

- C. Christensen Report, Chapter VIII, [798]-[852].
- D. Christensen Report, Chapter X, [1215]-[1250], [1251]-[1274].
- E. Christensen Supplemental Report. Volume 2, pp 4-5.
- F. Christensen Supplemental Report. Chapter VI. [162]-[188], [268]-[269].

228A Further, by reason of the matters pleaded in paragraphs 151-152, 163A-165, 170-170A, 174, 179A-182, 192-201 and 214-219, had the Flood Engineers commenced reasonably prudent Flood Operations at Somerset Dam and Wivenhoe Dam at any time on or after 16 December 2010 and continued such Flood Operations until 5 January 2011 (contrary to what occurred in fact), there would have remained a significant risk as at 5 January 2011:

- a) that, unless releases were continued at Somerset Dam and Wivenhoe Dam, there would be insufficient flood storage capacity in Lake Somerset and Lake Wivenhoe to store incoming flows should further rainfall occur in accordance with, or in excess of, that forecast by the Bureau of Meteorology; and
- b) that, without such capacity, subsequent releases would be necessary in volumes that would cause urban flooding downstream of Wivenhoe Dam.

228B Further, by reason of the matters pleaded in paragraphs 151-152, 163A-165, 170-170A, 174, 179A-182, 192-201, 214-219 and 228A, by the end of 5 January 2011, a reasonably prudent flood engineer:

- a) having first commenced reasonably prudent Flood Operations on 16 December 2010 (by taking the actions pleaded in paragraph 160 above), and having continued reasonably prudent Flood Operations since that time, would have reduced the water level in Lake Somerset to no higher than approximately EL 96.18 m AHD, and would have reduced the water level in Lake Wivenhoe to no higher than approximately EL 64.21 m AHD: or, alternatively,

- b) having first commenced reasonably prudent Flood Operations on 2 January 2011 (by taking the actions pleaded in paragraph 211 above), and having continued reasonably Flood Operations since that time, would have reduced the water level in Lake Somerset to no higher than approximately EL 96.20 m AHD. and would have reduced the water level in Lake Wivenhoe to no higher than approximately EL 64.18 m AHD: or, alternatively,
- c) having first commenced reasonably prudent Flood Operations on 5 January 2011 (by taking the actions pleaded in paragraph 228 above), would have reduced the water level in Lake Somerset to no higher than approximately EL 98.61 m AHD, and would have reduced the water level in Lake Wivenhoe to no higher than approximately EL 66.55 m AHD: or, alternatively,
- d) would have reduced the water levels in Lake Somerset and Lake Wivenhoe to their respective Temporary Full Supply Levels; or, alternatively,
- e) would have reduced the water levels in Lake Somerset and Lake Wivenhoe to their respective Full Supply Levels.

PARTICULARS

- A. Flood Mitigation Manual, sections 1.1, 3.1, 8.4, 8.5. 9.3, 9.4..
- B. Christensen Report. Chapter VIII. [798]-[852].
- C. Christensen Report, Volume 2. pp 170-171.
- D. Christensen Supplemental Report. Chapter VI. [162]-[188], r2681-[269].
- E. Christensen Supplemental Report, Volume 2. pp 48-49. 51-52, 54-55,107-108.
- F. Christensen Report. Chapter X. [1215]-[1250], [1251]-[1274].

229 In the circumstances pleaded in paragraphs 224-228B, in-tho-period-3 January-to-5-January-2011. the Flood Engineers (or one or more of them);

- a) failed to do one or more of the things pleaded in paragraph 228 in the period 3 January to 5 January 2011; and, or alternatively,
- b) failed, by the end of 5 January 2011, to reduce the water levels in Lake Somerset and Lake Wivenhoe to levels no higher than the respective water levels pleaded in paragraph 228B.

230 In the circumstances pleaded in the preceding paragraph, the Flood Engineers (or one or more of them) breached their duty of care to the plaintiff and other Group Members in the period 3 January to 5 January 2011 (the **3-5 January Breaches**).

R Events of 6 January 2011

Weather Forecasts

231 On 6 January 2011:

- a) the Bureau of Meteorology 4-day forecast for 6 January to 9 January 2011 predicted 50-125 mm of rainfall in the Brisbane River Basin, including in the Lake Somerset and Lake Wivenhoe catchment areas; and
- b) the Bureau of Meteorology 8-day forecast for 6 January to 13 January 2011 predicted 100-200 mm of rainfall in the Brisbane River Basin, including in the Lake Somerset and Lake Wivenhoe catchment areas.

PARTICULARS

- A. Bureau of Meteorology, Poor Man's Ensemble forecast for period 6 January to 9 January 2011.
- B. Bureau of Meteorology, Poor Man's Ensemble forecast for period 6 January to 13 January 2011.

232 At or around 8:00 am on 6 January 2011, the Bureau of Meteorology forecast rainfall of up to 150 mm in South East Queensland over the following 24 to 48 hours.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix E, p1.

233 At or around 10:21 am on 6 January 2011, the Bureau of Meteorology issued a QPF predicting rainfall of 30-50 mm in the Lake Somerset and Lake Wivenhoe catchment areas over the following 24 hours.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix C, p 168.

234 At or around 4:00 pm on 6 January 2011, the Bureau of Meteorology issued a QPF predicting rainfall of 20-30 mm in the Lake Somerset and Lake Wivenhoe catchment areas over the following 24 hours.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix C, p 169.

Rainfall and Inflows

235 In the 24 hours to 9:00 am on 6 January 2011, there was widespread rainfall throughout the catchment areas of Lake Somerset and Lake Wivenhoe, ranging from 20 mm to 56 mm.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 6.3, p 64.

236 This rainfall, and the associated runoff, resulted in ongoing catchment inflows into Lake Wivenhoe and Lake Somerset throughout the course of 6 January 2011.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 9.2, p 154 and Section 9.3, p 169.

Water Level

237 At or around 8:00 am on 6 January 2011:

- a) the water level of Lake Somerset was approximately EL 99.34 m AHD (0.34 m above Full Supply Level) and rising; and
- b) the water level of Lake Wivenhoe:
 - i) was approximately EL 67.31 m AHD (0.31 m above Full Supply Level) and rising; and
 - ii) was above the level at which the Flood Mitigation Manual required releases to commence.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix E, p1.
- B. Lake Wivenhoe water level at 6.30am on 6 January 2011 - EL 67.31 m AHD
- Seqwater, Spreadsheet containing Lake Wivenhoe water levels between 1 December 2010 and 31 January 2011, Doc identification number: MAU.500.020.0027.
- C. Lake Somerset water level at 7.00am on 6 January 2011 - EL 99.34 m AHD
- Seqwater, Technical Situation Report 7, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix F, p 74.

- D. Lake Wivenhoe water level at 7.00am on 6 January 2011 - EL 67.31 m AHD

Seqwater, Technical Situation Report 7, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix F, p 74.

- E. Flood Mitigation Manual, sections 1.2, 8.3 and 8.4.

238 Over the course of 6 January 2011:

- a) the water level of Lake Somerset increased from approximately EL 99.27 m AHD to approximately EL 99.51 m AHD by day's end; and
- b) the water level of Lake Wivenhoe increased from approximately EL 67.22 m AHD to approximately EL 67.45 m AHD by day's end.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 9.2, p 154 and Section 9.3, p 169.

- B. Lake Wivenhoe water level at 10.00 pm on 6 January 2011 - EL 67.44 mAHD

Seqwater, Spreadsheet containing Lake Wivenhoe water levels between 1 December 2010 and 31 January 2011, Doc identification number: MAU.500.020.0027.

Flood Operations

239 At or around 7:00-am on 6 January 2011, Seqwater, SunWater and the Flood Engineers mobilised the Flood Operations Centre.

240 The Flood Engineers on duty on 6 January 2011 were as follows:

Shift Start Time	Shift Finish Time	Flood Operations Engineer
Thursday 6/1/2011 07:00	Thursday 6/1/2011 19:00	Mr Malone

Shift Start Time	Shift Finish Time	Flood Operations Engineer
Thursday 6/1/2011 19:00	Friday 7/1/2011 07:00	Mr Ay re

240A In using the Real Time Flood Model on 6 January 2011 to predict future inflows into Lake Somerset and Lake Wivenhoe, the Flood Engineers selected and input initial losses and continuing loss rates as follows:

Relief	Initial Losses	Continuing Loss
CRE (Cressbrook Creek Region)	0 mm and 10mm	2.5 mm/hr
COO (Coovar Creek Region)	10 mm and 25 mm	2.5 mm/hr
LIN (Brisbane River at Linville Region)	10 mm and 15 mm	2.5 mm/hr
EMU (Emu Creek Region)	10 mm and 25 mm	2.5 mm/hr
GRE (Gregors Creek Region)	0 mm and 10 mm	2.5 mm/hr
SDI (Somerset Dam Inflow Region)	0 mm	2.5 mm/hr
WDI (Wivenhoe Dam Inflow Region)	0 mm and 10 mm	2.5 mm/hr

241 By reason of the matters pleaded at paragraphs 231-237, by 8:00 am on 6 January 2011 at the latest, the Flood Mitigation Manual required the Flood Engineers to continue or commence releases from Somerset Dam and Wivenhoe Dam.

PARTICULARS

A. Flood Mitigation Manual, sections 1.2, 8.3 and 8.4.

242 The Flood Engineers did not continue or commence any releases from Somerset Dam or Wivenhoe Dam after 9:45 am on 6 January 2011.

PARTICULARS

A. Seqwater, January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam, 2 March 2011, Sections 9.2 and 9.3, pp 154 and 169.

6 January 2011 Breaches

243 In the circumstances pleaded in paragraphs 231-238, on 6 January 2011, there was a significant risk that:

- a) unless releases were immediately commenced at Somerset Dam and Wivenhoe Dam, there would be insufficient flood storage capacity in Lake Somerset and Lake Wivenhoe to store incoming flows should further rainfall occur in accordance with, or in excess of, that forecast by the Bureau of Meteorology; and
- b) without such capacity, subsequent releases would be necessary in volumes that would cause urban flooding downstream of Wivenhoe Dam.

244 [Not used]

245 Further, by reason of the matters pleaded at paragraphs 231-238 and 243, a reasonably prudent flood engineer on 6 January 2011:

- a) would have complied with the Flood Mitigation Manual;
- b) would have commenced or continued Flood Operations and releases on 6 January 2011;
- c) would have implemented and maintained Strategy W3 at Wivenhoe Dam;
- d) would have implemented and maintained Strategy S2 at Somerset Dam;
- e) would have caused Somerset Dam and Wivenhoe Dam to release water at rates substantially exceeding the rate of inflow;
- f) ~~[Not used] would have reduced the water level in Lake Somerset to no higher than:~~
 - i) ~~approximately EL 95.75 m AHD by the end of 6 January 2011;~~
~~or, alternatively,~~

- ii) ~~approximately EL 98.48 m AHD by the end of 6 January 2011;~~
~~or, alternatively,~~
 - iii) ~~Temporary Full Supply Level by the end of 6 January 2011;~~ or,
~~alternatively,~~
 - iv) ~~Full Supply Level by the end of 6 January 2011;~~
- g) ~~[Not used] would have reduced the water level in Lake Wivenhoe to no higher than:~~
- i) ~~approximately EL 63.62 m AHD at the end of 6 January 2011;~~
~~or, alternatively,~~
 - ii) ~~approximately EL 66.76 m AHD at the end of 6 January 2011;~~
~~or, alternatively,~~
 - iii) ~~Temporary Full Supply Level at the end of 6 January 2011;~~ or,
~~alternatively,~~
 - iv) ~~Full Supply Level at the end of 6 January 2011;~~ and
- h) would have continued Flood Operations until Lake Somerset and Lake Wivenhoe were no longer likely to exceed their respective Temporary Full Supply Levels, or alternatively, Full Supply Levels;
and
- i) would have selected and input losses and continuing loss rates equal, or approximate, to those specified in the table below into the Real Time Flood Model to forecast future inflows into Lake Somerset and Lake Wivenhoe to take account of the increased runoff that would be generated from continuing rainfall by reason of the increasingly saturated catchments:

<u>Region</u>	<u>Initial Losses</u>	<u>Continuing Loss Rates</u>
<u>CRE (Cressbrook Creek Region)</u>	<u>2.1 mm</u>	<u>0.1 mm/hr</u>
<u>COO (Cooyar Creek Region)</u>	<u>2.1 mm</u>	<u>0.1 mm/hr</u>
<u>LIN (Brisbane River at Linville Region)</u>	<u>2.1 mm</u>	<u>0.1 mm/hr</u>

<u>Region</u>	<u>Initial Losses</u>	<u>Continuing Loss Rates</u>
<u>EMU (Emu Creek Region)</u>	<u>2.1 mm</u>	<u>0.1 mm/hr</u>
<u>GRE (Gregors Creek Region)</u>	<u>2.1 mm</u>	<u>0.1 mm/hr</u>
<u>SDI (Somerset Dam Inflow Region)</u>	<u>1.0 mm</u>	<u>0.05 mm/hr</u>
<u>WDI (Wivenhoe Dam Inflow Region)</u>	<u>1.0 mm</u>	<u>0.05 mm/hr</u>

PARTICULARS

- A. A reasonably prudent flood engineer would have complied with the Flood Mitigation Manual by taking the actions pleaded in paragraph 245(b)-(h).
- B. Flood Mitigation Manual, sections 1.1, 3.1, 8.4, 8.5, 9.3, 9.4.
- C. Christensen Report, Chapter VIII, [853]-[871].
- D. Christensen Report, Chapter X, [1275]-[1289], [1426]-[1452].
- E. Christensen Supplemental Report, Volume 2, pp 4-5.
- F. Christensen Supplemental Report, Chapter VI, [189]-[201].

245A Further, by reason of the matters pleaded in paragraphs 151-152, 163A-165, 170-170A, 174, 179A-182, 192-201, 214-219 and 231-236, had the Flood Engineers commenced reasonably prudent Flood Operations at Somerset Dam and Wivenhoe Dam at any time on or after 16 December 2010 and continued such Flood Operations until 6 January 2011 (contrary to what occurred in fact), there would have remained a significant risk as at 6 January 2011:

- a) that, unless releases were continued at Somerset Dam and Wivenhoe Dam, there would be insufficient flood storage capacity in Lake Somerset and Lake Wivenhoe to store incoming flows should further rainfall occur in accordance with, or in excess of, that forecast by the Bureau of Meteorology; and

- b) that, without such capacity, subsequent releases would be necessary in volumes that would cause urban flooding downstream of Wivenhoe Dam.

245B Further, by reason of the matters pleaded in paragraphs 151-152, 163A-165, 170-170A, 174, 179A-182, 192-201, 214-219, 231-236 and 245A, by the end of 6 January 2011, a reasonably prudent flood engineer:

- a) having first commenced reasonably prudent Flood Operations on 16 December 2010 (by taking the actions pleaded in paragraph 160 above), and having continued reasonably prudent Flood Operations since that time, would have reduced the water level in Lake Somerset to no higher than approximately EL 95.74 m AHD, and would have reduced the water level in Lake Wivenhoe to no higher than approximately EL 63.62 m AHD; or, alternatively,
- b) having first commenced reasonably prudent Flood Operations on 2 January 2011 (by taking the actions pleaded in paragraph 211, above), and having continued reasonably Flood Operations since that time, would have reduced the water level in Lake Somerset to no higher than approximately EL 95.76 m AHD, and would have reduced the water level in Lake Wivenhoe to no higher than approximately EL 63.59 m AHD; or, alternatively,
- c) having first commenced reasonably prudent Flood Operations on 5 January 2011 (by taking the actions pleaded in paragraph 228 above), and having continued reasonably prudent Flood Operations since that time, would have reduced the water level in Lake Somerset to no higher than approximately EL 97.64 m AHD, and would have reduced the water level in Lake Wivenhoe to no higher than approximately EL 65.30 m AHD; or, alternatively,
- d) having first commenced reasonably prudent Flood Operations on 6 January 2011 (by taking the actions pleaded in paragraph 245 above), would have reduced the water level in Lake Somerset to no higher than approximately EL 98.48 m AHD, and would have reduced the water level in Lake Wivenhoe to approximately EL 66.76 m AHD; or alternatively,

- e) would have reduced the water levels in Lake Somerset and Lake Wivenhoe to their respective Temporary Full Supply Levels; or, alternatively,
- f) would have reduced the water levels in Lake Somerset and Lake Wivenhoe to their respective Full Supply Levels.

PARTICULARS

- A. Flood Mitigation Manual, sections 1.1, 3.1, 8.4, 8.5, 9.3, 9.4.
- B. Christensen Report, Chapter VIII, [853]-[871].
- C. Christensen Report. Chapter X. [1275]-[1289], [1426]-[1452].
- D. Christensen Report. Volume 2. pp 174-175, 362-363.
- E. Christensen Supplemental Report. Chapter VI, [189]-[201].
- F. Christensen Supplemental . Volume 2. pp 57-58, 110-111.

246 In the circumstances pleaded in paragraphs 239-245B, on 6 January-2011. the Flood Engineers (or one or more of them):

- a) failed to do one or more of the things pleaded in paragraph 245 on 6 January 2011; and, or alternatively,
- b) failed, by the end of 6 January 2011, to reduce the water levels in Lake Somerset and Lake Wivenhoe to levels no higher than the respective water levels pleaded in paragraph 245B.

247 In the circumstances pleaded in the preceding paragraph, the Flood Engineers (or one or more of them) breached their duty of care to the plaintiff and other Group Members on 6 January 2011 (the **6 January Breaches**).

S Events of 7 January 2011

Weather Forecasts

248 On 7 January 2011:

- a) the Bureau of Meteorology 4-day forecast for 7 January to 10 January 2011 predicted 50-150 mm of rainfall in the Brisbane River Basin, including in the Lake Somerset and Lake Wivenhoe catchment areas; and
- b) the Bureau of Meteorology 8-day forecast for 7 January to 14 January 2011 predicted 75-200 mm of rainfall in the Brisbane River Basin, including in the Lake Somerset and Lake Wivenhoe catchment areas.

PARTICULARS

- A. Bureau of Meteorology, Poor Man's Ensemble forecast for period 7 January to 10 January 2011.
- B. Bureau of Meteorology, Poor Man's Ensemble forecast for period 7 January to 14 January 2011.

249 At or around 10:03 am on 7 January 2011, the Bureau of Meteorology issued a QPF predicting rainfall of 20-30 mm in the Lake Somerset and Lake Wivenhoe catchment areas over the following 24 hours.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix C, p 170.

250 At or around 4:04 pm on 7 January 2011, the Bureau of Meteorology issued a QPF predicting rainfall of 20-30 mm in the Lake Somerset and Lake Wivenhoe catchment areas over the following 24 hours.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix C p 171.

Rainfall and Inflows

251 In the 24 hours to 9:00 am on 7 January 2011, there was widespread rainfall throughout the catchment areas for Lake Somerset and Lake Wivenhoe, ranging from 10 mm to 30 mm.

PARTICULARS

A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 6.3, p 65.

252 Catchment inflows into Lake Wivenhoe and Lake Somerset continued in significant volumes throughout the course of 7 January 2011.

PARTICULARS

A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 9.2, pp 154-155 and Section 9.3, p 169.

Water Level

253 At or around 6:07 am on 7 January 2011:

- a) the water level of Lake Somerset was approximately EL 99.59 mAHD; and
- b) the water level of Lake Wivenhoe was approximately EL 67.64 m AHD.

PARTICULARS

A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix E, p 7.

B. Lake Somerset water level at 6.00am on 7 January 2011 - EL 99.59 mAHD

Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, p 169.

- C. Lake Wivenhoe water level at 6.00am on 7 January 2011 -
EL 67.64 mAHD

Seqwater, Spreadsheet containing Lake Wivenhoe water levels between 1 December 2010 and 31 January 2011, Doc identification number: MAU.500.020.0027.

254 At all times during the morning of 7 January 2011, the water level in Lake Wivenhoe was above the level at which the Flood Mitigation Manual required releases from Wivenhoe Dam to commence.

255 Over the course of 7 January 2011:

- a) the water level of Lake Somerset increased from approximately EL 99.52 m AHD (0.52 m above Full Supply Level) to approximately EL 100.28 mAHD (1.28 m above Full Supply Level) by day's end;
and
- b) the water level of Lake Wivenhoe increased from approximately EL 67.46 m AHD (0.46 m above Full Supply Level) to approximately EL 68.28 m AHD (1.28 m above Full Supply Level) by day's end.

PARTICULARS

A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 9.2, p 154-155 and Section 9.3, p 169.

B. Lake Wivenhoe water level at 12.00 am on 7 January 2011 -
EL 67.46 mAHD

Lake Wivenhoe water level at 10.00 pm on 7 January 2011 - EL
68.26 mAHD

Seqwater, Spreadsheet containing Lake Wivenhoe water levels between 1 December 2010 and 31 January 2011, Doc identification number: MAU.500.020.0027.

Flood Operations

256 The Flood Engineers on duty on 7 January 2011 were as follows:

Shift Start Time	Shift Finish Time	Flood Operations Engineer
Thursday 6/1/2011 19:00	Friday 7/1/2011 07:00	Mr Ayre
Friday 7/1/2011 07:00	Friday 7/1/2011 19:00	Mr Malone
Friday 7/1/2011 19:00	Saturday 8/1/2011 07:00	Mr Ruffini

256A In using the Real Time Flood Model on 7 January 2011 to predict future inflows into Lake Somerset and Lake Wivenhoe, the Flood Engineers selected and input initial losses and continuing loss rates as follows:

Region	Initial Losses	Continuing Loss Rates
<u>CRE (Cressbrook Creek Region)</u>	<u>10mm</u>	<u>2.5 mm/hr</u>
<u>COO (Cooyar Creek Region)</u>	<u>10 mm</u>	<u>2.5 mm/hr</u>
<u>LIN (Brisbane River at Linville Region)</u>	<u>15 mm</u>	<u>2.5 mm/hr</u>
<u>EMU (Emu Creek Region)</u>	<u>30 mm</u>	<u>2.5 mm/hr</u>
<u>GRE (Gregors Creek Region)</u>	<u>10 mm</u>	<u>2.5 mm/hr</u>
<u>SDI (Somerset Dam Inflow Region)</u>	<u>0 mm</u>	<u>2.5 mm/hr</u>
<u>WDI (Wivenhoe Dam Inflow Region)</u>	<u>0 mm</u>	<u>2.5 mm/hr</u>

257 The Flood Engineers did not commence releases from Wivenhoe Dam until approximately 3:00 pm on 7 January 2011.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 9.2, p 155 and Appendix L, p 1.

258 Once the Flood Engineers commenced releases from Wivenhoe Dam they did so:

- a) operating under Strategy W1; or alternatively
- b) at rates consistent with Strategy W1.

259 The Flood Engineers continued to operate under Strategy W1, or continued to release water from Wivenhoe Dam at rates consistent with Strategy W1, throughout the remainder of 7 January 2011.

PARTICULARS

A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 9.2, p 155 and Appendix L, pp 1-3.

260 Even after the Flood Engineers commenced releases from Wivenhoe Dam, rates of inflow into Lake Wivenhoe substantially exceeded rates of outflow throughout the remainder of 7 January 2011.

PARTICULARS

A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 9.2, p 155.

261 The Flood Engineers did not commence releases from Somerset Dam until approximately 7:00 pm on 7 January 2011.

PARTICULARS

A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 9.3, p 169 and Appendix L, p 65.

262 Once the Flood Engineers commenced releases from Somerset Dam they did so:

- a) operating under Strategy S1; or alternatively
- b) at rates consistent with Strategy S1.

263 The Flood Engineers continued to operate under Strategy S1, or continued to release water from Somerset Dam at rates consistent with Strategy S1, throughout the remainder of 7 January 2011.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 9.3, p 169.

264 Even after the Flood Engineers commenced releases from Somerset Dam, rates of inflow substantially exceeded rates of outflow throughout the remainder of 7 January 2011.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 9.3, p 169.

7 January 2011 Breaches

265 In the circumstances pleaded in paragraphs 248-255, on 7 January 2011, there was a substantial risk:

- a) that, unless releases were commenced at Somerset Dam and Wivenhoe Dam:
- i) in accordance with Strategy S2 and Strategy W3 respectively; and, or alternatively,
 - ii) at rates substantially in excess of the rate of inflow;

there would be insufficient flood storage capacity in Lake Somerset and Lake Wivenhoe to store incoming flows should further rainfall occur in accordance with, or in excess of, that forecast by the Bureau of Meteorology; and

- b) that, without such capacity, subsequent releases would be necessary in volumes that would cause urban flooding downstream of Wivenhoe Dam.

266 [Not used]

267 Further, by reason of the matters pleaded at paragraphs 248-255 and 265, a reasonably prudent flood engineer responsible for Flood Operations at Somerset Dam and Wivenhoe Dam on 7 January 2011:

- a) would have complied with the Flood Mitigation Manual;
- b) would have commenced releases at Somerset Dam and Wivenhoe Dam as soon as possible, and in any event, earlier than 3:00 pm;
- c) would have implemented and maintained Strategy W3 at Wivenhoe Dam;
- d) would have implemented Strategy S2 at Somerset Dam until approximately 7:00 pm and then adopted Strategy S3;
- e) would have caused Somerset Dam to release water at rates approximating the rate of inflow;
- f) would have caused Wivenhoe Dam to release water at rates exceeding the rate of inflow; and
- g) [Not used] would have reduced the water level in Lake Somerset to no higher than:
 - i) approximately EL 96.38 m AHD by the end of 7 January 2011; or, alternatively;
 - ii) approximately EL 99.41 m AHD by the end of 7 January 2011; or, alternatively;
 - iii) Temporary Full Supply Level by the end of 7 January 2011; or, alternatively;
 - iv) Full Supply Level by the end of 7 January 2011; and
- h) [Not used] would have reduced the water level in Lake Wivenhoe to no higher than:
 - i) approximately EL 63.34 m AHD at the end of 7 January 2011; or, alternatively;
 - ii) approximately EL 67.44 m AHD at the end of 7 January 2011; or, alternatively;

iii) Temporary Full-Supply-Level-at-the-end-of-7-January-2011; or, alternatively,

iv) Full-Supply-Level-at-the-end-of-7-January-2011.

i) would have selected and input losses and continuing loss rates equal, or approximate, to those specified in the table below into the Real Time Flood Model to forecast future inflows into Lake Somerset and Lake Wivenhoe to take account of the increased runoff that would be generated from continuing rainfall by reason of the increasingly saturated catchments:

<u>Region</u>	<u>Initial Losses</u>	<u>Continuing Loss Rates</u>
<u>CRE (Cressbrook Creek Region)</u>	<u>2.1 mm</u>	<u>0.07 mm/hr</u>
<u>COO (Cooyar Creek Region)</u>	<u>2.1 mm</u>	<u>0.07 mm/hr</u>
<u>LIN (Brisbane River at Linville Region)</u>	<u>2.1 mm</u>	<u>0.07 mm/hr</u>
<u>EMU (Emu Creek Region)</u>	<u>2.1 mm</u>	<u>0.07 mm/hr</u>
<u>GRE (Gregors Creek Region)</u>	<u>2.1 mm</u>	<u>0.07 mm/hr</u>
<u>SDI (Somerset Dam Inflow Region)</u>	<u>1.0 mm</u>	<u>0.03 mm/hr</u>
<u>WDI (Wivenhoe Dam Inflow Region)</u>	<u>1.0 mm</u>	<u>0.03 mm/hr</u>

PARTICULARS

- A. A reasonably prudent flood engineer would have complied with the Flood Mitigation Manual by taking the actions pleaded in paragraph 267(b)-(h).
- B. Flood Mitigation Manual, sections 1.1, 3.1, 8.4, 8.5, 9.3, 9.4.
- C. Christensen Report, Chapter VIII, [872]-[906].
- D. Christensen Report, Chapter X, [1290]-[1325], [1453]-[1475], [1573]-[1602].
- E. Christensen, Supplemental Report, Volume 2, pp 4-5.

F. Christensen Supplemental Report, Chapter VI, [202]-[211].

267A Further, by reason of the matters pleaded in paragraphs 151-152, 163A-165, 170-170A, 174, 179A-182, 192-201, 214-219, 231-236 and 248-252, had the Flood Engineers commenced reasonably prudent Flood Operations at Somerset Dam and Wivenhoe Dam at any time on or after 16 December 2010 and continued such Flood Operations until 7 January 2011 (contrary to what occurred in fact), there would have remained a significant risk as at 7 January 2011:

- a) that, unless releases were continued at Somerset Dam and Wivenhoe Dam, there would be insufficient flood storage capacity in Lake Somerset and Lake Wivenhoe to store incoming flows should further rainfall occur in accordance with, or in excess of, that forecast by the Bureau of Meteorology; and
- b) that, without such capacity, subsequent releases would be necessary in volumes that would cause urban flooding downstream of Wivenhoe Dam.

267B Further, by reason of the matters pleaded in paragraphs 151-152, 163A-165, 170-170A, 174, 179A-182, 192-201, 214-219, 231-236, 248-252 and 267A, by the end of 7 January 2011, a reasonably prudent flood engineer:

- a) having first commenced reasonably prudent Flood Operations on 16 December 2010 (by taking the actions pleaded in paragraph 160 above), and having continued reasonably prudent Flood Operations since that time, would have reduced the water level in Lake Somerset to no higher than approximately EL 96.42 m AHD, and would have reduced the water level in Lake Wivenhoe to no higher than approximately EL 63.31 m AHD; or, alternatively,
- b) having first commenced reasonably prudent Flood Operations on 2 January 2011 (by taking the actions pleaded in paragraph 211 above), and having continued reasonably Flood Operations since that time, would have reduced the water level in Lake Somerset to no higher than approximately EL 96.44 m AHD, and would have reduced the water level in Lake Wivenhoe to no higher than approximately EL 63.27 m AHD; or, alternatively,

- c) having first commenced reasonably prudent Flood Operations on 5 January 2011 (by taking the actions pleaded in paragraph 228 above), and having continued reasonably prudent Flood Operations since that time, would have reduced the water level in Lake Somerset to no higher than approximately EL 97.10 m AHD, and would have reduced the water level in Lake Wivenhoe to no higher than approximately EL 64.59 m AHD; or, alternatively,
- d) having first commenced reasonably prudent Flood Operations on 6 January 2011 (by taking the actions pleaded in paragraph 245 above), and having continued reasonably prudent Flood Operations since that time, would have reduced the water level in Lake Somerset to no higher than approximately EL 98.28 m AHD, and would have reduced the water level in Lake Wivenhoe to approximately EL 65.88 m AHD; or alternatively,
- e) having first commenced reasonably prudent Flood Operations on 7 January 2011 (by taking the actions pleaded in paragraph 267 above), would have reduced the water level in Lake Somerset to no higher than approximately EL 99.41 m AHD, and would have reduced the water level in Lake Wivenhoe to approximately EL 67.44 m AHD; or alternatively,
- f) would have reduced the water levels in Lake Somerset and Lake Wivenhoe to their respective Temporary Full Supply Levels; or, alternatively,
- g) would have reduced the water levels in Lake Somerset and Lake Wivenhoe to their respective Full Supply Levels.

PARTICULARS

- A. Flood Mitigation Manual, sections 1.1, 3.1, 8.4, 8.5, 9.3, 9.4.
- B. Christensen Report, Chapter VIII, [872]-[906].
- C. Christensen Report, Chapter X, [1290]-[1325], [1453]-[1475], [1573]-[1602].
- D. Christensen Report, Volume 2, pp 178-179, 366-367, 412-413.

- E. Christensen Supplemental Report. Chapter VI. [202]-[211].
- F. Christensen Supplemental Report. Volume 2. pp 60-61. 113-114.

268 In the circumstances pleaded in paragraphs 256-267B, on-7-January-2011- the Flood Engineers (or one or more of them):

- a) failed to do one or more of the things pleaded in paragraph 267 on 7 January 2011; and, or alternatively,
- b) failed, by the end of 7 January 2011, to reduce the water levels in Lake Somerset and Lake Wivenhoe to levels no higher than the respective water levels pleaded in paragraph 267B.

269 In the circumstances pleaded in the preceding paragraph, the Flood Engineers (or one or more of them) breached their duty of care to the plaintiff and other Group Members on 7 January 2011 (the **7 January Breaches**).

T Events of 8 January 2011

Weather Forecasts

270 On 8 January 2011:

- a) the Bureau of Meteorology 4-day forecast for 8 January to 11 January 2011 predicted 100-300 mm of rainfall in the Brisbane River Basin, including in the Lake Somerset and Lake Wivenhoe catchment areas; and
- b) the Bureau of Meteorology 8-day forecast for 8 January to 15 January 2011 predicted 100-320 mm of rainfall in the Brisbane River Basin, including in the Lake Somerset and Lake Wivenhoe catchment areas.

PARTICULARS

- A. Bureau of Meteorology, Poor Man's Ensemble forecast for period 8 January to 11 January 2011.
- B. Bureau of Meteorology, Poor Man's Ensemble forecast for period 8 January to 15 January 2011.

271 At or around 6:00 pm on 7 January 2011, the Flood Engineers were notified that the Bureau of Meteorology was predicting further high rainfall totals for South East Queensland over the following four days as follows:

- a) Saturday, 8 January 2011: 15 to 50 mm rainfall;
- b) Sunday, 9 January 2011: 50-100 mm widespread rainfall;
- c) Monday, 10 January 2011: 50-100 mm widespread rainfall; and
- d) Tuesday, 11 January 2011: 25-50 mm rainfall.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix E, p 10.

272 At or around 10:03 am on 8 January 2011, the Bureau of Meteorology issued a QPF predicting rainfall of 30-50 mm in the Lake Somerset and Lake Wivenhoe catchment areas over the following 24 hours.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix C, p 172.

273 At or around 4:00 pm on 8 January 2011, the Bureau of Meteorology issued a QPF predicting rainfall of 30-50 mm in the Lake Somerset and Lake Wivenhoe catchment areas over the following 24 hours.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix C, p 173.

Rainfall and Inflows

274 In the 24 hours to 9:00 am on 8 January 2011, there was widespread rainfall throughout the catchment areas for Lake Somerset and Lake Wivenhoe, with as much as 100 mm of rainfall in some areas.

PARTICULARS

A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 6.3, p 66.

275 Catchment inflows into Lake Wivenhoe and Lake Somerset continued in significant volumes throughout the course of 8 January 2011.

PARTICULARS

A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 9.2, pp 155-156 and Section 9.3, pp 169-170.

Water Level

276 At or around 6:32 am on 8 January 2011:

- a) the water level of Lake Somerset was approximately EL 100.42 m AHD and rising steadily; and
- b) the water level at Lake Wivenhoe was approximately EL 68.45 m AHD and rising steadily.

PARTICULARS

A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix E, pp 13-14.

B. Lake Somerset water level at 6.00am on 8 January 2011 - EL 100.43 mAHD

Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, p 170.

- C. Lake Wivenhoe water level at 6.00am on 8 January 2011 - EL 68.46 m AHD

Seqwater, Spreadsheet containing Lake Wivenhoe water levels between 1 December 2010 and 31 January 2011, Doc identification number: MAU.500.020.0027.

- D. Lake Somerset water level at 5.00am on 8 January 2011 - EL 100.42 m AHD

Seqwater, Technical Situation Report 8, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix F, p 76.

- E. Lake Wivenhoe water level at 6.00am on 8 January 2011 - EL 68.45 m AHD

Seqwater, Technical Situation Report 8, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix F, p 77.

277 At or around 8:00 am on 8 January 2011, the water level in Lake Wivenhoe rose to exceed approximately EL 68.50 m AHD.

PARTICULARS

- A. Lake Wivenhoe water level at 8.00am on 8 January 2011 - EL 68.52 m AHD

Seqwater, Spreadsheet containing Lake Wivenhoe water levels between 1 December 2010 and 31 January 2011, Doc identification number: MAU.500.020.0027.

- B. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 9.2, p155.

278 Over the course of 8 January 2011:

- a) the water level of Lake Somerset increased from approximately EL 100.31 m AHD (1.31 m above Full Supply Level) to approximately

EL 100.46 m AHD (1.46 m above Full Supply Level), before reducing to approximately EL 100.33 m AHD (1.33 m above Full Supply Level) by day's end; and

- b) the water level of Lake Wivenhoe increased from approximately EL 68.32 m AHD (1.32 m above Full Supply Level) to approximately EL 68.65 m AHD (1.65 m above Full Supply Level) by day's end.

PARTICULARS

A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 9.2, pp 155-156 and Section 9.3, p 170.

B. Lake Wivenhoe water level at 12.00am on 8 January 2011 - EL 68.32 m AHD

Lake Wivenhoe water level at 11.00 pm on 8 January 2011 - EL 68.65 m AHD

Seqwater, Spreadsheet containing Lake Wivenhoe water levels between 1 December 2010 and 31 January 2011, Doc identification number: MAU.500.020.0027.

Flood Operations

279 The Flood Engineers on duty on 8 January 2011 were as follows:

Shift Start Time	Shift Finish Time	Flood Operations Engineer
Friday 7/1/2011 19:00	Saturday 8/1/2011 07:00	Mr Ruffini
Sat 8/1/2011 07:00	Saturday 8/1/2011 19:00	Mr Ay re
Sat 8/1/2011 19:00	Sunday 9/1/2011 07:00	Mr Tibaldi

279A In using the Real Time Flood Model on 8 January 2011 to predict future inflows into Lake Somerset and Lake Wivenhoe, the Flood Engineers selected and input initial losses and continuing loss rates as follows:

<u>Region</u>	<u>Initial Losses</u>	<u>Continuing Loss Rates</u>
<u>CRE (Cressbrook Creek Region)</u>	<u>10mm</u>	<u>2.5 mm/hr</u>
<u>COO (Cooyar Creek Region)</u>	<u>10 mm and 30 mm</u>	<u>0.5 mm/hr</u>
<u>LIN (Brisbane River at Linville Region)</u>	<u>15 mm and 30 mm</u>	<u>0.5 mm/hr</u>
<u>EMU (Emu Creek Region)</u>	<u>30 mm</u>	<u>0.5 mm/hr</u>
<u>GRE (Gregors Creek Region)</u>	<u>10 mm and 40 mm</u>	<u>0.5 mm/hr</u>
<u>SDI (Somerset Dam Inflow Region)</u>	<u>0 mm and 15 mm</u>	<u>0.5 mm/hr</u>
<u>WDI (Wivenhoe Dam Inflow Region)</u>	<u>0 mm</u>	<u>2.5 mm/hr</u>

280 Throughout Mr Ruffini's shift on 8 January 2011, Mr Ruffini:

- a) operated Wivenhoe Dam under Strategy W1, or maintained a release strategy at Wivenhoe Dam consistent with Strategy W1;
- b) did not implement Strategy W3 at Wivenhoe Dam;
- c) operated Somerset Dam under Strategy S1, or maintained a release strategy at Somerset Dam consistent with Strategy S1; and
- d) did not implement a release strategy at Somerset Dam consistent with Strategy S2.

281 Throughout Mr Ayre's shift on 8 January 2011, Mr Ayre:

- a) operated Wivenhoe Dam under Strategy W1, or maintained a release strategy at Wivenhoe Dam consistent with Strategy W1; and
- b) did not implement Strategy W3 at Wivenhoe Dam.

282 At or around 11:30 am, Mr Ayre directed that the release strategy at Somerset Dam be changed from Strategy S1 to Strategy S2.

PARTICULARS

- A. *Seqwater, January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 9.3, p 170 and Appendix L, p 66.

283 The decision by Mr Ayre to increase substantially the rate of outflow from Somerset Dam while not implementing a corresponding increase in the rate of outflow from Wivenhoe Dam increased the risk that there would be insufficient flood storage capacity in Lake Wivenhoe to store incoming flows should further rainfall occur in accordance with, or in excess of, that forecast by the Bureau of Meteorology.

284 [Not used]

8 January 2011 Breaches

285 In the circumstances pleaded in paragraphs 270-278, on 8 January 2011, there was a substantial risk:

- a) that, unless releases were commenced at Somerset Dam and Wivenhoe Dam:
 - i) in accordance with Strategy S2 and Strategy W3 respectively; and, or alternatively,
 - ii) at rates substantially in excess of the rate of inflow;

there would be insufficient flood storage capacity in Lake Somerset and Lake Wivenhoe to store incoming flows should further rainfall occur in accordance with, or in excess of, that forecast by the Bureau of Meteorology; and

- b) that, without such capacity, subsequent releases would be necessary in volumes that would cause urban flooding downstream of Wivenhoe Dam.

286 Further, and in the alternative to paragraph 285, in the circumstances pleaded in paragraphs 270-278 and 282-283, on 8 January 2011, there was a substantial risk:

- a) that, unless releases were commenced at Wivenhoe Dam at a rate substantially in excess of the rate of outflow from Somerset Dam, there would be insufficient flood storage capacity in Lake Wivenhoe to store incoming flows should further rainfall occur in accordance with, or in excess of, that forecast by the Bureau of Meteorology; and
- b) that, without such capacity, subsequent releases would be necessary in volumes that would cause urban flooding downstream of Wivenhoe Dam.

287 [Not used]

288 Further, by reason of the matters pleaded at paragraphs 270-278 and 285-286, a reasonably prudent flood engineer on 8 January 2011:

- a) would have complied with the Flood Mitigation Manual;
- b) would have implemented and maintained Strategy W3 at Wivenhoe Dam;
- c) would have implemented and maintained Strategy S2- S3 at Somerset Dam;
- d) would have caused Wivenhoe Dam to release water at rates exceeding the rate of inflow;
- e) would not have substantially increased the rate of outflow from Somerset Dam without implementing a corresponding increase in the rate of outflow from Wivenhoe Dam; and
- f) [Not used] would have kept the water level in Lake Somerset to no higher than:
 - i) approximately ~~EL 96.70 m AHD by the end of 8 January 2011;~~ or, alternatively,
 - ii) approximately ~~EL 100.14 m AHD by the end of 8 January 2011;~~ or, alternatively,
 - iii) ~~Temporary Full Supply Level by the end of 8 January 2011;~~ or, alternatively,

- iv) Full-Supply Level by the end of 8 January 2014; and
- g) [Not used] would have kept the water level in Lake Wivenhoe to no higher than:
 - i) ~~approximately EL 62.80 m AHD at the end of 8 January 2014; or, alternatively,~~
 - ii) ~~approximately EL 67.58 m AHD at the end of 8 January 2014; or, alternatively,~~
 - iii) ~~Temporary Full-Supply Level at the end of 8 January 2014; or, alternatively,~~
 - iv) ~~Full-Supply Level at the end of 8 January 2014.~~
- h) would have selected and input losses and continuing loss rates equal, or approximate, to those specified in the table below into the Real Time Flood Model to forecast future inflows into Lake Somerset and Lake Wivenhoe to take account of the increased runoff that would be generated from continuing rainfall by reason of the increasingly saturated catchments:

<u>Region</u>	<u>Initial Losses</u>	<u>Continuing Loss Rates</u>
<u>CRE (Cressbrook Creek Region)</u>	<u>2.1 mm</u>	<u>0.05 mm/hr</u>
<u>COO (Coovar Creek Region)</u>	<u>2.1 mm</u>	<u>0.05 mm/hr</u>
<u>LIN (Brisbane River at Linville Region)</u>	<u>2.1 mm</u>	<u>0.05 mm/hr</u>
<u>EMU (Emu Creek Region)</u>	<u>2.1 mm</u>	<u>0.05 mm/hr</u>
<u>GRE (Gregors Creek Region)</u>	<u>2.1 mm</u>	<u>0.05 mm/hr</u>
<u>SDI (Somerset Dam Inflow Region)</u>	<u>1.0 mm</u>	<u>0.02 mm/hr</u>
<u>WDI (Wivenhoe Dam Inflow Region)</u>	<u>1.0 mm</u>	<u>0.02 mm/hr</u>

PARTICULARS

- A. A reasonably prudent flood engineer would have complied with the Flood Mitigation Manual by taking the actions pleaded in paragraph 288(b)-(g).
- B. Flood Mitigation Manual, sections 1.1, 3.1, 8.4, 8.5, 9.3, 9.4.
- C. Christensen Report, Chapter VIII, [907]-[926].
- D. Christensen Report, Chapter X, [1326]-[1340], [1476]-[1490], [1603]-[1618], [1703]-[1725].
- E. Christensen Supplemental Report. Volume 2. pp 4-5.
- F. Christensen Supplemental Report. Chapter VI. [212]-[221].

288A Further, by reason of the matters pleaded in paragraphs 151-152, 163A-165, 170-170A, 174, 179A-182, 192-201, 214-219, 231-236, 248-252 and 270-275, had the Flood Engineers commenced reasonably prudent Flood Operations at Somerset Dam and Wivenhoe Dam at any time on or after 16 December 2010 and continued such Flood Operations until 8 January 2011 (contrary to what occurred in fact), there would have remained a significant risk as at 8 January 2011:

- a) that, unless substantial releases were made from Wivenhoe Dam, there would be insufficient flood storage capacity in Lake Somerset and Lake Wivenhoe to store incoming flows should further rainfall occur in accordance with, or in excess of, that forecast by the Bureau of Meteorology; and
- b) that, without such capacity, subsequent releases would be necessary in volumes that would cause urban flooding downstream of Wivenhoe Dam.

288B Further, by reason of the matters pleaded in paragraphs 151-152, 163A-165, 170-170A, 174, 179A-182, 192-201, 214-219, 231-236, 248-252, 270-275 and 288A, by the end of 8 January 2011, a reasonably prudent flood engineer:

- a) having first commenced reasonably prudent Flood Operations on 16 December 2010 (by taking the actions pleaded in paragraph 160 above), and having continued reasonably prudent Flood Operations since that time, would have kept the water level in Lake Somerset to no higher than approximately EL 96.71 m AHD, and would have reduced the water level in Lake Wivenhoe to no higher than approximately EL 62.80 m AHD; or, alternatively,
- b) having first commenced reasonably prudent Flood Operations on 2 January 2011 (by taking the actions pleaded in paragraph 211 above), and having continued reasonably Flood Operations since that time, would have reduced the water level in Lake Somerset to no higher than approximately EL 96.73 m AHD, and would have reduced the water level in Lake Wivenhoe to no higher than approximately EL 62.79 m AHD; or, alternatively,
- c) having first commenced reasonably prudent Flood Operations on 5 January 2011 (by taking the actions pleaded in paragraph 228 above), and having continued reasonably prudent Flood Operations since that time, would have reduced the water level in Lake Somerset to no higher than approximately EL 96.42 m AHD, and would have reduced the water level in Lake Wivenhoe to no higher than approximately EL 63.93 m AHD; or, alternatively,
- d) having first commenced reasonably prudent Flood Operations on 6 January 2011 (by taking the actions pleaded in paragraph 245 above), and having continued reasonably prudent Flood Operations since that time, would have reduced the water level in Lake Somerset to no higher than approximately EL 97.63 m AHD, and would have reduced the water level in Lake Wivenhoe to approximately EL 64.83 m AHD; or alternatively,
- e) having first commenced reasonably prudent Flood Operations on 7 January 2011 (by taking the actions pleaded in paragraph 267 above), and having continued reasonably prudent Flood Operations since that time, would have reduced the water level in Lake Somerset to no higher than approximately EL 98.80 m AHD, and would have

reduced the water level in Lake Wivenhoe to approximately EL 66.45 m AHD; or alternatively,

- f) having first commenced reasonably prudent Flood Operations on 8 January 2011 (by taking the actions pleaded in paragraph 288 above), would have reduced the water level in Lake Somerset to no higher than approximately EL 100.14 m AHD, and would have reduced the water level in Lake Wivenhoe to approximately EL 67.58 m AHD; or alternatively,
- g) would have reduced the water levels in Lake Somerset and Lake Wivenhoe to their respective Temporary Full Supply Levels; or, alternatively,
- h) would have reduced the water levels in Lake Somerset and Lake Wivenhoe to their respective Full Supply Levels.

PARTICULARS

- A. Flood Mitigation Manual, sections 1.1, 3.1, 8.4, 8.5, 9.3, 9.4,
- B. Christensen Report, Chapter VIII, [907]-[926].
- C. Christensen Report, Chapter X. [1326]-[1340]. [1476]-[1490]. [1603]-[1618]. [1703]-[1725].
- D. Christensen Report. Volume 2, pp 182-183, 370-371, 416-417, 456-457.
- E. Christensen Supplemental Report. Chapter VI. [212]-[221].
- F. Christensen Supplemental Report. Volume 2, 63-64, 116-117.

289 By reason of the matters pleaded in paragraphs 279-288B, on-8-January 2-044 the Flood Engineers (or one or more of them);

- a) failed to do one or more of the things in pleaded in paragraph 288 on 8 January 2011; and, or alternatively,
- b) failed, by the end of 8 January 2011, to reduce the water levels in Lake Somerset and Lake Wivenhoe to levels no higher than the respective water levels pleaded in paragraph 288B.

290 In the circumstances pleaded in the preceding paragraph, the Flood Engineers (or one or more of them) breached their duty of care to the plaintiff and other Group Members on 8 January 2011 (the **8 January Breaches**).

U Events of 9 January 2011

Weather Forecasts

291 On 9 January 2011:

- a) the Bureau of Meteorology 4-day forecast for 9 January to 12 January 2011 predicted 75-300 mm of rainfall in the Brisbane River Basin, including in the Lake Somerset and Lake Wivenhoe catchment areas; and
- b) the Bureau of Meteorology 8-day forecast for 9 January to 16 January 2011 predicted 100-320 mm of rainfall in the Brisbane River Basin, including in the Lake Somerset and Lake Wivenhoe catchment areas.

PARTICULARS

- A. Bureau of Meteorology, Poor Man's Ensemble forecast for period 9 January to 12 January 2011.
- B. Bureau of Meteorology, Poor Man's Ensemble forecast for period 9 January to 16 January 2011.

292 At or around 10:03 am on 9 January 2011, the Bureau of Meteorology issued a QPF predicting rainfall of 40-60 mm in the Lake Somerset and Lake Wivenhoe catchment areas over the following 24 hours.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix C, p 174.

293 At or around 4:00 pm on 9 January 2011, the Bureau of Meteorology issued a QPF predicting rainfall of 50-80 mm in the Lake Somerset and Lake Wivenhoe catchment areas over the following 24 hours.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix C, p 175.

Rainfall and Inflows

294 In the 24 hours to 9:00 am on 9 January 2011, there was widespread rainfall recorded throughout the catchment areas for Lake Somerset and Lake Wivenhoe, with up to 43 mm of rainfall in some areas.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 6.3, p 67.

295 Catchment inflows into Lake Wivenhoe and Lake Somerset continued in significant volumes throughout the course of 9 January 2011.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 9.2, pp 156-157 and Section 9.3, pp 170-171.

Water Level

296 At or around 6:15 am on 9 January 2011:

- a) the water level of Lake Somerset was at approximately EL 100.27 m AHD and falling slowly; and
- b) the water level at Lake Wivenhoe was at approximately EL 68.58 m AHD and falling slowly.

PARTICULARS

A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix E, pp 17-18.

B. Lake Somerset water level at 6.00am on 9 January 2011 - EL 100.27 mAHD

Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, p 170.

C. Lake Wivenhoe water level at 6.00am on 9 January 2011 - EL 68.58 mAHD

Seqwater, Spreadsheet containing Lake Wivenhoe water levels between 1 December 2010 and 31 January 2011, Doc identification number: MAU.500.020.0027.

D. Lake Somerset water level at 7.32am on 9 January 2011 - EL 100.27 mAHD

Seqwater, Technical Situation Report 9, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix F, p 78.

E. Lake Wivenhoe water level at 7.32am on 9 January 2011 - EL 68.58 mAHD

Seqwater, Technical Situation Report 9, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix F, p 79.

297 At or about 8:00 am on 9 January 2011, the water level in Lake Wivenhoe had exceeded approximately EL 68.50 m AHD for over 24 hours.

PARTICULARS

A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 9.2, pp155-156.

298 Over the course of 9 January 2011:

- a) the water level of Lake Somerset first decreased from approximately EL 100.32 m AHD (1.32 m above Full Supply Level) to approximately EL 100.27 m AHD, before increasing to approximately EL 102.22 m AHD (3.22 m above Full Supply Level) by day's end; and
- b) the water level of Lake Wivenhoe first decreased from approximately EL 68.64 m AHD (1.64 m above Full Supply Level) to approximately EL 68.53 m AHD, before increasing to approximately EL 69.60 m AHD (2.60 m above Full Supply Level) by day's end.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Section 9.2, pp 156-157 and Section 9.3, pp 170-171.
- B. Lake Wivenhoe water level at 12.00am on 9 January 2011 - EL 68.64 mAHD

Lake Wivenhoe water level at 10.00am on 9 January 2011 - EL 68.53 mAHD

Lake Wivenhoe water level at 11.00 pm on 9 January 2011 - EL 69.60 mAHD

Seqwater, Spreadsheet containing Lake Wivenhoe water levels between 1 December 2010 and 31 January 2011, Doc identification number: MAU.500.020.0027.

Flood Operations

299 The Flood Engineers on duty on 9 January 2011 were as follows:

Shift Start Time	Shift Finish Time	Flood Operations Engineer
Sat 8/1/2011 19:00	Sunday 9/1/2011 07:00	Mr Tibaldi
Sunday 9/1/2011 07:00	Sunday 9/1/2011 19:00	Mr Malone

Shift Start Time	Shift Finish Time	Flood Operations" Engineer
Sunday 9/1/2011 19:00	Monday 10/1/2011 07:00	Mr Ruffini Mr Ayre

299A In addition to the rostered shifts pleaded in the preceding paragraph:

- a) All four Flood Engineers attended a meeting at 3:30 pm on 9 January 2011 to discuss and agree the appropriate flood mitigation strategy given the prevailing and forecast conditions; and
- b) Mr Malone remained at the Flood Operations Centre until approximately 10:00 pm on 9 January and assisted Mr Ruffini and Mr Ayre in conducting Flood Operations from 7:00 pm until approximately 10:00 pm.

PARTICULARS

- A. *Seqwater, January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam, 2 March 2011, pp 33-34.*

299B In using the Real Time Flood Model on 9 January 2011 to predict future inflows into Lake Somerset and Lake Wivenhoe, the Flood Engineers selected and input initial losses and continuing loss rates as follows:

<u>Region</u>	<u>Initial Losses</u>	<u>Continuing Loss Rates</u>
<u>CRE (Cressbrook Creek Region)</u>	<u>10mm</u>	<u>2.5 mm/hr</u>
<u>COO (Cooyar Creek Region)</u>	<u>30 mm</u>	<u>0.5 mm/hr</u>
<u>LIN (Brisbane River at Linville Region)</u>	<u>30 mm</u>	<u>0.5 mm/hr</u>
<u>EMU (Emu Creek Region)</u>	<u>30 mm</u>	<u>0.5 mm/hr</u>
<u>GRE (Gregors Creek Region)</u>	<u>40 mm</u>	<u>0.5 mm/hr</u>
<u>SDI (Somerset Dam Inflow Region)</u>	<u>15 mm</u>	<u>0.5 mm/hr</u>
<u>WDI (Wivenhoe Dam Inflow Region)</u>	<u>0 mm</u>	<u>2.5 mm/hr</u>

300 At or around 8:15 am on 9 January 2011, Mr Malone directed that releases from Somerset Dam be increased, while releases at Wivenhoe Dam were left substantially unchanged.

PARTICULARS

A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix L, pp 7-8, 67.

301 The decision by Mr Malone to increase substantially the rate of outflow from Somerset Dam while not implementing a corresponding increase in the rate of outflow from Wivenhoe Dam increased the risk that there would be insufficient flood storage capacity in Lake Wivenhoe to store incoming flows should further rainfall occur in accordance with, or in excess of, that forecast by the Bureau of Meteorology.

301A Each of the other three Flood Engineers was notified that Mr Malone had increased the release rate from Somerset Dam, without a corresponding increase in the release rate from Wivenhoe Dam, at or around 8:15 am on 9 January 2011.

PARTICULARS

A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix L, p 67.

302 Until 3:30 pm on 9 January 2011 at the earliest, Mr Malone:

- a) operated Wivenhoe Dam under Strategy W1 or W2, or maintained a release strategy at Wivenhoe Dam consistent with Strategy W1 or Strategy W2; and
- b) did not implement Strategy W3 at Wivenhoe Dam.

PARTICULARS

A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix M, p 82.

303 The Flood Engineers did not implement Strategy W3 at Wivenhoe Dam, or a release strategy consistent with Strategy W3, until the afternoon of 9 January 2011 at the earliest.

9 January 2011 Breaches

304 In the circumstances pleaded in paragraphs 291-298, on the morning of 9 January 2011, there was a substantial risk:

a) that, unless releases were immediately commenced at Somerset Dam and Wivenhoe Dam:

i) in accordance with Strategy S2 and Strategy W3 respectively; and, or alternatively,

ii) at rates substantially in excess of the rate of inflow;

there would be insufficient flood storage capacity in Lake Somerset and Lake Wivenhoe to store incoming flows should further rainfall occur in accordance with, or in excess of, that forecast by the Bureau of Meteorology; and

b) that, without such capacity, subsequent releases would be necessary in volumes that would cause urban flooding downstream of Wivenhoe Dam.

305 Further, and in the alternative to paragraph 304, in the circumstances pleaded in paragraphs 291-298 and 300-302, on 9 January 2011, there was a substantial risk:

a) that, unless releases were commenced at Wivenhoe Dam at a rate substantially in excess of the rate of outflow from Somerset Dam, there would be insufficient flood storage capacity in Lake Wivenhoe to store incoming flows should further rainfall occur in accordance with, or in excess of, that forecast by the Bureau of Meteorology; and

b) that, without such capacity, subsequent releases would be necessary in volumes that would cause urban flooding downstream of Wivenhoe Dam.

306 [Not used]

307 Further, by reason of the matters pleaded at paragraphs 291-298 and 304-305, a reasonably prudent flood engineer responsible for Flood Operations at Somerset Dam and Wivenhoe Dam on the morning of 9 January 2011:

- a) would have complied with the Flood Mitigation Manual;
- b) would have immediately implemented and maintained Strategy W3 at Wivenhoe Dam;
- c) would have implemented and maintained Strategy S2- S3 at Somerset Dam, but-only-in-conjunction-with and Strategy W3 at Wivenhoe Dam;
- d) would not have implemented Strategy S2 at Somerset Dam, or substantially increased releases from Somerset Dam into Lake Wivenhoe, without also implementing Strategy W3 at Wivenhoe Dam or otherwise ensuring that the rate of outflow from Wivenhoe Dam substantially exceeded the rate of outflow from Somerset Dam;
- e) would have commenced storing inflows in Lake Somerset by ensuring that releases from Lake Somerset were substantially less than the rate of inflow; and
- f) [Not used] would-have-kept-the-water-level-in-Lake-Somerset-to-no higher-than:
 - i) approximately EL ~~100.18 m AHD~~ by the end of 9 January 2011; or,-alternatively;
 - ii) approximately EL ~~102.98 m AHD~~ by the end of 9 January 2011; and
- g) [Not used] would-have-kept-the-water-level-in-Lake-Wivenhoe-to-no higher-than:
 - i) approximately EL ~~63.91 m AHD~~ at the end of 9 January 2011; or,-alternatively;
 - ii) Temporary-Full-Supply-Level;-or,-alternatively;
 - iii) Full-Supply-Level;-or,-alternatively;

iv) ~~approximately EL 68.83 m AHD at the end of 9 January 2014.~~

- h) would have selected and input losses and continuing loss rates equal, or approximate, to those specified in the table below into the Real Time Flood Model to forecast future inflows into Lake Somerset and Lake Wivenhoe to take account of the increased runoff that would be generated from continuing rainfall by reason of the increasingly saturated catchments:

<u>Region</u>	<u>Initial Losses</u>	<u>Continuing Loss Rates</u>
<u>CRE (Cressbrook Creek Region)</u>	<u>2.1 mm</u>	<u>0.05 mm/hr</u>
<u>COO (Cooyar Creek Region)</u>	<u>2.1 mm</u>	<u>0.05 mm/hr</u>
<u>LIN (Brisbane River at Linville Region)</u>	<u>2.1 mm</u>	<u>0.05 mm/hr</u>
<u>EMU (Emu Creek Region)</u>	<u>2.1 mm</u>	<u>0.05 mm/hr</u>
<u>GRE (Gregors Creek Region)</u>	<u>2.1 mm</u>	<u>0.05 mm/hr</u>
<u>SDI (Somerset Dam Inflow Region)</u>	<u>1.0 mm</u>	<u>0.02 mm/hr</u>
<u>WDI (Wivenhoe Dam Inflow Region)</u>	<u>1.0 mm</u>	<u>0.02 mm/hr</u>

PARTICULARS

- A. A reasonably prudent flood engineer would have complied with the Flood Mitigation Manual by taking the actions pleaded in paragraph 307(b)-(g).
- B. Flood Mitigation Manual, sections 1.1, 3.1, 8.4, 8.5, 9.3, 9.4.
- C. Christensen Report, Chapter VIII, [927]-[952].
- D. Christensen Report, Chapter X, [1341]-[1356], [1491]-[1506], [1619]-[1635], [1726]-[1741], [1806]-[1829].
- E. Christensen Supplemental Report, Volume 2, pp 4-5.
- F. Christensen Supplemental Report, Chapter VI, [222]-[232].

307A Further, by reason of the matters pleaded in paragraphs 151-152, 163A-165, 170-170A, 174, 179A-182, 192-201, 214-219, 231-236, 248-252, 270-275 and 291-295, had the Flood Engineers commenced reasonably prudent Flood Operations at Somerset Dam and Wivenhoe Dam at any time on or after 16 December 2010 and continued such Flood Operations until 9 January 2011 (contrary to what occurred in fact), there would have remained a significant risk as at 9 January 2011:

- a) that, unless substantial releases were made from Wivenhoe Dam, there would be insufficient flood storage capacity in Lake Somerset and Lake Wivenhoe to store incoming flows should further rainfall occur in accordance with, or in excess of, that forecast by the Bureau of Meteorology;
- b) that, without such capacity, subsequent releases would be necessary in volumes that would cause urban flooding downstream of Wivenhoe Dam.

307B Further, by reason of the matters pleaded in paragraphs 151-152, 163A-165, 170-170A, 174, 179A-182, 192-201, 214-219, 231-236, 248-252, 270-275, 291-295 and 307A, by the end of 9 January 2011, a reasonably prudent flood engineer:

- a) having first commenced reasonably prudent Flood Operations on 16 December 2010 (by taking the actions pleaded in paragraph 160 above), and having continued reasonably prudent Flood Operations since that time, would have kept the water level in Lake Somerset to no higher than approximately EL 100.42 m AHD, and would have kept the water level in Lake Wivenhoe to no higher than approximately EL 64.13 m AHD; or, alternatively,
- b) having first commenced reasonably prudent Flood Operations on 2 January 2011 (by taking the actions pleaded in paragraph 211 above), and having continued reasonably Flood Operations since that time, would have kept the water level in Lake Somerset to no higher than approximately EL 100.43 m AHD, and would have kept the water level in Lake Wivenhoe to no higher than approximately EL 64.12 m AHD; or, alternatively,

- c) having first commenced reasonably prudent Flood Operations on 5 January 2011 (by taking the actions pleaded in paragraph 228 above), and having continued reasonably prudent Flood Operations since that time, would have kept the water level in Lake Somerset to no higher than approximately EL 100.20 m AHD, and would have kept the water level in Lake Wivenhoe to no higher than approximately EL 64.82 m AHD; or, alternatively,
- d) having first commenced reasonably prudent Flood Operations on 6 January 2011 (by taking the actions pleaded in paragraph 245 above), and having continued reasonably prudent Flood Operations since that time, would have kept the water level in Lake Somerset to no higher than approximately EL 101.06 m AHD, and would have kept the water level in Lake Wivenhoe to approximately EL 65.36 m AHD; or alternatively,
- e) having first commenced reasonably prudent Flood Operations on 7 January 2011 (by taking the actions pleaded in paragraph 267 above), and having continued reasonably prudent Flood Operations since that time, would have kept the water level in Lake Somerset to no higher than approximately EL 101.90 m AHD, and would have reduced the water level in Lake Wivenhoe to approximately EL 66.51 m AHD; or alternatively,
- f) having first commenced reasonably prudent Flood Operations on 8 January 2011 (by taking the actions pleaded in paragraph 288 above), and having continued reasonably prudent Flood Operations since that time, would have kept the water level in Lake Somerset to no higher than approximately EL 102.85 m AHD, and would have kept the water level in Lake Wivenhoe to approximately EL 67.67 m AHD; or alternatively,
- g) having first commenced reasonably prudent Flood Operations on 9 January 2011 (by taking the actions pleaded in paragraph 307 above), would have kept the water level in Lake Somerset to no higher than approximately EL 102.98 m AHD, and would have kept the water level in Lake Wivenhoe to approximately EL 68.83 m AHD; or alternatively,

- h) would have reduced the water level in Lake Wivenhoe to, or maintained the water level in Lake Wivenhoe at, Temporary Full Supply Level; or, alternatively,
- i) would have reduced the water level in Lake Wivenhoe to, or maintained the water level in Lake Wivenhoe at, Full Supply Level.

PARTICULARS

- A. Flood Mitigation Manual, sections 1.1, 3.1, 8.4, 8.5, 9.3, 9.4.
- B. Christensen Report. Chapter VIII, [927]-[952].
- C. Christensen Report, Chapter X, [1341]-[1356], [1491]-[1506], [1619]-[1635], [1726]-[1741], [1806]-[1829].
- D. Christensen Report, Volume 2, pp 186-187, 374-375, 420-421, 460-461, 496-497
- E. Christensen Supplemental Report. Chapter VI, [222]-[232].
- F. Christensen Supplemental Report, Volume 2, pp 66-67, 119-120.

308 By reason of the matters pleaded in paragraphs 299-307B, on 9 January 2011 the Flood Engineers (or one or more of them):

- a) failed to do one or more of the things in pleaded in paragraph 307 on 9 January 2011; and, or alternatively,
- b) failed, by the end of 9 January 2011, to reduce the water levels in Lake Somerset and Lake Wivenhoe to levels no higher than the respective water levels pleaded in paragraph 307B.

309 In the circumstances pleaded in the preceding paragraph, the Flood Engineers (or one or more of them) breached their duty of care to the plaintiff and other Group Members on 9 January 2011 (the **9 January Breaches**).

V Events of 10 January to 11 January 2011

Weather Forecasts

310 On 10 January 2011:

- a) the Bureau of Meteorology 4-day forecast for 10 January to 13 January 2011 predicted 75-225 mm of rainfall in the Brisbane River Basin, including in the Lake Somerset and Lake Wivenhoe catchment areas; and
- b) the Bureau of Meteorology 8-day forecast for 10 January to 17 January 2011 predicted 75-225 mm of rainfall in the Brisbane River Basin, including in the Lake Somerset and Lake Wivenhoe catchment areas.

PARTICULARS

- A. Bureau of Meteorology, Poor Man's Ensemble forecast for period 10 January to 13 January 2011.
- B. Bureau of Meteorology, Poor Man's Ensemble forecast for period 10 January to 17 January 2011.

311 On 11 January 2011:

- a) the Bureau of Meteorology 4-day forecast for 11 January to 14 January 2011 predicted 40-120 mm of rainfall in the Brisbane River Basin, including in the Lake Somerset and Lake Wivenhoe catchment areas; and
- b) the Bureau of Meteorology 8-day forecast for 11 January to 18 January 2011 predicted 40-120 mm of rainfall in the Brisbane River Basin, including in the Lake Somerset and Lake Wivenhoe catchment areas.

PARTICULARS

- A. Bureau of Meteorology, Poor Man's Ensemble forecast for period 11 January to 14 January 2011.

- B. Bureau of Meteorology, Poor Man's Ensemble forecast for period 11 January to 18 January 2011.

312 At or around 10:03 am on 10 January 2011, the Bureau of Meteorology issued a QPF predicting rainfall of 50-100 mm in the Lake Somerset and Lake Wivenhoe catchment areas over the following 24 hours.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix C, p 176.

313 At or around 4:00 pm on 10 January 2011, the Bureau of Meteorology issued a QPF predicting rainfall of 25-50 mm (with isolated falls of up to 100 mm) in the Lake Somerset and Lake Wivenhoe catchment areas over the following 24 hours.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix C, p 177.

314 At or around 10:14 am on 11 January 2011, the Bureau of Meteorology issued a QPF predicting rainfall in excess of 100 mm in the Lake Somerset and Lake Wivenhoe catchment areas over the following 24 hours.

PARTICULARS

- A. Seqwater, *January 2011 Flood Event: Report on the Operation of Somerset Dam and Wivenhoe Dam*, 2 March 2011, Appendix C, p 178.

315 At or around 4:13 pm on 11 January 2011, the Bureau of Meteorology issued a QPF predicting rainfall of 50-100 mm in the Lake Somerset and Lake Wivenhoe catchment areas over the following 24 hours.