

- (2) predicted that Wivenhoe Dam would peak at EL 68.497 at 10:00 on 11 January 2011 and then drain down to FSL on the dam operations in place at the time;
  - (3) predicted that Somerset Dam would peak at EL 99.91 at 00:00 on 8 January 2011 and then drain down to FSL on the dam operations in place at the time;
  - (4) predicted a Lockyer Creek peak of approximately 500 m<sup>3</sup>/s;
- (iii) at 16:00 on 6 January 2011 the Flood Engineer then on duty had produced hydrographs modelling inflows using the FLOOD-Ops RTFM and produced Operations Spreadsheets (**SDWD-201101061600**) which;
- (1) identified the general dam operations in place during 6 January 2011 and a gate opening strategy to be implemented after the peak of inflows expected from the Lockyer Creek catchment passed on 7 January 2011;
  - (2) predicted that Wivenhoe Dam would peak at EL 68.42 at 15:00 on 8 January 2011 and then drain down to FSL on the dam operations in place at the time;
  - (3) predicted that Somerset Dam would peak at EL 99.69 at 19:00 on 7 January 2011 and then drain down to FSL on the dam operations in place at the time;
  - (4) predicted a Lockyer Creek peak of approximately 480 m<sup>3</sup>/s;
  - (5) predicted the drain down to FSL of Lake Wivenhoe within approximately seven days and Lake Somerset within approximately four days;
- (iv) at 21:00 on 6 January 2011 the Flood Engineer then on duty had produced hydrographs modelling inflows using the FLOOD-Ops RTFM and produced Operations Spreadsheets (**SDWD-201101062100**) which;
- (1) identified the general dam operations in place during 6 January 2011 and a gate opening strategy to be implemented after the peak of inflows expected from the Lockyer Creek catchment passed on 7 January 2011;

- (2) predicted that Wivenhoe Dam would peak at EL 68.24 at 11:00 on 8 January 2011 and then drain down to FSL on the dam operations in place at the time;
  - (3) predicted that Somerset Dam would peak at EL 99.7 at 00:00 on 8 January 2011 and then drain down to FSL on the dam operations in place at the time;
  - (4) predicted a Lockyer Creek peak of approximately 470 m<sup>3</sup>/s;
  - (5) predicted the drain down to FSL of Lake Wivenhoe within approximately four days and of Lake Somerset within approximately three days;
- (v) on 6 January 2011 a reasonably prudent flood engineer::
- (1) would not have expected the level in Lake Wivenhoe to exceed EL 68.50 at any time on 6 January 2011 or at any time in the future;
  - (2) would not have considered the conditions for choosing Strategy W3 in the Flood Mitigation Manual to have been triggered;
  - (3) would not have implemented Strategy W3;
- (g) says that there was no BoM forecast or other information available to the Flood Engineers which would have caused a reasonably prudent flood engineer responsible for Flood Operations at Somerset Dam and Wivenhoe Dam to adopt an operating strategy materially different from the general strategy in place;
- (h) as to sub-paragraph 245(d):
- (i) says that the Flood Engineers did in fact continue flood releases at Somerset Dam;
  - (ii) says that such releases:
    - (1) were sufficient to deal with the events on 6 January 2011;
    - (2) were consistent with Strategy S2;
- (i) denies the allegations in sub-paragraph 245(e);
- (j) says that the operations alleged would have been contrary to the Flood Mitigation Manual;
- (k) says that:

- (i) Mr Ruffini was not on duty as a Flood Engineer between 07:00 on 1 January 2011 and 19:00 on 7 January 2011;
- (ii) Mr Ruffini did not select or input loss rates into the RTFM prior to coming on duty at 19:00 on 7 January 2011;
- (l) otherwise denies the allegations.

216. As to paragraphs 245A and 245B of the Statement of Claim:

- (a) repeats and relies upon its responses to paragraphs 231 to 245 of the Statement of Claim above;
- (b) says that the dam operations between 16 December 2010 and 7 January 2011 had no causative relevance to the flooding which occurred subsequent to 9 January 2011;
- (c) says that as at 6 January 2011 the Extreme Rainfall Event described in paragraph 261 below which occurred between 9 January 2011 and 11 January 2011:
  - (1) was not predicted by forecasts available to the Flood Engineers;
  - (2) was not reasonably foreseeable;
- (d) for the Flood Engineers to have acted in the manner alleged would have been contrary to:
  - (i) the Flood Mitigation Manual
  - (ii) widely accepted peer professional opinion as competent professional practice in the field of flood mitigation and dam operation;

#### **Particulars**

The State relies on the particulars to paragraph 308 below.

- (e) otherwise denies the allegations.

217. As to paragraph 246 and 247 of the Statement of Claim, the State:

- (a) repeats and relies upon its responses to paragraphs 239 to 245B of the Statement of Claim above;
- (b) denies the allegations.

#### **Events of 7 January 2011**

218. As to paragraph 248 of the Statement of Claim, the State:

- (a) repeats and relies upon its response to paragraphs 138 to 142 of the Statement of Claim above;
- (b) says that the BoM 4 day PME forecast published on 7 January 2011 for 8 January to 11 January 2011:
  - (i) forecast rainfall between 50 mm and 300 mm in the Lake Wivenhoe and Lake Somerset catchments;
  - (ii) to the extent that it forecast rainfall of between 200 mm to 300 mm in the Lake Wivenhoe and Lake Somerset catchments forecast that rain to affect only a small area in the south east of the catchment;
  - (iii) forecast the most intense rainfall between 300 mm and 400 mm in catchments below Wivenhoe Dam;
- (c) says that the BoM 8 day PME forecast published on 7 January for 8 January to 15 January 2011:
  - (i) forecast rainfall between 50 mm to 300 mm of rainfall in Lake Wivenhoe and Lake Somerset catchments;
  - (ii) to the extent that it forecast rainfall of between 200 mm to 300 mm in Lake Wivenhoe and Lake Somerset catchments forecast that rainfall to affect only a small area in the south east of the catchments;
  - (iii) forecast the most intense rainfall between 300 mm and 400mm in catchments below Wivenhoe Dam;
- (d) says that on the proper interpretation of the 4 and 8 day PME forecasts, the forecast was for a decreasing rain trend, with most of the rain forecast to fall in the first four days;
- (e) says that the BoM 1 day PME forecast published for 8 January 2011 forecast rainfall between 1 mm to 25 mm in Lake Wivenhoe and Lake Somerset catchments;
- (f) otherwise denies the allegations.

219. The State admits paragraph 249 of the Statement of Claim.

220. The State admits paragraph 250 of the Statement of Claim.

221. As to paragraph 251 of the Statement of Claim, the State:

- (a) says that:
  - (i) rain generally eased in the 24 hours to 09:00 on 7 January 2011;

- (ii) rainfall was widespread with totals generally between approximately 10 mm and approximately 30 mm through the catchment areas for Lake Somerset and Lake Wivenhoe and also in the Brisbane River catchments downstream of Wivenhoe Dam;

(b) otherwise admits the allegations.

222. As to paragraph 252 of the Statement of Claim, the State:

- (a) says that, at 18:00 on 7 January 2011, the Flood Engineer then on duty produced hydrographs modelling inflows using the FLOOD-Ops RTFM and produced Operations Spreadsheets (**SDWD-201101071800**);
- (b) says that when Mr Ruffini came on duty at 19:00 on 7 January 2011, SDWD-201101071800, being the then current model run:
- (i) calculated the following inflows into the Wivenhoe and Somerset Dams during 7 January 2011 to that time:

Date/time	Wivenhoe	Somerset
07/01/2011 12:00	1688	642
07/01/2011 13:00	1511	695
07/01/2011 14:00	1377	649
07/01/2011 15:00	1307	600
07/01/2011 16:00	1245	568
07/01/2011 17:00	1190	545
07/01/2011 18:00	1143	526
07/01/2011 19:00	1104	508

- (ii) predicted the following inflows into the Wivenhoe and Somerset Dams during the remainder of the 7 January 2011:

Date/time	Wivenhoe	Somerset
07/01/2011 20:00	1074	489
07/01/2011 21:00	1051	470
07/01/2011 22:00	1034	449

07/01/2011 23:00	1021	428
08/01/2011 00:00	1011	407
07/01/2011 04:00	1123	199
07/01/2011 05:00	1183	214
07/01/2011 06:00	1225	214
07/01/2011 07:00	1246	234
07/01/2011 08:00	1297	335
07/01/2011 09:00	1276	325
07/01/2011 10:00	1252	336
07/01/2011 11:00	1657	504
07/01/2011 12:00	1688	642

- (c) during the period of Mr Ruffini's shift from 19:00 on 7 January 2011 to 07:00 on 8 January 2011, the level of Lake Wivenhoe rose from approximately EL 68.15 to approximately EL 68.47 being a net inflow into Lake Wivenhoe of approximately 37,120 ML;
- (d) otherwise denies the allegations.

223. The State admits paragraph 253 of the Statement of Claim.

224. As to paragraph 254 of the Statement of Claim, the State:

- (a) admits that at all times during the morning of 7 January 2011 the level of Lake Wivenhoe was above the level at which the Flood Mitigation Manual authorised releases from Wivenhoe Dam to commence;
- (b) says that the Flood Mitigation Manual did not require releases of water from Wivenhoe Dam during the morning of 7 January 2011;
- (c) otherwise denies the allegations.

225. As to paragraph 255 of the Statement of claim, the State:

- (a) says that at midnight on 7 January 2011, the water level in the Dams was:
- (i) Lake Somerset approximately EL 100.31;
  - (ii) Lake Wivenhoe approximately EL 68.30;
- (b) otherwise admits the allegations.

226. The State admits paragraph 256 of the Statement of Claim.

227. As to paragraph 256A of the Statement of Claim, the State:

- (a) denies the allegations;
- (b) says that in using the FLOOD-Ops RTFM on 7 January 2011, the flood engineers selected and input the following loss rates for the cases referred to below:

Case SDWD- 201101070100		
	Initial	Continuing
CRE	10	2.5
COO	10	2.5
LIN	15	2.5
EMU	30	2.5
GRE	10	2.5
SDI	0	1.0
WDI	0	2.5

Case SDWD- 201101071800		
	Initial	Continuing
CRE	10	2.5
COO	10	2.5
LIN	15	2.5
EMU	30	2.5
GRE	10	2.5
SDI	0	1.0
WDI	0	2.5

Case SDWD- 201101072200		
	Initial	Continuing
CRE	10	2.5

COO	30	0.5
LIN	30	0.5
EMU	30	0.5
GRE	40	0.5
SDI	15	0.5
WDI	0	2.5

Case SDWD- 201101072200_72hr		
	Initial	Continuing
CRE	10	2.5
COO	30	0.5
LIN	30	0.5
EMU	30	0.5
GRE	40	0.5
SDI	15	0.5
WDI	0	2.5

- (c) says that the selection of initial and continuing loss rates referred to in the preceding sub-paragraph were based upon the exercise of professional engineering judgement taking into account the matters pleaded in response to paragraph 136B of the Statement of Claim.

228. As to paragraph 257 of the Statement of Claim, the State:

- (a) says that:
- (i) the Flood Engineers issued Wivenhoe Directive 1 at noon on 7 January 2011;
  - (ii) implementation of Wivenhoe Directive 1 commenced at 15:00 on 7 January 2011;
  - (iii) water was being released through the regulators at the rate of 50 m<sup>3</sup>/s prior to 15:00 on 7 January 2011;
- (b) otherwise denies the allegations.

229. As to paragraphs 258 and 259 of the Statement of Claim, the State:



- (a) says that, at the time Mr Ruffini came on duty at 19:00 on 7 January 2011, Wivenhoe Dam Gate 3 was open 2.5 m discharging 255 m<sup>3</sup>/s and the hydro was discharging 13 m<sup>3</sup>/s;
- (b) says that, in the period from 19:00 on 7 January 2011 to 24:00 on 7 January 2011, the Wivenhoe Dam Gate 3 was progressively opened to 3.5 m, Gate 2 was progressively opened to 1.0 m, Gate 4 was opened to 0.5 m and the hydro remained discharging throughout that period at 13 m<sup>3</sup>/s;
- (c) says that the gate openings were in accordance with the general strategy which had been determined prior to when Mr Ruffini commenced duty at 19:00 on 7 January 2011;
- (d) otherwise does not admit the allegations.

230. As to paragraph 260 of the Statement of Claim, the State:

- (a) admits that the rates of inflow into Lake Wivenhoe exceeded rates of outflow during the period 00:00 on 7 January 2011 to 24:00 on 7 January 2011;
- (b) says that the rate of inflow into Lake Wivenhoe and the rate of outflow from Lake Wivenhoe caused by the radial gate operations implemented on that day were:
  - (i) within the range of normal dam operating procedures;
  - (ii) consistent with accepted flood mitigation procedures for attenuating inflows;
- (c) does not admit that the extent by which inflows exceeded outflows was "substantial";
- (d) otherwise denies the allegations.

231. As to paragraph 261 of the Statement of Claim, the State:

- (a) says that prior to 17:00 on 7 January 2011 water was being released at Somerset Dam through a regulator opened at 50% at about 35 m<sup>3</sup>/s;
- (b) says that:
  - (i) at about 16:13 on 7 January 2011, the Flood Engineers issued Somerset Directive 1 directing the opening of the regulator to 100% releasing at about 70 m<sup>3</sup>/s;
  - (ii) Somerset Directive 1 was implemented at about 17:00 on 7 January 2011;

- (iii) at about 18:00 on 7 January 2011, the Flood Engineers issued Somerset Directive 2 directing the closing of the regulator and the opening of a sluice gate releasing about 206 m<sup>3</sup>/s;
  - (iv) Somerset Directive 2 was implemented at about 19:00 on 7 January 2011;
  - (c) otherwise denies the allegations.
232. As to paragraphs 262 and 263 of the Statement of Claim, the State:
- (a) says that, at the time Mr Ruffini commenced duty at 19:00 on 7 January 2011, at Somerset Dam, all crest gates were open and Sluice gate L was fully opened discharging a total of about 206 m<sup>3</sup>/s;
  - (b) says that the gate openings were in accordance with the general strategy which had been determined prior to Mr Ruffini commencing duty at 19:00 on 7 January 2011;
  - (c) otherwise does not admit the allegations.
233. As to paragraph 264 of the Statement of Claim, the State:
- (a) admits that the rates of inflow into Lake Somerset exceeded rates of outflow during the period 00:00 on 7 January 2011 to 24:00 on 7 January 2011;
  - (b) says that the rate of inflow into Lake Somerset and the rate of outflow from Lake Somerset caused by the gate operations implemented on that day were:
    - (i) within the range of normal dam operating procedures;
    - (ii) consistent with accepted flood mitigation procedures for attenuating inflows;
  - (c) otherwise denies the allegations.
234. As to paragraph 265 of the Statement of Claim, the State:
- (a) says that SDWD-201101071800:
    - (i) identified the general dam operations strategy in place at the time Mr Ruffini commenced duty;
    - (ii) predicted that Wivenhoe Dam would peak at EL 68.51 at 14:00 on 8 January 2011 and on the dam operations strategy in place at that time, drain down to FSL by approximately 12:00 on 11 January 2011;
  - (b) says that during the period Mr Ruffini was on duty between 19:00 on 7 January 2011 and 07:00 on 8 January 2011, he:

- (i) continued to monitor the real time gauge data collected by FLOOD-Col and inflow hydrographs generated by the FLOOD-Ops RTFM;
  - (ii) at 22:00 on 7 January 2011 produced hydrographs modelling inflows using the FLOOD-Ops RTFM (**SDWD-201101072200**);
  - (iii) at 22:00 on 7 January 2011 produced hydrographs modelling inflows using the FLOOD-Ops RTFM taking into account 72 hour BoM SILO forecasts (**SDWD-201101072200\_72hr**);
- (c) says that SDWD-201101072200 produced hydrographs consistent with SDWD-201101071800;
- (d) says SDWD-201101072200\_72hr:
- (i) predicted that Wivenhoe Dam would reach an initial peak of EL 68.92 at approximately 22:00 on 8 January 2011;
  - (ii) assuming no change to the gate operations in SDWD-201101071800 (which the strategy then in place predicted would be progressively closed over the period from 03:00 on 11 January 2011 to 05:00 on 12 January 2011) predicted that the level of Lake Wivenhoe would gradually increase from approximately EL 68.60 on the morning of 10 January 2011 to a second peak of approximately EL 69.80 on about 23 January 2011;
- (e) says that the 72 hour BoM SILO forecasts upon which SDWD-201101072200\_72hr was based did not forecast the Extreme Rainfall Event described in paragraph 261 below, which occurred between 9 January and 11 January 2011;
- (f) says that the BoM forecasts pleaded in paragraphs 248 to 250 of the Statement of Claim did not predict the Extreme Rainfall Event described in paragraph 261 below, which occurred between 9 January and 11 January 2011;
- (g) says that, at 09:00 on 8 January 2011, the Flood Engineer then on duty produced hydrographs modelling inflows using the FLOOD-Ops RTFM and produced Operations Spreadsheets (**SDWD-201101080900**);
- (h) says that SDWD-201101080900:
- (i) identified the general dam operations strategy in place at the time Mr Ruffini ceased duty in the Flood Operations Centre on the morning of 8 January 2011;

- (ii) predicted that Wivenhoe Dam would peak at EL 68.64 at 20:00 on 8 January 2011 and drain down to FSL at approximately 21:00 on 11 January 2011 on the dam operations strategy in place at that time with gate closing slightly extended;
- (i) says that at 09:00 on 8 January 2011, after Mr Ruffini ceased duty, the Flood Engineer then on duty produced hydrographs modelling inflows using the FLOOD-Ops RTFM taking into account 72 hour forecasts (**SDWD-201101080900\_72**);
- (j) says that SDWD-201101080900\_72 did not predict the Extreme Rainfall Event described in paragraph 261 below which occurred between 9 January and 11 January 2011;
- (k) says that there was no BoM forecast or other information available to the Flood Engineers in the period Mr Ruffini was on duty which would have caused a reasonably prudent flood engineer responsible for Flood Operations at Somerset Dam and Wivenhoe Dam to adopt an operating strategy materially different from the general strategy in place and followed while Mr Ruffini was on duty;
- (l) otherwise denies the allegations.

235. As to paragraph 267 of the Statement of Claim, the State:

- (a) repeats and relies upon the matters pleaded in response to paragraphs 54, 248 to 265 of the Statement of Claim above;
- (b) admits that a reasonably prudent flood engineer responsible for Flood Operations at Somerset Dam and Wivenhoe Dam on 7 January 2011 would have complied with the Flood Mitigation Manual;
- (c) says that the Flood Engineers complied with the Flood Mitigation Manual;
- (d) denies that a reasonably prudent flood engineer responsible for Flood Operations at Somerset Dam and Wivenhoe Dam on 7 January 2011 would have acted in the manner alleged in sub-paragraphs 267(b), (c) and (f);
- (e) further or alternatively says, in any event, that the releases made from Wivenhoe Dam were at a rate consistent with the objectives of Strategy W3;
- (f) says that model results using forecast rain (including 72 hour forecast rain) showed that the forecast rain could be dealt with by continuing with the current gate operations strategy;
- (g) releases in accordance with the then current gate operations strategy were:

- (i) at a level which prevented urban inundation downstream of Wivenhoe Dam;
  - (ii) predicted Wivenhoe Dam to draw down to FSL in a time significantly shorter than the seven day draw down period provided for by the Flood Mitigation Manual;
- (h) as to the allegations in sub-paragraph 267(d):
- (i) says immediately upon event mobilisation at 07:42 on 6 January 2011, Strategy S2 was implemented;
  - (ii) admits that a reasonably prudent flood engineer responsible for flood operations at Somerset Dam on 7 January 2011 would have continued operations under Strategy S2;
  - (iii) denies a reasonably prudent flood engineer responsible for flood operations at Somerset Dam on 7 January 2011 would have adopted Strategy S3 as alleged in paragraph 267(d) of the Statement of Claim;
- (i) as to sub-paragraph 267(e), says that the release of water from Lake Somerset at the rates alleged would have been contrary to Section 9.3 of the Flood Mitigation Manual;
- (j) as to sub-paragraph 267(f), says that the release of water at rates alleged would have been contrary to the Flood Mitigation Manual;
- (k) as to sub-paragraph 267(i):
- (i) repeats and relies upon the matters pleaded in response to paragraph 136B of the Statement of Claim above;
  - (ii) denies that the Flood Engineers ought to have selected the rates stated therein;
  - (iii) says that Mr Ruffini did not select or input loss rates into the RTFM prior to coming on duty at 19:00 on 7 January 2011;
  - (iv) says that the initial and continuing loss rates for model runs SDWD-201101072200 and SDWD-201101072200\_72hr were selected by Mr Ruffini based upon the exercise of professional engineering judgement taking into account the matters pleaded in response to paragraph 136B of the Statement of Claim;
- (l) otherwise denies the allegations.

236. As to paragraphs 267A and 267B of the Statement of Claim, the State:

- (a) repeats and relies upon the matters pleaded in response to paragraphs 54, 136A, 136B 149, 150 and 248 to 267 of the Statement of Claim above;
- (a) says that as at 7 January 2011 the Extreme Rainfall Event described in paragraph 261 below which occurred between 9 January 2011 and 11 January 2011:
  - (i) was not predicted by forecasts available to the Flood Engineers;
  - (ii) was not reasonably foreseeable;
- (b) for the Flood Engineers to have acted in the manner alleged would have been contrary to widely accepted peer professional opinion as competent professional practice in the field of flood mitigation and dam operation;

#### **Particulars**

The State relies on the particulars to paragraph 308 below.

- (c) says that the Flood Engineers had no authority to reduce the levels of the Dams below FSL;
- (d) says that the dam operations between 16 December 2010 and 7 January 2011 had no causative relevance to the flooding which occurred subsequent to 9 January 2011;
- (e) says that between the time Mr Ruffini commenced his shift at 19:00 on 7 January 2011 and midnight on that day:
  - (i) Mr Ruffini could not have reduced the water levels in Somerset Dam or Wivenhoe Dam to the levels alleged in sub-paragraphs 267B(a), (b), (c), (d), (e), (f) or (g) of the Statement of Claim;
  - (ii) attempting to reduce the water levels in Somerset Dam and Wivenhoe Dam to any of the levels alleged in paragraph 267B of the Statement of Claim:
    - (1) may have caused downstream flooding at night without any or adequate warning, with the risk of injury, loss of life or damage to property;
    - (2) would have been contrary to the general strategy that had been set by the Senior Flood Operations Engineer;
    - (3) would have been contrary to the Flood Mitigation Manual;

(f) otherwise denies the allegations.

237. As to paragraph 268 of the Statement of Claim, the State:

- (a) repeats and relies upon its responses to paragraphs 256 to 267B of the Statement of Claim above;
- (b) otherwise denies the allegations.

238. As to paragraph 269 of the Statement of Claim, the State denies the allegations.

- (a) repeats and relies upon its responses to paragraphs 256 to 268 of the Statement of Claim above;
- (b) says that in the period Mr Ruffini was on duty in the Flood Operations Centre:
  - (i) the Extreme Rainfall Event described below in paragraph 261 which occurred between 9 January and 11 January 2011 was not foreseeable;
  - (ii) as at 11:00 on 9 January 2011 the full magnitude of the rainfall that subsequently occurred on 10 January and 11 January 2011 was not reasonably foreseeable;
  - (iii) it was not probable that harm would occur to the plaintiff or the Group Members by Mr Ruffini not departing from the general strategy for management of the Flood Event which was in place while he was on duty between 19:00 on 7 January 2011 and 07:00 on 8 January 2011;
- (c) denies that any conduct of Mr Ruffini was causative of harm to the plaintiff or Group Members;
- (d) says that, in adhering to the flood mitigation strategy which was in place while Mr Ruffini was on duty in the Flood Operations Centre, the conduct of Mr Ruffini was consistent with widely accepted peer professional opinion as competent professional practice in the field of flood mitigation and dam operation;

#### **Particulars**

The State relies on the particulars to paragraph 308 below.

(e) otherwise denies the allegations.

#### **Events of 8 January 2011**

239. As to paragraph 270 of the Statement of Claim, the State:

- (a) repeats and relies upon its response to paragraphs 138 to 142 of the Statement of Claim above;

- (b) says that the BoM 4 day PME forecast published on 8 January 2011 for 9 January to 12 January 2011:
- (i) forecast between 50 mm and 300 mm of rainfall in Lake Wivenhoe and Lake Somerset catchments;
  - (ii) to the extent that it forecast rainfall of between 200 mm and 300 mm in the Lake Wivenhoe and lake Somerset catchments, forecast that rain to affect only a small area in the south east of the catchments;
  - (iii) forecast the most intense rainfall of between 300 mm and 400 mm to fall in the catchments below Wivenhoe Dam;
- (c) says that the BoM 8 day PME forecast published on 8 January for 9 January to 16 January 2011:
- (i) forecast between 50 mm to 300 mm of rainfall in Lake Wivenhoe and Lake Somerset catchments;
  - (ii) to the extent that it forecast rainfall of between 200 mm and 300 mm in the Lake Wivenhoe and Lake Somerset catchments, forecast that rain to affect only a small area in the south east of the catchments;
  - (iii) forecast the most intense rainfall between 300 mm and 400 mm to fall in the catchments below Wivenhoe Dam;
- (d) says that on the proper interpretation of the 4 and 8 day PME forecasts, the forecast was for most of the rain to fall in the first four days;
- (e) says the BoM 1 day PME forecast then issued for 9 January 2011 was for rain of between 25 mm to 150 mm in the Wivenhoe and Somerset catchments;
- (f) otherwise denies the allegations.

240. As to paragraph 271 of the Statement of Claim, the State:

- (a) says that at 17:57 the Duty Engineer (Mr Malone) prepared Situation Report 6 which recorded:

*Advice from BOM indicates that SEQLD can expect further high rainfall total over the next 4 days.*

*Saturday: rain light at times 15-50mm with higher falls along the coast*

*Sunday: widespread rain totals between 50-100mm*

*Monday: widespread rain again with totals between 50-100mm*

*Tuesday: rain easing with totals between 25-50mm;*

- (b) otherwise denies the allegations.



241. The State admits paragraph 272 of the Statement of Claim.
242. The State admits paragraph 273 of the Statement of Claim.
243. As to paragraph 274 of the Statement of Claim, the State:
- (a) says that the Lake Somerset and Lake Wivenhoe catchment average rainfall for 24 hours to 10:03 on 8 January 2011 was approximately 28 mm;
  - (b) says that more than half of the measuring stations in the Lake Somerset and Lake Wivenhoe catchment recorded 20 mm or less;
  - (c) otherwise denies the allegations.
244. As to paragraph 275 of the Statement of Claim, the State:
- (a) admits that catchment inflows into Lake Wivenhoe and Lake Somerset continued throughout the course of 8 January 2011;
  - (b) otherwise denies the allegations.
245. The State admits paragraph 276 of the Statement of Claim.
246. The State admits paragraph 277 of the Statement of Claim.
247. As to paragraph 278 of the Statement of Claim, the State:
- (a) admits the allegations in sub-paragraph 278(a);
  - (b) in relation to sub-paragraph 278(b):
    - (i) says that the water level of lake Wivenhoe increased from approximately EL 68.30 at 00:00 to approximately EL 68.64 at 17:00 on 8 January 2011;
    - (ii) says that the water level remained stable at approximately EL 68.64 between 17:00 to 23:00 before dropping to approximately EL 68.63 at midnight;
  - (c) otherwise denies the allegations.
248. The State admits paragraph 279 of the Statement of Claim.
249. As to paragraph 279A of the Statement of Claim, the State:
- (a) says that in using the FLOOD-Ops RTFM on 8 January 2011, the flood engineers selected and input the following loss rates for each of the identified cases:

Cases SDWD- 201101080900 201101080900 72hr
--

	201101081500 201101081500_72hr	
	Initial	Continuing
CRE	10	2.5
COO	30	0.5
LIN	30	0.5
EMU	30	0.5
GRE	40	0.5
SDI	15	0.5
WDI	0	2.5

(b) says that the selection of initial and continuing loss rates referred to in the preceding sub-paragraph were based upon the exercise of professional engineering judgement taking into account the matters pleaded in response to paragraph 136B of the Statement of Claim;

(c) otherwise denies the allegations.

250. As to paragraph 280 of the Statement of Claim, the State:

(a) repeats and relies on the matters pleaded in response to paragraphs 258 to 269 inclusive of the Statement of Claim above;

(b) says that Somerset Dam was being operated conformably with Strategy S2 during the period Mr Ruffini was on duty between 19:00 on 7 January 2011 and 07:00 on 8 January 2011;

(c) otherwise denies the allegations.

251. The State denies the allegations in paragraphs 281, 282 and 283 of the Statement of Claim.

252. As to paragraphs 285 and 286 of the Statement of Claim, the State:

(a) repeats and relies on the matters pleaded in response to paragraphs 258 to 269 of the Statement of Claim above as to the period when Mr Ruffini was on duty between 19:00 on 7 January 2011 and 07:00 on 8 January 2011;

(b) says that, at 09:00 on 8 January 2011 the Flood Engineer then on duty produced hydrographs modelling inflows using the FLOOD-Ops RTFM and produced Operations Spreadsheets (**SDWD-201101080900**);

- (c) says that SDWD-201101080900 identified the general dam operations strategy in place at the time;
- (d) says that SDWD-201101080900 predicted that Wivenhoe Dam would:
  - (i) peak at EL 68.64 at 20:00 on 8 January 2011; and
  - (ii) fall to FSL at approximately 04:00 on 12 January 2011 on the operational strategy in place at the time with gate closing slightly extended;
- (e) says that at 09:00 on 8 January 2011 the Flood Engineer then on duty produced hydrographs modelling inflows using the FLOOD-Ops RTFM taking into account 72 hour BoM forecasts (**SDWD-201101080900\_72**);
- (f) says that SDWD-201101080900\_72 did not predict the Extreme Rainfall Event described in paragraph 261 which occurred between 9 January 2011 and 11 January 2011;
- (g) says that, at 15:00 on 8 January 2011 the Flood Engineer then on duty produced hydrographs modelling inflows using the FLOOD-Ops RTFM and produced Operations Spreadsheets (**SDWD-201101081500**);
- (h) says that SDWD-201101081500:
  - (i) identified the general dam operations strategy in place at the time;
  - (ii) predicted that Wivenhoe Dam would:
    - (1) peak at EL 68.66 at 23:00 on 8 January 2011; and
    - (2) fall to FSL at approximately 02:00 on 12 January 2011 on the operational strategy in place at the time;
- (i) says that, at 15:00 on 8 January 2011 the Flood Engineer then on duty also produced hydrographs modelling inflows using the FLOOD-Ops RTFM and produced Operations Spreadsheets taking into account 72 hour BoM forecasts (**SDWD-201101081500\_72hr**);
- (j) says that SDWD-201101081500\_72hr:
  - (i) identified the general dam operations strategy in place at the time;
  - (ii) predicted that Lake Wivenhoe would, by the application of the same gate opening strategy in place, but with some extension or adjustment of it on and from 11 January 2011:
    - (1) reach an initial peak of EL 68.66 at approximately 20:00 on 8 January 2011;

(2) reach a second peak caused by the forecast rain of EL 68.82 at approximately 15:00 on 12 January 2011;

- (k) says that the 72 hour BoM forecasts upon which 201101081500\_72hr was based did not forecast the Extreme Rainfall Event described in paragraph 261 below which occurred between 9 January 2011 and 11 January 2011;
- (l) says that the BoM forecasts pleaded in paragraphs 270 to 273 of the Statement of Claim did not predict the Extreme Rainfall Event described in paragraph 261 below which occurred between 9 January 2011 and 11 January 2011;
- (m) says that there was no BoM forecast or other information available to the Flood Engineers on 8 January 2011 which would have caused a reasonably prudent flood engineer responsible for Flood Operations at Somerset Dam and Wivenhoe Dam to adopt an operating strategy materially different from the general strategy in place on 8 January 2011;
- (n) otherwise denies the allegations.

253. As to paragraph 288 of the Statement of Claim, the State:

- (a) repeats and relies upon the matters pleaded in response to paragraphs 54, 270 to 286 inclusive of the Statement of Claim above;
- (b) admits that a reasonably prudent flood engineer responsible for Flood Operations at Somerset Dam and Wivenhoe Dam on 8 January 2011 would have complied with the Flood Mitigation Manual;
- (c) says that the Flood Engineers complied with the Flood Mitigation Manual;
- (d) as to the period after 08:00 on 8 January 2011, admits sub-paragraph 288(b);
- (e) says that the acts as alleged in sub-paragraphs 288(c), (d) and (e) would have been inconsistent with the Flood Mitigation Manual;
- (f) as to sub-paragraph 288(h):
  - (i) repeats and relies upon the matters pleaded in response to paragraph 136B of the Statement of Claim above;
  - (ii) denies that the Flood Engineers ought to have selected the rates stated therein;
  - (iii) says that Mr Ruffini did not select or input loss rates into the RTFM after leaving duty at 07:00 on 8 January 2011;

(iv) says that the initial and continuing loss rates for model runs SDWD-201101072200 and SDWD-201101072200\_72hr used by Mr Ruffini whilst on shift until 07:00 on 8 January 2011 were selected by Mr Ruffini based upon the exercise of professional engineering judgement taking into account the matters pleaded in response to paragraph 136B of the Statement of Claim.

(g) otherwise denies the allegations.

254. As to paragraph 288A and 288B of the Statement of Claim, the State:

- (a) repeats and relies upon its responses to paragraphs 54, 136A, 136B, 149, 150, 270 to 288 of the Statement of Claim above;
- (b) says that as at 8 January 2011 the Extreme Rainfall Event described in paragraph 261 below which occurred between 9 January 2011 and 11 January 2011:
  - (i) was not predicted by forecasts available to the Flood Engineers;
  - (ii) was not reasonably foreseeable;
- (c) for the Flood Engineers to have acted in the manner alleged would have been contrary to widely accepted peer professional opinion as competent professional practice in the field of flood mitigation and dam operation;

#### **Particulars**

The State relies on the particulars to paragraph 308 below.

- (d) says the Flood Engineers had no authority to reduce the levels of the Dams below FSL;
- (e) says that there was no basis for a reasonably prudent flood engineer to reduce the dam levels below FSL;
- (f) says that the dam operations between 16 December 2010 and 8 January 2011 had no causative relevance to the flooding which occurred subsequent to 9 January 2011;
- (g) says that between midnight on 8 January 2011 and the time Mr Ruffini ceased shift at 07:00 on that day:
  - (i) Mr Ruffini could not have reduced the water levels in Somerset Dam and Wivenhoe Dam to the levels alleged in sub-paragraphs 288B(a), (b), (c), (d), (e), (g) (f) or (h) of the Statement of Claim;

- (ii) attempting to reduce the water levels in Somerset Dam and Wivenhoe Dam to any of the levels alleged in paragraph 288B of the Statement of Claim:
  - (1) may have caused downstream flooding at night without any or adequate warning, with the risk of injury, loss of life or damage to property;
  - (2) would have been contrary to the general strategy that had been set by the Senior Flood Operations Engineer;
  - (3) would have been contrary to the terms of the Flood Mitigation Manual;
- (h) the conduct of Mr Ruffini was consistent with widely accepted peer professional opinion as competent professional practice in the field of flood mitigation and dam operation;
- (i) otherwise denies the allegations.

255. As to paragraphs 289 and 290 of the Statement of Claim, the State:

- (a) repeats and relies upon its response to paragraphs 279 to 288B of the Statement of Claim above;
- (b) otherwise denies the allegations.

#### **Events of 9 January 2011**

256. As to paragraph 291 of the Statement of Claim, the State:

- (a) repeats and relies upon its response to paragraphs 138 to 142 of the Statement of Claim above;
- (b) says that the BoM 4 day PME forecast published on 9 January 2011 for 10 January to 13 January 2011:
  - (i) predicted between 50 mm and 300 mm of rainfall in the Lake Wivenhoe and Lake Somerset catchments;
  - (ii) to the extent that it predicted rainfall of between 200 mm to 300 mm forecast that rain to affect only a small area in the south east of the catchments;
  - (iii) predicted the most intense rainfall in catchments below Wivenhoe Dam;
- (c) says that the BoM 8 day PME forecast published on 9 January 2011 for 10 January to 17 January 2011:

- (i) predicted 50 mm to 200 mm of rainfall in the Lake Wivenhoe and Lake Somerset catchments;
  - (ii) to the extent that it predicted rainfall of between 150 mm to 200 mm in the Lake Wivenhoe and Lake Somerset catchments forecast that rain to affect only a small area in the south east of the catchment;
  - (iii) predicted the most intense rainfall between 200mm and 300 mm to fall in catchments below Wivenhoe Dam;
- (d) says that on the proper interpretation of the 4 and 8 day PME forecasts, the forecast was for rainfall of a decreasing trend with most of the rain forecast to fall in the first three days;
- (e) says that the BoM 1 day PME forecast published on 9 January 2011 for 10 January 2011:
- (i) was for 15 mm to 150 mm;
  - (ii) to the extent it predicted rainfall of between 100 mm and 150 mm in the Lake Wivenhoe and Somerset catchments forecast that rain to only affect a very small area in the south east of the catchments;
  - (iii) predicted the most intense rainfall between 100 mm and 200 mm to be in catchments below Wivenhoe Dam;
- (f) otherwise denies the allegations.

257. The State admits paragraph 292 of the Statement of Claim.

258. The State admits paragraph 293 of the Statement of Claim.

259. As to paragraph 294 of the Statement of Claim, the State:

- (a) says that in the 24 hours to 09:00 Sunday 9 January 2011, rainfall totals were generally below approximately 30 mm but with isolated higher totals just over approximately 40 mm in the upper reaches of the Stanley River catchments around Ferris Knob and the centre of the Upper Brisbane River catchment around Devon Hills;
- (b) otherwise denies the allegations.

260. The QPF issued by BoM at approximately 10:00 forecast between 40 mm to 60 mm in the catchments of Lake Somerset and Lake Wivenhoe over the following 24 hours.