising quickly as a result of significant heavy rainfall. The objective for dam operations will be to minimise the impact of urban flooding in areas downstream of the dam.

Releases through five gates have been held at around 236,000 megalitres a day since early Monday night 10 January as a result of outflows into the Brisbane River from the Lockyer Creek and Bremer River.

If further rainfall occurs, dam releases may need to be increased further.

Local Councils have been advised that as a result of Lockyer Creek flows, local runoff and Wivenhoe releases, Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge Colleges Crossing, Fernvale Bridge, and Mt Crosby Weir Bridge may be inundated until at Sunday 16 January.

NORTH PINE DAM:

Five gates are open, releasing around 15,000 megalitres a day and will continue until at least Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

LESLIE HARRISON DAM:

Gate releases are underway due to rainfall and inflows.

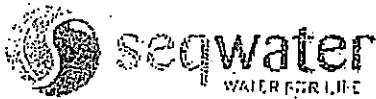
HINZE DAM:

A minor release of around 1200 megalitres a day is being made through the emergency gates. There is no public access to the spillway.

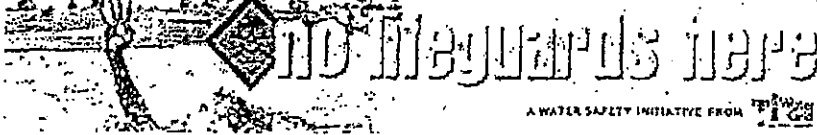
For detailed information on road crossing closures and other potential impacts, always contact your local council.

This information will be updated during Tuesday 11 January.

Paul Bird
Senior Communications Advisor
Queensland Bulk Water Supply Authority trading as Seqwater



P [redacted] pbird [redacted]
Level 3, 240 Margaret St. Brisbane City QLD 4000
PO Box 16146, City East QLD 4002
Website www.seqwater.com.au



Swimming in weirs and fast flowing water is FATAL.

rethink it.

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QLD Bulk Water Supply Authority ABN75450239876 (Trading as Seqwater).

Jina O'Driscoll

From: Barry Dennien
Sent: Tuesday, 11 January 2011 6:57 AM
To: Madgwick.DarrenT [REDACTED]; Dunn.KerryG [REDACTED]
Subject: Martin.PeterJ [REDACTED]
Attachments: Wivenhoe releases - Monday PM
img-110173945-0001.jpg; Technical Situation Report W37.docx

Folks:

Please find latest Technical report on Wivenhoe releases, BOM forecast of river heights accounting for the releases and downstream flows, and BCC flood maps accounting for the releases and downstream flows. Brisbane forecasts of properties impacted.

Further updates will be issued tomorrow morning.

Australian Government Bureau of Meteorology Queensland

PRIORITY

FLOOD WARNING FOR THE LOCKYER, BREMER, WARRILL AND BRISBANE RIVER BELOW WIVENHOE INCLUDING BRISBANE CITY Issued at 4:16 PM on Monday the 10th of January 2011 by the Bureau of Meteorology, Brisbane.

Stream level rises causing moderate to major flooding are being recorded in Lockyer Creek, Warrill Creek and along the Bremer River. Major flood levels are likely at Ipswich during Tuesday.

Wivenhoe dam is providing significant mitigation of upper Brisbane floods. River flows from the Bremer and Lockyer catchments combined with releases from Wivenhoe dam are expected to increase levels in Brisbane overnight and through Tuesday.

At the Brisbane City Gauge, a river levels of about 2.1 metres is expected with the afternoon high tide on Tuesday and about 3 metres is expected with the high tides on Wednesday causing moderate flooding.

metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

LOCKYER CREEK:

Further rainfall during Monday has led to renewed rises in the Lockyer Creek catchment. Rainfall is forecast to continue this evening and a return to moderate to major flood levels is expected overnight and during Tuesday. Major flood levels are expected to continue at Lyons Bridge with rises above 15 metres likely during Tuesday.

BREMER RIVER:

Rainfall during Monday will lead to renewed rises and a return to moderate flood levels along the Bremer River to Walloon. Levels over 5 metres are expected at Rosewood overnight.

The Bremer River at Ipswich is expected to reach about 12.7 metres on Tuesday afternoon. Higher levels are possible.

WARRILL CREEK

Further rainfall during Monday will lead to increasing river levels along Warrill Creek with levels expected to reach above 6 metres at Amberley overnight.

MIDDLE AND LOWER BRISBANE:

SEQwater advises releases from Wivenhoe Dam will increase during Monday.

Moderate flooding is expected at Savages Crossing and at Mt Crosby Weir overnight tonight and during Tuesday.

The Brisbane River at the City Gauge (lower end of Edward Street and at Thornton Street) is expected to reach about 2.1 metres with the afternoon high tide on Tuesday and reach about 3 metres with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Predicted River Heights/Flows:

Ipswich: Reach about 12.7 metres (major) during Tuesday afternoon. Quicker rises and higher levels are possible depending on further rainfall tonight.

Moggill: Reach about 12 metres (minor) during Tuesday afternoon.

Indalee: Reach about 7 metres (minor) overnight Tuesday.

Brisbane: Reach about 2.1 metres with the afternoon high tide on Tuesday.

Reach about 3 metres with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Further rises are possible at all four locations depending on further rain.

Next Issue:

The next warning will be issued at about 9pm Monday.

Brisbane Properties affected

Number of properties affected:

- 455 properties (parcels of land) have been identified as experiencing flooding on next Wednesday (at least 221 of these are homes and businesses)
- 7,731 properties may see some flooding either on the land or outside the property
- More than 400 streets will be affected by flooding in some way

Below is the list of suburbs where the 455 properties that will be affected are located. In brackets is the number of properties/parcels of land that will be affected in each suburb. This is based on the data and modelling we have done to date and we may see increases in these numbers once figures are revised.

- Rocklea (80)
- Albion (49)
- Milton (49)
- Auchenflower (40)
- Norman Park (26)
- Pinkenba (26)
- Oxley (19)
- New Farm (17)
- Kangaroo Point (16)
- Bulimba & Sherwood (14 each)
- Yeronga (10)
- Graceville (9)

- Newstead (8)
- Yeerongpilly (7)
- Bowen Hills (6)
- Indooroopilly, Windsor (5 each)
- Wacol, Brisbane City, Moggill, East Brisbane, Fortitude Valley (4 each)
- Chelmer, Hemmant, Tennyson (3 each)
- Fairfield, Fig Tree Pocket, Coorparoo, South Brisbane, Lytton, Murrarie (2 each)

7 Rapid Response Group teams will be working from both a map and a database to doorknock/letterbox drop a flyer to the 221 homes and businesses that are predicted as being likely to experience inundation. They will visually check using the map that none of the remaining parcels of land from the total 455 properties identified as experiencing flooding are actually homes or businesses also.

The locations where the 221 homes and businesses are located is Albion, Auchenflower, Brisbane City, Bowen Hills, Bulimba, Fortitude Valley, Graceville, Hemmant, Indooroopilly, Kangaroo Point, Lytton, Milton, New Farm, Newstead, Norman Park, Oxley, Pinkenba, Rocklea, Sherwood, Tennyson, Wacol, Windsor, Yeronga.

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- 7,731 properties may see some flooding either on the land or outside the property
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- Rocklea (80)
- Albion (49)
- Milton (49)
- Auchenflower (40)
- Norman Park (26)
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- Oxley (19)
- New Farm (17)
- Kangaroo Point (16)
- Bulimba & Sherwood (14 each)
- Yeronga (10)
- Graceville (9)
- Newstead (8)
- Yeerongpilly (7)
- Bowen Hills (6)
- Indooroopilly, Windsor (5 each)
- Wacol, Brisbane City, Moggill, East Brisbane, Fortitude Valley (4 each)
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Regards

Barry Dennien
Chief Executive Officer
SEQ Water Grid Manager

Phone: [REDACTED] | Fax: [REDACTED] Mobile: [REDACTED]

Email: barry.dennien@seqwater.com.au

Visit: Level 15, 53 Albert Street, Brisbane

Post: PO Box 16205, City East Qld 4002

ABN: 14783 317 630

Please consider the environment before printing this email. It takes 10 litres of water to make one sheet of A4 paper.

Litsupport Brisbane

From: Dan Spiller
Sent: Tuesday, 11 January 2011 7:17 AM
To: 'stephen.robertson'; 'Ken Smith (ken.smith)';
'Lance McCallum (lance.mccallum)'; 'Tim Watts
(tim.watts)'; 'Geoff Stead (geoff.stead)';
'lauren.sims'; 'Martin.PeterJ';
'Dunn.KerryG';
Cc: Barry Dennien; 'pborrows'; 'Rob Drury'; 'pbird';
'Damien Brown (damien.brown)'; 'bob.reilly';
'terry.wall'; 'Madgwick.DarrenT';
Subject: Water Grid dam release strategy
Attachments: Technical Situation Report W38.docx

All,

Attached is the latest report, with the BoM warning on the Lockyer flood below.

Key points are:

- Current releases are 2,750 cubic metres per second (about 240,000 ML/day). Due to heavy rainfall in the catchment, it was not possible to reduce releases to allow the Lockyer Valley flows to pass.
- Further rainfall may result in the need to increase releases.
- Wivenhoe Dam is at 73.51m AHD and rising at about 25mm/hour. Above 74m, the primary objective becomes maintaining the security of the dam. Releases would be increased at this level with less scope for consideration of downstream impacts.

The BoM is remodeling based on this release strategy. There is some uncertainty about the level of flows coming from the Lockyer.

Please call me on [REDACTED] if you require any further information.

Debbie and Tim: I recommend that a briefing for the Minister would be appropriate, perhaps around 10am.

Regards,
Daniel Spiller

Australian Government Bureau of Meteorology Queensland

PRIORITY

FLOOD WARNING FOR THE LOCKYER, BREMER, WARRILL AND BRISBANE RIVER BELOW WIVENHOE INCLUDING BRISBANE CITY Issued at 4:06 AM on Tuesday the 11th of January 2011 by the Bureau of Meteorology, Brisbane.

The main flood waters in the Lockyer Creek are now arriving at Lyons Bridge, with strong stream rises expected during Tuesday.

Wivenhoe dam is providing significant mitigation of upper Brisbane floods. River flows from the Bremer and Lockyer catchments combined with releases from Wivenhoe dam are expected to increase levels in Brisbane during Tuesday.

At the Brisbane City Gauge, minor flood levels of about 2.1 metres are expected with the afternoon high tide on Tuesday and levels of about 3 metres are expected with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

LOCKYER CREEK:

Extremely heavy rainfall during Monday led to extreme rises in the Lockyer Creek catchment and Laidley Creek at Mulgowie. Record flood levels of 18.92 metres were recorded at Gatton Monday evening before the station failed. This level was well above the previous record peak of 16.33 metres from the February 1893 flood.

The main flood waters are currently arriving at Lyons Bridge, with strong stream rises expected in the next few hours. The Lockyer Creek at Glenore Grove peaked at 14.60 metres at 11:30pm, which is 0.3 metres below the 1974 flood.

Renewed stream rises have commenced in Lockyer Creek at Lyons Bridge with a peak between 16 and 16.5 metres expected Tuesday morning. This is likely to be similar in level to the 1996 flood.

BREMER RIVER:

The Bremer River at Walloon has exceeded the moderate flood level. The Bremer River at Rosewood peaked at 5.8 metres around midnight Monday.

The Bremer River at Ipswich is expected to reach about 12.7 metres on Tuesday afternoon. Higher levels are possible.

WARRILL CREEK

Warrill Creek at Amberley peaked at 5.98 metres around 9pm Monday.

MIDDLE AND LOWER BRISBANE:

Moderate flooding is developing at Savages Crossing and at Mt Crosby Weir.

At the Brisbane City Gauge (lower end of Edward Street and at Thornton Street), minor flood levels of about 2.1 metres are expected with the afternoon high tide on Tuesday and levels of about 3 metres are expected with the high tides on Wednesday causing moderate flooding.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Predicted River Heights/Flows:

Ipswich: Reach about 12.7 metres (major) during Tuesday afternoon.

Moggill: Reach about 12 metres (minor) during Tuesday afternoon.

Jindalee: Reach about 7 metres (minor) overnight Tuesday.

Brisbane: Reach about 2.1 metres (minor) with the afternoon high tide on Tuesday. Reach about 3 metres (moderate) with the high tides on Wednesday.

(3 metres at the Brisbane City gauge is about 1.5 metres higher than the highest tide of the year at this location).

Further rises are possible at all four locations depending on further rain.

Next Issue:

The next warning will be issued at about 8am Tuesday.

Latest River Heights:

Lockyer Ck at Helidon #	12.68m steady	03:02 PM MON 10/01/11
Flagstone Ck at Brown-Zirbels Rd *	3.49m falling	02:10 AM TUE 11/01/11
Sandy Creek at Sandy Creek Road #	2.15m falling	03:19 AM TUE 11/01/11
Ma Ma Ck at Harm's *	3.26m rising	02:30 AM TUE 11/01/11
Tenthill Ck at Tenthill *	5.57m rising	02:40 AM TUE 11/01/11
Lockyer Ck at Gatton #	18.92m rising	06:30 PM MON 10/01/11
Laidley Ck at Mulgowie *	6.39m rising	02:20 AM TUE 11/01/11
Laidley Ck at Laidley	8.7m falling slowly	10:00 PM MON 10/01/11
Laidley Ck at Showground Weir #	7.84m rising	03:25 AM TUE 11/01/11
Laidley Ck at Warrego Hwy *	6.41m rising	02:00 AM TUE 11/01/11
Lockyer Ck at Glenore Grove #	13.8m falling	03:24 AM TUE 11/01/11
Lockyer Ck at Lyons Br #	15.55m rising	03:23 AM TUE 11/01/11
Lockyer Ck at Rifle Range Rd *	15.39m rising	02:40 AM TUE 11/01/11
Lockyer Ck at O'Reilly's Weir #	18m falling	03:28 AM TUE 11/01/11
Brisbane R at Lowood Pump Stn #	15.93m falling	03:31 AM TUE 11/01/11
Brisbane R at Savages Crossing #	15.89m rising	03:29 AM TUE 11/01/11
Brisbane R at Burtons Br #	12.22m rising	03:29 AM TUE 11/01/11
Brisbane R at Kholo Br #	7.99m rising	03:29 AM TUE 11/01/11
Brisbane R at Mt Crosby #	15.82m steady	03:30 AM TUE 11/01/11
Brisbane R at Mt Crosby #	14.08m falling	04:39 PM MON 10/01/11
Brisbane R at Colleges Crossing #	13.91m rising	03:32 AM TUE 11/01/11
Bremer R at Rosewood#	5.56m falling	03:11 AM TUE 11/01/11
Bremer R at Five Mile Br Walloon #	6.4m rising	03:15 AM TUE 11/01/11
Warrill Ck at Greens Rd Amberley #	5.84m falling	03:29 AM TUE 11/01/11
Bremer R at One Mile Br #	13.75m rising	03:31 AM TUE 11/01/11
Bremer R at Hancocks Br Brassall #	11.33m rising	03:22 AM TUE 11/01/11
Bremer R at Ipswich #	8.55m rising	03:31 AM TUE 11/01/11
Brisbane R at Moggill #	7.07m rising	03:29 AM TUE 11/01/11
Brisbane R at Jindalee Br #	4.5m rising	03:29 AM TUE 11/01/11
Brisbane R at City Gauge #	1.4m falling	03:15 AM TUE 11/01/11

*automatic station

Warnings and River Height Bulletins are available at <http://www.bom.gov.au/qld/flood/> . Flood Warnings are also available on telephone 1300 659 219 at a low call cost of 27.5 cents, more from mobile, public and satellite phones.

-----Safe Stamp-----

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For more information regarding this service, please contact your service provider.

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority trading as Seqwater



Swimming in weirs and fast flowing water is FATAL

rethink it

Ph [REDACTED] | Fax [REDACTED] | M [REDACTED] | E rdrry@seqwater.com.au
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

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TECHNICAL SITUATION REPORT

TSR Number	W38	Date of TSR release	11.1.2011	Time of TSR release	6.30am
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Seqwater status of inflows and dam operations

Current status but could change based on inflows or rainfall.

Current objectives	<ul style="list-style-type: none"> Maintain releases to keep Wivenhoe below RL74 at which significant releases need to be made to ensure the dam security and minimise flood impacts downstream if possible 										
Strategy	<ul style="list-style-type: none"> Maintain current release of 2750cumecs as long as possible but it may need to be increased Close sluices at Somerset Dam to store more water however will affect upstream areas. 										
Key considerations	<table> <tr> <td>Storage levels:</td><td>Above FSL</td></tr> <tr> <td>Inflows:</td><td>Inflows expected around 1,500,000ML which is close to 1974 event.</td></tr> <tr> <td>Rainfall:</td><td>Continuing</td></tr> <tr> <td>Lockyer/Bremer:</td><td>Monitoring their inflows</td></tr> <tr> <td>Brisbane River:</td><td>Impact as below.</td></tr> </table>	Storage levels:	Above FSL	Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.	Rainfall:	Continuing	Lockyer/Bremer:	Monitoring their inflows	Brisbane River:	Impact as below.
Storage levels:	Above FSL										
Inflows:	Inflows expected around 1,500,000ML which is close to 1974 event.										
Rainfall:	Continuing										
Lockyer/Bremer:	Monitoring their inflows										
Brisbane River:	Impact as below.										

Rainfall

Rainfall continues in the North Pine Dam, Somerset Dam and Wivenhoe Dam catchments. Isolated falls in the Upper Brisbane River of up to 125 mm have been recorded with widespread falls of 40 to 70 mm in the Somerset Dam catchment. This rainfall will increase inflows into the dam.

There has also been 20 to 60 mm in the Lockyer Creek catchment in the last 12 hours with falls of up to 30 mm in the Bremer River.

A severe weather warning remains current for heavy rainfall in the dam catchment areas. The QPF issued by BOM at 16:00 estimates rainfalls for the 24 hours to 10:00 Tuesday as North Pine Dam (25mm to 50mm, with isolated falls to 100mm); Wivenhoe/Somerset Dam Catchments (25mm to 50mm, with isolated falls to 100mm).

North Pine Dam (Full Supply Level 39.60 m AHD)

The dam level is 39.80m AHD and has commenced rising again (storing 4,400ML above FSL). Five gates are open releasing 177 m³/s. The inflow into the dam since the commencement of the event is 77,000 ML. Estimated event volume is 88,000 ML assuming no further rainfall. Releases from the dam will continue until at least Wednesday 12 January 2011.

Somerset Dam (Full Supply Level 99.00 m AHD)

The dam level is 103.27m AHD and falling slowly. Peak inflow to the dam is estimated to be about

4,200 m³/s. Total discharge into Wivenhoe Dam is currently 1400 m³/s and this discharge will be decreased in the next few hours to be around 500 m³/s later on Tuesday. This is to ensure that the combined flood mitigation capacity in Somerset and Wivenhoe Dam is maximized.

The dam level peaked at 103.52m AHD at 19:00 on Monday 10 January 2011, (unless further significant rainfall is experienced). Areas around Kilcoy will continue to be adversely affected.

Wivenhoe Dam (Full Supply Level 67.00 m AHD)

The dam level is 73.51m AHD and rising at about 25 mm/hour. Releases from the dam have been held at a rate of 2,750 m³/s since 19:30 hours on Monday 10 January 2011. Outflows into the Brisbane River from both Lockyer Creek and the Bremer River are also increasing.

The BoM has provided further advice about the flash flooding experienced in the upper areas of Lockyer Creek. The rainfall responsible for this event was not observed at any rainfall stations but it is considered to be extreme. Flood levels in the Lockyer Creek catchment will exceed maximum recorded levels in some stations in the upper catchment. This flow will result in increases in Brisbane River levels below the junction of Lockyer Creek.

Five radial gates are currently open at the dam releasing about 2,750m³/s into the Brisbane River. At this stage, the dam will reach just over 74.0m AHD during Tuesday evening.

Above EL 74.0m AHD the objective for dam operations is to maintain the security of the dam and minimise downstream flood flows if possible.

If further rainfall occurs, dam releases may need to be increased further and this may result in river flows in the lower Brisbane River approaching or exceeding 5,000m³/s.

Impacts downstream of Wivenhoe Dam

The projected Wivenhoe Dam releases combined with Lockyer Creek flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Sunday 16 January in varying degrees.

Water levels in the lower Brisbane River will be impacted by the combined flows of Lockyer Creek, Bremer River, local runoff and releases from Wivenhoe Dam.

The BoM will provide further information regarding the magnitude of the flash flood event occurring in Lockyer Creek early Tuesday morning. Consideration was given to modifying the releases from Wivenhoe Dam to try to moderate the peak flows emanating from Lockyer Creek but the rainfall in the past 12 hours in the catchment above the dam makes this option not possible. Therefore instead of decreasing releases to accommodate the Lockyer Creek flows, the strategy will endeavour to maintain the current releases until Lockyer Creek peaks.

Outlook

Heavy rainfall continues throughout South East Queensland and the situation could deteriorate over the next 24 hours. The flood operation centre will continue to monitor the situation and provide situation reports every six hours until the situation stabilizes.

Seqwater Technical Officer name	Robert Drury
Seqwater Technical Officer position title	Dam Operations Manager

BoM assessment

(consisting of references to latest Flood Warning for the Brisbane River and other relevant Bureau forecasts and warnings (e.g. weather/rain forecasts, Tropical Cyclone Warning etc) and other updates/comments if needed)

BoM has been advised.

BoM Technical Officer name	Peter Baddiley
BoM Technical Officer position title	
BoM Technical Officer contact details	flood.qld [REDACTED]

Brisbane City Council (BCC) assessment

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

BCC Technical Officer name	Chris Lavin
BCC Technical Officer position title	Disaster Operations Manager
BCC Technical Officer contact details	[REDACTED]

Ipswich City Council (ICC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

ICC Technical Officer name	Tony Trace
ICC Technical Officer position title	Local Disaster Response Coordinator
ICC Technical Officer contact details	[REDACTED]

Somerset Regional Council (SRC) assessment (if required)

(to include predicted local inundation areas and depths of inundation based on the information)

Council has been advised of the current status.

SRC Technical Officer name	Tony Jacobs
SRC Technical Officer position title	Local Disaster Response Coordinator
SRC Technical Officer contact details	[REDACTED]

Collated and distributed by (Agency)

Contact Officer signature	
Contact Officer name	Rob Drury
Contact Officer position title	Dam Operations Manager

Next TSR due	Date	11.1.2011	Time	PM	or Event	
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D435

Suzie Emery

From: Elaina Smouha [elainamir[REDACTED]]
Sent: Thursday, 13 January 2011 4:45 PM
To: tim.watts[REDACTED]
Cc: john.bradley[REDACTED] ken.smith[REDACTED] Barry Dennien
Subject: Flood Mitigation Manual review
Attachments: Scan 1.pdf; Brian Cooper - final report.docx; Brian Cooper - final report attachment.xlsx; Wivenhoe Dam Background_Briefing_Jan_2011[1].docx

Tim,

Attached is the independent review of Somerset and Wivenhoe Dam operations against the Flood Mitigation Manual and a briefing note from Seqwater on the development of the Manual.

Kind regards

Elaina

Elaina Smouha

Director, Governance and Regulatory Compliance

SEQ Water Grid Manager

Phone: [REDACTED] | Mobile: [REDACTED] | Fax: [REDACTED]

Email: [elaina.smouha\[REDACTED\]](mailto:elaina.smouha[REDACTED])

Visit: Level 15, 53 Albert Street Brisbane

Post: PO Box 16205, City East QLD 4002

ABN: 14783 317 630

13 January 2011

The Honourable Stephen Robertson MP
Minister for Natural Resources, Mines and Energy
and Minister for Trade
PO Box 15216
Brisbane QLD 4002

Dear Minister

Independent review of Somerset and Wivenhoe Dam operations against the *Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam*

Attached is a final report from Mr Brian Cooper, Brian Cooper Consulting, on an independent review of the operation of Somerset and Wivenhoe Dams for compliance against Seqwater's *Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam* (Flood Mitigation Manual) during the current flood event.

Mr Cooper concludes that:

"The strategies as set out in the Flood Mitigation Manual have been followed, allowing for the discretion given to making 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 those responsible for flood operations and the way events unfolded."

Given the circumstances, we endeavoured to provide him with as much information as possible to enable a sufficient compliance review against the Flood Mitigation Manual. Mr Cooper identifies some Flood Mitigation Manual requirements where further information of compliance is required. In relation to these matters, Mr Cooper states:

"There are a number of requirements where there was insufficient time given the urgency of this review, to source the necessary information for me to demonstrate compliance. However, satisfaction or otherwise of these requirements would have had little impact on the operation of the two dams during this particular Flood Event. It is intended that they be audited when time permits, after the Flood Event."

Also, attached is a summary from Mr Barton Maher, Seqwater, on the development history of the Flood Mitigation Manual, and in particular, the extensive peer review to which both the Flood Mitigation Manual and studies that fed the development of it were subject. For example:

- the Brisbane and Pine Rivers Flood Study underwent an internal review by the Water Resources Group and then went to an independent review panel comprising of Professor Colin Apelt, Head of Department, Department of Civil Engineering, University of Queensland; and Mr Eric Lesleighter, Principal Hydraulic Engineer and Chief Engineer Water Resources, Snowy Mountains Engineering Corporation
- the 2005/2006 Brisbane Valley Flood Damage Minimisation Study involved a Project Technical Review Group involving SEQWater Corporation, the Bureau of Meteorology, SunWater, Department of Natural Resources, Mining and Water Dam Safety Regulator and WRM Consultants
- the most recent 2009 review of the Flood Mitigation Manual was subject to an expert review panel comprising of The Bureau of Meteorology; SunWater (as operator of the Flood Control Centre); the Department of Environment and Resource Management Dam Safety Regulator and Brisbane City Council. The minor changes to the Flood Mitigation Manual were extensively tested to ensure that the flood mitigation outcomes were not compromised.

I hope this proves to be of assistance.

If you have any questions, please contact me on [REDACTED] or via email at barry.dennien@seqwater.com.au [REDACTED]

Yours sincerely

[REDACTED]
Barry Dennien
Chief Executive Officer

Cc: Mr John Bradley
Director-General
Department of Environment and Resource Management

Date	Time	TSR	Wivenhoe Dam Release (m³/s)		Gate No.	Opening (m)	Storage Level	Rainfall (mm)
			Regulators	Hydro				
			Gates		Total			
12/12/2010	1400 W1							
13/12/2010	1300 W2		10	290	300			
15/12/2010	1800 W3							
16/12/2010	1600 W4			0				
17/12/2010	1200 W5							
17/12/2010	1800 W6	Closed						
	1830		13	Opening Op. Initiated	50	63	3	0.5
18/12/2010	0700 W7							
19/12/2010	0700 W8				350	350	3	3.5
19/12/2010	1800 W9				300	300	3	3
20/12/2010	0700 W10							
20/12/2010	0900 W11							
20/12/2010	0900 W12							
21/12/2010	0730 W13							
22/12/2010	0830 W14							
22/12/2010	1600 W15							
23/12/2010	0800 W16							
23/12/2010	1430 W17							
24/12/2010	0630 W18							
24/12/2010	1330 W19							
25/12/2010	0930 W20							

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Large storms yesterday pm and night; 20-50 forecast tonight
20-50 forecast o/n

40-50 since 16/12/2010
20-30 upper Brisbane R.

68 expected this afternoon

peak 68.24 (0400); currently 68.22 (112% cap.) falling slowly

currently @ 67.61 (107% cap.) falling slowly to finish just > FSL

When gates closed, will be 67.2 (0.2m > FSL) & 50mm < gate opening trigger level

10-30 in CA over last 24 hrs.; further heavy rain expected to start on 29/12/2010

67.07 expected when all gates closed

little or no rainfall

10-20 over last 24 hrs

26/12/2010	0800 W21			Rel. minor over last 24 hrs.
27/12/2010	0800 W22			40-50 over dam CA last 24 hrs.
28/12/2010	0700 W23	347 (initially) then back to 46		20-40 over dam CA's last 24 hrs
29/12/2010	0700 W24		69.26 (@ 0600) - aim is to return to FSL by 2/1/2011 69.33 peak	No/very little in last 24 hrs.
30/12/2010	0700 W25	Wivenhoe+Lockyer = 1,600m ³ /s		
31/12/2010	0700 W26 W27	Wivenhoe+Lockyer = 1,600m ³ /s	yesterday @ 1200 (2.3m > FSL) 69.07 this am	No/very little in last 24 hrs.
06/01/2011	1200 W28	Commence opening RG @ 1800 & ramp up to 300m ³ /s by 2200	68.4 @ 0500	No/very little in last 24 hrs.
			67.31 @ 0700	20-30 widespread with up to 50 on dam CA's
07/01/2011	0700 W29			30-50 with isolated falls up to 75; signif. Rain on Lock. Ck.
07/01/2011	1500 W30	Release started 1500 to be incr. slowly to ~1,200m ³ /s by 1400 tomorrow	67.64 @ 0600	
08/01/2011	0700 W31	~890	All (5) RG's open	Widespread rain 20-40 over dam CA's since 0900 yesterday, further high rainfall predicted for next 4 days
09/01/2011	0700 W32 W33	1,343	Currently 68.58 (falling slowly)	For last 12 hrs. av. of 40 for Somerset CA & <10 for Wivenhoe CA
09/01/2011	2100 W34	1,400	Currently @ 69.1;	Very heavy rainfall - totals for 24 hrs 100 - 300; Severe weather warning for heavy rainfall

W35
W36
W37

20-60 last 12 hrs in Lockyer CA; 30 in
Bremer R., Isol. Falls of 125 in upper
Brisbane R. & widespread falls of 40 - 70
in Somerset CA

73.51 rising @
25mm/hr.

All (5) gates

2,750 since 1930 on
10/1/2011

0630 W38

11/01/2011

74.1 (179.5% cap.)
rising @ 25mm/hr.

3,970

1200 W39

11/01/2011

Comments

Crossing Closures

45,000ML from Somerset; WL Somerset to peak at 99.7 on 13/12/2010; 150m³/s expected through Brisbane; 30,000ML expected into Wivenhoe from upper Brisbane R.; peak WL in Wivenhoe expected to be 67.6; Releases expected from Wivenhoe on afternoon of 13/12/2010 ramping up to 300m³/s; Reg. will be closed & Gate 3 opened to 3m to get WL back to 67.25; incr. release will impact on 3 crossings; Dam Regulator Informed

138m³/s from Somerset;

Releases from Wivenhoe will cease on 16/12/2010; Hydro will continue during fish recovery ops.

Gate closed 1000

Decision to commence a release tonight was made this am by Duty Flood Engineers to provide as much notice to impacted Councils as possible; 60,000ML needs to be released from Wivenhoe & Somerset to maintain FSL

Need to release >60,000ML from Wivenhoe & Somerset to achieve FSL

Releases could increase to 300m³/s;

100,000ML to be drained in next 4 days; Q|Brisbane R. to be maintained at 300-350m³/s; Transfer from Somerset via 2 reg.; Wivenhoe Q incr. to 150m³/s o/n; Will incr. further to 300m³/s as Q|Lock.Ck. Subside over next 24 hrs.; Q|Lock.Ck. Currently 130m³/s 12,000ML/day from Somerset; Release expected until 22/12/2010;

Somerset rel. steady (Q|reg.=140m³/s); Q|Wivenhoe to be maintained at 300m³/s (Lock.Ck. Permitting) to allow Burtons Bridge to remain open; WL|Wivenhoe expected to incr. to 67.4 over next 2 days;

Somerset risen to 100.2 - sluice gate releases to be made until am of 22/12/2010 when FSL expected; WL|Wivenhoe at 68 expected this pm; Q|Wivenhoe expected to be >1,200m³/s - discuss with impacted Cncls - strategy decision by 10000; Wivenhoe inflows excl. Q|Somerset peak tomorrow at 1800m³/s

Inflow to Somerset to peak today at 700m³/s; Somerset & Wivenhoe currently storing 140,000ML above FSL; further inflows occurring; releases to be incr. o/n to ~1,200m³/s; various Cncls. Given heads up; BOM advised Same as W11

410m³/s from Somerset sluice gates; Somerset peaked @100.43 (1300 on 20/12/2010), currently @ 100.23 (114% of cap.); 110,700ML inflow to Somerset; 67,500ML discharged into Wivenhoe; Wivenhoe inflow (excl. Somerset releases) = 157,900ML; 103,000ML released; Total inflow to both dams ~310,000ML; Continued gate operations may be necessary if forecast rainfall results in subsequent river rises

410m³/s from Somerset sluice gates; Somerset currently @ 99.68 (108% cap.); 121,500ML inflow to Somerset; 103,000ML released to Wivenhoe; Gate Ops. @ Wivenhoe; High tides expected to coincide with peak levels in Brisbane R.

BOM aware of all releases

1 sluice open @ Somerset to be closed @ 0900 - WL will be 0.1m> FSL; Est. inflow to Somerset 135,000ML; majority discharged into Wivenhoe; Gate closure ops @ Wivenhoe in progress; Wivenhoe inflow (excl. Somerset inflow) = 204,000ML; A total of 324,000ML has been released; Contd. gate ops may be necessary if forecast rain results in river rises; Gate closure ops sequence to be reviewed

Somerset gate ops ceased @ 0900, WL @ 99.1; Gate closure sequence extended to pm of 24/12/2010; Contd. Gate ops may be necessary if forecast rainfall gives incr. river levels

Gate ops @ Somerset ceased yesterday, reg. to be opened to bring lake to FSL; Gate ops continuing @ Wivenhoe -1 gate incr. every 5-6 hrs to ensure Brisbane R. Q not incr. due to incr. Lock. Ck. Outflows & maintain Burtons Bridge open;

Flood Centre to monitor o/n & consider options tomorrow am based on inflows & rainfall; further gate ops may be necessary in coming days

Somerset WL incr. from 99.18 yesterday @ 0600 to 99.33 @ 0730 today; 99.5 tomorrow if no gate ops.; Wivenhoe currently 4,200ML through hydro & reg.; 15,000ML expected just from upper Brisbane R. in next few days; WL cont. to fall in Lock. Ck; Small rises expected in Bremer & Warrill systems; WL in Wivenhoe incr. to 67.28 @ 600

Gate release will impact on 3 crossings

Would impact Twin Bridges, Savages Crossing, Colleges Crossing

Twin Bridges & Savages Crossing currently closed; Colleges Crossing to be impacted in afternoon

Twin Bridges, Savages Crossing, Colleges Crossing currently closed

Twin Bridges, Savages Crossing and Colleges Crossing are closed; closing of Burtons Bridge and Kholo Bridge will be considered if more rain or inflows

Both Burtons and Kholo bridges likely to be inundated

Wivenhoe releases reduced slightly to keep Burtons Bridge open - then incr. releases after Somerset ReglCnd Inform residents affected by Burtons Bridge

Kholo Bridge is also expected to be inundated by mid-morning ; In accordance with the adopted operational strategy these bridges should be back in service by late Thursday and all bridges (with the possible exception of Twin Bridges) should be trafficable for Christmas providing no further rainfall occurs.

Burtons Bridge & Kholo Bridge expected to be back in service by 23-24/12/2010; All bridges expected to be trafficable by Xmas provided no further rain

Gate closing sequence to allow bridges to be accessible

Projected crossing openings: Burtons Bridge – 18:00 Thursday 23 December 2010.

Savages Crossing – 19:00 Thursday 23 December 2010

Kholo Bridge – 21:00 Thursday 23 December 2010

Colleges Crossing – 08:00 Friday 23 December 2010

Projected crossing openings: Burtons Bridge – 18:00 Thursday 23 December 2010, Kholo Bridge - 21:00 Thursday 23 December 2010; Other bridges expected to remain closed until Xmas Day

Twin Bridges, Savages Crossing and Colleges Crossing are currently closed and should remain so for some time due in part to current outflows into the Brisbane River from Lockyer Creek that will peak in excess of 200 cumecs late today.

Twin Bridges, Savages Crossing and Colleges Crossing may still be affected by flows from the Lockyer. Twin Bridges, Savages and Colleges Crossing remain impacted by Wivenhoe releases and Lockyer and local runoff. Burtons and Kholo Bridges would be currently unaffected. Kholo will no doubt still be closed by Council regarding repairs.

Crossings downstream of the dam are currently impacted primarily by non-controlled river flows only (no RG releases from Wivenhoe). Lockyer Creek outflows into the Brisbane River are currently in the order of 60m³/s. Twin Bridges, Savages and Colleges Crossings will be inundated but the plan is to release around 300-350m³/s depending on flows downstream so as to not impact Burtons Bridge.

Twin Bridges, Savages Crossing and Colleges Crossing currently closed; Burtons Bridge is currently open, but will be closed later today/tomorrow; Kholo Bridge remains unserviceable due to flood damage; No current expectation that either Mt Crosby Weir Bridge or Fernvale Bridge will be impacted by the current event; An updated estimate of the time of closure of Burtons Bridge this afternoon will be provided to Council. RG discharge dropped back to 46m³/s to ensure Burtons Bridge can remain open; Twin Bridges, Savages Crossing, Colleges Crossing, Burtons Bridge and Kholo Bridge are currently closed; No current expectation that either Mt Crosby Weir Bridge or Fernvale Bridge will be impacted by the current event; Lockyer Creek outflows being closely monitored and may come close to impacting upon the Mt Crosby Weir Bridge; England Creek access is not impacted yet.

Twin Bridges, Savages Crossing, Colleges Crossing, Burtons Bridge and Kholo Bridge are currently closed; no current expectation that Mt Crosby Weir Bridge or Fernvale Bridge will be impacted by current event. At this stage, estimated that the flow at Burtons Bridge will fall below the bridge deck on Sunday morning.

Twin Bridges, Savages Crossing, Colleges Crossing, Burtons Bridge and Kholo Bridge are currently closed to inundation

Not included
Lockyer Ck peak of about 1,000m³/s Friday afternoon. This will take out twin bridges and nearby inundate Savages Crossing. Colleges Crossing could be taken out by a combined Lockyer and local runoff. Current strategy is to keep Burton Bridge free. Gate release would limit mid-Brisbane Q to 400m³/s ((Burtons capacity 450m³/s).

Q|Lockyer may be of sufficient magnitude to inundate Burtons Bridge; Somerset Regional Council, Ipswich City Council and Brisbane City Council have been advised of the potential for gate operations during the next 24 hours; The relatively high Lockyer flows will adversely impact upon Twin Bridges, Savages Crossing, and Colleges Crossing for several days, may also later impact upon Burtons Bridge & Kholo Bridge; not expected to be any adverse impacts upon Fernvale Bridge or Mt Crosby Weir Bridge; Councils have been advised of this strategy and are contacting residents

All of the crossings downstream of Wivenhoe with the exception of Fernvale and Mt Crosby Weir Bridge will be adversely impacted; Councils have been advised of this strategy and are contacting residents

The projected Wivenhoe release of 1,200m³/s combined with Lockyer flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing) will be adversely impacted for several days. At this stage Fernvale and Mt Crosby Weir Bridge are not expected to be affected but they could potentially be affected if the predicted rainfall totals eventuate.

The current Wivenhoe Dam release combined with Lockyer flows and local runoff will mean that all low level crossings downstream of Wivenhoe (Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing) will be adversely impacted until at least Wednesday 12 January. At this stage Fernvale and Mt Crosby Weir Bridge are not expected to be affected, but this may be revised if the predicted rainfall totals eventuate and higher releases from Wivenhoe Dam are considered necessary. Cncls advised of Wivenhoe op. strategy

The projected Wivenhoe Dam releases combined with Lockyer flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Saturday 15 January in varying degrees; Water levels in the lower Brisbane R will be impacted by the combined flows of Lockyer Ck, Bremer River, local runoff and releases from Wivenhoe Dam

BOM issued severe weather warning @ 0.44s; Somerset WL incr. to 99.46 (0.46m > FSL) - 2 regs. To be opened today (140m³/s); Wivenhoe WL incr. to 67.37 (0.37m > FSL); RG to be opened later today following discussions with local authorities; further gate ops may be necessary if rainfall incr. river levels

BOM continues with severe weather warning & widespread rainfall over dam CA's; 2 regs. @ Somerset giving 139m³/s release, lake contd. To rise to 99.6 (0.6m > FSL); RG ops @ Wivenhoe commenced yesterday @ 0900, WL contd. To rise to 67.57 (0.57m > FSL); Q|Wivenhoe reduced of/n because of incr. Q|Lockyer to ensure Burtons Bridge remains open; RG @ Wivenhoe wound back as Q|Lockyer incr. > 250m³/s; Q|Lockyer expected to peak > 500m³/s later today/tomorrow - will inundate Burtons Bridge; When this happens, Q|Wivenhoe will be incr. to get WL back to FSL; further gate ops may be necessary in coming days

Sever weather warning no longer current; Somerset release through regs' ~ 208m³/s; WL|Somerset incr. to 99.96 (0.96m > FSL) - inflows decreasing; RG opening dependent on Q|Lockyer; Wivenhoe WL currently @ 68.55 (1.55m > FSL); inflows to Wivenhoe decr.

Further 2 sluices opened @ Somerset; WL @ Somerset 99.83 & falling slowly; 2 sluices to be closed @ 1200; Intended to incr. Wivenhoe releases so Q|Wivenhoe+Q|Lockyer maintained @ 1,600m³/s (similar Q to mid Oct & mid Dec 2010)

2 sluices @ Somerset remain open (405m³/s) - FSL expected by 6/1/2011; RG closing sequence expected to start mid tomorrow - RG expected to be closed on 2/1/2011

WL @ Somerset 99.01 (falling from peak of 100.0 - 1200 28/12/2010) - currently 2 regs;

Somerset @ 99.34 (0.34m > FSL) & rising slowly; Wivenhoe 67.31 (0.31m > FSL) & rising slowly; Gates will be opened in next 24 hrs; Lockyer Ck peak of about 100m³/s Friday afternoon

100-200mm rain forecast for SE Qld next 5 days; Somerset WL @ 99.58 (0.58m > FSL) rising slowly - currently releasing 35m³/s; Wivenhoe WL @ 67.64 (0.64m > FSL & > gate trigger level) rising slowly; u/s of dam river levels peaked @ Linville and Gregors Ck gauges; A peak of about 470 cumecs is expected from Lockyer Creek by mid-afternoon; Wivenhoe gate releases will occur after the impact of Lockyer flows on Burtons Bridge has been ascertained and flood levels in the lower Lockyer subside Q|Wivenhoe may be as high as 1,200m³/s

Somerset releasing 35m³/s; 50,000MI into Somerset; Gate release @ Wivenhoe - strategy to be reviewed tomorrow (dependent on further rainfall)

Somerset WL @ 100.42 & rising (0500) - 1 open sluice gate; Water temp. held in Wivenhoe - strategy may need to be reviewed (depend. On confidence in estimates of Wivenhoe inflows); Intended to ramp Wivenhoe up to 1,200m³/s by 1200 - likely to be incr. next week; since 2/1/2011, ~200,000MI has flowed into Wivenhoe (incl. Somerset releases), further 180,000MI expected based on recorded rainfall; ~ 50,000MI released via reg. & hydro (@50m³/s)

Somerset currently @ 100.27 - 60mm rain in last 2 hrs will cause significant inflow later today; 405m³/s being released into Wivenhoe; maintain combined Q of 1,600m³/s in mid-Brisbane R.
Not included

Somerset @ 101.68 rising quickly; 5 sluice gates open releasing ~1,100m³/s; WL expected to reach 103.5 by am 11/1/2011; River levels u/s Wivenhoe rising fast; Q|Brisbane R. @ Gregors Ck @ 6,700m³/s; Wivenhoe expected to reach 73.0 by 11/1/2011 - need to incr. Q|Wivenhoe am of 10/1/2011 - crank up to 2,600m³/s by am 11/1/2011; Attempt to keep combined Q < 3,500m³/s - < limit of urban damages in the City

Not included
Not included
Not included

Somerset WL @ 103.27 & falling slowly ; currently 1,400m³/s released to Wivenhoe- to be reduced to 500m³/s later in the day - to ensure flood mitigation of Somerset & Wivenhoe are maximized; BOM provided advice on flash flooding in Lockyer Ck.; WL in Wivenhoe will reach 74 by evening; May need to increase Q further - may result in Q lower Brisbane R. >5,000m³/s

Somerset @ 103.3 & rising; Outflows into the Brisbane River from both Lockyer Creek and the Bremer River are also increasing; If no further rain, can hold @ 74.8 - aim is to prevent fuse plug triggering, situation assessed every 3 hrs.; Heavy rainfall continues throughout South East Queensland and the situation could deteriorate over the next 24 hours. The flood operation centre will continue to monitor the situation and provide situation reports every six hours until the situation stabilizes.

The projected Wivenhoe Dam releases combined with Lockyer Creek flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted; Water levels in the lower Brisbane River will be impacted by the combined flows of Lockyer Creek, Bremer River, local runoff and releases from Wivenhoe Dam.

Suzie Emery

From: Dan Spiller
Sent: Saturday, 15 January 2011 8:32 AM
To: 'jbs2000'; 'Bradley John'
Subject: Discussion Paper on Dam Full Supply Level Investigations Seqwater Gated Storages
Attachments: Discussion Paper on Dam Full Supply Level Investigations Seqwater Gated Storages.docx

Attachment 1

Discussion Paper on Dam Full Supply Level Investigations Seqwater Gated Storages

Summary of comments

The attached paper summarises an analysis that changing the initial storage level of dams has on downstream flood impacts.

Wivenhoe/Somerset System

The analysis shows that for some minor floods similar to October 2010, reducing the starting volume of Wivenhoe Dam by 5% or 10% has minimal impacts on impacts downstream. The main benefit being that inundation times for downstream bridges will be reduced but only by around 15%. However peak water levels are not affected. There are minimal potential benefits to downstream bridge until dam levels are reduced down to about 50% of capacity.

These results are not unexpected as Wivenhoe has such a large flood storage. Adding say 100,000ML to the flood storage (equates to reducing the storage volume by 10%) does not appreciably increase this available flood storage.

It should also be noted that in many cases, Wivenhoe flood releases will be made following the peaks of inflows into the Brisbane River from the Lockyer and Bremer Catchments. Certainly during many events, Lockyer Creek could already have inundated most or all of the road crossings downstream of Wivenhoe Dam. In these instances, a small amount of additional flood storage in the dam provides minimal benefit.

Another option considered was pre-releasing Wivenhoe water in anticipation of a flood event. This is not considered a viable option for the following reasons:

- Regardless of forecast, there is never any certainty on the amount of rain that will fall within a dam catchment. For example, on 29 November 2010, the quantitative forecast from BOM for the Wivenhoe Catchment was 25 to 50 millimetres. Actual rainfall received was in the order of 10 millimetres. On a saturated catchment this could equate to a runoff discrepancy of hundreds of thousands of megalitres. A pre-release of anticipated flood water based on forecast could result in major embarrassment.
- Any significant pre-release of water would result in bridge inundation below Wivenhoe Dam.
- Any pre-release of water from Wivenhoe Dam will take at least 24 hours to reach the lower end of the Brisbane River system. Rains occurring in the catchments below the dam over this period could potentially worsen downstream flood impacts.

The Bureau of Meteorology has been contacted and they have confirmed the above forecast reliability assessment. They advised that, whilst weather prediction models are steadily improving, the forecast of rainfall amounts over catchment time/space scales is recognised as one of the most challenging/difficult tasks. Detailed rainfall forecasting is not deterministic - the uncertainties involved are often expressed in probabilistic forecasts and whilst there is often the ability to forecast the potential for a significant rain event to occur in the southeast

Qld-northern NSW region, it is difficult (if not impossible) to predict the actual location of the heaviest rain, even with only a few hours notice.

The Queensland Director of Dam Safety (Mr Peter Allen) was contacted and he confirmed the assessment that minor reductions in the stored volume of Wivenhoe Dam would have minimal impacts on floods downstream and concurred with the risks involved in any pre release of significant volumes of water from dams prior to an event.

North Pine and Leslie Harrison Dams

Lowering the normal FSL for North Pine and Leslie Harrison Dams will have minimal impact on major floods and may not decrease releases depending on the size of even minor events. However lowering the level of North Pine Dam after a flood release to between 95% and 100% may reduce the frequency of operations in some rain events although the main benefit is in operational efficiency as it provides more time for response and may reduce making releases in a minor storm event.

Similarly reducing Leslie Harrison level to around 95% after or before an event could assist in reducing call out of staff and manning the storage for minor releases and even the timing of releases.

Normally both dams are returned to just under 100% after an event based on base inflows still occurring and possible further rain. Allowing the dams to reduce to around 95% improves the operational leeway. However this could best be provided by an operational arrangement where the WGM simply agrees Seqwater has the operational latitude to reduce both storages to between 95% and 100% after an event or when there is some inflow and Seqwater can decide the exact level based on ongoing inflows and possible predicted rainfall, but not going below 95%.

DAM FULL SUPPLY LEVEL (FSL) INVESTIGATIONS

SEQWATER GATED STORAGES

INTRODUCTION

The following short paper examines the issues associated with temporary lowering the full supply levels of Seqwater's gated dams to improve short term flood mitigation benefits. The paper considers Wivenhoe Dam, Somerset Dam, North Pine Dam and Leslie Harrison Dam.

WIVENHOE DAM AND SOMERSET DAM

Wivenhoe Dam and Somerset dam control only 50% of the Brisbane River catchment (Bremer River and Lockyer Creek catchments are not controlled), therefore the Flood Mitigation benefits provided by the dam will depend on the rainfall distribution experienced during a flood event. This makes it difficult to quantify exactly the benefits of lowering the storage in anticipation of possible flood rains.

There are primarily two types of flood events that may occur in the Brisbane River Catchment. There are the smaller events that impact primarily on the rural bridges upstream of Moggill and the larger events that impact on urban areas in Brisbane. The threshold that separates these two events is a river flow of around 3500 cubic metres per second at Moggill. To understand the possible benefits of lowering the storage to reduce flooding impacts, it makes sense to discuss these two types of events separately.

Events Impacting on Bridges (Moggill Flow < 3500m³/s) – Limited Urban Impacts

In recent history, flood events of this nature occurred in April 1989, February 1999 and October 2010. The flow characteristics of events of this type are shown in the following table.

Event	Wivenhoe Dam					
	Starting Level		Volume Of Inflow	Volume Of Outflow	Peak Outflow	Peak Water Level
	m AHD	%	ML	ML	m ³ /s	m AHD
Early April 1989	67.06	>100	690,000	690,000	1,620	69.78
Late April 1989	67.00	100	870,000	820,000	1,490	71.45
February 1999	63.92	<100	1,220,000	900,600	1,800	70.45
October 2010	67.03	>100	640,000	640,000	1,300	69.65

The October 2010 event was examined to determine the benefits of lowering the storage level. This event commenced with the dam at FSL. The event was examined with the dam at 95% capacity, 90% capacity, 80% capacity, 50% capacity and empty at the commencement of the event. The results are shown in the following table. When reading the table it is important to understand that the bridges are impacted not just by outflows from Wivenhoe, but also by flows from the uncontrolled areas of the river catchment. Accordingly, the location of a bridge within the system will dictate the size of catchment area that will impact on the bridge. All inundation times shown in the table are approximations only, made for the purposes of this investigation.

Dam Percentage Full at Event Commencement	Approximate Duration of Wivenhoe Radial Gate Releases/ Twin Bridges Inundation (hours)	Approximate Duration of Savages Crossing and Colleges Crossing Inundation (hours)	Approximate Duration of Burtons Bridge and Kholo Bridge Inundation (hours)	Peak Flow at Moggill (m ³ /s)
100%	230	247	183	1848
95%	187	214	183	1848
90%	185	214	183	1841
80%	172	214	183	1786
50%	130	214	153	1722
0%	0	189	38	940

The table shows that the reduction in FSL won't have a large impact on Bridge inundation times. A reduction in the order of 36 hours or 15% of the total inundation time may be possible for the low level bridges only. The reductions are generally caused by the delay in release commencement associated with the lower starting FSL. However, the bridges can often already be inundated at this time anyway due to flood inflows into the Brisbane River from the 50% of the catchment not controlled by Wivenhoe Dam. Lowering the FSL of the dam has no impact on such inundations as shown in the table.

For events smaller than those considered above, it should be noted that the Manual of Flood Mitigation allows a trigger level buffer of 27500 megalitres above FSL and this has the effect of protecting Twin Bridges and the lower level bridges from inundation as a result of minor events. Twin Bridges is essentially a low level causeway that is inundated following any radial gate release. This inundation could possibly be prevented by raising the bridge deck level. Regardless, the areas accessed using this bridge can also be accessed using the Fernvale Bridge. It is acknowledged however that the closing of Twin Bridges causes inconvenience to local residents, as it adds approximately another five kilometres to the journeys to and from their residences. Approximately 40 residences and several businesses (primarily turf farms) are impacted.

Events Impacting on Urban Areas (Moggill Flow > 3500m³/s) – All rural bridges inundated

Events of this nature have not been experienced since the construction of Wivenhoe Dam was completed in 1984, with the last event of this nature being experienced in 1974. The inflow volume into Wivenhoe Dam associated with the 1974 event has been estimated to be in the order of 1.5 million megalitres. However during the 1974 event, an additional 1.5 million megalitres of flood flow impacting the urban areas of Brisbane originated from catchment areas that are not controlled by Wivenhoe Dam.

For events of this nature, it is unlikely that peak water levels in Brisbane would be significantly impacted by minor reductions in the level of Wivenhoe Dam. Certainly reductions in dam volume in the order of at least 250000 megalitres would be needed to provide any significant reduction in water level peaks experienced in urban areas. Additionally, reductions in the FSL of this order would not necessarily guarantee reductions in urban flood levels, as the effectiveness of Wivenhoe Dam in reducing urban flood levels is

directly dependant on the distribution of rainfall in the Brisbane River catchment during a flood event (Wivenhoe Dam controls only 50% of the total Brisbane River catchment) and the spacing between individual flood events.

NORTH PINE DAM

North Pine Dam has no flood mitigation potential. Unlike Wivenhoe Dam, once the dam has reached FSL, all water flows into the dam must be released to protect the structural safety of the dam.

Any radial gate operation at North Pine Dam to release flood water, results in inundation of Youngs Crossing Road, so lowering the FSL is problematic and may best be achieved by increasing the daily water diversion to the North Pine Dam Water Treatment Plant. There are river release valves that allow some water to be drained from North Pine Dam without inundating Youngs Crossing. These valves have been operated continuously since the recent gate releases to manage residual inflows into the dam. However outflows from these valves are restricted to flows in the order of several hundred megalitres per day as larger flows will adversely impact on Youngs Crossing. Certainly a small reduction in the level of North Pine Dam is potentially beneficial in preventing closures of Youngs Crossing Road associated with small storm events.

It should be noted however that Youngs Crossing Road is also impacted by uncontrolled flood flows from Lake Kurwongbah and local storm run-off. In recent times Youngs Crossing Road has been closed by flood water during times when no water releases were being made from North Pine Dam, but when storm rains resulted in flood flows from uncontrolled areas of the catchment.

The table below gives an indication of the rainfall required to operate for NPD:

Level	Capacity			Rainfall Required to Operate	
				Wet Conditions	Dry Conditions
	m AHD	%	ML	mm	mm
FSL	39.60	100.0%	214,302	5	60
Reduced FSL	39.10	95.0%	203,618	35	100

Recent changes to the Manual of Flood Mitigation for North Pine Dam allows for some ability to retain up to 2500 megalitres of water to reduce impacts on Youngs Crossing Road, provided favourable weather forecasts are experienced. However the preferred option to reduce public inconvenience associated with storm events would be to raise the flood immunity of the river crossing on Youngs Crossing Road. This crossing is primarily a low level causeway that is potentially unsuitable given the volume of traffic that now uses this crossing on a daily basis.

LESLIE HARRISON DAM

Similar to North Pine Dam, Leslie Harrison Dam has no flood mitigation potential. Once the dam has reached FSL, all water flows into the dam must be released to protect the structural safety of the dam.

The dam is relatively small with a total full supply storage volume of only 24800 megalitres, against an inflow volume during a 72 hour 1 in 50 year storm event of over 30000 megalitres. Flood gate operations at Leslie Harrison Dam do not impact on public roads and generally only inconvenience the general public during large flood events. Reductions in this inconvenience cannot be achieved by small reductions in dam storage

Suzie Emery

From: Lance McCallum [Lance.McCallum@...]
Sent: Saturday, 15 January 2011 10:31 AM
To: Dan Spiller; Bradley John
Cc: Tim Watts
Subject: Urgent - Cabinet in confidence

John/Dan

The Minister has asked that preparation be done over the weekend that will enable him to go to the Emergency Cabinet meeting on Monday with a position on how the Govt is going to handle the issues of reviewing operational decisions made by SEQwater and SEQWGM in relation to releases from the dams.

I understand that in further to the recent independent review of the Wivenhoe operations manual the WGM is also undertaking further work by compiling a list of the operational experts who authored the manual.

((Happy to discuss further.

Thanks, Lance.

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From: Bradley John [John.Bradley [REDACTED]]
Sent: Saturday, 15 January 2011 10:34 AM
To: Lance.McCallum [REDACTED]; Dan Spiller
Cc: tim.watts [REDACTED]; Barry Dennien
Subject: Re: Urgent - Cabinet in confidence

Thanks Lance - we have anticipated the need for something like this - seqwgm work underway - I will talk to SEQWGM when out of SDMG now on.

Regards
John B

From: Lance McCallum [mailto:Lance.McCallum [REDACTED]]
Sent: Saturday, January 15, 2011 10:30 AM
To: spiller daniel @ SEQWGM; Bradley John
Cc: Tim Watts <Tim.Watts [REDACTED]>
Subject: Urgent - Cabinet in confidence

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Thanks, Lance.

+-----+

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3 sheets of A4 paper = 1 litre of water

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From: Barry Dennien [Barry.Dennien [REDACTED]]
Sent: Saturday, 15 January 2011 10:41 AM
To: Dan Spiller
Cc: Elaina Smouha
Subject: Fwd: Urgent - Cabinet in confidence

Dan elaina

I take it you are on to this

Regards
Barry Dennien

Begin forwarded message:

From: Bradley John <John.Bradley [REDACTED]>
Date: 15 January 2011 10:33:42 AM AEST
To: "Lance.McCallum [REDACTED]"
<Lance.McCallum [REDACTED]>, Dan Spiller <Daniel.Spiller [REDACTED]>
Cc: "tim.watts [REDACTED]" <tim.watts [REDACTED]>, Barry Dennien
<Barry.Dennien [REDACTED]>
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Suzie Emery

From: Elaina Smouha [elainamir [REDACTED]]
Sent: Saturday, 15 January 2011 1:42 PM
To: john.bradley [REDACTED]
Cc: Barry Dennien; Dan Spiller; pborrows [REDACTED]; bob.reilly [REDACTED]
Subject: Cabinet in confidence - discussion points
Attachments: Public inquiry strategy - brief.docx

John

Attached are some discussion points for our 2pm teleconference about Monday's Emergency Cabinet meeting.

Regards

Elaina

Discussion points for teleconference

What is the objective?

- a) Ensuring public transparency
- b) To answer the State's questions on the performance of Wivenhoe Dam operations
- c) Preparation for a public inquiry
- d) Normal and logical course of conduct after the occurrence of a major flood event – Review requirement under the Flood Mitigation Manual

Background

- 1) Design of Dam – Storages/Spillway upgrade (Responsible: Seqwater)
- 2) How does Wivenhoe Dam work as a flood mitigator? Stats on how much did Wivenhoe Dam knock off the flood peak? **[Priority to get out to the public] (Responsible: Seqwater)**
- 3) Development of Flood Mitigation Manual (Responsible: Seqwater/DERM)
 - a. Four strategies
 - b. History of Flood Mitigation Manual updates and peer review
- 4) Responsibility under the *Water Supply (Safety and Reliability) Act 2008* (Responsible: DERM)
 - a. What is the formal reporting process following a major flood event?
- 5) "The Event" – operation of Wivenhoe Dam (Responsible: Seqwater)
 - a. Event report under the Flood Mitigation Manual
- 6) "The Event" – management of the Water Grid emergency under the SEQ Water Grid Emergency Response Plan (Responsible: SEQ Water Grid Manager)
- 7) What next?
 - a. SWOT
 - i. Community feedback
 - ii. A significant (from a national perspective)

Seqwater report

Flood Mitigation Manual requires a report to the Chief Executive after a significant flood event, on the effectiveness of the operational procedures:

- Get more comprehensive report from Brian Cooper? – review appropriateness of trigger levels – take into account the accuracy of rainfall forecasts provided by BOM at the time – reliability of weather forecasts.
- Set up expert panel for Flood Mitigation Manual review
- Communication Protocol and incorporation into the Flood Mitigation Manual (revisit in the next fortnight)

Seqwater to procure review.

Urgent accelerated review due to anticipated further rainfall.

Suzie Emery

From: Duty Engineer [dutysec [REDACTED]]
Sent: Saturday, 15 January 2011 2:08 PM
To: 'Peter Borrows'; 'Rob Drury'; 'Terry Malone'
Cc: Dan Spiller; 'John Bradley'; Elaina Smouha; bob.reilly [REDACTED]
Subject: March 2010 Report Index
Attachments: Report Index.pdf

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FYI

Terry Malone
Duty Engineer
Flood Operations Centre

Phone: [REDACTED]

Fax: [REDACTED]

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From: Peter Borrows [mailto:pborrows [REDACTED]]
Sent: Saturday, 15 January 2011 1:10 PM
To: Rob Drury; Duty Seq; Terry Malone
Cc: Peter Borrows
Subject: Fw: 2 pm phone hook up - Wivenhoe operations brief preparation

Rob & Terry, can you both come in on this at 2pm please.

From: Barry Dennien <Barry.Dennien [REDACTED]>
To: Dan Spiller <Daniel.Spiller [REDACTED]>; John Bradley (john.bradley [REDACTED])
<john.bradley [REDACTED]>; Elaina Smouha <Elaina.Smouha [REDACTED]>; Peter Borrows;
bob.reilly [REDACTED] <bob.reilly [REDACTED]>
Sent: Sat Jan 15 12:10:09 2011
Subject: 2 pm phone hook up - Wivenhoe operations brief preparation

Folks

Details of phone hook up:

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Agenda to follow in approx one hour

Barry Dennien

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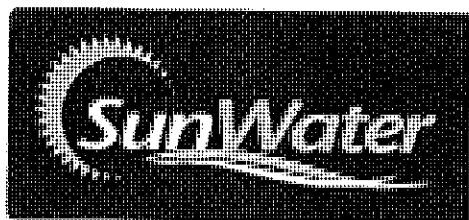
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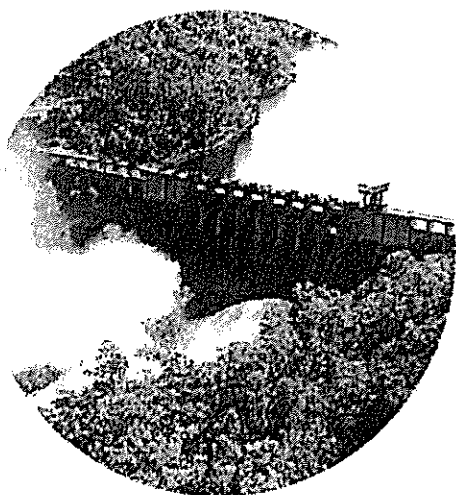
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Author:

Mr Rob Ayre
Headworks Design Manager
Infrastructure Development

Approved:

Mr Daryl Brigden
Manager, Engineering South
Infrastructure Development



Final Report

Flood Events at Wivenhoe, Somerset and North Pine Dams for February and March 2010

Date: June 2010

P-AEXP-1802-AK-01-03

File: 08-007969/00

Prepared for:

Seqwater

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LIST OF APPENDICES

APPENDIX A - FOC Attendance Logs & Event Logs

APPENDIX B - Estimated Inflows and Release

APPENDIX C - Reservoir Headwater Levels

Suzie Emery

From: Dan Spiller [Daniel.Spiller [REDACTED]]
Sent: Saturday, 15 January 2011 2:14 PM
To: 'watergridmedia' [REDACTED]
Subject: FW: March 2010 Report Index
Attachments: Report Index.pdf

From: Duty Engineer [mailto:dutysec [REDACTED]]
Sent: Saturday, January 15, 2011 2:08 PM
To: 'Peter Borrows'; 'Rob Drury'; 'Terry Malone'
Cc: Dan Spiller; 'John Bradley'; Elaina Smouha; bob.reilly [REDACTED]
Subject: March 2010 Report Index

FYI

Terry Malone
Duty Engineer
Flood Operations Centre

[REDACTED]

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Sent: Saturday, 15 January 2011 1:10 PM
To: Rob Drury; Duty Seq; Terry Malone
Cc: Peter Borrows
Subject: Fw: 2 pm phone hook up - Wivenhoe operations brief preparation

Rob & Terry, can you both come in on this at 2pm please.

From: Barry Dennien <Barry.Dennien [REDACTED]>
To: Dan Spiller <Daniel.Spiller [REDACTED]>; John Bradley (john.bradley [REDACTED]) <john.bradley [REDACTED]>; Elaina Smouha <Elaina.Smouha [REDACTED]>; Peter Borrows; bob.reilly [REDACTED] <bob.reilly [REDACTED]>
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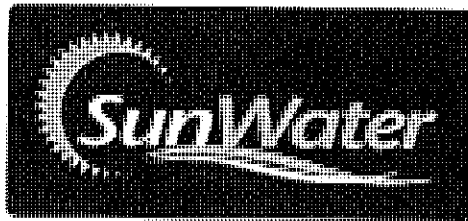
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Prepared by:

Doc No.: 942353
Entered: [REDACTED]



SunWater Limited
ACN 131 034 985

179 Turbot Street, Brisbane
PO Box 15536 City East
Brisbane Queensland Australia 4002

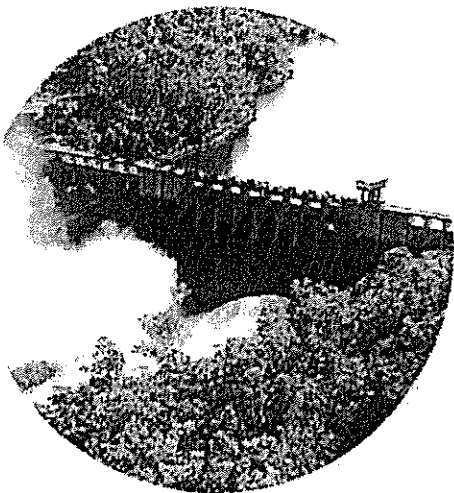
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Author:

[REDACTED]
Mr Rob Ayre
Headworks Design Manager
Infrastructure Development

Approved:

[REDACTED]
Mr Daryl Brigden
Manager, Engineering South
Infrastructure Development



Final Report

Flood Events at Wivenhoe, Somerset and North Pine Dams for February and March 2010

Date: June 2010
P-AEXP-1802-AK-01-03
File: 08-007969/00

Prepared for:

Seqwater

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LIST OF APPENDICES

APPENDIX A - FOC Attendance Logs & Event Logs

APPENDIX B - Estimated Inflows and Release

APPENDIX C - Reservoir Headwater Levels

Suzie Emery

From: Dan Spiller [Daniel.Spiller@] [REDACTED]
Sent: Saturday, 15 January 2011 2:21 PM
To: 'Duty Engineer'
Subject: FW: Cabinet in confidence - discussion points
Attachments: Public inquiry strategy - brief.docx

Follow Up Flag: Follow up
Flag Status: Flagged

From: Elaina Smouha [mailto:elainamir@] [REDACTED]
Sent: Saturday, January 15, 2011 1:42 PM
To: john.bradley@ [REDACTED]
Cc: Barry Dennien; Dan Spiller; pborrows@ [REDACTED]; bob.reilly@ [REDACTED]
Subject: Cabinet in confidence - discussion points

John

Attached are some discussion points for our 2pm teleconference about Monday's Emergency Cabinet meeting.

Regards

Elaina

Discussion points for teleconference

What is the objective?

- a) Ensuring public transparency
- b) To answer the State's questions on the performance of Wivenhoe Dam operations
- c) Preparation for a public inquiry
- d) Normal and logical course of conduct after the occurrence of a major flood event – Review requirement under the Flood Mitigation Manual

Background

- 1) Design of Dam – Storages/Spillway upgrade (Responsible: Seqwater)
- 2) How does Wivenhoe Dam work as a flood mitigator? Stats on how much did Wivenhoe Dam knock off the flood peak? **[Priority to get out to the public] (Responsible: Seqwater)**
- 3) Development of Flood Mitigation Manual (Responsible: Seqwater/DERM)
 - a. Four strategies
 - b. History of Flood Mitigation Manual updates and peer review
- 4) Responsibility under the *Water Supply (Safety and Reliability) Act 2008* (Responsible: DERM)
 - a. What is the formal reporting process following a major flood event?
- 5) "The Event" – operation of Wivenhoe Dam (Responsible: Seqwater)
 - a. Event report under the Flood Mitigation Manual
- 6) "The Event" – management of the Water Grid emergency under the SEQ Water Grid Emergency Response Plan (Responsible: SEQ Water Grid Manager)
- 7) What next?
 - a. SWOT
 - i. Community feedback
 - ii. A significant (from a national perspective)

Seqwater report

Flood Mitigation Manual requires a report to the Chief Executive after a significant flood event, on the effectiveness of the operational procedures:

- Get more comprehensive report from Brian Cooper? – review appropriateness of trigger levels – take into account the accuracy of rainfall forecasts provided by BOM at the time – reliability of weather forecasts.
- Set up expert panel for Flood Mitigation Manual review
- Communication Protocol and incorporation into the Flood Mitigation Manual (revisit in the next fortnight)

Seqwater to procure review.

Urgent accelerated review due to anticipated further rainfall.

Suzie Emery

From: Elaina Smouha [elainamir [REDACTED]]
Sent: Saturday, 15 January 2011 4:37 PM
To: Barry Dennien; Dan Spiller; Michael Lyons
Subject: Ministerial brief - outline
Attachments: Ministerial brief - contents outline.docx

Discussion points for teleconference

What is the objective?

- a) Ensuring public transparency
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- c) Preparation for a public inquiry
- d) Normal and logical course of conduct after the occurrence of a major flood event – Review requirement under the Flood Mitigation Manual

Background (focus on Brisbane River flooding issues)

- 1) Design of Dam – Storages/Spillway upgrade (*Information provider: Seqwater and Peter Allen - DERM*) [1/3 to ½ a page]
- 2) "The Flood Event" – Q&A (*Information provider: Seqwater*) [2 ½ pages]
 - a. Chronology - High level time step of events and significant decision making/changes – more detailed time step information for Tuesday afternoon (i.e. what was the BOM forecast at the time, narrow peak etc.)
 - b. How does Wivenhoe Dam work as a flood mitigator?
 - c. What are the factors being balanced when making decisions about the amount of dam releases? To what extent does information from the Bureau of Meteorology/rain gauges influence decisions? How reliable is this information?
 - d. Statistics on how much did Wivenhoe Dam knock off the flood peak.
 - e. What would have happened if Wivenhoe Dam had not been built and we only had Somerset Dam? What damage would have been caused compared to what has currently been experienced (damage statistics)?
 - f. If we have undertaken pre-emptive dam releases to bring Wivenhoe Dam's full supply level down to lower than what we had maintained (i.e. 60%), what would have been the river height for the period that this flood event occurred?
 - g. If pre-emptive dam releases would not have made a difference, why? (i.e. why did we not release earlier?)
 - h. Why was Wivenhoe Dam only allowed to rise up to 191% and not 230%?
 - i. What is the fuse plug and why did it need to be maintained?
 - j. What damage or town isolation occurred during the Wivenhoe Dam releases that occurred since October 2010?
 - k. Did Seqwater have time to reduce the dam level between the 5 events? If so, would it have made a difference to this flood event?

3) The Flood Mitigation Manual (*Information Provider: Seqwater/DERM*) [½ to 1 page]

- a. Describe the decision making framework - Four strategies
- b. How is the Manual designed to work?
- c. History of Flood Mitigation Manual updates and peer review – who was on the panels, studies that fed into previous versions of the Manual and who was involved in these studies?
- d. **Attach** Minister Robertson's request for advice on pre-emptive release and our response (*Information provider: SEQ Water Grid Manager*)

4) Regulatory context - *Water Supply (Safety and Reliability) Act 2008* (*Information provider: Peter Allen - DERM*)

- a. Flood Mitigation Manual approval
- b. Formal reporting process under the Flood Mitigation Manual – **attach** report resulting from the February 1999 flood event
- c. Decision making process under the Flood Mitigation Manual –
 - i. Who makes the flood release decisions under the Manual?
 - ii. who is informed/consulted?
 - iii. effect of the recent Flood Communication Protocol?

5) Brian Cooper Flood Mitigation Manual compliance review (*Responsible: SEQ Water Grid Manager*)

Seqwater report

(*Information provider: Seqwater, Peter Allen and Bob Reilly*)

Seqwater, in consultation with Peter Allen and Bob Reilly, to set out how Seqwater's Flood Mitigation Manual Report to the Chief Executive on the effectiveness of the operational procedures will be undertaken.

- **Attach** table of contents of the 1999 Flood Mitigation Manual report
- Reflect Brian Cooper's compliance review
- Peer review – establishment of an expert panel – who will be on it? Peter Allen and Bob Reilly may provide some input.
- Communication Protocol and incorporation into the Flood Mitigation Manual (revisit in the next fortnight?)

Timeframes on the development of the report – consider urgency due to anticipated further rainfall during this summer.

Elaine Emery

From: Elaina Smouha [elainamir [REDACTED]]
Sent: Saturday, 15 January 2011 5:03 PM
To: mfoster [REDACTED]; peter.allen [REDACTED]; bob.reilly [REDACTED]
pborrows; rdrury [REDACTED]; dutysec [REDACTED]
Cc: john.bradley [REDACTED]; Barry Dennien; Dan Spiller; Michael Lyons; Elaina Smouha
Subject: Cabinet in confidence - Ministerial brief outline
Attachments: Ministerial brief - contents outline.docx

Dear All

To assist, attached is a Ministerial brief outline as per our recent teleconference, for Monday's Emergency Cabinet meeting. It also records those who will be providing information for the Background and Flood Mitigation Manual report process.

As discussed, the brief needs to be provided to Minister Robertson tomorrow (Sunday, 16 January 2011).

Regards

Elaina

Elaina Smouha
Director, Governance and Regulatory Compliance
SEQ Water Grid Manager

[REDACTED]
Email: elaina.smouha [REDACTED]
Visit: Level 15, 53 Albert Street Brisbane
Post: PO Box 16205, City East QLD 4002
ABN: 14783 317 630

Ministerial brief outline

What is the objective?

- a) Ensuring public transparency
- b) To answer the State's questions on the performance of Wivenhoe Dam operations
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- Communication Protocol and incorporation into the Flood Mitigation Manual (revisit in the next fortnight?)

Timeframes on the development of the report – consider urgency due to anticipated further rainfall during this summer.

Suzie Emery

From: peter_allen [REDACTED]
Sent: Sunday, 16 January 2011 11:58 AM
To: rdrury [REDACTED]; pborrows [REDACTED]; dutyseq [REDACTED]
john.bradley [REDACTED]; Barry Dennien; daniel [REDACTED]
michael.lyons [REDACTED]; elaina.smouha [REDACTED]
peter.allen [REDACTED]; mfoster [REDACTED]; bob.reilly [REDACTED]
Cc: threereillys [REDACTED]
Subject: Re: Fw: Cabinet in confidence - Ministerial brief outline - Regulatory context
Attachments: Regulatory context for the dams.doc

Barry,

This is the proposed regulatory context to go into the Ministerial Briefing. Both Bob Reilly and Peter Borrows have reviewed it and are happy with it.

Peter Allen
Director Dam Safety (Water Supply)
DERM

> Allen Peter <Peter.Allen [REDACTED]> wrote:

>
>
>

> ----- Original Message -----

> From: Elaina Smouha <elainamir [REDACTED]>
> To: mfoster [REDACTED] <mfoster [REDACTED]>; Allen Peter;
> Reilly Bob; pborrows <pborrows [REDACTED]>; rdrury [REDACTED]
> <rdrury [REDACTED]>; dutyseq [REDACTED] <dutyseq [REDACTED]>
> Cc: Bradley John; Dennien Barry [REDACTED]; spiller daniel [REDACTED]; Lyons
> Michael [REDACTED]; smouha elaina [REDACTED]
> Sent: Sat Jan 15 17:02:53 2011
> Subject: Cabinet in confidence - Ministerial brief outline

> Dear All

> To assist, attached is a Ministerial brief outline as per our recent
> teleconference, for Monday's Emergency Cabinet meeting. It also records
> those who will be providing information for the Background and Flood
> Mitigation Manual report process.

> As discussed, the brief needs to be provided to Minister Robertson
> tomorrow (Sunday, 16 January 2011).

> Regards

> Elaina

> Elaina Smouha

> Director, Governance and Regulatory Compliance

> SEQ Water Grid Manager

>
>
>

> Email: elaina.smouha@
> <<mailto:elaina.smouha@>>
>
> Visit: Level 15, 53 Albert Street Brisbane
>
> Post: PO Box 16205, City East QLD 4002
>
> ABN: 14783 317 630
>
>
>
> +-----+
> Think B4U Print
> 1 ream of paper = 6% of a tree and 5.4kg CO2 in the atmosphere
> 3 sheets of A4 paper = 1 litre of water
> +-----+
>

Regulatory context for the dams' flood operations

These are contained in the Flood Mitigation Manual (manual) approved under sections 370 to 374 of the *Water Supply (Safety and Reliability) Act 2008*. The Chief Executive Officer (CEO) of DERM (or his delegate) approves the manual, and the approval is notified in the Queensland Government Gazette. Approval can be for a period of up to five years, after which the approval needs to be renewed. There are no decision-making criteria specified in the Act for the CEO to take into account when approving the manual.

The manual for the dams requires, amongst other matters:

- a) Flood operations to be conducted in accordance with manual's provisions.
(There is an approval process specified in the manual, if Seqwater considers a different flood release strategy is desirable to deal with a particular flood event. This was not used in the January 2011 flood event)
- b) Flood operations to be under the control of CEO-approved engineers (who are highly qualified and experienced)
- c) Annual reporting on the preparedness and status of the flood control system for flood operations, and the training of the personnel who manage the flood events.
- d) Reporting on the flood operations during flood events.
- e) Reviews after flood events such as the January 2011 event. For this flood event, the Queensland Government engaged Mr Brian Cooper, an independent consulting engineer, to review compliance with the manual. Mr Cooper concluded (Attachment??):

"...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 the final report or other appropriate reference??)

The manual is separate from a draft communication protocol (Insert name) between the Local, State and Commonwealth government agencies that are affected by the dams' flood operations. This protocol is not binding on the parties to it is not subject to regulatory approval/review.

Some DERM staff, because of their specialist skills, work in the Flood Operations Centre that Seqwater activates to manage such events. None of them are involved in any of the regulatory decisions concerning the dams or are members of the work unit (Office of the Water Supply Regulator) which undertakes the CEO's regulatory functions.

Suzie Emery

From: Barry Dennien [Barry.Dennien@]
Sent: Sunday, 16 January 2011 12:25 PM
To: Dan Spiller
Subject: Fwd: Cabinet in confidence - Ministerial brief outline - Regulatory context
Attachments: Regulatory context for the dams.doc; ATT00001.htm

Regards
Barry Dennien

Begin forwarded message:

From: "peter_allen" <peter_allen@>
Date: 16 January 2011 11:57:56 AM AEST
To: "rdrury" <rdrury@>, "pborrows" <pborrows@>, "dutyseq" <dutyseq@>, "john.bradley" <john.bradley@>, Barry Dennien <Barry.Dennien@>, "daniel" <daniel@>, "michael.lyons" <michael.lyons@>, elaina.smouha <elaina.smouha@>, "peter.allen" <peter.allen@>, "mfoster" <mfoster@>, "bob.reilly" <bob.reilly@>
Cc: "threereillys" <threereillys@>
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Peter Allen
Director Dam Safety (Water Supply)
DERM

Allen Peter <Peter.Allen@> wrote:

----- Original Message -----

From: Elaina Smouha <elainamir@>
To: mfoster <mfoster@>; Allen Peter; Reilly Bob; pborrows <pborrows@>; rdrury <rdrury@>

<rdrry [REDACTED]>; dutyseq [REDACTED]

<dutyseq [REDACTED]

Cc: Bradley John; Dennien Barry [REDACTED]; spiller daniel [REDACTED]
Lyons

Michael [REDACTED]; smouha elaina [REDACTED]

Sent: Sat Jan 15 17:02:53 2011

Subject: Cabinet in confidence - Ministerial brief outline

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Elaina

Elaina Smouha

Director, Governance and Regulatory Compliance

SEQ Water Grid Manager

[REDACTED]

Email: [elaina.smouha@](mailto:elaina.smouha@[REDACTED]) [REDACTED]

<[mailto:elaina.smouha](mailto:elaina.smouha@[REDACTED])

Visit: Level 15, 53 Albert Street Brisbane

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ABN: 14783 317 630

+-----+

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Suzie Emery

From: Bradley John [John.Bradley [REDACTED]]
Sent: Sunday, 16 January 2011 12:55 PM
To: Barry Dennien; Dan Spiller
Subject: RE: Should the Wivenhoe have been bigger? | Courier Mail Andrew Bolt Blog

Barry

Can you pls ask Peter B to add this question to the BN today

Is it true Wivenhoe didn't comply with ANCOLD standard?

Why didn't you implement recommendations of the 2007 report ?

John Bradley
Director-General
Department of Environment and Resource Management

Email: John.Bradley@derm.qld.gov.au
www.derm.qld.gov.au

Department of Environment and Resource Management
400 George Street, Brisbane Q 4000
GPO Box 2454, Brisbane Q 4001

From: Barry Dennien [mailto:Barry.Dennien [REDACTED]]
Sent: Sunday, 16 January 2011 7:25 AM
To: spiller daniel [REDACTED]; Bradley John
Subject: Fwd: Should the Wivenhoe have been bigger? | Courier Mail Andrew Bolt Blog

For note

Regards
Barry Dennien

Begin forwarded message:

From: Barry Dennien <[Barry.Dennien \[REDACTED\]](mailto:Barry.Dennien [REDACTED])>
Date: 16 January 2011 7:00:05 AM AEST
To: Peter Borrows <[pborrows \[REDACTED\]](mailto:pborrows [REDACTED])>
Subject: Should the Wivenhoe have been bigger? | Courier Mail Andrew Bolt Blog

http://blogs.news.com.au/couriermail/andrewbolt/index.php/couriermail/comments/should_the_wivenhoe_have_been_bigger/

Peter

It may be worthwhile starting to gather all dam studies and reports

Note this blog is selectively picking bits of information from the 2007 report

Talk later

Barry

Regards
Barry Dennien

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1 ream of paper = 6% of a tree and 5.4kg CO2 in the atmosphere

3 sheets of A4 paper = 1 litre of water

+-----+

Suzie Emery

From: Lance McCallum [Lance.McCallum [REDACTED]]
Sent: Sunday, 16 January 2011 2:45 PM
To: Bradley John; Dan Spiller; Barry Dennien; Hunt Dan
Cc: Kirstie Ross; Tim Watts; Geoff Stead
Subject: Special cabinet Meeting - Monday 17 January 2010 - Pre Brief

Confidential

John, Dan('s), Barry

I confirm a pre-cabinet briefing tomorrow morning from 9am in Minister Robertson's boardroom.

Thanks

Lance.

This email, together with any attachments, is intended for the named recipient(s) only; and may contain privileged and confidential information. If received in error, you are asked to inform the sender as quickly as possible and delete this email and any copies of this from your computer system network.

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Unless stated otherwise, this email represents only the views of the sender and not the views of the Queensland Government.

Please consider the environment before printing this email.

Suzie Emery

From: Peter Borrows [pborrows [REDACTED]]
Sent: Sunday, 16 January 2011 3:59 PM
To: bob.reilly [REDACTED]; Rob Drury; Duty Seq; john.bradley [REDACTED]; Barry Dennien; Dan Spiller
Cc: Michael Lyons; Mike Foster; Elaina Smouha; peter.allen [REDACTED]
Subject: Cabinet in confidence - Ministerial brief outline
Attachments: Ministerial brief - contents outline.docx

Please see attached draft with attachment.

In relation to the draft contents outline sent yesterday, the following is a cross reference FYI.

Regards, Peter.

Peter Borrows
Chief Executive Officer
Queensland Bulk Water Supply Authority *trading as Seqwater*



[REDACTED] E pborrows [REDACTED]
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From: Elaina Smouha [mailto:elainamir [REDACTED]]
Sent: Saturday, 15 January 2011 5:03 PM
To: Mike Foster; peter.allen [REDACTED]; bob.reilly [REDACTED]; Peter Borrows; Rob Drury; Duty Seq
Cc: john.bradley [REDACTED]; barry.dennien [REDACTED]; daniel.spiller [REDACTED]; michael.lyons [REDACTED]; Elaina Smouha
Subject: Cabinet in confidence - Ministerial brief outline

Dear All

To assist, attached is a Ministerial brief outline as per our recent teleconference, for Monday's Emergency Cabinet meeting. It also records those who will be providing information for the Background and Flood Mitigation Manual report process.

As discussed, the brief needs to be provided to Minister Robertson tomorrow (Sunday, 16 January 2011).

Regards

Elaina

Elaina Smouha

Director, Governance and Regulatory Compliance
SEQ Water Grid Manager

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QLD Bulk Water Supply Authority ABN75450239876 (Trading as Seqwater).

Ministerial brief outline

What is the objective?

- a) Ensuring public transparency
- b) To answer the State's questions on the performance of Wivenhoe Dam operations
- c) Preparation for a public inquiry
- d) Normal and logical course of conduct after the occurrence of a major flood event – Review requirement under the Flood Mitigation Manual

Background (focus on Brisbane River flooding issues)

- 1) Design of Dam – Storages/Spillway upgrade (*Information provider: Seqwater and Peter Allen - DERM*) [1/3 to ½ a page]
- 2) "The Flood Event" – Q&A (*Information provider: Seqwater*) [2 ½ pages]
 - a. Chronology - High level time step of events and significant decision making/changes – more detailed time step information for Tuesday afternoon (i.e. what was the BOM forecast at the time, narrow peak etc.)
 - b. How does Wivenhoe Dam work as a flood mitigator?
 - c. What are the factors being balanced when making decisions about the amount of dam releases? To what extent does information from the Bureau of Meteorology/rain gauges influence decisions? How reliable is this information?
 - d. Statistics on how much did Wivenhoe Dam knock off the flood peak.
 - e. What would have happened if Wivenhoe Dam had not been built and we only had Somerset Dam? What damage would have been caused compared to what has currently been experienced (damage statistics)?
 - f. If we have undertaken pre-emptive dam releases to bring Wivenhoe Dam's full supply level down to lower than what we had maintained (i.e. 60%), what would have been the river height for the period that this flood event occurred?
 - g. If pre-emptive dam releases would not have made a difference, why? (i.e. why did we not release earlier?)
 - h. Why was Wivenhoe Dam only allowed to rise up to 191% and not 230%?
 - i. What is the fuse plug and why did it need to be maintained?
 - j. What damage or town isolation occurred during the Wivenhoe Dam releases that occurred since October 2010?
 - k. Did Seqwater have time to reduce the dam level between the 5 events? If so, would it have made a difference to this flood event?

- 3) The Flood Mitigation Manual (*Information Provider: Seqwater/DERM*) [½ to 1 page]
 - a. Describe the decision making framework - Four strategies
 - b. How is the Manual designed to work?
 - c. History of Flood Mitigation Manual updates and peer review – who was on the panels, studies that fed into previous versions of the Manual and who was involved in these studies?
 - d. **Attach** Minister Robertson's request for advice on pre-emptive release and our response (*Information provider: SEQ Water Grid Manager*)
- 4) Regulatory context - *Water Supply (Safety and Reliability) Act 2008* (*Information provider: Peter Allen - DERM*)
 - a. Flood Mitigation Manual approval
 - b. Formal reporting process under the Flood Mitigation Manual – **attach** report resulting from the February 1999 flood event
 - c. Decision making process under the Flood Mitigation Manual –
 - i. Who makes the flood release decisions under the Manual?
 - ii. who is informed/consulted?
 - iii. effect of the recent Flood Communication Protocol?
- 5) Brian Cooper Flood Mitigation Manual compliance review (*Responsible: SEQ Water Grid Manager*)

Seqwater report

(*Information provider: Seqwater, Peter Allen and Bob Reilly*)

Seqwater, in consultation with Peter Allen and Bob Reilly, to set out how Seqwater's Flood Mitigation Manual Report to the Chief Executive on the effectiveness of the operational procedures will be undertaken.

- **Attach** table of contents of the 1999 Flood Mitigation Manual report
- Reflect Brian Cooper's compliance review
- Peer review – establishment of an expert panel – who will be on it? Peter Allen and Bob Reilly may provide some input.
- Communication Protocol and incorporation into the Flood Mitigation Manual (revisit in the next fortnight?)

Timeframes on the development of the report – consider urgency due to anticipated further rainfall during this summer.

Suzie Emery

From: Elaina Smouha [elainami [REDACTED]]
Sent: Sunday, 16 January 2011 4:07 PM
To: Dan Spiller; Barry Dennien
Subject: Cabinet in confidence - Regulatory context
Attachments: Regulatory_context_for_the_dams[1].docx

I have tracked my changes.

Elaina

Regulatory context for the dams' flood operations

These ~~Operational~~ procedures for flood mitigation for a dam are contained in the Flood Mitigation Manual (~~manual~~) approved under sections 370 to 374 of the *Water Supply (Safety and Reliability) Act 2008* (*Water Supply Act*). Under section 370 of the *Water Supply Act*, Seqwater as the owner and operator of Wivenhoe and Somerset Dams is required to prepare a Flood Mitigation Manual. The Chief Executive Officer (CEO) of DERM (or his delegate) approves the ~~manual~~ Flood Mitigation Manual, and the approval is notified in the Queensland Government Gazette. Approval can be for a period of up to five years, after which the approval needs to be renewed. There are no decision-making criteria specified in the *Water Supply Act* for the CEO to take into account when approving the Flood Mitigation Manual.

The manual for the ~~dams~~ Flood Mitigation Manual requires, amongst other matters:

- a) Flood operations to be conducted in accordance with manual's provisions, unless Seqwater considers that it is necessary to depart from the procedures of the Flood Mitigation Manual to meet the flood mitigation objectives of the Flood Mitigation Manual. ~~(There is an approval process specified in the manual, if Seqwater considers a different flood release strategy is desirable to deal with a particular flood event. This discretion was not used/exercised in the January 2011 flood event).~~
- b) Flood operations to be under the control of CEO-approved engineers (who are highly qualified and experienced)
- c) Annual reporting on the preparedness and status of the flood control system for flood operations, and the training of the personnel who manage the flood events.
- d) Reporting on the flood operations during flood events.
- e) ~~Reviews after flood events such as the January 2011 event, and a Seqwater report containing details of the procedures used, the reasons for such and other pertinent information. Seqwater must forward this report to the CE within six weeks of the completion of a flood event.~~ ~~For this flood event, the Queensland Government engaged Mr Brian Cooper, an independent consulting engineer, to review compliance with the manual. Mr Cooper concluded (Attachment??):~~
- e) ~~"...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 the final report or other appropriate reference??)~~

Section 374 of the Water Supply Act protects the CE and Seqwater from liability for complying with the Flood Mitigation Manual. It states:

- (1) The chief executive or a member of the council does not incur civil liability for an act done, or omission made, honestly and without negligence under this part.

(2) An owner of a dam who observes the operational procedures in a flood mitigation manual, approved by the chief executive, for the dam does not incur civil liability for an act done, or omission made, honestly and without negligence in observing the procedures.

During November 2010, Commonwealth, State and local government agencies developed a Protocol for Communication of Flooding Information for the Brisbane River Catchment – including Floodwater Releases from Wivenhoe and Somerset Dams to “ensure the provision of consistent and robust information to the community”. This is separate from the Flood Mitigation Manual. The manual is separate from a draft communication protocol (Insert name) between the Local, State and Commonwealth government agencies that are affected by the dams' flood operations. This protocol is not legally binding on the parties to it and is not subject to regulatory approval/review.

Some DERM staff, because of their specialist skills, work in the Flood Operations Centre that Seqwater activates to manage such events in accordance with the Flood Mitigation Manual. The Flood Operations Centre is ~~None of them are not~~ involved in any of the regulatory decisions concerning the dams or are members of the work unit (Office of the Water Supply Regulator, Department of Environment and Resource Management.) which undertakes the CEO's regulatory functions.

Suzie Emery

From: Peter Borrows [pborrows [REDACTED]]
Sent: Sunday, 16 January 2011 4:28 PM
To: bob.reilly [REDACTED]; Rob Drury; Duty Seq; john.bradley [REDACTED]; Barry Dennien; Dan Spiller
Cc: Michael Lyons; Mike Foster; Elaina Smouha; peter.allen [REDACTED]
Subject: Cabinet in confidence - Ministerial brief outline
Attachments: Ministerial brief - contents outline.docx; Ministerial Briefing Note January 17 2011 Final Draft for distribution.doc; Jan 2011 Flood Event_Ver 1_draft for distribution.docx

Please see attached draft with attachment.

In relation to the draft contents outline sent yesterday, the following is a cross reference FYI.

The attached Ministerial Briefing Note addresses the questions contained in the Ministerial Information Request as follows:

- 1) Design of Dam – Storages/Spillway upgrade

Refer Section 1

- 2) "The Flood Event" – Q&A

- a. Chronology - High level time step of events and significant decision making/changes – more detailed time step information for Tuesday afternoon (i.e. what was the BOM forecast at the time, narrow peak etc.)

Refer Section 2.5

- b. How does Wivenhoe Dam work as a flood mitigator?

Refer Sections 2.1, 2.3 and 3.1

- c. What are the factors being balanced when making decisions about the amount of dam releases? To what extent does information from the Bureau of Meteorology/rain gauges influence decisions? How reliable is this information?

Refer Sections 3.1 and 3.2

- d. Statistics on how much did Wivenhoe Dam knock off the flood peak.

Refer Section 2.1

- e. What would have happened if Wivenhoe Dam had not been built and we only had Somerset Dam? What damage would have been caused compared to what has currently been experienced (damage statistics)?

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- f. If we have undertaken pre-emptive dam releases to bring Wivenhoe Dam's full supply level down to lower than what we had maintained (i.e. 60%), what would have been the river height for the period that this flood event occurred?

Refer Section 2.4

- g. If pre-emptive dam releases would not have made a difference, why? (i.e. why did we not release earlier?)

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- h. Why was Wivenhoe Dam only allowed to rise up to 191% and not 230%?

Refer Section 2.2

- i. What is the fuse plug and why did it need to be maintained?

Refer Section 2.3

- j. What damage or town isolation occurred during the Wivenhoe Dam releases that occurred since October 2010?

Refer Section 2.4

- k. Did Seqwater have time to reduce the dam level between the 5 events? If so, would it have made a difference to this flood event?

Refer Section 2.4

3) The Flood Mitigation Manual

Refer Section 3.1

- a. Describe the decision making framework - Four strategies

Refer Section 3.2

- b. How is the Manual designed to work?

Refer Section 3.2

- c. History of Flood Mitigation Manual updates and peer review – who was on the panels, studies that fed into previous versions of the Manual and who was involved in these studies?

Refer Section 3.1

- 4) Regulatory context - *Water Supply (Safety and Reliability) Act 2008* (Information provider: Peter Allen - DERM)

Refer Section 4

Regards, Peter.

Peter Borrows
Chief Executive Officer
Queensland Bulk Water Supply Authority *trading as* Seqwater



E pborrows

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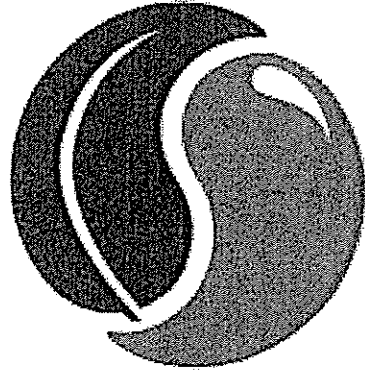
Regards

Elaina

Elaina Smouha
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QLD Bulk Water Supply Authority ABN75450239876 (Trading as Seqwater).



seqwater
WATER FOR LIFE

**JANUARY 2011 FLOOD
EVENT**

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1 INTRODUCTION

Wivenhoe Dam was constructed by the Queensland Government between 1977 and 1984. The dam is a 56 m AHD high and 2.3 kilometre long earth and rock embankment separated into two parts by a concrete gravity spillway. The spillway is controlled by 5 radial gates, each 12.0 metres wide by 16.0 m AHD high. Two saddle dam embankments are located on the left side of the reservoir.

The dam spillway capacity was upgraded in 2005. This was done primarily through the construction of a 164 metre wide secondary spillway through the right abutment of the existing dam. This spillway contains three erodible earth fill fuse plug embankments that are initiated at different dam levels in excess of EL 75.6.

The dam has two main functions by providing:

- A 1,165,000 ML storage at full supply level (FSL EL 67.0) providing an urban water supply for Brisbane and surrounding areas;
- Flood mitigation in the Brisbane River by providing a dedicated flood storage volume of 1,450,000 ML up to EL77 (this flood level was increased as part the 2005 upgrade to allow a water level of EL80m and a temporary flood storage volume of 1,966,000 ML with all fuse plugs initiated and the dam at the point of failure).

The dam has an EXTREME hazard classification under ANCOLD guidelines because of the significant development downstream in the Brisbane and Ipswich metropolitan areas, with the population at risk in the event of a dam failure numbering in the hundreds of thousands.

In accordance with the Queensland Regulatory program for dam spillway upgrades, a further upgrade of Wivenhoe Dam is scheduled to occur prior to 2035 to enable the dam to safely pass the Probable Maximum Flood. This work will involve the reconstruction of Saddle Dam 2 as a fuse plug spillway.

Wivenhoe Dam is in excellent condition. Comprehensive Dam Safety reviews undertaken in accordance with ANCOLD guidelines have been undertaken in 1997 (Gutteridge, Haskins & Davey Pty Ltd), 2003 (Wivenhoe Alliance), 2006 (NSW Department of Commerce), 2009 (GHD) and September 2010 (Seqwater). The reports concluded that the design of the dam is in accordance with modern day standards and that there are no significant outstanding design or construction issues that require investigation.

2 WIVENHOE DAM FLOOD MITIGATION AND FLOOD OPERATIONS

2.1 Flood Mitigation

The Brisbane River catchment covers an area of approximately 14,000 square kilometres of which about half is below Wivenhoe Dam. Maximum overall flood mitigation effect is achieved by operating Wivenhoe Dam in conjunction with Somerset Dam. Although Somerset and Wivenhoe Dam reduce flooding in Brisbane City, major flooding can still occur. The Lockyer-Laidley Valley drains into the Brisbane River through Lockyer Creek that enters the Brisbane River just downstream of Wivenhoe Dam near Lowood. Another major tributary, the Bremer River, flows into the Brisbane River at Moggill. Wivenhoe Dam has no control over inflows into the Brisbane River from both these major tributaries.

Wivenhoe Dam mitigates downstream flooding by storing incoming flood water during a rainfall event and releasing these waters at a reduced flow rate downstream to minimise flood impacts. The timing of the releases is also manipulated so that the aim is for outflows from the dams to impact on downstream areas only after the peak inflows from the downstream major tributaries have passed. However, this aim cannot always be achieved in practice. This is because some large floods, such as the one currently being experienced, have the potential to overflow the dam's flood storage compartment. **Should this occur, the dam would fail and the resulting damage and loss of life would be at least 100 to 1000 times greater than that currently being experienced.**

Therefore the basis of all flood operation decision making is to ensure the dam never fails. This is the reason that the dam's flood storage compartment would never be intentionally fully filled as additional inflows after this point would result in a dam failure. Similarly, there will be uncertainty on future rainfall that could occur which could not be releases if there was insufficient flood storage which could not be stored or released.

Another factor that impacts on flood release decision making in large events are the levels at which the erodible fuse plugs are triggered. Loss of one or more fuse plugs severely limits the ability of the dam to mitigate the effects of future flood events that may occur prior to the fuse plug or plugs being reinstated. Reinstatement of a fuse plug following an event would take a minimum of 4 to 6 months and would require an extended period of relatively dry weather.

2.2 Flood Operations

A real time flood monitoring and forecasting system has been established in the Wivenhoe and Somerset Dam catchments. This system employs radio telemetry to collect, transmit and receive rainfall and stream flow information. The system consists of around 230 field stations that automatically record rainfall and/or river heights at selected locations in the dam catchments. Most of these field stations are owned by Seqwater with the remainder belonging to other agencies.

The rainfall and river height data is transmitted to Seqwater's Flood Operations Centre in real time. Once received in the Flood Operations Centre, the data is processed using a Real Time Flood Model (RTFM) to estimate likely dam inflows and evaluate a range of possible inflow scenarios based on forecast and recorded rainfall in the dam catchments. The RTFM is a suite of hydrologic computer programs that utilise the real time data to assist in the operation of the dams during flood events.

Seqwater engineers use the RTFM for flood monitoring and forecasting during flood events to operate the dams in accordance with a Manual of Flood Mitigation (the origin of and objectives and procedures contained in the Manual of Flood Mitigation are explained in the following section of this document). Releases of water from the dams are optimised to minimise the impacts of flooding in accordance with the objectives and procedures contained in a Manual of Flood Mitigation.

The RTFM and data collection network performed well During the January 2011 event, with no failures experienced that compromised the ability of Seqwater to operate the dam.

3 MANUAL OF FLOOD MITIGATION FOR WIVENHOE AND SOMERSET DAMS

The Manual of Flood Mitigation for Wivenhoe and Somerset Dams, in its current form, was developed in 1992 during an extensive hydrological study of the Brisbane and Pine Rivers catchments by DPI, Water Resources. The final reports were subject to extensive internal review by the Water Resources Group before being reviewed by an independent review panel comprising Professor Colin Apelt, Head of Department, Department of Civil Engineering, University of Queensland and Mr Eric Lesleighter, Principal Hydraulic Engineer and Chief Engineer Water Resources, Snowy Mountains Engineering Corporation.

Subsequently, the Manual was extensively reviewed during the Brisbane Valley Flood Damages Minimisation Study in 2006, with the latest comprehensive review of the Manual undertaken in 2009. Both of these reviews have included expert review panels comprising key stakeholders, with the most recent review involving representatives from DERM, BOM, BCC and SunWater.

The Manual of Flood Mitigation is prepared by Seqwater as the owner of the dam and approved and gazetted by the Chief Executive of DERM in accordance with the Water Supply Act 2008. The manual defines flood objectives procedures; roles and responsibilities; and staffing and operational requirements for flood events impacting on Wivenhoe and Somerset dams.

The primary objectives of the procedures contained in the flood manual are, in 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 primarily, this involves minimising inundation of the seven bridges below the dam upstream of Moggill);
- 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.

During an event, the operation of the dam transitions between the following four operating strategies depending of the circumstances at the time. These procedures associated with these strategies are explained in detail in the Manual.

- **Strategy W1** – Primary consideration is given to Minimising Disruption to Downstream Rural Life. Under this strategy, the predicted water level is below 68.50 m AHD and the maximum release is 1,900m³/s.
- **Strategy W2** – Transition Phase moving from Minimising Disruption to Protecting Downstream Urban Areas. Under this strategy, the water level is predicted to be between 68.5 and 74.0 m AHD and the maximum release is less than 3,500m³/s.
- **Strategy W3** – Primary consideration is to Protect of Urban Areas from Inundation. Under this strategy, the water level is predicted to be between 68.5 and 74.0 m AHD but the maximum release is less than 4,000m³/s.
- **Strategy W4** – Primary consideration is to protecting the structural safety of the Dam. Under this strategy, the water level is predicted to exceed 74.0 m AHD and there is no limit to the maximum release. Consideration is given to managing flood releases to avoid fuse plug initiation if at all possible as this would compromise flood mitigation capacity in the short to medium term.

In addition to these strategies, historical records show that there is a significant probability of two or more flood producing storms occurring in the Brisbane River system within a short time of each other. Accordingly for each flood event, the aim is always to empty stored floodwaters within seven days after the flood peak has passed through the dams.

4 JANUARY 2011 FLOOD EVENT

4.1 Background

In the 25 days leading up to the current event, three flood events impacting on Wivenhoe Dam were experienced, with gate releases being made on all but five of those days. The total outflow from these events was around 700,000ML. The details of these events are as follows:

EVENT	EVENT START DATE	EVENT END DATE	VOLUME RELEASED (ML)
1	13/12/2010	16/12/2010	70,000
2	17/12/2010	24/12/2010	150,000
3	26/12/2010	02/01/2011	470,000

During these events, requests were received from Councils and residents impacted by bridge closures downstream of the dam to curtail releases as soon and as quickly as possible. Additionally the 2 January end date of the flood event prior to the current event meant that significant drain down of the dam prior to the onset of the current event that commenced on 6 January 2011, was not possible without major bridge inundation downstream of the dam and without exceeding minor flood levels in the lower Brisbane River.

Additionally, a flood event was also experienced in October 2010 that resulted in a release of 750,000ML from the dam. Accordingly drain down below the dam full supply level prior to the start of the first December event would not have been possible without significant bridge inundation and without exceeding minor flood levels (as defined by BOM and BCC) in the lower Brisbane River.

Regardless, significant drain down prior to the current event would have had little impact on the peak level in Wivenhoe Dam as shown in the table below. The reason for this is that this total event inflow volume of 2,600,000 ML is well in excess of the useable flood storage combined with the available water supply storages shown in the table.

The specific impact on the Lower Brisbane River of these reduced dam levels requires the use of a complex hydraulic model. The results of this modelling would still contain a degree of uncertainty as illustrated by the difficulties in estimating the final flood peak in Brisbane during the event. This is because the rapid closure of the gates after peak inflow was achieved resulted in significant water level reductions downstream and this is difficult to model accurately.

JANUARY 2011 FLOOD			
Starting Level		Peak Height	Capacity
%	m AHD	m AHD	%
100	67.0	74.97	191
95	66.5	74.93	191
90	65.8	74.88	190
75	64.0	74.63	187
50	60.0	74.11	180

It should be noted that the possible reductions shown above are based up a unique dual peaked flood hydrograph with a volume of about 2,600,000 ML which occurred during this event. A hydrograph with the same volume but a different distribution could result in a significantly lower reduction in peak water levels.

Flood operations at the dam are also highly dependent upon the flood inflow volume and a slight variation in the flood volume could significantly reduce the benefits associated with draining down the dam prior to a flood event.

4.2 Event Decision Making

The following table contains a summary of the key decisions points associated with the current event. As at 16 January 2011, the event remains in progress.

DATE AND TIME	FLOOD EVENT MILESTONE
07:00 06/01/2011 (Thursday)	Rainfall is experienced in the dam catchments that will result in flood releases, however Wivenhoe releases are delayed for 24 hours to allow Lockyer Creek flood flows to pass downstream and prevent the isolation of the community dependent of Burtons Bridge. The forecast is for 150mm over the next 24 hours.
15:00 07/01/2011 (Friday)	Wivenhoe releases commence, with operational strategy W1 in use. Rainfall for the next four days is estimated to be between 140mm and 300mm, with a forecast for rain easing on Tuesday 11 January 2011. All bridges downstream of the dam with the exception of Fernvale Bridge and Mt Crosby Weir Bridge are expected to be inundated for a number of days.

06:00 09/01/2011 (Sunday)	Moderate to heavy rain periods forecast until Tuesday, but both Wivenhoe and Somerset dam levels were falling slowly, with Somerset at 1.27 m AHD above FSL and Wivenhoe 1.58 m AHD above FSL.
15:30 09/01/2011 (Sunday)	Following significant rain during the day a meeting of Duty Engineers is held. The QPF issued at 16:00 indicates 50mm to 80mm over the next 24 hours. Based on this forecast, it is anticipated that dam levels can be held to a maximum of 3.50 m AHD above FSL in Somerset and 5.5 m AHD above FSL in Wivenhoe. However, by 19:00 it was apparent that both Fernvale Bridge and Mt Crosby Weir Bridge would be inundated by the combined dam releases and Lockyer Creek flows and that the operational strategy had progressed to W2.
06:30 10/01/2011 (Monday)	Rainfall continued during the night and based on rainfall on the ground it was apparent the operational strategy had progressed to W3.
06:30 10/01/2011 (Monday)	Rainfall continued during the day but based on rainfall on the ground, operational strategy W3 remained in use. However it was apparent that any further heavy rain would result in progression of the operational strategy to W4.
08:00 11/01/2011 (Tuesday)	Rainfall continued during the night with isolated heavy falls in the Wivenhoe Dam catchment area and based on rainfall on the ground it was apparent the operational strategy would soon progress to W4 with Wivenhoe Dam exceeding 8.00 m AHD above FSL. The objective now was to limit outflows and subsequent flood damage to urban areas, while ensuring the structural safety of the dam.
11:00 11/01/2011 (Tuesday)	Rapid inflows were experienced in Wivenhoe Dam, with the dam rising almost a metre in eight hours. Releases were increased until the dam level stabilised in accordance with Strategy W4. Computer models were not reflecting actual dam inflows due to intense point rainfalls in the immediate catchment around the dam. Falls are estimated to be similar to those experienced at both Toowoomba and Upper Lockyer the previous day and are falling outside and between existing rain gauges.
21:00 11/01/2011 (Tuesday)	Wivenhoe Dam peaked. Peak release of 7450 cumecs with a level of 0.7 metres below fuse plug trigger.
22:00 11/01/2011	Wivenhoe Dam releases were closed off as quickly as possible over the

(Tuesday)	next 11 hours, while ensuring water levels in the dam did not rise further and initiate a fuse plug embankment.
08:00 12/01/2011 (Wednesday)	Minimum possible release level reached, with inflows matching outflows. Further reductions in release rate would likely cause the dam level to rise.
21:00 13/01/2011 (Thursday)	The 7 day dam drain down is commenced as Lockyer Creek and Bremer River peaks pass the Lower Brisbane area. Maximum release target is the limit of damaging floods in Brisbane being 3500 cumecs.
09:00 17/01/2011 (Monday)	Drain down continues, with released expected to cease on Wednesday 19 January 2011 unless further rainfall is experienced.

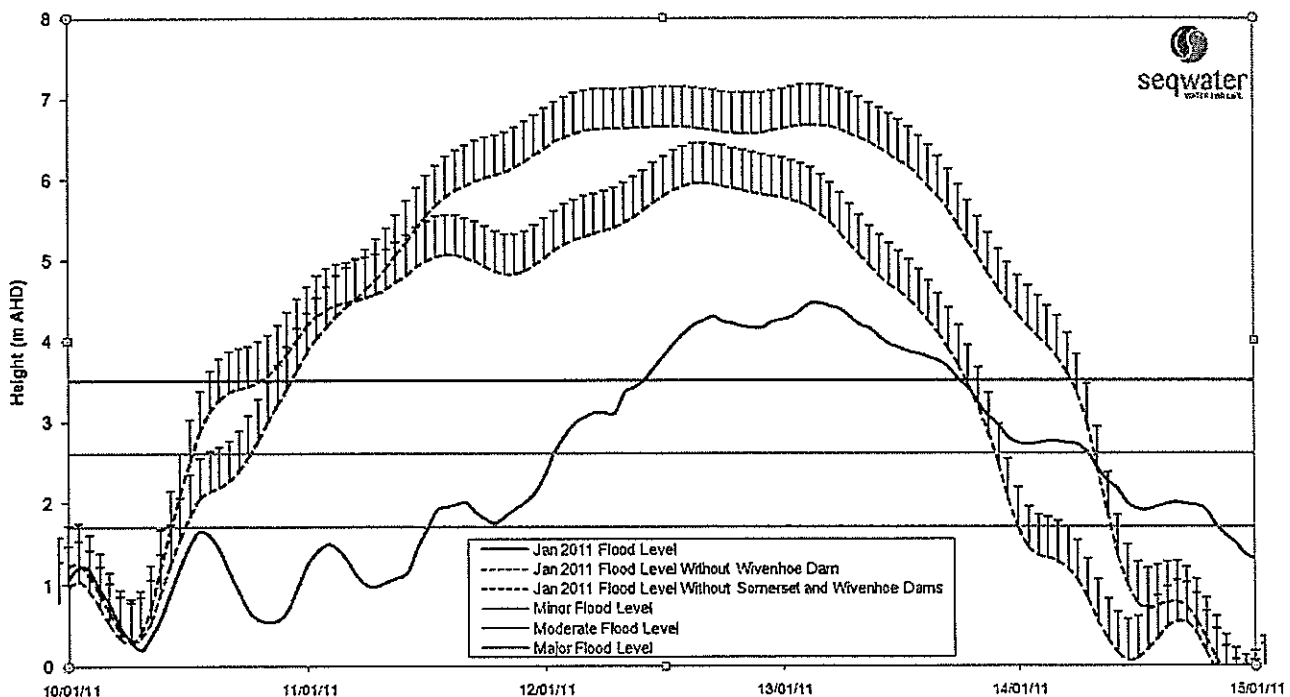
4.3 Flood Mitigation Benefits of Wivenhoe Dam

The following graphs demonstrate the significant benefits of Wivenhoe Dam in mitigating the current flood event, with reductions in flood peak of up to 2.5 metres in the City area and up to 5.5 metres in the Moggill area further upstream.

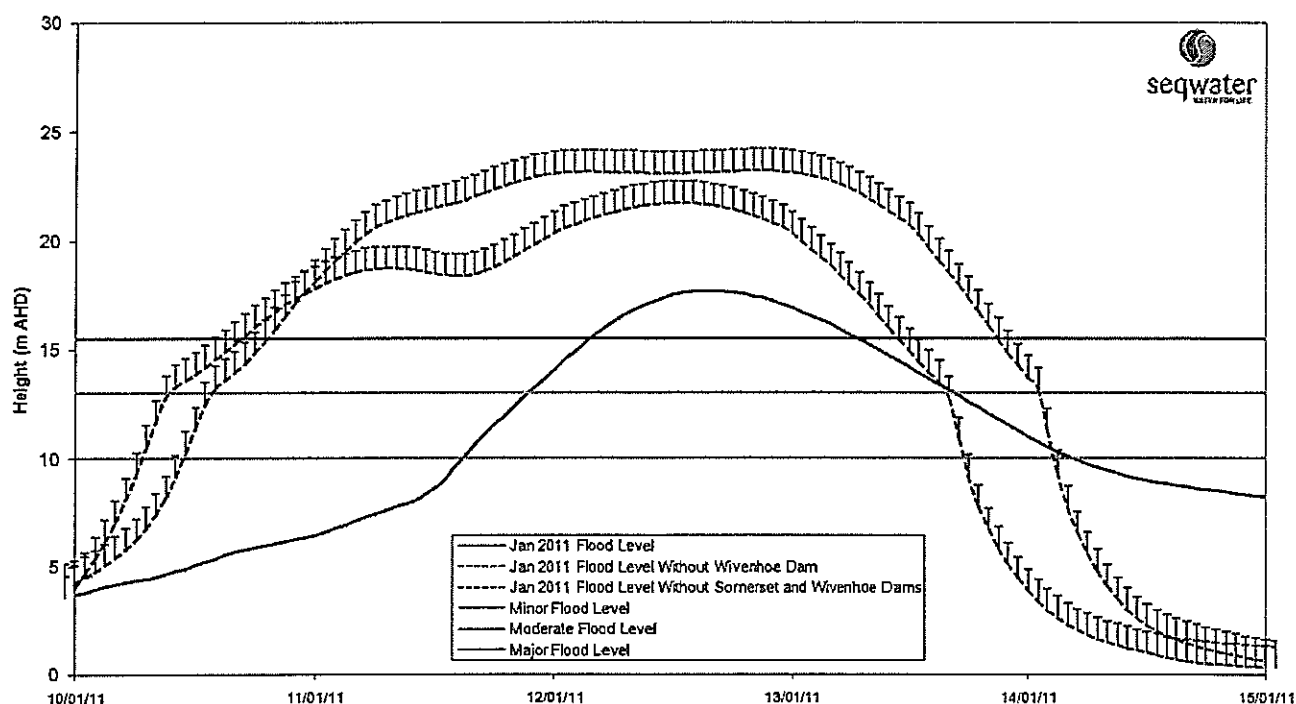
This equates to significant reduction in the potential for loss of life as well as saving in damages in the order of up to \$1.6 billion based on current damage curves. Up to 13,000 more properties would have been impacted by the event without the Dam.

The time at which flood levels remained elevated above major levels has also been reduced by up to 3 days by the dam. This has significant benefits to impact on the population of the city, property damage and the recovery operation.

JANUARY 2011 BRISBANE FLOOD
Assessment of Flood Levels at Brisbane City



JANUARY 2011 BRISBANE FLOOD Assessment of Flood Levels at Moggill



The strategy adopted to quickly close off releases once the peak in the dam had been reached and rain stopped falling certainly reduced the predicted flood peak by at least one metre in the lower Brisbane River area. This notion is supported by BOM.

5 EVENT REVIEW

Under the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam that are approved and gazetted by the Department of Environment and Resource Management, there is a regulatory requirement that a report must be prepared as per the below wording:

"Seqwater must prepare a report after each Flood Event. The report must contain details of the procedures used, the reasons therefore and other pertinent information. Seqwater must forward the report to the Chief Executive within six weeks of the completion of the Flood Event."

Such a report was prepared for the flood events of February and March 2010 and copies are available. A copy of the Table of Contents of that report is included as Appendix 1. For this event, the report would be a comprehensive summary of all procedures, actions, outcomes and processes during the event.

It is recommended that the process and content for reports required for this event be:

- In the short term, utilise this report attached to this briefing note as the basis for communications and discussion.
- Prepare any Interim Reports as agreed to provide information and input as required.
- Seqwater prepare a Comprehensive Report as per the existing regulatory requirements of the Act and the gazetted manual and any requirements of the Dam Safety Regulator. This would be done within 6 weeks of the closure of the current event as per the manual. This timeframe is subject to any new mobilisation of the Flood Operations Centre. The Table of Contents would include:
 - Introduction
 - Flood Event Summary
 - Mobilisation and Staffing
 - Event Rainfall
 - Inflow and Release Details
 - Data Collection System Performance
 - Data Analysis Performance
 - Communication
 - Flood Management Strategies and Manual Compliance
 - Improvements in data collection systems, practices and processes.
 - improvements by interacting agencies

- Review of factors impacting on the protection of urban areas
 - Recommendations & Conclusions
- The report would then be reviewed by the Dam Safety Regulator in conjunction with any peer review they require. The review should cover:
 - Were the provisions of the manual complied with?
 - What improvements to either facilities e.g. stream gauges, or work practices, are desirable to improve Seqwater's ability to predict inflows into the dams.
 - Are improvements to either Seqwater's facilities or work practices desirable to improve Seqwater's ability to manage events? For example, investigations to raise the dam to improve its flood storage capacity, If so, what are they and their implications.
 - Are changes to the facilities or work practices of other organisations desirable to improve Seqwater's abilities to manage these events? If so, what are they and their implications? (For example, would it be worth funding Brisbane River crossing upgrades so that floodwater could be released faster, while not adversely affecting access to properties--or maybe alternative strategies e.g. resupply operations could be put in place to achieve similar outcomes?)
 - Given the manual's order of priorities i.e. protection of the dam etc, are any changes in the flood release strategies for either dam desirable? If so, what are they, and their implications
- Based on this review, a review of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam would occur utilising an expert panel of review including representatives of DERM, Seqwater, BoM, affected Local Governments and other stakeholders as necessary.

Appendix A

FINAL REPORT – FLOOD EVENTS AT WIVENHOE, SOMERSET AND NORTH PINE DAMS FOR FEBRUARY AND MARCH 2010

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Ministerial Briefing Note

17 January 2010

Flood Event January 2011

1. BACKGROUND INFORMATION ON WIVENHOE DAM

2. WIVENHOE DAM FLOOD MITIGATION AND FLOOD OPERATIONS

- 2.1 What were the benefits provided by Wivenhoe Dam during the current event?
- 2.2 Why was Wivenhoe Dam only allowed to rise up to 191% and not 230%?
- 2.3 What is the role of the erodible fuse plug embankments?
- 2.4 Why weren't pre-emptive releases undertaken prior to the start of the flood event?
- 2.5 Is there a detailed record of the events associated with the current flood?

3. THE MANUAL OF OPERATIONAL PROCEDURES FOR FLOOD MITIGATION AT WIVENHOE DAM AND SOMERSET DAM

- 3.1 What is the Manual of Flood Mitigation and how was it developed?
- 3.2 What is contained in the Manual?

4. REGULATORY CONTEXT

5. COMPLIANCE WITH MANUAL

6. SEQWATER REPORT

1 BACKGROUND INFORMATION ON WIVENHOE DAM

Wivenhoe Dam was completed in 1984 and has two main functions;

- A 1,165,000 ML storage providing an urban water supply for Brisbane;
- Flood mitigation in the Brisbane River by providing a dedicated flood storage volume of 1,450,000 ML (this flood storage was increased in 2005 to 1,966,000 ML with the dam at the point of failure).

In accordance with the Queensland Regulatory program for dam spillway upgrades, a further upgrade of Wivenhoe Dam is scheduled to occur prior to 2035.

Wivenhoe Dam is in excellent condition with four Comprehensive Dam Safety reviews undertaken in the last 14 years, the latest in 2010.

2 WIVENHOE DAM FLOOD MITIGATION AND FLOOD OPERATIONS

2.1 What were the benefits provided by Wivenhoe Dam during the current event?

The following graphs demonstrate the significant benefits of Wivenhoe Dam in mitigating the current flood event, with reductions in flood peak of up to 2.5 metres in the City area and up to 5.5 metres in the Moggill area further upstream.

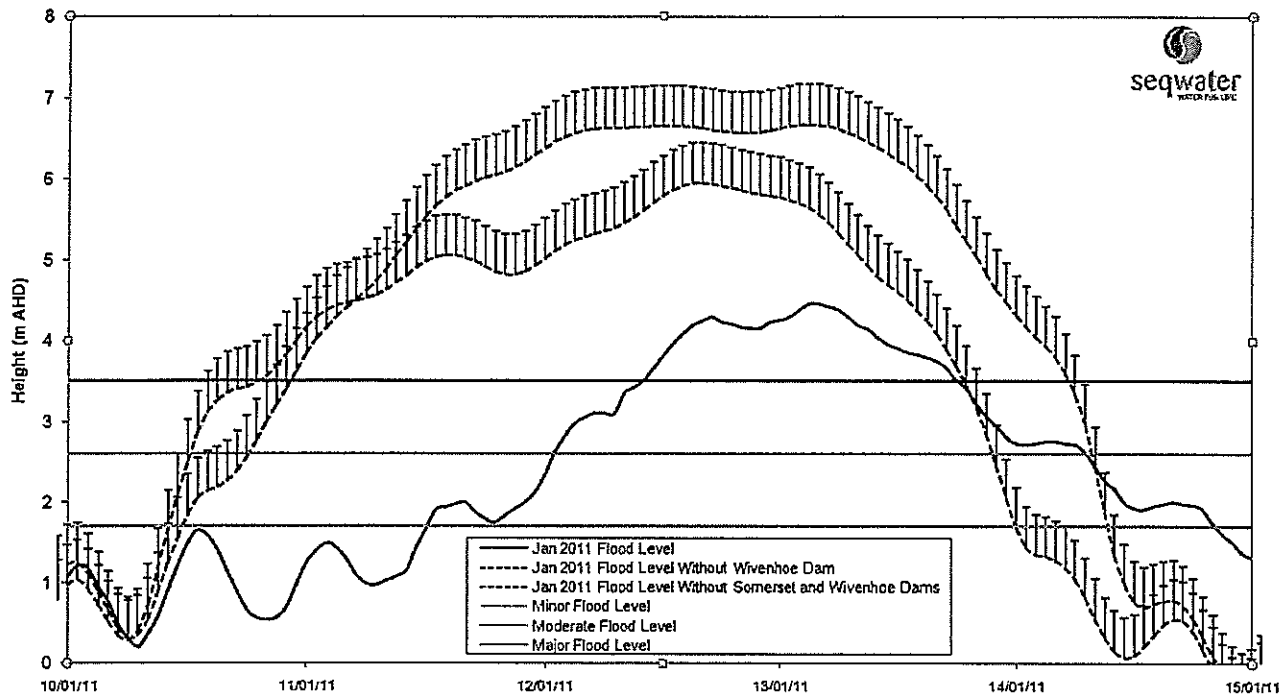
This equates to significant reduction in the potential for loss of life as well as saving in damages in the order of up to \$1.6 billion based on current damage curves. Up to 13,000 more properties would have been impacted by the event without the Dam. (Source: Flood Damage Tables provided to Seqwater by the Brisbane City Council).

The time at which flood levels remained elevated above major levels has also been reduced by up to 3 days by the dam. This has significant benefits to impact on the population of the city, property damage and the recovery operation.

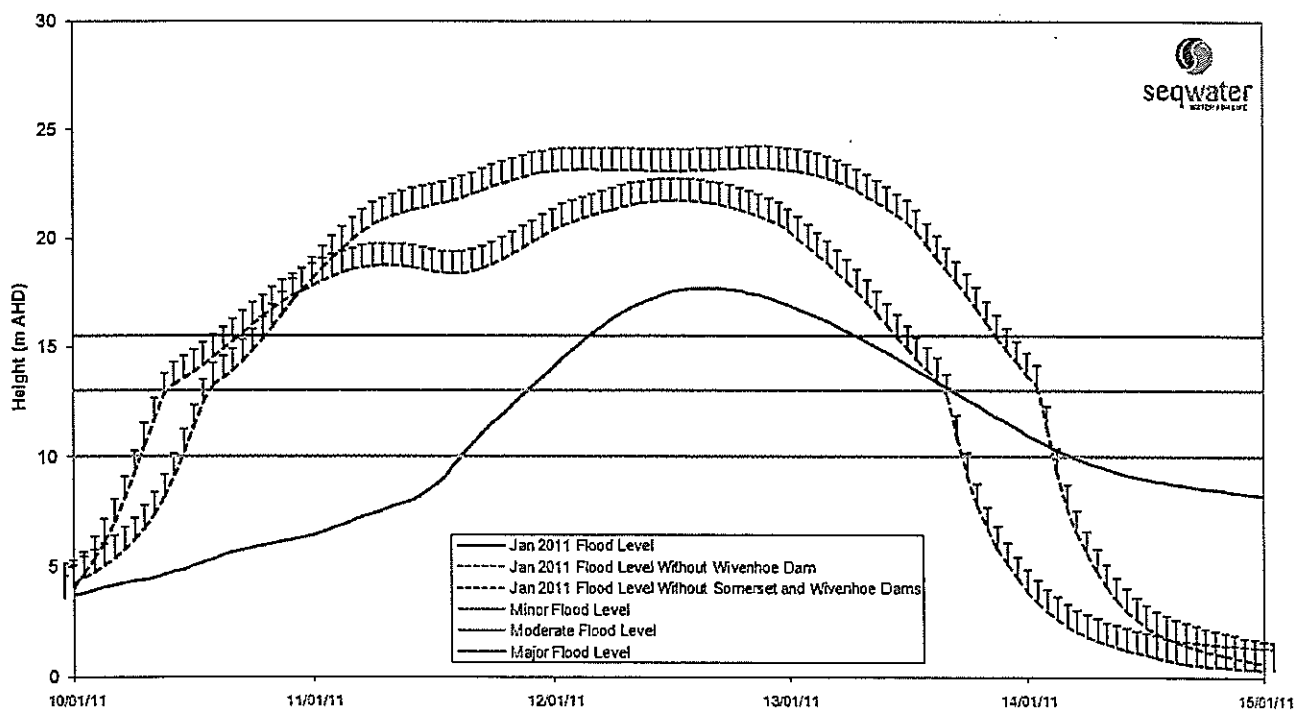
Depending on the nature of the event, the presence of Wivenhoe Dam could also potentially increase flood warning times to impacted areas. How these times may have been increased during the current event is presently difficult to quantify, but discussions will be held with BOM on this issue at a later date.

In addition, the strategy adopted to quickly close off releases once the peak in the dam had been reached and rain stopped falling certainly reduced the predicted flood peak by at least one metre in the lower Brisbane River area.

JANUARY 2011 BRISBANE FLOOD Assessment of Flood Levels at Brisbane City



JANUARY 2011 BRISBANE FLOOD Assessment of Flood Levels at Moggill



2.2 Why was Wivenhoe Dam only allowed to rise up to 191% and not 230%?

Wivenhoe Dam mitigates downstream flooding by storing incoming flood water during a rainfall event and releasing these waters at a reduced flow rate downstream to reduce flood impacts. The timing of the releases is also manipulated so that the aim is for outflows from the dams to impact on downstream areas only after the peak inflows from the downstream major tributaries have passed. However this aim cannot always be achieved in practice. This is because some large floods, such as the one currently being experienced, have the potential to overflow the dam's flood storage compartment. **Should this occur, the dam would fail and the resulting damage and loss of life would be at least 100 to 1000 times greater than that currently being experienced.**

Therefore the basis of all flood operation decision making is to ensure the dam never fails. This is the reason that the dam's flood storage compartment would never be intentionally fully filled as any additional inflows after this point would result in a dam failure. At any one time, there will always be uncertainty about what rain is going to occur. Hence, we cannot use all of the flood capacity as we would not be able to release sufficient water to cater for large inflows.

2.3 What is the role of the erodible fuse plug embankments?

Another factor that impacts on flood release decision making in large events are the levels at which the erodible fuse plugs are triggered. The fuse plugs act as a safety valve to rapidly increase dam outflows if the structural safety of the dam is in danger. Loss of one or more fuse plugs severely limits the ability of the dam to mitigate the effects of future flood events that may occur prior to the fuse plug or plugs being reinstated. Reinstatement of a fuse plug following an event would take a minimum of 4 to 6 months and would require an extended period of relatively dry weather.

2.4 Why weren't pre-emptive releases undertaken prior to the start of the flood event?

In the 25 days leading up to the current event, three flood events impacting on Wivenhoe Dam were experienced, with gate releases being made on all but five of those days. The total outflow from these events was around 700,000ML.

During these events, requests were received from Councils and residents impacted by bridge closures downstream of the dam to curtail releases as soon and as quickly as possible. Additionally the 2 January end date of the flood event prior to the current event meant that significant drain down of the dam prior to the onset of the current event that commenced on 6 January 2011, was not possible without major bridge inundation downstream of the dam and without exceeding minor flood levels in the lower Brisbane River.

Additionally, a flood event was also experienced in October 2010 that resulted in a release of 750,000ML from the dam. Accordingly drain down below the dam full supply level prior to the start of the first December event would not have been possible without significant bridge inundation and without exceeding minor flood levels (as defined by BOM and BCC) in the lower Brisbane River.

Regardless, significant drain down prior to the current event would have had little impact on the peak level in Wivenhoe Dam as shown in the table below. The reason for this is that this total event inflow volume of 2,600,000 ML is well in excess of the useable flood storage combined with the available water supply storages shown in the table.

The specific impact on the Lower Brisbane River of these reduced dam levels requires the use of a complex hydraulic model. The results of this modelling would still contain a degree of uncertainty as illustrated by the difficulties in estimating the final flood peak in Brisbane during the event. This is because the rapid closure of the gates after peak inflow was achieved resulted in significant water level reductions downstream and this is difficult to model accurately.

JANUARY 2011 FLOOD			
Starting Level		Peak Height	Capacity
%	m AHD	m AHD	%
100	67.0	74.97	191
95	66.5	74.93	191
90	65.8	74.88	190
75	64.0	74.63	187
50	60.0	74.11	180

- # It should be noted that the possible reductions shown above are based up a unique dual peaked flood hydrograph with a volume of about 2,600,000 ML which occurred during this event. A hydrograph with the same volume but a different distribution could result in a significantly lower reduction in peak water levels.
- Flood operations at the dam are also highly dependent upon the flood inflow volume and a slight variation in the flood volume could significantly reduce the benefits associated with draining down the dam prior to a flood event.

2.5 Is there a detailed record of the events associated with the current flood?

A preliminary report has been prepared and is attached to this briefing.

3 THE MANUAL OF FLOOD MITIGATION AT WIVENHOE DAM AND SOMERSET DAM

3.1 What is the Manual of Flood Mitigation and how was it developed?

The Manual of Flood Mitigation for Wivenhoe and Somerset dams in its current form was developed in 1992 during an extensive hydrological study of the Brisbane and Pine Rivers catchments by DPI, Water Resources. The final reports were subject to extensive internal review by the Water Resources Group before being reviewed by an independent review panel comprising Professor Colin Apelt, Head of Department, Department of Civil Engineering, University of Queensland and Mr Eric Lesleighter, Principal Hydraulic Engineer and Chief Engineer Water Resources, Snowy Mountains Engineering Corporation. Subsequently, the Manual was extensively reviewed during the Brisbane Valley Flood Damages Minimisation Study in 2006, with the latest comprehensive review of the Manual undertaken in 2009. Both of these reviews have included expert review panels comprising key stakeholders, with the most recent review involving representatives from DERM, BOM, BCC and SunWater.

The Manual of Flood Mitigation is prepared by Seqwater as the owner of the dam and approved and gazetted by the Chief Executive of DERM in accordance with the Water Supply Act 2008. The manual defines flood objectives procedures; roles and responsibilities; and staffing and operational requirements for flood events impacting on Wivenhoe and Somerset dams.

3.2 What is contained in the Manual?

The primary objectives of the procedures contained in the Manual are, in 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 primarily, this involves minimising inundation of the seven bridges below the dam upstream of Moggill);
- 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.

During an event, the operation of the dam transitions between the following four operating strategies depending of the circumstances at the time. These procedures associated with these strategies are explained in detail in the Manual.

- **Strategy W1** – Primary consideration is given to Minimising Disruption to Downstream Rural Life.
- **Strategy W2** – Transition Phase moving from Minimising Disruption to Protecting Downstream Urban Areas.
- **Strategy W3** – Primary consideration is to Protect of Urban Areas from Inundation.
- **Strategy W4** – Primary consideration is to protecting the structural safety of the Dam.

In addition to these strategies, historical records show that there is a significant probability of two or more flood producing storms occurring in the Brisbane River system within a short time of each other. Accordingly for each flood event, the aim is always to empty stored floodwaters within seven days after the flood peak has passed through the dams.

4 REGULATORY CONTEXT (Provided by Peter Allen and unedited)

These are contained in the Flood Mitigation Manual (manual) approved under sections 370 to 374 of the *Water Supply (Safety and Reliability) Act 2008*. The Chief Executive Officer (CEO) of DERM (or his delegate) approves the manual, and the approval is notified in the Queensland Government Gazette. Approval can be for a period of up to five years, after which the approval needs to be renewed. There are no decision-making criteria specified in the Act for the CEO to take into account when approving the manual.

The manual for the dams requires, amongst other matters:

1. Flood operations to be conducted in accordance with manual's provisions. (There is an approval process specified in the manual, if Seqwater considers a different flood release strategy is desirable to deal with a particular flood event. This was not used in the January 2011 flood event)
2. Flood operations to be under the control of CEO-approved engineers (who are highly qualified and experienced)
3. Annual reporting on the preparedness and status of the flood control system for flood operations, and the training of the personnel who manage the flood events.
4. Reporting on the flood operations during flood events.
5. Reviews after flood events such as the January 2011 event. For this flood event, the Queensland Government engaged Mr Brian Cooper, an independent consulting engineer, to review compliance with the manual. Mr Cooper concluded (Attachment??): "...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 the final report or other appropriate reference??)

The manual is separate from a draft communication protocol (Insert name) between the Local, State and Commonwealth government agencies that are affected by the dams' flood operations. This protocol is not binding on the parties to it is not subject to regulatory approval/review.

Some DERM staff, because of their specialist skills, work in the Flood Operations Centre that Seqwater activates to manage such events. None of them are involved in any of the regulatory decisions concerning the dams or are members of the work unit (Office of the Water Supply Regulator) which undertakes the CEO's regulatory functions.

5 COMPLIANCE WITH THE MANUAL

(To be provided)

6 SEQWATER REPORT

It is recommended that the process and content for reports required for this event be:

- In the short term, utilise this report attached to this briefing note as the basis for communications and discussion.
- Prepare any Interim Reports as agreed to provide information and input as required.
- Seqwater prepare a Comprehensive Report as per the existing regulatory requirements of the Act and the gazetted manual and any requirements of the Dam Safety Regulator. This would be done within 6 weeks of the closure of the current event as per the manual. This timeframe is subject to any new mobilisation of the Flood Operations Centre. The Table of Contents would include:
 - Introduction
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 - Improvements in data collection systems, practices and processes.
 - improvements by interacting agencies
 - Review of factors impacting on the protection of urban areas
 - Recommendations & Conclusions
- The report would then be reviewed by the Dam Safety Regulator in conjunction with any peer review they require. The review should cover:
 - Were the provisions of the manual complied with?
 - What improvements to either facilities e.g. stream gauges, or work practices, are desirable to improve Seqwater's ability to predict inflows into the dams.
 - Are improvements to either Seqwater's facilities or work practices desirable to improve Seqwater's ability to manage events? For example, investigations to raise the dam to improve its flood storage capacity, If so, what are they and their implications

- Are changes to the facilities or work practices of other organisations desirable to improve Seqwater's abilities to manage these events? If so, what are they and their implications? (For example, would it be worth funding Brisbane River crossing upgrades so that floodwater could be released faster, while not adversely affecting access to properties--or maybe alternative strategies e.g. resupply operations could be put in place to achieve similar outcomes?)
- Given the manual's order of priorities i.e. protection of the dam etc, are any changes in the flood release strategies for either dam desirable? If so, what are they, and their implications
- Based on this review, a review of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam would occur utilising an expert panel of review including representatives of DERM, Seqwater, BoM, affected Local Governments and other stakeholders as necessary.

Ministerial brief outline

What is the objective?

- a) Ensuring public transparency
- b) To answer the State's questions on the performance of Wivenhoe Dam operations
- c) Preparation for a public inquiry
- d) Normal and logical course of conduct after the occurrence of a major flood event – Review requirement under the Flood Mitigation Manual

Background (focus on Brisbane River flooding issues)

- 1) Design of Dam – Storages/Spillway upgrade (*Information provider: Seqwater and Peter Allen - DERM*) [1/3 to ½ a page]
- 2) "The Flood Event" – Q&A (*Information provider: Seqwater*) [2 ½ pages]
 - a. Chronology - High level time step of events and significant decision making/changes – more detailed time step information for Tuesday afternoon (i.e. what was the BOM forecast at the time, narrow peak etc.)
 - b. How does Wivenhoe Dam work as a flood mitigator?
 - c. What are the factors being balanced when making decisions about the amount of dam releases? To what extent does information from the Bureau of Meteorology/rain gauges influence decisions? How reliable is this information?
 - d. Statistics on how much did Wivenhoe Dam knock off the flood peak.
 - e. What would have happened if Wivenhoe Dam had not been built and we only had Somerset Dam? What damage would have been caused compared to what has currently been experienced (damage statistics)?
 - f. If we have undertaken pre-emptive dam releases to bring Wivenhoe Dam's full supply level down to lower than what we had maintained (i.e. 60%), what would have been the river height for the period that this flood event occurred?
 - g. If pre-emptive dam releases would not have made a difference, why? (i.e. why did we not release earlier?)
 - h. Why was Wivenhoe Dam only allowed to rise up to 191% and not 230%?
 - i. What is the fuse plug and why did it need to be maintained?
 - j. What damage or town isolation occurred during the Wivenhoe Dam releases that occurred since October 2010?
 - k. Did Seqwater have time to reduce the dam level between the 5 events? If so, would it have made a difference to this flood event?

- 3) The Flood Mitigation Manual (*Information Provider: Seqwater/DERM*) [½ to 1 page]
 - a. Describe the decision making framework - Four strategies
 - b. How is the Manual designed to work?
 - c. History of Flood Mitigation Manual updates and peer review – who was on the panels, studies that fed into previous versions of the Manual and who was involved in these studies?
 - d. **Attach** Minister Robertson's request for advice on pre-emptive release and our response (*Information provider: SEQ Water Grid Manager*)
- 4) Regulatory context - *Water Supply (Safety and Reliability) Act 2008* (*Information provider: Peter Allen - DERM*)
 - a. Flood Mitigation Manual approval
 - b. Formal reporting process under the Flood Mitigation Manual – **attach** report resulting from the February 1999 flood event
 - c. Decision making process under the Flood Mitigation Manual –
 - i. Who makes the flood release decisions under the Manual?
 - ii. who is informed/consulted?
 - iii. effect of the recent Flood Communication Protocol?
- 5) Brian Cooper Flood Mitigation Manual compliance review (*Responsible: SEQ Water Grid Manager*)

Seqwater report

(*Information provider: Seqwater, Peter Allen and Bob Reilly*)

Seqwater, in consultation with Peter Allen and Bob Reilly, to set out how Seqwater's Flood Mitigation Manual Report to the Chief Executive on the effectiveness of the operational procedures will be undertaken.

- **Attach** table of contents of the 1999 Flood Mitigation Manual report
- Reflect Brian Cooper's compliance review
- Peer review – establishment of an expert panel – who will be on it? Peter Allen and Bob Reilly may provide some input.
- Communication Protocol and incorporation into the Flood Mitigation Manual (revisit in the next fortnight?)

Timeframes on the development of the report – consider urgency due to anticipated further rainfall during this summer.

Gina O'Driscoll

From: Kathy Reilly [threereillys [REDACTED]]
Sent: Sunday, 16 January 2011 6:00 PM
To: Reilly Bob; pborrows [REDACTED]; John Bradley [REDACTED]; Barry Dennien;
Dan Spiller; peter.allen [REDACTED]
Subject: Re: Cabinet in confidence - Ministerial brief outline

Hi Peter

Peter Allen will provide you with some technical commentary, so I will concentrate on the wider issues. In the interests of time, I have not checked my comments with Peter Allen so he and your staff can feel to correct me if I have got my facts wrong.

Dam failure versus fuse plug activation

In the current event, the critical issue we were trying to avoid was activation of the fuse plugs, with the first one being activated at (I recall) 75.6 metres--not sure what this was in terms of percentage of capacity. As well as the adverse impacts of such activation cited in the text, the practical effect would also have been to increase, I understand, flood sights by about 0.5 metres in Brisbane. So, we had to avoid this outcome. (Also what the 0.5 metres been worth in terms of avoided property damage?)

Personally, I would emphasise more the arguments around what we had to do to avoid this outcome.

Reducing the peak flood in brisbane--last paragraph p.3

This is an important point. However the argument would be strengthened if you more comprehensively explained the reasoning behind the statement. For example, are we saying that because seepage reduced the flow from 6,000 cumecs to 2,500 cumecs, then this was the outcome, and that the only reason we could do that was because we were still 0.5 metres or so below fuse plug activation (and thus had a buffer if there was an unexpected surge in inflows?)

Also what is the 1 metre worth in terms of reduced property damage?

Section 2.4

Playing the devil's advocate for a moment with respect to the table on p.7, could someone convincingly argue that if the starting level had been 50% of FSL, you would have had the ability to reduce the releases from Wivenhoe below 2,500 cumecs at the height of the flood event, and thus further reduce the peak height in Brisbane / Ipswich?

Seepage report (p.13)

The specific additional issues that I suggest we include are:

- whether it is worth investigating increasing the flood capacity of Wivenhoe--I know a fair bit of work has been done on this issue
- whether the Brisbane River crossings which act, under some situations as a constraint on the releases from Wivenhoe, should be replaced by bridges. For example if the smallest could pass, for example, 2,500 cumecs, then this could enable higher releases under some circumstances.
- Whether the policy of draining the flood compartment within 7 days should be modified.

I also suggest the review be undertaken by an independent expert and that an expert panel be formed to provide review of the report and identification of any additional issues requiring investigation--this is important if you are picking up possible improvement by other agencies.

Minor points.

- throughout the text can we be clear what we mean by the term "failure"--to the Minister I suspect this means the dam will collapse and I do not think this is what meant in some cases.
- the spillway upgrade in 2035 is not intended to improve flood mitigation capacity, I understand (p.2)

- the first few paragraphs in section 2.1 refer to the scenario where Wivenhoe did not exist--could this be made clearer in the text?
- Finally, could we make the point that Wivenhoe/Somerset does not control Lockyer/Bremer and that the flood flow at the river peak was compromised of x % from these sources. In the last few days, I have explained to many people around Milton/Auchenflower (where there was significant flooding) this point and they are always surprised. There appears to be a strong view in the community that Wivenhoe was supposed to stop any repetition of the 1974 flood and therefore it "failed" in this task given what has happened.

Regards

Bob

----- Original Message -----

From: Reilly Bob
 To: threereillys [REDACTED]
 Sent: Sunday, January 16, 2011 4:33 PM
 Subject: Fw: Cabinet in confidence - Ministerial brief outline

----- Original Message -----

From: Peter Borrows <pborrow@[REDACTED]>
 To: Reilly Bob; Rob Drury <rdrury@[REDACTED]>; Duty Sec <dutysec@[REDACTED]>; Bradley John; Dennien Barry [REDACTED]; spiller daniel [REDACTED]
 Cc: Lyons Michael [REDACTED]; Mike Foster <mfoster@[REDACTED]>; Elaine Smouha <elainamir@[REDACTED]>; Allen Peter
 Sent: Sun Jan 16 16:28:29 2011
 Subject: Cabinet in confidence - Ministerial brief outline

Please see attached draft with attachment.

In relation to the draft contents outline sent yesterday, the following is a cross reference FYI.

The attached Ministerial Briefing Note addresses the questions contained in the Ministerial Information Request as follows:

1) Design of Dam – Storages/Spillway upgrade

Refer Section 1

2) "The Flood Event" – Q&A

a. Chronology - High level time step of events and significant decision making/changes – more detailed time step information for Tuesday afternoon (i.e. what was the BOM forecast at the time, narrow peak etc.)

Refer Section 2.5

b. How does Wivenhoe Dam work as a flood mitigator?

Refer Sections 2.1, 2.3 and 3.1

c. What are the factors being balanced when making decisions about the amount of dam releases? To what extent does information from the Bureau of Meteorology/rain gauges influence decisions? How reliable is this information?

Refer Sections 3.1 and 3.2

d. Statistics on how much did Wivenhoe Dam knock off the flood peak.

Refer Section 2.1

e. What would have happened if Wivenhoe Dam had not been built and we only had Somerset Dam? What damage would have been caused compared to what has currently been experienced (damage statistics)?

Refer Sections 2.1 and 2.2

f. If we have undertaken pre-emptive dam releases to bring Wivenhoe Dam's full supply level down to lower than what we had maintained (i.e. 60%), what would have been the river height for the period that this flood event occurred?

Refer Section 2.4

If pre-emptive dam releases would not have made a difference, why? (i.e. why did we not release earlier?)

Refer Section 2.4

h. Why was Wivenhoe Dam only allowed to rise up to 191% and not 230%?

Refer Section 2.2

i. What is the fuse plug and why did it need to be maintained?

Refer Section 2.3

j. What damage or town isolation occurred during the Wivenhoe Dam releases that occurred since October 2010?

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k. Did Seqwater have time to reduce the dam level between the 5 events? If so, would it have made a difference to this flood event?

Refer Section 2.4

3) The Flood Mitigation Manual

Refer Section 3.1

a. Describe the decision making framework - Four strategies

Refer Section 3.2

b. How is the Manual designed to work?

Refer Section 3.2

c. History of Flood Mitigation Manual updates and peer review – who was on the panels, studies that fed into previous versions of the Manual and who was involved in these studies?

Refer Section 3.1

4) Regulatory context - Water Supply (Safety and Reliability) Act 2008 (Information provider: Peter Allen - DERM)

Refer Section 4

Regards, Peter.

Peter Borrows

Chief Executive Officer

Queensland Bulk Water Supply Authority trading as Seqwater

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Website | www.seqwater.com.au <<http://www.seqwater.com.au/>>

From: Elaina Smouha [mailto:elainamir@seqwater.com.au] [REDACTED]

Sent: Saturday, 15 January 2011 5:03 PM

To: Mike Foster; peter.allen [REDACTED]; bob.reilly [REDACTED]; Peter Borrows; Rob Drury; Duty Seq

cc: john.bradley [REDACTED]; barry.dennien [REDACTED]; daniel.spiller [REDACTED]

michael.lyons [REDACTED]; Elaina Smouha

Subject: Cabinet in confidence - Ministerial brief outline

Dear All

To assist, attached is a Ministerial brief outline as per our recent teleconference, for Monday's Emergency Cabinet meeting. It also records those who will be providing information for the Background and Flood Mitigation Manual report process.

As discussed, the brief needs to be provided to Minister Robertson tomorrow (Sunday, 16 January 2011).

Regards

Elaina

Elaina Smouha

Director, Governance and Regulatory Compliance

SEQ Water Grid Manager

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From: Elaina Smouha <elainamir[REDACTED]>
Sent: Sunday, January 16, 2011 6:05 PM
To: Peter Borrows <pborrows[REDACTED]>
Cc: Barry Dennien <Barry.Dennien[REDACTED]>; Dan Spiller <Daniel.Spiller[REDACTED]>
Subject: Re: Cabinet in confidence - Ministerial brief outline
Attach: Seqwater Jan_2011_Flood_Event_Ver_1_draft_for_distribution[1].docx; Seqwater Ministerial_Briefing_Note_January_17_2011_Final_Draft_for_distribution[1].docx

Peter

As per your conversation with Barry, we have highlighted some queries within your attached reports.

Regards

Elaina

On Sun, Jan 16, 2011 at 4:28 PM, Peter Borrows <pborrows[REDACTED]> wrote:

Please see attached draft with attachment.

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Peter Borrows

Chief Executive Officer

Queensland Bulk Water Supply Authority *trading as Seqwater*


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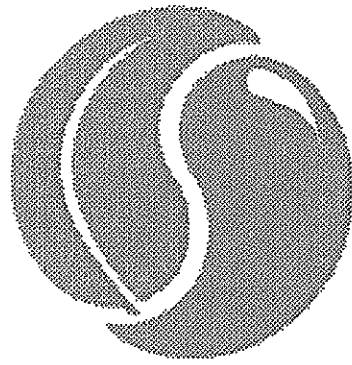
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seqwater
WATER FOR LIFE

**JANUARY 2011 FLOOD
EVENT**

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1 INTRODUCTION

Wivenhoe Dam was constructed by the Queensland Government between 1977 and 1984. The dam is a 56 m AHD high and 2.3 kilometre long earth and rock embankment separated into two parts by a concrete gravity spillway. The spillway is controlled by 5 radial gates, each 12.0 metres wide by 16.0 m AHD high. Two saddle dam embankments are located on the left side of the reservoir.

The dam spillway capacity was upgraded in 2005. This was done primarily through the construction of a 164 metre wide secondary spillway through the right abutment of the existing dam. This spillway contains three erodible earth fill fuse plug embankments that are initiated at different dam levels in excess of EL 75.6.

The dam has two main functions by providing:

- A 1,165,000 ML storage at full supply level (FSL EL 67.0) providing an urban water supply for Brisbane and surrounding areas;
- Flood mitigation in the Brisbane River by providing a dedicated flood storage volume of 1,450,000 ML up to EL77 (this flood level was increased as part the 2005 upgrade to allow a water level of EL80m and a temporary flood storage volume of 1,966,000 ML with all fuse plugs initiated and the dam at the point of failure).

The dam has an EXTREME hazard classification under ANCOLD guidelines because of the significant development downstream in the Brisbane and Ipswich metropolitan areas, with the population at risk in the event of a dam failure numbering in the hundreds of thousands.

In accordance with the Queensland Regulatory program for dam spillway upgrades, a further upgrade of Wivenhoe Dam is scheduled to occur prior to 2035 to enable the dam to safely pass the Probable Maximum Flood. This work will involve the reconstruction of Saddle Dam 2 as a fuse plug spillway.

Wivenhoe Dam is in excellent condition. Comprehensive Dam Safety reviews undertaken in accordance with ANCOLD guidelines have been undertaken in 1997 (Gutteridge, Haskins & Davey Pty Ltd), 2003 (Wivenhoe Alliance), 2006 (NSW Department of Commerce), 2009 (GHD) and September 2010 (Seqwater). The reports concluded that the design of the dam is in accordance with modern day standards and that there are no significant outstanding design or construction issues that require investigation.

2 WIVENHOE DAM FLOOD MITIGATION AND FLOOD OPERATIONS

2.1 Flood Mitigation

The Brisbane River catchment covers an area of approximately 14,000 square kilometres of which about half is below Wivenhoe Dam. Maximum overall flood mitigation effect is achieved by operating Wivenhoe Dam in conjunction with Somerset Dam. Although Somerset and Wivenhoe Dam reduce flooding in Brisbane City, major flooding can still occur. The Lockyer-Laidley Valley drains into the Brisbane River through Lockyer Creek that enters the Brisbane River just downstream of Wivenhoe Dam near Lowood. Another major tributary, the Bremer River, flows into the Brisbane River at Moggill. Wivenhoe Dam has no control over inflows into the Brisbane River from both these major tributaries.

Wivenhoe Dam mitigates downstream flooding by storing incoming flood water during a rainfall event and releasing these waters at a reduced flow rate downstream to minimise flood impacts. The timing of the releases is also manipulated so that the aim is for outflows from the dams to impact on downstream areas only after the peak inflows from the downstream major tributaries have passed. However, this aim cannot always be achieved in practice. This is because some large floods, such as the one currently being experienced, have the potential to overflow the dam's flood storage compartment. Should this occur, the dam would fail and the resulting damage and loss of life would be at least 100 to 1000 times greater than that currently being experienced.

Therefore the basis of all flood operation decision making is to ensure the dam never fails. This is the reason that the dam's flood storage compartment would never be intentionally fully filled as additional inflows after this point would result in a dam failure. Similarly, there will be uncertainty on future rainfall that could occur which could not be releases if there was insufficient flood storage which could not be stored or released.

Another factor that impacts on flood release decision making in large events are the levels at which the erodible fuse plugs are triggered. Loss of one or more fuse plugs severely limits the ability of the dam to mitigate the effects of future flood events that may occur prior to the fuse plug or plugs being reinstated. Reinstatement of a fuse plug following an event would take a minimum of 4 to 6 months and would require an extended period of relatively dry weather.

2.2 Flood Operations

A real time flood monitoring and forecasting system has been established in the Wivenhoe and Somerset Dam catchments. This system employs radio telemetry to collect, transmit and receive rainfall and stream flow information. The system consists of around 230 field stations that automatically record rainfall and/or river heights at selected locations in the dam catchments. Most of these field stations are owned by Seqwater with the remainder belonging to other agencies.

The rainfall and river height data is transmitted to Seqwater's Flood Operations Centre in real time. Once received in the Flood Operations Centre, the data is processed using a Real Time Flood Model (RTFM) to estimate likely dam inflows and evaluate a range of possible inflow scenarios based on forecast and recorded rainfall in the dam catchments. The RTFM is a suite of hydrologic computer programs that utilise the real time data to assist in the operation of the dams during flood events.

Seqwater engineers use the RTFM for flood monitoring and forecasting during flood events to operate the dams in accordance with a Manual of Flood Mitigation (the origin of and objectives and procedures contained in the Manual of Flood Mitigation are explained in the following section of this document). Releases of water from the dams are optimised to minimise the impacts of flooding in accordance with the objectives and procedures contained in a Manual of Flood Mitigation.

The RTFM and data collection network performed well During the January 2011 event, with no failures experienced that compromised the ability of Seqwater to operate the dam.

Inconsistent with statement on page 8?

3 MANUAL OF FLOOD MITIGATION FOR WIVENHOE AND SOMERSET DAMS

The Manual of Flood Mitigation for Wivenhoe and Somerset Dams, in its current form, was developed in 1992 during an extensive hydrological study of the Brisbane and Pine Rivers catchments by DPI, Water Resources. The final reports were subject to extensive internal review by the Water Resources Group before being reviewed by an independent review panel comprising Professor Colin Apelt, Head of Department, Department of Civil Engineering, University of Queensland and Mr Eric Lesleighter, Principal Hydraulic Engineer and Chief Engineer Water Resources, Snowy Mountains Engineering Corporation.

Subsequently, the Manual was extensively reviewed during the Brisbane Valley Flood Damages Minimisation Study in 2006, with the latest comprehensive review of the Manual undertaken in 2009. Both of these reviews have included expert review panels comprising key stakeholders, with the most recent review involving representatives from DERM, BOM, BCC and SunWater.

The Manual of Flood Mitigation is prepared by Seqwater as the owner of the dam and approved and gazetted by the Chief Executive of DERM in accordance with the Water Supply Act 2008. The manual defines flood objectives procedures; roles and responsibilities; and staffing and operational requirements for flood events impacting on Wivenhoe and Somerset dams.

The primary objectives of the procedures contained in the flood manual are, in 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 primarily, this involves minimising inundation of the seven bridges below the dam upstream of Moggill);
- 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.

During an event, the operation of the dam transitions between the following four operating strategies depending of the circumstances at the time. These procedures associated with these strategies are explained in detail in the Manual.

- **Strategy W1** – Primary consideration is given to Minimising Disruption to Downstream Rural Life. Under this strategy, the predicted water level is below 68.50 m AHD and the maximum release is 1,900m³/s.
- **Strategy W2** – Transition Phase moving from Minimising Disruption to Protecting Downstream Urban Areas. Under this strategy, the water level is predicted to be between 68.5 and 74.0 m AHD and the maximum release is less than 3,500m³/s. River flows at Moggill? Not releases?
- **Strategy W3** – Primary consideration is to Protect of Urban Areas from Inundation. Under this strategy, the water level is predicted to be between 68.5 and 74.0 m AHD but the maximum release is less than 4,000m³/s. River flows at Moggill? Not releases?
- **Strategy W4** – Primary consideration is to protecting the structural safety of the Dam. Under this strategy, the water level is predicted to exceed 74.0 m AHD and there is no limit to the maximum release. Consideration is given to managing flood releases to avoid fuse plug initiation if at all possible as this would compromise flood mitigation capacity in the short to medium term.

In addition to these strategies, historical records show that there is a significant probability of two or more flood producing storms occurring in the Brisbane River system within a short time of each other. Accordingly for each flood event, the aim is always to empty stored floodwaters within seven days after the flood peak has passed through the dams.

4 JANUARY 2011 FLOOD EVENT

4.1 Background

In the 25 days leading up to the current event, three flood events impacting on Wivenhoe Dam were experienced, with gate releases being made on all but five of those days. The total outflow from these events was around 700,000ML. The details of these events are as follows:

EVENT	EVENT START DATE	EVENT END DATE	VOLUME RELEASED (ML)
1	13/12/2010	16/12/2010	70,000
2	17/12/2010	24/12/2010	150,000 Should this be 370,000 as per teleconference?
3	26/12/2010	02/01/2011	470,000

During these events, requests were received from Councils and residents impacted by bridge closures downstream of the dam to curtail releases as soon and as quickly as possible. Additionally the 2 January end date of the flood event prior to the current event meant that significant drain down of the dam prior to the onset of the current event that commenced on 6 January 2011, was not possible without major bridge inundation downstream of the dam and without exceeding minor flood levels in the lower Brisbane River.

Additionally, a flood event was also experienced in October 2010 that resulted in a release of 750,000ML from the dam. Accordingly drain down below the dam full supply level prior to the start of the first December event would not have been possible without significant bridge inundation and without exceeding minor flood levels (as defined by BOM and BCC) in the lower Brisbane River.

Regardless, significant drain down prior to the current event would have had little impact on the peak level in Wivenhoe Dam as shown in the table below. The reason for this is that this total event inflow volume of 2,600,000 ML is well in excess of the useable flood storage combined with the available water supply storages shown in the table.

The specific impact on the Lower Brisbane River of these reduced dam levels requires the use of a complex hydraulic model. The results of this modelling would still contain a degree of uncertainty as illustrated by the difficulties in estimating the final flood peak in Brisbane during the event. This

is because the rapid closure of the gates after peak inflow was achieved resulted in significant water level reductions downstream and this is difficult to model accurately.

JANUARY 2011 FLOOD			
Starting Level		Peak Height	Capacity
%	m AHD	m AHD	%
100	67.0	74.97	191
95	66.5	74.93	191
90	65.8	74.88	190
75	64.0	74.63	187
50	60.0	74.11	180

It should be noted that the possible reductions shown above are based up a **unique dual** peaked flood hydrograph with a volume of about 2,600,000 ML which occurred during this event. A hydrograph with the same volume but a different distribution could result in a significantly lower reduction in peak water levels.

Flood operations at the dam are also highly dependent upon the flood inflow volume and a slight variation in the flood volume could significantly reduce the benefits associated with draining down the dam prior to a flood event.

Assumptions for model?

Is it a dual or triple peak? Should we explain in detail why is it so unique?

4.2 Event Decision Making

The following table contains a summary of the key decisions points associated with the current event. As at 16 January 2011, the event remains in progress.

Weather forecasts were consistently less than actual. Emphasise reliance on BOM advice.

Need to specify BOM forecasts and actual rainfall experienced for each time step

DATE AND TIME	FLOOD EVENT MILESTONE
07:00 06/01/2011 (Thursday)	Rainfall is experienced in the dam catchments that will result in flood releases, however Wivenhoe releases are delayed for 24 hours to allow Lockyer Creek flood flows to pass downstream and prevent the isolation of the community dependent of Burtons Bridge. The forecast is for 150mm over the next 24 hours.
15:00 07/01/2011 (Friday)	Wivenhoe releases commence, with operational strategy W1 in use. Rainfall for the next four days is estimated to be between 140mm and 300mm, with a forecast for rain easing on Tuesday 11 January 2011. All bridges downstream of the dam with the exception of Fernvale Bridge and

	Mt Crosby Weir Bridge are expected to be inundated for a number of days.
--	--

06:00 09/01/2011 (Sunday)	Moderate to heavy rain periods forecast until Tuesday, but both Wivenhoe and Somerset dam levels were falling slowly, with Somerset at 1.27 m AHD above FSL and Wivenhoe 1.58 m AHD above FSL.
15:30 09/01/2011 (Sunday)	Following significant rain during the day a meeting of Duty Engineers is held. The QPF issued at 16:00 indicates 50mm to 80mm over the next 24 hours. Based on this forecast, it is anticipated that dam levels can be held to a maximum of 3.50 m AHD above FSL in Somerset and 5.5 m AHD above FSL in Wivenhoe. However, by 19:00 it was apparent that both Fernvale Bridge and Mt Crosby Weir Bridge would be inundated by the combined dam releases and Lockyer Creek flows and that the operational strategy had progressed to W2.
06:30 10/01/2011 (Monday)	Rainfall continued during the night and based on rainfall on the ground it was apparent the operational strategy had progressed to W3.
06:30 10/01/2011 (Monday)	Rainfall continued during the day but based on rainfall on the ground, operational strategy W3 remained in use. However it was apparent that any further heavy rain would result in progression of the operational strategy to W4.
08:00 11/01/2011 (Tuesday)	Rainfall continued during the night with isolated heavy falls in the Wivenhoe Dam catchment area and based on rainfall on the ground it was apparent the operational strategy would soon progress to W4 with Wivenhoe Dam exceeding 8.00 m AHD above FSL. The objective now was to limit outflows and subsequent flood damage to urban areas, while ensuring the structural safety of the dam.
11:00 11/01/2011 (Tuesday)	Rapid inflows were experienced in Wivenhoe Dam, with the dam rising almost a metre in eight hours. Releases were increased until the dam level stabilised in accordance with Strategy W4. Computer models were not reflecting actual dam inflows due to intense point rainfalls in the immediate catchment around the dam. Falls are estimated to be similar to those experienced at both Toowoomba and Upper Lockyer the previous day and are falling outside and between existing rain gauges.
21:00 11/01/2011 (Tuesday)	Wivenhoe Dam peaked. Peak release of 7450 cumecs with a level of 0.7 metres below fuse plug trigger.
22:00 11/01/2011	Wivenhoe Dam releases were closed off as quickly as possible over the

(Tuesday)	next 11 hours, while ensuring water levels in the dam did not rise further and initiate a fuse plug embankment.
08:00 12/01/2011 (Wednesday)	Minimum possible release level reached, with inflows matching outflows. Further reductions in release rate would likely cause the dam level to rise.
21:00 13/01/2011 (Thursday)	The 7 day dam drain down is commenced as Lockyer Creek and Bremer River peaks pass the Lower Brisbane area. Maximum release target is the limit of damaging floods in Brisbane being 3500 cumecs.
09:00 17/01/2011 (Monday)	Drain down continues, with released expected to cease on Wednesday 19 January 2011 unless further rainfall is experienced.

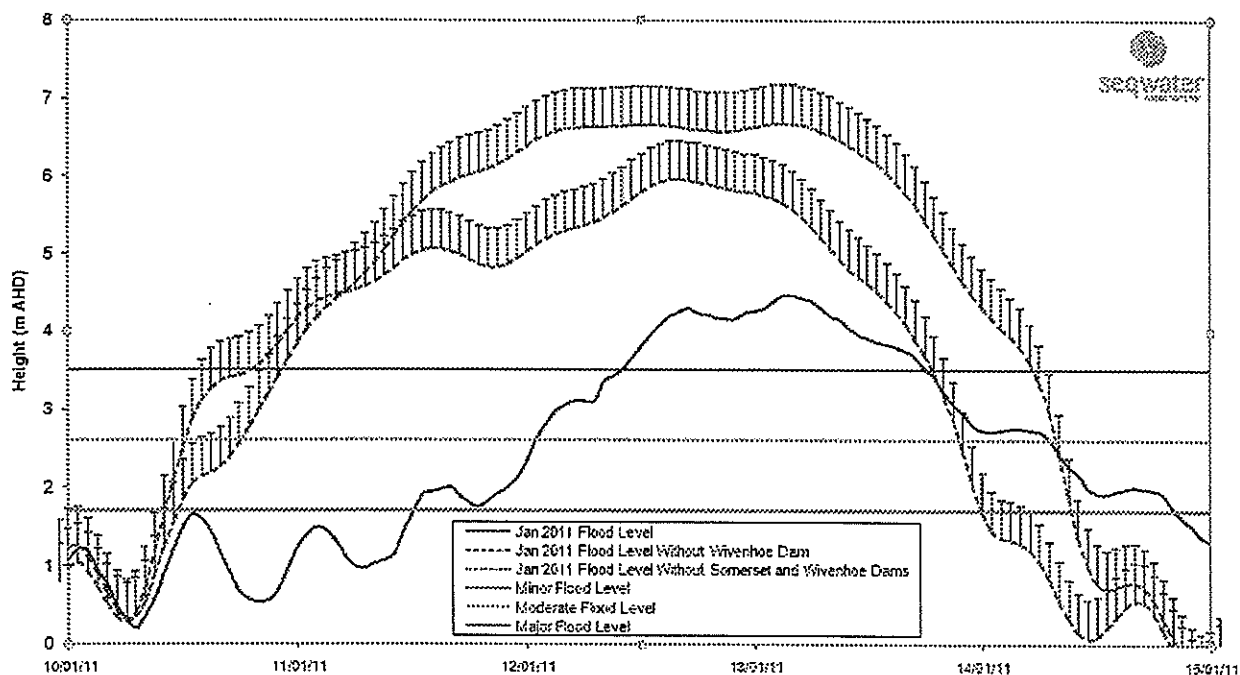
4.3 Flood Mitigation Benefits of Wivenhoe Dam

The following graphs demonstrate the significant benefits of Wivenhoe Dam in mitigating the current flood event, with reductions in flood peak of up to 2.5 metres in the City area and up to 5.5 metres in the Moggill area further upstream.

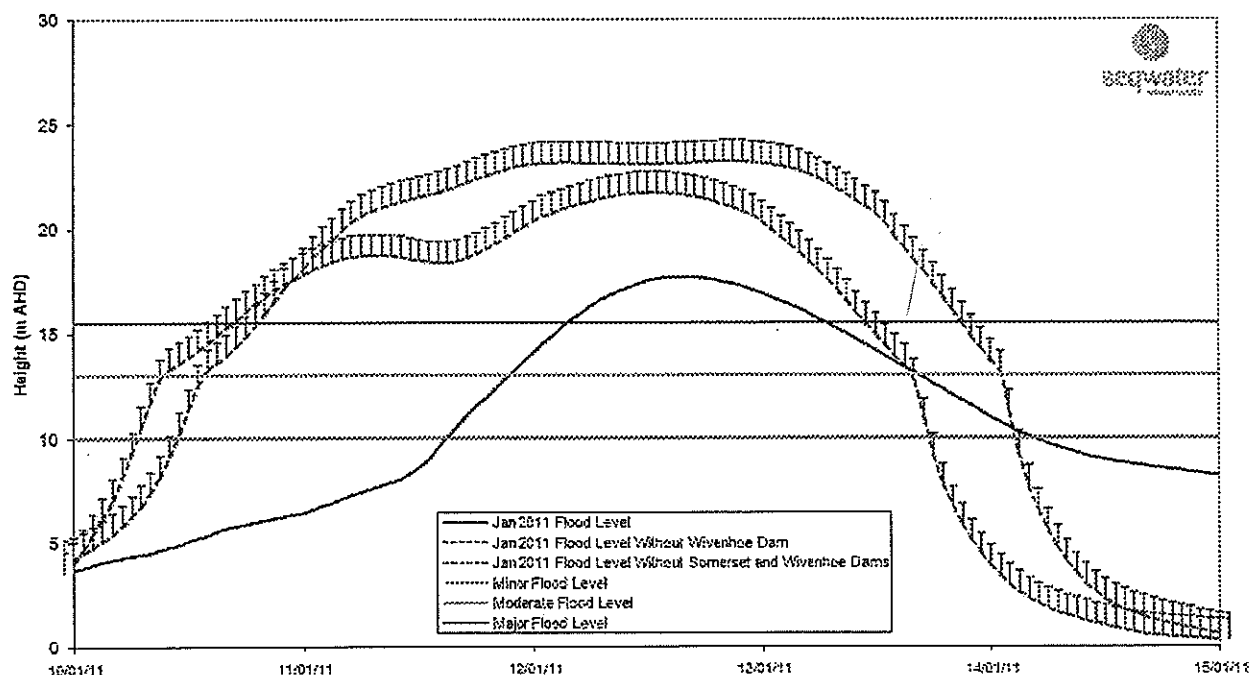
This equates to significant reduction in the potential for loss of life as well as saving in damages in the order of up to \$1.6 billion based on current damage curves. Up to 13,000 more properties would have been impacted by the event without the Dam.

The time at which flood levels remained elevated above major levels has also been reduced by up to 3 days by the dam. This has significant benefits to impact on the population of the city, property damage and the recovery operation.

JANUARY 2011 BRISBANE FLOOD
Assessment of Flood Levels at Brisbane City



JANUARY 2011 BRISBANE FLOOD Assessment of Flood Levels at Moggill



The strategy adopted to quickly close off releases once the peak in the dam had been reached and rain stopped falling certainly reduced the predicted flood peak by at least one metre in the lower Brisbane River area. This notion is supported by BOM.

Blue line of graph – Breakdown the component of % of Wivenhoe Dam release and downstream inflows

5 EVENT REVIEW

Under the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam that are approved and gazetted by the Department of Environment and Resource Management, there is a regulatory requirement that a report must be prepared as per the below wording:

“Seqwater must prepare a report after each Flood Event. The report must contain details of the procedures used, the reasons therefore and other pertinent information. Seqwater must forward the report to the Chief Executive within six weeks of the completion of the Flood Event.”

Such a report was prepared for the flood events of February and March 2010 and copies are available. A copy of the Table of Contents of that report is included as Appendix 1. For this event, the report would be a comprehensive summary of all procedures, actions, outcomes and processes during the event.

It is recommended that the process and content for reports required for this event be:

- In the short term, utilise this report attached to this briefing note as the basis for communications and discussion.
- Prepare any Interim Reports as agreed to provide information and input as required.
- Seqwater prepare a Comprehensive Report as per the existing regulatory requirements of the Act and the gazetted manual and any requirements of the Dam Safety Regulator. This would be done within 6 weeks of the closure of the current event as per the manual. This timeframe is subject to any new mobilisation of the Flood Operations Centre. The Table of Contents would include:
 - Introduction
 - Flood Event Summary
 - Mobilisation and Staffing
 - Event Rainfall
 - Inflow and Release Details
 - Data Collection System Performance
 - Data Analysis Performance
 - Communication
 - Flood Management Strategies and Manual Compliance
 - Improvements in data collection systems, practices and processes.
 - improvements by interacting agencies

- Review of factors impacting on the protection of urban areas
 - Recommendations & Conclusions
- The report would then be reviewed by the Dam Safety Regulator in conjunction with any peer review they require. The review should cover:
 - Were the provisions of the manual complied with?
 - What improvements to either facilities e.g. stream gauges, or work practices, are desirable to improve Seqwater's ability to predict inflows into the dams.
 - Are improvements to either Seqwater's facilities or work practices desirable to improve Seqwater's ability to manage events? For example, investigations to raise the dam to improve its flood storage capacity, If so, what are they and their implications.
 - Are changes to the facilities or work practices of other organisations desirable to improve Seqwater's abilities to manage these events? If so, what are they and their implications? (For example, would it be worth funding Brisbane River crossing upgrades so that floodwater could be released faster, while not adversely affecting access to properties--or maybe alternative strategies e.g. resupply operations could be put in place to achieve similar outcomes?)
 - Given the manual's order of priorities i.e. protection of the dam etc, are any changes in the flood release strategies for either dam desirable? If so, what are they, and their implications
- Based on this review, a review of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam would occur utilising an expert panel of review including representatives of DERM, Seqwater, BoM, affected Local Governments and other stakeholders as necessary.

Appendix A

FINAL REPORT – FLOOD EVENTS AT WIVENHOE, SOMERSET AND NORTH PINE DAMS FOR FEBRUARY AND MARCH 2010

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Ministerial Briefing Note

17 January 2010

Flood Event January 2011

1. BACKGROUND INFORMATION ON WIVENHOE DAM

2. WIVENHOE DAM FLOOD MITIGATION AND FLOOD OPERATIONS

- 2.1 What were the benefits provided by Wivenhoe Dam during the current event?
- 2.2 Why was Wivenhoe Dam only allowed to rise up to 191% and not 230%?
- 2.3 What is the role of the erodible fuse plug embankments?
- 2.4 Why weren't pre-emptive releases undertaken prior to the start of the flood event?
- 2.5 Is there a detailed record of the events associated with the current flood?

3. THE MANUAL OF OPERATIONAL PROCEDURES FOR FLOOD MITIGATION AT WIVENHOE DAM AND SOMERSET DAM

- 3.1 What is the Manual of Flood Mitigation and how was it developed?
- 3.2 What is contained in the Manual?

4. REGULATORY CONTEXT

5. COMPLIANCE WITH MANUAL

6. SEQWATER REPORT

1 BACKGROUND INFORMATION ON WIVENHOE DAM

Wivenhoe Dam was completed in 1984 and has two main functions;

- A 1,165,000 ML storage providing an urban water supply for Brisbane;
- Flood mitigation in the Brisbane River by providing a dedicated flood storage volume of 1,450,000 ML (this flood storage was increased in 2005 to 1,966,000 ML with the dam at the point of failure).

In accordance with the Queensland Regulatory program for dam spillway upgrades, a further upgrade of Wivenhoe Dam is scheduled to occur prior to 2035. Would it have made any difference to the current flood event?

Was it relevant to this event i.e any di? Would water have been released through it? Would the Flood Mitigation Manual decision levels changed?

Wivenhoe Dam is in excellent condition with four Comprehensive Dam Safety reviews undertaken in the last 14 years, the latest in 2010.

2 WIVENHOE DAM FLOOD MITIGATION AND FLOOD OPERATIONS

2.1 What were the benefits provided by Wivenhoe Dam during the current event?

The following graphs demonstrate the significant benefits of Wivenhoe Dam in mitigating the current flood event, with reductions in flood peak of up to 2.5 metres in the City area and up to 5.5 metres in the Moggill area further upstream.

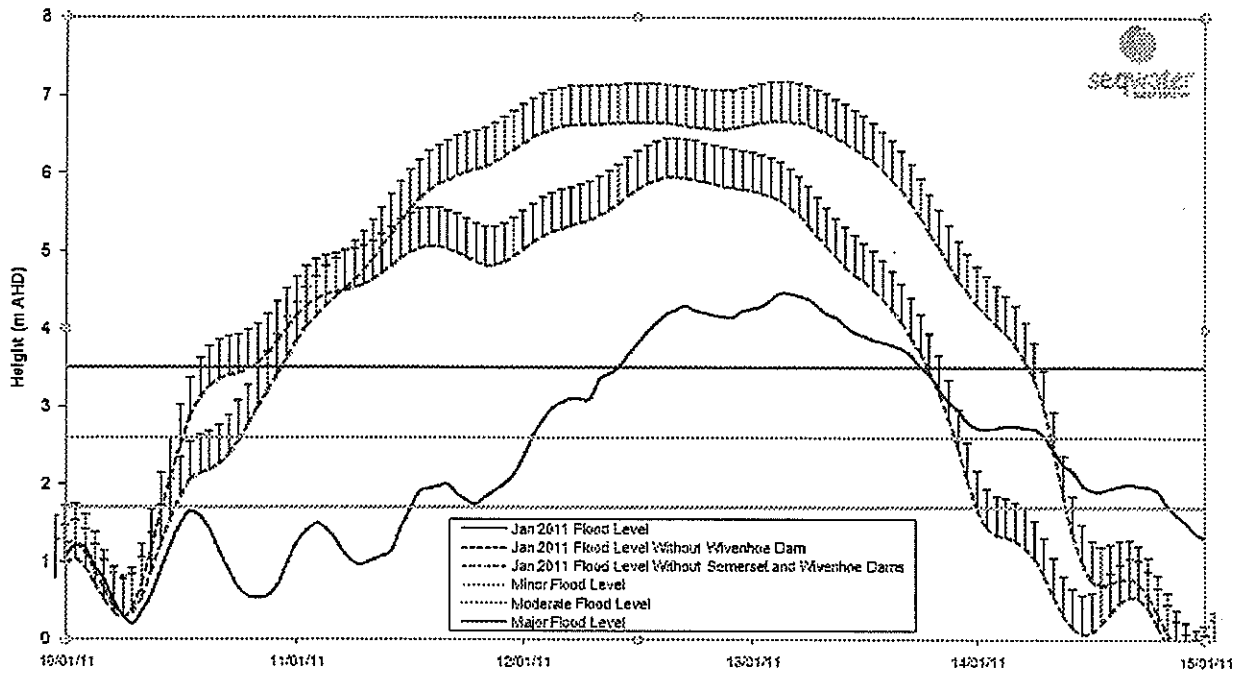
This equates to significant reduction in the potential for loss of life as well as saving in damages in the order of up to \$1.6 billion based on current damage curves. Up to 13,000 more properties would have been impacted by the event without the Dam. (Source: Flood Damage Tables provided to Seqwater by the Brisbane City Council).

The time at which flood levels remained elevated above major levels has also been reduced by up to 3 days by the dam. This has significant benefits to impact on the population of the city, property damage and the recovery operation.

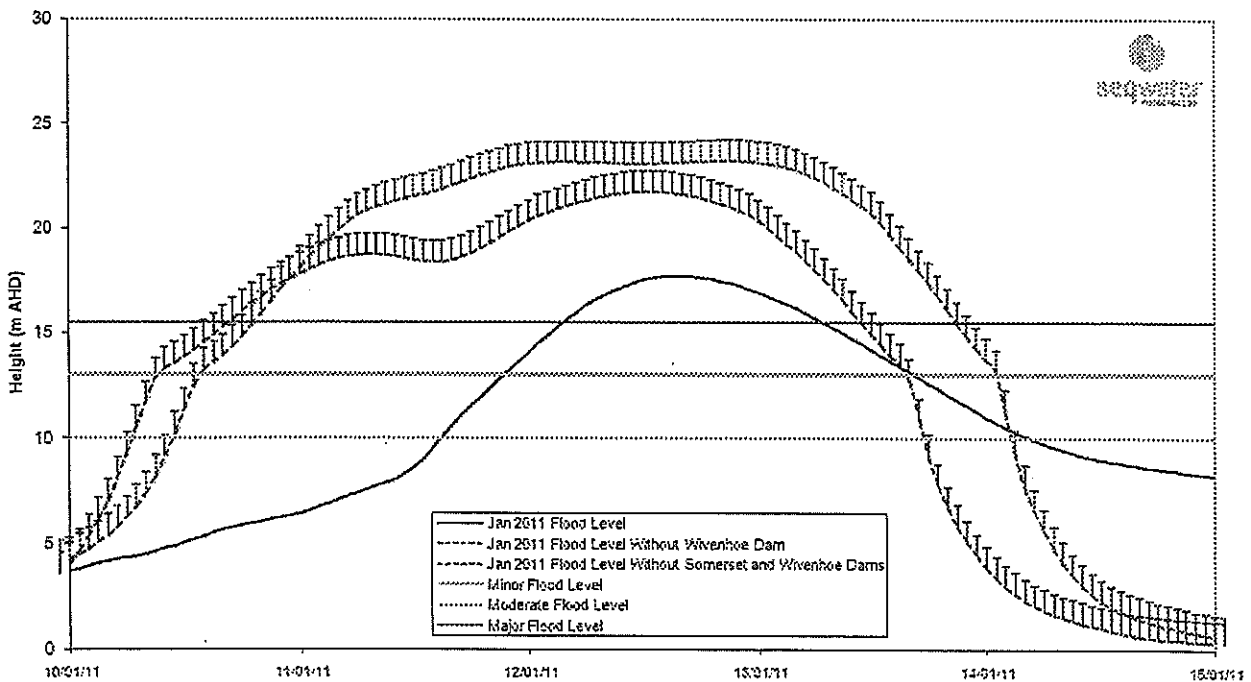
Depending on the nature of the event, the presence of Wivenhoe Dam could also potentially increase flood warning times to impacted areas. How these times may have been increased during the current event is presently difficult to quantify, but discussions will be held with BOM on this issue at a later date.

In addition, the strategy adopted to quickly close off releases once the peak in the dam had been reached and rain stopped falling certainly reduced the predicted flood peak by at least one metre in the lower Brisbane River area.

JANUARY 2011 BRISBANE FLOOD **Assessment of Flood Levels at Brisbane City**



JANUARY 2011 BRISBANE FLOOD **Assessment of Flood Levels at Moggill**



Blue line of graph – Breakdown the component of % of Wivenhoe Dam release and downstream inflows

2.2 Why was Wivenhoe Dam only allowed to rise up to 191% and not 230%?

Wivenhoe Dam mitigates downstream flooding by storing incoming flood water during a rainfall event and releasing these waters at a reduced flow rate downstream to reduce flood impacts. The timing of the releases is also manipulated so that the aim is for outflows from the dams to impact on downstream areas only after the peak inflows from the downstream major tributaries have passed. However this aim cannot always be achieved in practice. This is because some large floods, such as the one currently being experienced, have the potential to overflow the dam's flood storage compartment. **Should this occur, the dam would fail and the resulting damage and loss of life would be at least 100 to 1000 times greater than that currently being experienced.**

Therefore the basis of all flood operation decision making is to ensure the dam never fails. This is the reason that the dam's flood storage compartment would never be intentionally fully filled as any additional inflows after this point would result in a dam failure. At any one time, there will always be uncertainty about what rain is going to occur. Hence, we cannot use all of the flood capacity as we would not be able to release sufficient water to cater for large inflows.

**Why didn't we let the first fuse plug go? Why not 200%? Why not 205%?
Dam is rock core etc.**

2.3 What is the role of the erodible fuse plug embankments?

Another factor that impacts on flood release decision making in large events are the levels at which the erodible fuse plugs are triggered. The fuse plugs act as a safety valve to rapidly increase dam outflows if the structural safety of the dam is in danger. Loss of one or more fuse plugs severely limits the ability of the dam to mitigate the effects of future flood events that may occur prior to the fuse plug or plugs being reinstated. Reinstatement of a fuse plug following an event would take a minimum of 4 to 6 months and would require an extended period of relatively dry weather.

2.4 Why weren't pre-emptive releases undertaken prior to the start of the flood event?

In the 25 days leading up to the current event, three flood events impacting on Wivenhoe Dam were experienced, with gate releases being made on all but five of those days. The total outflow from these events was around 700,000ML.

Detail specific impacts – which bridges knocked out, how long people isolated, which towns impacted, how many people impacted?

During these events, requests were received from Councils and residents impacted by bridge closures downstream of the dam to curtail releases as soon and as quickly as possible. Additionally the 2 January end date of the flood event prior to the current event meant that significant drain down of the dam prior to the onset of the current event that commenced on 6 January 2011, was not possible without major bridge inundation downstream of the dam and without exceeding minor flood levels in the lower Brisbane River.

Additionally, a flood event was also experienced in October 2010 that resulted in a release of 750,000ML from the dam. Accordingly drain down below the dam full supply level prior to the start of the first December event would not have been possible without significant bridge inundation and without exceeding minor flood levels (as defined by BOM and BCC) in the lower Brisbane River.

Regardless, significant drain down prior to the current event would have had little impact on the peak level in Wivenhoe Dam as shown in the table below. The reason for this is that this total event inflow volume of 2,600,000 ML is well in excess of the useable flood storage combined with the available water supply storages shown in the table.

The specific impact on the Lower Brisbane River of these reduced dam levels requires the use of a complex hydraulic model. The results of this modelling would still contain a degree of uncertainty as illustrated by the difficulties in estimating the final flood peak in Brisbane during the event. This is because the rapid closure of the gates after peak inflow was achieved resulted in significant water level reductions downstream and this is difficult to model accurately.

What are the assumptions in terms of the releases at different levels?

JANUARY 2011 FLOOD			
Starting Level		Peak Height	Capacity
%	m AHD	m AHD	%
100	67.0	74.97	191
95	66.5	74.93	191
90	65.8	74.88	190
75	64.0	74.63	187
50	60.0	74.11	180

- # It should be noted that the possible reductions shown above are based up a unique dual peaked flood hydrograph with a volume of about 2,600,000 ML which occurred during this event. A hydrograph with the same volume but a different distribution could result in a significantly lower reduction in peak water levels.
- Flood operations at the dam are also highly dependent upon the flood inflow volume and a slight variation in the flood volume could significantly reduce the benefits associated with draining down the dam prior to a flood event.

2.5 Is there a detailed record of the events associated with the current flood?

A preliminary report has been prepared and is attached to this briefing.

3 THE MANUAL OF FLOOD MITIGATION AT WIVENHOE DAM AND SOMERSET DAM

3.1 What is the Manual of Flood Mitigation and how was it developed?

The Manual of Flood Mitigation for Wivenhoe and Somerset dams in its current form was developed in 1992 during an extensive hydrological study of the Brisbane and Pine Rivers catchments by DPI, Water Resources. The final reports were subject to extensive internal review by the Water Resources Group before being reviewed by an independent review panel comprising Professor Colin Apelt, Head of Department, Department of Civil Engineering, University of Queensland and Mr Eric Lesleighter, Principal Hydraulic Engineer and Chief Engineer Water Resources, Snowy Mountains Engineering Corporation. Subsequently, the Manual was extensively reviewed during the Brisbane Valley Flood Damages Minimisation Study in 2006, with the latest comprehensive review of the Manual undertaken in 2009. Both of these reviews have included expert review panels comprising key stakeholders, with the most recent review involving representatives from DERM, BOM, BCC and SunWater.

Can we attach CV of experts? Note Colin Apelt chaired the Brisbane Flood Study and chairs the current Brisbane Flood taskforce.

The Manual of Flood Mitigation is prepared by Seqwater as the owner of the dam and approved and gazetted by the Chief Executive of DERM in accordance with the Water Supply Act 2008. The manual defines flood objectives procedures; roles and responsibilities; and staffing and operational requirements for flood events impacting on Wivenhoe and Somerset dams.

3.2 What is contained in the Manual?

The primary objectives of the procedures contained in the Manual are, in 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 primarily, this involves minimising inundation of the seven bridges below the dam upstream of Moggill);
- 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.

During an event, the operation of the dam transitions between the following four operating strategies depending of the circumstances at the time. These procedures associated with these strategies are explained in detail in the Manual.

- **Strategy W1** – Primary consideration is given to Minimising Disruption to Downstream Rural Life.
- **Strategy W2** – Transition Phase moving from Minimising Disruption to Protecting Downstream Urban Areas.
- **Strategy W3** – Primary consideration is to Protect of Urban Areas from Inundation.
- **Strategy W4** – Primary consideration is to protecting the structural safety of the Dam.

In addition to these strategies, historical records show that there is a significant probability of two or more flood producing storms occurring in the Brisbane River system within a short time of each other. Accordingly for each flood event, the aim is always to empty stored floodwaters within seven days after the flood peak has passed through the dams.

4 REGULATORY CONTEXT (Provided by Peter Allen and unedited)

These are contained in the Flood Mitigation Manual (manual) approved under sections 370 to 374 of the *Water Supply (Safety and Reliability) Act 2008*. The Chief Executive Officer (CEO) of DERM (or his delegate) approves the manual, and the approval is notified in the Queensland Government Gazette. Approval can be for a period of up to five years, after which the approval needs to be renewed. There are no decision-making criteria specified in the Act for the CEO to take into account when approving the manual.

The manual for the dams requires, amongst other matters:

1. Flood operations to be conducted in accordance with manual's provisions. (There is an approval process specified in the manual, if Seqwater considers a different flood release strategy is desirable to deal with a particular flood event. This was not used in the January 2011 flood event)
2. Flood operations to be under the control of CEO-approved engineers (who are highly qualified and experienced)
3. Annual reporting on the preparedness and status of the flood control system for flood operations, and the training of the personnel who manage the flood events.
4. Reporting on the flood operations during flood events.
5. Reviews after flood events such as the January 2011 event. For this flood event, the Queensland Government engaged Mr Brian Cooper, an independent consulting engineer, to review compliance with the manual. Mr Cooper concluded (Attachment??): "...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 the final report or other appropriate reference??)

The manual is separate from a draft communication protocol (Insert name) between the Local, State and Commonwealth government agencies that are affected by the dams' flood operations. This protocol is not binding on the parties to it is not subject to regulatory approval/review.

Some DERM staff, because of their specialist skills, work in the Flood Operations Centre that Seqwater activates to manage such events. None of them are involved in any of the regulatory decisions concerning the dams or are members of the work unit (Office of the Water Supply Regulator) which undertakes the CEO's regulatory functions.

5 COMPLIANCE WITH THE MANUAL

(To be provided)

6 SEQWATER REPORT

It is recommended that the process and content for reports required for this event be:

- In the short term, utilise this report attached to this briefing note as the basis for communications and discussion.
- Prepare any Interim Reports as agreed to provide information and input as required.
- Seqwater prepare a Comprehensive Report as per the existing regulatory requirements of the Act and the gazetted manual and any requirements of the Dam Safety Regulator. This would be done within 6 weeks of the closure of the current event as per the manual. This timeframe is subject to any new mobilisation of the Flood Operations Centre. The Table of Contents would include:
 - Introduction
 - Flood Event Summary
 - Mobilisation and Staffing
 - Event Rainfall
 - Inflow and Release Details
 - Data Collection System Performance
 - Data Analysis Performance
 - Communication
 - Flood Management Strategies and Manual Compliance
 - Improvements in data collection systems, practices and processes.
 - improvements by interacting agencies
 - Review of factors impacting on the protection of urban areas
 - Recommendations & Conclusions
- The report would then be reviewed by the Dam Safety Regulator in conjunction with any peer review they require. The review should cover:
 - Were the provisions of the manual complied with?
 - What improvements to either facilities e.g. stream gauges, or work practices, are desirable to improve Seqwater's ability to predict inflows into the dams.
 - Are improvements to either Seqwater's facilities or work practices desirable to improve Seqwater's ability to manage events? For example, investigations to raise the dam to improve its flood storage capacity, if so, what are they and their implications

- Are changes to the facilities or work practices of other organisations desirable to improve Seqwater's abilities to manage these events? If so, what are they and their implications? (For example, would it be worth funding Brisbane River crossing upgrades so that floodwater could be released faster, while not adversely affecting access to properties--or maybe alternative strategies e.g. resupply operations could be put in place to achieve similar outcomes?)
- Given the manual's order of priorities i.e. protection of the dam etc, are any changes in the flood release strategies for either dam desirable? If so, what are they, and their implications
- Based on this review, a review of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam would occur utilising an expert panel of review including representatives of DERM, Seqwater, BoM, affected Local Governments and other stakeholders as necessary.

Suzie Emery

From: Barry Dennien [Barry.Dennien [REDACTED]]
Sent: Sunday, 16 January 2011 7:36 PM
To: Dan Spiller
Subject: Fwd: River height calculation [SEC=UNCLASSIFIED]

Regards
Barry Dennien

Begin forwarded message:

From: Peter Baddiley <P.Baddiley [REDACTED]>
Date: 16 January 2011 7:05:22 PM AEST
To: Barry Dennien <Barry.Dennien [REDACTED]>
Cc: Rob Vertessy <R.Vertessy [REDACTED]>, Peter Baddiley <P.Baddiley [REDACTED]>
Subject: RE: River height calculation [SEC=UNCLASSIFIED]

Thanks Barry for your kind remark. It is a testing time for all of us.

Re your request, I think the Bureau need to respond to this request because it relates to questions about predicted flood levels which is a Bureau responsibility.

From what I can see now with the data that the Bureau has and from my involvement in the events on Tuesday/Wednesday, the significant increase in WD discharges through Tuesday clearly has a significant impact (increase) on downstream peak flood levels, rates of rise and timing.

However, again from my understanding of what happened based on operational data, modelling and the warning and predicting operations through Tue/Wed, the dam operators firstly increased the releases to manage the dam level and its safety (by necessity of course because of the intense Tuesday rainfalls); but then, when the dam was at a high level, very quickly moved to rapidly reducing the releases to minimise or mitigate the downstream flooding.

I believe, again from what I have before me, that this decision did reduce levels from what they otherwise would have been if a more conservative operation had applied. I don't have experience in operating dams, but it seemed to me a very solid, but "big" decision to make in the timeframe it seems to have been made (again from the reduced discharges evident during Wed morning).

All of these initial viewpoints, of course, needs to be tested with more detailed assessment and modelling yet to happen.

regards, peter

Peter Baddiley
Regional Hydrology Manager
Climate & Water Division
Bureau of Meteorology
Level 21, 69 Ann Street
GPO Box 413, BRISBANE, QLD, AUSTRALIA 4001

EMAIL: [p.baddiley \[REDACTED\]](mailto:p.baddiley [REDACTED])

EMAIL for flood matters: [flood.qld \[REDACTED\]](mailto:flood.qld [REDACTED])
WWW : www.bom.gov.au

From: Barry Dennien [mailto:Barry.Dennien@seq.qld.gov.au]
Sent: Sunday, 16 January 2011 1:17 PM
To: Peter Baddiley
Subject: River height calculation

Hi Peter

You and your team are doing a great job.

We are getting many requests for stats on Wivenhoe's performance during the flood event.

One stat that would be useful to hold back the media until all info is collated is how much impact on river levels did the peak release on Tuesday night have on the river (tuesday noon to midnight). I understand not much however an estimate at this stage would be good.

Regards

Barry

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Suzie Emery

From: Bradley John [John.Bradley [REDACTED]]
Sent: Sunday, 16 January 2011 7:41 PM
To: Lance.McCallum [REDACTED]; Dan Spiller
Cc: tim.watts [REDACTED]; Barry Dennien
Subject: Re: Urgent - Cabinet in confidence

Follow Up Flag: Follow up
Flag Status: Flagged

Lance

I am sorry for the delay on the brief requested for tonight for Minister - Barry and his team have been working hard all day on this among their other issues - but have had challenges with input from seqwater.

Seqwater has struggled to provide their input in a congenit form and so Barry, Dan and others are still there awaiting for some stuff and finalising it at the end of a very long week.

We think we are about 60 to 90 minutes away at this point. I will forward it to you and Minister as soon as possible and we will talk through at 9 am.

John B

From: Bradley John
Sent: Saturday, January 15, 2011 10:33 AM
To: 'Lance.McCallum [REDACTED]' <Lance.McCallum [REDACTED]>; spiller daniel [REDACTED]
Cc: 'tim.watts [REDACTED]' <tim.watts [REDACTED]>; Dennien Barry [REDACTED]
Subject: Re: Urgent - Cabinet in confidence

Thanks Lance - we have anticipated the need for something like this - seqwgm work underway - I will talk to SEQWGM when out of SDMG now on.

Regards
John B

From: Lance McCallum [mailto:Lance.McCallum [REDACTED]]
Sent: Saturday, January 15, 2011 10:30 AM
To: spiller daniel [REDACTED]; Bradley John
Cc: Tim Watts <Tim.Watts [REDACTED]>
Subject: Urgent - Cabinet in confidence

John/Dan

The Minister has asked that preparation be done over the weekend that will enable him to go to the Emergency Cabinet meeting on Monday with a position on how the Govt is going to handle the issues of reviewing operational decisions made by SEQwater and SEQWGM in relation to releases from the dams.

I understand that in further to the recent independent review of the Wivenhoe operations manual the WGM is also undertaking further work by compiling a list of the operational experts who authored the manual.

Happy to discuss further.

Thanks, Lance.

+-----+
Think B4U Print

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3 sheets of A4 paper = 1 litre of water
+-----+

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Suzie Emery

From: Dan Spiller [Daniel.Spiller [REDACTED]]
Sent: Sunday, 16 January 2011 9:26 PM
To: 'Bradley John'
Subject: Talking points_Wivenhoe Dam releases
Attachments: Talking points_Wivenhoe Dam releases.docx

For review in case you are still at it.

Dan

SEQ Water Grid Manager and Seqwater MINISTERIAL BRIEFING NOTE

**TO: Minister for Natural Resources, Mines
and Energy and Minister for Trade**

**SUBJECT: January 2011 flood event and Wivenhoe Dam
operations**

Advisor	<input type="checkbox"/> Ok
Dated / /	
<input type="checkbox"/> Approved <input type="checkbox"/> Not Approved <input type="checkbox"/> Noted <input type="checkbox"/> Further information required	
Minister.....	
Dated / /	

REQUESTED BY

- The Ministers Office requested this brief by 16 January 2011.

TIMEFRAME

- Noting of this brief is required prior to the Emergency Cabinet meeting to be held on 17 January 2011.

RECOMMENDATION

It is recommended that the Minister:

- note** Seqwater's Ministerial briefing note setting out background information on Wivenhoe Dam, the January 2011 flood event and Seqwater's Flood Mitigation Manual.
- note** the advice on the benefits of pre-emptive releases from Wivenhoe Dam in response to the Minister's request.
- note** Mr Brian Cooper's independent compliance review of the operation of Wivenhoe Dam against the Flood Mitigation Manual for the January 2011 flood event.
- approve** key media responses on the flood event and Wivenhoe Dam.
- approve** that Mr Barry Dennien, Chief Executive Officer, SEQ Water Grid Manager, speak to the media in accordance with the key media responses.

BACKGROUND

- From 13 December 2010 to 11 January 2011, South East Queensland experienced unprecedented rainfall, which resulted in the January 2011 flood event. Wivenhoe Dam played a significant role in mitigating the downstream flood peak.
- Attachment A** contains Seqwater's Ministerial briefing note setting out background information on Wivenhoe Dam, Wivenhoe Dam's flood mitigation and operations, Seqwater's Flood Mitigation Manual, the regulatory context of the Flood Mitigation Manual and Seqwater's proposed procedure for the preparation of its comprehensive Flood Mitigation Manual report to the Chief Executive, Department of Environment and Resource Management, on Wivenhoe Dam operations for the January 2011 flood event.
- After the Wivenhoe Dam release in October 2010, by way of a letter dated 25 October 2010 at **Attachment B**, the Minister requested the SEQ Water Grid Manager to procure urgent advice as to whether South East Queensland's water security situation would provide "*an opportunity to reduce the volume stored in key dams as a means of reducing the severity, frequency and duration of flooding in downstream areas.*"
- The Minister also sought the SEQ Water Grid Manager's "*confirmation that these options would not significantly impact upon our current water security, measured as the probability of needing to reintroduce Medium Level Restrictions over the next five to ten years.*"
- As a result, the SEQ Water Grid Manager requested that Seqwater provide a report assessing the options requested by the Minister.

Author Name: Barry Dennien Position: Chief Executive Officer, SEQ Water Grid Manager Tel No: [REDACTED] Date: 16 January 2011	Cleared by Name: Position: Tel No:	Cleared by Name: Position: Tel No:	Recommended: Name: John Bradley Director-General, DERM Tel No: [REDACTED] Date:
	Name: Position: Tel No:	Name: Position: Tel No:	

- **Attachment C** contains the SEQ Water Grid Manager's letter to the Minister dated 24 December 2010, in response to the pre-emptive Wivenhoe Dam release advice sought, based on Seqwater's advice. This letter stated that *"Seqwater has advised that releasing water to below Full Supply Level may provide some benefits in terms of reduced community and operational impacts during minor inflow events, such as has occurred over the past month. For medium and major flood events, it considers that pre-emptive releases will provide negligible benefits...Informed by this advice, the SEQ Water Grid Manager has advised Seqwater that, from a water security perspective, it has no in-principle objection to minor releases from Wivenhoe, Somerset and North Pine dams to minimise the operational and community impacts of gate releases."*
- It should be noted that while seeking advice from Seqwater on pre-emptive dam releases, the SEQ Water Grid Manager continued to provide the Department of Environment and Resource Management with progress reports.
- On 11 January 2011, the Minister requested the SEQ Water Grid Manager to procure an urgent independent review of Seqwater's operation of Somerset and Wivenhoe Dams in accordance with the Flood Mitigation Manual, for the period 13 December 2010 to 11 January 2011.
- Mr Brian Cooper was engaged to conduct the independent review and his report and curriculum vitae are contained in **Attachment D**.
- Mr Brian Cooper concludes that the *"strategies as set out in the Flood Mitigation Manual have been followed, allowing for the discretion given to making 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 those responsible for flood operations and the way events unfolded."*

CURRENT ISSUES

- The purpose of this Ministerial brief is to provide the Minister with background information on the January 2011 flood event and the operation of Wivenhoe Dam, in preparation for an Emergency Cabinet meeting scheduled on 17 January 2011.
- This Ministerial brief provides information that may assist in responding to questions raised, or anticipated to be raised, by the public and media.
- **Attachment E** contains key media responses based on factual information from Seqwater's Ministerial briefing note.

RESOURCE/IMPLEMENTATION IMPLICATIONS

- Any recommendations regarding the Flood Mitigation Manual, improvements to the structure or operation of Wivenhoe Dam, resourcing etc. will arise after any relevant flood event debriefs and Seqwater's Flood Mitigation Manual report to the Chief Executive, Department of Environment and Resource Management.

PROPOSED ACTION

- In accordance with the Flood Mitigation Manual, Seqwater will submit a comprehensive report to the Chief Executive, Department of Environment and Resource Management, containing details of the procedures used, the reasons for such and other pertinent information for the operation of Wivenhoe Dam during the January 2011 flood event.
- This report is required to be submitted within six weeks of completion of the flood event.

Author Name: Barry Dennien Position: Chief Executive Officer, SEQ Water Grid Manager Tel No: [REDACTED] Date: 16 January 2011	Cleared by Name: Position: Tel No: Name: Position: Tel No:	Cleared by Name: Position: Tel No: Name: Position: Tel No:	Recommended: Name: John Bradley Director-General, DERM Tel No: [REDACTED] Date:
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OTHER INFORMATION

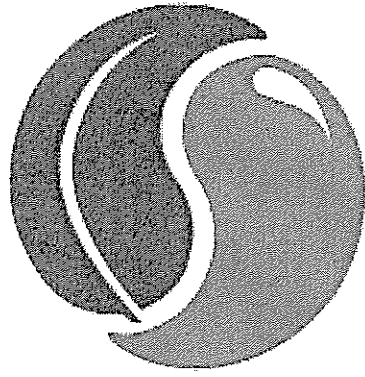
- **Consultation:** In preparing the Ministerial briefing note at **Attachment A**, Seqwater consulted with Mr Peter Allen and Mr Bob Reilly from the Office of the Water Supply Regulator, Department of Environment and Resource Management. The SEQ Water Grid Manager provided information on the Minister's request for advice on pre-emptive releases from Wivenhoe Dam and the independent compliance review from Mr Brian Cooper.
- **Legislation:** The Flood Mitigation Manual is a requirement of, and approved by the Chief Executive, Department of Environment and Resource Management, under the *Water Supply (Safety and Reliability) Act 2008*.
- **Key Communication Messages:** The information contained in this Ministerial brief may be used to formulate public messaging regarding the flood event and the operation of Wivenhoe Dam. Communicating the benefits of Wivenhoe Dam for flood mitigation may present positive communication opportunities.

MINISTER'S COMMENTS

ATTACHMENTS

- **Attachment A:** Seqwater Ministerial briefing note
- **Attachment B:** Letter from Minister Robertson to the SEQ Water Grid Manager dated 25 October 2010
- **Attachment C:** Letter from the SEQ Water Grid Manager to Minister Robertson dated 24 December 2010
- **Attachment D:** Flood Mitigation Manual compliance review report by Mr Brian Cooper and curriculum vitae of Mr Brian Cooper
- **Attachment E:** Key media responses

Author Name: Barry Dennien Position: Chief Executive Officer, SEQ Water Grid Manager Tel No: [REDACTED] Date: 16 January 2011	Cleared by Name: Position: Tel No: Name: Position: Tel No:	Cleared by Name: Position: Tel No: Name: Position: Tel No:	Recommended: Name: John Bradley Director-General, DERM Tel No: [REDACTED] Date:
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seqwater
WATER FOR LIFE

**JANUARY 2011 FLOOD
EVENT**

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1 INTRODUCTION

Wivenhoe Dam was constructed by the Queensland Government between 1977 and 1984. The dam is a 56 m AHD high and 2.3 kilometre long earth and rock embankment separated into two parts by a concrete gravity spillway. The spillway is controlled by 5 radial gates, each 12.0 metres wide by 16.0 m AHD high. Two saddle dam embankments are located on the left side of the reservoir.

The dam spillway capacity was upgraded in 2005. This was done primarily through the construction of a 164 metre wide secondary spillway through the right abutment of the existing dam. This spillway contains three erodible earth fill fuse plug embankments that are initiated at different dam levels in excess of EL 75.6.

The dam has two main functions by providing:

- A 1,165,000 ML storage at full supply level (FSL EL 67.0) providing an urban water supply for Brisbane and surrounding areas;
- Flood mitigation in the Brisbane River by providing a dedicated flood storage volume of 1,450,000 ML up to EL77 (this flood level was increased as part the 2005 upgrade to allow a water level of EL80m and a temporary flood storage volume of 1,966,000 ML with all fuse plugs initiated and the dam at the point of failure).

The dam has an EXTREME hazard classification under ANCOLD guidelines because of the significant development downstream in the Brisbane and Ipswich metropolitan areas, with the population at risk in the event of a dam failure numbering in the hundreds of thousands.

In accordance with the Queensland Regulatory program for dam spillway upgrades, a further upgrade of Wivenhoe Dam for dam safety reasons only is scheduled to occur prior to 2035 to enable the dam to safely pass the Probable Maximum Flood. This work will involve the reconstruction of Saddle Dam 2 as a fuse plug spillway.

Wivenhoe Dam is in excellent condition. Comprehensive Dam Safety reviews undertaken in accordance with ANCOLD guidelines have been undertaken in 1997 (Gutteridge, Haskins & Davey Pty Ltd), 2003 (Wivenhoe Alliance), 2006 (NSW Department of Commerce), 2009 (GHD) and September 2010 (Seqwater). The reports concluded that the design of the dam is in accordance with modern day standards and that there are no significant outstanding design or construction issues that require investigation.

2 WIVENHOE DAM FLOOD MITIGATION AND FLOOD OPERATIONS

2.1 Flood Mitigation

The Brisbane River catchment covers an area of approximately 14,000 square kilometres of which about half is below Wivenhoe Dam. Maximum overall flood mitigation effect is achieved by operating Wivenhoe Dam in conjunction with Somerset Dam. Although Somerset and Wivenhoe Dam reduce flooding in Brisbane City, major flooding can still occur. The Lockyer-Laidley Valley drains into the Brisbane River through Lockyer Creek that enters the Brisbane River just downstream of Wivenhoe Dam near Lowood. Another major tributary, the Bremer River, flows into the Brisbane River at Moggill. Wivenhoe Dam has no control over inflows into the Brisbane River from both these major tributaries.

Wivenhoe Dam mitigates downstream flooding by storing incoming flood water during a rainfall event and releasing these waters at a reduced flow rate downstream to minimise flood impacts. The timing of the releases is also manipulated so that the aim is for outflows from the dams to impact on downstream areas only after the peak inflows from the downstream major tributaries have passed. However, this aim cannot always be achieved in practice. This is because some large floods, such as the one currently being experienced, have the potential to overflow the dam's flood storage compartment. **Should this occur, the dam would fail and the resulting damage and loss of life would be at least 100 to 1000 times greater than that currently being experienced.**

Therefore the basis of all flood operation decision making is to ensure the dam never fails. This is the reason that the dam's flood storage compartment would never be intentionally fully filled as additional inflows after this point would result in a dam failure. Similarly, there will be uncertainty on future rainfall that could occur which could not be releases if there was insufficient flood storage which could not be stored or released.

Another factor that impacts on flood release decision making in large events are the levels at which the erodible fuse plugs are triggered. Loss of one or more fuse plugs severely limits the ability of the dam to mitigate the effects of future flood events that may occur prior to the fuse plug or plugs being reinstated. Reinstatement of a fuse plug following an event would take a minimum of 4 to 6 months and would require an extended period of relatively dry weather.

2.2 Flood Operations

A real time flood monitoring and forecasting system has been established in the Wivenhoe and Somerset Dam catchments. This system employs radio telemetry to collect, transmit and receive rainfall and stream flow information. The system consists of around 230 field stations that automatically record rainfall and/or river heights at selected locations in the dam catchments. Most of these field stations are owned by Seqwater with the remainder belonging to other agencies.

The rainfall and river height data is transmitted to Seqwater's Flood Operations Centre in real time. Once received in the Flood Operations Centre, the data is processed using a Real Time Flood Model (RTFM) to estimate likely dam inflows and evaluate a range of possible inflow scenarios based on forecast and recorded rainfall in the dam catchments. The RTFM is a suite of hydrologic computer programs that utilise the real time data to assist in the operation of the dams during flood events.

Seqwater engineers use the RTFM for flood monitoring and forecasting during flood events to operate the dams in accordance with a Manual of Flood Mitigation (the origin of and objectives and procedures contained in the Manual of Flood Mitigation are explained in the following section of this document). Releases of water from the dams are optimised to minimise the impacts of flooding in accordance with the objectives and procedures contained in a Manual of Flood Mitigation.

The RTFM and data collection network performed well During the January 2011 event, with no failures experienced that compromised the ability of Seqwater to operate the dam.

3 MANUAL OF FLOOD MITIGATION FOR WIVENHOE AND SOMERSET DAMS

The Manual of Flood Mitigation for Wivenhoe and Somerset Dams, in its current form, was developed in 1992 during an extensive hydrological study of the Brisbane and Pine Rivers catchments by DPI, Water Resources. The final reports were subject to extensive internal review by the Water Resources Group before being reviewed by an independent review panel comprising Professor Colin Apelt, Head of Department, Department of Civil Engineering, University of Queensland and Mr Eric Lesleighter, Principal Hydraulic Engineer and Chief Engineer Water Resources, Snowy Mountains Engineering Corporation.

Subsequently, the Manual was extensively reviewed during the Brisbane Valley Flood Damages Minimisation Study in 2006, with the latest comprehensive review of the Manual undertaken in 2009. Both of these reviews have included expert review panels comprising key stakeholders, with the most recent review involving representatives from DERM, BOM, BCC and SunWater.

The Manual of Flood Mitigation is prepared by Seqwater as the owner of the dam and approved and gazetted by the Chief Executive of DERM in accordance with the Water Supply Act 2008. The manual defines flood objectives procedures; roles and responsibilities; and staffing and operational requirements for flood events impacting on Wivenhoe and Somerset dams.

The primary objectives of the procedures contained in the flood manual are, in 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 primarily, this involves minimising inundation of the seven bridges below the dam upstream of Moggill);
- 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.

During an event, the operation of the dam transitions between the following four operating strategies depending of the circumstances at the time. These procedures associated with these strategies are explained in detail in the Manual.

- **Strategy W1** – Primary consideration is given to Minimising Disruption to Downstream Rural Life. Under this strategy, the predicted water level is below 68.50 m AHD and the maximum release is 1,900m³/s.
- **Strategy W2** – Transition Phase moving from Minimising Disruption to Protecting Downstream Urban Areas. Under this strategy, the water level is predicted to be between 68.5 and 74.0 m AHD and the maximum release is less than 3,500m³/s.
- **Strategy W3** – Primary consideration is to Protect of Urban Areas from Inundation. Under this strategy, the water level is predicted to be between 68.5 and 74.0 m AHD but the maximum release is less than 4,000m³/s.
- **Strategy W4** – Primary consideration is to protecting the structural safety of the Dam. Under this strategy, the water level is predicted to exceed 74.0 m AHD and there is no limit to the maximum release. Consideration is given to managing flood releases to avoid fuse plug initiation if at all possible as this would compromise flood mitigation capacity in the short to medium term.

In addition to these strategies, historical records show that there is a significant probability of two or more flood producing storms occurring in the Brisbane River system within a short time of each other. Accordingly for each flood event, the aim is always to empty stored floodwaters within seven days after the flood peak has passed through the dams.

4 JANUARY 2011 FLOOD EVENT

4.1 Background

In the 25 days leading up to the current event, three flood events impacting on Wivenhoe Dam were experienced, with gate releases being made on all but five of those days. The total outflow from these events was around 700,000ML. The details of these events are as follows:

EVENT	EVENT START DATE	EVENT END DATE	VOLUME RELEASED (ML)
1	13/12/2010	16/12/2010	70,000
2	17/12/2010	24/12/2010	150,000
3	26/12/2010	02/01/2011	470,000

During these events, requests were received from Councils and residents impacted by bridge closures downstream of the dam to curtail releases as soon and as quickly as possible.

Additionally the 2 January end date of the flood event prior to the current event meant that significant drain down of the dam prior to the onset of the current event that commenced on 6 January 2011, was not possible without major bridge inundation downstream of the dam and without exceeding minor flood levels in the lower Brisbane River.

Additionally, a flood event was also experienced in October 2010 that resulted in a release of 750,000ML from the dam. Accordingly drain down below the dam full supply level prior to the start of the first December event would not have been possible without significant bridge inundation and without exceeding minor flood levels (as defined by BOM and BCC) in the lower Brisbane River.

Regardless, significant drain down prior to the current event would have had little impact on the peak level in Wivenhoe Dam as shown in the table below. The reason for this is that this total event inflow volume of 2,600,000 ML is well in excess of the useable flood storage combined with the available water supply storages shown in the table.

The specific impact on the Lower Brisbane River of these reduced dam levels requires the use of a complex hydraulic model. The results of this modelling would still contain a degree of uncertainty as illustrated by the difficulties in estimating the final flood peak in Brisbane during the event. This is because the rapid closure of the gates after peak inflow was achieved resulted in significant water level reductions downstream and this is difficult to model accurately.

JANUARY 2011 FLOOD			
Starting Level		Peak Height	Capacity
%	m AHD	m AHD	%
100	67.0	74.97	191
95	66.5	74.93	191
90	65.8	74.88	190
75	64.0	74.63	187
50	60.0	74.11	180

It should be noted that the possible reductions shown above are based on a dual peaked flood hydrograph with a volume of about 2,600,000 ML which occurred during this event. A hydrograph with the same volume but a different distribution could result in a significantly lower reduction in peak water levels.

Flood operations at the dam are also highly dependent upon the flood inflow volume and a slight variation in the flood volume could significantly reduce the benefits associated with draining down the dam prior to a flood event.

4.2 Event Decision Making

The following table contains a summary of the key decisions points associated with the current event. As at 16 January 2011, the event remains in progress.

DATE AND TIME	FLOOD EVENT MILESTONE
07:00 06/01/2011 (Thursday)	Rainfall is experienced in the dam catchments that will result in flood releases, however Wivenhoe releases are delayed for 24 hours to allow Lockyer Creek flood flows to pass downstream and prevent the isolation of the community dependent of Burtons Bridge. The forecast is for 150mm over the next 24 hours.
15:00 07/01/2011 (Friday)	Wivenhoe releases commence, with operational strategy W1 in use. Rainfall for the next four days is estimated to be between 140mm and 300mm, with a forecast for rain easing on Tuesday 11 January 2011. All bridges downstream of the dam with the exception of Fernvale Bridge and Mt Crosby Weir Bridge are expected to be inundated for a number of days.

06:00 09/01/2011 (Sunday)	Moderate to heavy rain periods forecast until Tuesday, but both Wivenhoe and Somerset dam levels were falling slowly, with Somerset at 1.27 m AHD above FSL and Wivenhoe 1.58 m AHD above FSL.
15:30 09/01/2011 (Sunday)	Following significant rain during the day a meeting of Duty Engineers is held. The QPF issued at 16:00 indicates 50mm to 80mm over the next 24 hours. Based on this forecast, it is anticipated that dam levels can be held to a maximum of 3.50 m AHD above FSL in Somerset and 5.5 m AHD above FSL in Wivenhoe. However, by 19:00 it was apparent that both Fernvale Bridge and Mt Crosby Weir Bridge would be inundated by the combined dam releases and Lockyer Creek flows and that the operational strategy had progressed to W2.
06:30 10/01/2011 (Monday)	Rainfall continued during the night and based on rainfall on the ground it was apparent the operational strategy had progressed to W3.
06:30 10/01/2011 (Monday)	Rainfall continued during the day but based on rainfall on the ground, operational strategy W3 remained in use. However it was apparent that any further heavy rain would result in progression of the operational strategy to W4.
08:00 11/01/2011 (Tuesday)	Rainfall continued during the night with isolated heavy falls in the Wivenhoe Dam catchment area and based on rainfall on the ground it was apparent the operational strategy would soon progress to W4 with Wivenhoe Dam exceeding 8.00 m AHD above FSL. The objective now was to limit outflows and subsequent flood damage to urban areas, while ensuring the structural safety of the dam.
11:00 11/01/2011 (Tuesday)	Rapid inflows were experienced in Wivenhoe Dam, with the dam rising almost a metre in eight hours. Releases were increased until the dam level stabilised in accordance with Strategy W4. Computer models were not reflecting actual dam inflows due to intense point rainfalls in the immediate catchment around the dam. Falls are estimated to be similar to those experienced at both Toowoomba and Upper Lockyer the previous day and are falling outside and between existing rain gauges.
21:00 11/01/2011 (Tuesday)	Wivenhoe Dam peaked. Peak release of 7450 cumecs with a level of 0.7 metres below fuse plug trigger.
22:00 11/01/2011	Wivenhoe Dam releases were closed off as quickly as possible over the

(Tuesday)	next 11 hours, while ensuring water levels in the dam did not rise further and initiate a fuse plug embankment.
08:00 12/01/2011 (Wednesday)	Minimum possible release level reached, with inflows matching outflows. Further reductions in release rate would likely cause the dam level to rise.
21:00 13/01/2011 (Thursday)	The 7 day dam drain down is commenced as Lockyer Creek and Bremer River peaks pass the Lower Brisbane area. Maximum release target is the limit of damaging floods in Brisbane being 3500 cumecs.
09:00 17/01/2011 (Monday)	Drain down continues, with release expected to cease on Wednesday 19 January 2011 unless further rainfall is experienced.

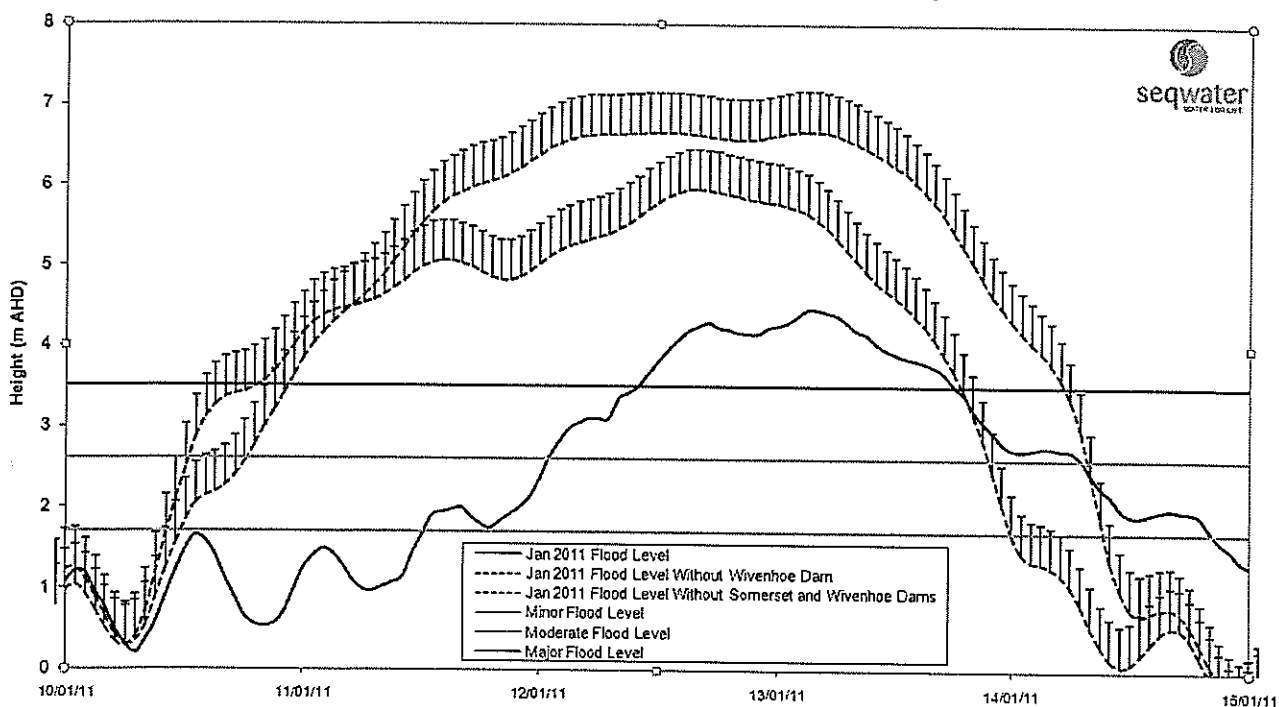
4.3 Flood Mitigation Benefits of Wivenhoe Dam

The following graphs demonstrate the significant benefits of Wivenhoe Dam in mitigating the current flood event, with reductions in flood peak of up to 2.5 metres in the City area and up to 5.5 metres in the Moggill area further upstream.

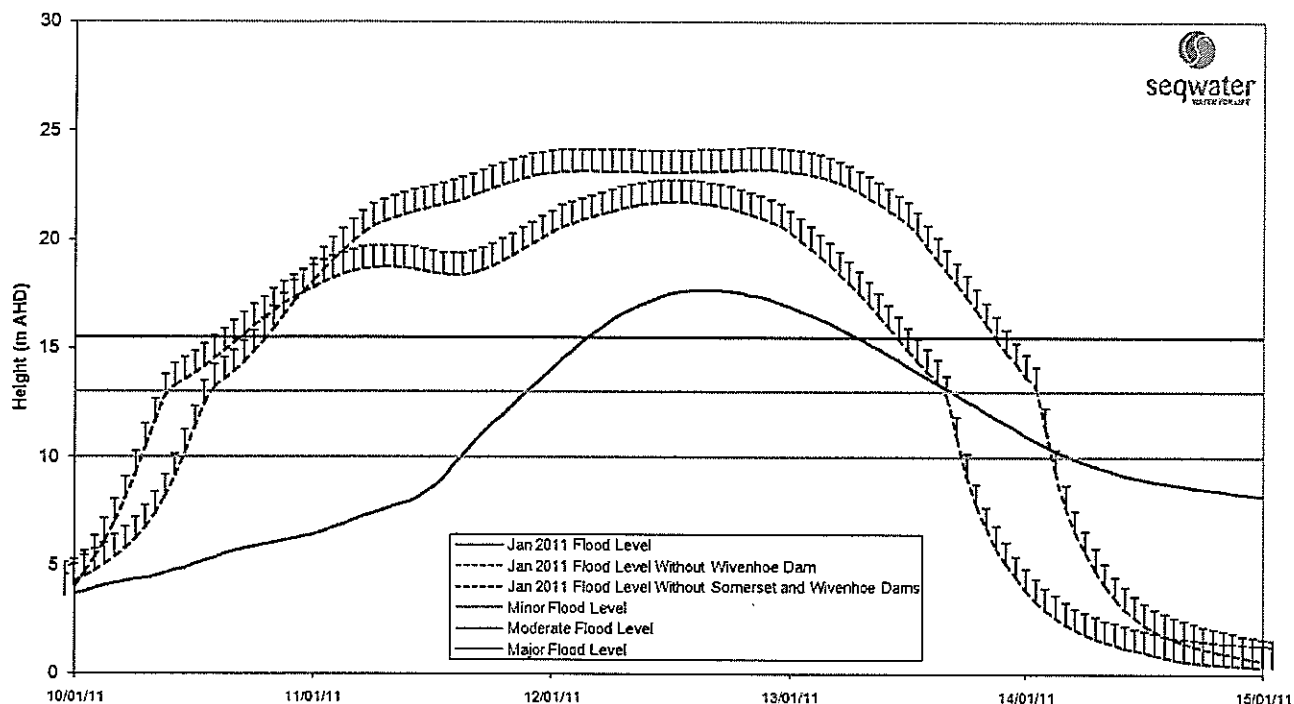
This equates to significant reduction in the potential for loss of life as well as saving in damages in the order of up to \$1.6 billion based on current damage curves. Up to 13,000 more properties would have been impacted by the event without the Dam.

The time at which flood levels remained elevated above major levels has also been reduced by up to 3 days by the dam. This has significant benefits to impact on the population of the city, property damage and the recovery operation.

JANUARY 2011 BRISBANE FLOOD
Assessment of Flood Levels at Brisbane City



JANUARY 2011 BRISBANE FLOOD Assessment of Flood Levels at Moggill



The strategy adopted to quickly close off releases once the peak in the dam had been reached and rain stopped falling certainly reduced the predicted flood peak by at least one metre in the lower Brisbane River area. This was carried out because the releases had stopped the dam from rising and careful monitoring allowed rapid reduction of releases while ensuring fuse plug initiation did not occur.

This notion is supported by BOM.

5 EVENT REVIEW

Under the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam that are approved and gazetted by the Department of Environment and Resource Management, there is a regulatory requirement that a report must be prepared as per the below wording:

“Seqwater must prepare a report after each Flood Event. The report must contain details of the procedures used, the reasons therefore and other pertinent information. Seqwater must forward the report to the Chief Executive within six weeks of the completion of the Flood Event.”

Such a report was prepared for the flood events of February and March 2010 and copies are available. A copy of the Table of Contents of that report is included as Appendix 1. For this event, the report would be a comprehensive summary of all procedures, actions, outcomes and processes during the event.

It is recommended that the process and content for reports required for this event be:

- In the short term, utilise this report attached to this briefing note as the basis for communications and discussion.
- Prepare any Interim Reports as agreed to provide information and input as required.
- Seqwater prepare a Comprehensive Report as per the existing regulatory requirements of the Act and the gazetted manual and any requirements of the Dam Safety Regulator. This would be done within 6 weeks of the closure of the current event as per the manual. This timeframe is subject to any new mobilisation of the Flood Operations Centre. The Table of Contents would include:
 - Introduction
 - Flood Event Summary
 - Mobilisation and Staffing
 - Event Rainfall
 - Inflow and Release Details
 - Data Collection System Performance
 - Data Analysis Performance
 - Communication
 - Flood Management Strategies and Manual Compliance
 - Improvements in data collection systems, practices and processes.
 - improvements by interacting agencies

- Review of factors impacting on the protection of urban areas
 - Recommendations & Conclusions
- The report would then be reviewed by the Dam Safety Regulator in conjunction with any peer review they require. The review should cover:
 - Were the provisions of the manual complied with?
 - What improvements to either facilities e.g. stream gauges, or work practices, are desirable to improve Seqwater's ability to predict inflows into the dams.
 - Are improvements to either Seqwater's facilities or work practices desirable to improve Seqwater's ability to manage events? For example, investigations to raise the dam to improve its flood storage capacity, If so, what are they and their implications.
 - Are changes to the facilities or work practices of other organisations desirable to improve Seqwater's abilities to manage these events?
 - whether it is worth investigating increasing the flood capacity of Wivenhoe
 - whether the Brisbane River crossings which act, under some situations as a constraint on the releases from Wivenhoe, should be replaced by bridges. For example if the smallest could pass , for example, 2,500 cumecs, then this could enable higher releases under some circumstances.
 - Whether the policy of draining the flood compartment within 7 days should be modified.
 - Given the manual's order of priorities i.e. protection of the dam etc, are any changes in the flood release strategies for either dam desirable? If so, what are they, and their implications
- Based on this review, a review of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam would occur utilising an expert panel of review including representatives of DERM, Seqwater, BoM, affected Local Governments and other stakeholders as necessary.

Appendix A

FINAL REPORT – FLOOD EVENTS AT WIVENHOE, SOMERSET AND NORTH PINE DAMS FOR FEBRUARY AND MARCH 2010

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TRIM reference: D/11/

Enquiry received:

Purpose: Wivenhoe Dam release

Impacts of Wivenhoe and Somerset dams

- Wivenhoe and Somerset dams reduced the flood peak by 2.5 metres in the City and 5.5 metres at Moggill.
- Without the dams, up to 13,000 more houses would have been flooded. They prevented up to \$1.6 billion of damages.
- Without the dams, major flooding would have lasted for three days.
- Wivenhoe and Somerset dams controlled 2.6 million megalitres of floodwater. This is 1.1 million megalitres more than in 1974.
- The dams controlled these floodwaters, providing time for peak flows from the Lockyer and Bremer to pass.
- Total flow in the Brisbane River in 1974 was 9,500 cubic metres per second. The estimated flow from this event would have been 13,000 cubic metres per second if Wivenhoe did not exist.

Operation of Wivenhoe and Somerset dams

- The dams were operated strictly in accordance with the approved Operational Procedures.
- The Operational Procedures were developed by Australia's best hydrologists, including:
 - Professor Colin Apelt, Head of Department, Department of Civil Engineering, University of Queensland
 - Mr Eric Lesleighter, Principal Hydraulic Engineer and Chief Engineer Water Resources, Snowy Mountains Engineering Corporation.
- Professor Apelt is Chair of the Brisbane City Council flood taskforce.

Rainfall forecasts

- Dam operations were based on forecasts provided by the Bureau of Meteorology.
- The rainfall during the event exceeded all forecasts.

- Rainfall was local and intense, as demonstrated by the tragic events in Toowoomba.
- It is unreasonable to expect that dam operators could foresee these events.

Pre-emptive releases

- The dam has been designed for both water supply and flood mitigation.
- Detailed Operational Procedures have been developed by leading hydrologists over many years, with a review as recently as 2009. The procedures are based on the current full supply level.
- Water was released from the dam on 20 of the 25 days leading up to this event.
- A total of 1,450 million megalitres was released between October 2010 and this event.
- These releases isolated some residents and inconvenienced many more.
- The clear decision making process in the Manual was set down since 1992 and was reviewed in 2009 to reflect the installation of the Wivenhoe Spillway upgrade. That review included independent experts from the Bureau of Meteorology, Sunwater, Brisbane City Council and the Department of Environment and Resource Management.
- It is a manual which reflects safe operating practices based on detailed hydrological analysis and technical assessments of dam safety.

Peak releases

- Outflows from Wivenhoe Dam peaked on Tuesday 11 January 2011 at 397,000 ML.
- The impact of these releases was minimised by closing down releases quickly once inflows into the dam had peaked.
- The release rate was higher for three hours, but not sustained.
- These releases accounted for only part of the increase in river levels. The Bureau of Meteorology has stated that, even at their peak, outflows from Wivenhoe Dam contributed slightly more than half the flood arriving in Brisbane (Courier Mail, 14 January).

Large releases earlier

- Releasing large volumes of water over the weekend would have had major impacts on the rural communities of the Brisbane Valley. Bridges would have been cut and communities would have been isolated with little notice.
- Over the weekend, neither rainfall forecasts nor the rain on the ground indicated with certainty that urban areas would be impacted.

Increases to above 200% (level of fuse plugs)

- Wivenhoe Dam is not designed to overtop. If it did, the dam would fail and the resulting damage and loss of life would be at least 100 to 1,000 times greater than that currently being experienced.
- To ensure that this never occurs, the dam has been designed with plugs that automatically open when it reaches more than 200% of full supply volume.
- Once opened, the rate of release through these plugs cannot be varied.
- The plugs continue to release water at this rate until the dam reaches full supply level.
- The plugs would take four to six months of dry weather to repair, rendering the flood storage compartment useless.

Changes to dam operations

- The upgrade required to meet ANCOLD standards would have had no impact on this event. It will be completed for even bigger floods.
- Options to increase the full supply level have been investigated. Had they been implemented, these options would have reduced the flood compartment, resulting in higher releases earlier.

Ministerial Briefing Note

17 January 2010

Flood Event January 2011

1. BACKGROUND INFORMATION ON WIVENHOE DAM

2. WIVENHOE DAM FLOOD MITIGATION AND FLOOD OPERATIONS

- 2.1 What were the benefits provided by Wivenhoe Dam during the current event?
- 2.2 Why was Wivenhoe Dam only allowed to rise up to 191% and not 230%?
- 2.3 What is the role of the erodible fuse plug embankments?
- 2.4 Why weren't pre-emptive releases undertaken prior to the start of the flood event?
- 2.5 Is there a detailed record of the events associated with the current flood?

3. THE MANUAL OF OPERATIONAL PROCEDURES FOR FLOOD MITIGATION AT WIVENHOE DAM AND SOMERSET DAM

- 3.1 What is the Manual of Flood Mitigation and how was it developed?
- 3.2 What is contained in the Manual?

4. REGULATORY CONTEXT

5. SEQWATER REPORT

1 BACKGROUND INFORMATION ON WIVENHOE DAM

Wivenhoe Dam was completed in 1984 and has two main functions;

- A 1,165,000 ML storage providing an urban water supply for Brisbane;
- Flood mitigation in the Brisbane River by providing a dedicated flood storage volume of 1,450,000 ML (this flood storage was increased in 2005 to 1,966,000 ML with the dam at the point of failure).

In accordance with the Queensland Regulatory program for dam spillway upgrades, a further upgrade of Wivenhoe Dam is scheduled to occur prior to 2035 but only for dam safety reasons in the event of a probable maximum flood and has no impact on the current event.

Wivenhoe Dam is in excellent condition with four Comprehensive Dam Safety reviews undertaken in the last 14 years, the latest in 2010.

2 WIVENHOE DAM FLOOD MITIGATION AND FLOOD OPERATIONS

2.1 What were the benefits provided by Wivenhoe Dam during the current event?

The following graphs demonstrate the significant benefits of Wivenhoe Dam in mitigating the current flood event, with reductions in flood peak from Wivenhoe Dam not existing of up to 2.5 metres in the City area and up to 5.5 metres in the Moggill area further upstream.

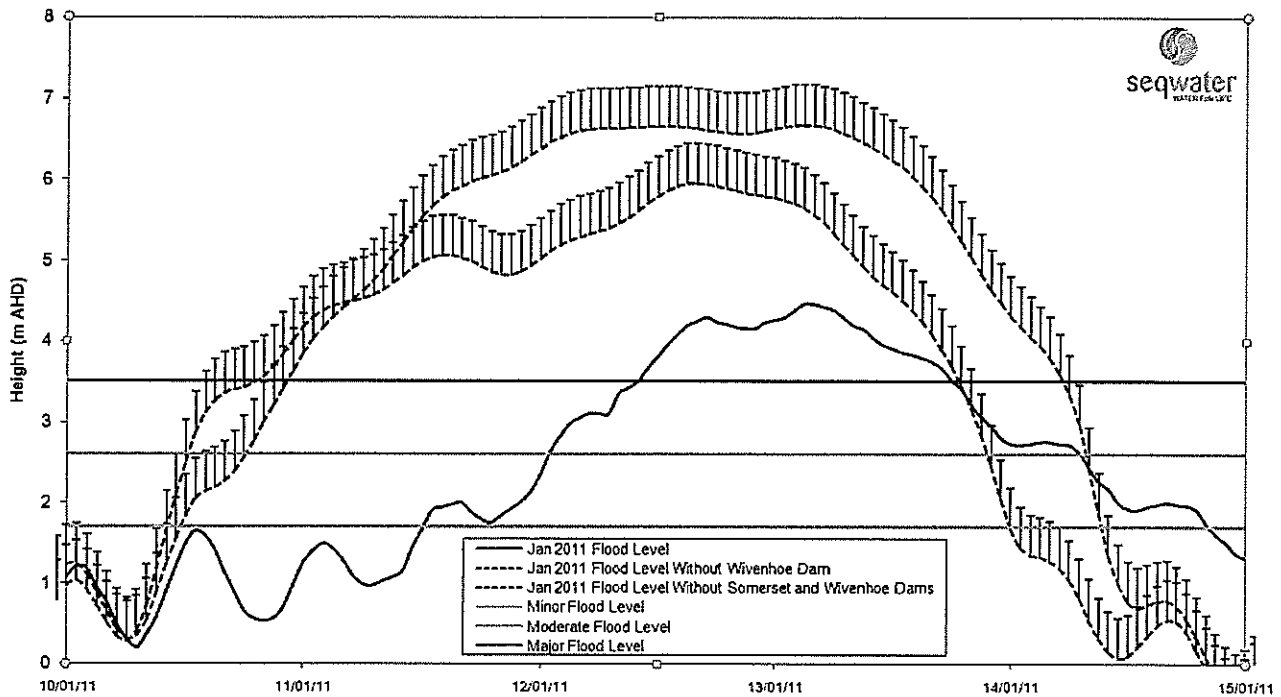
This equates to significant reduction in the potential for loss of life as well as saving in damages in the order of up to \$1.6 billion based on current damage curves. Up to 13,000 more properties would have been impacted by the event without the Dam. (Source: Flood Damage Tables provided to Seqwater by the Brisbane City Council).

The time at which flood levels remained elevated above major levels has also been reduced by up to 3 days by the dam. This has significant benefits to impact on the population of the city, property damage and the recovery operation.

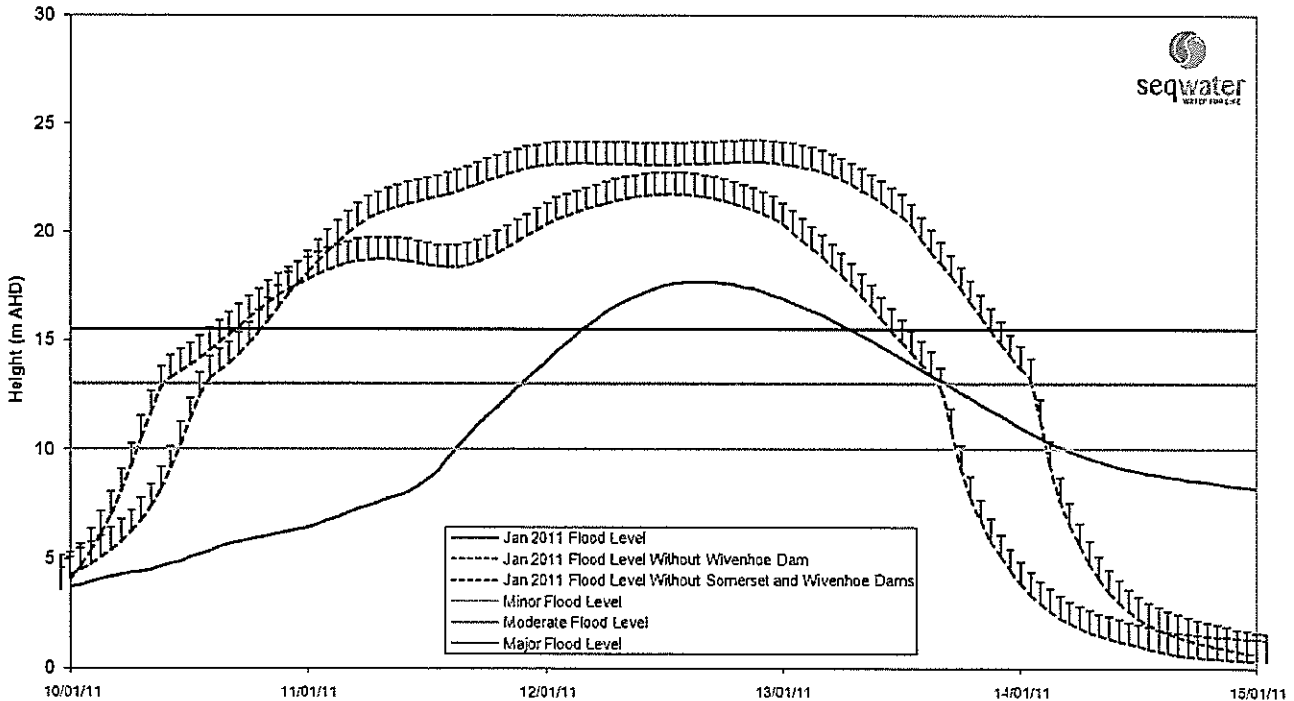
Depending on the nature of the event, the presence of Wivenhoe Dam could also potentially increase flood warning times to impacted areas. How these times may have been increased during the current event is presently difficult to quantify, but discussions will be held with BOM on this issue at a later date.

In addition, the strategy adopted to quickly close off releases once the peak in the dam had been reached and rain stopped falling certainly reduced the predicted flood peak by at least one metre in the lower Brisbane River area. This was carried out because the releases had stopped the dam from rising and careful monitoring allowed rapid reduction of releases while ensuring fuse plug initiation did not occur.

JANUARY 2011 BRISBANE FLOOD **Assessment of Flood Levels at Brisbane City**



JANUARY 2011 BRISBANE FLOOD **Assessment of Flood Levels at Moggill**



2.2 Why was Wivenhoe Dam only allowed to rise up to 191% and not 230%?

Wivenhoe Dam mitigates downstream flooding by storing incoming flood water during a rainfall event and releasing these waters at a reduced flow rate downstream to reduce flood impacts. The timing of the releases is also manipulated so that the aim is for outflows from the dams to impact on downstream areas only after the peak inflows from the downstream major tributaries have passed. However this aim cannot always be achieved in practice. This is because some large floods, such as the one currently being experienced, have the potential to overflow the dam's flood storage compartment. **Should this occur, the dam would fail and the resulting damage and loss of life would be at least 100 to 1000 times greater than that currently being experienced.**

Therefore the basis of all flood operation decision making is to ensure the dam never fails. This is the reason that the dam's flood storage compartment would never be intentionally fully filled as any additional inflows after this point would result in a dam failure. At any one time, there will always be uncertainty about what rain is going to occur. Hence, we cannot use all of the flood capacity as we would not be able to release sufficient water to cater for large inflows.

2.3 What is the role of the erodible fuse plug embankments?

Another factor that impacts on flood release decision making in large events are the levels at which the erodible fuse plugs are triggered. The fuse plugs act as a safety valve to rapidly increase dam outflows if the structural safety of the dam is in danger. Loss of one or more fuse plugs severely limits the ability of the dam to mitigate the effects of future flood events that may occur prior to the fuse plug or plugs being reinstated. Reinstatement of a fuse plug following an event would take a minimum of 4 to 6 months and would require an extended period of relatively dry weather.

2.4 Why weren't pre-emptive releases undertaken prior to the start of the flood event?

In the 25 days leading up to the current event, three flood events impacting on Wivenhoe Dam were experienced, with gate releases being made on all but five of those days. The total outflow from these events was around 700,000ML.

During these events, requests were received from Councils and residents impacted by bridge closures downstream of the dam to curtail releases as soon and as quickly as possible. Additionally the 2 January end date of the flood event prior to the current event meant that significant drain down of the dam prior to the onset of the current event that commenced on 6 January 2011, was not possible without major bridge inundation downstream of the dam and without exceeding minor flood levels in the lower Brisbane River.

Additionally, a flood event was also experienced in October 2010 that resulted in a release of 750,000ML from the dam. Accordingly drain down below the dam full supply level prior to the start of the first December event would not have been possible without significant bridge inundation and without exceeding minor flood levels (as defined by BOM and BCC) in the lower Brisbane River.

Regardless, significant drain down prior to the current event would have had little impact on the peak level in Wivenhoe Dam as shown in the table below. The reason for this is that this total event inflow volume of 2,600,000 ML is well in excess of the useable flood storage combined with the available water supply storages shown in the table.

The specific impact on the Lower Brisbane River of these reduced dam levels requires the use of a complex hydraulic model. The results of this modelling would still contain a degree of uncertainty as illustrated by the difficulties in estimating the final flood peak in Brisbane during the event. This is because the rapid closure of the gates after peak inflow was achieved resulted in significant water level reductions downstream and this is difficult to model accurately.

JANUARY 2011 FLOOD			
Starting Level		Peak Height	Capacity
%	m AHD	m AHD	%
100	67.0	74.97	191
95	66.5	74.93	191
90	65.8	74.88	190
75	64.0	74.63	187
50	60.0	74.11	180

It should be noted that the possible reductions shown above are based up a unique dual peaked flood hydrograph with a volume of about 2,600,000 ML which occurred during this event. A hydrograph with the same volume but a different distribution could result in a significantly lower reduction in peak water levels.

Flood operations at the dam are also highly dependent upon the flood inflow volume and a slight variation in the flood volume could significantly reduce the benefits associated with draining down the dam prior to a flood event.

2.5 Is there a detailed record of the events associated with the current flood?

A preliminary report has been prepared and is attached to this briefing.

3 THE MANUAL OF FLOOD MITIGATION AT WIVENHOE DAM AND SOMERSET DAM

3.1 What is the Manual of Flood Mitigation and how was it developed?

The Manual of Flood Mitigation for Wivenhoe and Somerset dams in its current form was developed in 1992 during an extensive hydrological study of the Brisbane and Pine Rivers catchments by DPI, Water Resources. The final reports were subject to extensive internal review by the Water Resources Group before being reviewed by an independent review panel comprising Professor Colin Apelt, Head of Department, Department of Civil Engineering, University of Queensland and Mr Eric Lesleighter, Principal Hydraulic Engineer and Chief Engineer Water Resources, Snowy Mountains Engineering Corporation. Subsequently, the Manual was extensively reviewed during the Brisbane Valley Flood Damages Minimisation Study in 2006, with the latest comprehensive review of the Manual undertaken in 2009. Both of these reviews have included expert review panels comprising key stakeholders, with the most recent review involving representatives from DERM, BOM, BCC and SunWater.

The Manual of Flood Mitigation is prepared by Seqwater as the owner of the dam and approved and gazetted by the Chief Executive of DERM in accordance with the Water Supply Act 2008. The manual defines flood objectives procedures; roles and responsibilities; and staffing and operational requirements for flood events impacting on Wivenhoe and Somerset dams.

3.2 What is contained in the Manual?

The primary objectives of the procedures contained in the Manual are, in 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 primarily, this involves minimising inundation of the seven bridges below the dam upstream of Moggill);
- 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.

During an event, the operation of the dam transitions between the following four operating strategies depending of the circumstances at the time. These procedures associated with these strategies are explained in detail in the Manual.

- **Strategy W1** – Primary consideration is given to Minimising Disruption to Downstream Rural Life.
- **Strategy W2** – Transition Phase moving from Minimising Disruption to Protecting Downstream Urban Areas.
- **Strategy W3** – Primary consideration is to Protect of Urban Areas from Inundation.
- **Strategy W4** – Primary consideration is to protecting the structural safety of the Dam.

In addition to these strategies, historical records show that there is a significant probability of two or more flood producing storms occurring in the Brisbane River system within a short time of each other. Accordingly for each flood event, the aim is always to empty stored floodwaters within seven days after the flood peak has passed through the dams.

4 REGULATORY CONTEXT

Operational procedures for flood mitigation for a dam are contained in the Flood Mitigation Manual approved under sections 370 to 374 of the *Water Supply (Safety and Reliability) Act 2008* (Water Supply Act). Under section 370 of the Water Supply Act, Seqwater as the owner and operator of Wivenhoe and Somerset Dams is required to prepare a Flood Mitigation Manual. The Chief Executive (CE) of DERM (or his delegate) approves the Flood Mitigation Manual, and the approval is notified in the Queensland Government Gazette. Approval can be for a period of up to five years, after which the approval needs to be renewed. There are no decision-making criteria specified in the Water Supply Act for the CE to take into account when approving the Flood Mitigation Manual.

The Flood Mitigation Manual requires, amongst other matters:

1. Flood operations to be conducted in accordance with manual's provisions, unless Seqwater considers that it is necessary to depart from the procedures of the Flood Mitigation Manual to meet the flood mitigation objectives of the Flood Mitigation Manual. The Flood Mitigation Manual sets out a consultation and approval process through Seqwater's Chair and the CE for departures from the Flood Mitigation Manual. This discretion was not exercised in the January 2011 flood event.
2. Flood operations to be under the control of CE-approved engineers (who are highly qualified and experienced)
3. Annual reporting on the preparedness and status of the flood control system for flood operations, and the training of the personnel who manage the flood events.
4. Reporting on the flood operations during flood events.
5. Reviews after flood events such as the January 2011 event, and a Seqwater report containing details of the procedures used, the reasons for such and other pertinent information. Seqwater must forward this report to the CE within six weeks of the completion of a flood event.

Section 374 of the Water Supply Act protects the CE and Seqwater from liability for complying with the Flood Mitigation Manual. It states:

- (1) *The chief executive or a member of the council does not incur civil liability for an act done, or omission made, honestly and without negligence under this part.*
- (2) *An owner of a dam who observes the operational procedures in a flood mitigation manual, approved by the chief executive, for the dam does not incur civil liability for an act done, or omission made, honestly and without negligence in observing the procedures.*

During November 2010, Commonwealth, State and local government agencies developed a *Protocol for Communication of Flooding Information for the Brisbane River Catchment – including Floodwater Releases from Wivenhoe and Somerset Dams* to “ensure the provision of consistent and robust information to the community”. This is separate from the Flood Mitigation Manual, is not legally binding and is not subject to regulatory approval/review.

Some DERM staff, because of their specialist skills, work in the Flood Operations Centre that Seqwater activates to manage such events in accordance with the Flood Mitigation Manual. The Flood Operations Centre is not involved in any of the regulatory decisions concerning the dams or are members of the Office of the Water Supply Regulator,

Department of Environment and Resource Management, which undertakes the CE's regulatory functions.

5 SEQWATER REPORT

It is recommended that the process and content for reports required for this event be:

- In the short term, utilise this report attached to this briefing note as the basis for communications and discussion.
- Prepare any Interim Reports as agreed to provide information and input as required.
- Seqwater prepare a Comprehensive Report as per the existing regulatory requirements of the Act and the gazetted manual and any requirements of the Dam Safety Regulator. This would be done within 6 weeks of the closure of the current event as per the manual. This timeframe is subject to any new mobilisation of the Flood Operations Centre. The Table of Contents would include:
 - Introduction
 - Flood Event Summary
 - Mobilisation and Staffing
 - Event Rainfall
 - Inflow and Release Details
 - Data Collection System Performance
 - Data Analysis Performance
 - Communication
 - Flood Management Strategies and Manual Compliance
 - Improvements in data collection systems, practices and processes.
 - improvements by interacting agencies
 - Review of factors impacting on the protection of urban areas
 - Recommendations & Conclusions
- The report would then be reviewed by the Dam Safety Regulator in conjunction with any peer review they require. The review should cover:
 - Were the provisions of the manual complied with?
 - What improvements to either facilities e.g. stream gauges, or work practices, are desirable to improve Seqwater's ability to predict inflows into the dams.
 - Are improvements to either Seqwater's facilities or work practices desirable to improve Seqwater's ability to manage events? For example, investigations to raise the dam to improve its flood storage capacity, If so, what are they and their implications

- Are changes to the facilities or work practices of other organisations desirable to improve Seqwater's abilities to manage these events?
 - whether it is worth investigating increasing the flood capacity of Wivenhoe
 - whether the Brisbane River crossings which act, under some situations as a constraint on the releases from Wivenhoe, should be replaced by bridges. For example if the smallest could pass , for example, 2,500 cumecs, then this could enable higher releases under some circumstances.
 - Whether the policy of draining the flood compartment within 7 days should be modified.
 - Given the manual's order of priorities i.e. protection of the dam etc, are any changes in the flood release strategies for either dam desirable? If so, what are they, and their implications
- Based on this review, a review of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam would occur utilising an expert panel of review including representatives of DERM, Seqwater, BoM, affected Local Governments and other stakeholders as necessary.

TRIM reference: D/11/

Enquiry received:

Purpose: Wivenhoe Dam release

Impacts of Wivenhoe and Somerset dams

- Wivenhoe and Somerset dams reduced the flood peak by 2.5 metres in the City and 5.5 metres at Moggill.
- Without the dams, up to 13,000 more houses would have been flooded. They prevented up to \$1.6 billion of damages.
- Without the dams, major flooding would have lasted for three days.
- Wivenhoe and Somerset dams controlled 2.6 million megalitres of floodwater. This is 1.1 million megalitres more than in 1974.
- The dams controlled these floodwaters, providing time for peak flows from the Lockyer and Bremer to pass.
- Total flow in the Brisbane River in 1974 was 9,500 cubic metres per second. The estimated flow from this event would have been 13,000 cubic metres per second if Wivenhoe did not exist.

Operation of Wivenhoe and Somerset dams

- The dams were operated strictly in accordance with the approved Operational Procedures.
- The Operational Procedures were developed by Australia's best hydrologists, including:
 - Professor Colin Apelt, Head of Department, Department of Civil Engineering, University of Queensland
 - Mr Eric Lesleighter, Principal Hydraulic Engineer and Chief Engineer Water Resources, Snowy Mountains Engineering Corporation.
- Professor Apelt is Chair of the Brisbane City Council flood taskforce.

Rainfall forecasts

- Dam operations were based on forecasts provided by the Bureau of Meteorology.
- The rainfall during the event exceeded all forecasts.

- Rainfall was local and intense, as demonstrated by the tragic events in Toowoomba.
- It is unreasonable to expect that dam operators could foresee these events.

Pre-emptive releases

- The dam has been designed for both water supply and flood mitigation.
- Detailed Operational Procedures have been developed by leading hydrologists over many years, with a review as recently as 2009. The procedures are based on the current full supply level.
- Water was released from the dam on 20 of the 25 days leading up to this event.
- A total of 1,450 million megalitres was released between October 2010 and this event.
- These releases isolated some residents and inconvenienced many more.
- The clear decision making process in the Manual was set down since 1992 and was reviewed in 2009 to reflect the installation of the Wivenhoe Spillway upgrade. That review included independent experts from the Bureau of Meteorology, Sunwater, Brisbane City Council and the Department of Environment and Resource Management.
- It is a manual which reflects safe operating practices based on detailed hydrological analysis and technical assessments of dam safety.

Peak releases

- Outflows from Wivenhoe Dam peaked on Tuesday 11 January 2011 at 397,000 ML.
- The impact of these releases was minimised by closing down releases quickly once inflows into the dam had peaked.
- The release rate was higher for three hours, but not sustained.
- These releases accounted for only part of the increase in river levels. The Bureau of Meteorology has stated that, even at their peak, outflows from Wivenhoe Dam contributed slightly more than half the flood arriving in Brisbane (Courier Mail, 14 January).

Large releases earlier

- Releasing large volumes of water over the weekend would have had major impacts on the rural communities of the Brisbane Valley. Bridges would have been cut and communities would have been isolated with little notice.
- Over the weekend, neither rainfall forecasts nor the rain on the ground indicated with certainty that urban areas would be impacted.

Increases to above 200% (level of fuse plugs)

- Wivenhoe Dam is not designed to overtop. If it did, the dam would fail and the resulting damage and loss of life would be at least 100 to 1,000 times greater than that currently being experienced.
- To ensure that this never occurs, the dam has been designed with plugs that automatically open when it reaches more than 200% of full supply volume.
- Once opened, the rate of release through these plugs cannot be varied.
- The plugs continue to release water at this rate until the dam reaches full supply level.
- The plugs would take four to six months of dry weather to repair, rendering the flood storage compartment useless.

Changes to dam operations

- The upgrade required to meet ANCOLD standards would have had no impact on this event. It will be completed for even bigger floods.
- Options to increase the full supply level have been investigated. Had they been implemented, these options would have reduced the flood compartment, resulting in higher releases earlier.

Suzie Emery

From: Peter Borrows [pborrows [REDACTED]]
Sent: Sunday, 16 January 2011 9:33 PM
To: Barry Dennien
Cc: Peter Borrows; Rob Drury; Duty Seq
Subject: Fw: Cabinet in confidence - Ministerial brief outline
Attachments: WGM Brief with replies.docx; WGM Report with replies.docx; Ministerial Briefing Note January 17 2011 Final Draft for distribution.doc; Jan 2011 Flood Event_Ver 1_draft for distribution.docx

Barry, a lot of the extra questions will have to be picked up after the event in an interim or final report.

Sorry it has taken so long.

I think everyone is taking longer now.

Peter

From: Rob Drury
To: Peter Borrows
Cc: John Tibaldi; Paul Bird
Sent: Sun Jan 16 21:20:33 2011
Subject: FW: Cabinet in confidence - Ministerial brief outline

Peter,

- Below is a reply to Bob covering most of his comments. Some have been included in the updated Brief and Report and others explained.
- Attached is an updated copy of the Report and the Brief with some minor changes. Most changes are in the fuse plugs and the Report section at the end
- Copies of the WGM comments named appropriately with our comments in red as to whether we made changes or reasons why we didn't. if we said reasons why we couldn't, we did not change the brief or Report in that area.

Rob

Robert Drury
Dam Operations Manager
Water Delivery
Queensland Bulk Water Supply Authority *trading as Seqwater*



Swimming in weirs and
flowing water is FA!

rethink



[REDACTED] E rdrury [REDACTED]
Wivenhoe Dam, Brisbane Valley Highway, via Fernvale Q4306 Australia
PO Box 37, Fernvale QLD 4306
Website | www.seqwater.com.au

From: Peter Borrows
Sent: Sunday, 16 January 2011 6:06 PM
To: Rob Drury
Cc: John Tibaldi; Paul Bird; Jim Pruss; Peter Borrows
Subject: Fw: Cabinet in confidence - Ministerial brief outline

Have a look.

I'll call in a while. You'll have to get input from John T I think.

From: Kathy Reilly <threereillys[REDACTED]>
To: Reilly Bob <Bob.Reilly[REDACTED]>; Peter Borrows; john.bradley[REDACTED]
<john.bradley[REDACTED]>; barry.dennien[REDACTED] <barry.dennien[REDACTED]>;
dan.spiller[REDACTED] <dan.spiller[REDACTED]>; peter.allen[REDACTED]
<peter.allen[REDACTED]>
Sent: Sun Jan 16 17:59:36 2011
Subject: Re: Cabinet in confidence - Ministerial brief outline

Hi Peter

Peter Allen will provide you with some technical commentary, so I will concentrate on the wider issues. In the interests of time, I have not checked my comments with Peter Allen so he and your staff can feel to correct me if I have got my facts wrong.

Dam failure versus fuse plug activation

In the current event, the critical issue we were trying to avoid was activation of the fuse plugs, with the first one being activated at (I recall) 75.6 metres--not sure what this was in terms of percentage of capacity. As well as the adverse impacts of such activation cited in the text, the practical effect would also have been to increase, I understand, flood heights by about 0.5 metres in Brisbane. So, we had to avoid this outcome. (Also what the 0.5 metres been worth in terms of avoided property damage?)

This is not necessarily correct, the main reasons are as per the document rather than a 0.5m increase as we could shut down gates, although this again increases the levels to make up for the fuse plug flow. Personally, I would emphasise more the arguments around what we had to do to avoid this outcome.

Reducing the peak flood in brisbane--last paragraph p.3

This is an important point. However the argument would be strengthened if you more comprehensively explained the reasoning behind the statement. For example, are we saying that because seqwater reduced the flow from 6,000 cumecs to 2,500 cumecs, then this was the outcome, and that the only reason we could do that was because we were still 0.5 metres or so below fuse plug activation (and thus had a buffer if there was an unexpected surge in inflows?) We really did this because we managed to stop the increase in the dam rising. Did try to cover this in the report.

Also what is the 1 metre worth in terms of reduced property damage? Haven't been able to quantify this yet.

Section 2.4

Playing the devil's advocate for a moment with respect to the table on p.7, could someone convincingly argue that if the starting level had been 50% of FSL, you would have had the ability to reduce the releases from Wivenhoe below 2,500 cumecs at the height of the flood event, and thus further reduce the peak height in Brisbane /Ipswich? Possibly, but at no stage had 50% reduction in Wivenhoe been seriously canvassed by Govt nor could we have probably got to 50% after every event.

Seqwater report (p.13)

The specific additional issues that I suggest we include are:

- whether it is worth investigating increasing the flood capacity of Wivenhoe--I know a fair bit of work has been done on this issue
- whether the Brisbane River crossings which act, under some situations as a constraint on the releases from Wivenhoe, should be replaced by bridges. For example if the smallest could pass, for example, 2,500 cumecs, then this could enable higher releases under some circumstances.
- Whether the policy of draining the flood compartment within 7 days should be modified.

Included in report.

I also suggest the review be undertaken by an independent expert and that an expert panel be formed to provide review of the report and identification of any additional issues requiring investigation--this is important if you are picking up possible improvement by other agencies.

Left out of report as a decision not by Seqwater.

Minor points.

- throughout the text can we be clear what we mean by the term "failure"--to the Minister I suspect this means the dam will collapse and I do not think this is what meant in some cases.
- the spillway upgrade in 2035 is not intended to improve flood mitigation capacity, I understand (p.2)
- the first few paragraphs in section 2.1 refer to the scenario where Wivenhoe did not exist--could this be made clearer in the text?
- Finally, could we make the point that Wivenhoe/Somerset does not control Lockyer/Bremer and that the flood flow at the river peak was compromised of x % from these sources. In the last few days, I have explained to many people around Milton/Auchenflower (where there was significant flooding) this point and they are always surprised. There appears to be a strong view in the community that Wivenhoe was supposed to stop any repetition of the 1974 flood and therefore it "failed" in this task given what has happened.

Most of these comments included but we cannot split up what source contributes what levels downstream without serious analysis of the whole system. Best estimate the BoM came up with was 50% but that was just an estimate however we agree.

Bob

----- Original Message -----

From: Reilly Bob
To: [threeireillys](#)
Sent: Sunday, January 16, 2011 4:33 PM
Subject: Fw: Cabinet in confidence - Ministerial brief outline

----- Original Message -----

From: Peter Borrows <[pborrows](#)>
To: Reilly Bob; Rob Drury <[rdrury](#)>; Duty Seq <[dutyseq](#)>; Bradley John; Dennien Barry
 <[spiller daniel](#)>
Cc: Lyons Michael <[mlyons](#)>; Mike Foster <[mfoster](#)>; Elaina Smouha <[elainamir](#)>; Allen Peter
Sent: Sun Jan 16 16:28:29 2011
Subject: Cabinet in confidence - Ministerial brief outline

Please see attached draft with attachment.

In relation to the draft contents outline sent yesterday, the following is a cross reference FYI.

The attached Ministerial Briefing Note addresses the questions contained in the Ministerial Information Request as follows:

1) Design of Dam – Storages/Spillway upgrade

Refer Section 1

2) “The Flood Event” – Q&A

a. Chronology - High level time step of events and significant decision making/changes – more detailed time step information for Tuesday afternoon (i.e. what was the BOM forecast at the time, narrow peak etc.)

Refer Section 2.5

b. How does Wivenhoe Dam work as a flood mitigator?

Refer Sections 2.1, 2.3 and 3.1

c. What are the factors being balanced when making decisions about the amount of dam releases? To what extent does information from the Bureau of Meteorology/rain gauges influence decisions? How reliable is this information?

Refer Sections 3.1 and 3.2

d. Statistics on how much did Wivenhoe Dam knock off the flood peak.

Refer Section 2.1

e. What would have happened if Wivenhoe Dam had not been built and we only had Somerset Dam? What damage would have been caused compared to what has currently been experienced (damage statistics)?

Refer Sections 2.1 and 2.2

f. If we have undertaken pre-emptive dam releases to bring Wivenhoe Dam’s full supply level down to lower than what we had maintained (i.e. 60%), what would have been the river height for the period that this flood event occurred?

Refer Section 2.4

g. If pre-emptive dam releases would not have made a difference, why? (i.e. why did we not release earlier?)

Refer Section 2.4

h. Why was Wivenhoe Dam only allowed to rise up to 191% and not 230%?

Refer Section 2.2

i. What is the fuse plug and why did it need to be maintained?

Refer Section 2.3

j. What damage or town isolation occurred during the Wivenhoe Dam releases that occurred since October 2010?

Refer Section 2.4

k. Did Seqwater have time to reduce the dam level between the 5 events? If so, would it have made a difference to this flood event?

Refer Section 2.4

3) The Flood Mitigation Manual

Refer Section 3.1

- a. Describe the decision making framework - Four strategies

Refer Section 3.2

- b. How is the Manual designed to work?

Refer Section 3.2

- c. History of Flood Mitigation Manual updates and peer review – who was on the panels, studies that fed into previous versions of the Manual and who was involved in these studies?

Refer Section 3.1

4) Regulatory context - Water Supply (Safety and Reliability) Act 2008 (Information provider: Peter Allen - DERM)

Refer Section 4

Regards, Peter.

Peter Borrows

Chief Executive Officer

Queensland Bulk Water Supply Authority trading as Seqwater

[REDACTED] | E pborrows [REDACTED]

Level 3, 240 Margaret St, Brisbane City QLD 4000
PO Box 16146, City East QLD 4002

Website | www.seqwater.com.au <<http://www.seqwater.com.au/>>

From: Elaina Smouha [<mailto:elainami@seqwater.com.au>] [REDACTED]
Sent: Saturday, 15 January 2011 5:03 PM

To: Mike Foster; peter.allen [REDACTED]; bob.reilly [REDACTED]; Peter Borrows; Rob Drury; Duty Seq
Cc: john.bradley [REDACTED]; barry.dennien [REDACTED]; daniel.spiller [REDACTED];
michael.lyons [REDACTED]; Elaina Smouha
Subject: Cabinet in confidence - Ministerial brief outline

Dear All

To assist, attached is a Ministerial brief outline as per our recent teleconference, for Monday's Emergency Cabinet meeting. It also records those who will be providing information for the Background and Flood Mitigation Manual report process.

As discussed, the brief needs to be provided to Minister Robertson tomorrow (Sunday, 16 January 2011).

Regards

Elaina

Elaina Smouha

Director, Governance and Regulatory Compliance

SEQ Water Grid Manager

Email: elaina.smouha [REDACTED] <mailto:elaina.smouha [REDACTED]>

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Ministerial Briefing Note

17 January 2010

Flood Event January 2011

1. BACKGROUND INFORMATION ON WIVENHOE DAM

2. WIVENHOE DAM FLOOD MITIGATION AND FLOOD OPERATIONS

- 2.1 What were the benefits provided by Wivenhoe Dam during the current event?
- 2.2 Why was Wivenhoe Dam only allowed to rise up to 191% and not 230%?
- 2.3 What is the role of the erodible fuse plug embankments?
- 2.4 Why weren't pre-emptive releases undertaken prior to the start of the flood event?
- 2.5 Is there a detailed record of the events associated with the current flood?

3. THE MANUAL OF OPERATIONAL PROCEDURES FOR FLOOD MITIGATION AT WIVENHOE DAM AND SOMERSET DAM

- 3.1 What is the Manual of Flood Mitigation and how was it developed?
- 3.2 What is contained in the Manual?

4. REGULATORY CONTEXT

5. COMPLIANCE WITH MANUAL

6. SEQWATER REPORT

1 BACKGROUND INFORMATION ON WIVENHOE DAM

Wivenhoe Dam was completed in 1984 and has two main functions;

- A 1,165,000 ML storage providing an urban water supply for Brisbane;
- Flood mitigation in the Brisbane River by providing a dedicated flood storage volume of 1,450,000 ML (this flood storage was increased in 2005 to 1,966,000 ML with the dam at the point of failure).

In accordance with the Queensland Regulatory program for dam spillway upgrades, a further upgrade of Wivenhoe Dam is scheduled to occur prior to 2035 but only for dam safety reasons in the event of a probable maximum flood and has no impact on the current event.

Wivenhoe Dam is in excellent condition with four Comprehensive Dam Safety reviews undertaken in the last 14 years, the latest in 2010.

2 WIVENHOE DAM FLOOD MITIGATION AND FLOOD OPERATIONS

2.1 What were the benefits provided by Wivenhoe Dam during the current event?

The following graphs demonstrate the significant benefits of Wivenhoe Dam in mitigating the current flood event, with reductions in flood peak from Wivenhoe Dam not existing of up to 2.5 metres in the City area and up to 5.5 metres in the Moggill area further upstream.

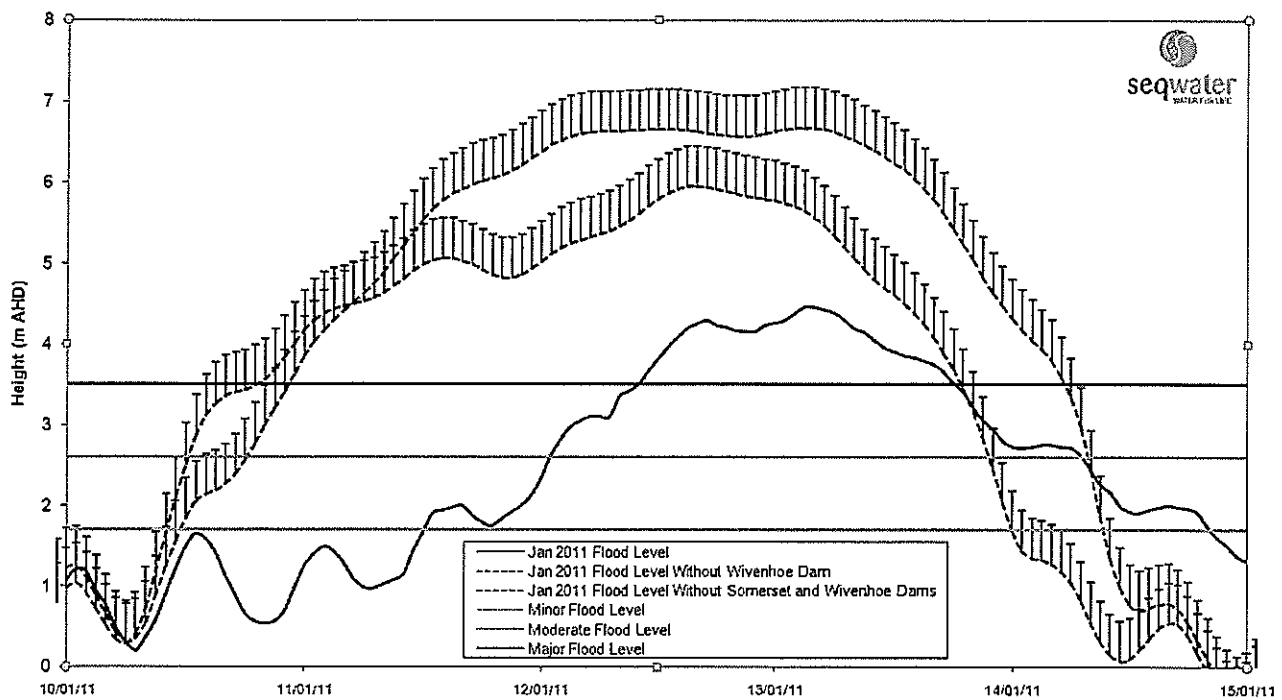
This equates to significant reduction in the potential for loss of life as well as saving in damages in the order of up to \$1.6 billion based on current damage curves. Up to 13,000 more properties would have been impacted by the event without the Dam. (Source: Flood Damage Tables provided to Seqwater by the Brisbane City Council).

The time at which flood levels remained elevated above major levels has also been reduced by up to 3 days by the dam. This has significant benefits to impact on the population of the city, property damage and the recovery operation.

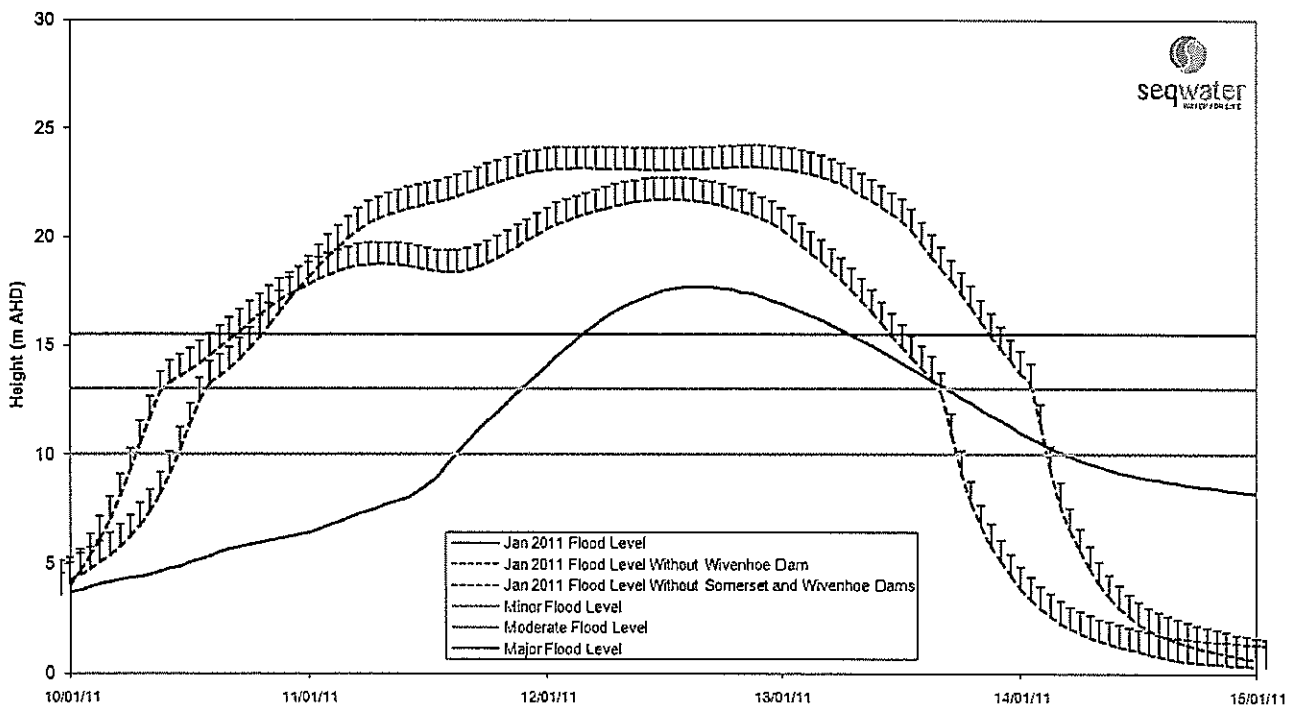
Depending on the nature of the event, the presence of Wivenhoe Dam could also potentially increase flood warning times to impacted areas. How these times may have been increased during the current event is presently difficult to quantify, but discussions will be held with BOM on this issue at a later date.

In addition, the strategy adopted to quickly close off releases once the peak in the dam had been reached and rain stopped falling certainly reduced the predicted flood peak by at least one metre in the lower Brisbane River area. This was carried out because the releases had stopped the dam from rising and careful monitoring allowed rapid reduction of releases while ensuring fuse plug initiation did not occur.

JANUARY 2011 BRISBANE FLOOD **Assessment of Flood Levels at Brisbane City**



JANUARY 2011 BRISBANE FLOOD **Assessment of Flood Levels at Moggill**



2.2 Why was Wivenhoe Dam only allowed to rise up to 191% and not 230%?

Wivenhoe Dam mitigates downstream flooding by storing incoming flood water during a rainfall event and releasing these waters at a reduced flow rate downstream to reduce flood impacts. The timing of the releases is also manipulated so that the aim is for outflows from the dams to impact on downstream areas only after the peak inflows from the downstream major tributaries have passed. However this aim cannot always be achieved in practice. This is because some large floods, such as the one currently being experienced, have the potential to overflow the dam's flood storage compartment. **Should this occur, the dam would fail and the resulting damage and loss of life would be at least 100 to 1000 times greater than that currently being experienced.**

Therefore the basis of all flood operation decision making is to ensure the dam never fails. This is the reason that the dam's flood storage compartment would never be intentionally fully filled as any additional inflows after this point would result in a dam failure. At any one time, there will always be uncertainty about what rain is going to occur. Hence, we cannot use all of the flood capacity as we would not be able to release sufficient water to cater for large inflows.

2.3 What is the role of the erodible fuse plug embankments?

Another factor that impacts on flood release decision making in large events are the levels at which the erodible fuse plugs are triggered. The fuse plugs act as a safety valve to rapidly increase dam outflows if the structural safety of the dam is in danger. Loss of one or more fuse plugs severely limits the ability of the dam to mitigate the effects of future flood events that may occur prior to the fuse plug or plugs being reinstated. Reinstatement of a fuse plug following an event would take a minimum of 4 to 6 months and would require an extended period of relatively dry weather.

2.4 Why weren't pre-emptive releases undertaken prior to the start of the flood event?

In the 25 days leading up to the current event, three flood events impacting on Wivenhoe Dam were experienced, with gate releases being made on all but five of those days. The total outflow from these events was around 700,000ML.

During these events, requests were received from Councils and residents impacted by bridge closures downstream of the dam to curtail releases as soon and as quickly as possible. Additionally the 2 January end date of the flood event prior to the current event meant that significant drain down of the dam prior to the onset of the current event that commenced on 6 January 2011, was not possible without major bridge inundation downstream of the dam and without exceeding minor flood levels in the lower Brisbane River.

Additionally, a flood event was also experienced in October 2010 that resulted in a release of 750,000ML from the dam. Accordingly drain down below the dam full supply level prior to the start of the first December event would not have been possible without significant bridge inundation and without exceeding minor flood levels (as defined by BOM and BCC) in the lower Brisbane River.

Regardless, significant drain down prior to the current event would have had little impact on the peak level in Wivenhoe Dam as shown in the table below. The reason for this is that this total event inflow volume of 2,600,000 ML is well in excess of the useable flood storage combined with the available water supply storages shown in the table.

The specific impact on the Lower Brisbane River of these reduced dam levels requires the use of a complex hydraulic model. The results of this modelling would still contain a degree of uncertainty as illustrated by the difficulties in estimating the final flood peak in Brisbane during the event. This is because the rapid closure of the gates after peak inflow was achieved resulted in significant water level reductions downstream and this is difficult to model accurately.

JANUARY 2011 FLOOD			
Starting Level		Peak Height	Capacity
%	m AHD	m AHD	%
100	67.0	74.97	191
95	66.5	74.93	191
90	65.8	74.88	190
75	64.0	74.63	187
50	60.0	74.11	180

It should be noted that the possible reductions shown above are based up a unique dual peaked flood hydrograph with a volume of about 2,600,000 ML which occurred during this event. A hydrograph with the same volume but a different distribution could result in a significantly lower reduction in peak water levels.

Flood operations at the dam are also highly dependent upon the flood inflow volume and a slight variation in the flood volume could significantly reduce the benefits associated with draining down the dam prior to a flood event.

2.5 Is there a detailed record of the events associated with the current flood?

A preliminary report has been prepared and is attached to this briefing.

3 THE MANUAL OF FLOOD MITIGATION AT WIVENHOE DAM AND SOMERSET DAM

3.1 What is the Manual of Flood Mitigation and how was it developed?

The Manual of Flood Mitigation for Wivenhoe and Somerset dams in its current form was developed in 1992 during an extensive hydrological study of the Brisbane and Pine Rivers catchments by DPI, Water Resources. The final reports were subject to extensive internal review by the Water Resources Group before being reviewed by an independent review panel comprising Professor Colin Apelt, Head of Department, Department of Civil Engineering, University of Queensland and Mr Eric Lesleighter, Principal Hydraulic Engineer and Chief Engineer Water Resources, Snowy Mountains Engineering Corporation. Subsequently, the Manual was extensively reviewed during the Brisbane Valley Flood Damages Minimisation Study in 2006, with the latest comprehensive review of the Manual undertaken in 2009. Both of these reviews have included expert review panels comprising key stakeholders, with the most recent review involving representatives from DERM, BOM, BCC and SunWater.

The Manual of Flood Mitigation is prepared by Seqwater as the owner of the dam and approved and gazetted by the Chief Executive of DERM in accordance with the Water Supply Act 2008. The manual defines flood objectives procedures; roles and responsibilities; and staffing and operational requirements for flood events impacting on Wivenhoe and Somerset dams.

3.2 What is contained in the Manual?

The primary objectives of the procedures contained in the Manual are, in 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 primarily, this involves minimising inundation of the seven bridges below the dam upstream of Moggill);
- 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.

During an event, the operation of the dam transitions between the following four operating strategies depending of the circumstances at the time. These procedures associated with these strategies are explained in detail in the Manual.

- **Strategy W1** – Primary consideration is given to Minimising Disruption to Downstream Rural Life.
- **Strategy W2** – Transition Phase moving from Minimising Disruption to Protecting Downstream Urban Areas.
- **Strategy W3** – Primary consideration is to Protect of Urban Areas from Inundation.
- **Strategy W4** – Primary consideration is to protecting the structural safety of the Dam.

In addition to these strategies, historical records show that there is a significant probability of two or more flood producing storms occurring in the Brisbane River system within a short time of each other. Accordingly for each flood event, the aim is always to empty stored floodwaters within seven days after the flood peak has passed through the dams.

4 REGULATORY CONTEXT (Provided by Peter Allen and unedited)

These are contained in the Flood Mitigation Manual (manual) approved under sections 370 to 374 of the *Water Supply (Safety and Reliability) Act 2008*. The Chief Executive Officer (CEO) of DERM (or his delegate) approves the manual, and the approval is notified in the Queensland Government Gazette. Approval can be for a period of up to five years, after which the approval needs to be renewed. There are no decision-making criteria specified in the Act for the CEO to take into account when approving the manual.

The manual for the dams requires, amongst other matters:

1. Flood operations to be conducted in accordance with manual's provisions. (There is an approval process specified in the manual, if Seqwater considers a different flood release strategy is desirable to deal with a particular flood event. This was not used in the January 2011 flood event)
2. Flood operations to be under the control of CEO-approved engineers (who are highly qualified and experienced)
3. Annual reporting on the preparedness and status of the flood control system for flood operations, and the training of the personnel who manage the flood events.
4. Reporting on the flood operations during flood events.
5. Reviews after flood events such as the January 2011 event. For this flood event, the Queensland Government engaged Mr Brian Cooper, an independent consulting engineer, to review compliance with the manual. Mr Cooper concluded (Attachment??): "...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 the final report or other appropriate reference??)

The manual is separate from a draft communication protocol (Insert name) between the Local, State and Commonwealth government agencies that are affected by the dams' flood operations. This protocol is not binding on the parties to it is not subject to regulatory approval/review.

Some DERM staff, because of their specialist skills, work in the Flood Operations Centre that Seqwater activates to manage such events. None of them are involved in any of the regulatory decisions concerning the dams or are members of the work unit (Office of the Water Supply Regulator) which undertakes the CEO's regulatory functions.

5 COMPLIANCE WITH THE MANUAL

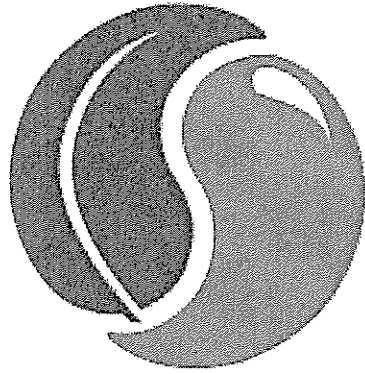
(To be provided)

6 SEQWATER REPORT

It is recommended that the process and content for reports required for this event be:

- In the short term, utilise this report attached to this briefing note as the basis for communications and discussion.
- Prepare any Interim Reports as agreed to provide information and input as required.
- Seqwater prepare a Comprehensive Report as per the existing regulatory requirements of the Act and the gazetted manual and any requirements of the Dam Safety Regulator. This would be done within 6 weeks of the closure of the current event as per the manual. This timeframe is subject to any new mobilisation of the Flood Operations Centre. The Table of Contents would include:
 - Introduction
 - Flood Event Summary
 - Mobilisation and Staffing
 - Event Rainfall
 - Inflow and Release Details
 - Data Collection System Performance
 - Data Analysis Performance
 - Communication
 - Flood Management Strategies and Manual Compliance
 - Improvements in data collection systems, practices and processes.
 - improvements by interacting agencies
 - Review of factors impacting on the protection of urban areas
 - Recommendations & Conclusions
- The report would then be reviewed by the Dam Safety Regulator in conjunction with any peer review they require. The review should cover:
 - Were the provisions of the manual complied with?
 - What improvements to either facilities e.g. stream gauges, or work practices, are desirable to improve Seqwater's ability to predict inflows into the dams.
 - Are improvements to either Seqwater's facilities or work practices desirable to improve Seqwater's ability to manage events? For example, investigations to raise the dam to improve its flood storage capacity, If so, what are they and their implications

- Are changes to the facilities or work practices of other organisations desirable to improve Seqwater's abilities to manage these events?
 - whether it is worth investigating increasing the flood capacity of Wivenhoe
 - whether the Brisbane River crossings which act, under some situations as a constraint on the releases from Wivenhoe, should be replaced by bridges. For example if the smallest could pass , for example, 2,500 cumecs, then this could enable higher releases under some circumstances.
 - Whether the policy of draining the flood compartment within 7 days should be modified.
 - Given the manual's order of priorities i.e. protection of the dam etc, are any changes in the flood release strategies for either dam desirable? If so, what are they, and their implications
- Based on this review, a review of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam would occur utilising an expert panel of review including representatives of DERM, Seqwater, BoM, affected Local Governments and other stakeholders as necessary.



seqwater
WATER FOR LIFE

**JANUARY 2011 FLOOD
EVENT**

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1 INTRODUCTION

Wivenhoe Dam was constructed by the Queensland Government between 1977 and 1984. The dam is a 56 m AHD high and 2.3 kilometre long earth and rock embankment separated into two parts by a concrete gravity spillway. The spillway is controlled by 5 radial gates, each 12.0 metres wide by 16.0 m AHD high. Two saddle dam embankments are located on the left side of the reservoir.

The dam spillway capacity was upgraded in 2005. This was done primarily through the construction of a 164 metre wide secondary spillway through the right abutment of the existing dam. This spillway contains three erodible earth fill fuse plug embankments that are initiated at different dam levels in excess of EL 75.6.

The dam has two main functions by providing:

- A 1,165,000 ML storage at full supply level (FSL EL 67.0) providing an urban water supply for Brisbane and surrounding areas;
- Flood mitigation in the Brisbane River by providing a dedicated flood storage volume of 1,450,000 ML up to EL77 (this flood level was increased as part the 2005 upgrade to allow a water level of EL80m and a temporary flood storage volume of 1,966,000 ML with all fuse plugs initiated and the dam at the point of failure).

The dam has an EXTREME hazard classification under ANCOLD guidelines because of the significant development downstream in the Brisbane and Ipswich metropolitan areas, with the population at risk in the event of a dam failure numbering in the hundreds of thousands.

In accordance with the Queensland Regulatory program for dam spillway upgrades, a further upgrade of Wivenhoe Dam for dam safety reasons only is scheduled to occur prior to 2035 to enable the dam to safely pass the Probable Maximum Flood. This work will involve the reconstruction of Saddle Dam 2 as a fuse plug spillway.

Wivenhoe Dam is in excellent condition. Comprehensive Dam Safety reviews undertaken in accordance with ANCOLD guidelines have been undertaken in 1997 (Gutteridge, Haskins & Davey Pty Ltd), 2003 (Wivenhoe Alliance), 2006 (NSW Department of Commerce), 2009 (GHD) and September 2010 (Seqwater). The reports concluded that the design of the dam is in accordance with modern day standards and that there are no significant outstanding design or construction issues that require investigation.

2 WIVENHOE DAM FLOOD MITIGATION AND FLOOD OPERATIONS

2.1 Flood Mitigation

The Brisbane River catchment covers an area of approximately 14,000 square kilometres of which about half is below Wivenhoe Dam. Maximum overall flood mitigation effect is achieved by operating Wivenhoe Dam in conjunction with Somerset Dam. Although Somerset and Wivenhoe Dam reduce flooding in Brisbane City, major flooding can still occur. The Lockyer-Laidley Valley drains into the Brisbane River through Lockyer Creek that enters the Brisbane River just downstream of Wivenhoe Dam near Lowood. Another major tributary, the Bremer River, flows into the Brisbane River at Moggill. Wivenhoe Dam has no control over inflows into the Brisbane River from both these major tributaries.

Wivenhoe Dam mitigates downstream flooding by storing incoming flood water during a rainfall event and releasing these waters at a reduced flow rate downstream to minimise flood impacts. The timing of the releases is also manipulated so that the aim is for outflows from the dams to impact on downstream areas only after the peak inflows from the downstream major tributaries have passed. However, this aim cannot always be achieved in practice. This is because some large floods, such as the one currently being experienced, have the potential to overflow the dam's flood storage compartment. **Should this occur, the dam would fail and the resulting damage and loss of life would be at least 100 to 1000 times greater than that currently being experienced.**

Therefore the basis of all flood operation decision making is to ensure the dam never fails. This is the reason that the dam's flood storage compartment would never be intentionally fully filled as additional inflows after this point would result in a dam failure. Similarly, there will be uncertainty on future rainfall that could occur which could not be releases if there was insufficient flood storage which could not be stored or released.

Another factor that impacts on flood release decision making in large events are the levels at which the erodible fuse plugs are triggered. Loss of one or more fuse plugs severely limits the ability of the dam to mitigate the effects of future flood events that may occur prior to the fuse plug or plugs being reinstated. Reinstatement of a fuse plug following an event would take a minimum of 4 to 6 months and would require an extended period of relatively dry weather.

2.2 Flood Operations

A real time flood monitoring and forecasting system has been established in the Wivenhoe and Somerset Dam catchments. This system employs radio telemetry to collect, transmit and receive rainfall and stream flow information. The system consists of around 230 field stations that automatically record rainfall and/or river heights at selected locations in the dam catchments. Most of these field stations are owned by Seqwater with the remainder belonging to other agencies.

The rainfall and river height data is transmitted to Seqwater's Flood Operations Centre in real time. Once received in the Flood Operations Centre, the data is processed using a Real Time Flood Model (RTFM) to estimate likely dam inflows and evaluate a range of possible inflow scenarios based on forecast and recorded rainfall in the dam catchments. The RTFM is a suite of hydrologic computer programs that utilise the real time data to assist in the operation of the dams during flood events.

Seqwater engineers use the RTFM for flood monitoring and forecasting during flood events to operate the dams in accordance with a Manual of Flood Mitigation (the origin of and objectives and procedures contained in the Manual of Flood Mitigation are explained in the following section of this document). Releases of water from the dams are optimised to minimise the impacts of flooding in accordance with the objectives and procedures contained in a Manual of Flood Mitigation.

The RTFM and data collection network performed well During the January 2011 event, with no failures experienced that compromised the ability of Seqwater to operate the dam.

3 MANUAL OF FLOOD MITIGATION FOR WIVENHOE AND SOMERSET DAMS

The Manual of Flood Mitigation for Wivenhoe and Somerset Dams, in its current form, was developed in 1992 during an extensive hydrological study of the Brisbane and Pine Rivers catchments by DPI, Water Resources. The final reports were subject to extensive internal review by the Water Resources Group before being reviewed by an independent review panel comprising Professor Colin Apelt, Head of Department, Department of Civil Engineering, University of Queensland and Mr Eric Lesleighter, Principal Hydraulic Engineer and Chief Engineer Water Resources, Snowy Mountains Engineering Corporation.

Subsequently, the Manual was extensively reviewed during the Brisbane Valley Flood Damages Minimisation Study in 2006, with the latest comprehensive review of the Manual undertaken in 2009. Both of these reviews have included expert review panels comprising key stakeholders, with the most recent review involving representatives from DERM, BOM, BCC and SunWater.

The Manual of Flood Mitigation is prepared by Seqwater as the owner of the dam and approved and gazetted by the Chief Executive of DERM in accordance with the Water Supply Act 2008. The manual defines flood objectives procedures; roles and responsibilities; and staffing and operational requirements for flood events impacting on Wivenhoe and Somerset dams.

The primary objectives of the procedures contained in the flood manual are, in 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 primarily, this involves minimising inundation of the seven bridges below the dam upstream of Moggill);
- 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.

During an event, the operation of the dam transitions between the following four operating strategies depending of the circumstances at the time. These procedures associated with these strategies are explained in detail in the Manual.

- **Strategy W1** – Primary consideration is given to Minimising Disruption to Downstream Rural Life. Under this strategy, the predicted water level is below 68.50 m AHD and the maximum release is 1,900m³/s.
- **Strategy W2** – Transition Phase moving from Minimising Disruption to Protecting Downstream Urban Areas. Under this strategy, the water level is predicted to be between 68.5 and 74.0 m AHD and the maximum release is less than 3,500m³/s.
- **Strategy W3** – Primary consideration is to Protect of Urban Areas from Inundation. Under this strategy, the water level is predicted to be between 68.5 and 74.0 m AHD but the maximum release is less than 4,000m³/s.
- **Strategy W4** – Primary consideration is to protecting the structural safety of the Dam. Under this strategy, the water level is predicted to exceed 74.0 m AHD and there is no limit to the maximum release. Consideration is given to managing flood releases to avoid fuse plug initiation if at all possible as this would compromise flood mitigation capacity in the short to medium term.

In addition to these strategies, historical records show that there is a significant probability of two or more flood producing storms occurring in the Brisbane River system within a short time of each other. Accordingly for each flood event, the aim is always to empty stored floodwaters within seven days after the flood peak has passed through the dams.

4 JANUARY 2011 FLOOD EVENT

4.1 Background

In the 25 days leading up to the current event, three flood events impacting on Wivenhoe Dam were experienced, with gate releases being made on all but five of those days. The total outflow from these events was around 700,000ML. The details of these events are as follows:

EVENT	EVENT START DATE	EVENT END DATE	VOLUME RELEASED (ML)
1	13/12/2010	16/12/2010	70,000
2	17/12/2010	24/12/2010	150,000
3	26/12/2010	02/01/2011	470,000

During these events, requests were received from Councils and residents impacted by bridge closures downstream of the dam to curtail releases as soon and as quickly as possible.

Additionally the 2 January end date of the flood event prior to the current event meant that significant drain down of the dam prior to the onset of the current event that commenced on 6 January 2011, was not possible without major bridge inundation downstream of the dam and without exceeding minor flood levels in the lower Brisbane River.

Additionally, a flood event was also experienced in October 2010 that resulted in a release of 750,000ML from the dam. Accordingly drain down below the dam full supply level prior to the start of the first December event would not have been possible without significant bridge inundation and without exceeding minor flood levels (as defined by BOM and BCC) in the lower Brisbane River.

Regardless, significant drain down prior to the current event would have had little impact on the peak level in Wivenhoe Dam as shown in the table below. The reason for this is that this total event inflow volume of 2,600,000 ML is well in excess of the useable flood storage combined with the available water supply storages shown in the table.

The specific impact on the Lower Brisbane River of these reduced dam levels requires the use of a complex hydraulic model. The results of this modelling would still contain a degree of uncertainty as illustrated by the difficulties in estimating the final flood peak in Brisbane during the event. This is because the rapid closure of the gates after peak inflow was achieved resulted in significant water level reductions downstream and this is difficult to model accurately.

JANUARY 2011 FLOOD			
Starting Level		Peak Height	Capacity
%	m AHD	m AHD	%
100	67.0	74.97	191
95	66.5	74.93	191
90	65.8	74.88	190
75	64.0	74.63	187
50	60.0	74.11	180

It should be noted that the possible reductions shown above are based on a dual peaked flood hydrograph with a volume of about 2,600,000 ML which occurred during this event. A hydrograph with the same volume but a different distribution could result in a significantly lower reduction in peak water levels.

Flood operations at the dam are also highly dependent upon the flood inflow volume and a slight variation in the flood volume could significantly reduce the benefits associated with draining down the dam prior to a flood event.

4.2 Event Decision Making

The following table contains a summary of the key decisions points associated with the current event. As at 16 January 2011, the event remains in progress.

DATE AND TIME	FLOOD EVENT MILESTONE
07:00 06/01/2011 (Thursday)	Rainfall is experienced in the dam catchments that will result in flood releases, however Wivenhoe releases are delayed for 24 hours to allow Lockyer Creek flood flows to pass downstream and prevent the isolation of the community dependent of Burtons Bridge. The forecast is for 150mm over the next 24 hours.
15:00 07/01/2011 (Friday)	Wivenhoe releases commence, with operational strategy W1 in use. Rainfall for the next four days is estimated to be between 140mm and 300mm, with a forecast for rain easing on Tuesday 11 January 2011. All bridges downstream of the dam with the exception of Fernvale Bridge and Mt Crosby Weir Bridge are expected to be inundated for a number of days.

06:00 09/01/2011 (Sunday)	Moderate to heavy rain periods forecast until Tuesday, but both Wivenhoe and Somerset dam levels were falling slowly, with Somerset at 1.27 m AHD above FSL and Wivenhoe 1.58 m AHD above FSL.
15:30 09/01/2011 (Sunday)	Following significant rain during the day a meeting of Duty Engineers is held. The QPF issued at 16:00 indicates 50mm to 80mm over the next 24 hours. Based on this forecast, it is anticipated that dam levels can be held to a maximum of 3.50 m AHD above FSL in Somerset and 5.5 m AHD above FSL in Wivenhoe. However, by 19:00 it was apparent that both Fernvale Bridge and Mt Crosby Weir Bridge would be inundated by the combined dam releases and Lockyer Creek flows and that the operational strategy had progressed to W2.
06:30 10/01/2011 (Monday)	Rainfall continued during the night and based on rainfall on the ground it was apparent the operational strategy had progressed to W3.
06:30 10/01/2011 (Monday)	Rainfall continued during the day but based on rainfall on the ground, operational strategy W3 remained in use. However it was apparent that any further heavy rain would result in progression of the operational strategy to W4.
08:00 11/01/2011 (Tuesday)	Rainfall continued during the night with isolated heavy falls in the Wivenhoe Dam catchment area and based on rainfall on the ground it was apparent the operational strategy would soon progress to W4 with Wivenhoe Dam exceeding 8.00 m AHD above FSL. The objective now was to limit outflows and subsequent flood damage to urban areas, while ensuring the structural safety of the dam.
11:00 11/01/2011 (Tuesday)	Rapid inflows were experienced in Wivenhoe Dam, with the dam rising almost a metre in eight hours. Releases were increased until the dam level stabilised in accordance with Strategy W4. Computer models were not reflecting actual dam inflows due to intense point rainfalls in the immediate catchment around the dam. Falls are estimated to be similar to those experienced at both Toowoomba and Upper Lockyer the previous day and are falling outside and between existing rain gauges.
21:00 11/01/2011 (Tuesday)	Wivenhoe Dam peaked. Peak release of 7450 cumecs with a level of 0.7 metres below fuse plug trigger.
22:00 11/01/2011	Wivenhoe Dam releases were closed off as quickly as possible over the

(Tuesday)	next 11 hours, while ensuring water levels in the dam did not rise further and initiate a fuse plug embankment.
08:00 12/01/2011 (Wednesday)	Minimum possible release level reached, with inflows matching outflows. Further reductions in release rate would likely cause the dam level to rise.
21:00 13/01/2011 (Thursday)	The 7 day dam drain down is commenced as Lockyer Creek and Bremer River peaks pass the Lower Brisbane area. Maximum release target is the limit of damaging floods in Brisbane being 3500 cumecs.
09:00 17/01/2011 (Monday)	Drain down continues, with released expected to cease on Wednesday 19 January 2011 unless further rainfall is experienced.

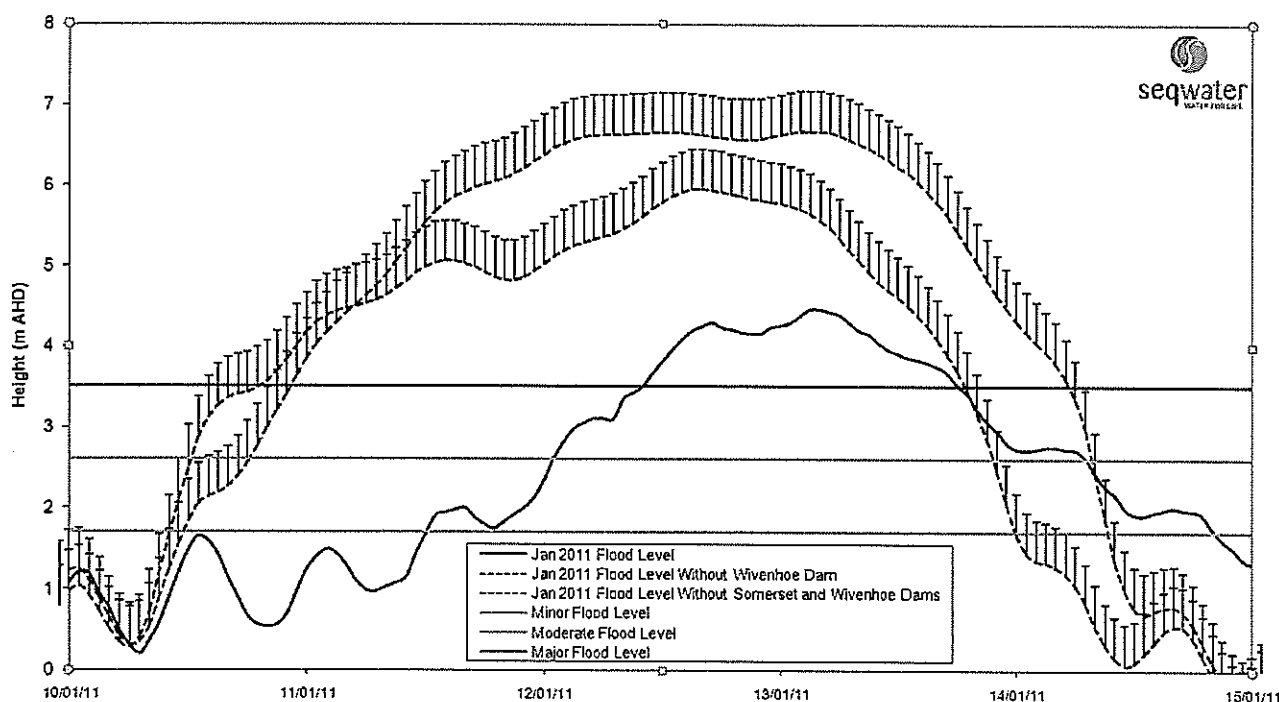
4.3 Flood Mitigation Benefits of Wivenhoe Dam

The following graphs demonstrate the significant benefits of Wivenhoe Dam in mitigating the current flood event, with reductions in flood peak of up to 2.5 metres in the City area and up to 5.5 metres in the Moggill area further upstream.

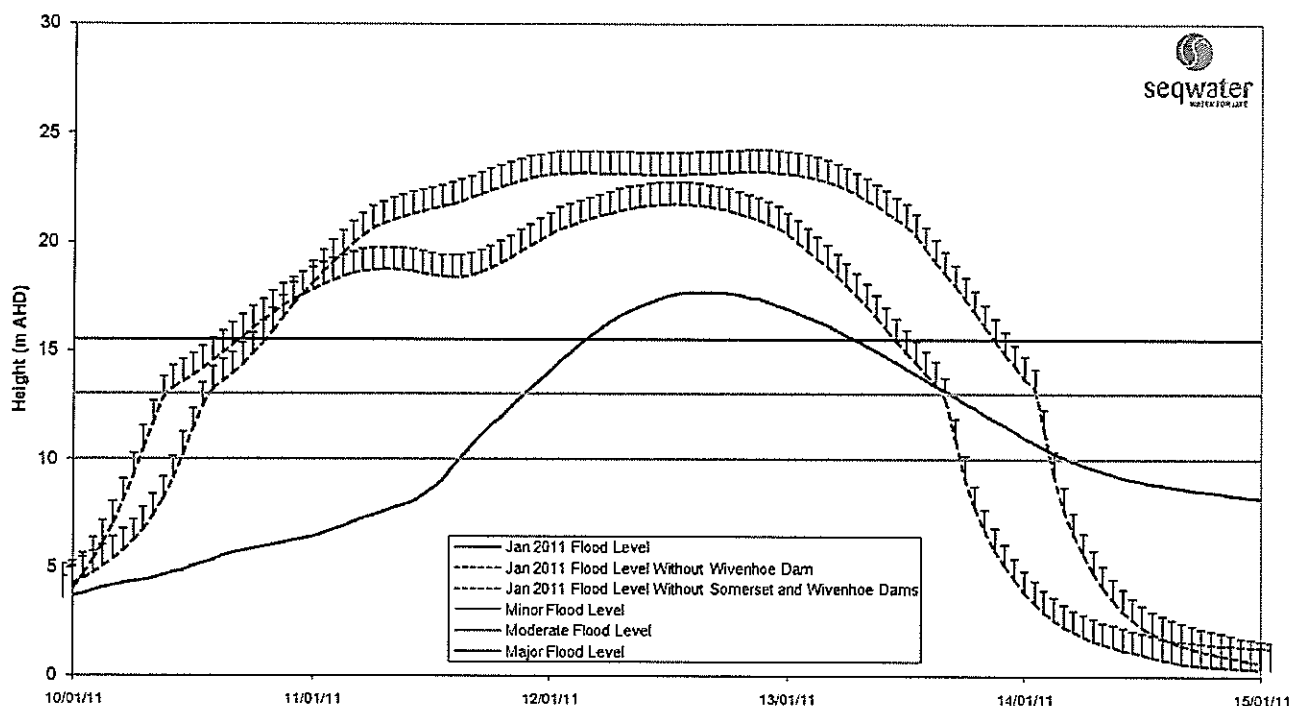
This equates to significant reduction in the potential for loss of life as well as saving in damages in the order of up to \$1.6 billion based on current damage curves. Up to 13,000 more properties would have been impacted by the event without the Dam.

The time at which flood levels remained elevated above major levels has also been reduced by up to 3 days by the dam. This has significant benefits to impact on the population of the city, property damage and the recovery operation.

JANUARY 2011 BRISBANE FLOOD
Assessment of Flood Levels at Brisbane City



JANUARY 2011 BRISBANE FLOOD Assessment of Flood Levels at Moggill



The strategy adopted to quickly close off releases once the peak in the dam had been reached and rain stopped falling certainly reduced the predicted flood peak by at least one metre in the lower Brisbane River area. This was carried out because the releases had stopped the dam from rising and careful monitoring allowed rapid reduction of releases while ensuring fuse plug initiation did not occur.

This notion is supported by BOM.

5 EVENT REVIEW

Under the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam that are approved and gazetted by the Department of Environment and Resource Management, there is a regulatory requirement that a report must be prepared as per the below wording:

“Seqwater must prepare a report after each Flood Event. The report must contain details of the procedures used, the reasons therefore and other pertinent information. Seqwater must forward the report to the Chief Executive within six weeks of the completion of the Flood Event.”

Such a report was prepared for the flood events of February and March 2010 and copies are available. A copy of the Table of Contents of that report is included as Appendix 1. For this event, the report would be a comprehensive summary of all procedures, actions, outcomes and processes during the event.

It is recommended that the process and content for reports required for this event be:

- In the short term, utilise this report attached to this briefing note as the basis for communications and discussion.
- Prepare any Interim Reports as agreed to provide information and input as required.
- Seqwater prepare a Comprehensive Report as per the existing regulatory requirements of the Act and the gazetted manual and any requirements of the Dam Safety Regulator. This would be done within 6 weeks of the closure of the current event as per the manual. This timeframe is subject to any new mobilisation of the Flood Operations Centre. The Table of Contents would include:
 - Introduction
 - Flood Event Summary
 - Mobilisation and Staffing
 - Event Rainfall
 - Inflow and Release Details
 - Data Collection System Performance
 - Data Analysis Performance
 - Communication
 - Flood Management Strategies and Manual Compliance
 - Improvements in data collection systems, practices and processes.
 - improvements by interacting agencies

- Review of factors impacting on the protection of urban areas
 - Recommendations & Conclusions
- The report would then be reviewed by the Dam Safety Regulator in conjunction with any peer review they require. The review should cover:
 - Were the provisions of the manual complied with?
 - What improvements to either facilities e.g. stream gauges, or work practices, are desirable to improve Seqwater's ability to predict inflows into the dams.
 - Are improvements to either Seqwater's facilities or work practices desirable to improve Seqwater's ability to manage events? For example, investigations to raise the dam to improve its flood storage capacity, If so, what are they and their implications.
 - Are changes to the facilities or work practices of other organisations desirable to improve Seqwater's abilities to manage these events?
 - whether it is worth investigating increasing the flood capacity of Wivenhoe
 - whether the Brisbane River crossings which act, under some situations as a constraint on the releases from Wivenhoe, should be replaced by bridges. For example if the smallest could pass , for example, 2,500 cumecs, then this could enable higher releases under some circumstances.
 - Whether the policy of draining the flood compartment within 7 days should be modified.
 - Given the manual's order of priorities i.e. protection of the dam etc, are any changes in the flood release strategies for either dam desirable? If so, what are they, and their implications
- Based on this review, a review of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam would occur utilising an expert panel of review including representatives of DERM, Seqwater, BoM, affected Local Governments and other stakeholders as necessary.

Appendix A

FINAL REPORT – FLOOD EVENTS AT WIVENHOE, SOMERSET AND NORTH PINE DAMS FOR FEBRUARY AND MARCH 2010

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Ministerial Briefing Note

17 January 2010

Flood Event January 2011

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2. WIVENHOE DAM FLOOD MITIGATION AND FLOOD OPERATIONS

- 2.1 What were the benefits provided by Wivenhoe Dam during the current event?
- 2.2 Why was Wivenhoe Dam only allowed to rise up to 191% and not 230%?
- 2.3 What is the role of the erodible fuse plug embankments?
- 2.4 Why weren't pre-emptive releases undertaken prior to the start of the flood event?
- 2.5 Is there a detailed record of the events associated with the current flood?

3. THE MANUAL OF OPERATIONAL PROCEDURES FOR FLOOD MITIGATION AT WIVENHOE DAM AND SOMERSET DAM

- 3.1 What is the Manual of Flood Mitigation and how was it developed?
- 3.2 What is contained in the Manual?

4. REGULATORY CONTEXT

5. COMPLIANCE WITH MANUAL

6. SEQWATER REPORT

1 BACKGROUND INFORMATION ON WIVENHOE DAM

Wivenhoe Dam was completed in 1984 and has two main functions;

- A 1,165,000 ML storage providing an urban water supply for Brisbane;
- Flood mitigation in the Brisbane River by providing a dedicated flood storage volume of 1,450,000 ML (this flood storage was increased in 2005 to 1,966,000 ML with the dam at the point of failure).

In accordance with the Queensland Regulatory program for dam spillway upgrades, a further upgrade of Wivenhoe Dam is scheduled to occur prior to 2035. Would it have made any difference to the current flood event?

Was it relevant to this event i.e any di? Would water have been released through it? Would the Flood Mitigation Manual decision levels changed?

Such an upgrade is only for dam security for PMF not flood mitigation. Changed some wording to reflect this.

Wivenhoe Dam is in excellent condition with four Comprehensive Dam Safety reviews undertaken in the last 14 years, the latest in 2010.

2 WIVENHOE DAM FLOOD MITIGATION AND FLOOD OPERATIONS

2.1 What were the benefits provided by Wivenhoe Dam during the current event?

The following graphs demonstrate the significant benefits of Wivenhoe Dam in mitigating the current flood event, with reductions in flood peak of up to 2.5 metres in the City area and up to 5.5 metres in the Moggill area further upstream.

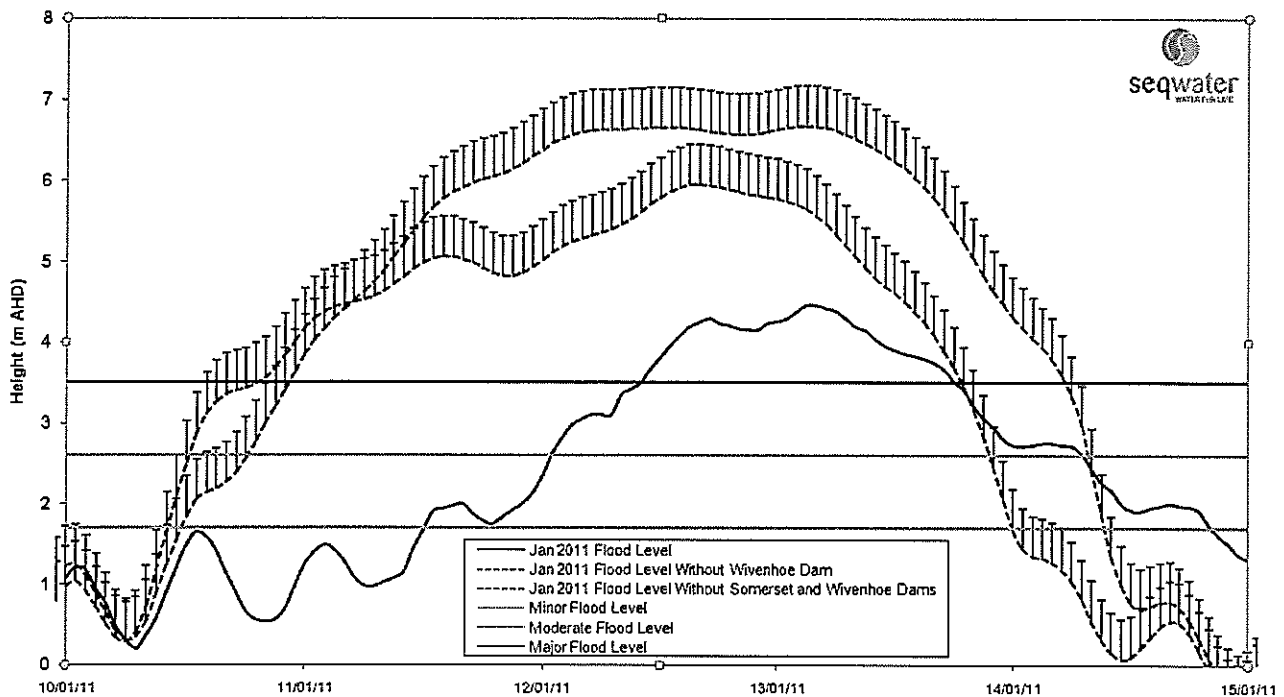
This equates to significant reduction in the potential for loss of life as well as saving in damages in the order of up to \$1.6 billion based on current damage curves. Up to 13,000 more properties would have been impacted by the event without the Dam. (Source: Flood Damage Tables provided to Seqwater by the Brisbane City Council).

The time at which flood levels remained elevated above major levels has also been reduced by up to 3 days by the dam. This has significant benefits to impact on the population of the city, property damage and the recovery operation.

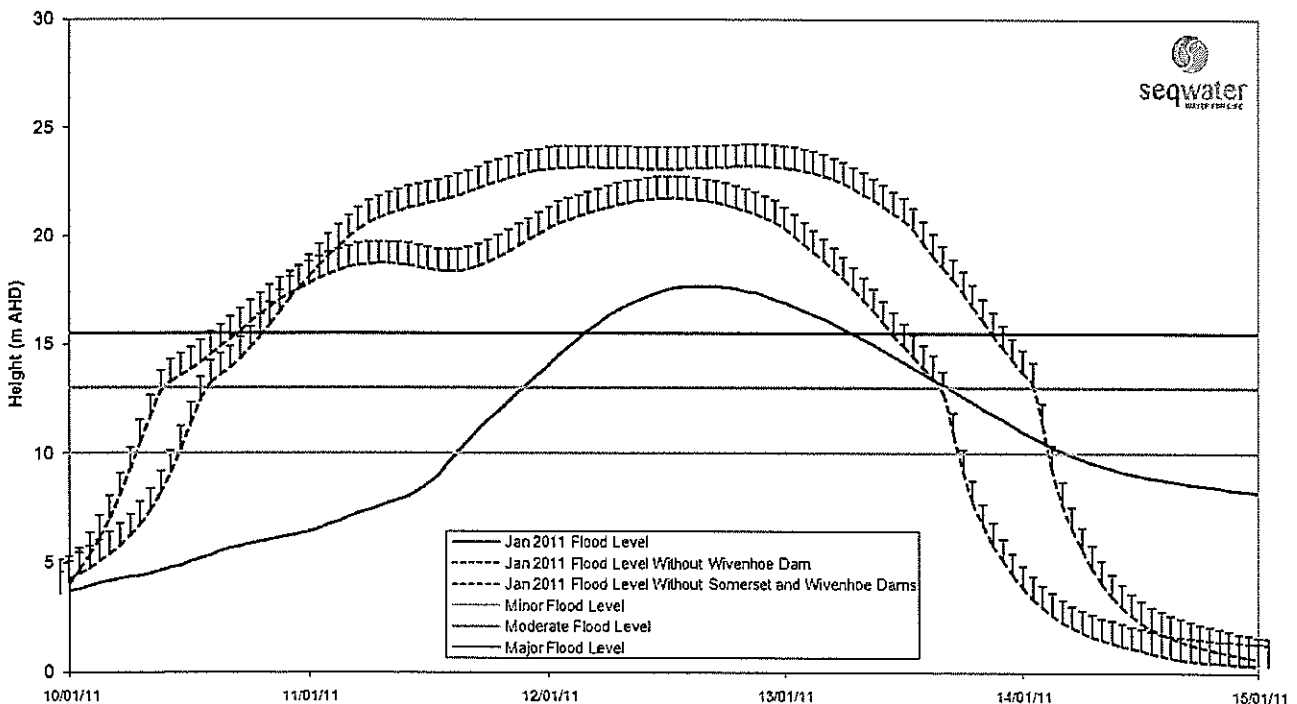
Depending on the nature of the event, the presence of Wivenhoe Dam could also potentially increase flood warning times to impacted areas. How these times may have been increased during the current event is presently difficult to quantify, but discussions will be held with BOM on this issue at a later date.

In addition, the strategy adopted to quickly close off releases once the peak in the dam had been reached and rain stopped falling certainly reduced the predicted flood peak by at least one metre in the lower Brisbane River area.

**JANUARY 2011 BRISBANE FLOOD
Assessment of Flood Levels at Brisbane City**



**JANUARY 2011 BRISBANE FLOOD
Assessment of Flood Levels at Moggill**



Blue line of graph – Breakdown the component of % of Wivenhoe Dam release and downstream inflows. Seqwater will undertake this work with the BoM but will take some time.

2.2 Why was Wivenhoe Dam only allowed to rise up to 191% and not 230%?

Wivenhoe Dam mitigates downstream flooding by storing incoming flood water during a rainfall event and releasing these waters at a reduced flow rate downstream to reduce flood impacts. The timing of the releases is also manipulated so that the aim is for outflows from the dams to impact on downstream areas only after the peak inflows from the downstream major tributaries have passed. However this aim cannot always be achieved in practice. This is because some large floods, such as the one currently being experienced, have the potential to overflow the dam's flood storage compartment. **Should this occur, the dam would fail and the resulting damage and loss of life would be at least 100 to 1000 times greater than that currently being experienced.**

Therefore the basis of all flood operation decision making is to ensure the dam never fails. This is the reason that the dam's flood storage compartment would never be intentionally fully filled as any additional inflows after this point would result in a dam failure. At any one time, there will always be uncertainty about what rain is going to occur. Hence, we cannot use all of the flood capacity as we would not be able to release sufficient water to cater for large inflows.

Why didn't we let the first fuse plug go? Why not 200%? Why not 205%?

Dam is rock core etc. See below reasons for not allowing fuse plugs to go.

2.3 What is the role of the erodible fuse plug embankments?

Another factor that impacts on flood release decision making in large events are the levels at which the erodible fuse plugs are triggered. The fuse plugs act as a safety valve to rapidly increase dam outflows if the structural safety of the dam is in danger. Loss of one or more fuse plugs severely limits the ability of the dam to mitigate the effects of future flood events that may occur prior to the fuse plug or plugs being reinstated. Reinstatement of a fuse plug following an event would take a minimum of 4 to 6 months and would require an extended period of relatively dry weather.

2.4 Why weren't pre-emptive releases undertaken prior to the start of the flood event?

In the 25 days leading up to the current event, three flood events impacting on Wivenhoe Dam were experienced, with gate releases being made on all but five of those days. The total outflow from these events was around 700,000ML.

Detail specific impacts – which bridges knocked out, how long people isolated, which towns impacted, how many people impacted? This will take quite some time to collate even in terms of times bridges are out, we are still in the middle of a release. Numbers of people will come from council but these details cannot be collated at the moment. Will attempt to do in the next week or so during meetings planned with Councils over the next few weeks.

During these events, requests were received from Councils and residents impacted by bridge closures downstream of the dam to curtail releases as soon and as quickly as possible. Additionally the 2 January end date of the flood event prior to the current event meant that significant drain down of the dam prior to the onset of the current event that commenced on 6 January 2011, was not possible without major bridge inundation downstream of the dam and without exceeding minor flood levels in the lower Brisbane River.

Additionally, a flood event was also experienced in October 2010 that resulted in a release of 750,000ML from the dam. Accordingly drain down below the dam full supply level prior to the start of the first December event would not have been possible without significant bridge inundation and without exceeding minor flood levels (as defined by BOM and BCC) in the lower Brisbane River.

Regardless, significant drain down prior to the current event would have had little impact on the peak level in Wivenhoe Dam as shown in the table below. The reason for this is that this total event inflow volume of 2,600,000 ML is well in excess of the useable flood storage combined with the available water supply storages shown in the table.

The specific impact on the Lower Brisbane River of these reduced dam levels requires the use of a complex hydraulic model. The results of this modelling would still contain a degree of uncertainty as illustrated by the difficulties in estimating the final flood peak in Brisbane during the event. This is because the rapid closure of the gates after peak inflow was

achieved resulted in significant water level reductions downstream and this is difficult to model accurately.

What are the assumptions in terms of the releases at different levels? Don't fully understand, can address at a later date.

JANUARY 2011 FLOOD			
Starting Level		Peak Height	Capacity
%	m AHD	m AHD	%
100	67.0	74.97	191
95	66.5	74.93	191
90	65.8	74.88	190
75	64.0	74.63	187
50	60.0	74.11	180

- # It should be noted that the possible reductions shown above are based up a unique dual peaked flood hydrograph with a volume of about 2,600,000 ML which occurred during this event. A hydrograph with the same volume but a different distribution could result in a significantly lower reduction in peak water levels.
- Flood operations at the dam are also highly dependent upon the flood inflow volume and a slight variation in the flood volume could significantly reduce the benefits associated with draining down the dam prior to a flood event.

2.5 Is there a detailed record of the events associated with the current flood?

A preliminary report has been prepared and is attached to this briefing.

3 THE MANUAL OF FLOOD MITIGATION AT WIVENHOE DAM AND SOMERSET DAM

3.1 What is the Manual of Flood Mitigation and how was it developed?

The Manual of Flood Mitigation for Wivenhoe and Somerset dams in its current form was developed in 1992 during an extensive hydrological study of the Brisbane and Pine Rivers catchments by DPI, Water Resources. The final reports were subject to extensive internal review by the Water Resources Group before being reviewed by an independent review panel comprising Professor Colin Apelt, Head of Department, Department of Civil Engineering, University of Queensland and Mr Eric Lesleighter, Principal Hydraulic Engineer and Chief Engineer Water Resources, Snowy Mountains Engineering Corporation. Subsequently, the Manual was extensively reviewed during the Brisbane Valley Flood Damages Minimisation Study in 2006, with the latest comprehensive review of the Manual undertaken in 2009. Both of these reviews have included expert review panels comprising key stakeholders, with the most recent review involving representatives from DERM, BOM, BCC and SunWater.

Can we attach CV of experts? Note Colin Apelt chaired the Brisbane Flood Study and chairs the current Brisbane Flood taskforce. Not available at the moment and would not be the CV when he was involved in 1992.

The Manual of Flood Mitigation is prepared by Seqwater as the owner of the dam and approved and gazetted by the Chief Executive of DERM in accordance with the Water Supply Act 2008. The manual defines flood objectives procedures; roles and responsibilities; and staffing and operational requirements for flood events impacting on Wivenhoe and Somerset dams.

3.2 What is contained in the Manual?

The primary objectives of the procedures contained in the Manual are, in 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 primarily, this involves minimising inundation of the seven bridges below the dam upstream of Moggill);
- 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.

During an event, the operation of the dam transitions between the following four operating strategies depending of the circumstances at the time. These procedures associated with these strategies are explained in detail in the Manual.

- **Strategy W1** – Primary consideration is given to Minimising Disruption to Downstream Rural Life.
- **Strategy W2** – Transition Phase moving from Minimising Disruption to Protecting Downstream Urban Areas.
- **Strategy W3** – Primary consideration is to Protect of Urban Areas from Inundation.
- **Strategy W4** – Primary consideration is to protecting the structural safety of the Dam.

In addition to these strategies, historical records show that there is a significant probability of two or more flood producing storms occurring in the Brisbane River system within a short time of each other. Accordingly for each flood event, the aim is always to empty stored floodwaters within seven days after the flood peak has passed through the dams.

4 REGULATORY CONTEXT (Provided by Peter Allen and unedited)

These are contained in the Flood Mitigation Manual (manual) approved under sections 370 to 374 of the *Water Supply (Safety and Reliability) Act 2008*. The Chief Executive Officer (CEO) of DERM (or his delegate) approves the manual, and the approval is notified in the Queensland Government Gazette. Approval can be for a period of up to five years, after which the approval needs to be renewed. There are no decision-making criteria specified in the Act for the CEO to take into account when approving the manual.

The manual for the dams requires, amongst other matters:

1. Flood operations to be conducted in accordance with manual's provisions. (There is an approval process specified in the manual, if Seqwater considers a different flood release strategy is desirable to deal with a particular flood event. This was not used in the January 2011 flood event)
2. Flood operations to be under the control of CEO-approved engineers (who are highly qualified and experienced)
3. Annual reporting on the preparedness and status of the flood control system for flood operations, and the training of the personnel who manage the flood events.
4. Reporting on the flood operations during flood events.
5. Reviews after flood events such as the January 2011 event. For this flood event, the Queensland Government engaged Mr Brian Cooper, an independent consulting engineer, to review compliance with the manual. Mr Cooper concluded (Attachment??): "...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 the final report or other appropriate reference??)

See Peter Allen

The manual is separate from a draft communication protocol (Insert name) between the Local, State and Commonwealth government agencies that are affected by the dams' flood operations. This protocol is not binding on the parties to it is not subject to regulatory approval/review.

Some DERM staff, because of their specialist skills, work in the Flood Operations Centre that Seqwater activates to manage such events. None of them are involved in any of the regulatory decisions concerning the dams or are members of the work unit (Office of the Water Supply Regulator) which undertakes the CEO's regulatory functions.

5 COMPLIANCE WITH THE MANUAL

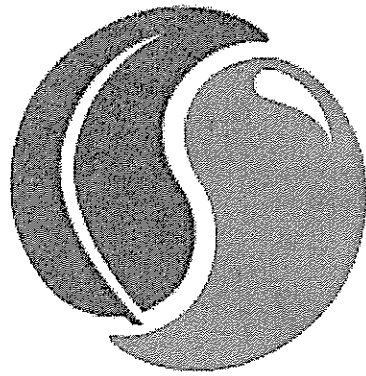
(To be provided)

6 SEQWATER REPORT

It is recommended that the process and content for reports required for this event be:

- In the short term, utilise this report attached to this briefing note as the basis for communications and discussion.
- Prepare any Interim Reports as agreed to provide information and input as required.
- Seqwater prepare a Comprehensive Report as per the existing regulatory requirements of the Act and the gazetted manual and any requirements of the Dam Safety Regulator. This would be done within 6 weeks of the closure of the current event as per the manual. This timeframe is subject to any new mobilisation of the Flood Operations Centre. The Table of Contents would include:
 - Introduction
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 - Improvements in data collection systems, practices and processes.
 - improvements by interacting agencies
 - Review of factors impacting on the protection of urban areas
 - Recommendations & Conclusions
- The report would then be reviewed by the Dam Safety Regulator in conjunction with any peer review they require. The review should cover:
 - Were the provisions of the manual complied with?
 - What improvements to either facilities e.g. stream gauges, or work practices, are desirable to improve Seqwater's ability to predict inflows into the dams.
 - Are improvements to either Seqwater's facilities or work practices desirable to improve Seqwater's ability to manage events? For example, investigations to raise the dam to improve its flood storage capacity, If so, what are they and their implications

- Are changes to the facilities or work practices of other organisations desirable to improve Seqwater's abilities to manage these events? If so, what are they and their implications? (For example, would it be worth funding Brisbane River crossing upgrades so that floodwater could be released faster, while not adversely affecting access to properties--or maybe alternative strategies e.g. resupply operations could be put in place to achieve similar outcomes?)
- Given the manual's order of priorities i.e. protection of the dam etc, are any changes in the flood release strategies for either dam desirable? If so, what are they, and their implications
- Based on this review, a review of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam would occur utilising an expert panel of review including representatives of DERM, Seqwater, BoM, affected Local Governments and other stakeholders as necessary.



seqwater
WATER FOR LIFE

**JANUARY 2011 FLOOD
EVENT**

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1 INTRODUCTION

Wivenhoe Dam was constructed by the Queensland Government between 1977 and 1984. The dam is a 56 m AHD high and 2.3 kilometre long earth and rock embankment separated into two parts by a concrete gravity spillway. The spillway is controlled by 5 radial gates, each 12.0 metres wide by 16.0 m AHD high. Two saddle dam embankments are located on the left side of the reservoir.

The dam spillway capacity was upgraded in 2005. This was done primarily through the construction of a 164 metre wide secondary spillway through the right abutment of the existing dam. This spillway contains three erodible earth fill fuse plug embankments that are initiated at different dam levels in excess of EL 75.6.

The dam has two main functions by providing:

- A 1,165,000 ML storage at full supply level (FSL EL 67.0) providing an urban water supply for Brisbane and surrounding areas;
- Flood mitigation in the Brisbane River by providing a dedicated flood storage volume of 1,450,000 ML up to EL77 (this flood level was increased as part the 2005 upgrade to allow a water level of EL80m and a temporary flood storage volume of 1,966,000 ML with all fuse plugs initiated and the dam at the point of failure).

The dam has an EXTREME hazard classification under ANCOLD guidelines because of the significant development downstream in the Brisbane and Ipswich metropolitan areas, with the population at risk in the event of a dam failure numbering in the hundreds of thousands.

In accordance with the Queensland Regulatory program for dam spillway upgrades, a further upgrade of Wivenhoe Dam is scheduled to occur prior to 2035 to enable the dam to safely pass the Probable Maximum Flood. This work will involve the reconstruction of Saddle Dam 2 as a fuse plug spillway.

Wivenhoe Dam is in excellent condition. Comprehensive Dam Safety reviews undertaken in accordance with ANCOLD guidelines have been undertaken in 1997 (Gutteridge, Haskins & Davey Pty Ltd), 2003 (Wivenhoe Alliance), 2006 (NSW Department of Commerce), 2009 (GHD) and September 2010 (Seqwater). The reports concluded that the design of the dam is in accordance with modern day standards and that there are no significant outstanding design or construction issues that require investigation.

2 WIVENHOE DAM FLOOD MITIGATION AND FLOOD OPERATIONS

2.1 Flood Mitigation

The Brisbane River catchment covers an area of approximately 14,000 square kilometres of which about half is below Wivenhoe Dam. Maximum overall flood mitigation effect is achieved by operating Wivenhoe Dam in conjunction with Somerset Dam. Although Somerset and Wivenhoe Dam reduce flooding in Brisbane City, major flooding can still occur. The Lockyer-Laidley Valley drains into the Brisbane River through Lockyer Creek that enters the Brisbane River just downstream of Wivenhoe Dam near Lowood. Another major tributary, the Bremer River, flows into the Brisbane River at Moggill. Wivenhoe Dam has no control over inflows into the Brisbane River from both these major tributaries.

Wivenhoe Dam mitigates downstream flooding by storing incoming flood water during a rainfall event and releasing these waters at a reduced flow rate downstream to minimise flood impacts. The timing of the releases is also manipulated so that the aim is for outflows from the dams to impact on downstream areas only after the peak inflows from the downstream major tributaries have passed. However, this aim cannot always be achieved in practice. This is because some large floods, such as the one currently being experienced, have the potential to overflow the dam's flood storage compartment. **Should this occur, the dam would fail and the resulting damage and loss of life would be at least 100 to 1000 times greater than that currently being experienced.**

Therefore the basis of all flood operation decision making is to ensure the dam never fails. This is the reason that the dam's flood storage compartment would never be intentionally fully filled as additional inflows after this point would result in a dam failure. Similarly, there will be uncertainty on future rainfall that could occur which could not be releases if there was insufficient flood storage which could not be stored or released.

Another factor that impacts on flood release decision making in large events are the levels at which the erodible fuse plugs are triggered. Loss of one or more fuse plugs severely limits the ability of the dam to mitigate the effects of future flood events that may occur prior to the fuse plug or plugs being reinstated. Reinstatement of a fuse plug following an event would take a minimum of 4 to 6 months and would require an extended period of relatively dry weather.

2.2 Flood Operations

A real time flood monitoring and forecasting system has been established in the Wivenhoe and Somerset Dam catchments. This system employs radio telemetry to collect, transmit and receive rainfall and stream flow information. The system consists of around 230 field stations that automatically record rainfall and/or river heights at selected locations in the dam catchments. Most of these field stations are owned by Seqwater with the remainder belonging to other agencies.

The rainfall and river height data is transmitted to Seqwater's Flood Operations Centre in real time. Once received in the Flood Operations Centre, the data is processed using a Real Time Flood Model (RTFM) to estimate likely dam inflows and evaluate a range of possible inflow scenarios based on forecast and recorded rainfall in the dam catchments. The RTFM is a suite of hydrologic computer programs that utilise the real time data to assist in the operation of the dams during flood events.

Seqwater engineers use the RTFM for flood monitoring and forecasting during flood events to operate the dams in accordance with a Manual of Flood Mitigation (the origin of and objectives and procedures contained in the Manual of Flood Mitigation are explained in the following section of this document). Releases of water from the dams are optimised to minimise the impacts of flooding in accordance with the objectives and procedures contained in a Manual of Flood Mitigation.

The RTFM and data collection network performed well During the January 2011 event, with no failures experienced that compromised the ability of Seqwater to operate the dam.

Inconsistent with statement on page 8? No, in general the system worked well, the fact that a high intensity event could happen where we do not have stations can occur regardless of how many you have, it could happen over the lake and the only way to really monitor is lake rise.

3 MANUAL OF FLOOD MITIGATION FOR WIVENHOE AND SOMERSET DAMS

The Manual of Flood Mitigation for Wivenhoe and Somerset Dams, in its current form, was developed in 1992 during an extensive hydrological study of the Brisbane and Pine Rivers catchments by DPI, Water Resources. The final reports were subject to extensive internal review by the Water Resources Group before being reviewed by an independent review panel comprising Professor Colin Apelt, Head of Department, Department of Civil Engineering, University of Queensland and Mr Eric Lesleighter, Principal Hydraulic Engineer and Chief Engineer Water Resources, Snowy Mountains Engineering Corporation.

Subsequently, the Manual was extensively reviewed during the Brisbane Valley Flood Damages Minimisation Study in 2006, with the latest comprehensive review of the Manual undertaken in 2009. Both of these reviews have included expert review panels comprising key stakeholders, with the most recent review involving representatives from DERM, BOM, BCC and SunWater.

The Manual of Flood Mitigation is prepared by Seqwater as the owner of the dam and approved and gazetted by the Chief Executive of DERM in accordance with the Water Supply Act 2008. The manual defines flood objectives procedures; roles and responsibilities; and staffing and operational requirements for flood events impacting on Wivenhoe and Somerset dams.

The primary objectives of the procedures contained in the flood manual are, in 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 primarily, this involves minimising inundation of the seven bridges below the dam upstream of Moggill);
- 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.

During an event, the operation of the dam transitions between the following four operating strategies depending of the circumstances at the time. These procedures associated with these strategies are explained in detail in the Manual.

- **Strategy W1** – Primary consideration is given to Minimising Disruption to Downstream Rural Life. Under this strategy, the predicted water level is below 68.50 m AHD and the maximum release is 1,900m³/s.
- **Strategy W2** – Transition Phase moving from Minimising Disruption to Protecting Downstream Urban Areas. Under this strategy, the water level is predicted to be between 68.5 and 74.0 m AHD and the maximum release is less than 3,500m³/s. River flows at Moggill? Not releases? True, but we have just inserted straight from the manual rather than add too much detail, but it is true that there is a relationship to Moggill.
- **Strategy W3** – Primary consideration is to Protect of Urban Areas from Inundation. Under this strategy, the water level is predicted to be between 68.5 and 74.0 m AHD but the maximum release is less than 4,000m³/s. River flows at Moggill? Not releases? True, but we have just inserted straight from the manual rather than add too much detail, but it is true that there is a relationship to Moggill.
- **Strategy W4** – Primary consideration is to protecting the structural safety of the Dam. Under this strategy, the water level is predicted to exceed 74.0 m AHD and there is no limit to the maximum release. Consideration is given to managing flood releases to avoid fuse plug initiation if at all possible as this would compromise flood mitigation capacity in the short to medium term.

In addition to these strategies, historical records show that there is a significant probability of two or more flood producing storms occurring in the Brisbane River system within a short time of each other. Accordingly for each flood event, the aim is always to empty stored floodwaters within seven days after the flood peak has passed through the dams.

4 JANUARY 2011 FLOOD EVENT

4.1 Background

In the 25 days leading up to the current event, three flood events impacting on Wivenhoe Dam were experienced, with gate releases being made on all but five of those days. The total outflow from these events was around 700,000ML. The details of these events are as follows:

EVENT	EVENT START DATE	EVENT END DATE	VOLUME RELEASED (ML)
1	13/12/2010	16/12/2010	70,000
2	17/12/2010	24/12/2010	150,000 Should this be 370,000 as per teleconference?
3	26/12/2010	02/01/2011	470,000

Leave as 150,000 as we believe this is correct, will confirm if 350,000 was based on some other numbers.

During these events, requests were received from Councils and residents impacted by bridge closures downstream of the dam to curtail releases as soon and as quickly as possible.

Additionally the 2 January end date of the flood event prior to the current event meant that significant drain down of the dam prior to the onset of the current event that commenced on 6 January 2011, was not possible without major bridge inundation downstream of the dam and without exceeding minor flood levels in the lower Brisbane River.

Additionally, a flood event was also experienced in October 2010 that resulted in a release of 750,000ML from the dam. Accordingly drain down below the dam full supply level prior to the start of the first December event would not have been possible without significant bridge inundation and without exceeding minor flood levels (as defined by BOM and BCC) in the lower Brisbane River.

Regardless, significant drain down prior to the current event would have had little impact on the peak level in Wivenhoe Dam as shown in the table below. The reason for this is that this total event inflow volume of 2,600,000 ML is well in excess of the useable flood storage combined with the available water supply storages shown in the table.

The specific impact on the Lower Brisbane River of these reduced dam levels requires the use of a complex hydraulic model. The results of this modelling would still contain a degree of uncertainty as illustrated by the difficulties in estimating the final flood peak in Brisbane during the event. This

is because the rapid closure of the gates after peak inflow was achieved resulted in significant water level reductions downstream and this is difficult to model accurately.

JANUARY 2011 FLOOD			
Starting Level		Peak Height	Capacity
%	m AHD	m AHD	%
100	67.0	74.97	191
95	66.5	74.93	191
90	65.8	74.88	190
75	64.0	74.63	187
50	60.0	74.11	180

It should be noted that the possible reductions shown above are based up a unique dual peaked flood hydrograph with a volume of about 2,600,000 ML which occurred during this event. A hydrograph with the same volume but a different distribution could result in a significantly lower reduction in peak water levels.

Flood operations at the dam are also highly dependent upon the flood inflow volume and a slight variation in the flood volume could significantly reduce the benefits associated with draining down the dam prior to a flood event.

Assumptions for model? The model was developed by the Expert Panel as part of the Manual review in 2009, we did not include this in the report as we should check with the panel first.

Is it a dual or triple peak? Should we explain in detail why is it so unique? It is a dual peak, we have removed unique as all are unique.

4.2 Event Decision Making

The following table contains a summary of the key decisions points associated with the current event. As at 16 January 2011, the event remains in progress.

Weather forecasts were consistently less than actual. Emphasise reliance on BOM advice.

Need to specify BOM forecasts and actual rainfall experienced for each time step.

We will need to do significant investigation into this and discussions with the BoM before we make any claims regarding forecast accuracy. The BoM issues a variety of forecasts both qualitative and quantitative.

DATE AND TIME	FLOOD EVENT MILESTONE
07:00 06/01/2011 (Thursday)	Rainfall is experienced in the dam catchments that will result in flood releases, however Wivenhoe releases are delayed for 24 hours to allow Lockyer Creek flood flows to pass downstream and prevent the isolation of the community dependent of Burtons Bridge. The forecast is for 150mm

	over the next 24 hours.
15:00 07/01/2011 (Friday)	Wivenhoe releases commence, with operational strategy W1 in use. Rainfall for the next four days is estimated to be between 140mm and 300mm, with a forecast for rain easing on Tuesday 11 January 2011. All bridges downstream of the dam with the exception of Fernvale Bridge and Mt Crosby Weir Bridge are expected to be inundated for a number of days.

06:00 09/01/2011 (Sunday)	Moderate to heavy rain periods forecast until Tuesday, but both Wivenhoe and Somerset dam levels were falling slowly, with Somerset at 1.27 m AHD above FSL and Wivenhoe 1.58 m AHD above FSL.
15:30 09/01/2011 (Sunday)	Following significant rain during the day a meeting of Duty Engineers is held. The QPF issued at 16:00 indicates 50mm to 80mm over the next 24 hours. Based on this forecast, it is anticipated that dam levels can be held to a maximum of 3.50 m AHD above FSL in Somerset and 5.5 m AHD above FSL in Wivenhoe. However, by 19:00 it was apparent that both Fernvale Bridge and Mt Crosby Weir Bridge would be inundated by the combined dam releases and Lockyer Creek flows and that the operational strategy had progressed to W2.
06:30 10/01/2011 (Monday)	Rainfall continued during the night and based on rainfall on the ground it was apparent the operational strategy had progressed to W3.
06:30 10/01/2011 (Monday)	Rainfall continued during the day but based on rainfall on the ground, operational strategy W3 remained in use. However it was apparent that any further heavy rain would result in progression of the operational strategy to W4.
08:00 11/01/2011 (Tuesday)	Rainfall continued during the night with isolated heavy falls in the Wivenhoe Dam catchment area and based on rainfall on the ground it was apparent the operational strategy would soon progress to W4 with Wivenhoe Dam exceeding 8.00 m AHD above FSL. The objective now was to limit outflows and subsequent flood damage to urban areas, while ensuring the structural safety of the dam.
11:00 11/01/2011 (Tuesday)	Rapid inflows were experienced in Wivenhoe Dam, with the dam rising almost a metre in eight hours. Releases were increased until the dam level stabilised in accordance with Strategy W4. Computer models were not reflecting actual dam inflows due to intense point rainfalls in the immediate catchment around the dam. Falls are estimated to be similar to those experienced at both Toowoomba and Upper Lockyer the previous day and are falling outside and between existing rain gauges.
21:00 11/01/2011 (Tuesday)	Wivenhoe Dam peaked. Peak release of 7450 cumecs with a level of 0.7 metres below fuse plug trigger.
22:00 11/01/2011	Wivenhoe Dam releases were closed off as quickly as possible over the

(Tuesday)	next 11 hours, while ensuring water levels in the dam did not rise further and initiate a fuse plug embankment.
08:00 12/01/2011 (Wednesday)	Minimum possible release level reached, with inflows matching outflows. Further reductions in release rate would likely cause the dam level to rise.
21:00 13/01/2011 (Thursday)	The 7 day dam drain down is commenced as Lockyer Creek and Bremer River peaks pass the Lower Brisbane area. Maximum release target is the limit of damaging floods in Brisbane being 3500 cumecs.
09:00 17/01/2011 (Monday)	Drain down continues, with released expected to cease on Wednesday 19 January 2011 unless further rainfall is experienced.

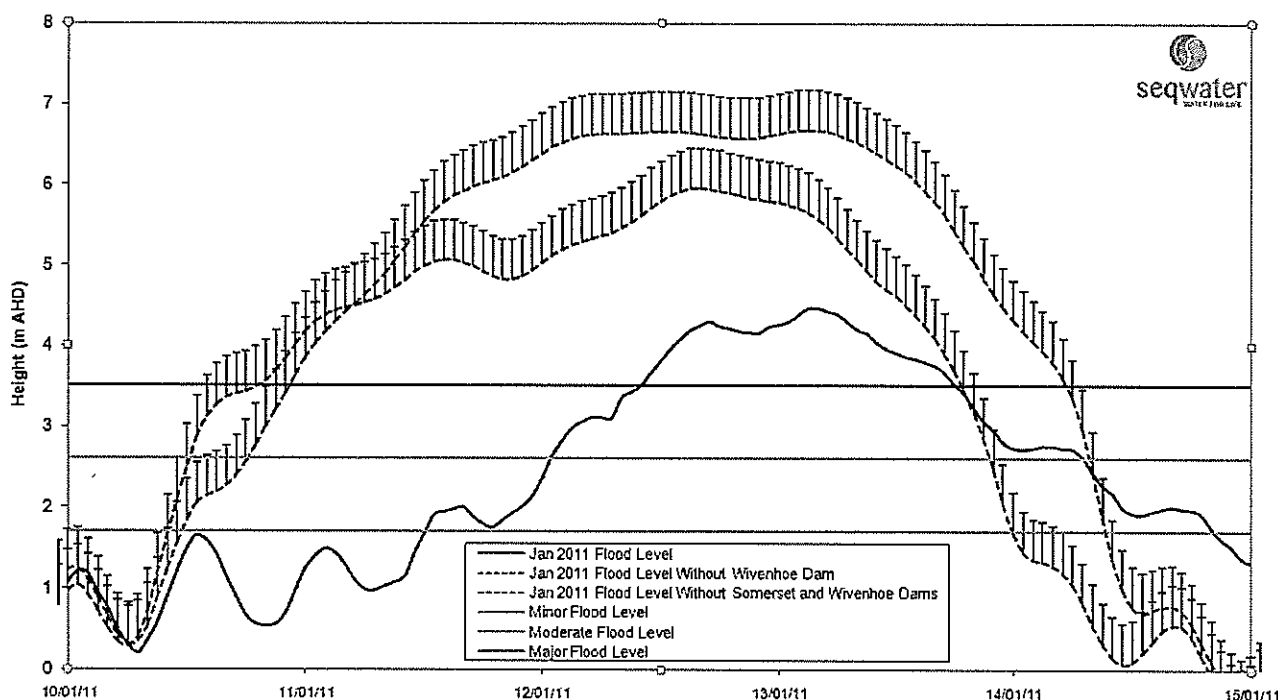
4.3 Flood Mitigation Benefits of Wivenhoe Dam

The following graphs demonstrate the significant benefits of Wivenhoe Dam in mitigating the current flood event, with reductions in flood peak of up to 2.5 metres in the City area and up to 5.5 metres in the Moggill area further upstream.

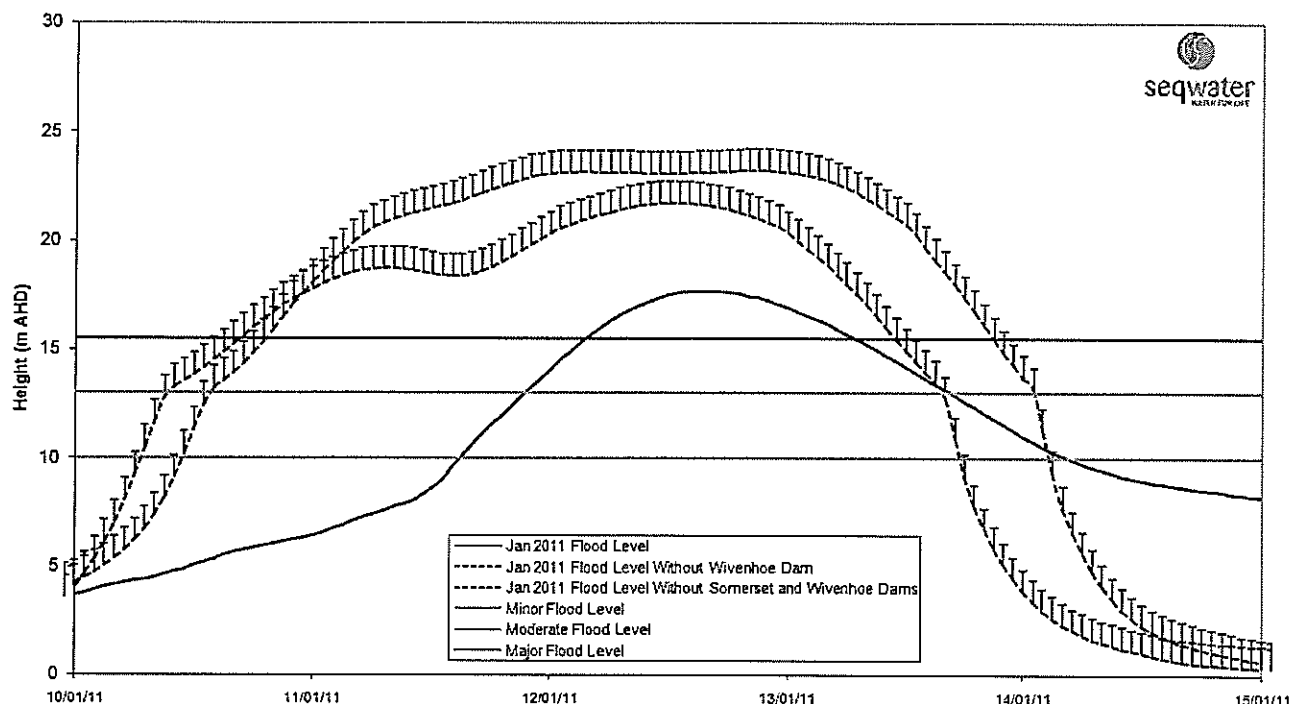
This equates to significant reduction in the potential for loss of life as well as saving in damages in the order of up to \$1.6 billion based on current damage curves. Up to 13,000 more properties would have been impacted by the event without the Dam.

The time at which flood levels remained elevated above major levels has also been reduced by up to 3 days by the dam. This has significant benefits to impact on the population of the city, property damage and the recovery operation.

JANUARY 2011 BRISBANE FLOOD
Assessment of Flood Levels at Brisbane City



JANUARY 2011 BRISBANE FLOOD Assessment of Flood Levels at Moggill



The strategy adopted to quickly close off releases once the peak in the dam had been reached and rain stopped falling certainly reduced the predicted flood peak by at least one metre in the lower Brisbane River area. This notion is supported by BOM.

Blue line of graph – Breakdown the component of % of Wivenhoe Dam release and downstream inflows. As per briefing note comment.

5 EVENT REVIEW

Under the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam that are approved and gazetted by the Department of Environment and Resource Management, there is a regulatory requirement that a report must be prepared as per the below wording:

"Seqwater must prepare a report after each Flood Event. The report must contain details of the procedures used, the reasons therefore and other pertinent information. Seqwater must forward the report to the Chief Executive within six weeks of the completion of the Flood Event."

Such a report was prepared for the flood events of February and March 2010 and copies are available. A copy of the Table of Contents of that report is included as Appendix 1. For this event, the report would be a comprehensive summary of all procedures, actions, outcomes and processes during the event.

It is recommended that the process and content for reports required for this event be:

- In the short term, utilise this report attached to this briefing note as the basis for communications and discussion.
- Prepare any Interim Reports as agreed to provide information and input as required.
- Seqwater prepare a Comprehensive Report as per the existing regulatory requirements of the Act and the gazetted manual and any requirements of the Dam Safety Regulator. This would be done within 6 weeks of the closure of the current event as per the manual. This timeframe is subject to any new mobilisation of the Flood Operations Centre. The Table of Contents would include:
 - Introduction
 - Flood Event Summary
 - Mobilisation and Staffing
 - Event Rainfall
 - Inflow and Release Details
 - Data Collection System Performance
 - Data Analysis Performance
 - Communication
 - Flood Management Strategies and Manual Compliance
 - Improvements in data collection systems, practices and processes.
 - improvements by interacting agencies

- Review of factors impacting on the protection of urban areas
 - Recommendations & Conclusions
- The report would then be reviewed by the Dam Safety Regulator in conjunction with any peer review they require. The review should cover:
 - Were the provisions of the manual complied with?
 - What improvements to either facilities e.g. stream gauges, or work practices, are desirable to improve Seqwater's ability to predict inflows into the dams.
 - Are improvements to either Seqwater's facilities or work practices desirable to improve Seqwater's ability to manage events? For example, investigations to raise the dam to improve its flood storage capacity, If so, what are they and their implications.
 - Are changes to the facilities or work practices of other organisations desirable to improve Seqwater's abilities to manage these events? If so, what are they and their implications? (For example, would it be worth funding Brisbane River crossing upgrades so that floodwater could be released faster, while not adversely affecting access to properties--or maybe alternative strategies e.g. resupply operations could be put in place to achieve similar outcomes?)
 - Given the manual's order of priorities i.e. protection of the dam etc, are any changes in the flood release strategies for either dam desirable? If so, what are they, and their implications
- Based on this review, a review of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam would occur utilising an expert panel of review including representatives of DERM, Seqwater, BoM, affected Local Governments and other stakeholders as necessary.

Appendix A

FINAL REPORT – FLOOD EVENTS AT WIVENHOE, SOMERSET AND NORTH PINE DAMS FOR FEBRUARY AND MARCH 2010

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Suzie Emery

From: Bradley John [John.Bradley [REDACTED]]
Sent: Sunday, 16 January 2011 9:57 PM
To: Dan Spiller
Subject: RE: Talking points_Wivenhoe Dam releases

Follow Up Flag: Follow up
Flag Status: Flagged

Thanks Dan - this is generally clear - suggest make the preface to the ANCOLD standard answer clearer, so the TPs reflect what the difference from the standard was

thanks
John B

From: Dan Spiller [mailto:Daniel.Spiller [REDACTED]]
Sent: Sunday, 16 January 2011 9:26 PM
To: Bradley John
Subject: Talking points_Wivenhoe Dam releases

For review in case you are still at it.

Dan

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Suzie Emery

From: Elaina Smouha [elainamir [REDACTED]]
Sent: Sunday, 16 January 2011 10:14 PM
To: john.bradley [REDACTED]
Cc: Barry Dennien; Dan Spiller; WaterGridMedia; debbie.best [REDACTED]; pborrows
Subject: Cabinet in confidence - Ministerial brief - Flood event and Wivenhoe Dam
Attachments: Letter_from_Stephen_Robertson_MP_RE_Release_of_Water_from_Key_Storages[1].pdf; Letter_to_Minister_-_flood_management[1].docx; BrianCooperCV09122010.pdf; Brian Cooper - final report.docx; Brian Cooper - final report attachment.xlsx; Seqwater Ministerial_Briefing_Note_January_17_2011_Final_Draft_for_distribution[1].docx; Seqwater Jan_2011_Flood_Event_Ver_1_draft_for_distribution[1].docx; FINAL Ministerial_Brief_-_Wivenhoe_Operations[3].docx; Talking points_Wivenhoe Dam releases.docx

John

Attached is the Ministerial Brief and accompanying attachments for the Emergency Cabinet meeting scheduled on 17 January 2011.

((Regards

Elaina

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Director, Governance and Regulatory Compliance
SEQ Water Grid Manager
[REDACTED]

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((

12 January 2011

Mr. Barry Dennien
CEO, SEQ Water Grid Manager
PO Box 16205
City East QLD 4002

Dear Barry,

This letter report:

- presents my final findings on a review of the operation of Wivenhoe Dam (including controlled releases) for compliance against the Flood Mitigation Manual for the period 12 December 2010 to date (Flood Event), and;
- provides advice on the prudence and appropriateness of the decisions and actions taken during the Flood Event regarding the operation of Wivenhoe Dam in light of the Flood Mitigation Manual's requirements and the circumstances of the Flood Event.

The report follows on from my preliminary report sent to you earlier today. The findings and advice are provided on the basis of information provided by SEQ Water Grid Manager which comprised the Flood Mitigation Manual and Technical Situation Reports. The latter were daily (sometimes twice daily) reports for the subject period. They gave a log of rainfall over the dam catchments and the downstream river (Lockyer Ck. and Bremer R.) catchments; inflows to Somerset and Wivenhoe Dams; storage levels; releases from the dams; details of the operation of gates and other outlets (gate openings/discharges); proposed changes in operating strategies and impacts on the various access crossings downstream of Wivenhoe Dam. In reviewing the Technical Situation Reports, I prepared a spreadsheet (see separate attachment of Excel spreadsheet *Tech Reports – Summary*, summarising the reports so that a timeline of the Flood Event could be seen at a glance. This provided a good overview of the Flood Event as it unfolded and showed what information may or may not have been included in a particular report. The Queensland Director Dam Safety (Water Supply) informed me that the Flood Operation Logs contain much more detailed information including details of the communications that were carried out and some of the more detailed information that is not necessarily included in the Technical Situation Reports. I have been provided with a draft of the *"Protocol for the Communication of Flooding Information for the Brisbane River Catchment – Including Floodwater Releases from Wivenhoe and Somerset Dams"* developed in October/November last year and currently being used. The Technical Situation Reports appear to have been an outcome of that Protocol.

The various requirements and required actions detailed in the Flood Mitigation Manual are summarised in the Table given in Attachment A. The Table also gives my comments (where appropriate) on whether there is evidence from the information presented to me, that there is satisfactory compliance with these requirements and actions.

The main aspects of the Flood Mitigation Manual are the various strategies for operating Wivenhoe Dam and Somerset Dam as well as a number of requirements relating to flood operations personnel, flood preparedness and flood training.

At Wivenhoe Dam there are four main strategies for operating the dam (W1 to W4) and at Dam there are three (S1 to S3). These strategies are hierarchical and are based on a number of flood objectives. These in descending order of importance, are:

- 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 (FSL) at the conclusion of the Flood Event, and;
- Minimise impacts to riparian flora and fauna during the drain down phase of the Flood Event.

Normal procedures require a return to FSL within 7 days of the flood event peak passing through the dams so that the potential effects of closely spaced Flood Events can be allowed for.

It is apparent from the Technical Situation Reports that emphasis has been given to communicating changes in flood operations strategies with local authorities and the Bureau of Meteorology (BOM).

Until the last day or so, Wivenhoe Dam has been below EL74.0 and accordingly, would be operating under Strategy W1 i.e. make releases such that bridges downstream of the dam do not have to be closed prematurely. For a few days at the end of December and for the last day or so before yesterday's big rise, Strategy W2 would be in place (restrain releases from Wivenhoe Dam such that Brisbane River flows are maintained within the upper limit of non-damaging floods at Lowood (3,500 m³/s)). At various times during the Flood Event some of the downstream bridges have been closed. However, it is evident that action has been taken to vary dam releases such that various bridges could be re-opened as soon as possible. This appears to have been done in accordance with the flood operating strategies. The operations then moved onto Strategy W4 when the storage in Wivenhoe Dam reached about EL 73.5 (before the W4 trigger level of EL 74) when yesterday's heavy rain came on and it was assessed that there was a chance that the first (central) fuse plug could be triggered. It was then a matter of juggling the radial gate openings in an attempt to circumvent any fuse plug triggering. A graph of storage levels for Wivenhoe and Somerset Dams (from information taken from the Technical Situation Reports) showing the limits for the various Wivenhoe Dam flood strategies is given in Attachment A. It is apparent from this graph, that the appropriate flood operation strategies were adopted. The Technical Situation Reports indicate that proposed changes in strategy were appropriately communicated with appropriate authorities in accordance with the new Communication Protocol.

Summary:

The Technical Situation Reports comply with the requirements of the new Communication Protocol. However, I feel that there could be more consistency in the information presented. There seem to be gaps in information presented such as storage levels (see spreadsheet and graph in Attachment A). It would be useful to specify the minimum information required to be presented in the Technical Situation Reports (storage levels, inflows, recent/current rainfall, forecast rainfall, releases from dams, estimated flows from downstream tributaries, current flood operating strategy for each dam and proposed change in strategy, gate and regulator operations, state of downstream road crossings etc). Most of the minimum information is already given, but not in a consistent manner. As a means of reviewing processes followed during a flood, it would be useful to present a timeline of the flood event showing graphs of storage levels and other data that can be easily presented in a graphical manner.

I am informed by the Queensland Director Dam Safety (Water Supply) that the various requirements of the Flood Mitigation Manual relating to requirements for flood operations personnel, flood preparedness and flood training have been adhered to. There are a number of other requirements however, that I am not able to say whether they were satisfied as I had insufficient information. These requirements (see Table in Attachment A) should be subject to a separate audit.

It appears to me that the decision to implement Strategy W4 was a prudent one. While it would cause some damage in the Brisbane River downstream, its implementation, considering forecast rainfalls and projected flows in Lockyer Ck. And the Bremer River, would allow reduction of the storage level in

Wivenhoe Dam. This reduction in storage level would hopefully provide a sufficient buffer that would minimise the chance of a fuse plug triggering in the auxiliary spillway. Triggering of the first (central) fuse plug would cause a sudden increase of flow of some 2,000m³/s from Wivenhoe Dam. This increase in flow would cause significantly more flooding in the lower Brisbane River than that caused by early implementation of Strategy W4.

Conclusions:

The strategies as set out in the Flood Mitigation Manual have been followed, allowing for the discretion given to making 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 those responsible for flood operations and the way events unfolded.

There are a number of requirements where there was insufficient time given the urgency of this review, to source the necessary information for me to demonstrate compliance. However, satisfaction or otherwise of these requirements would have had little impact on the operation of the two dams during this particular Flood Event. It is intended that they be audited when time permits, after the Flood Event.

There are aspects of the Technical Situation Reports that could be improved and these have been discussed above.

Regards,



Brian Cooper

ATTACHMENT A

Action Requirements extracted from the Flood Mitigation Manual:

Action	Comment
The Flood Mitigation Manual contains the operational procedures for Wivenhoe Dam and Somerset Dam for the purposes of flood mitigation and must be used for the operation of the dams during flood events.	Appears to have been done
Sufficient numbers of suitably qualified personnel are available to operate the dams if a Flood Event occurs.	Director of Dam Safety is satisfied
The level of flooding as a result of emptying stored floodwaters after the peak has passed is to be less than the flood peak unless accelerated release is necessary to reduce the risk of overtopping.	See Note 1
A regular process of internal audit and management review must be maintained by Seqwater to achieve improvements in the operation of the RTFM.	See Note 1
Seqwater must maintain a log of the performance of the data collection network. The log must include all revised field calibrations and changes to the number, type and locations of gauges. Senior Flood Operations and Flood Operations Engineers are to be notified of all significant changes to the Log.	See Note 1
Seqwater must maintain a log of the performance of the RTFM. Any faults to the computer hardware or software are to be noted and promptly and appropriately attend to.	See Note 1
Seqwater must ensure that all available data and other documentation is appropriately collected and catalogued for future use.	See Note 1
Seqwater must ensure that information relevant to the calibration of its field stations is shared with appropriate agencies.	See Note 1
Seqwater must liaise and consult with these agencies with a view to ensuring all information relative to the flood event is consistent and used in accordance with agreed responsibilities: <ul style="list-style-type: none"> • Bureau of Meteorology (issue of flood warnings for Brisbane River basin); • Department of Environment and Resource Management (review of flood and discretionary powers); • Somerset Regional Council (flood level information for upstream of Somerset Dam and upstream and downstream of Wivenhoe Dam); • Ipswich City Council (flood level information for Ipswich), and; • Brisbane City Council (flood level information for Brisbane City). 	Required also by draft of Communications Protocol. Technical Situation Reports infer compliance
Seqwater must report to the Chief Executive by 30 September each year on the training and state of preparedness of operations personnel.	See Note 1
Seqwater must provide a report to the Chief Executive by 30 September each year on the state of the Flood Monitoring and Forecasting System and Communication Networks.	See Note 1

Action	Comment
After each significant flood event, Seqwater must report to the Chief Executive on the effectiveness of the operational procedures contained in this manual.	It is too early for this action to be implemented. Will be implemented when the Flood Event is finished
Prior to the expiry of the approval period, Seqwater must review the Manual pursuant to provisions of the Act.	It is too early for this action to be implemented
Strategies are changed in response to changing rainfall forecasts and stream flow conditions to maximise the flood mitigation benefits of the dams.	Technical Situation Reports indicate that this is done
When determining dam outflows within all strategies, peak outflow should generally not exceed peak inflow.	Information from Seqwater indicates that the requirement was satisfied
Protocol for use of discretionary powers (i.e. who gets told)	Director of Dam Safety is satisfied – I don't know whether Seqwater CEO or Chairperson approved – See Note 1

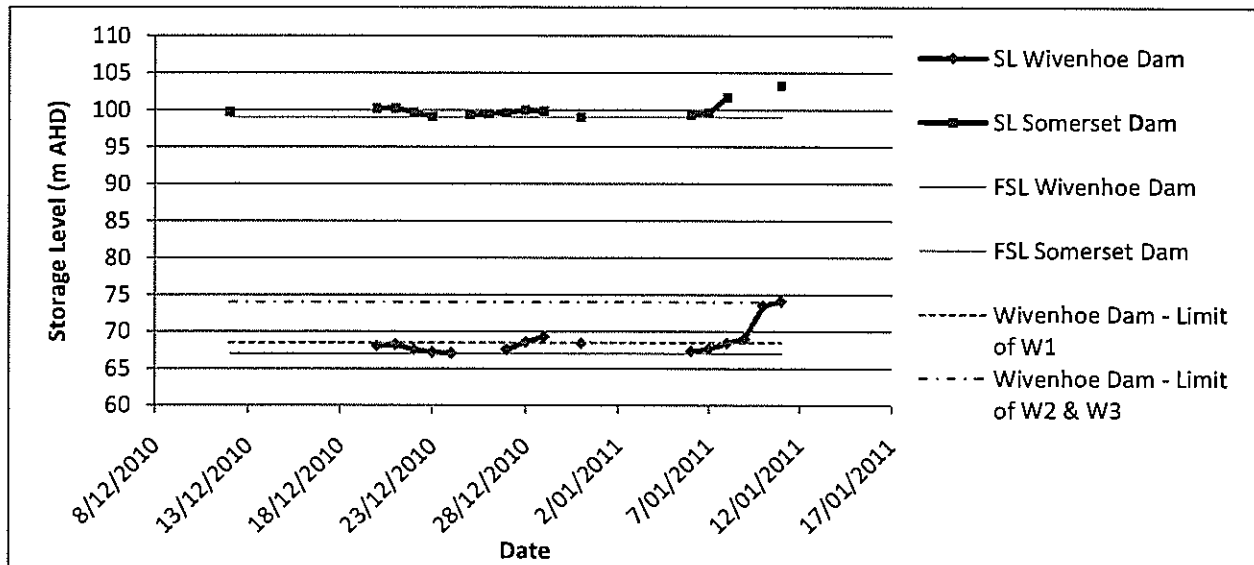
Note1: For a number of the above actions, given the short time frame for the review on compliance of actual flood operations with the Flood Mitigation Manual, it was not possible to source some of the information required to confirm that requirements had been fulfilled. These actions will be audited separately, when time permits.

Action	Comment
<i>Flood Strategies for Wivenhoe Dam:</i>	
<p>The intent of Strategy W1 is to not to submerge the bridges downstream of the dam prematurely (see Appendix I). The limiting condition for Strategy W1 is the submergence of Mt Crosby Weir Bridge that occurs at approximately 1,900 m³/s.</p> <p>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.</p>	Technical Situation Reports indicate that every attempt was made to keep the specified road crossings open
<p>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 (3,500 m³/s). In these instances, the combined peak river flows should not exceed those shown in the following table:</p>	Technical Situation Reports indicate that Wivenhoe Dam releases were made considering concurrent flows in the Bremer River & Lockyer Ck. To delay damaging floods as long as possible
<p>The intent of Strategy W3 is to limit the flow in the Brisbane River at Moggill to less than 4000 m³/s, noting that 4000 m³/s at Moggill is the upper limit of non-damaging floods downstream. The combined peak river flow targets for Strategy W3 are shown in the following table. In relation to these targets, it should be noted that depending on natural flows from the Lockyer and Bremer catchments, it may not be possible to limit the flow at Moggill to below 4000 m³/s. In these instances, the flow at Moggill is to be kept as low as possible.</p>	
<p>The intent of Strategy W4 is to ensure the safety of the dam while limiting downstream impacts as much as possible.</p> <p>This strategy normally comes into effect when the water level in Wivenhoe Dam reaches EL74.0 m AHD. However the Senior Flood Operations Engineer may seek to invoke the discretionary powers of Section 2.8 if earlier commencement is able to prevent triggering of a fuse plug.</p> <p>There are no restrictions on gate opening increments or gate operating frequency once the storage level exceeds EL74.0 AHD, as the safety of the dam is of primary concern at these storage levels.</p>	Technical Situation Reports indicate that Wivenhoe Dam releases were such as to delay adopting this strategy as long as possible
Where possible, total releases during closure should not produce greater flood levels downstream than occurred during the flood event.	Technical Situation Reports indicate that this requirement was satisfied
The aim should always be to empty stored floodwaters stored above EL 67.0m within seven days after the flood peak has passed through the dams.	Technical Situation Reports indicate that

Action	Comment
	emphasis was given to satisfying this requirement
Flow in the spillway to be as symmetrical as possible with the centre gates opened first.	Technical Situation Reports indicate that this was done
The bottom edge of the radial gates must always be at least 500mm below the release flow surface.	See Note 1 above

Action	Comment
<i>Flood Strategies for Somerset Dam:</i>	
The intent of Strategy S1 (Somerset Dam Level expected to exceed EL 99.0 and Wivenhoe Dam not expected to reach EL 67.0 (FSL) during the course of the Flood Event) is to return the dam to full supply level while minimising the impact on rural life upstream of the dam. Consideration is also given to minimising the downstream environmental impacts from the release.	Technical Situation Reports indicate that this was done
The intent of Strategy S2 (Somerset Dam Level expected to exceed EL 99.0 and Wivenhoe Dam level expected to exceed EL 67.0 (FSL) but not exceed EL 75.5 (fuse plug initiation) during the course of the Flood Event). This to maximise the benefits of the flood storage capabilities of the dam while protecting the structural safety of both dams. The Flood Mitigation Manual contains a graph that shows the intended interaction of the Wivenhoe Dam and Somerset Dam storage levels.	Technical Situation Reports indicate that this was done – little information on the operation of the radial gates at Somerset Dam. How the graph was followed not really demonstrated
The intent of Strategy S3 (Somerset Dam Level expected to exceed EL 99.0 and Wivenhoe Dam level expected to exceed EL 75.5 (fuse plug initiation) during the course of the Flood Event) is to maximise the benefits of the flood storage capabilities of the dam while protecting the structural safety of both dams.	Not relevant at this stage
The safety of Somerset Dam is the primary consideration and cannot be compromised and its peak level cannot exceed EL 109.7.	Maximum level only EL103.3

Wivenhoe & Somerset Dams – Storage Level Behaviour (as presented in Technical Situation Reports)



24 December 2010

Hon Stephen Robertson MP
Minister for Natural Resources, Mines and Energy
and Minister for Trade
PO Box 15216
Brisbane Qld 4001

Dear Minister

I am pleased to respond to your letter of 25 October 2010 regarding options to and benefits of releasing water from key storages in anticipation of major inflows over the current wet season. Our advice follows, based on discussions with Seqwater.

Only four of the dams in South East Queensland region are gated, with the ability to release significant amounts of water in anticipation of major inflows. These are Wivenhoe, Somerset, North Pine and Leslie Harrison dams.

Detailed operational procedures have been approved for each of the gated dams. The dams will continue to be operated in accordance with these procedures. These procedures generally relate to the management of the dams and should be managed above Full Supply Level. This advice relates to the water security aspect of the management of the dams below Full Supply Level.

Based on information currently available, Seqwater has advised that releasing water to below Full Supply Level may provide some benefits in terms of reduced community and operational impacts during minor inflow events, such as has occurred over the past month. For medium and major flood events, it considers that pre-emptive releases will provide negligible benefits.

Informed by this advice, the SEQ Water Grid Manager has advised Seqwater that, from a water security perspective, it has no in-principle objection to minor releases from Wivenhoe, Somerset and North Pine dams to minimise the operational and community impacts of gate releases. Specifically, it has advised that it has no in-principle objection to:

- Wivenhoe and Somerset dams being drawn down to 95 per cent of their combined Full Supply Level
- North Pine Dam being drawn down to 97.5 per cent of its Full Supply Level.

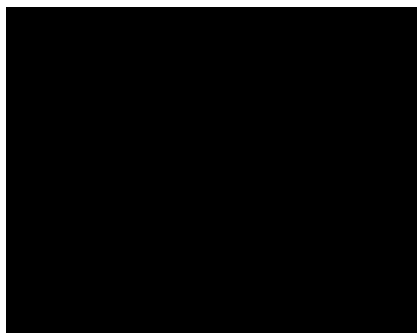
The SEQ Water Grid Manager has assessed the water security implications of the release to be negligible, having no impact on our ability to meet the risk criteria specified in the System Operating Plan or our ability to meet our supply obligations to Grid Customers. From a water security perspective, the Queensland Water Commission has also confirmed that it does not have any objections to the potential release.

Please note that these arrangements are intended to apply for the current wet season only, taking into account the level of storages and the rainfall forecasts over coming months.

For future wet seasons, the SEQ Water Grid Manager will continue to work with Seqwater to investigate the optimal arrangements. In particular, we propose to further investigate options that may reduce the frequency or duration of intermediate level flows (between 1,900 and 3,500 cubic metres per second). In addition, we recommend that the investigations with the Queensland Water Commission to examine the opportunity of raising the full supply level of Wivenhoe Dam for water supply be expanded to include options involving the release of the additional water once major inflows are forecast.

I trust that this advice is sufficient. If you have any questions, please do not hesitate to contact Mr Dan Spiller, Director Operations, by telephone on [REDACTED] or by email on dan.spiller@seqwater.com.au.

Yours sincerely



Gary Humphrys
Chair

ATTACHMENT

Wivenhoe and Somerset dams

Wivenhoe Dam can store up to 1.15 million litres (ML) of drinking water. In addition, it has the capacity to store an additional 1.45 ML of flood water.

While large, the flood compartment can be filled within days. For example, following heavy rainfall in October 2010 Wivenhoe Dam received inflows equivalent to almost half of the flood storage compartment capacity in just a few days.

Several factors influence flood release strategies for Wivenhoe and Somerset dams.

First, rain events that have caused flooding have historically been prolonged events over several days, often with a second event occurring several days to a week after the first. As a result, the operational procedures for the dam are designed to ensure that all water held in the flood compartments is released within seven days of a rain event, ensuring that the flood compartment is available for any future inflows.

Secondly, the dam only controls flood waters from part of the Brisbane River catchment area. About 50 per cent of the catchment area of the Brisbane River is upstream of the Wivenhoe Dam wall, and can be potentially controlled by it. No flood mitigation structures exist for most of the potential run-off from the other 50 per cent of the catchment area.

Third, the Bureau of Meteorology has had limited success in plotting rainfall distribution accurately to assess where most flooding risk lies above or below the dam wall. Historical floods have demonstrated that flooding can occur from both. For example, the 1974 flood flows primarily occurred below the dam wall whilst the 1890's event occurred above the dam wall. As a result, when releasing water from Wivenhoe Dam it is very important to predict and monitor below the dam wall flows so as to understand combined river flows that cause flood impacts.

Taking these factors into account, the flood release strategy for Wivenhoe and Somerset dams has a hierarchy of objectives:

- Ensure the structural safety of the dam
- Provide optimum protection of urbanised areas from inundation
- Minimise disruption to rural life
- Retain full supply level after a flood event
- Minimise impacts to flora and fauna during the drain down phase.

Within this framework, flood releases from Wivenhoe Dam typically fall into two categories of flood events based on the impact they cause when combined with below the dam wall catchment runoff:

- Larger events typically involving combined river flows greater than 3,500 cubic meters per second measured at Moggill. These events would have flood impacts on

urban areas in Brisbane. This scale of release has not been required since Wivenhoe Dam was completed.

- Smaller events with combined river flows of less than 1,900 cubic meters per second measured at the Mt Crosby weir which can inundate up to seven rural bridges isolating up to 50 households and causing inconvenience to many more. There has been six of these events since 1984, when Wivenhoe Dam was completed.

Our assessment of the benefits of lowering dam storage levels to reduce flooding impacts is below for these two event types.

Large events

Seqwater has advised that releases of greater than 3,500 cubic metres per second (m³/s) from Wivenhoe Dam are likely to impact on urban areas in Brisbane. Events of this nature have not been experienced since Wivenhoe Dam was completed in 1984.

Seqwater has advised that:

- pre-emptive releases are likely to have negligible impacts on the extent of these impacts
- any impacts would require releases of at least 250,000 ML. This is equivalent to a release of about 16 per cent of the combined storage capacity of Wivenhoe and Somerset dams.

A pre-emptive release of this scale is not recommended, based on information currently available. The potential water security impacts are considered to be more significant than the negligible benefits. These potential security impacts include costs associated with the earlier or avoidable operation of the desalination facility at capacity, as well as the increased probability of triggering the implementation of a drought response plan.

More detailed investigation of opportunities to actively manage flood storage is recommended, including options to increase flood supply level on a temporary basis. These investigations need to be led by Seqwater, and involve the Bureau of Meteorology, Councils and the SEQ Water Grid Manager.

In particular, it has been identified that it is worth investigating the impacts on downstream flooding for intermediate level flows (flows between 1900 and 3500 m³/s).

Seqwater will undertake extensive investigations for the Queensland Water Commission in early 2011 to examine the opportunity of raising the full supply level of Wivenhoe Dam for water supply. We will recommend that the scope of this work be widened to consider the benefits of pre-lowering storage levels based on mid range rainfall events and the reduced impacts to river levels and subsequent property impacts. It is noted that predicting rainfall intensity and location, even as events are about to occur has not been accurate, however the Bureau of Meteorology is improving its methods.

Smaller events

Pre-emptive releases from Wivenhoe Dam may reduce the impacts of minor gate releases (strategies W1A to W1E in the operational procedures).

Minor gate releases may result in the closure of up to six bridges, isolating up to 50 dwellings and inconveniencing many more. As stated in existing flood management plans, releases should be managed to minimise the impacts on these residents. Over the immediate term, Councils have requested that bridge closures be avoided over the Christmas to New Year period, if at all possible. In addition:

- There are resource implications involved in the activation of the flood control centre. Under flood management plans, the centre must be staffed by suitability qualified officers at all times during gate releases. There are currently only four quality duty engineers, who have staffed the flood centre for much of period since the initial release in October.
- Gate releases during the Christmas holiday period would result in closure of dams to water based activities, impacting on up to 150,000 people who are expected to use the recreational facilities over the holiday period.

The Water Grid Manager has advised Seqwater that, from a water security perspective, it would not object to water being released from Wivenhoe and Somerset dams to 95 per cent of storage capacity at any time until end March 2010.

Under this recommendation, storage levels could potentially be reduced by up to about 77,250 ML. This is equivalent to the amount of water released between 13 and 16 December 2010, through a single gate.

Pre-emptive releases will be managed so as to minimise the likelihood of gate releases due to small storms and local rainfall. Storage capacity will usually be reduced through a combination of:

- Extended gate releases, especially for strategy W1C. For comparison, up to 130,000 ML/day was released during in November and mid December 2010. At this rate, the additional releases could occur in about half a day.
- Ongoing gate releases of up to 30,000 ML/day, which do not isolate any residents but can inundate some lower bridges that cause inconvenience.
- Ongoing valve release of up to about 4,300 ML/day, which can be maintained without inundate any bridges.

Actual releases would be decided by Seqwater based on operational considerations and in accordance with its statutory and regulatory obligations.

Water security impacts

The water security impacts of releases will be zero if the dams fill over the remainder of the wet season. Current forecasts indicate that there is a high probability of this occurring:

- Heavy rainfall is forecast over the Christmas holiday period, as noted above.
- Over the remainder of the wet season, advice from the Bureau of Meteorology is that sea surface temperatures are likely to remain at levels typical of a La Niña event into the first quarter of 2011, with the majority of the models indicating the event will gradually weaken over the coming months.

The water security impacts will be minimal, even if there were no further inflows to the dams. Modelling indicates that the reduction would have a minimal impact on the probability of key water Grid storages falling to 40 per cent of capacity over the next five years.

North Pine and Leslie Harrison dams

North Pine and Leslie Harrison dams do not have flood mitigation potential. Once the dams have reached Full Supply Level, all water flows into the dam must be released to protect the structural safety of the dam.

Seqwater has advised that, without major releases, there are negligible benefits to reducing volumes stored in North Pine or Leslie Harrison dams for the purposes of reducing the extent or duration of any downstream flooding impacts.

For North Pine Dam, there may be some operational and community benefits to minor releases to below Full Supply Level in some circumstances. Any gate operation at North Pine Dam results in inundation of Youngs Crossing Road, which isolates a number of residents. These impacts are currently being minimised by releasing from North Pine Dam at night. With further rainfall forecast, Seqwater may choose to reduce the level to below Full Supply Level in order to reduce the frequency of night releases or the likelihood of releases being required during the day.

For this dam, the SEQ Water Grid Manager has advised Seqwater that, from a water security perspective, it would not object to water being released to 97.5 per cent of storage capacity at any time until end March 2010.

For Leslie Harrison Dam, gate operations do not impact on public roads and generally only inconvenience the general public during large flood events. There is no scope to reduce this inconvenience through small pre-emptive releases. Accordingly, no in-principle approval be made for pre-emptive releases from this dam.



Brian Cooper

Dams Engineer

Qualifications & Affiliations

Short courses on finite element analysis, embankment dam engineering, earthquake engineering. Published technical papers – ICOLD, ANCOLD and I.E. Aust. Attended dam safety course at USBR (Denver, USA) in 2002

Bachelor of Engineering (B.E. Hons), 1968 and Master of Engineering Science (M.Eng.Sc.), 1971

University of New South Wales

Graduate Diploma of Engineering Management, 1994 Deakin University

F.I.E. Aust., C.P.Eng. RPEQ

Expertise

Brian has approximately 40 years experience in investigation and design of major dams, weirs and hydraulic structures, having started his career designing farm dams and small irrigation schemes. He retired from NSW Department of Commerce in 2005. Brian now works as a private consultant specialising in dams engineering and fish passage at dams and weirs. He has a special interest in risk assessment and computer modelling in general and the seismic analysis of dams in particular. Engineering software (concrete dam stability analysis and flood routing) written by Brian is still used extensively in the Dams & Civil Group of the Department of Commerce. He also has particular experience with concrete dams and the use of post tensioned ground anchors for strengthening those dams. He was a member of the Australian National Committee on Large Dams (ANCOLD) Working Group that developed guidelines for 'Design of Dams for Earthquakes' and a member of the Working Group that revised the guidelines for 'Risk Assessment for Dams'. He has been a guest lecturer for a number of years (most recently in 2009) on concrete dam engineering for the University of NSW post graduate Embankment Dam Engineering Course, and on the history of dams in NSW at Sydney University.

He has been the project director and project manager for a number of feasibility studies, design reviews, site investigations and detail design consultancies for major dams and weirs including the direction and co-ordination of all specialist services including dambreak studies, preparation of dam safety emergency plans and risk assessments. He is currently an expert reviewer for a number of Australian water authorities and consultants (State Water Corporation (NSW), Hydro Tasmania, SunWater (Queensland), Brisbane City Council, Goulburn-Murray Water, Goulburn Valley Water, WA Water Corporation, Southern Rural Water (Victoria), URS, GHD, Hobart Water, NT PowerWater, and TrustPower (NZ)). He has also worked as a sub-consultant for a number of consulting firms (URS, MWH, GHD).

Brian is the Engineers Australia representative for the NSW Dams Safety Committee (the dam safety regulator in NSW) and is currently the Chairman of that organisation. He has been a member of the Murray Darling Basin Authority's Fish Passage Task Force which advises inter alia on the installation of fishways on the Murray River as part of the Living Murray Program.

Brian is a registered engineer in Queensland (RPEQ No. 6819). He started his own consulting business in 2008, advising on dam safety, dam design and analysis, dam risk assessments and dam upgrades as well as fish passage for dams. He is providing specialist advice through *Brian Cooper Consulting* as a sole trader.

Professional Experience

2008 to Present: Principal of Brian Cooper Consulting

- 2010 Five yearly comprehensive dam safety inspection of Carcoar Dam (double curvature arch dam).
Internal reviewer to URS (Melbourne) on concept design of regulator structures and associated fishways for the Hipwell Road project for watering the Gunbower Forest
Specialist adviser to Melbourne Water – valve behaviour on Sugarloaf Dam pipeline, structural behaviour of pumping station floor slab and pump bases at Cardinia Dam Pumping Station
Commenced work as member of ANCOLD working group re-writing the Earthquake Guidelines – responsible for re-writing sections relating to concrete dams.
Continuing involvement with Alluvium in the design of the weir upgrade and the new fishway for Booligal Weir.
Continuing external peer review services to State Water Corporation for the detail design of new auxiliary fuse plug spillways for Copeton and Chaffey Dams, detail design of raising and post tensioned strengthening of Keepit Dam, detail design of upgrade works for Wyangala Dam, finite element analysis of Carcoar Dam (double curvature arch dam).
Further work with GHD (Perth) on risk assessment for Serpentine Dam.
Continuing involvement with Hydro Tasmania, as Chair of external review panel for Catagunya Dam.
- 2009 Part of URS' comprehensive inspection team for Melbourne Water's Maroondah Dam.
Part of URS' business risk assessment team for Southern Rural Water's Cowsarr and Maffra Weirs.
Part of Alluvium's design team upgrading Booligal Weir and providing a fishway at the weir, for State Water Corporation.
Part of GHD's design team for Lower Fitzroy River Infrastructure Project designing fishways for Rookwood and Eden Bann Weirs near Rockhampton in Queensland.
Project Manager on behalf of SA Water and reviewer for study into vibration of a crane rail beam at Lock 5 on the River Murray.
Expert reviewer for State Water Corporation for 3D finite element analysis of Carcoar Dam (double curvature arch dam).
Internal reviewer for URS on Laanecoorie Dam Upgrade.
Expert reviewer for State Water Corporation for risk assessments for Oberon and Rydal Dams.
Member of GHD's Serpentine Dam risk assessment team for WA WaterCorp.
Expert reviewer for SunWater in Queensland for the comprehensive risk assessment undertaken for Fairbairn Dam and Coolmunda Dam.
Expert reviewer for State Water Corporation for major upgrade works at Keepit, Copeton, Chaffey and Wyangala Dams.
Appointed as Chairman of the NSW Dams Safety Committee (the dam safety regulator in NSW).
Provided external peer review for Goulburn Valley Water, on Nine Mile Creek Dam Upgrade.
Internal reviewer for URS (Adelaide) for Lake Victoria Outlet Regulator options studies.
Provided advice to URS (Melbourne) on the Mildura Weir Fishway design.
Member of expert panel advising State Water Corporation on revised dam surveillance regime.
Part of Ecosmart bid team - prepared concept designs for fish passage facility at proposed Wyaralong Dam in Queensland.
Continuing expert review role for Catagunya Dam upgrade.
- 2008 Started as a private specialist dams consultant - *Brian Cooper Consulting*.
Worked through the URS Corporation for the USBR and the USACE in developing a risk toolbox for lined spillways.
Advised TrustPower in New Zealand on replacement of post tensioned anchors at Mahinerangi No. 1 Dam.
Adviser to State Water Corporation and to URS on further upgrade works for Hume Dam.
Provided specialist advice to WA Water Corporation on Wellington Dam post tensioning.
Peer reviewer on behalf of URS for Warren Dam in South Australia.
Part of URS team carrying out portfolio risk assessment of Melbourne Water's dams.
Member of Expert Review Panel for Darwin River and Manton Dams for NT PowerWater.

1987 to 2008: Dams & Civil Section of NSW Department of Public Works and Services/NSW Department of Commerce.

- 2008 Carried out detailed 3D finite element analysis of radial gate at Wyangala Dam spillway for State Water Corporation.
Continuing review role for Tillegra Dam.
Continuing review role for Hinze and Lake Manchester Dams in Queensland and Catagunya Dam in Tasmania.
Prepared options report on Burrendong Dam spillway modifications for State Water Corporation.
- 2007 Continuing roles on Lake Manchester, Hinze, Catagunya and Redbank Ck. Dams.
Internal peer reviewer for NSW Dept. of Commerce regarding design of Tillegra Dam.
Advised State Water on feasibility of fish passage facilities at a number of their major irrigation dams.
Expert reviewer for GHD on a flood retarding basin in south west Sydney.
Part of expert panel for River Murray Water risk assessments for Hume and Dartmouth Dams, Torrumbarry and Yarrawonga Weirs and Lake Victoria.
Re-elected as Deputy Chairman of the Dams Safety Committee
- 2006 Project director for 3D finite element analysis of Bendora Dam (double curvature arch dam)
Chair of external peer review panel for upgrading of Lake Manchester Dam (concrete gravity dam) in Queensland
Internal peer reviewer and senior consultant for the raising of Hinze Dam (earth and rockfill embankment) in Queensland
Project director for preliminary and detailed design of Redbank Creek Dam (single curvature arch dam) upgrading
Project director for Keepit Dam fish passage investigations
Part of expert panel for URS undertaking portfolio risk assessment for dams owned by River Murray Water
External peer reviewer for Hydro Tasmania for Catagunya Dam (concrete gravity dam) upgrading;
Project director for 3D finite element analysis of Upper Cordeaux No. 2 Dam (single curvature arch dam owned by SCA) for BHP Billiton
- 2005 Project design engineer for dam related aspects of Nepean Dam Deepwater Access Project: Pipeline crossing end of spillway; outlet works for end of pipeline
Project design engineer for Avon Dam Deepwater Access Project: tunnel design through rockfill buttressing; new low level outlet works
- 2004 Internal reviewer to URS Australia for Pykes Ck Dam Investigations (Southern Rural Water, Victoria)
Internal reviewer to URS Australia for Lower Reservoir Dam (Hobart Water, Tasmania)
Member of expert review panel for the Melton Dam upgrade design (Southern Rural Water, Victoria)
- 2003/04 Designer for retrofitting multi-level offtake for Tallowa Dam (Sydney Catchment Authority).
Member of the Independent Technical Expert Panel for the Eildon Dam Upgrading in Victoria for Goulburn-Murray Water.
Currently the design director for the Wivenhoe Dam Alliance carrying out the flood capacity upgrading for Wivenhoe Dam in Queensland – included directing major computational fluid dynamics modelling investigations of existing spillway
- 2003 Carried out options study for environmental upgrading works at Keepit Dam (selective withdrawal facility, additional outlet works and fish passage)
Carried out assessment of spillway capacity for Hume Dam using computational fluid dynamics modelling (by a sub-consultant)
Carried out detail design for anchoring Bellfield Dam (Victoria) Intake Tower
Carried out detailed finite element analysis of Keepit Dam radial gates
- 2002 Carried out review of large farm dam with seepage problems. Directed computational fluid dynamics modelling of drum gate and radial gates at Warragamba Dam together with structural analysis of gates (modelling carried out by sub-consultant) to ensure gates can handle more

rigorous operating conditions

Adviser to the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) on civil engineering matters related to the replacement reactor project at Lucas Heights

Expert reviewer for Goulburn-Murray Water for remedial works at Cairn Curran Dam in Victoria

Project Director for Lerderderg Weir safety review and risk assessment for Southern Rural Water (Victoria). Carried out finite element analysis of radial gate

2001

Project Director for design of further remedial works at Hume Dam.

Technical director on behalf of NPWS for quantitative risk assessment for Snowy Mountains roads

Chairman of the committee producing a geotechnical response plan for the Alpine Way in the Snowy Region for NPWS

Carried out non-linear finite element analysis (earthquake loading) for outlet tower at Bellfield Dam for Wimmera-Mallee Water (Victoria)

Joined the MDB's Fish Passage Reference Group and reviewed fishway designs

Consultant to DLWC for their portfolio risk assessment of thirty dams

Provided advice on the post tensioning system at Waitakere Dam in New Zealand.

Director of Dam Surveillance Group responsible for the surveillance of DLWC dams and participant of a number of 5 yearly surveillance inspections

Project Director of review of DLWC Intake Towers Earthquake Stability Review

Directed DPWS input into the Earthquake Stability of the structural elements of Yarrawonga Weir as sub-consultant to URS Australia – included detail design of anchoring system for the weir.

Also provided design advice on design of stone columns to provide protection against liquefaction of alluvial foundations.

Member of the expert panel for the risk assessment studies being undertaken for Goulburn-Murray Water

Project Director for safety review and preliminary design of remedial options for Blowering Dam (DLWC)

Acted as reviewer for a number of projects carried out by URS (incl. Cardinia Dam outlet tower, Bellfield Dam embankment/spillway)

Directed functionality study (including business risk assessment) for Yallourn Weir for Southern Rural Water (Victoria)

2000

Project Director for design of further investigations and remedial works at Hume Dam.

Safety reviews for Bamarang and Flat Rock Dams

Director of Dam Surveillance Group responsible for the surveillance of DLWC dams and participant of a number of 5 yearly surveillance inspections

Project Director for earthquake studies on intake towers and appurtenant works at DLWC dams

Consultant to DLWC to manage their portfolio risk assessment

Project Director for a number of dambreak studies and preparation of dam safety emergency plans

Member of the consulting team carrying out risk assessments for Goulburn-Murray Water (Victoria) for Eppalock Dam

Carried out review of Earthquake Stability Review of the Outlet Tower at Eppalock Dam in Victoria for G-MW.

Reviewed URS Australia designs for Alpine Way remedial works

1999

Project Director of earthquake studies on Wyangala Dam

Project Director for design of further remedial works at Hume Dam. Included design of ground improvement works (stone columns) for protecting alluvial foundations against liquefaction

Peer reviewer of Leslie Dam (Queensland) Safety Report.

Peer reviewer of DLWC's Screening Level Risk Assessment

1998

Project Director for portfolio risk assessment for six dams owned by a Southern Rural Water in Victoria.

Directed structural analysis of spillway gates on Narracan Dam for Southern Rural Water

Project Director for concept design and DD&C contract documentation for Warragamba Dam auxiliary spillway. Dam to be upgraded the dam to cater for increased inflow flood estimates.

Upgrading works estimated to cost \$135M. An auxiliary spillway is to be constructed adjacent to the existing dam - involves excavating some 2,000,000m³ of rock and constructing concrete lining, training walls, fuse plug embankments, large scale cement stabilised sandstone fill, a multi

span bridge across the spillway, post tensioned ground anchors for dissipator/training walls, modifications of existing spillway gates. Design involved extensive physical hydraulic model testing.

- 1997 Feasibility options study for remediation of Redbank Ck. Dam near Mudgee (NSW) Karapiro Dam, New Zealand - Part of international consulting team reviewing this concrete arch dam's security and determining appropriate remedial options (mass concrete buttressing). Director of risk assessment studies for Tenterfield Dam
- 1993-1997 Hume Dam Investigations - Project Manager of Investigation and Design Studies for the embankments at the dam. Work involves:
- review of the stability of the embankments under static and earthquake loadings
 - investigation of liquefaction
 - potential of embankments' foundations
 - development of stabilising options
 - development of options to provide increased flood security including provision of new auxiliary spillways and modifications to existing works
- detail design and documentation of stabilising works for the embankments including a key trench into the dam's foundations, stabilising berms, slurry wall cut-offs, drainage/filter curtains and strengthening of critical gravity training walls with both horizontal and vertical post tensioning.
- part of advisory and review team for the risk assessment of the dam and its components.
- 1990-1996 Warragamba Dam Upgrading for Sydney Water Corporation - Project Manager of Investigation Concept Design Studies for upgrading the dam to cater for increased inflow flood estimates and provide substantial flood mitigation. Upgrading works estimated to cost \$280M. The existing dam was to be strengthened with mass concrete buttressing – some 600,000m³.
- 1996 Project Director for Safety Review (including Finite Element Analysis) of Wellington Dam
- 1993-1996 Hume Dam Gates for Department of Water Resources - Project Manager for the design of new maintenance baulks and emergency closure gates. Involves development of proposals for underwater installation.
- 1995 Redbank Creek Dam and Lithgow No. 2 Dam for NSW Public Works Dams Surveillance - Project Manager for safety reviews and finite element analysis of two 15m high arch dams. Clarrie Hall Dam for NSW Public Works Dams Surveillance - Project Manager for dambreak studies.
- 1994 Burrinjuck Dam Gates for NSW Department of Water Resources - Project Manager for the design of new control and emergency closure gates. Involves underwater installation. Karangi Dam for Coffs Harbour City Water Project - Project Manager for dambreak studies.
- 1993 Mardi Dam for Wyong Council - Project Manager for safety review of earth embankment.
- 1988-1990 Nepean Dam Remedial Works for Sydney Water Corporation - Project Manager for investigation studies, design development and detail design. Work involved:
- initial flood security studies and development of options
 - co-ordination of hydraulic model studies
 - detail design and contract documentation for modified spillway, large size post-tensioned ground anchors and rockfill buttressing.
- 1987-1989 Boggabilla Weir for NSW Department of Water Resources - Project Manager for detail design and contract documentation of a large gated re-regulation weir with fishway. Involved liaison with fisheries expert in developing optimum geometry for fish ladder.

Chaffey Dam for NSW Department of Water Resources - Project Manager for upgrading of dam.
Work involved:

- development of options and preliminary design
- finite element analyses for raised morning glory spillway
- stability analyses for raised earth/rockfill embankment
- co-ordination of hydraulic model studies for raised spillway.

1969-1987: ***Water Resources Commission of NSW (WRC) (now Department of Land and Water Conservation).***

1986-1987 Flood Security studies for WRC - Project Design Engineer for investigation into flood security of Chaffey and Glennies Creek Dams. Involved co-ordinating dambreak studies, development of remedial options, economic risk studies.

- 1985-1987 Hume Dam Strengthening for WRC - Project Design Engineer for detail design and contract documentation. Work included:
- design of large size post-tensioned ground anchors including development of appropriate grouting procedures
 - design of structural modifications to the concrete gravity dam
 - design of a new road bridge over the dam.
 - establishing the rationale for replacing the existing post tensioning system

Contact

Tel: [REDACTED]
Mobile: [REDACTED]
Email: [brian.cooper.consult](mailto:brian.cooper.consult@brian.cooper.consult) [REDACTED]

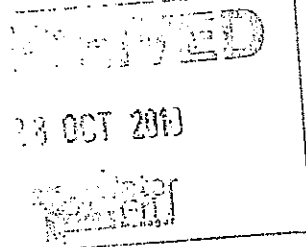


**Queensland
Government**

Ref CTS 19311/10

25 OCT 2010

Mr Gary Humphrys
Chair
SEQ Water Grid Manager
PO Box 16205
CITY EAST QLD 4002



Office of the
Minister for Natural Resources,
Mines and Energy and
Minister for Trade

Dear Mr Humphrys

I write in relation to seeking advice regarding options to and benefits of releasing water from key storages in anticipation of major inflows over the coming summer.

I understand that the key Water Grid storages are at 100 per cent of storage capacity going into the traditional wet season, with forecasts of higher than median rainfall and the prospect of multiple flood events.

I am also advised that our water supply is more secure than ever before, due to storages being full, key Water Grid projects completed and ongoing water efficiency.

I seek your urgent advice about whether this water security provides an opportunity to reduce the volume stored in key dams as a means of reducing the severity, frequency and duration of flooding in downstream areas.

In doing so, I note that recent releases from Wivenhoe Dam have resulted in significant inconvenience and isolation for residents in some downstream areas. With the catchments saturated, I understand that even quite minor rainfall events will result in further water releases and further inconvenience for these residents.

By end November 2010, I would appreciate your advice as to the available options and the likely benefits. At a minimum, you should review the operation of Wivenhoe, North Pine and Leslie Harrison dams. At least for Leslie Harrison Dam, this would be a return to standard operating procedures prior to the drought, when the dam was routinely drawn down to 95 per cent of capacity to minimise the impacts of storms on downstream residents.

I also seek your confirmation that these options would not significantly impact upon our current water security, measured as the probability of needing to reintroduce Medium Level Restrictions over the next five to ten years.

Level 17
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Queensland 4002 Australia
Telephone +61 7 3225 1861
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ABN 65 959 415 158



**Queensland
Government**

Office of the
**Minister for Natural Resources,
Mines and Energy and
Minister for Trade**

I emphasise that this is only a temporary measure, reflecting that dams are full prior to the commencement of the traditional wet season. I expect that your advice will include a clear date or trigger beyond which dams will be allowed to fill to their full supply level.

Thank you in advance for your assistance.

Should you have any further enquiries, please feel welcome to contact Mr John Bradley, Director General, Department of Environment and Resource Management on [REDACTED].

Yours sincerely

STEPHEN ROBERTSON MP

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ABN 65 959 415 158

26/12/2010	0800 W21			Rel. minor over last 24 hrs.	
27/12/2010	0800 W22			40-50 over dam CA last 24 hrs.	
28/12/2010	0700 W23	347 (initially) then back to 46		20-40 over dam CA's last 24 hrs	
29/12/2010	0700 W24			69.26 (@ 0600) - aim is to return to FSL by 2/1/2011 69.33 peak yesterday @ 1200 (2.3m > FSL) 69.07 this am	No/very little in last 24 hrs.
30/12/2010	0700 W25	Wivenhoe+Lockyer = 1,600m ³ /s			No/very little in last 24 hrs.
31/12/2010	0700 W26 W27	Wivenhoe+Lockyer = 1,600m ³ /s		68.4 @ 0500	No/very little in last 24 hrs.
06/01/2011	1200 W28	Commence opening RG @ 1800 & ramp up to 300m ³ /s by 2200		67.31 @ 0700 CA's	20-30 widespread with up to 50 on dam
07/01/2011	0700 W29			67.64 @ 0600	30-50 with isolated falls up to 75; signif. Rain on Lock. Ck.
07/01/2011	1500 W30	Release started 1500 to be incr. slowly to ~1,200m ³ /s by 1400 tomorrow			
08/01/2011	0700 W31	~890	All (5) RG's open	68.45 @ 0600 rising steadily	Widespread rain 20-40 over dam CA's since 0900 yesterday; further high rainfall predicted for next 4 days
09/01/2011	0700 W32 W33	1,343		Currently 68.58 (falling slowly)	For last 12 hrs. av. of 40 for Somerset CA & <10 for Wivenhoe CA
09/01/2011	2100 W34	1,400		Currently @ 69.1;	Very heavy rainfall - totals for 24 hrs 100 - 300; Severe weather warning for heavy rainfall

W35
W36
W37

20-60 last 12 hrs in Lockyer CA; 30 in
Bremer R.; Isol. Falls of 125 in upper
Brisbane R. & widespread falls of 40 - 70
in Somerset CA

2,750 since 1930 on
10/1/2011

All (5) gates

73.51 rising @
25mm/hr.

11/01/2011

0630 W38

74.1 (179.5% cap.)
rising @ 25mm/hr.

3,970

11/01/2011

1200 W39

Comments

Crossing Closures

45,000ML from Somerset; WL Somerset to peak at 99.7 on 13/12/2010; 150m³/s expected through Brisbane; 30,000ML expected into Wivenhoe from upper Brisbane R.; peak WL in Wivenhoe expected to be 67.6; Releases expected from Wivenhoe on afternoon of 13/12/2010 ramping up to 300m³/s; Reg. will be closed & Gate 3 opened to 3m to get WL back to 67.25; Incr. release will impact on 3 crossings; Dam Regulator informed

138m³/s from Somerset;

Releases from Wivenhoe will cease on 16/12/2010; Hydro will continue during fish recovery ops.

Gate closed 1000

Decision to commence a release tonight was made this am by Duty Flood Engineers to provide as much notice to impacted Councils as possible; 60,000ML needs to be released from Wivenhoe & Somerset to maintain FSL

Need to release >60,000ML from Wivenhoe & Somerset to achieve FSL

Releases could increase to 300m³/s;

100,000ML to be drained in next 4 days; Q Brisbane R. to be maintained at 300-350m³/s; Transfer from Somerset via 2 reg.; Wivenhoe Q incr. to 150m³/s o/n; Will incr. further to 300m³/s as Q Lock.Ck. Subside over next 24 hrs.; Q Lock.Ck. Currently 130m³/s 12,000ML/day from Somerset; Release expected until 22/12/2010;

Somerset rel. steady (Q reg.=140m³/s); Q Wivenhoe to be maintained at 300m³/s (Lock.Ck. Permitting) to allow Burtons Bridge to remain open; WL Wivenhoe expected to incr. to 67.4 over next 2 days;

Somerset risen to 100.2 - sluice gate releases to be made until am of 22/12/2010 when FSL expected; WL Wivenhoe at 68 expected this pm; Q Wivenhoe expected to be >1,200m³/s - discuss with impacted Cnds.- strategy decision by 10000; Wivenhoe inflows incl. Q Somerset peak tomorrow at 1800m³/s

Inflow to Somerset to peak today at 700m³/s; Somerset & Wivenhoe currently storing 140,000ML above FSL; further inflows occurring; releases to be incr. o/n to ~1,200m³/s; various Cnds. Given heads up; BOM advised

Same as W11

410m³/s from Somerset sluice gates; Somerset peaked @100.43 (1300 on 20/12/2010), currently @ 100.23 (114% of cap.); 110,700ML inflow to Somerset, 67,500ML discharged into Wivenhoe; Wivenhoe inflow (excl. Somerset releases) = 157,900ML; 103,000ML released; Total inflow to both dams ~310,000ML; Continued gate operations may be necessary if forecast rainfall results in subsequent river rises

410m³/s from Somerset sluice gates; Somerset currently @ 99.68 (108% cap.); 121,500ML inflow to Somerset, 103,000ML released to Wivenhoe; Gate Ops. @ Wivenhoe; High tides expected to coincide with peak levels in Brisbane R.

BOM aware of all releases

1 sluice open @ Somerset to be closed @ 0900 - WL will be 0.1m> FSL; Est. inflow to Somerset 135,000ML, majority discharged into Wivenhoe; Gate closure ops @ Wivenhoe in progress; Wivenhoe inflow (excl. Somerset inflow) = 204,000ML; A total of 324,000ML has been released; Contd. gate ops may be necessary if forecast rain results in river rises; Gate closure ops sequence to be reviewed

Somerset gate ops ceased @ 0900, WL @ 99.1; Gate closure sequence extended to pm of 24/12/2010; Contd. Gate ops may be necessary if forecast rainfall gives incr. river levels

Gate ops @ Somerset ceased yesterday, reg. to be opened to bring lake to FSL; Gate ops continuing @ Wivenhoe -1 gate incr. every 5-6 hrs to ensure Brisbane R. Q not incr. due to incr. Lock. Ck. Outflows & maintain Burtons Bridge open;

Flood Centre to monitor o/n & consider options tomorrow am based on inflows & rainfall; further gate ops may be necessary in coming days

Somerset WL incr. from 99.18 yesterday @ 0600 to 99.33 @ 0730 today; 99.5 tomorrow if no gate ops.; Wivenhoe currently 4,200ML through hydro & reg.; 15,000ML expected just from upper Brisbane R. in next few days; WL cont. to fall in Lock. Ck; Small rises expected in Bremer & Warrill systems; WL in Wivenhoe incr. to 67.28 @ 600

Gate release will impact on 3 crossings

Would impact Twin Bridges, Savages Crossing, Colleges Crossing

Twin Bridges & Savages Crossing currently closed; Colleges Crossing to be impacted in afternoon

Twin Bridges, Savages Crossing, Colleges Crossing currently closed

Twin Bridges, Savages Crossing and Colleges Crossing are closed; closing of Burtons Bridge and Kholo Bridge will be considered if more rain or inflows

Both Burtons and Kholo bridges likely to be inundated

Wivenhoe releases reduced slightly to keep Burtons Bridge open - then incr. releases after Somerset Regn/Cnd inform residents affected by Burtons Bridge

Kholo Bridge is also expected to be inundated by mid-morning ; In accordance with the adopted operational strategy these bridges should be back in service by late Thursday and all bridges (with the possible exception of Twin Bridges) should be trafficable for Christmas providing no further rainfall occurs.

Burtons Bridge & Kholo Bridge expected to be back in service by 23-24/12/2010; All bridges expected to be trafficable by Xmas provided no further rain

Gate closing sequence to allow bridges to be accessible

Projected crossing openings: Burtons Bridge – 18:00 Thursday 23 December 2010.

Savages Crossing – 19:00 Thursday 23 December 2010

Kholo Bridge – 21:00 Thursday 23 December 2010

Colleges Crossing – 08:00 Friday 23 December 2010

Projected crossing openings: Burtons Bridge – 18:00 Thursday 23 December 2010, Kholo Bridge - 21:00

Thursday 23 December 2010; Other bridges expected to remain closed until Xmas Day

Twin Bridges, Savages Crossing and Colleges Crossing are currently closed and should remain so for some time due in part to current outflows into the Brisbane River from Lockyer Creek that will peak in excess of 200 cumecs late today.

Twin Bridges, Savages Crossing and Colleges Crossing may still be affected by flows from the Lockyer.

Twin Bridges, Savages and Colleges Crossing remain impacted by Wivenhoe releases and Lockyer and local runoff. Burtons and Kholo Bridges would be currently unaffected. Kholo will no doubt still be closed by Council regarding repairs.

BOM issued severe weather warning @ 0.44s; Somerset WL incr. to 99.46 (0.46m > FSL) - 2 regs. To be opened today (140m³/s); Wivenhoe WL incr. to 67.37 (0.37m > FSL); RG to be opened later today following discussions with local authorities; further gate ops may be necessary if rainfall incr. river levels

BOM continues with severe weather warning & widespread rainfall over dam CA's; 2 regs. @ Somerset giving 139m³/s release, lake contd. To rise to 99.6 (0.6m > FSL); RG ops @ Wivenhoe commenced yesterday @ 0900; WL contd. To rise to 67.57 (0.57m > FSL); Q[Wivenhoe reduced o/n because of incr. Q]Lockyer to ensure Burtons Bridge remains open; RG @ Wivenhoe wound back as Q[Lockyer incr. > 250m³/s; Q]Lockyer expected to peak > 500m³/s later today/tomorrow - will inundate Burtons Bridge; When this happens, Q[Wivenhoe will be incr. to get WL back to FSL; further gate ops may be necessary in coming days

Sever weather warning no longer current; Somerset release through regs' ~ 208m³/s; WL[Somerset incr. to 99.96 (0.96m > FSL) - inflows decreasing; RG opening dependent on Q]Lockyer; Wivenhoe WL currently @ 68.55 (1.55m > FSL); inflows to Wivenhoe decr.

Further 2 sluices opened @ Somerset; WL @ Somerset 99.83 & falling slowly, 2 sluices to be closed @ 1200; intended to incr. Wivenhoe releases so Q[Wivenhoe+Q]Lockyer maintained @ 1,600m³/s (similar Q to mid Oct & mid Dec 2010)

2 sluices @ Somerset remain open (405m³/s) - FSL expected by 6/1/2011; RG closing sequence expected to start mid tomorrow- RG expected to be closed on 2/1/2011

WL @ Somerset 99.01 (falling from peak of 100.0 - 1200 28/12/2010) - currently 2 regs;

Somerset @ 99.34 (0.34m > FSL) & rising slowly; Wivenhoe 67.31 (0.31m > FSL) & rising slowly; Gates will be opened in next 24 hrs; Lockyer Ck peak of about 100m³/s Friday afternoon

100-200mm rain forecast for SE Qld next 5 days; Somerset WL @ 99.58 (0.59m > FSL) rising slowly - currently releasing 35m³/s; Wivenhoe WL @ 67.64 (0.64m > FSL & > gate trigger level) rising slowly; u/s of dam river levels peaked @ Linville and Gregors Ck gauges; A peak of about 470 cumecs is expected from Lockyer Creek by mid-afternoon; Wivenhoe gate releases will occur after the impact of Lockyer flows on Burtons Bridge has been ascertained and flood levels in the lower Lockyer subside Q[Wivenhoe may be as high as 1,200m³/s

Somerset releasing 35m³/s; 50,000ML into Somerset; Gate release @ Wivenhoe - strategy to be reviewed tomorrow (dependent on further rainfall)

Somerset WL @ 100.42 & rising (0500) - 1 open sluice gate; Water temp. held in Wivenhoe - strategy may need to be reviewed (depend. on confidence in estimates of Wivenhoe inflows); intended to ramp Wivenhoe up to 1,200m³/s by 1200 - likely to be incr. next week; since 2/1/2011, ~200,000ML has flowed into Wivenhoe (incl. Somerset releases), further 180,000ML expected based on recorded rainfall; ~50,000ML released via reg. & hydro (@50m³/s)

Somerset currently @ 100.27 - 60mm rain in last 2 hrs will cause significant inflow later today; 405m³/s being released into Wivenhoe; maintain combined Q of 1,600m³/s in mid-Brisbane R.

Not included

Somerset @ 101.68 rising quickly; 5 sluice gates open releasing ~1,100m³/s; WL expected to reach 103.5 by am 11/1/2011; River levels u/s Wivenhoe rising fast; Q[Brisbane R. @ Gregors Ck @ 6,700m³/s; Wivenhoe expected to reach 73.0 by 11/1/2011 - need to incr. Q]Wivenhoe am of 10/1/2011 - crank up to 2,600m³/s by am 11/1/2011; Attempt to keep combined Q < 3,500m³/s - < limit of urban damages in the City

Crossings downstream of the dam are currently impacted primarily by non-controlled river flows only (no RG releases from Wivenhoe). Lockyer Creek outflows into the Brisbane River are currently in the order of 60m³/s. Twin Bridges, Savages and Colleges Crossings will be inundated but the plan is to release around 300-350m³/s depending on flows downstream so as to not impact Burtons Bridge.

Twin Bridges, Savages Crossing and Colleges Crossing currently closed; Burtons Bridge is currently open, but will be closed later today/tomorrow; Kholo Bridge remains unserviceable due to flood damage; No current expectation that either Mt Crosby Weir Bridge or Fernvale Bridge will be impacted by the current event; An updated estimate of the time of closure of Burtons Bridge this afternoon will be provided to Council RG discharge dropped back to 46m³/s to ensure Burtons Bridge can remain open; Twin Bridges, Savages Crossing, Colleges Crossing, Burtons Bridge and Kholo Bridge are currently closed; No current expectation that either Mt Crosby Weir Bridge or Fernvale Bridge will be impacted by the current event; Lockyer Creek outflows being closely monitored and may come close to impacting upon the Mt Crosby Weir Bridge; England Creek access is not impacted yet

Twin Bridges, Savages Crossing, Colleges Crossing, Burtons Bridge and Kholo Bridge are currently closed; no current expectation that Mt Crosby Weir Bridge or Fernvale Bridge will be impacted by current event. At this stage, estimated that the flow at Burtons Bridge will fall below the bridge deck on Sunday morning.

Twin Bridges, Savages Crossing, Colleges Crossing, Burtons Bridge and Kholo Bridge are currently closed
Twin Bridges, Savages Crossing, Colleges Crossing, Burtons Bridge and Kholo Bridge are currently closed due to inundation

Not Included
Lockyer Ck peak or about 100m³/s Friday afternoon. This will take out twin bridges and nearly inundate Savages Crossing. Colleges Crossing could be taken out by a combined Lockyer and local runoff. Current strategy is to keep Burton Bridge free. Gate release would limit mid-Brisbane Q to 400m³/s (Burtons capacity 450m³/s).

Q[Lockyer may be of sufficient magnitude to inundate Burtons Bridge; Somerset Regional Council, Ipswich City Council and Brisbane City Council have been advised of the potential for gate operations during the next 24 hours; The relatively high Lockyer flows will adversely impact upon Twin Bridges, Savages Crossing, and Colleges Crossing for several days, may also later impact upon Burtons Bridge & Kholo Bridge; not expected to be any adverse impacts upon Fernvale Bridge or Mt Crosby Weir Bridge; Councils have been advised of this strategy and are contacting residents

All of the crossings downstream of Wivenhoe with the exception of Fernvale and Mt Crosby Weir Bridge will be adversely impacted; Councils have been advised of this strategy and are contacting residents

The projected Wivenhoe release of 1,200m³/s combined with Lockyer flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing) will be adversely impacted for several days. At this stage Fernvale and Mt Crosby Weir Bridge are not expected to be affected but they could potentially be affected if the predicted rainfall totals eventuate.

The current Wivenhoe Dam release combined with Lockyer flows and local runoff will mean that all low level crossings downstream of Wivenhoe (Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing) will be adversely impacted until at least Wednesday 12 January. At this stage Fernvale and Mt Crosby Weir Bridge are not expected to be affected, but this may be revised if the predicted rainfall totals eventuate and higher releases from Wivenhoe Dam are considered necessary. Cncls advised of Wivenhoe op. strategy

The projected Wivenhoe Dam releases combined with Lockyer flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted until at least Saturday 15 January in varying degrees; Water levels in the lower Brisbane R will be impacted by the combined flows of Lockyer Ck, Bremer River, local runoff and releases from Wivenhoe Dam

Not included
Not included
Not included

Somerset WL @ 103.27 & falling slowly ; currently 1,400m³/s released to Wivenhoe- to be reduced to 500m³/s later in the day - to ensure flood mitigation of Somerset & Wivenhoe are maximized; BOM provided advice on flash flooding in Lockyer Ck.; WL in Wivenhoe will reach 74 by evening; May need to increase Q further - may result in Q lower Brisbane R. >5,000m³/s

Somerset @ 103.3 & rising; Outflows into the Brisbane River from both Lockyer Creek and the Bremer River are also increasing; if no further rain, can hold @ 74.8 - aim is to prevent fuse plug triggering, situation assessed every 3 hrs.; Heavy rainfall continues throughout South East Queensland and the situation could deteriorate over the next 24 hours. The flood operation centre will continue to monitor the situation and provide situation reports every six hours until the situation stabilizes.

The projected Wivenhoe Dam releases combined with Lockyer Creek flows and local runoff will mean that all crossings downstream of Wivenhoe (Twin Bridges, Fernvale, Savages Crossing, Burtons Bridge, Kholo Bridge, Mt Crosby Weir and Colleges Crossing) will be adversely impacted; Water levels in the lower Brisbane River will be impacted by the combined flows of Lockyer Creek, Bremer River, local runoff and releases from Wivenhoe Dam.

Suzie Emery

From: Bradley John [John.Bradley [REDACTED]]
Sent: Sunday, 16 January 2011 10:35 PM
To: Elaina Smouha
Cc: Barry Dennien; Dan Spiller; Best Debbie; pborrows; Reilly Bob
Subject: RE: Cabinet in confidence - Ministerial brief - Flood event and Wivenhoe Dam

Follow Up Flag: Follow up
Flag Status: Flagged

Many thanks to all for thier hard work at the end of an exceptionally long week,

I have sent to Minister and look forward to seeing Barry/Dan, Peter Borrows and Bob Reilly at 9 am in Minister Robertson's office,

thanks
John B

From: Elaina Smouha [mailto:elainamir [REDACTED]]
Sent: Sunday, 16 January 2011 10:14 PM
To: Bradley John
Cc: Dennien Barry [REDACTED]; spiller daniel [REDACTED]; WaterGridMedia; Best Debbie; pborrows
Subject: Cabinet in confidence - Ministerial brief - Flood event and Wivenhoe Dam

John

Attached is the Ministerial Brief and accompanying attachments for the Emergency Cabinet meeting scheduled on 17 January 2011.

Regards

Elaina

Elaina Smouha
Director, Governance and Regulatory Compliance
SEQ Water Grid Manager

Email: [elaina.smouha \[REDACTED\]](mailto:elaina.smouha [REDACTED])
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ABN: 14783 317 630

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From: Barry Dennien </O=SOUTH EAST QUEENSLAND WATER GRID
MANAGER/OU=EXCHANGE ADMINISTRATIVE GROUP
(FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BARRY.DENNIEN>
Sent: Tuesday, January 25, 2011 4:32 PM
To: john.bradley [REDACTED]
Cc: Dan Spiller <Daniel.Spiller [REDACTED]>
elaina.smouha [REDACTED] pborrows [REDACTED]; Reilly Bob
<Bob.Reilly [REDACTED]>
Subject: Public inquiry discussion points - brief - Cabinet in confidence
Attach: Public inquiry strategy - brief.docx

John

Attached are some discussion points in preparation for the 2pm teleconference about Monday's Emergency Cabinet meeting.

Regards

Barry

Discussion points for teleconference

What is the objective?

- a) Ensuring public transparency
- b) To answer the State's questions on the performance of Wivenhoe Dam operations
- c) Preparation for a public inquiry
- d) Normal and logical course of conduct after the occurrence of a major flood event – Review requirement under the Flood Mitigation Manual

Background

- 1) Design of Dam – Storages/Spillway upgrade (Responsible: Seqwater)
- 2) How does Wivenhoe Dam work as a flood mitigator? Stats on how much did Wivenhoe Dam knock off the flood peak? **Priority to get out to the public** (Responsible: Seqwater)
- 3) Development of Flood Mitigation Manual (Responsible: Seqwater/DERM)
 - a. Four strategies
 - b. History of Flood Mitigation Manual updates and peer review
- 4) Responsibility under the *Water Supply (Safety and Reliability) Act 2008* (Responsible: DERM)
 - a. What is the formal reporting process following a major flood event?
- 5) "The Event" – operation of Wivenhoe Dam (Responsible: Seqwater)
 - a. Event report under the Flood Mitigation Manual
- 6) "The Event" – management of the Water Grid emergency under the SEQ Water Grid Emergency Response Plan (Responsible: SEQ Water Grid Manager)
- 7) What next?
 - a. SWOT
 - i. Community feedback
 - ii. A significant (from a national perspective)

Seqwater report

Flood Mitigation Manual requires a report to the Chief Executive after a significant flood event, on the effectiveness of the operational procedures:

- Get more comprehensive report from Brian Cooper? – review appropriateness of trigger levels – take into account the accuracy of rainfall forecasts provided by BOM at the time – reliability of weather forecasts.
- Set up expert panel for Flood Mitigation Manual review
- Communication Protocol and incorporation into the Flood Mitigation Manual (revisit in the next fortnight)

Seqwater to procure review.

Urgent accelerated review due to anticipated further rainfall.

From: Dan Spiller <dan.spiller[REDACTED]>
Sent: Monday, March 7, 2011 6:19 PM
To: 'Bradley John' <John.Bradley[REDACTED]>;
'Debbie.Best' <Debbie.Best[REDACTED]>; 'Reilly Bob' <Bob.Reilly[REDACTED]>
Cc: Barry Dennien <Barry.Dennien[REDACTED]>
Subject: Summary report
Attach: January flood event_Summary of information released_FINAL.PDF

All,

Report as provided to Stark and CM.

Dan

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January 2011 flood event Summary of dam operations

January 2011

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1.0 Introduction

A flood event occurred in South East Queensland in January 2011.

Throughout this event, the Water Grid provided regular updates on the levels of key storages and the management of releases. The releases were provided to media outlets and Councils, and made available on the Water Grid website (www.watergrid.com.au). The updates released during the flood event have been collated under **Attachment 1**.

Updates focused on the four dams in South East Queensland that are gated, with the ability to control the rate of release of floodwater. These are Wivenhoe, Somerset, North Pine and Leslie Harrison dams.

The updates include information about the storage levels of each dam and releases from those dams. They also contain most general information about:

- flows from the Lockyer and Bremer, which enter the Brisbane River downstream of Wivenhoe Dam
- impacts on downstream bridges, based on advice from the Councils that own those bridges
- rainfall forecasts, based on advice from the Bureau of Meteorology.

Information about the regulatory framework for the management of Wivenhoe and Somerset dams is contained in Section 2.

Information about the operation of Wivenhoe and Somerset dams is summarised in Section 3.

Information about the operation of North Pine and Leslie Harrison dams is summarised in Section 4. Information on Hinze Dam releases are also included.

All of these dams are owned and operated by Seqwater. The information provided in the updates was based on information provided by Seqwater.

As outlined in Section 5, more detailed information about the impact of dam releases on river levels is being prepared by the Bureau of Meteorology and responsible Councils.

2.0 Regulatory framework

Detailed operational procedures have been approved for each of the gated dams.

Seqwater is the owner and operator of Wivenhoe and Somerset Dams.

Under Section 370 of the *Water Supply (Safety and Reliability) Act 2008*, it is required to prepare a flood mitigation manual for approval by the Dam Safety Regulator.

Seqwater's approved *Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam* (Operations Manual) can be viewed at www.derm.qld.gov.au. At the request of Seqwater, some sections of the published version Operations Manual have been deducted for security reasons relating to critical infrastructure.

The Operations Manual sets out clear priorities for the strategies to manage water supplies in the dams.

The Operations Manual lists the structural safety of the dam as the highest priority, particularly in extreme weather events where there is the threat of the dam overtopping which could lead to damage to the dam wall.

With the structural safety of the dam secure, the next objectives in order of priority are to provide optimum protection of urbanised areas from inundation, minimise disruption to rural life in the valley of the Brisbane and Stanley Rivers, provide full water supply storage after the flood, and minimise impacts to riparian flora and fauna during the drain down phase of the flood event.

The operational procedures outlined in the Operations Manual have been developed and progressively refined over many years, and have been reviewed by Australia's leading water experts.

They include Professor Colin Apelt, Head of Department, Department of Civil Engineering and Chair of the Brisbane City Council flood taskforce; University of Queensland and Mr Eric Lesleighter, Principal Hydraulic Engineer and Chief Engineer Water Resources, Snowy Mountains Engineering Corporation.

The Operations Manual in its current form was developed in 1992 and has had six revisions since this time, with the latest review taking place in 2009, and finalised in January 2010.

More general information about the operation of Wivenhoe Dam is contained in a factsheet at **Attachment 2**.

TRIM reference:

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3.0 Wivenhoe and Somerset dams

Table 1 summarises the information released during the event, including the dam levels and release rates. For some days, dam levels are not specified. For those days, levels were not specified in the releases or updated on the Seqwater website.

On 13 February 2010, Seqwater announced that Wivenhoe Dam would be reduced to 75 per cent of its full supply level. This is an interim measure for the remainder of the summer, with the longer term approach to be shaped by the Commission of Inquiry's outcomes. Seqwater advises that a reduction in Wivenhoe Dam storage level to 75 per cent of its Full Supply Level will provide appreciable flood mitigation benefits ahead of any major rain events in the remainder of the wet season.

The operational decision reflects current circumstances, rather than issues which likely to be considered by the Commission of Inquiry into the recent floods. The Commission of Inquiry will continue to assess dam operations during the January flood event and whether any changes to the long term framework are required.

TRIM reference:

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Table 1: Wivenhoe and Somerset dam operation

Update	Wivenhoe Dam		Somerset Dam		Bridges inundated					Key statements from Updates		
	Level	Releases	Level	Releases into Wivenhoe Dam	Twin	Savages	Burtons	Rhola	Colleges			Fernvale
Saturday 1 January	-	130,000 ML/day	-	Through regulator valve	x	x	x	x	x			<ul style="list-style-type: none">• The gradual gate closure sequence at Wivenhoe began overnight and by sometime Sunday all gates will be closed.
Sunday 2 January	-	All five gates closed Sunday morning	-	Through regulator valve	x	x						<ul style="list-style-type: none">• All five gates were fully closed this morning.
Monday 3 January	-	-	-	-	x							<ul style="list-style-type: none">• No update
Tuesday 4 January	102%	Through regulator valve	103%	Through regulator valve								<ul style="list-style-type: none">• No update
Wednesday 5 January	102%	Through regulator valve	103%	Through regulator valve								<ul style="list-style-type: none">• No update
Thursday 6 January	103%	Through regulator valve. Gate operations will be required	104%	Through regulator valve	x	x	x	x	x			<ul style="list-style-type: none">• Gate operations at Wivenhoe Dam will be required. To minimise downstream impacts, these releases will commence when flood levels in the lower Lockyer Creek subside.• Local flows, and the expected Wivenhoe Dam release, may impact upon Twin Bridges, Savages Crossing, Burtons Bridge, Rhola Bridge and Colleges Crossing for several days.
Friday 7 January	106%	Through regulator valve. Gate operations will be required at 130,000 ML/day	107%	Through regulator valve	x	x	x	x	x			<ul style="list-style-type: none">• To minimise downstream impacts, these releases will commence when flood levels in the lower Lockyer Creek subside. The rate of release will be similar to last week, at up to 130,000 megalitres per day.
Saturday 8 January	-	100,00 ML/day through all 5 gates	-	Through one gate	x	x	x	x	x			<ul style="list-style-type: none">• Releases will be reviewed and may change depending on rainfall, inflows into the dam and river flows.
Sunday 9 January	-	116,000 ML/day	-	Through sluice gates	x	x	x	x	x			<ul style="list-style-type: none">• Gate operations will continue to be reviewed and may change at short notice depending on rainfall, inflows into the dam and river flows.• These releases are expected to continue until next week.

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Update	Wivenhoe Dam		Somerset Dam		Bridges Inundated						Key statements from Updates	
	Level	Releases	Level	Releases into Wivenhoe Dam	Twin	Savages	Burtons	Khola	Colleges	Fernvale		Mt Crosby
Monday 10 January (Morning)	140%	170,000 ML/day	150%	Through sluice gates	x	x	x	x	x	x	x	<ul style="list-style-type: none">Overnight, Fernvale and Mt Crosby Weir Bridges together with a number of local roads became Inundated. They joined the others already Impacted, including Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing.In order to relieve the quickly filling flood storage compartment, and with more rain forecast, controlled releases from the dam have been increased today from 116,000 megalitres per day to 170,000 megalitres per day. These releases are a necessity.Releases are being reviewed in consultation with the Bureau of Meteorology and local councils, utilising a strategy to limit Impacts where possible downstream.
Monday 10 January (Evening)	154%	Increasing to 240,000 ML/day	158%	Through sluice gates	x	x	x	x	x	x	x	<ul style="list-style-type: none">In order to relieve the quickly filling flood storage compartment, and with more rain forecast, controlled releases from the dam have been Increased today from 116,000 megalitres per day to 172,000 megalitres per day. Further increases to the release rate are planned, to approximately 240,000 megalitres per day by midnight.These releases are a necessity as, at the peak, Wivenhoe Dam was receiving more than twice the volume of Sydney Harbour each day.Releases are continually being reviewed in consultation with the Bureau of Meteorology and local councils, utilising a strategy to limit Impacts where possible downstream.
Tuesday 11 January (Morning)	173%	Further increases today	160%	Through sluice gates	x	x	x	x	x	x	x	<ul style="list-style-type: none">Significant rainfall received across catchments has caused waterways upstream of Somerset and Wivenhoe Dams to rise quickly overnight.Controlled releases through the five gates have been

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Update	Wivenhoe Dam		Somersey Dam		Bridges inundated						Key statements from updates	
	Level	Releases	Level	Releases into Wivenhoe Dam	Twin	Savages	Burtons	Kholo	Colleges	Fernvale		Mt Crosby
Tuesday 11 January (Evening 5.19PM)	190%	490,000 ML/day	176%	176,000 ML/day through sluice gates	x	x	x	x	x	x	x	held at around 236,000 megalitres since early last night but will need to be increased further today.
Tuesday 11 January (Evening 10.30PM)	190%	645,000 ML/day	183%	Releases ceased, but expected to recommence overnight	x	x	x	x	x	x	x	<ul style="list-style-type: none">Controlled releases through Wivenhoe's five radial gates have now been increased to around 490,000 megalitres per day. This is expected to increase.While substantial amounts of water are being released into Wivenhoe from Somerset Dam, water levels in Somerset are expected to continue to rising today and areas around Kilcoy are likely to be impacted by these rising dam levels.At 10pm Wivenhoe Dam was at 190 per cent with water levels falling slowly.Controlled releases through Wivenhoe's five radial gates of 645,000 megalitres per day are expected to reduce slightly overnight due to easing rainfall.Somerset Dam is at 183 per cent and releases into Wivenhoe are expected to recommence overnight however high upstream levels are expected to continue to affect Kilcoy.
Wednesday 12 January (Morning)	190%	205,000 ML/day, down from an overnight peak of 645,000 ML/day	190%	Through sluice gates	x	x	x	x	x	x	x	<ul style="list-style-type: none">Wivenhoe's five radial gates are currently releasing 205,000 megalitres per day, down from 370,000 megalitres and an overnight peak of 645,000 megalitres.This strategy is to allow for the Bremer and Lockyer Rivers to subside.After the expected downstream peak in the lower Brisbane River has passed, releases will need to be increased to 301,000 megalitres per day.However, this increase is unlikely to cause a second significant rise in the river.

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Update	Wivenhoe Dam		Somerset Dam		Bridges inundated						Key statements from updates	
	Level	Releases	Level	Releases into Wivenhoe Dam	Twin	Savages	Burtons	Khola	Colleges	Fernvale		Mt Crosby
Wednesday 12 January (Evening)	189%	215,000 ML/day	186%	123,000 ML/day	x	x	x	x	x	x	x	<ul style="list-style-type: none">These controlled releases must continue in order to relieve Wivenhoe Dam's swollen flood storage compartment in order to create space for further rainfall and inflows.Wivenhoe's five radial gates continue to release 215,000 megalitres per day. This is considerably down from an overnight peak of 645,000 megalitres and will remain at this level to allow for the Bremer and Lockyer Rivers to subside.After the expected downstream peak in the lower Brisbane River has passed, releases will be increased to 301,000 megalitres per day, however, this increase is unlikely to cause a second significant rise in the river.
Thursday 13 January (Morning)	187%	215,000 ML/day	174%	121,000 ML/day	x	x	x	x	x	x	x	<ul style="list-style-type: none">Wivenhoe Dam is at 187 per cent, and is dropping gradually with controlled releases through all five gates of 215,000 megalitres per day.The dam's slow recession is due in part to Inflows of 121,000 megalitres per day via a sluice gate from Somerset Dam. Somerset is at 174 per cent.
Thursday 13 January (Evening)	186%	228,000 ML/day	167%	120,000 ML/day	x	x	x	x	x	x	x	<ul style="list-style-type: none">Wivenhoe Dam is at 186 per cent, and is dropping gradually with controlled releases through all five gates of 228,000 megalitres per day.
Friday 14 January (Morning)	179%	301,000 ML/day	151%	111,800 ML/day	x	x	x	x	x	x	x	<ul style="list-style-type: none">Wivenhoe Dam is at 179 per cent, and continues to drop steadily. Releases have been graduated to 301,000 megalitres per day in a 7 day strategy designed to draw down the flood storage compartment with no noticeable effects downstream.The continuing releases are necessary in order to prepare Wivenhoe for any future weather events

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Update	Wivenhoe Dam		Somerset Dam		Bridges inundated						Key statements from Updates	
	Level	Releases	Level	Releases into Wivenhoe Dam	Twin	Savages	Burtons	Rhodo	Colleges	Fernalde		
												should they occur.
Friday 14 January (Evening)	172%	301,000 ML/day	140%	111,800 ML/day	x	x	x	x	x	x	x	<ul style="list-style-type: none">Wivenhoe Dam is at 172 per cent, and continues to drop steadily.Inflows and water levels in the Brisbane and Pine catchments are being continually monitored.
Saturday 15 January (Morning)	163%	301,000 ML/day	129%	79,000 ML/day	x	x	x	x	x	x	x	<ul style="list-style-type: none">Wivenhoe Dam is at 163 per cent, and continues to drop steadily.
Saturday 15 January (Evening)	154%	301,000 ML/day	121%	79,000 ML/day	x	x	x	x	x	x	x	<ul style="list-style-type: none">Wivenhoe Dam is at 154 per cent, and continues to drop steadily.
Sunday 16 January	138%	299,000 ML/day	106%	70,500 ML/day	x	x	x	x	x	x	x	<ul style="list-style-type: none">Wivenhoe Dam is at 138 per cent, and continues to drop steadily. Releases continue at around 299,000 megalitres per day. This flow will be maintained to drain the flood storage compartment this week.
Monday 17 January	123%	299,000 ML/day	100%	Small discharges	x	x	x	x	x	x	x	<ul style="list-style-type: none">Wivenhoe Dam is at 123 per cent capacity and continues to drop steadily. Releases continue at around 299,000 megalitres per day.Somerset Dam is at 100 per cent with small discharges through the cone valves into Wivenhoe.
Tuesday 18 January	107%	176,000 ML/day and reducing with the gate closing sequence	99%	Small discharges	x	x	x	x	x	x	x	<ul style="list-style-type: none">Wivenhoe Dam is at 107 per cent and continues to drop steadily.Releases remained constant overnight at around 176,000 megalitres per day and are now reducing with the commencement of the gate closing sequence which began at 9am this morning.
Wednesday 19 January	99%	Gate closing sequence expected to be completed by Thursday	100%	Sluice gates closed	x	x	x	x	x	x	x	<ul style="list-style-type: none">Wivenhoe Dam is at 99.3 per cent with the gate closing sequence expected to be complete by late afternoon today.

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Update	Wivenhoe Dam		Somerset Dam		Bridges Inundated						Key statements from updates	
	Level	Releases	Level	Releases into Wivenhoe Dam	Twin	Savages	Buttons	Kililo	Colleges	Fernvale		MIT Crosby
Thursday 20 January	99.6%	One gate partially open	100.8%	Sluice gates closed	x							<ul style="list-style-type: none">Somerset Dam is at 100 per cent capacity with all sluice gates currently closed. Depending on Inflows into the catchment, further releases into Wivenhoe Dam may be made over the next 24 hours.Last night's storms over the catchment have resulted in one gate being partially opened at Wivenhoe Dam this morning. This will see a small controlled release over the course of today to maintain the dam at or near 100%.

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4.0 Other dams

Controlled releases were made from North Pine, Leslie Harrison and Hinze dams. These releases are summarised in **Table 2**.

Table 2: Other dam operation

Update	North Pine		Hinze		Leslie Harrison	
	Dam level	Releases	Dam level	Releases	Dam level	Releases
Thursday 30 December	99.9%	-	100.0%	Minor releases	97.6%	-
Friday 31 December	100.2%	-	100.0%	Minor releases	97.8%	-
Saturday 1 January	-	Minor releases underway	-	Minor releases	-	-
Sunday 2 January	-	Minor release overnight, gates closed early morning	-	Minor releases	-	-
Monday 3 January	-	-	-	-	-	-
Tuesday 4 January	99.0%	-	99.6%	-	98.8%	-
Wednesday 5 January	99.1%	-	99.6%	-	98.8%	-
Thursday 6 January	100.0%	Releases expected today	99.9%	-	98.8%	Releases commenced
Friday 7 January	-	Spillway operations commenced	100.0%	-	96.2%	Releases underway
Saturday 8 January	-	Minor releases underway	-	Releases predicted	-	Releases underway
Sunday 9 January	-	Release operations being reviewed	-	Minor releases underway	-	Releases ceased
Monday 10 January am	103.9%	5 gates open releasing 43,000 ML/day	100.0%	Minor releases 1,200 ML/day	100.0%	Releases underway
Tuesday 11 January am	105.3%	5 gates open releasing 15,000 ML/day	100.0%	Minor releases 1,200 ML/day	96.8%	Releases underway
Wednesday 12 January am	101.8%	5 gates open, releasing 6,800 ML/day	112.1%	Minor releases 8,000 ML/day	96.1%	Releases underway
Thursday 13 January am	100.4%	5 gates open. Expected to close Friday	-	Minor releases 8,000 ML/day	96.9%	Releases ceased
Friday 14 January am	-	Releases ceased	100.0%	Minor releases 8,000 ML/day	97.3%	-
Saturday 15 January am	-	-	-	Minor releases 8,000 ML/day	-	-
Sunday 16 January	96.0%	-	-	Minor releases 6,800 ML/day	-	-
Monday 17 January	99.4%	-	99.8%	Minor releases 6,800 ML/day	97.7%	-

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5.0 Additional information

A range of modelling is required to be undertaken to ascertain the precise downstream impact of releases from Wivenhoe Dam during the January 2011 flood event.

Compiling this technical information requires the following tasks:

- validation the water outflows from Wivenhoe Dam
- calculation and validation Brisbane River levels as a result of the water outflows
- determination of the impact of inundation based on those Brisbane River levels.

Seqwater has responsibility for providing and validating water outflows over the event.

Both the Bureau of Meteorology and the Brisbane City Council have developed models for determining Brisbane River levels for various water outflows from Wivenhoe Dam. This includes taking into account flows down both the Lockyer and Bremer rivers and other localised flows. Brisbane City Council has developed the modelling to determine the impact of Brisbane River levels on the flooding properties and households.

Seqwater dam levels and water outflows during the January event are required to be validated and provided to the Dam Safety Regulator as part of a comprehensive report into the event. This report will also be provided to the Commission of Inquiry into the Queensland floods which is now underway.

In addition, Bureau of Meteorology has agreed to be the clearing house for all data requests in relation to either river or rainfall gauges across the region in relation to the January flood event. Any request for this data should be directed to climate.qld@bom.gov.au.

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Attachment 1: Update

TRIM reference:

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TRIM reference: D/

Date and time: 1/01/11 10:45am

Title : MEDIA UPDATE - 01.01.11

Summary: Dam safety for South East Queensland over holiday season, Most recreation facilities open

Note: Issued to all key media and stakeholders in South East Queensland

**MEDIA UPDATE
1 January 2011**

Dam safety for South East Queensland over holiday season

Controlled floodwater releases over several days will see Wivenhoe Dam return to full supply level this weekend.

With the flood compartment empty, Wivenhoe Dam will be ready for more rain forecast next week.

Over the last week, Wivenhoe Dam's flood storage compartment has significantly reduced the flood risk for Brisbane and Ipswich.

The gradual gate closure sequence at Wivenhoe began overnight and by sometime Sunday all gates will be closed.

Water Grid operators continue to work closely with councils regarding dam releases and Twin Bridges, Savages Crossing, Colleges Crossing, Kholo and Burton Bridges will continue to be inundated until Sunday.

Somerset Dam continues to make minor releases into Wivenhoe.

A minor release is being made from North Pine Dam however no impact on Youngs Crossing is expected.

No releases are currently being made from Leslie Harrison Dam

Hinze Dam continues to discharge flood waters and this is expected to continue until early next week. There is no public access to the spillway.

For information on local flood impacts, including road closures, members of the public should always contact the local council.

For recorded information on current dam releases in South east Queensland, call [REDACTED].

Most recreation facilities open

Lower dam levels mean that both Somerset and Wivenhoe Dams are now open to water based activities.



Media updates issued during
the January flood event

All recreation sites are now open, except for:

- River access at Atkinson's Crossing
- Billies Bay/Hay's Landing

For further information on the Water Grid: www.watergrid.com.au

ENDS

Notes to the editor

About the SEQ Water Grid

Established in June 2008 in response to the crippling Millennium Drought, the SEQ Water Grid represents one of Australia's largest investments in water infrastructure.

Through a network of climate resilient water sources, treatment facilities, new two-way pipes and existing pipelines, the SEQ Water Grid gives the South East Queensland region the ability to support water demands, water quality, economic prosperity and lifestyle - regardless of climate change and population growth.

For further details contact the SEQ Water Grid Communications Unit on:

Ph: [REDACTED] | **Email:** media@watergrid.com.au

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TRIM reference: D/	Date and time: 2/01/11 9:50am
Title : MEDIA UPDATE - 02.01.11	
Summary: Dam safety for South East Queensland over holiday season, Most recreation facilities open	
Note: Issued to all key media and stakeholders in South East Queensland	

**MEDIA UPDATE
2 January 2011****Dam safety for South East Queensland over holiday season**

All five gates at Wivenhoe Dam were fully closed on Sunday morning.

This means the flood compartment at Wivenhoe Dam is ready for more rain forecast next week.

Councils have been advised and they will make decisions about opening Twin Bridges, Savages Crossing, Colleges Crossing, Kholo and Burton Bridges as inundation levels drop.

Somerset Dam continues to make minor releases into Wivenhoe.

A minor release was made overnight at North Pine Dam with gates closed early Sunday morning.

No releases are being made from Leslie Harrison Dam

Flood water releases from Hinze Dam will reduce during today and the gate is expected to close sometime tomorrow. There is no public access to the spillway.

For information on local flood impacts, including road closures, members of the public should always contact the local council.

For recorded information on current dam releases in South East Queensland, call [REDACTED]

Most recreation facilities open

Both Somerset and Wivenhoe Dams are open to water based activities.

All recreation sites are now open, except for:

- River access at Atkinson's Crossing
- Billies Bay/Hay's Landing

which are both expected to re-open sometime today.



Media updates issued during
the January flood event

Due to the ground being saturated, care should be taken around all recreation sites. Vehicles must only be parked in designated parking areas and should not be driven on off roads or onto grassed areas.

For further information on the Water Grid: www.watergrid.com.au

ENDS

Notes to the editor

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For further details contact the SEQ Water Grid Communications Unit on:

Ph: [REDACTED] | Email: media@watergrid.com.au

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TRIM reference: D/	Date and time: 6/01/11 4:13pm
Title : SEQ dam release and flooding update - 06.01.11	
Summary: Dam releases, Recreation update, Gold Coast Desalination Plant update	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 06.01.11

MEDIA RELEASE - 6 JANUARY 2011

Dam Releases

With recent heavy rainfall across South East Queensland and the forecast of more to come, releases are being made from some of the region's water storages.

Gate operations at Wivenhoe Dam will be required. To minimise downstream impacts, these releases will commence when flood levels in the lower Lockyer Creek subside.

Local flows, and the expected Wivenhoe Dam release, may impact upon Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing for several days. Local councils should be consulted for detailed information on road crossing closures and other impacts.

At this stage, no impacts are expected for Fernvale Bridge or Mt Crosby Weir Bridge.

Water from Somerset Dam is being released into Wivenhoe Dam through a regulator valve, which may increase later today.

A release through the gate at North Pine Dam is expected to commence later today.

A release from Leslie Harrison is underway and may continue until the weekend.

No water is currently being released from Hinze Dam.

The Water Grid is working with local councils regarding the current releases and the likely impacts, which are being managed in accordance with approved flood management plans.

Recreation update

Dams are currently open for water-based recreational activities, however this may change depending on the weather. Visitors should check the Water Grid website for additional information for each recreation site.

Gold Coast Desalination Plant



Media updates issued during
the January flood event

Even though the regions dams are at or near full capacity, recent heavy rains have resulted in high sediment levels in the Brisbane River. These increased levels present challenges for water treatment plants like those at Mt Crosby, which are the main supply for Brisbane.

The Gold Coast Desalination facility was recently brought up to full capacity to address the flood associated issues at Mt Crosby without compromising water security or quality for Brisbane.

The Gold Coast Desalination facility is now operating at 33 per cent capacity to ensure the highest water quality for the South East Queensland region.

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking detailed information on **potential impacts in their local areas including road closures** should direct inquiries to their local councils.

For further details contact the Water Grid Communications Unit on:
Ph: [REDACTED] | Email: media [REDACTED]

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TRIM reference: D/	Date and time: 7/01/11 10:03am
Title : SEQ dam release and flooding update - 07.01.11	
Summary: Dam releases, Recreation update, Gold Coast Desalination Plant update	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 07.01.11

MEDIA RELEASE - 7 JANUARY 2011

Dam releases

With recent heavy rainfall across South East Queensland and the forecast of more to come, releases are being made from some of the region's water storages.

Water from Somerset Dam is being released into Wivenhoe Dam through a regulator valve. The releases may be increased to utilise sluice gates later today or over the weekend.

Gate operations at Wivenhoe Dam will be required. To minimise downstream impacts, these releases will commence when flood levels in the lower Lockyer Creek subside. The rate of release will be similar to last week, at up to 130,000 megalitres per day.

Local flows, and the expected Wivenhoe Dam release, may impact upon Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing for several days. Local councils should be consulted for detailed information on road crossing closures and other impacts.

At this stage, no impacts are expected for Fernvale Bridge or Mt Crosby Weir Bridge.

Spillway gate operations commenced yesterday evening at North Pine Dam. These releases may continue until next week, depending upon further rainfall.

A release from Leslie Harrison is underway and may continue until the weekend.

No water is currently being released from Hinze Dam.

The Water Grid is working with local councils regarding the current releases and the likely impacts, which are being managed in accordance with approved flood management plans.

Telephone - [REDACTED] has been established for members of the public seeking information on which dams are spilling in South East Queensland.

Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

Recreation update

Due to water levels, Wivenhoe Dam is closed to all water based recreational activities as of this morning. The closure will most likely extend over the weekend.

At this stage Lake Somerset is open to all water based recreational activities, however this may change with short notice.

Lake Baroon has also been closed to all water based recreational activities but is open for picnics and barbeques. Care should be taken at the recreation sites, and vehicles must be parked in designated parking areas only.

Moogerah and Maroon Dam remains open, but swimming and skiing should be avoiding.

The following recreational sites are currently closed to the public –

- O'Sheas Crossing
- Hamon Cove
- Logan inlet
- Captain Logan Camp
- River access at Atkinson's Crossing
- Billies Bay and Hays Landing

Visitors should check the Water Grid website for additional information for each recreation site.

Gold Coast Desalination Plant

Even though the regions dams are at or near full capacity, recent heavy rains have resulted in high sediment levels in the Brisbane River. These increased levels may present challenges for water treatment plants like those at Mt Crosby, which are the main supply for Brisbane.

The Gold Coast Desalination facility was recently brought up to full capacity to address the flood associated issues at Mt Crosby without compromising water security or quality for Brisbane.

The Gold Coast Desalination facility is now operating at 33 per cent capacity to ensure the highest water quality for the South East Queensland region.

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

For further details contact the Water Grid Communications Unit on:

Ph: [REDACTED] | Email: media [REDACTED]

TRIM reference: D/	Date and time: 7/01/11 4:42pm
Title : SEQ dam release and flooding update - 07.01.11	
Summary: Friday Grid Update, Dam releases	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 07.01.11

**WEEKLY GRID UPDATE
FRIDAY 7 JANUARY 2011**

DAM RELEASES

Gate operations have commenced at Wivenhoe Dam and releases are expected to reach around 100,000 megalitres a day by tomorrow afternoon. Releases will be reviewed and may change depending on rainfall, inflows into the dam and river flows.

Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing may be inundated for several days. Local councils should be consulted for detailed information on road crossing closures and other impacts.

At this stage, no impacts are expected for Fernvale Bridge or Mt Crosby Weir Bridge.

Water from Somerset Dam is being released into Wivenhoe Dam through a regulator valve. The releases may increase to utilise sluice gates later today or over the weekend to manage rainfall and inflows.

Spillway gate operations commenced yesterday evening at North Pine Dam. These releases may continue into next week, depending upon further rainfall. The local council has been advised that Youngs Crossing Road may be inundated.

A release from Leslie Harrison Dam is underway and may continue until next week.

A release through the emergency gates at Hinze Dam is expected during the weekend.

The Water Grid is working with local councils regarding the current releases and the likely impacts, which are being managed in accordance with approved flood management plans.

Telephone - [REDACTED] has been established for members of the public seeking information on which dams are spilling in South East Queensland.

Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

RECREATION UPDATE

Due to high water levels, Lake Wivenhoe is currently closed to all water based recreational activities. The closure will most likely extend over the next few days.

The following recreation sites at Wivenhoe are currently closed due to submerged infrastructure, or dangerous conditions:

- O'Sheas Crossing
- Hamon Cove
- Logan inlet
- Captain Logan Camp
- River access at Atkinson's Crossing
- Billies Bay and Hays Landing

Other recreation areas at Wivenhoe are open for land based activities. The Spillway Lookout recreation area is open, however visitors are advised that there may be long delays due to the number of people visiting the site. Security staff and traffic controllers will be on site and all visitors will need to follow their directions.

Lake Somerset will be temporarily closed to all water based recreational activities from 6pm tonight and is expected to remain closed over the weekend and possibly into next week.

Access to Lake Borumba is not available as Yabba Creek Road between Imbil and Borumba Dam is currently closed. Access is expected to remain closed for several days.

Lake Baroon has also been closed to all water based recreational activities but is open for picnics and barbeques. Care should be taken at the recreation sites, and vehicles must be parked in designated parking areas only.

Lake Maroon remains closed to water skiing and swimming but remains open to boating and fishing.

Visitors should check the Water Grid website (www.watergrid.com.au) for additional information on each recreation site.

GOLD COAST DESALINATION PLANT

Even though the regions dams are at or near full capacity, recent heavy rains have resulted in high sediment levels in the Brisbane River. These increased levels may

present challenges for water treatment plants like those at Mt Crosby, which are the main supply for Brisbane.

The Gold Coast Desalination facility was recently brought up to full capacity to address the flood associated issues at Mt Crosby without compromising water security or quality for Brisbane.

The Gold Coast Desalination facility is now operating at 33 per cent capacity to ensure the highest water quality for the South East Queensland region.

GRID TWELVE

The current supply capacity of the **Grid Twelve** is **100.0 %**, no change from last week. The Grid Twelve makes up nearly 90 % of South East Queensland's total water storage volume. See below for further breakdowns:

Dam	Current capacity (%)	Change in capacity on last week (%)	Rainfall (mm over past seven days)
Wivenhoe	100%	No change	72mm
Somerset	100%	No change	74mm
North Pine	98.4%	1.8% ↓	82mm
Hinze	100%	No change	72mm
Baroon Pocket	100%	No change	95mm
Leslie Harrison	96.2%	1.6% ↓	121mm
Ewen Maddock	100%	No change	105mm
Cooloolabin	100%	No change	92mm
Lake Kurwongbah	100%	No change	82mm
Lake MacDonald	100%	No change	90mm
Little Nerang	100%	No change	72mm
Wappa	100%	No change	92mm

The current supply capacity of the **Grid Three 3 (Wivenhoe, Somerset and North Pine)** is **100 %**, no change from last week.

Note: The Grid Twelve and Grid Three % full is calculated by dividing the combined current storage volume of the dams in the group by the combined full storage volume.



Media updates issued during
the January flood event

DID YOU KNOW?

By maintaining the Gold Coast Desalination Plant in standby mode, the Water Grid can ensure that the plant is online and available at any stage. This ensures water quality issues can be addressed without compromising water security for the South East Queensland region. The flexibility of the Water Grid allows us to safely isolate, transfer and blend water from multiple sources across the region.

Notes to the Editor: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance: Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland.

Members of the public seeking information on **potential impacts in their local areas** should **direct inquiries to their local councils**.

About the Water Grid: Established in June 2008 in response to the crippling Millennium Drought, the Water Grid represents one of Australia's largest investments in water infrastructure.

Through a network of climate resilient water sources, treatment facilities, new two-way pipes and existing pipelines, the Water Grid gives the South East Queensland region the ability to support water demands, water quality, economic prosperity and lifestyle - regardless of climate change and population growth.

CONTACT DETAILS

Please direct all media enquiries to the Water Grid Communications Unit:

Phone [REDACTED]
Email: media@watergrid.com.au
Website: www.watergrid.com.au

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TRIM reference: D/	Date and time: 8/01/11 10:26am
Title : SEQ dam release and flooding update - 08.01.11	
Summary: Dam releases, Recreation update, Gold Coast Desalination Plant update	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 08.01.11

MEDIA RELEASE - 8 JANUARY 2011

Dam releases

With recent heavy rainfall across South East Queensland and the forecast of more to come, releases are being made from some of the region's water storages.

Water from Somerset Dam is being released into Wivenhoe Dam through one gate.

At Wivenhoe Dam, all five gates are now open. Releases are expected to reach around 100,000 megalitres a day by this afternoon. Releases will be reviewed and may change depending on rainfall, inflows into the dam and river flows.

Wivenhoe Dam releases may impact upon Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing for several days. Local councils should be consulted for detailed information on road crossing closures and other impacts.

At this stage, no impacts are expected for Fernvale Bridge or Mt Crosby Weir Bridge, although this may change depending on rainfall.

Spillway gate operations commenced during the evening of Thursday 6 January 2011. These releases may continue until next week, depending upon further rainfall.

A release from Leslie Harrison is underway and may continue until the weekend.

Releases through the emergency gates of Hinze Dam is expected to occur sometime over the weekend.

The Water Grid is continuing to work with local councils regarding the current releases and the likely impacts, which are being managed in accordance with approved flood management plans.

Telephone - [REDACTED] has been established for members of the public seeking information on which dams are spilling in South East Queensland.

Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

Recreation update



Media updates issued during
the January flood event

Due to water levels, Wivenhoe Dam and Somerset Dam are closed for all water based recreational activities and is expected to remain closed for some days.

The following recreational sites are currently closed to the public –

- O'Sheas Crossing
- Hamon Cove
- Logan inlet
- Captain Logan Camp
- River access at Atkinson's Crossing
- Billies Bay and Hays Landing
- The Spit
- Lake Somerset Holiday Park Kirkleagh (Boat ramps only)

Other recreation areas at Wivenhoe are open for land based activities. The Spillway Lookout recreation area is open, however visitors are advised that there may be long delays due to the number of people visiting the site. Security staff and traffic controllers will be on site and all visitors will need to follow their directions.

Access to Borumba Dam is currently not available as Yabba Creek Road between Imbil and Borumba Dam is closed.

Lake Baroon has also been closed to all water based recreational activities but is open for picnics and barbeques. Care should be taken at the recreation sites, and vehicles must be parked in designated parking areas only.

Lake Maroon remains closed to water skiing and swimming but remains open to boating and fishing.

Visitors should check the Water Grid website for additional information for each recreation site.

Gold Coast Desalination Plant

Even though the regions dams are at or near full capacity, recent heavy rains have resulted in high sediment levels in the Brisbane River. These increased levels may present challenges for water treatment plants like those at Mt Crosby, which are the main supply for Brisbane.

The Gold Coast Desalination facility was recently brought up to full capacity to address the flood associated issues at Mt Crosby without compromising water security or quality for Brisbane.

The Gold Coast Desalination facility is now operating at 33 per cent capacity to ensure the highest water quality for the South East Queensland region.

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number

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Media updates issued during
the January flood event

has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking detailed information on **potential impacts in their local areas including road closures** should direct inquiries to their local councils.

For further details contact the Water Grid Communications Unit on:
Ph: [REDACTED] | Email: media [REDACTED]

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TRIM reference: D/	Date and time: 9/01/11 9:29am
Title : SEQ dam release and flooding update - 9.01.11	
Summary: Dam releases, Recreation update, Gold Coast Desalination Plant update	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 09.01.11

MEDIA RELEASE - 9 JANUARY 2011

Dam releases

With recent heavy rainfall across South East Queensland and the forecast of more to come, releases are being made from some of the region's water storages. Based on current forecasts, all release operations may change at short notice.

Water from Somerset Dam is being released into Wivenhoe Dam through the sluice gates.

At Wivenhoe Dam, releases commenced during the evening of Thursday 6 January 2011, with all five gates opened by Saturday 8 January 2011. Releases have reached around 116,000 megalitres a day. Gate operations will continue to be reviewed and may change at short notice depending on rainfall, inflows into the dam and river flows.

Wivenhoe Dam releases may impact upon Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing for several days. Local councils should be consulted for detailed information on road crossing closures and other impacts.

At this stage, no impacts are expected for Fernvale Bridge or Mt Crosby Weir Bridge, although this may change depending on rainfall.

These releases are expected to continue until next week.

Release operations at North Pine Dam are being reviewed and may result in the closure of gates later today or tomorrow, however this action is dependent on whether further rainfall is received in the catchment.

Releases from Leslie Harrison Dam have now ceased, however further inflows received may see gate operations re-occur at short notice.

Minor releases through the emergency gates of Hinze Dam have commenced.

The Water Grid is continuing to work with local councils regarding the current releases and the likely impacts, which are being managed in accordance with approved flood management plans.

Telephone - [REDACTED] has been established for members of the public seeking information on which dams are spilling in South East Queensland.

Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

Recreation update

Due to water levels, Wivenhoe Dam and Somerset Dam are **closed** for all water based recreational activities and is expected to remain closed into next week.

The following recreational sites are currently **closed** to the public -

- O'Sheas Crossing
- Hamon Cove
- Logan inlet
- Captain Logan Camp
- River access at Atkinson's Crossing
- Billies Bay and Hays Landing
- The Spit
- Lake Somerset Holiday Park Kirkleagh (Boat ramps only)

Other recreation areas at Wivenhoe are open for land based activities. The Spillway Lookout recreation area is open, however visitors are advised that there may be long delays due to the number of people visiting the site. Security staff and traffic controllers will be on site and all visitors will need to follow their directions.

Access to Borumba Dam is currently not available as Yabba Creek Road between Imbil and Borumba Dam is closed.

Lake Baroon has also been closed to all water based recreational activities but is open for picnics and barbeques. Care should be taken at the recreation sites, and vehicles must be parked in designated parking areas only.

Lake Maroon remains closed to water skiing and swimming but remains open to boating and fishing.

Visitors should check the Water Grid website for additional information for each recreation site.

Gold Coast Desalination Plant

Even though the regions dams are at or near full capacity, recent heavy rains have resulted in high sediment levels in the Brisbane River. These increased levels may present challenges for water treatment plants like those at Mt Crosby, which are the main supply for Brisbane.

The Gold Coast Desalination facility was recently brought up to full capacity to address the flood associated issues at Mt Crosby without compromising water security or quality for Brisbane.



Media updates issued during
the January flood event

The Gold Coast Desalination facility is now operating at 33 per cent capacity to ensure the highest water quality for the South East Queensland region.

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking detailed information on **potential impacts in their local areas including road closures** should direct inquiries to their local councils.

For further details contact the Water Grid Communications Unit on:
Ph: [REDACTED] | Email: media [REDACTED]

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TRIM reference: D/**Date and time:** 10/01/11 7:15am

Title : SEQ dam release and flooding update - 10.01.11 AM

Summary: Wivenhoe Dam releases

Note: Issued to all key media and stakeholders in South East Queensland

SEQ dam release and flooding update - 10.01.11 AM

MEDIA RELEASE - 10 JANUARY 2011

Wivenhoe Dam releases

Significant rainfall received across catchments has lifted Wivenhoe Dam's level to above 140 per cent and Somerset Dam to above 150 per cent. Although releases are being made, significant quantities of water have been held back to manage impacts downstream and allow for inflows which have occurred below Wivenhoe Dam.

Overnight, this weather has inundated Fernvale Bridge and Mt Crosby Weir bridge together with a number of local roads. They join a number of other bridges already impacted, including Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing.

In order to relieve the dam's flood storage compartment and with more rain forecast, controlled releases are being increased today from 116,000 megalitres per day to 150,000 megalitres per day. This will be done in consultation with the Bureau of Meteorology and local councils, utilising a strategy to limit impacts where possible downstream, noting that these releases are a necessity.

Residents are urged to contact local councils for detailed information on road crossing closures and other impacts.

Telephone - [REDACTED] has been established for members of the public seeking information on which dams are spilling in South East Queensland.

ENDS

Note to the Editor: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance: Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland.

Members of the public seeking information on **potential impacts in their local areas** should **direct inquiries to their local councils**.



Media updates issued during
the January flood event

About the SEQ Water Grid: Established in June 2008 in response to the crippling Millennium Drought, the SEQ Water Grid represents one of Australia's largest investments in water infrastructure.

Through a network of climate resilient water sources, treatment facilities, new two-way pipes and existing pipelines, the SEQ Water Grid gives the South East Queensland region the ability to support water demands, water quality, economic prosperity and lifestyle - regardless of climate change and population growth.

For further information on the Water Grid: www.watergrid.com.au

For further details contact the SEQ Water Grid Communications Unit on:
Ph: [REDACTED] | Email: media@watergrid.com.au

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TRIM reference: D/	Date and time: 10/01/11, 10:42am
Title : SEQ dam release and flooding update - 10.01.11 AM	
Summary: Dam releases, Recreation update, Gold Coast Desalination Plant update	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 10.01.11 AM

MEDIA RELEASE - 10 JANUARY 2011

Dam releases

Significant rainfall across the catchment has lifted Wivenhoe Dam's level to above 140 per cent and Somerset Dam to above 150 per cent.

Although releases are being made, large quantities of water continue to flow into the dams and are being held back in order to manage impacts downstream and allow for other inflows from urban runoff, and the Lockyer and Bremer Rivers to subside.

Overnight, Fernvale and Mt Crosby Weir Bridges together with a number of local roads became inundated. They joined the others already impacted, including Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing.

In order to relieve the quickly filling flood storage compartment, and with more rain forecast, controlled releases from the dam have been increased today from 116,000 megalitres per day to 170,000 megalitres per day. These releases are a necessity.

Releases are being reviewed in consultation with the Bureau of Meteorology and local councils, utilising a strategy to limit impacts where possible downstream.

Water from Somerset Dam is being released into Wivenhoe Dam through the sluice gates.

Spillway gate operations are continuing at North Pine Dam, with all five gates open. These releases may continue until next week, depending upon further rainfall.

At Leslie Harrison Dam, gate releases are underway. A minor release of around 1200 megalitres a day is being made through the emergency gates of Hinze Dam.

The Water Grid is working with local councils regarding the current releases and the likely impacts, which are being managed in accordance with approved flood management plans.

Telephone - [REDACTED] has been established for members of the public seeking information on which dams are spilling in South East Queensland.

Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

Recreation update

Due to water levels, both Wivenhoe and Somerset are **closed** to all recreational activities, and will remain so for some days.

The following recreation sites are **closed** –

- O'Sheas Crossing
- Hamon Cove
- Logan Inlet
- Captain Logan Camp
- Lumley Hill
- Spillway Common/ Atkinson's Crossing
- Cormorant Bay
- Branch Creek
- Billies Bay/Hays Landing
- The Spit
- Lake Somerset Holiday Park Kirkleagh

Numerous roads are cut including the highway at Kilcoy and Fernvale, and conditions are extremely dangerous.

Moogerah and Maroon Dam remains open, however, swimming and skiing should be avoiding.

Access to Borumba Dam is currently not available as Yabba Creek Road between Imbil and Borumba Dam is closed.

Lake Baroon has also been closed to all water based recreational activities but is open for picnics and barbeques. Care should be taken at the recreation sites, and vehicles must be parked in designated parking areas only.

Visitors should check the Water Grid website for additional information for each recreation site.

Gold Coast Desalination Plant

Even though the regions dams are at or near full capacity, recent heavy rains have resulted in high sediment levels in the Brisbane River. These increased levels may present challenges for water treatment plants like those at Mt Crosby, which are the main supply for Brisbane.

The Gold Coast Desalination facility was recently brought up to full capacity to address the flood associated issues at Mt Crosby without compromising water security or quality for Brisbane.

With Mt Crosby now back to normal the Gold Coast Desalination facility has now been reduced to 33 per cent capacity.

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Media updates issued during
the January flood event

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking detailed information on **potential impacts in their local areas including road closures** should direct inquiries to their local councils.

For further details contact the Water Grid Communications Unit on:
Ph: [REDACTED] | Email: media [REDACTED]

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TRIM reference: D/	Date and time: 10/01/11 4:50pm
Title : SEQ dam release and flooding update - 10.01.11 PM	
Summary: Dam releases, Recreation update, Gold Coast Desalination Plant update	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 10.01.11 PM

MEDIA RELEASE - 10 JANUARY 2011

Dam releases

Significant rainfall in the catchments has lifted Wivenhoe Dam's level to 154 per cent and Somerset Dam to 158 per cent, despite continuing releases.

Although releases are being made, large quantities of water continue to flow into the dams. Water is being held back in order to manage impacts downstream and allow for other inflows from urban runoff, the Lockyer and Bremer Rivers to subside.

Overnight, Fernvale and Mt Crosby Weir Bridges together with a number of local roads became inundated. They joined the others already impacted, including Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge and Colleges Crossing.

In order to relieve the quickly filling flood storage compartment, and with more rain forecast, controlled releases from the dam have been increased today from 116,000 megalitres per day to 172,000 megalitres per day. Further increases to the release rate are planned, to approximately 240,000 megalitres per day by midnight.

These releases are a necessity as, at the peak, Wivenhoe Dam was receiving more than twice the volume of Sydney Harbour each day.

Releases are continually being reviewed in consultation with the Bureau of Meteorology and local councils, utilising a strategy to limit impacts where possible downstream.

Water from Somerset Dam is being released into Wivenhoe Dam through the sluice gates.

Spillway gate operations are continuing at North Pine Dam, with all five gates open, releasing around 43,000 megalitres a day. These releases may continue until Wednesday 12 January 2011.

At Leslie Harrison Dam, gate releases are underway. A minor release of around 1200 megalitres a day is being made through the emergency gates of Hinze Dam.

The Water Grid is working with local councils regarding the current releases and the likely impacts. Releases are being managed in accordance with approved flood management plans.



Media updates issued during
the January flood event

Telephone - [REDACTED] has been established for members of the public seeking information on which dams are spilling in South East Queensland.

Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

Recreation update

Due to water levels, both Wivenhoe and Somerset are **closed** to all recreational activities, and will remain so for some days.

The following recreation sites are **closed** -

- O'Sheas Crossing
- Hamon Cove
- Logan Inlet
- Captain Logan Camp
- Lumley Hill
- Spillway Common/ Atkinson's Crossing
- Cormorant Bay
- Branch Creek
- Billies Bay/Hays Landing
- The Spit
- Lake Somerset Holiday Park Kirkleagh

Numerous roads are cut including the highway at Kilcoy and Fernvale, and conditions are extremely dangerous.

Moogerah and Maroon Dam remains open, however, swimming and skiing should be avoiding.

Access to Borumba Dam is currently not available as Yabba Creek Road between Imbil and Borumba Dam is closed.

Lake Baroon has also been closed to all water based recreational activities but is open for picnics and barbeques. Care should be taken at the recreation sites, and vehicles must be parked in designated parking areas only.

Visitors should check the Water Grid website for additional information for each recreation site.

Gold Coast Desalination Plant

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The Gold Coast Desalination facility was recently brought up to full capacity to address the flood associated issues at Mt Crosby without compromising water security or quality for Brisbane.

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Media updates issued during
the January flood event

With Mt Crosby now back to normal the Gold Coast Desalination facility has now been reduced to 33 per cent capacity.

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking detailed information on **potential impacts in their local areas including road closures** should direct inquiries to their local councils.

For further details contact the Water Grid Communications Unit on:
Ph: [REDACTED] | Email: media [REDACTED]

safe secure sustainable

TRIM reference: D/	Date and time: 11/01/11 8:39am
Title : SEQ dam release and flooding update - 11.01.11 AM	
Summary: Unprecedented Wivenhoe Dam releases, Residents urged to conserve water supply, Upper Somerset townships urged to conserve water	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 11.01.11 AM

MEDIA RELEASE - 11 JANUARY 2011

UNPRECEDENTED WIVENHOE DAM RELEASES

NOTE: All SEQ dams are safe, stable and operating within their design specifications.

Significant rainfall received across catchments has caused waterways upstream of Somerset and Wivenhoe Dams to rise quickly overnight.

Wivenhoe Dam is currently at 173% and rising. Somerset Dam is at 160%.

Controlled releases through the five gates have been held at around 236,000 megalitres since early last night but will need to be increased further today.

These releases will are being made in consultation with the Bureau of Meteorology and local councils and aim to limit downstream impacts where possible.

Note these large releases are necessary for the safe management of the dam.

Release levels will be progressively reviewed depending on rainfall across the catchments today.

Local Councils have been advised that as a result of Lockyer Creek flows, local runoff and Wivenhoe releases, Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge Colleges Crossing, Fernvale Bridge, and Mt Crosby Weir Bridge may be inundated until at Sunday 16 January.

Residents are urged to contact local councils for detailed information on road crossing closures and other impacts.

All recreations areas around Somerset and Wivenhoe are closed, and given the dam levels and the need for safety around spillways, we will not be able to facilitate any land-based media access to our sites today.

While substantial amounts of water is being released into Wivenhoe from Somerset Dam, water levels in Somerset are expected to continue to rising today and areas around Kilcoy are likely to be impacted by these rising dam levels.



Media updates issued during
the January flood event

Five gates are open at North Pine Dam, releasing around 15,000 megalitres a day and will continue until at least Wednesday 12 January.

The local Council is being kept informed regarding Youngs Crossing.

Gate releases at Leslie Harrison Dam are underway due to rainfall and inflows.

A minor release of around 1200 megalitres a day is being made through the emergency gates at Hinze Dam. There is no access to the spillway.

Telephone - [REDACTED] has been established for members of the public seeking information on which dams are spilling in South East Queensland.

Members of the public seeking detailed information on **potential impacts in their local areas including road closures should direct inquiries to their local councils**.

RESIDENTS URGED TO CONSERVE WATER SUPPLY

All Somerset, Scenic Rim and Lockyer Valley residents are being urged to conserve water due to the impacts of local flooding on water infrastructure.

Water Grid spokesperson Dan Spiller said vital water infrastructure in these regions has been damaged by flood waters, cutting off the raw water supply.

"Although we have a limited supply in the local reservoirs, we are unable to get tankers in to replenish this supply due to flooded roads. We are also facing issues with loss of power at some water treatment plants.

"We are therefore urging residents to restrict all non-essential use until further notice.

The Water Grid Manager, Queensland Urban Utilities and Emergency Management Queensland are working closely to gain access to the plants and to rectify all situations.

"We are working urgently to find ways for tankers to get in and replenish supplies. We are also considering options for getting bottled water in to those areas," said Mr Spiller.

Residents with further enquiries can contact the local water retailer, Queensland Urban Utilities on [REDACTED], or for emergencies please call [REDACTED].

UPPER SOMERSET TOWNSHIPS URGED TO CONSERVE WATER

Residents in the upper Somerset townships of Kilcoy, Jimna and Linville are being urged to conserve water due to the impacts of local flooding on water infrastructure.



Media updates issued during
the January flood event

Water Grid spokesperson Dan Spiller said vital water infrastructure in these regions has been damaged by flood waters, cutting off the raw water supply.

"We have a limited supply in local reservoirs that is expected to last one to three days. However, we will ensure that critical supplies are maintained. In the meantime we are asking people to conserve water while we repair equipment and organise alternate supplies," he said.

The power is currently down at the main water treatment plant in Kilcoy, with flood water restricting access to rectify the situation.

In Jimna and Linville rising waters have impacted infrastructure that supports the region's supply.

Approximately 1,000 residents on town water across these three areas are impacted.

"We are asking people to restrict non-essential water use, including limiting shower times and considering alternative water supplies where possible," said Mr Spiller.

The Water Grid Manager is working closely with Emergency Management Queensland to gain access to the plants and to rectify all situations. Current demand and supply levels are being closely monitored and alternate water supplies are being considered.

"We are looking at trucking in tankers to fill the reservoirs and are also considering the supply of bottled water if necessary. Obviously we cannot truck in water while roads are closed," said Mr Spiller.

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking detailed information on **potential impacts in their local areas including road closures should direct inquiries to their local councils.**

For further details contact the Water Grid Communications Unit on:
Ph: [REDACTED] | Email: media [REDACTED]

safe secure sustainable

TRIM reference: D/	Date and time: 11/01/11 5:19pm
Title : SEQ dam release and flooding update - 11.01.11 PM	
Summary: Increased controlled releases from Wivenhoe	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 11.01.11 PM

MEDIA RELEASE - 11 JANUARY 2011

Increased controlled releases from Wivenhoe Dam

NOTE: All SEQ dams are safe, stable and operating within their design specifications.

Wivenhoe Dam is currently at 190 per cent and rising. Somerset Dam is at 176 per cent and also rising.

Controlled releases through Wivenhoe's five radial gates have now been increased to around 490,000 megalitres per day. This is expected to increase. Releases are being made in consultation with the Bureau of Meteorology and local councils and an effort to limit downstream impacts where possible. Note these large releases are necessary for the safe management of the dam.

Due to a combination of Lockyer Creek, local runoff and Wivenhoe releases, Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge Colleges Crossing, Fernvale Bridge, and Mt Crosby Weir Bridge may be inundated until at least Sunday 16 January. Residents are urged to contact local councils for detailed information on road crossing closures and other impacts.

All recreations areas around Somerset and Wivenhoe are closed, and given the dam levels and the need for safety around spillways, **we will not be able to facilitate any land-based media access to our sites today.**

While substantial amounts of water is being released into Wivenhoe from Somerset Dam, water levels in Somerset are expected to continue to rise today and areas around Kilcoy are likely to be impacted by these rising dam levels.

Five gates are open at North Pine Dam, releasing around 15,000 megalitres a day and will continue until at least Wednesday 12 January. The local Council is being kept informed regarding Youngs Crossing.

Gate releases at Leslie Harrison Dam are underway due to rainfall and inflows.

Water has spilled from Wyaralong Dam after it exceeded 100 per cent capacity this morning.



Media updates issued during
the January flood event

A minor release of around 6,600 megalitres a day is being made through the emergency gates at Hinze Dam, which is likely to increase to around 8,000 megalitres per day by 6.00 pm Tuesday 11 January .

For detailed information on road crossing closures and other potential impacts, always contact your local council.

ENDS

Note to the Editor: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance: Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland.

Members of the public seeking information on **potential impacts in their local areas** should **direct inquiries to their local councils.**

About the SEQ Water Grid: Established in June 2008 in response to the crippling Millennium Drought, the SEQ Water Grid represents one of Australia's largest investments in water infrastructure.

Through a network of climate resilient water sources, treatment facilities, new two-way pipes and existing pipelines, the SEQ Water Grid gives the South East Queensland region the ability to support water demands, water quality, economic prosperity and lifestyle - regardless of climate change and population growth.

For further information on the Water Grid: www.watergrid.com.au

For further details contact the SEQ Water Grid Communications Unit on:

Ph: [REDACTED] | **Email:** media@watergrid.com.au

safe secure sustainable

TRIM reference: D/	Date and time: 11/01/11 10:30pm
Title : SEQ dam release and flooding update - 11.01.11 PM	
Summary: Controlled releases from Wivenhoe Dam decreasing	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 11.01.11 PM

MEDIA RELEASE - 11 JANUARY 2011

Controlled releases from Wivenhoe Dam decreasing

NOTE: All SEQ dams remain safe, stable and operating within their design specifications.

At 10pm Wivenhoe Dam was at 190 per cent with water levels falling slowly.

Controlled releases through Wivenhoe's five radial gates of 645,000 megalitres per day are expected to reduce slightly overnight due to easing rainfall.

Releases are being made in consultation with the Bureau of Meteorology and local councils and every effort to limit downstream impacts where possible is being made. Note that these large releases are necessary for the continued safe management of the dam.

Somerset Dam is at 183 per cent and releases into Wivenhoe are expected to recommence overnight however high upstream levels are expected to continue to affect Kilcoy.

Due to a combination of Lockyer Creek, local runoff and Wivenhoe releases, Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge Colleges Crossing, Fernvale Bridge, and Mt Crosby Weir Bridge may be inundated until at least Sunday 16 January. Residents are urged to contact local councils for detailed information on road crossing closures and other impacts.

All recreations areas around Somerset and Wivenhoe are closed, and given the dam levels and the need for safety around spillways, **we will not be able to facilitate any land-based media access to our sites today.**

Five gates are open at North Pine Dam and will continue until at least Wednesday 12 January. The local Council is being kept informed regarding Youngs Crossing.

Gate releases at Leslie Harrison Dam are underway due to rainfall and inflows.

Water has spilled from Wyaralong Dam after it exceeded 100 per cent capacity this morning.



Media updates issued during
the January flood event

A minor release of around 8,000 megalitres a day is being made through the emergency gates at Hinze Dam. There is no public access to the spillway.

For detailed information on river levels, road and crossing closures and other potential impacts, always contact your local council.

ENDS

Note to the Editor: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance: Please direct the community to contact **telephone - 1800 613 122**. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland.

Members of the public seeking information on **potential impacts in their local areas** should **direct inquiries to their local councils**.

About the SEQ Water Grid: Established in June 2008 in response to the crippling Millennium Drought, the SEQ Water Grid represents one of Australia's largest investments in water infrastructure.

Through a network of climate resilient water sources, treatment facilities, new two-way pipes and existing pipelines, the SEQ Water Grid gives the South East Queensland region the ability to support water demands, water quality, economic prosperity and lifestyle - regardless of climate change and population growth.

For further information on the Water Grid: www.watergrid.com.au

For further details contact the SEQ Water Grid Communications Unit on:

Ph: [REDACTED] | Email: media@watergrid.com.au

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TRIM reference: D/	Date and time: 12/01/11 8:39am
Title : SEQ dam release and flooding update - 12.01.11 AM	
Summary: Controlled releases from Wivenhoe Dam decreasing	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 12.01.11 AM

MEDIA RELEASE - 12 JANUARY 2011

CONTROLLED RELEASES FROM WIVENHOE DAM DECREASING

NOTE: All SEQ dams are safe, stable and operating within their design specifications.

Currently, Wivenhoe Dam is at 190 per cent down from 191 per cent overnight.

This reflects the current ease in the weather. Somerset Dam is now at 190 per cent.

Wivenhoe's five radial gates are currently releasing 205,000 megalitres per day, down from 370,000 megalitres and an overnight peak of 645,000 megalitres.

This strategy is to allow for the Bremer and Lockyer Rivers to subside.

After the expected downstream peak in the lower Brisbane River has passed, releases will need to be increased to 301,000 megalitres per day.

However, this increase is unlikely to cause a second significant rise in the river.

These controlled releases must continue in order to relieve Wivenhoe Dam's swollen flood storage compartment in order to create space for further rainfall and inflows.

They are being made in consultation with the Bureau of Meteorology and local councils and every effort is being made to limit downstream impacts where possible.

Due to a combination of Lockyer Creek, local runoff and Wivenhoe releases, Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge Colleges Crossing, Fernvale Bridge, and Mt Crosby Weir Bridge may be inundated until at least Sunday 16 January.

Residents are urged to contact local councils for detailed information on road crossing closures and other impacts.

All recreations areas around Somerset and Wivenhoe are closed, and given the dam levels and the need for safety around spillways, we will not be able to facilitate any land-based media access to our sites today.



Media updates issued during
the January flood event

Five gates are open at North Pine Dam, however with no further rainfall, the gates are expected to close today or tomorrow. The local Council is being kept informed regarding Youngs Crossing.

Gate releases at Leslie Harrison Dam are underway due to rainfall and inflows, however these may cease later today.

Water has spilled from Wyaralong Dam after it exceeded 100 per cent capacity yesterday morning.

A minor release of around 8,000 megalitres a day is being made through the emergency gates at Hinze Dam. There is no public access to the spillway.

Telephone - [REDACTED] has been established for members of the public seeking information on which dams are spilling in South East Queensland.

Members of the public seeking detailed information on **potential impacts in their local areas including road closures should direct inquiries to their local councils**.

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking detailed information on **potential impacts in their local areas including road closures should direct inquiries to their local councils**.

For further details contact the Water Grid Communications Unit on:
Ph: [REDACTED] | Email: media [REDACTED]

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TRIM reference: D/	Date and time: 12/01/11 12:47pm
Title : SEQ dam release and flooding update - 12.01.11 PM	
Summary: Controlled releases from Wivenhoe Dam are continuing	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 12.01.11 PM

MEDIA RELEASE - 12 JANUARY 2011

CONTROLLED RELEASES FROM WIVENHOE DAM ARE CONTINUING

NOTE: All SEQ dams remain safe, stable and operating within their design specifications.

Currently, Wivenhoe Dam is at 189 per cent, down from 191 per cent overnight. This reflects the current ease in the weather. Somerset Dam is now at 186 per cent, discharging 123,000 megalitres per day into Wivenhoe Dam via a sluice gate.

Wivenhoe's five radial gates continue to release 215,000 megalitres per day. This is considerably down from an overnight peak of 645,000 megalitres and will remain at this level to allow for the Bremer and Lockyer Rivers to subside.

After the expected downstream peak in the lower Brisbane River has passed, releases will be increased to 301,000 megalitres per day, however, this increase is unlikely to cause a second significant rise in the river.

These controlled releases must continue in order to relieve Wivenhoe Dam's swollen flood storage compartment in order to create space for further rainfall and inflows, should they occur.

They are being made in consultation with the Bureau of Meteorology and local councils and every effort is being made to limit downstream impacts where possible.

Due to a combination of Lockyer Creek, local runoff and Wivenhoe releases, Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge Colleges Crossing, Fernvale Bridge, and Mt Crosby Weir Bridge may be inundated until at least Sunday 16 January.

Residents are urged to contact local councils for detailed information on road crossing closures and other impacts.

All recreations areas around Somerset and Wivenhoe are closed, and given the dam levels and the need for safety around spillways, we will not be able to facilitate any land-based media access to our sites today.



Media updates issued during
the January flood event

Five gates are open at North Pine Dam releasing 6,800 megalitres per day, however with no further rainfall, the gates are expected to close in the next coming days. The local Council is being kept informed regarding Youngs Crossing.

Gate releases at Leslie Harrison Dam are underway due to rainfall and inflows.

Water has spilled from Wyaralong Dam after it exceeded 100 per cent capacity yesterday morning.

A minor release of around 8,000 megalitres a day is being made through the emergency gates at Hinze Dam. There is no public access to the spillway.

Telephone - [REDACTED] has been established for members of the public seeking information on which dams are spilling in South East Queensland.

For detailed information on river levels, road and crossing closures and other potential impacts, always contact your local council.

ENDS

Owing to technical issues caused by the flood, a temporary email contact is in use. Please email to watergridmedia [REDACTED]

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

For further details contact the Water Grid Communications Unit on:

Email: watergridmedia [REDACTED]

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TRIM reference: D/	Date and time: 13/01/11 8:30am
Title : SEQ dam release and flooding update - 13.01.11 AM	
Summary: Controlled releases from Wivenhoe Dam continue	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 13.01.11 AM

MEDIA RELEASE - 13 JANUARY 2011

CONTROLLED RELEASES FROM WIVENHOE DAM CONTINUE

NOTE: All SEQ dams remain safe, stable and operating within their design specifications.

Wivenhoe Dam is at 187 per cent, and is dropping gradually with controlled releases through all five gates of 215,000 megalitres per day. This is down from the peak of 645,000 megalitres earlier in the week.

The dam's slow recession is due in part to inflows of 121,000 megalitres per day via a sluice gate from Somerset Dam. Somerset is at 174 per cent.

After the expected downstream peak in the lower Brisbane River has passed, releases will be increased to 301,000 megalitres per day.

This increase is unlikely to cause a second significant rise in the river and is necessary in order to relieve Wivenhoe Dam's swollen flood storage compartment in order to create space for further rainfall and inflows, should they occur.

All releases are being made in consultation with the Bureau of Meteorology and local councils and every effort is being made to limit downstream impacts where possible.

Due to a combination of Lockyer Creek, local runoff and Wivenhoe releases, Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge Colleges Crossing, Fernvale Bridge, and Mt Crosby Weir Bridge may be inundated until at least Sunday 16 January.

Residents are urged to contact local councils for detailed information on road crossing closures and other impacts.

All recreations areas around Somerset and Wivenhoe are closed, and given the dam levels and the need for safety around spillways, **we will not be able to facilitate any land-based media access to our sites today.**

Five gates are open at North Pine Dam, however are expected to close Friday. The local Council is being kept informed regarding Youngs Crossing.

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Media updates issued during
the January flood event

Gate releases at Leslie Harrison Dam have now ceased.

Water has spilled from Wyaralong Dam after it exceeded 100 per cent capacity yesterday morning.

A minor release of around 8,000 megalitres a day is being made through the emergency gates at Hinze Dam. There is no public access to the spillway.

For detailed information on river levels, road and crossing closures and other potential impacts, always contact your local council.

ENDS

Owing to technical issues caused by the flood, a temporary email contact is in use. Please email to watergridmedia@seqwatergrid.com.au

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

For further details contact the Water Grid Communications Unit on:

Ph: [REDACTED] | Email: watergridmedia@seqwatergrid.com.au

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TRIM reference: D/	Date and time: 13/01/11 5:30pm
Title : SEQ dam release and flooding update - 13.01.11 PM	
Summary: Controlled releases from Wivenhoe Dam continue	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 13.01.11 PM

MEDIA RELEASE - 13 JANUARY 2011

CONTROLLED RELEASES FROM WIVENHOE DAM CONTINUE

NOTE: All SEQ dams remain safe, stable and operating within their design specifications.

Wivenhoe Dam is at 186 per cent, and is dropping gradually with controlled releases through all five gates of 228,000 megalitres per day. This is down from the peak of 645,000 megalitres earlier in the week.

The dam's slow recession is due in part to inflows of 120,000 megalitres per day via a sluice gate from Somerset Dam. Somerset is at 167 per cent.

Releases are being made in consultation with the Bureau of Meteorology and local councils and every effort is being made to limit downstream impacts where possible.

Due to a combination of Lockyer Creek, local runoff and Wivenhoe releases, Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge Colleges Crossing, Fernvale Bridge, and Mt Crosby Weir Bridge may be inundated until at least Sunday 16 January.

Residents are urged to contact local councils for detailed information on road crossing closures and other impacts.

All recreations areas around Somerset and Wivenhoe are closed, and given the dam levels and the need for safety around spillways, **we will not be able to facilitate any land-based media access to our sites today.**

Five gates are open at North Pine Dam, however, are expected to close Friday. The local Council is being kept informed regarding Youngs Crossing.

Gate releases at Leslie Harrison Dam have now ceased.

Water has spilled from Wyaralong Dam after it exceeded 100 per cent capacity earlier this week.



Media updates issued during
the January flood event

A minor release of around 8,000 megalitres a day is being made through the emergency gates at Hinze Dam. There is no public access to the spillway.

For detailed information on river levels, road and crossing closures and other potential impacts, always contact your local council.

ENDS

Owing to technical issues caused by the flood, a temporary email contact is in use. Please email to watergridmedia@seqwatergrid.com.au

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

For further details contact the Water Grid Communications Unit on:

Ph: [REDACTED]

| Email: watergridmedia@seqwatergrid.com.au

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TRIM reference: D/	Date and time: 14/01/11 8:00am
Title : SEQ dam release and flooding update - 14.01.11 AM	
Summary: Controlled releases from Wivenhoe Dam continue	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 14.01.11 AM

MEDIA RELEASE - 14 JANUARY 2011

CONTROLLED RELEASES FROM WIVENHOE DAM CONTINUE

NOTE: All SEQ dams remain safe, stable and operating within their design specifications.

Wivenhoe Dam is at 179 per cent, and continues to drop steadily. Releases have been graduated to 301,000 megalitres per day in a 7 day strategy designed to draw down the flood storage compartment with no noticeable effects downstream.

The continuing releases are necessary in order to prepare Wivenhoe for any future weather events should they occur. Somerset Dam is at 151 percent and also dropping steadily with 111,800 megalitres per day being released into Wivenhoe via the sluice gates.

Inflows and water levels in the Brisbane and Pine catchments are being continually monitored.

Releases are being made in consultation with the Bureau of Meteorology and local councils and every effort is being made to limit downstream impacts where possible.

Due to a combination of Lockyer Creek, local runoff and Wivenhoe releases, Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge Colleges Crossing, Fernvale Bridge, and Mt Crosby Weir Bridge may be inundated until at least Sunday 16 January.

Residents are urged to contact local councils for detailed information on road crossing closures and other impacts.

All recreations areas around Somerset and Wivenhoe are closed, and given the dam levels and the need for safety around spillways, we will not be able to facilitate any land-based media access to our sites today.

People are advised not to travel to any recreation sites during the flood crisis, even if the roads are open.



Media updates issued during
the January flood event

Recreation sites may need to remain closed until they can be properly inspected and any public safety issues assessed.

All five gates at North Pine Dam closed this morning.

Gate releases at Leslie Harrison Dam have ceased.

Water has spilled from Wyaralong Dam after it exceeded 100 per cent capacity earlier this week.

A minor release of around 8,000 megalitres a day is being made through the emergency gates at Hinze Dam.

This release may reduce slowly over the next few days but will continue until next week. There is no public access to the spillway.

For detailed information on river levels, road and crossing closures and other potential impacts, always contact your local council.

ENDS

Owing to technical issues caused by the flood, a temporary email contact is in use. Please email to watergridmedia@seqwatergrid.com.au

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

For further details contact the Water Grid Communications Unit on:

Ph: [REDACTED] | Mobile: [REDACTED]

| Email: watergridmedia@seqwatergrid.com.au

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TRIM reference: D/	Date and time: 14/01/11 4:00pm
Title : SEQ dam release and flooding update - 14.01.11 PM	
Summary: Non-flood affected residents urged to use water wisely	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 14.01.11 PM

MEDIA RELEASE - 14 JANUARY 2011

NON-FLOOD AFFECTED RESIDENTS URGED TO USE WATER WISELY

Despite significant operational challenges caused by flooding, the major water supplies remain reliable in the Water Grid supplying Brisbane, Ipswich and the Gold Coast.

Deputy Premier Paul Lucas said that the region's major water treatment plant at Mount Crosby had been partly flooded and impacted by poor water quality in the Brisbane River.

"While production is increasing, some of our water treatment infrastructure was impacted by floods and the output is still being affected by turbidity in the Brisbane and North Pine Rivers.

"One of Mount Crosby's two water treatment plants, East Bank, was flooded resulting in substantial mechanical damage to large pumps moved by the force of the water.

"Both Mt Crosby plants are now back on line and gradually being brought up to maximum production.

"We are also using the desalination plant and transfers across the Water Grid to resupply local water reservoirs where water levels declined while Mount Crosby was off line."

Mr Lucas urged residents and businesses in Brisbane, Logan and Ipswich who had not been affected by floods to use only what they need for the next few days.

"Our key priority in these areas is maintaining sufficient water for those households and businesses who need to use more in the immediate flood recovery.

"Flood affected residents and businesses will need to use a lot more water than normal, so its important that people who haven't been affected try to use water wisely," he said.

"In suburbs not directly, affected like Wynnum and Manly, we don't need to use a lot of water, so I'd ask every one to do their part in the Queenslander tradition."



Media updates issued during
the January flood event

Water Grid Manager CEO Barry Dennien said that people who haven't been affected by the flood can help by using the same cautious water use practices that saw us through the drought. These include:

- take only short 4 minute showers
- don't water gardens
- don't hose buildings, driveways and footpaths
- delay washing your cars
- don't fill pools
- only use dishwashers when you have a full load
- turn-off taps when you don't need water

"During the drought South East Queenslanders showed how well we could conserve water. This latest crisis means residents and businesses outside the directly flooded affected areas need to do the same again" Mr Dennien said.

"I can assure everyone who has not been directly impacted by flooding that by conserving valuable water over the next few days you will make a real and important contribution to the flood recovery effort" said Mr Dennien.

The Water Grid is working closely with local councils to prioritise water use for the cleanup of key roads first, followed by other areas later after water treatment plants are operating normally again.

ENDS

Owing to technical issues caused by the flood, a temporary email contact is in use. Please email to watergridmedia@seqwatergrid.com.au

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

For further details contact the Water Grid Communications Unit on:

Ph: [REDACTED]
| Email: watergridmedia@seqwatergrid.com.au

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TRIM reference: D/	Date and time: 14/01/11 6:00pm
Title : SEQ dam release and flooding update - 14.01.11 PM	
Summary: Controlled releases from Wivenhoe Dam continue	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 14.01.11 PM

MEDIA RELEASE - 14 JANUARY 2011

CONTROLLED RELEASES FROM WIVENHOE DAM CONTINUE

NOTE: All SEQ dams remain safe, stable and operating within their design specifications.

Wivenhoe Dam is at 172 per cent, and continues to drop steadily. Releases have been graduated to 301,000 megalitres per day in a 7 day strategy designed to draw down the flood storage compartment without contributing to further flooding.

The continuing releases are necessary in order to prepare Wivenhoe for any future weather events should they occur.

Somerset Dam is at 140 per cent and also dropping steadily with 111,800 megalitres per day being released into Wivenhoe via the sluice gates. Inflows and water levels in the Brisbane and Pine catchments are being continually monitored.

Releases are being made in consultation with the Bureau of Meteorology and local councils and every effort is being made to limit downstream impacts where possible.

Due to a combination of Lockyer Creek, local runoff and Wivenhoe releases, Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge Colleges Crossing, Fernvale Bridge, and Mt Crosby Weir Bridge may be inundated until the middle of next week.

Residents are urged to contact local councils for detailed information on road crossing closures and other impacts.

All recreations areas around Somerset and Wivenhoe are closed, and given the dam levels and the need for safety around spillways, we will not be able to facilitate any land-based media access to our sites.

People are advised not to travel to any recreation sites during the flood crisis, even if the roads are open.

Recreation sites may need to remain closed until they can be properly inspected and any public safety issues assessed.



Media updates issued during
the January flood event

All five gates at North Pine Dam closed this morning.

Gate releases at Leslie Harrison Dam have ceased.

Water has spilled from Wyaralong Dam after it exceeded 100 per cent capacity earlier this week.

A minor release of around 8,000 megalitres a day is being made through the emergency gates at Hinze Dam. This release may reduce slowly over the next few days but will continue until next week. There is no public access to the spillway.

For detailed information on river levels, road and crossing closures and other potential impacts, always contact your local council.

ENDS

Owing to technical issues caused by the flood, a temporary email contact is in use. Please email to watergridmedia@seqwatergrid.com.au

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

For further details contact the Water Grid Communications Unit on:

Email: watergridmedia@seqwatergrid.com.au

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TRIM reference: D/	Date and time: 15/01/11 9:30am
Title : SEQ dam release and flooding update - 15.01.11 AM	
Summary: Controlled releases from Wivenhoe Dam continue, Water quality	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 15.01.11 AM

MEDIA RELEASE - 15 JANUARY 2011

CONTROLLED RELEASES FROM WIVENHOE DAM CONTINUE

NOTE: All SEQ dams remain safe, stable and operating within their design specifications.

Wivenhoe Dam is at 163 per cent, and continues to drop steadily. Releases continue at around 301,000 megalitres per day as part of a strategy designed to draw down the flood storage compartment by mid-next week without contributing to further flooding.

The continuing releases are necessary in order to prepare Wivenhoe for any future weather events should they occur.

Somerset Dam is at 129 per cent and also dropping slowly with about 79,000 megalitres per day being released into Wivenhoe via the sluice gates.

Inflows and water levels in the Brisbane and Pine catchments are being continually monitored.

Releases are being made in consultation with the Bureau of Meteorology and local councils and every effort is being made to limit downstream impacts where possible.

Due to a combination of Lockyer Creek, local runoff and Wivenhoe releases, Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge Colleges Crossing, Fernvale Bridge, and Mt Crosby Weir Bridge may be inundated until the middle of next week.

Residents are urged to contact local councils for detailed information on road crossing closures and other impacts.

All recreations areas around Somerset and Wivenhoe are closed, and given the dam levels and the need for safety around spillways, **we will not be able to facilitate any land-based media access to our sites.**

People are advised not to travel to any recreation sites during the flood crisis, even if the roads are open.

Recreation sites may need to remain closed until they can be properly inspected and any public safety issues assessed.

All five gates at North Pine Dam closed this morning.

Gate releases at Leslie Harrison Dam have ceased.

Water has spilled from Wyaralong Dam after it exceeded 100 per cent earlier this week.

A minor release of around 8,000 megalitres a day is being made through the emergency gates at Hinze Dam.

This release may reduce slowly over the next few days but will continue until next week.

There is no public access to the spillway.

For detailed information on river levels, road and crossing closures and other potential impacts, always contact your local council.

RESIDENTS AND BUSINESSES STRONGLY URGED TO USE WATER WISELY

The connected Water Grid continues to maintain safe and secure water supplies in the face of unprecedented flooding impacts.

Water Treatment Plants across the connected Water Grid are producing at maximum rates however very high demand associated with the clean-up of flood impacts is expected over the weekend.

Given the critical need to ensure adequate water supplies for the clean-up, residents and businesses in areas not directly impacted by flooding are strongly urged to use water wisely.

Within areas affected by flooding, residents should use what water is needed to clean-up immediate flood impacts.

Sensible water conservation practices are strongly encouraged such as using a high pressure hose or trigger nozzle.

Outside immediately impacted areas, residents and businesses are urged to conserve water by adopting the same water use practices that saw us through the drought. These include:

- take only short 4 minute showers
- don't water gardens
- delay washing your cars
- don't fill pools
- only use dishwashers when you have a full load
- turn-off taps when you don't need water



Media updates issued during
the January flood event

WATER QUALITY

Water across Brisbane and the Sunshine and Gold Coasts remains safe to drink. While some people may see minor discolouration of their tap water, they should not be concerned.

Water Grid suppliers are continually monitoring water quality across the network as well working closely with Queensland Health.

While Queensland Urban Utilities have a precautionary Boiled Water Alert currently in place for Marburg, water in the Ipswich area is also safe to drink.

Boil water alerts are in place for locations in the Lockyer Valley and Somerset council areas and residents and businesses are urged to visit the Queensland Urban Utilities website www.urbanutilities.com.au for more details.

ENDS

Owing to technical issues caused by the flood, a temporary email contact is in use. Please email to [watergridmedia@\[REDACTED\]](mailto:watergridmedia@[REDACTED])

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

For further details contact the Water Grid Communications Unit on:

Email: [watergridmedia@\[REDACTED\]](mailto:watergridmedia@[REDACTED])

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TRIM reference: D/	Date and time: 15/01/11 6:00pm
Title : SEQ dam release and flooding update - 15.01.11 PM	
Summary: Controlled releases from Wivenhoe Dam continue, Water Quality	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 15.01.11 PM

MEDIA RELEASE - 15 JANUARY 2011

CONTROLLED RELEASES FROM WIVENHOE DAM CONTINUE

NOTE: All SEQ dams remain safe, stable and operating within their design specifications.

Wivenhoe Dam is at 154 per cent, and continues to drop steadily. Releases continue at around 301,000 megalitres per day as part of a strategy designed to draw down the flood storage compartment by mid-next week without contributing to further flooding.

The continuing releases are necessary in order to prepare Wivenhoe for any future weather events should they occur.

Somerset Dam is at 121 per cent and also dropping slowly with about 79,000 megalitres per day being released into Wivenhoe via the sluice gates.

Inflows and water levels in the Brisbane and Pine catchments are being continually monitored.

Releases are being made in consultation with the Bureau of Meteorology and local councils and every effort is being made to limit downstream impacts where possible.

Due to a combination of Lockyer Creek, local runoff and Wivenhoe releases, Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge Colleges Crossing, Fernvale Bridge, and Mt Crosby Weir Bridge may be inundated until the middle of next week.

Residents are urged to contact local councils for detailed information on road crossing closures and other impacts.

All recreations areas around Somerset and Wivenhoe are closed, and given the dam levels and the need for safety around spillways, **we will not be able to facilitate any land-based media access to our sites.**

People are advised not to travel to any recreation sites during the flood crisis, even if the roads are open.



Media updates issued during
the January flood event

Recreation sites may need to remain closed until they can be properly inspected and any public safety issues assessed.

All five gates at North Pine Dam closed this morning.

Gate releases at Leslie Harrison Dam have ceased.

As at 7:00am today, 1,693 megalitres was passing over the spillway at Wyaralong Dam. This represents a water depth of 0.19m over the spillway.

A minor release of around 8,000 megalitres a day is being made through the emergency gates at Hinze Dam.

This release may reduce slowly over the next few days but will continue until next week.

There is no public access to the spillway.

For detailed information on river levels, road and crossing closures and other potential impacts, always contact your local council.

RESIDENTS AND BUSINESSES STRONGLY URGED TO USE WATER WISELY

The connected Water Grid continues to maintain safe and secure water supplies in the face of unprecedented flooding impacts.

Water Treatment Plants across the connected Water Grid are producing at maximum rates however very high demand associated with the clean-up of flood impacts is expected over the weekend.

Given the critical need to ensure adequate water supplies for the clean-up, residents and businesses in areas not directly impacted by flooding are strongly urged to use water wisely.

Within areas affected by flooding, residents should use what water is needed to clean-up immediate flood impacts.

Sensible water conservation practices are strongly encouraged such as using a high pressure hose or trigger nozzle.

Outside immediately impacted areas, residents and businesses are urged to conserve water by adopting the same water use practices that saw us through the drought. These include:

- take only short 4 minute showers
- don't water gardens
- delay washing your cars
- don't fill pools
- only use dishwashers when you have a full load
- turn-off taps when you don't need water

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Media updates issued during
the January flood event

WATER QUALITY

Water across Brisbane and the Sunshine and Gold Coasts remains safe to drink. While some people may see minor discolouration of their tap water, they should not be concerned.

Water Grid suppliers are continually monitoring water quality across the network as well working closely with Queensland Health.

While Queensland Urban Utilities have a precautionary Boiled Water Alert currently in place for Marburg, water in the Ipswich area is also safe to drink.

Boil water alerts are in place for locations in the Lockyer Valley and Somerset council areas and residents and businesses are urged to visit the Queensland Urban Utilities website www.urbanutilities.com.au for more details.

ENDS

Owing to technical issues caused by the flood, a temporary email contact is in use. Please email to watergridmedia@seqwatergrid.com.au

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

For further details contact the Water Grid Communications Unit on:

| Email: watergridmedia@seqwatergrid.com.au

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TRIM reference: D/	Date and time: 15/01/11 3:30pm
Title : SEQ dam release and flooding update - 15.01.11	
Summary: Water Grid gears-up for the clean-up	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 15.01.11

MEDIA RELEASE - 15 JANUARY 2011: Issued at 3:30pm

Water Grid gears-up for the clean-up

The expected spike in water use this weekend has started with every asset in the Water Grid currently in use.

Real-time bulk water consumption data from LinkWater today showed water use increasing rapidly due to the big clean-up across Brisbane and Ipswich now taking place.

Water Grid spokesperson Barry Dennien said typically Brisbane and Ipswich areas use about 700 megalitres over a weekend period, but already these areas had reached 215 megalitres by mid morning today.

"We've noticed a rapid rise in water use over the last few hours and expect the total to reach over 950 megalitres by tomorrow evening," said Mr Dennien.

"If people see minor discolouration of their tap water, they should not be concerned - Brisbane's water is absolutely safe to drink.

"A precautionary boil water notice has been issued for Marburg, however water across Ipswich and the Sunshine and Gold Coasts also remains safe to drink," he said.

Seqwater maintenance and operations staff are working around the clock to get major water treatment plants back to full production.

"A large spike in water demand so soon after flooding presents a real challenge - but it's a challenge that with the communities help we are up to," he said.

Brisbane's biggest water treatment plant at Mt Crosby is now stretching production to 410 megalitres per day after recovering from significant flood impacts.

The Gold Coast Desalination Plant currently at 66% or 88 megalitres per day is also making an important contribution.



Media updates issued during
the January flood event

The enormous demand means that within areas affected by flooding, residents should sensibly use whatever water is needed.

Outside flood impacted areas, consumers are also asked to make an extra effort to conserve water by adopting the same water use practices that saw us through the drought.

Together the Water Grid and Queensland Urban Utilities have been working to ensure Lowood, Gatton, Helidon, Fernvale and Laidley are resupplied with drinking water as fast as possible.

Lowood's severely affected pump station and water treatment plant are back on line and are about to supply Lowood, Gatton, Helidon, Fernvale and Laidley.

Queensland Urban Utility crews, who worked through the night, remain on site repairing the town's reticulation system.

"These crews have done a tremendous job to get water supply to these local communities back on line so quickly after some considerable damage" said Mr Dennien.

For more information on boil water notices in the Queensland Urban Utilities supply area, including Somerset and Lockyer Valley, go to www.urbanutilities.com.au.

ENDS

Owing to technical issues caused by the flood, a temporary email contact is in use. Please email to watergridmedia@seqwatergrid.com.au

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

For further details contact the Water Grid Communications Unit on:

[Email: watergridmedia@seqwatergrid.com.au]

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TRIM reference: D/	Date and time: 16/01/11
Title : SEQ dam release and flooding update - 16.01.11	
Summary: Controlled releases from Wivenhoe Dam continue	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 16.01.11

MEDIA RELEASE - 16 JANUARY 2011

CONTROLLED RELEASES FROM WIVENHOE DAM CONTINUE

NOTE: All SEQ dams remain safe, stable and operating within their design specifications.

Wivenhoe Dam is at 138 per cent, and continues to drop steadily. Releases continue at around 299,000 megalitres per day. This flow will be maintained to drain the flood storage compartment this week.

The continuing releases are necessary in order to prepare Wivenhoe for any future weather events should they occur.

Inflows and water levels continue to be monitored in the Brisbane and Pine catchments.

Somerset Dam is at 106 per cent and also dropping slowly with about 70,500 megalitres per day being released into Wivenhoe via the sluice gates.

Water levels in Somerset will fall slowly in the next 24 hours.

Releases are being made in consultation with the Bureau of Meteorology and local councils and every effort is being made to limit downstream impacts where possible.

Due to a combination of Lockyer Creek, local runoff and Wivenhoe releases, Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge, Colleges Crossing, Fernvale Bridge, and Mt Crosby Weir Bridge may be inundated until the middle of next week.

Residents are urged to contact local councils for detailed information on road crossing closures and other impacts.

All recreations areas around Somerset and Wivenhoe are closed, and given the dam levels and the need for safety around spillways, we will not be able to facilitate any land-based media access to our sites.



Media updates issued during
the January flood event

People are advised not to travel to any recreation sites during the flood crisis, even if the roads are open.

Recreation sites may need to remain closed until they can be properly inspected and any public safety issues assessed.

North Pine Dam is at 96 per cent and all five gates remain closed.

Water has spilled from Wyaralong Dam after it exceeded 100 per cent capacity earlier this week.

A minor release of around 6,800 megalitres a day is being made through the emergency gates at Hinze Dam. This release may reduce slowly over the next few days but will continue until next week.

There is no public access to the spillway.

For detailed information on river levels, road and crossing closures and other potential impacts, always contact your local council.

RESIDENTS AND BUSINESSES STRONGLY URGED TO USE WATER WISELY

The connected Water Grid continues to maintain safe and secure water supplies in the face of unprecedented flooding impacts.

Water Treatment Plants across the connected Water Grid are producing at maximum rates however very high demand associated with the clean-up of flood impacts is expected over the weekend.

Given the critical need to ensure adequate water supplies for the clean-up, residents and businesses in areas not directly impacted by flooding are strongly urged to use water wisely.

Within areas affected by flooding, residents should use what water is needed to clean-up immediate flood impacts.

Sensible water conservation practices are strongly encouraged such as using a high pressure hose or trigger nozzle.

Outside immediately impacted areas, residents and businesses are urged to conserve water by adopting the same water use practices that saw us through the drought. These include:

- take only short 4 minute showers
- don't water gardens
- delay washing your cars
- don't fill pools
- only use dishwashers when you have a full load
- turn-off taps when you don't need water

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Media updates issued during
the January flood event

WATER QUALITY

Water across Brisbane and the Sunshine and Gold Coasts remains safe to drink. While some people may see minor discolouration of their tap water, they should not be concerned.

Water Grid suppliers are continually monitoring water quality across the network as well working closely with Queensland Health.

While Queensland Urban Utilities have a precautionary Boiled Water Alert currently in place for Marburg, water in the Ipswich area is also safe to drink.

Boil water alerts are in place for locations in the Lockyer Valley and Somerset council areas and residents and businesses are urged to visit the Queensland Urban Utilities website www.urbanutilities.com.au for more details.

ENDS

Owing to technical issues caused by the flood, a temporary email contact is in use. Please email to watergridmedia@seqwatergrid.com.au

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

For further details contact the Water Grid Communications Unit on:

| Email: watergridmedia@seqwatergrid.com.au

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TRIM reference: D/	Date and time: 17/01/11 11:05am
Title : SEQ dam release and flooding update - 17.01.11	
Summary: Controlled releases from Wivenhoe Dam continue, Water Quality	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 17.01.11

MEDIA RELEASE - 17 JANUARY 2011

CONTROLLED RELEASES FROM WIVENHOE DAM CONTINUE

NOTE: All SEQ dams remain safe, stable and operating within their design specifications.

Wivenhoe Dam is at 123 per cent capacity and continues to drop steadily. Releases continue at around 299,000 megalitres per day and this flow will be maintained to drain the flood storage compartment.

The continuing releases are necessary in order to prepare Wivenhoe for any future weather events should they occur. It is expected that releases from Wivenhoe Dam will cease mid-week.

Inflows and water levels continue to be monitored in the Brisbane and Pine catchments.

Somerset Dam is at 100 per cent with small discharges through the cone valves into Wivenhoe.

Releases are being made in consultation with the Bureau of Meteorology and local councils and every effort is being made to limit downstream impacts where possible.

Due to a combination of Lockyer Creek, local runoff and Wivenhoe releases, Twin Bridges, Savages Crossing, Burtons Bridge, Kholo Bridge, Colleges Crossing, Fernvale Bridge, and Mt Crosby Weir Bridge may be inundated until the middle the week.

Residents are urged to contact local councils for detailed information on road crossing closures and other impacts.

All recreations areas around Somerset and Wivenhoe are **closed**, and given the dam levels and the need for safety around spillways, **we will not be able to facilitate any land-based media access to our sites.**

People are advised not to travel to any recreation sites during the flood crisis, even if the roads are open.



Media updates issued during
the January flood event

Recreation sites may need to remain closed until they can be properly inspected and any public safety issues assessed.

North Pine Dam is at 99 per cent and all five gates remain closed.

Water has spilled from Wyaralong Dam after it exceeded 100 per cent capacity earlier last week.

A minor release of around 6,800 megalitres a day is being made through the emergency gates at Hinze Dam. This release may reduce slowly over the next few days but will continue until mid-week. There is no public access to the spillway.

For detailed information on river levels, road and crossing closures and other potential impacts, always contact your local council.

WATER QUALITY

Water across Brisbane and the Sunshine and Gold Coasts remains safe to drink. While some people may see minor discolouration of their tap water, they should not be concerned.

Water Grid suppliers are continually monitoring water quality across the network as well working closely with Queensland Health.

While Queensland Urban Utilities have a precautionary Boiled Water Alert currently in place for Marburg, water in the Ipswich area is also safe to drink.

Boil water alerts are in place for locations in the Lockyer Valley and Somerset council areas and residents and businesses are urged to visit the Queensland Urban Utilities website www.urbanutilities.com.au for more details.

ENDS

Owing to technical issues caused by the flood, a temporary email contact is in use. Please email to watergridmedia@seqwatergrid.com.au

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

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TRIM reference: D/	Date and time: 18/01/11 11:45am
Title : SEQ dam release and flooding update - 18.01.11	
Summary: Gate closure commenced at Wivenhoe	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 18.01.11

MEDIA RELEASE - 18 JANUARY 2011

GATE CLOSURE COMMENCED AT WIVENHOE DAM

NOTE: All SEQ dams remain safe, stable and operating within their design specifications.

Wivenhoe Dam is at 107 per cent and continues to drop steadily. Releases remained constant overnight at around 176,000 megalitres per day and are now reducing with the commencement of the gate closing sequence which began at 9am this morning.

The five radial gates are expected to be shut by Thursday to allow for the high tides that have been predicted for later this week.

Subject to weather, it is expected that the dam's flood storage compartment will have been returned to near zero from Thursday with any smaller excesses discharged via a smaller cone valve.

Inflows and water levels continue to be monitored in the Brisbane and Pine catchments.

Somerset Dam is at 99 per cent with small discharges through the cone valves into Wivenhoe.

All sluice gates at Somerset are closed.

Releases are being made in consultation with the Bureau of Meteorology and local councils and every effort is being made to limit downstream impacts where possible.

Residents are urged to contact local councils for detailed information on road crossing closures and other impacts.

Recreation areas around Somerset and Wivenhoe remain **closed** until further notice due to safety.

People are advised not to travel to any recreation sites during the flood situation, even if the roads are open.



Media updates issued during
the January flood event

North Pine Dam is at 99 per cent and all five gates remain closed.

The gates at Hinze Dam closed this morning.

For detailed information on river levels, road and crossing closures and other potential impacts, always contact your local council.

A single dam update will now be issued mid-morning each day.

ENDS

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

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TRIM reference: D/	Date and time: 19/01/11 10:00am
Title : SEQ dam release and flooding update - 19.01.11	
Summary: Dam update, Water quality	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 19.01.11

MEDIA RELEASE - 19 JANUARY 2011

DAM UPDATE

Wivenhoe Dam is at 99.3 per cent with the gate closing sequence expected to be complete by late afternoon today.

Inflows and water levels continue to be monitored in the Brisbane and Pine catchments, with more than 20mm of rain received in the Wivenhoe Dam catchment over the last 24 hours.

Small excesses will continue to be released through the cone valve at the base of the Wivenhoe Dam wall once all gates are closed.

Somerset Dam is at 100 per cent capacity with all sluice gates currently closed. Depending on inflows into the catchment, further releases into Wivenhoe Dam may be made over the next 24 hours.

All dam releases are being made in consultation with the Bureau of Meteorology and local councils and every effort is being made to limit downstream impacts where possible.

Residents should contact local councils for detailed information on road crossing closures and other impacts.

Recreation areas around Somerset and Wivenhoe dams remain closed until further notice due to safety.

Further releases from North Pine Dam were made overnight, to cater for the inflows from yesterday's storms. All gates at North Pine Dam were closed at 5.00am this morning.

There have been no further releases from Hinze Dam or Leslie Harrison Dam.

WATER QUALITY



Media updates issued during
the January flood event

Water across Brisbane and the Sunshine and Gold Coasts remains safe to drink.
Water Grid suppliers are continually monitoring water quality across the network and
are working closely with Queensland Health.

While Queensland Urban Utilities have a precautionary Boil Water Alert currently in
place for Marburg, water in the Ipswich area is also safe to drink.

Boil water alerts are in place for locations in the Lockyer Valley and Somerset council
areas and residents and businesses are urged to visit the Queensland Urban Utilities
website www.urbanutilities.com.au for more details.

A single dam update will now be issued mid-morning each day.

ENDS

PLEASE NOTE: While releases are being made from the region's water storages,
routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number
has been established for members of the public seeking information on which dams
are spilling in South East Queensland. Members of the public seeking information
on **potential impacts in their local areas should direct inquiries to their local
councils.**

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TRIM reference: D/	Date and time: 20/01/11 10:42am
Title : SEQ dam release and flooding update - 20.01.11	
Summary: Small releases from Wivenhoe Dam after overnight storms	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 20.01.11

MEDIA RELEASE - 20 JANUARY 2011

SMALL RELEASES FROM WIVENHOE DAM AFTER OVERNIGHT STORMS

Last night's storms over the catchment have resulted in one gate being partially opened at Wivenhoe Dam this morning. This will see a small controlled release over the course of today to maintain the dam at or near 100 per cent.

The Bureau of Meteorology has forecast showers and possible thunderstorms later today meaning water releases will be reassessed over the next 24 hours.

Somerset Dam is just over 100 per cent capacity with all sluice gates currently closed. Depending on catchment inflows, further releases into Wivenhoe Dam may be made over the next 24 hours.

The Flood Operations Centre continues to monitor rainfalls and water levels throughout the Brisbane and Pine River catchments and consult with the Bureau of Meteorology and local councils to limit downstream impacts where possible.

While Twin Bridges remains inundated, overnight rainfall in the Lockyer catchment may affect inundation of Savages and Colleges Crossing in coming days. Residents should always contact the local council for detailed information on road crossing closures and other impacts.

Further releases from North Pine Dam began overnight to cater for the inflows from last night's storms. All five gates are currently open and are expected to operate throughout the day.

There have been no further releases from Hinze Dam or Leslie Harrison Dam.

Recreation areas around Somerset and Wivenhoe dams remain closed until further notice due to safety.

Water has spilled from Wyaralong Dam after it exceeded 100 per cent capacity on Tuesday 11 January 2011.

WATER QUALITY



Media updates issued during
the January flood event

Water across Brisbane and the Sunshine and Gold Coasts remains safe to drink. Water Grid suppliers are continually monitoring water quality across the network and are working closely with Queensland Health.

While Queensland Urban Utilities have a precautionary Boil Water Alert currently in place for Marburg, water in the Ipswich area is also safe to drink.

Boil water alerts are in place for locations in the Lockyer Valley and Somerset council areas and residents and businesses are urged to visit the Queensland Urban Utilities website www.urbanutilities.com.au for more details.

A single dam update will now be issued mid-morning each day.

ENDS

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

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TRIM reference: D/	Date and time: 20/01/11 12:30pm
Title : SEQ dam release and flooding update - 20.01.11	
Summary: Gates now closed at Wivenhoe Dam, Water quality	
Note: Issued to all key media and stakeholders in South East Queensland	

SEQ dam release and flooding update - 20.01.11

MEDIA RELEASE - 20 JANUARY 2011

GATES NOW CLOSED AT WIVENHOE DAM

All gates are now closed at Wivenhoe Dam, after last night's small water release in the wake of storms.

The Bureau of Meteorology has forecast showers and possible thunderstorms later today meaning water releases will be reassessed over the next 24 hours.

Somerset Dam is just over 100 per cent capacity with all sluice gates currently closed. Depending on catchment inflows, further releases into Wivenhoe Dam may be made over the next 24 hours.

The Flood Operations Centre continues to monitor rainfalls and water levels throughout the Brisbane and Pine River catchments and consult with the Bureau of Meteorology and local councils to limit downstream impacts where possible.

While Twin Bridges remains inundated, overnight rainfall in the Lockyer catchment may affect inundation of Savages and Colleges Crossing in coming days. Residents should always contact the local council for detailed information on road crossing closures and other impacts.

Further releases from North Pine Dam began overnight to cater for the inflows from last night's storms. All five gates are currently open and are expected to operate throughout the day.

There have been no further releases from Hinze Dam or Leslie Harrison Dam.

Recreation areas around Somerset and Wivenhoe dams remain closed until further notice due to safety.

Water has spilled from Wyaralong Dam after it exceeded 100 per cent capacity on Tuesday 11 January 2011.

WATER QUALITY



Media updates issued during
the January flood event

Water across Brisbane and the Sunshine and Gold Coasts remains safe to drink. Water Grid suppliers are continually monitoring water quality across the network and are working closely with Queensland Health.

While Queensland Urban Utilities have a precautionary Boil Water Alert currently in place for Marburg, water in the Ipswich area is also safe to drink.

Boil water alerts are in place for locations in the Lockyer Valley and Somerset council areas and residents and businesses are urged to visit the Queensland Urban Utilities website www.urbanutilities.com.au for more details.

A single dam update will now be issued mid-morning each day.

ENDS

PLEASE NOTE: While releases are being made from the region's water storages, routine updates will be provided.

Community Assistance:

Please direct the community to contact telephone - [REDACTED]. This number has been established for members of the public seeking information on which dams are spilling in South East Queensland. Members of the public seeking information on potential impacts in their local areas should direct inquiries to their local councils.

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Attachment 2: Wivenhoe Dam factsheet

TRIM reference:

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3

Wivenhoe and Somerset Dams

Providing water supply and flood control for South East Queensland

A FEW FACTS

Wivenhoe Dam was built in response to the 1974 floods and is an award-winning feat of hydrological and structural engineering.

Connected to Wivenhoe Dam, Somerset Dam was completed in 1959. In the event of heavy rains, which may cause Somerset Dam to reach capacity, water is released downstream from Somerset to Wivenhoe Dam.

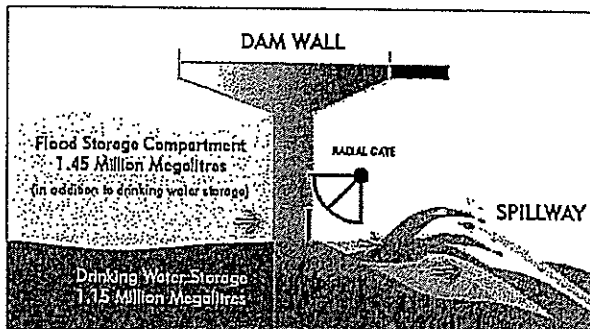
On top of storing 1.15 million megalitres of precious drinking water, Wivenhoe Dam can also store an additional 1.45 million megalitres, equal to 2.5 times the volume of Sydney Harbour. This additional space is known as the dam's flood storage compartment and works to hold back the flood waters which gather in the Brisbane Valley. These flood waters can threaten Brisbane after heavy weather events.

The flood storage compartment at Wivenhoe Dam temporarily stores flood water and releases it at a controlled rate to minimise downstream impacts. Flood levels along the Brisbane River and in the Ipswich and Brisbane urban areas would be much higher without the support of Wivenhoe and Somerset dams.

The Wivenhoe Dam wall is designed to withstand an extreme flood event, much worse than anything on record to date.

In a flood event similar to 1974, there would still be a large amount of local flooding in and around the Ipswich and Brisbane regions, simply due to the heavy local rainfalls. However, water levels along the Brisbane River would be reduced due to the mitigating impacts of Somerset and Wivenhoe dams.

Wivenhoe Dam Flood Storage Compartment



If it wasn't for Wivenhoe and Somerset dams, a considerable number of people, properties and infrastructure could be at an even greater risk of serious flooding. These dams are a crucial component of South East Queensland's flood mitigation plan and something Queenslanders can be proud of.

Spectacular pictures – but why does Wivenhoe Dam have to release stored flood water?

South East Queensland has a weather pattern that often sees prolonged or multiple rain events in close succession.



Following heavy rainfall in October 2010, Wivenhoe Dam received inflows equivalent to almost half the flood storage compartment capacity - in just a few days.

Wivenhoe Dam controls 50 per cent of the Brisbane catchment. It is therefore possible for Brisbane to flood from other sources such as rainfall in the catchment below the dam wall.

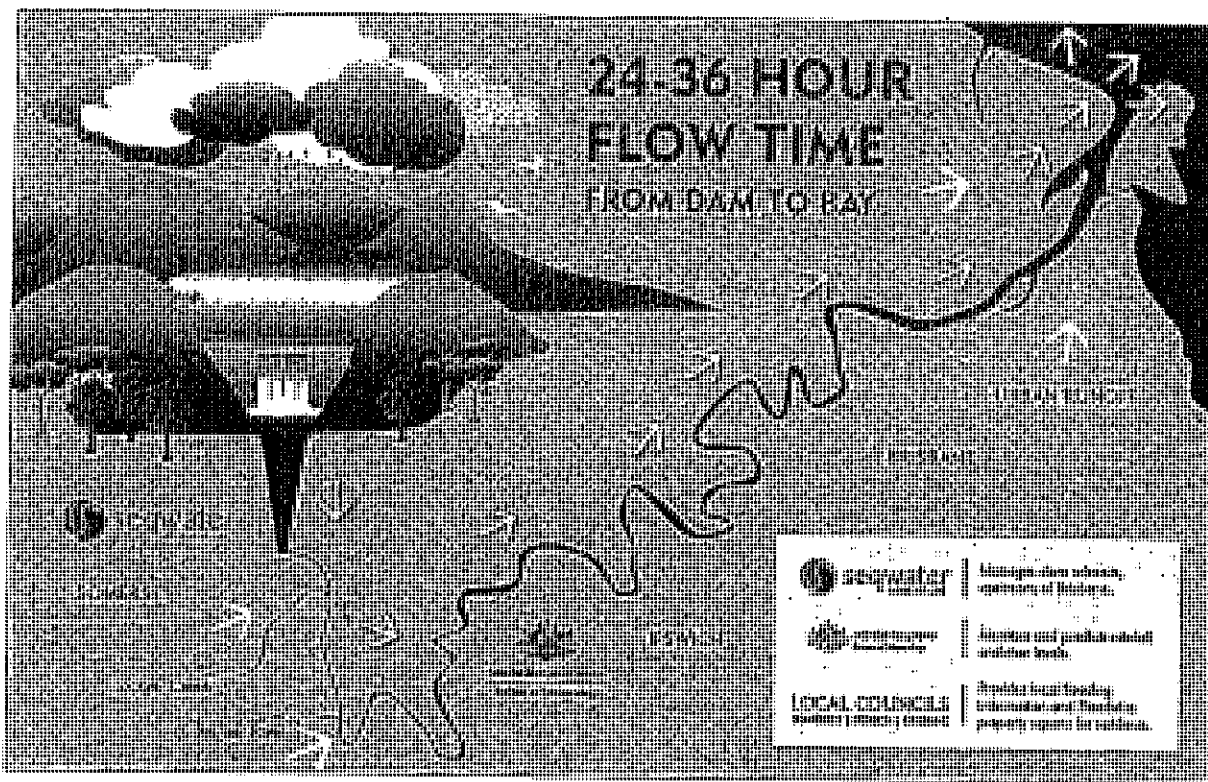
A fundamental principle in the management of Wivenhoe Dam is that all floodwater should be released within seven days. This means the greater the volume received in the flood storage compartment, the greater the discharge required.

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How are the releases managed?

Before Wivenhoe Dam begins a controlled release from its flood storage compartment, a dedicated 24-hour Flood Operations Centre is activated. The specific purpose of the centre is to manage any potential impacts of releases downstream.

The actions of the Flood Operations Centre are guided by a Flood Mitigation Manual. The Queensland State Government, local councils and relevant emergency services are consulted before the water releases from dams take place, to ensure communities are warned and can take all necessary precautions.

The amount of water released from Wivenhoe Dam depends on the level of water inside the flood storage compartment, as well as the incoming flows and downstream tributaries.

During a major flooding event, the SEQ Water Grid Manager, Seqwater (the dam operators), the Bureau of Meteorology and local councils work together to formulate recommendations. Members of the public and relevant emergency services are then advised on how to best manage impending localised flooding.

Rainfall is continually monitored throughout all South East Queensland catchments during a flood event. The Bureau of Meteorology provides rainfall forecasts to Seqwater who then monitor the surrounding catchments.

Together with weather predictions, a comprehensive network of river sensors, providing real-time data, work to inform the basis for a formulated schedule of controlled dam releases. The schedule works to ensure the maximum protection from flooding in urban areas is achieved.

Based on the weather forecast from the Bureau of Meteorology, and Seqwater's decisions to release water from Wivenhoe Dam, councils then work with residents regarding local area impacts. Councils know their areas best and work to advise residents about road and bridge closures, as well as local flooding.

The following priorities are considered when determining how much water is to be released from Wivenhoe Dam, and at what capacity:

- the structural safety of the dam
- maximising protection from flooding in urbanised areas
- minimising disruption to rural industries along the Brisbane River and Stanley River valleys
- minimising impacts to flora and fauna during the water release phase of a flood event
- the ability to retain the dam at full supply level at the conclusion of a flood event.

How do I find out further information?

For more information on the status of dam levels and Water Grid recreation sites visit www.watergrid.com.au

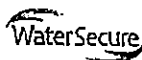
For information on local flooding, including road closures, contact your local council or visit their website.

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Suzie Emery

From: Reilly Bob [Bob.Reilly [REDACTED]]
Sent: Tuesday, 8 March 2011 7:39 AM
To: Dan Spiller; Jim Pruss; Mike Foster; Allen Peter
Cc: Lumley Carol
Subject: FW: Seqwater report Wivenhoe and Somerset dams: DRERM media release
Attachments: Seqwater report Wivenhoe and Somerset dams 070311.doc

Hi everyone

Not sure if you received this release.

Regards

Bob

From: Michaels Paul
Sent: Monday, 7 March 2011 8:14 PM
Subject: Seqwater report Wivenhoe and Somerset dams

Attention news editors... attached for your immediate use is a media release from the Department of Environment and Resource Management...

A Seqwater report on the operation of Wivenhoe and Somerset dams during the January floods is being released today by the Department of Environment and Resource Management.

Paul Michaels
Director, Media Services
Telephone [REDACTED]
email: paul.michaels
Group email: media
www.derm.qld.gov.au
Department of Environment and Resource Management
41 George Street, Brisbane Q 4001
GPO 2454, Brisbane Q 4001

+-----+

Think B4U Print

1 ream of paper = 6% of a tree and 5.4kg CO2 in the atmosphere

3 sheets of A4 paper = 1 litre of water

+-----+

Department of Environment and Resource Management (DERM)

Media release

Wivenhoe and Somerset dams operation report release

A Seqwater report on the operation of Wivenhoe and Somerset dams during the January floods is being released today by the Department of Environment and Resource Management (DERM).

DERM Director-General John Bradley, who is the regulator of dam safety, said Seqwater, the owner and operator of the dams, had been required to submit the report which would now be published on DERM's website www.derm.qld.gov.au.

"Seqwater's report addresses its compliance with the Flood Mitigation Manual for Wivenhoe and Somerset dams and the scope for potential changes in dam operational arrangements related to flood mitigation" Mr Bradley said.

Mr Bradley said that the scope of the Report was directly relevant to key matters to be assessed by the Commission of Inquiry.

Under its Terms of Reference, the Commission is required to consider the

"...implementation of the systems operation plans for dams across the state and in particular the 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."

"Given its direct relevance to the Commission of Inquiry's terms of reference, upon receiving the report, DERM provided it to Commission and consulted it on the appropriateness of its public release."

The Commission is scheduled to provide its Interim Report by 1 August 2011 which will provide recommendations to be addressed prior to the next wet season.

Mr Bradley said DERM would consider the recommendations in the Commission's Interim Report before responding formally to Seqwater's Report and implementing any regulatory changes required prior to the next wet season.

"The report includes Seqwater's assessment of the significance of the January 2011 Flood Event, Seqwater's operational response during the event and Seqwater's assessment of its compliance with the manual and the effectiveness of monitoring, modelling and communications systems.

"The report includes over 1000 pages of technical data in five volumes and so will represent a substantial part of Seqwater's submission to the Commission of Inquiry," Mr Bradley said.

Seqwater is required under the *Water Supply (Safety and Reliability) Act 2008* to submit a report to the department's Office of Water Supply Regulator within six weeks of a major flood event.

ENDS

Date: 7 March 2011

For further information contact Department of Environment and Resource Management Media Services Ph: [REDACTED] or email media@derm.qld.gov.au [REDACTED]