

Brooke Foxover

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From: DutyEngineer [dutyseq [REDACTED]]  
Sent: Monday, 24 January 2011 2:17 PM  
To: John Tibaldi  
Subject: Decision Review -02.doc  
Attachments: @

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Decision Review -02.doc

(101 KB)

DATE/TIME	DIRECTIVE	DAM LEVELS	MODEL RESULTS	STRATEGY
<p>Commenced 06 Jan 2011 07:42</p> <p>Completed 07 Jan 2011 02:00</p>	<p><b>Strategy W1A</b></p> <ul style="list-style-type: none"> <li>Event Mobilisation, currently using Strategy W1A. 24/7 staffing of the Flood Operations Centre and dams to continue until official de-mobilisation announced.</li> </ul>	<p>Wivenhoe Dam 67.31</p> <p>Somerset Dam 99.34</p>	<ul style="list-style-type: none"> <li>Lake level not expected to reach 67.50 (Strategy W1B) until 07 January 2011.</li> <li>Significant inflows expected from Lockyer Creek into the Brisbane River and these inflows likely to impact on College's Crossing. (Estimate of Lockyer flows needed)</li> <li>Wivenhoe Lake level forecast to peak at ??</li> </ul>	<p><b>Strategy W1A</b> (Lake Level greater than 67.25, maximum release 110 cumecs)</p> <ul style="list-style-type: none"> <li>Endeavour to maintain College's Crossing trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 175 cumecs.</li> <li>Water held in Wivenhoe in an attempt to maintain College's Crossing trafficable in accordance with Strategy W1A.</li> </ul>
<p>Commenced 07 Jan 2011 02:00</p> <p>Completed 07 Jan 2011 07:00</p>	<p><b>Strategy W1B</b></p> <ul style="list-style-type: none"> <li>Transition from Strategy W1A to W1B.</li> </ul>	<p>Wivenhoe Dam 67.52</p> <p>Somerset Dam 99.55</p>	<ul style="list-style-type: none"> <li>Lake level not expected to reach 67.75 (Strategy W1C) for at least six hours.</li> <li>Significant inflows expected from Lockyer Creek into the Brisbane River and these inflows likely to impact on Burton's Bridge, although there is uncertainty as to whether the Lockyer flows alone will be sufficient to inundate Burtons Bridge. (Estimate of Lockyer flows needed)</li> <li>Wivenhoe Lake level forecast to peak at ??</li> </ul>	<p><b>Strategy W1B</b> (Lake Level greater than 67.50, maximum release 110 cumecs)</p> <ul style="list-style-type: none"> <li>Endeavour to maintain Burtons Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 430 cumecs.</li> <li>Water held in Wivenhoe in an attempt to maintain Burtons Bridge trafficable in accordance with Strategy W1B.</li> </ul>

<p>Commenced 07 Jan 2011 07:00</p> <p>Completed 08 Jan 2011 08:30</p>	<p><b>Strategy W1C</b></p> <ul style="list-style-type: none"> <li>• Transition from Strategy W1B to W1C.</li> </ul>	<p>Wivenhoe Dam 67.52</p> <p>Somerset Dam 99.55</p>	<ul style="list-style-type: none"> <li>• Significant inflows expected from Lockyer Creek into the Brisbane River and these inflows likely to impact on Kholo Bridge, although there is uncertainty as to whether the Lockyer flows alone will be sufficient to inundate Kholo Bridge. (Estimate of Lockyer flows needed)</li> <li>• Wivenhoe Lake level forecast to peak at ??</li> </ul>	<p><b>Strategy W1C</b> <b>(Lake Level greater than 67.75, maximum release 500 cumecs)</b></p> <ul style="list-style-type: none"> <li>• Endeavour to maintain Kholo Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 550 cumecs.</li> <li>• Water held in Wivenhoe in an attempt to maintain Kholo Bridge trafficable in accordance with Strategy W1C.</li> </ul>
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<p>Commenced 07 Jan 2011 08:30</p> <p>Completed 07 Jan 2011 15:00</p>	<p><b>Strategy W1E</b></p> <ul style="list-style-type: none"> <li>Transition from Strategy W1C to W1E. Based on rainfall on the ground, it becomes apparent that all bridges apart from the Mt Crosby Weir Bridge and Fernvale Bridge will be flooded by Lockyer Creek flows alone.</li> <li>All impacted Councils are notified of situation and that releases are to be commenced from Wivenhoe Dam. Releases were delayed until 15:00 to allow bridges to be closed and arrangements to be made to cater for rural community isolation. The impacted rural communities had been isolated over the Christmas period and time was needed for suitable arrangements to be made to allow these communities to be prepared for another extended period of isolation.</li> <li>Rainfall on the ground and rainfall forecasts did not suggest that the event was likely to approach the use of Strategy W4.</li> </ul>	<p>Wivenhoe Dam 67.52</p> <p>Somerset Dam 99.79</p>	<ul style="list-style-type: none"> <li>Significant inflows expected from Lockyer Creek into the Brisbane River and these will be sufficient to inundate all bridges downstream of the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge. (Estimate of Lockyer flows needed).</li> <li>Wivenhoe Lake level forecast to peak at ??</li> </ul>	<p><b>Strategy W1E</b> <b>(Lake Level greater than 68.25, maximum release 1900 cumecs)</b></p> <ul style="list-style-type: none"> <li>Endeavour to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> <li>Releases from Wivenhoe Dam managed in an attempt to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable in accordance with Strategy W1E.</li> </ul>
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<p>Commenced 07 Jan 2011 15:00</p> <p>Completed 08 Jan 2011 14:00</p>	<p><b>Transition from Strategy W1E to Strategy W2</b> <b>Wivenhoe Directives #1 to #4.</b> <b>Somerset Directives #1 to #3.</b></p> <ul style="list-style-type: none"> <li>Gates opened continuously at Wivenhoe Dam for 23 hours in accordance with the standard gate opening sequence at a rate of 0.5 metres of opening per hour.</li> <li>At 14:00 on 08 January 2011, Wivenhoe discharge is 1271 cumecs. All bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> <li>Due to rainfall on the ground, it was apparent that the Somerset Dam level would significantly exceed 100.45. Accordingly two sluice gates were opened during this period to allow dam levels to move towards the Wivenhoe/Somerset Operations Target Line in accordance with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 68.03 to 68.61 over the 23 hour period.</p> <p>Somerset Dam level rises from 99.94 to 100.44 over the 23 hour period.</p>	<ul style="list-style-type: none"> <li>Significant inflows expected from Lockyer Creek into the Brisbane River and these will be sufficient to inundate all bridges downstream of the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge. (Estimate of Lockyer flows needed).</li> <li>Wivenhoe Lake level forecast to peak at ??</li> <li>Somerset Lake level forecast to peak at ??</li> </ul>	<p><b>Strategy W2</b> <b>(Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>Consideration initially on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> </ul>
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<p>Commenced 08 Jan 2011 14:00</p> <p>Completed 09 Jan 2011 01:00</p>	<p><b>Strategy W2</b></p> <ul style="list-style-type: none"> <li>Releases maintained from both dams to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>No change to gate settings over this period. Wivenhoe discharge is 1271 cumecs. All bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level rises very slightly from 68.61 to 68.63 over the 13 hour period.</p> <p>Somerset Dam level falls from 100.44 to 100.32 over the 13 hour period.</p>	<ul style="list-style-type: none"> <li>Wivenhoe Lake level forecast to peak at ??</li> <li>Somerset Lake level forecast to peak at ??</li> </ul>	<p><b>Strategy W2 (Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>With lake levels rising slightly (Wivenhoe) and falling (Somerset) consideration remains on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> </ul>
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<p>Commenced 09 Jan 2011 01:00</p> <p>Completed 09 Jan 2011 08:00</p>	<p><b>Strategy W2</b> <b>Wivenhoe Directives #5 to #7.</b></p> <ul style="list-style-type: none"> <li>• Releases increased marginally from Wivenhoe Dam to account for the passing of the Lockyer peak while maintaining Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>• Wivenhoe discharge is increased from 1271 cumecs to 1367 cumecs.</li> <li>• No change to Somerset Dam gate settings over this period.</li> <li>• All bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level falls from 68.63 to 68.57 over the 7 hour period.</p> <p>Somerset Dam level falls from 100.32 to 100.28 over the 7 hour period.</p>	<ul style="list-style-type: none"> <li>• Wivenhoe Lake level forecast to peak at ??</li> <li>• Somerset Lake level forecast to peak at ??</li> </ul>	<p><b>Strategy W2</b> <b>(Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>• With lake levels falling at both dams consideration remains on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> </ul>
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<p>Commenced 09 Jan 2011 08:00</p> <p>Completed 09 Jan 2011 14:00</p>	<p><b>Strategy W2</b> <b>Wivenhoe Directives #7.</b> <b>Somerset Directives #4 to #5.</b></p> <ul style="list-style-type: none"> <li>Releases increased marginally from Wivenhoe Dam to account for the passing of the Lockyer peak while maintaining Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>Wivenhoe discharge is increased from 1367 cumecs to 1420 cumecs.</li> <li>Somerset Dam sluice gates opened progressively over this period to allow dam levels to move towards the Wivenhoe/Somerset Operations Target Line in accordance with Strategy S2</li> <li>All bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level rises very slightly from 68.57 to 68.58 over the 6 hour period.</p> <p>Somerset Dam level rises from 100.28 to 100.47 over the 4 hour period.</p>	<ul style="list-style-type: none"> <li>Wivenhoe Lake level forecast to peak at ??</li> <li>Somerset Lake level forecast to peak at ??</li> </ul>	<p><b>Strategy W2</b> <b>(Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>With lake levels rising at both dams consideration was given to transitioning the primary consideration from minimizing disruption to downstream rural life to protecting urban areas from inundation. However during this period, consideration remained on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> <li>Model results showing rapid rises in water level in Somerset Dam provide justification to consider transitioning to Strategy W3 within the next 6 hours.</li> </ul>
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<p>Commenced 09 Jan 2011 14:00</p> <p>Completed 09 Jan 2011 19:00</p>	<p><b>Strategy W2</b></p> <ul style="list-style-type: none"> <li>Releases maintained from both dams to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>No change to gate settings over this period. Wivenhoe discharge is 1436 cumecs. All bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> <li>Due to rainfall on the ground and the rapid lake level rises, a decision is made to transition to Strategy W3 at 19:00.</li> </ul>	<p>Wivenhoe Dam level rises from 68.58 to 68.97 over the 5 hour period.</p> <p>Somerset Dam level rises from 100.47 to 101.43 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>Wivenhoe Lake level forecast to peak at ??</li> <li>Somerset Lake level forecast to peak at ??</li> </ul>	<p><b>Strategy W2 (Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>With lake levels continuing to rise at both dams the decision was made to transition the primary consideration from minimizing disruption to downstream rural life to protecting urban areas from inundation. However during this period, consideration remained on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> <li>Decision is made to transition to Strategy W3 at 19:00.</li> </ul>
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<p>Commenced 09 Jan 2011 19:00</p> <p>Completed 10 Jan 2011 01:00</p>	<p><b>Transition from Strategy W2 to Strategy W3</b></p> <ul style="list-style-type: none"> <li>• Council and Agency notifications commenced at 7:00pm.</li> <li>• Fernvale Bridge closed by police at around 01:00 on 10 January 2011 and once this was confirmed a directive was issued to increase releases from Wivenhoe Dam.</li> <li>• No change to gate settings over this period. Wivenhoe discharge is 1436 cumecs. All bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level rises from 68.97 to 69.97 over the 6 hour period.</p> <p>Somerset Dam level rises from 101.43 to 102.51 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>• Wivenhoe Lake level forecast to peak at ??</li> <li>• Somerset Lake level forecast to peak at ??</li> </ul>	<p><b>Strategy W3 (Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>• Before releases are increased towards the limit of non-damaging floods at Moggill, Councils and other impacted agencies must be notified and the Mt Crosby Weir Bridge and Fernvale Bridge must be closed.</li> </ul>
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<p>Commenced 10 Jan 2011 01:00</p> <p>Completed 10 Jan 2011 09:00</p>	<p><b>Strategy W3</b> <b>Wivenhoe Directives #8 to #9.</b></p> <ul style="list-style-type: none"> <li>• Council and Agency notifications commenced at 7:00pm.</li> <li>• The release rate was paused at 09:00 in an attempt to allow the Lockyer peak to pass Brisbane Fernvale Bridge closed by police at around 01:00 on 10 January 2011 and once this was confirmed a directive was issued to increase releases from Wivenhoe Dam.</li> <li>• No change to gate settings over this period. Wivenhoe discharge is 1436 cumecs. All bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level rises from 69.97 to 71.56 over the 6 hour period.</p> <p>Somerset Dam level rises from 101.43 to 102.51 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>• Wivenhoe Lake level forecast to peak at ??</li> <li>• Somerset Lake level forecast to peak at ??</li> </ul>	<p><b>Strategy W3</b> <b>(Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>• Before releases are increased towards the limit of non-damaging floods at Moggill, Councils and other impacted agencies must be notified and the Mt Crosby Weir Bridge and Fernvale Bridge must be closed.</li> </ul>

Brooke Foxover

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From: DutyEngineer [dutyseq [REDACTED]]  
Sent: Monday, 24 January 2011 4:35 PM  
To: John Tibaldi  
Subject: Decision Review -03.doc  
Attachments: @

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**Attachments:**

Decision Review -03.doc

(149 KB)

DATE/TIME	DIRECTIVE	DAM LEVELS	MODEL RESULTS	STRATEGY
Commenced 06 Jan 2011 07:42	<b>Strategy W1A</b> <ul style="list-style-type: none"> <li>Event Mobilisation, currently using Strategy W1A. 24/7 staffing of the Flood Operations Centre and dams to continue until official de-mobilisation announced.</li> </ul>	Wivenhoe Dam 67.31  Somerset Dam 99.34	<ul style="list-style-type: none"> <li>Lake level not expected to reach 67.50 (Strategy W1B) until 07 January 2011.</li> <li>Peak inflows into the Brisbane River from Lockyer are estimated to be in the order of 400 cumecs, but these flows will not inundate Colleges Crossing until ??)</li> <li>Wivenhoe Lake level forecast to peak at 68.3.</li> <li>Somerset Lake level forecast to peak at 99.8.</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<b>Strategy W1A</b> (Lake Level greater than 67.25, maximum release 110 cumecs)
Completed 07 Jan 2011 02:00				<ul style="list-style-type: none"> <li>Endeavour to maintain College's Crossing trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 175 cumecs.</li> <li>Water held in Wivenhoe in an attempt to maintain College's Crossing trafficable in accordance with Strategy W1A.</li> </ul>

<p>Commenced 07 Jan 2011 02:00</p> <p>Completed 07 Jan 2011 07:00</p>	<p><b>Strategy W1B</b></p> <ul style="list-style-type: none"> <li>Transition from Strategy W1A to W1B.</li> </ul>	<p>Wivenhoe Dam 67.52</p> <p>Somerset Dam 99.55</p>	<ul style="list-style-type: none"> <li>Lake level not expected to reach 67.75 (Strategy W1C) for at least six hours.</li> <li>Peak inflows into the Brisbane River from Lockyer are estimated to be in the order of 500 cumecs, but these flows may not be sufficient to inundate Burtons Bridge.</li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W1B</b> <b>(Lake Level greater than 67.50, maximum release 110 cumecs)</b></p> <ul style="list-style-type: none"> <li>Endeavour to maintain Burtons Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 430 cumecs.</li> <li>Water held in Wivenhoe in an attempt to maintain Burtons Bridge trafficable in accordance with Strategy W1B.</li> </ul>
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<p>Commenced 07 Jan 2011 07:00</p> <p>Completed 08 Jan 2011 08:30</p>	<p><b>Strategy W1C</b></p> <ul style="list-style-type: none"> <li>Transition from Strategy W1B to W1C.</li> </ul>	<p>Wivenhoe Dam 67.52</p> <p>Somerset Dam 99.55</p>	<ul style="list-style-type: none"> <li>Peak inflows into the Brisbane River from Lockyer are estimated to be in the order of 400 cumecs, but these flows may not be sufficient to inundate Burtons Bridge or Kholo Bridge.</li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W1C</b> <b>(Lake Level greater than 67.75, maximum release 500 cumecs)</b></p> <ul style="list-style-type: none"> <li>Endeavour to maintain Kholo Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 550 cumecs.</li> <li>Water held in Wivenhoe in an attempt to maintain Kholo Bridge trafficable in accordance with Strategy W1C.</li> </ul>
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<p>Commenced 07 Jan 2011 08:30</p> <p>Completed 07 Jan 2011 15:00</p>	<p><b>Strategy W1E</b></p> <ul style="list-style-type: none"> <li>Transition from Strategy W1C to W1E. Based on rainfall on the ground, it becomes apparent that all bridges apart from the Mt Crosby Weir Bridge and Fernvale Bridge will be flooded by Lockyer Creek flows alone.</li> <li>All impacted Councils are notified of situation and that releases are to be commenced from Wivenhoe Dam. Releases were delayed until 15:00 to allow bridges to be closed and arrangements to be made to cater for rural community isolation. The impacted rural communities had been isolated over the Christmas period and time was needed for suitable arrangements to be made to allow these communities to be prepared for another extended period of isolation.</li> <li>Rainfall on the ground and rainfall forecasts did not suggest that the event was likely to approach the use of Strategy W4.</li> </ul>	<p>Wivenhoe Dam 67.52</p> <p>Somerset Dam 99.79</p>	<ul style="list-style-type: none"> <li>Significant inflows expected from Lockyer Creek into the Brisbane River and these will be sufficient to inundate all bridges downstream of the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge.</li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W1E</b> <b>(Lake Level greater than 68.25, maximum release 1900 cumecs)</b></p> <ul style="list-style-type: none"> <li>Endeavour to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> <li>Releases from Wivenhoe Dam managed in an attempt to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable in accordance with Strategy W1E.</li> </ul>
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<p>Commenced 07 Jan 2011 15:00</p> <p>Completed 08 Jan 2011 14:00</p>	<p><b>Transition from Strategy W1E to Strategy W2</b> <b>Wivenhoe Directives #1 to #4.</b> <b>Somerset Directives #1 to #3.</b></p> <ul style="list-style-type: none"> <li>Gates opened continuously at Wivenhoe Dam for 23 hours in accordance with the standard gate opening sequence at a rate of 0.5 metres of opening per hour.</li> <li>At 14:00 on 08 January 2011, Wivenhoe discharge is 1271 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> <li>Due to rainfall on the ground, it was apparent that the Somerset Dam level would significantly exceed 100.45. Accordingly two sluice gates were opened during this period to allow dam levels to move towards the Wivenhoe/Somerset Operations Target Line in accordance with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 68.03 to 68.61 over the 23 hour period.</p> <p>Somerset Dam level rises from 99.94 to 100.44 over the 23 hour period.</p>	<ul style="list-style-type: none"> <li>Significant inflows expected from Lockyer Creek into the Brisbane River and these will be sufficient to inundate all bridges downstream of the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge.</li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W2</b> <b>(Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>Consideration initially on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> </ul>
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<p>Commenced 08 Jan 2011 14:00</p> <p>Completed 09 Jan 2011 01:00</p>	<p><b>Strategy W2</b></p> <ul style="list-style-type: none"> <li>Releases maintained from both dams to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>No change to gate settings over this period. Wivenhoe discharge is 1271 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level rises very slightly from 68.61 to 68.63 over the 13 hour period.</p> <p>Somerset Dam level falls from 100.44 to 100.32 over the 13 hour period.</p>	<ul style="list-style-type: none"> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W2</b> <b>(Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>With lake levels rising slightly (Wivenhoe) and falling (Somerset) consideration remains on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> </ul>
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<p>Commenced 09 Jan 2011 01:00</p> <p>Completed 09 Jan 2011 08:00</p>	<p><b>Strategy W2</b> <b>Wivenhoe Directives #5 to #7.</b></p> <ul style="list-style-type: none"> <li>Releases increased marginally from Wivenhoe Dam to account for the passing of the Lockyer peak while maintaining Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>Wivenhoe discharge is increased from 1271 cumecs to 1367 cumecs.</li> <li>No change to Somerset Dam gate settings over this period.</li> <li>All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level falls from 68.63 to 68.57 over the 7 hour period.</p> <p>Somerset Dam level falls from 100.32 to 100.28 over the 7 hour period.</p>	<ul style="list-style-type: none"> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W2</b> <b>(Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>With lake levels falling at both dams consideration remains on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> </ul>
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Commenced 09 Jan 2011 08:00	<b>Strategy W2 Wivenhoe Directives #7. Somerset Directives #4 to #5.</b>			<b>Strategy W2 (Lake Level greater than 68.50, maximum release 3500 cumecs)</b>
Completed 09 Jan 2011 14:00	<ul style="list-style-type: none"> <li>Releases increased marginally from Wivenhoe Dam to account for the passing of the Lockyer peak while maintaining Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>Wivenhoe discharge is increased from 1367 cumecs to 1420 cumecs.</li> <li>Somerset Dam sluice gates opened progressively over this period to allow dam levels to move towards the Wivenhoe/Somerset Operations Target Line in accordance with Strategy S2.</li> <li>All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level rises very slightly from 68.57 to 68.58 over the 6 hour period.</p> <p>Somerset Dam level rises from 100.28 to 100.47 over the 4 hour period.</p>	<ul style="list-style-type: none"> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<ul style="list-style-type: none"> <li>With lake levels rising at both dams consideration was given to transitioning the primary consideration from minimizing disruption to downstream rural life to protecting urban areas from inundation. However during this period, consideration remained on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> <li>Model results showing rapid rises in water level in Somerset Dam provide justification to consider transitioning to Strategy W3 within the next 6 hours.</li> </ul>

<p>Commenced 09 Jan 2011 14:00</p> <p>Completed 09 Jan 2011 19:00</p>	<p><b>Strategy W2</b></p> <ul style="list-style-type: none"> <li>Releases maintained from both dams to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>No change to gate settings over this period. Wivenhoe discharge is 1436 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> <li>Due to rainfall on the ground and the rapid lake level rises, a decision is made to transition to Strategy W3 at 19:00.</li> </ul>	<p>Wivenhoe Dam level rises from 68.58 to 68.97 over the 5 hour period.</p> <p>Somerset Dam level rises from 100.47 to 101.43 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W2</b> <b>(Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>With lake levels continuing to rise at both dams the decision was made to transition the primary consideration from minimizing disruption to downstream rural life to protecting urban areas from inundation. However during this period, consideration remained on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> <li>Decision is made to transition to Strategy W3 at 19:00.</li> </ul>
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<p>Commenced 09 Jan 2011 19:00</p> <p>Completed 10 Jan 2011 01:00</p>	<p><b>Transition from Strategy W2 to Strategy W3</b></p> <ul style="list-style-type: none"> <li>• Council and Agency notifications commenced at 7:00pm.</li> <li>• Fernvale Bridge closed by police at around 01:00 on 10 January 2011 and once this was confirmed a directive was issued to increase releases from Wivenhoe Dam.</li> <li>• No change to gate settings over this period. Wivenhoe discharge is 1436 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level rises from 68.97 to 69.97 over the 6 hour period.</p> <p>Somerset Dam level rises from 101.43 to 102.51 over the 6 hour period.</p>	<ul style="list-style-type: none"> <li>• Wivenhoe Lake level forecast to peak at .</li> <li>• Somerset Lake level forecast to peak at .</li> <li>• Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>• Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>• Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W3 (Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>• Before releases are increased towards the limit of non-damaging floods at Moggill, Councils and other impacted agencies must be notified and the Mt Crosby Weir Bridge and Fernvale Bridge must be closed.</li> </ul>
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<p>Commenced 10 Jan 2011 01:00</p> <p>Completed 10 Jan 2011 09:00</p>	<p><b>Strategy W3</b> <b>Wivenhoe Directives #8 to #10.</b></p> <ul style="list-style-type: none"> <li>Gates opened continuously at Wivenhoe Dam for 8 hours in accordance with the standard gate opening sequence at a rate of 0.5 metres of opening per hour.</li> <li>Wivenhoe discharge is increased from 1484 cumecs to 2030 cumecs. All rural bridges below the dam are flooded.</li> <li>Further gate openings at Wivenhoe Dam were paused at 09:00 in an attempt to allow the Lockyer and Bremer peaks to pass Brisbane and to restrict Brisbane River flows at Moggill to 3500 cumecs. This was done following advice from the Brisbane City Council that, 3500 cumecs at Moggill will submerge 322 properties and impact on 7000 properties.</li> <li>No gate movements occurred at Somerset Dam during this period, with dam levels plotting under the Wivenhoe/Somerset Operations Target Line. This meant that the only gate movements allowable at Somerset under Strategy S2 would be openings and this was not done to limit further rises in Wivenhoe.</li> </ul>	<p>Wivenhoe Dam level rises from 69.97 to 71.56 over the 8 hour period.</p> <p>Somerset Dam level rises from 101.43 to 102.51 over the 8 hour period.</p>	<ul style="list-style-type: none"> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W3</b> <b>(Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>Due to advice received from the Brisbane City Council that the limit of non-damaging floods is a flow of 3500 cumecs at Moggill, an attempt is made to remain within this flow.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> </ul>
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<p>Commenced 10 Jan 2011 09:00</p> <p>Completed 10 Jan 2011 15:00</p>	<p><b>Strategy W3</b></p> <ul style="list-style-type: none"> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 2099 cumecs. All rural bridges below the dam are flooded.</li> <li>At 15:00 the attempt to restrict Brisbane River flows at Moggill to 3500 cumecs was abandoned due to the rainfall being experienced in the dam catchments. A new target of 4000 cumecs was set in accordance with the Manual.</li> <li>No gate movements occurred at Somerset Dam during this period, with dam levels plotting under the Wivenhoe/Somerset Operations Target Line. This meant that the only gate movements allowable at Somerset under Strategy S2 would be openings and this was not done to limit further rises in Wivenhoe.</li> </ul>	<p>Wivenhoe Dam level rises from 71.56 to 72.53 over the 6 hour period.</p> <p>Somerset Dam level rises from 102.51 to 103.43 over the 6 hour period.</p>	<ul style="list-style-type: none"> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W3 (Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>A decision is made at 15:00 to attempt to remain within a target flow of 4000 cumecs at Moggill.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> </ul>
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<p>Commenced 10 Jan 2011 15:00</p> <p>Completed 10 Jan 2011 20:00</p>	<p><b>Strategy W3</b> <b>Wivenhoe Directive #11.</b></p> <ul style="list-style-type: none"> <li>Gates opened continuously at Wivenhoe Dam for 5 hours in accordance with the standard gate opening sequence at a rate of 1.0 metres of opening per hour.</li> <li>Wivenhoe discharge is increased from 2099 cumecs to 2707 cumecs. All rural bridges below the dam are flooded.</li> <li>Further gate openings at Wivenhoe Dam were paused at 20:00 in an attempt to allow the Lockyer and Bremer peaks to pass Brisbane and to restrict Brisbane River flows at Moggill to 4000 cumecs.</li> <li>No gate movements occurred at Somerset Dam during this period, with dam levels plotting under the Wivenhoe/Somerset Operations Target Line. This meant that the only gate movements allowable at Somerset under Strategy S2 would be openings and this was not done to limit further rises in Wivenhoe.</li> </ul>	<p>Wivenhoe Dam level rises from 72.53 to 73.06 over the 5 hour period.</p> <p>Somerset Dam level rises from 103.43 to 103.45 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W3</b> <b>(Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>A decision is made at 15:00 to attempt to remain within a target flow of 4000 cumecs at Moggill.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> </ul>
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<p>Commenced 10 Jan 2011 20:00</p> <p>Completed 11 Jan 2011 04:00</p>	<p><b>Strategy W3</b></p> <ul style="list-style-type: none"> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 2752 cumecs. All rural bridges below the dam are flooded.</li> <li>Gate openings at Wivenhoe Dam were paused at 20:00 in an attempt to allow the Lockyer and Bremer peaks to pass Brisbane and to restrict Brisbane River flows at Moggill to 4000 cumecs.</li> <li>During this period the plotted dam levels drifted just above the Wivenhoe/Somerset Operations Target Line. This lead to a decision at 04:00 to commence closing down releases from Somerset Dam to limit further rises in Wivenhoe. This decision is consistent with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 73.06 to 73.40 over the 8 hour period.</p> <p>Somerset Dam level fell from 103.45 to 103.23 over the 8 hour period.</p>	<ul style="list-style-type: none"> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W3 (Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>The target was to maintain a flow of 4000 cumecs at Moggill.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> <li>Model results show that a peak level in the dam close to 74.0 remains possible.</li> </ul>
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<p>Commenced 11 Jan 2011 04:00</p> <p>Completed 11 Jan 2011 10:00</p>	<p><b>Transition from Strategy W3 to Strategy W4</b> <b>Wivenhoe Directive #12.</b> <b>Somerset Directives #6 to #7.</b></p> <ul style="list-style-type: none"> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 2752 cumecs. All rural bridges below the dam are flooded.</li> <li>Further gate openings at Wivenhoe Dam were paused at 20:00 in an attempt to allow the Lockyer and Bremer peaks to pass Brisbane and to restrict Brisbane River flows at Moggill to 4000 cumecs.</li> <li>During this period the plotted dam levels drifted just above the Wivenhoe/Somerset Operations Target Line. This lead to a decision at 04:00 to commence closing down releases from Somerset Dam to limit further rises in Wivenhoe. This decision is consistent with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 73.06 to 73.40 over the 8 hour period.</p> <p>Somerset Dam level fell from 103.45 to 103.23 over the 8 hour period.</p>	<ul style="list-style-type: none"> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W3</b> <b>(Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>The target was to maintain a flow of 4000 cumecs at Moggill.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> <li>Model results show that restricting the peak level in the dam close to 74.0 is no longer possible due to the high intensity rainfall experienced in the last 3 hours.</li> <li>At 10:00 a decision is made to transition to Strategy W4.</li> </ul>
<p>Commenced 11 Jan 2011 10:00</p> <p>Completed 11 Jan 2011 11:00</p>	<p><b>Strategy W4</b></p>			
<p>Go hour by hour from now on.</p>				


Brooke Foxover

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Sent: Tuesday, 25 January 2011 10:29 AM  
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DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODL... RESULTS	STRATEGY
<p>Commenced 06 Jan 2011 07:42</p> <p>Completed 07 Jan 2011 02:00</p>	<p><b>Strategy W1A</b></p> <ul style="list-style-type: none"> <li>Event Mobilisation, currently using Strategy W1A. 24/7 staffing of the Flood Operations Centre and dams to continue until official de-mobilisation announced.</li> </ul>	<p>Wivenhoe Dam level rises from 67.31 to 67.52 over the 18 hour period.</p> <p>Somerset Dam level rises from 99.34 to 99.55 over the 18 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Lake level not expected to reach 67.50 (Strategy W1B) until 07 January 2011.</li> <li>Peak inflows into the Brisbane River from Lockyer are estimated to be in the order of 400 cumecs, but these flows will not inundate Colleges Crossing until ??)</li> <li>Wivenhoe Lake level forecast to peak at 68.3.</li> <li>Somerset Lake level forecast to peak at 99.8.</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W1A</b> <b>(Lake Level greater than 67.25, maximum release 110 cumecs)</b></p> <ul style="list-style-type: none"> <li>Endeavour to maintain College's Crossing trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 175 cumecs.</li> <li>Water held in Wivenhoe in an attempt to maintain College's Crossing trafficable in accordance with Strategy W1A.</li> </ul>

<p>Commenced 07 Jan 2011 02:00</p> <p>Completed 07 Jan 2011 07:00</p>	<p><b>Strategy W1B</b></p> <ul style="list-style-type: none"> <li>Transition from Strategy W1A to W1B.</li> </ul>	<p>Wivenhoe Dam level rises from 67.52 to 67.68 over the 5 hour period.</p> <p>Somerset Dam level rises from 99.55 to 99.60 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Lake level not expected to reach 67.75 (Strategy W1C) for at least six hours.</li> <li>Peak inflows into the Brisbane River from Lockyer are estimated to be in the order of 500 cumecs, but these flows may not be sufficient to inundate Burtons Bridge.</li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W1B</b> <b>(Lake Level greater than 67.50, maximum release 110 cumecs)</b></p> <ul style="list-style-type: none"> <li>Endeavour to maintain Burtons Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 430 cumecs.</li> <li>Water held in Wivenhoe in an attempt to maintain Burtons Bridge trafficable in accordance with Strategy W1B.</li> </ul>
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<p>Commenced 07 Jan 2011 07:00</p> <p>Completed 07 Jan 2011 09:00</p>	<p><b>Strategy W1C</b></p> <ul style="list-style-type: none"> <li>Transition from Strategy W1B to W1C.</li> </ul>	<p>Wivenhoe Dam level rises from 67.68 to 67.75 over the 2 hour period.</p> <p>Somerset Dam level rises from 99.60 to 99.65 over the 2 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Peak inflows into the Brisbane River from Lockyer are estimated to be in the order of 400 cumecs, but these flows may not be sufficient to inundate Burtons Bridge or Kholo Bridge.</li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W1C</b> <b>(Lake Level greater than 67.75, maximum release 500 cumecs)</b></p> <ul style="list-style-type: none"> <li>Endeavour to maintain Kholo Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 550 cumecs.</li> <li>Water held in Wivenhoe in an attempt to maintain Kholo Bridge trafficable in accordance with Strategy W1C.</li> </ul>
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<p>Commenced 07 Jan 2011 09:00</p> <p>Completed 07 Jan 2011 15:00</p>	<p><b>Strategy W1E</b></p> <ul style="list-style-type: none"> <li>Transition from Strategy W1C to W1E. Based on rainfall on the ground, it becomes apparent that all bridges apart from the Mt Crosby Weir Bridge and Fernvale Bridge will be flooded by Lockyer Creek flows alone.</li> <li>All impacted Councils are notified of situation and that releases are to be commenced from Wivenhoe Dam. Releases were delayed until 15:00 to allow bridges to be closed and arrangements to be made to cater for rural community isolation. The impacted rural communities had been isolated over the Christmas period and time was needed for suitable arrangements to be made to allow these communities to be prepared for another extended period of isolation.</li> <li>Rainfall on the ground and rainfall forecasts did not suggest that the event was likely to approach the use of Strategy W4.</li> </ul>	<p>Wivenhoe Dam level rises from 67.75 to 68.03 over the 6 hour period.</p> <p>Somerset Dam level rises from 99.65 to 99.94 over the 6 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Significant inflows expected from Lockyer Creek into the Brisbane River and these will be sufficient to inundate all bridges downstream of the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge.</li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W1E</b> <b>(Lake Level greater than 68.25, maximum release 1900 cumecs)</b></p> <ul style="list-style-type: none"> <li>Endeavour to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> <li>Releases from Wivenhoe Dam managed in an attempt to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable in accordance with Strategy W1E.</li> </ul>
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<p>Commenced 07 Jan 2011 15:00</p> <p>Completed 08 Jan 2011 14:00</p>	<p><b>Transition from Strategy W1E to Strategy W2 Wivenhoe Directives #1 to #4. Somerset Directives #1 to #3.</b></p> <ul style="list-style-type: none"> <li>Gates opened continuously at Wivenhoe Dam for 23 hours in accordance with the standard gate opening sequence at a rate of 0.5 metres of opening per hour.</li> <li>At 14:00 on 08 January 2011, Wivenhoe discharge is 1271 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> <li>Due to rainfall on the ground, it was apparent that the Somerset Dam level would significantly exceed 100.45. Accordingly two sluice gates were opened during this period to allow dam levels to move towards the Wivenhoe/Somerset Operations Target Line in accordance with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 68.03 to 68.61 over the 23 hour period.</p> <p>Somerset Dam level rises from 99.94 to 100.44 over the 23 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Significant inflows expected from Lockyer Creek into the Brisbane River and these will be sufficient to inundate all bridges downstream of the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge.</li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W2 (Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>Consideration initially on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> </ul>
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<p>Commenced 08 Jan 2011 14:00</p> <p>Completed 09 Jan 2011 01:00</p>	<p><b>Strategy W2</b></p> <ul style="list-style-type: none"> <li>Releases maintained from both dams to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>No change to gate settings over this period. Wivenhoe discharge is 1271 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level rises very slightly from 68.61 to 68.63 over the 13 hour period.</p> <p>Somerset Dam level falls from 100.44 to 100.32 over the 13 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W2</b> <b>(Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>With lake levels rising slightly (Wivenhoe) and falling (Somerset) consideration remains on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> </ul>
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<p>Commenced 09 Jan 2011 01:00</p> <p>Completed 09 Jan 2011 08:00</p>	<p><b>Strategy W2</b> <b>Wivenhoe Directives #5 to #7.</b></p> <ul style="list-style-type: none"> <li>Releases increased marginally from Wivenhoe Dam to account for the passing of the Lockyer peak while maintaining Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>Wivenhoe discharge is increased from 1271 cumecs to 1367 cumecs.</li> <li>No change to Somerset Dam gate settings over this period.</li> <li>All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level falls from 68.63 to 68.57 over the 7 hour period.</p> <p>Somerset Dam level falls from 100.32 to 100.28 over the 7 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W2</b> <b>(Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>With lake levels falling at both dams consideration remains on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> </ul>
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<p>Commenced 09 Jan 2011 08:00</p> <p>Completed 09 Jan 2011 14:00</p>	<p><b>Strategy W2 Wivenhoe Directives #7. Somerset Directives #4 to #5.</b></p> <ul style="list-style-type: none"> <li>Releases increased marginally from Wivenhoe Dam to account for the passing of the Lockyer peak while maintaining Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>Wivenhoe discharge is increased from 1367 cumecs to 1420 cumecs.</li> <li>Somerset Dam sluice gates opened progressively over this period to allow dam levels to move towards the Wivenhoe/Somerset Operations Target Line in accordance with Strategy S2.</li> <li>All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level rises very slightly from 68.57 to 68.58 over the 6 hour period.</p> <p>Somerset Dam level rises from 100.28 to 100.47 over the 4 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W2 (Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>With lake levels rising at both dams consideration was given to transitioning the primary consideration from minimizing disruption to downstream rural life to protecting urban areas from inundation. However during this period, consideration remained on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> <li>Model results showing rapid rises in water level in Somerset Dam provide justification to consider transitioning to Strategy W3 within the next 6 hours.</li> </ul>
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<p>Commenced 09 Jan 2011 14:00</p> <p>Completed 09 Jan 2011 19:00</p>	<p><b>Strategy W2</b></p> <ul style="list-style-type: none"> <li>Releases maintained from both dams to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>No change to gate settings over this period. Wivenhoe discharge is 1436 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> <li>Due to rainfall on the ground and the rapid lake level rises, a decision is made to transition to Strategy W3 at 19:00.</li> </ul>	<p>Wivenhoe Dam level rises from 68.58 to 68.97 over the 5 hour period.</p> <p>Somerset Dam level rises from 100.47 to 101.43 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W2</b> <b>(Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>With lake levels continuing to rise at both dams the decision was made to transition the primary consideration from minimizing disruption to downstream rural life to protecting urban areas from inundation. However during this period, consideration remained on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> <li>Decision is made to transition to Strategy W3 at 19:00.</li> </ul>
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	<b>Transition from Strategy W2 to Strategy W3</b>			<b>Strategy W3 (Lake Level greater than 68.50, maximum release 4000 cumecs)</b>
Commenced 09 Jan 2011 19:00	<ul style="list-style-type: none"> <li>Council and Agency notifications commenced at 7:00pm.</li> </ul>	Wivenhoe Dam level rises from 68.97 to 69.97 over the 6 hour period.	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Before releases are increased towards the limit of non-damaging floods at Moggill, Councils and other impacted agencies must be notified and the Mt Crosby Weir Bridge and Fernvale Bridge must be closed.</li> </ul>
Completed 10 Jan 2011 01:00	<ul style="list-style-type: none"> <li>Fernvale Bridge closed by police at around 01:00 on 10 January 2011 and once this was confirmed a directive was issued to increase releases from Wivenhoe Dam.</li> <li>No change to gate settings over this period. Wivenhoe discharge is 1436 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	Somerset Dam level rises from 101.43 to 102.51 over the 6 hour period.	<ul style="list-style-type: none"> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	

<p>Commenced 10 Jan 2011 01:00</p> <p>Completed 10 Jan 2011 09:00</p>	<p><b>Strategy W3 Wivenhoe Directives #8 to #10.</b></p> <ul style="list-style-type: none"> <li>Gates opened continuously at Wivenhoe Dam for 8 hours in accordance with the standard gate opening sequence at a rate of 0.5 metres of opening per hour.</li> <li>Wivenhoe discharge is increased from 1484 cumecs to 2030 cumecs. All rural bridges below the dam are flooded.</li> <li>Further gate openings at Wivenhoe Dam were paused at 09:00 in an attempt to allow the Lockyer and Bremer peaks to pass Brisbane and to restrict Brisbane River flows at Moggill to 3500 cumecs. This was done following advice from the Brisbane City Council that , 3500 cumecs at Moggill will submerge 322 properties and impact on 7000 properties.</li> <li>No gate movements occurred at Somerset Dam during this period, with dam levels plotting under the Wivenhoe/Somerset Operations Target Line. This meant that the only gate movements allowable at Somerset under Strategy S2 would be openings and this was not done to limit further rises in Wivenhoe.</li> </ul>	<p>Wivenhoe Dam level rises from 69.97 to 71.56 over the 8 hour period.</p> <p>Somerset Dam level rises from 101.43 to 102.51 over the 8 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W3 (Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>Due to advice received from the Brisbane City Council that the limit of non-damaging floods is a flow of 3500 cumecs at Moggill, an attempt is made to remain within this flow.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> </ul>
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<p>Commenced 10 Jan 2011 09:00</p> <p>Completed 10 Jan 2011 15:00</p>	<p><b>Strategy W3</b></p> <ul style="list-style-type: none"> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 2099 cumecs. All rural bridges below the dam are flooded.</li> <li>At 15:00 the attempt to restrict Brisbane River flows at Moggill to 3500 cumecs was abandoned due to the rainfall being experienced in the dam catchments. A new target of 4000 cumecs was set in accordance with the Manual.</li> <li>No gate movements occurred at Somerset Dam during this period, with dam levels plotting under the Wivenhoe/Somerset Operations Target Line. This meant that the only gate movements allowable at Somerset under Strategy S2 would be openings and this was not done to limit further rises in Wivenhoe.</li> </ul>	<p>Wivenhoe Dam level rises from 71.56 to 72.53 over the 6 hour period.</p> <p>Somerset Dam level rises from 102.51 to 103.43 over the 6 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W3</b> <b>(Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>A decision is made at 15:00 to attempt to remain within a target flow of 4000 cumecs at Moggill.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> </ul>
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<p>Commenced 10 Jan 2011 15:00</p> <p>Completed 10 Jan 2011 20:00</p>	<p><b>Strategy W3 Wivenhoe Directive #11.</b></p> <ul style="list-style-type: none"> <li>Gates opened continuously at Wivenhoe Dam for 5 hours in accordance with the standard gate opening sequence at a rate of 1.0 metres of opening per hour.</li> <li>Wivenhoe discharge is increased from 2099 cumecs to 2707 cumecs. All rural bridges below the dam are flooded.</li> <li>Further gate openings at Wivenhoe Dam were paused at 20:00 in an attempt to allow the Lockyer and Bremer peaks to pass Brisbane and to restrict Brisbane River flows at Moggill to 4000 cumecs.</li> <li>No gate movements occurred at Somerset Dam during this period, with dam levels plotting under the Wivenhoe/Somerset Operations Target Line. This meant that the only gate movements allowable at Somerset under Strategy S2 would be openings and this was not done to limit further rises in Wivenhoe.</li> </ul>	<p>Wivenhoe Dam level rises from 72.53 to 73.06 over the 5 hour period.</p> <p>Somerset Dam level rises from 103.43 to 103.45 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W3 (Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>A decision is made at 15:00 to attempt to remain within a target flow of 4000 cumecs at Moggill.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> </ul>
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<p>Commenced 10 Jan 2011 20:00</p> <p>Completed 11 Jan 2011 04:00</p>	<p><b>Strategy W3</b></p> <ul style="list-style-type: none"> <li>• Forecasts indicate that areas of intense rainfall are likely to shift south and possibly miss the dam catchments.</li> <li>• No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 2752 cumecs. All rural bridges below the dam are flooded.</li> <li>• Gate openings at Wivenhoe Dam were paused at 20:00 in an attempt to allow the initial Lockyer and Bremer peaks to pass Brisbane and to restrict Brisbane River flows at Moggill to 4000 cumecs.</li> <li>• Initial advice on a flash flood originating in Lockyer headwaters received at 20:00 and considerations undertaken during this period to develop a strategy to manage these potential flows.</li> <li>• During this period the plotted dam levels drifted just above the Wivenhoe/Somerset Operations Target Line. This lead to a decision at 04:00 to commence closing down releases from Somerset Dam to limit further rises in Wivenhoe. This decision is consistent with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 73.06 to 73.40 over the 8 hour period.</p> <p>Somerset Dam level fell from 103.45 to 103.23 over the 8 hour period.</p>	<ul style="list-style-type: none"> <li>• Forecasts indicate that areas of intense rainfall are likely to shift south and possibly miss the dam catchments.</li> <li>• Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>○ Wivenhoe ??mm;</li> <li>○ Somerset ??mm;</li> <li>○ Lockyer ??mm;</li> <li>○ Bremer ??mm.</li> </ul> </li> <li>• Wivenhoe Lake level forecast to peak at .</li> <li>• Somerset Lake level forecast to peak at .</li> <li>• Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>• Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>• Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W3</b> <b>(Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>• The target was to maintain a flow of 4000 cumecs at Moggill.</li> <li>• This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> <li>• Model results show that a peak level in the dam close to 74.0 remains possible.</li> </ul>
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<p>Commenced 11 Jan 2011 04:00</p> <p>Completed 11 Jan 2011 08:00</p>	<p><b>Transition from Strategy W3 to Strategy W4</b> <b>Wivenhoe Directive #12.</b> <b>Somerset Directive #6.</b></p> <ul style="list-style-type: none"> <li>The forecast indicating that the intense rainfall could shift south and miss the dam catchments did not eventuate.</li> <li>Extreme intense rainfall is experienced in relatively small areas of the Wivenhoe catchment during this period. (Much more words here). If the centroid of this rainfall was located 50 kms east or south, it is likely that there would not have been a need to transition to Strategy W4.</li> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 2832 cumecs. All rural bridges below the dam are flooded.</li> <li>During this period sluice gate openings at Somerset Dam are reduced from 5 to 2 as the plotted dam levels had drifted just above the Wivenhoe/Somerset Operations Target Line. This decision is consistent with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 73.40 to 73.70 over the 4 hour period.</p> <p>Somerset Dam level rises from 103.23 to 103.46 over the 4 hour period.</p>	<ul style="list-style-type: none"> <li>The forecast indicating that the intense rainfall could shift south and miss the dam catchments did not eventuate.</li> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W3</b> <b>(Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>The target was to maintain a flow of 4000 cumecs at Moggill.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> <li>Model results show that restricting the peak level in the dam close to 74.0 is no longer possible due to the high intensity rainfall experienced over this period.</li> <li>At 08:00 a decision is made to transition to Strategy W4 and the Dam Safety Regulator (DERM) is advised of this decision.</li> </ul>
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<p>Commenced 11 Jan 2011 08:00</p> <p>Completed 11 Jan 2011 13:00</p>	<p><b>Strategy W4</b> <b>Wivenhoe Directive #12 to #14.</b> <b>Somerset Directive #7.</b></p>	<p>Wivenhoe Dam level rises from 73.70 to 74.39 over the 5 hour period.</p> <p>Somerset Dam level rises from 103.46 to 103.91 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>• Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>○ Wivenhoe ??mm;</li> <li>○ Somerset ??mm;</li> <li>○ Lockyer ??mm;</li> <li>○ Bremer ??mm.</li> </ul> </li> <li>• Wivenhoe Lake level forecast to peak at .</li> <li>• Somerset Lake level forecast to peak at .</li> <li>• Once Strategy W4 is activated, the peak flows at Lowood and Moggill are no longer relevant to flood release considerations at Wivenhoe Dam.</li> <li>• Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W4</b> <b>(Lake Level predicted to exceed 74.00, no maximum release rate)</b></p> <ul style="list-style-type: none"> <li>• The target was to protect the structural safety of the dam.</li> <li>• The Manual requires actions under Strategy 4 to be that Wivenhoe gate openings are to occur at the minimum intervals and sequences until the storage level of Wivenhoe Dam begins to fall.</li> <li>• The dam level continued to rise at 01:00. A dam operator was relaying Wivenhoe Dam gauge board readings to the Flood Operations Centre every 30 minutes. All four duty engineers were present in the Flood Operations Centre and decisions were being made on a half hourly basis once the gauge board readings were received.</li> </ul>
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<p>Commenced 11 Jan 2011 13:00</p> <p>Completed 11 Jan 2011 18:00</p>	<p><b>Strategy W4</b> <b>Wivenhoe Directive #12 to #14.</b></p> <ul style="list-style-type: none"> <li>• Extreme lake level rises in Wivenhoe Dam continue during this period and a severe weather warning for intense rainfall remains current.</li> <li>• Gates opened continuously at Wivenhoe Dam for 5 hours in accordance with the standard gate opening sequence at an average rate of 2.0 metres of opening per hour.</li> <li>• Wivenhoe discharge is increased from 3992 cumecs to 7464 cumecs. All rural bridges below the dam are flooded. Damage to urban areas in Brisbane cannot be avoided.</li> <li>• No releases are made from Somerset Dam in accordance with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 74.39 to 74.97 over the 5 hour period.</p> <p>Somerset Dam level rises from 103.91 to 104.45 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>• Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>○ Wivenhoe ??mm;</li> <li>○ Somerset ??mm;</li> <li>○ Lockyer ??mm;</li> <li>○ Bremer ??mm.</li> </ul> </li> <li>• Wivenhoe Lake level forecast to peak at .</li> <li>• Somerset Lake level forecast to peak at .</li> <li>• Once Strategy W4 is activated, the peak flows at Lowood and Moggill are no longer relevant to flood release considerations at Wivenhoe Dam.</li> <li>• Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W4</b> <b>(Lake Level predicted to exceed 74.00, no maximum release rate)</b></p> <ul style="list-style-type: none"> <li>• The target was to protect the structural safety of the dam.</li> <li>• The Manual requires actions under Strategy 4 to be that Wivenhoe gate openings are to occur at the minimum intervals and sequences until the storage level of Wivenhoe Dam begins to fall.</li> <li>• The dam level continued to rise at during this period. A dam operator was relaying Wivenhoe Dam gauge board readings to the Flood Operations Centre every 30 minutes. All four duty engineers were present in the Flood Operations Centre and decisions were being made on a half hourly basis once the gauge board readings were received.</li> <li>• The water level in Wivenhoe Dam peaked at 18:00 on 11 January 2011.</li> </ul>
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<p>Commenced 11 Jan 2011 18:00</p> <p>Completed 11 Jan 2011 21:00</p>	<p><b>Strategy W4</b> <b>Wivenhoe Directive #15 to #24.</b></p> <ul style="list-style-type: none"> <li>The lake level in Wivenhoe dam stabilizes and then falls slightly at 21:00. A severe weather warning for intense rainfall remains current, but it appears from the BOM radar that the rainfall may have dissipated. On this basis a decision to commence closing down the gates to reduce urban flood impacts is taken at 21:00. This decision is potentially in contravention with the minimum gate opening settings required under Strategy W4.</li> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 7464 cumecs. All rural bridges below the dam are flooded. Damage to urban areas in Brisbane cannot be avoided.</li> <li>No releases are made from Somerset Dam in accordance with Strategy S2.</li> </ul>	<p>During this 3 hours period, the lake level in Wivenhoe Dam stabilizes at 74.97 and then falls slightly to 74.95 at 21:00.</p> <p>Somerset Dam level rises from 104.45 to 104.78 over the 3 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Once Strategy W4 is activated, the peak flows at Lowood and Moggill are no longer relevant to flood release considerations at Wivenhoe Dam.</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W4</b> <b>(Lake Level predicted to exceed 74.00, no maximum release rate)</b></p> <ul style="list-style-type: none"> <li>The target was to protect the structural safety of the dam.</li> <li>The Manual requires actions under Strategy 4 to be that Wivenhoe gate openings are to occur at the minimum intervals and sequences until the storage level of Wivenhoe Dam begins to fall.</li> <li>The dam level stabilized during this period and then fell slightly at 21:00. A dam operator was relaying Wivenhoe Dam gauge board readings to the Flood Operations Centre every 30 minutes. All four duty engineers were present in the Flood Operations Centre and decisions were being made on a half hourly basis once the gauge board readings were received.</li> <li>The water level in Wivenhoe Dam peaked at 18:00 on 11 January 2011.</li> </ul>

**Brooke Foxover**

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(223 KB)



DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODE... RESULTS	STRATEGY
<p>Commenced Thursday 06 Jan 2011 07:42</p> <p>Completed Friday 07 Jan 2011 02:00</p>	<p><b>Strategy W1A</b></p> <ul style="list-style-type: none"> <li>Event Mobilisation, currently using Strategy W1A. 24/7 staffing of the Flood Operations Centre and dams to continue until official de-mobilisation announced.</li> </ul>	<p>Wivenhoe Dam level rises from 67.31 to 67.52 over the 18 hour period.</p> <p>Somerset Dam level rises from 99.34 to 99.55 over the 18 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Lake level not expected to reach 67.50 (Strategy W1B) until 07 January 2011.</li> <li>Peak inflows into the Brisbane River from Lockyer are estimated to be in the order of 400 cumecs, but these flows will not inundate Colleges Crossing until ??)</li> <li>Wivenhoe Lake level forecast to peak at 68.3.</li> <li>Somerset Lake level forecast to peak at 99.8.</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W1A</b> <b>(Lake Level greater than 67.25, maximum release 110 cumecs)</b></p> <ul style="list-style-type: none"> <li>Endeavour to maintain College's Crossing trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 175 cumecs.</li> <li>Water held in Wivenhoe in an attempt to maintain College's Crossing trafficable in accordance with Strategy W1A.</li> </ul>

<p>Commenced Friday 07 Jan 2011 02:00</p> <p>Completed Friday 07 Jan 2011 07:00</p>	<p><b>Strategy W1B</b></p> <ul style="list-style-type: none"> <li>Transition from Strategy W1A to W1B.</li> </ul>	<p>Wivenhoe Dam level rises from 67.52 to 67.68 over the 5 hour period.</p> <p>Somerset Dam level rises from 99.55 to 99.60 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Lake level not expected to reach 67.75 (Strategy W1C) for at least six hours.</li> <li>Peak inflows into the Brisbane River from Lockyer are estimated to be in the order of 500 cumecs, but these flows may not be sufficient to inundate Burtons Bridge.</li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W1B</b> <b>(Lake Level greater than 67.50, maximum release 110 cumecs)</b></p> <ul style="list-style-type: none"> <li>Endeavour to maintain Burtons Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 430 cumecs.</li> <li>Water held in Wivenhoe in an attempt to maintain Burtons Bridge trafficable in accordance with Strategy W1B.</li> </ul>
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<p>Commenced Friday 07 Jan 2011 07:00</p> <p>Completed Friday 07 Jan 2011 09:00</p>	<p><b>Strategy W1C</b></p> <ul style="list-style-type: none"> <li>• Transition from Strategy W1B to W1C.</li> </ul>	<p>Wivenhoe Dam level rises from 67.68 to 67.75 over the 2 hour period.</p> <p>Somerset Dam level rises from 99.60 to 99.65 over the 2 hour period.</p>	<ul style="list-style-type: none"> <li>• Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>○ Wivenhoe ??mm;</li> <li>○ Somerset ??mm;</li> <li>○ Lockyer ??mm;</li> <li>○ Bremer ??mm.</li> </ul> </li> <li>• Peak inflows into the Brisbane River from Lockyer are estimated to be in the order of 400 cumecs, but these flows may not be sufficient to inundate Burtons Bridge or Kholo Bridge.</li> <li>• Wivenhoe Lake level forecast to peak at .</li> <li>• Somerset Lake level forecast to peak at .</li> <li>• Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>• Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>• Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W1C</b> <b>(Lake Level greater than 67.75, maximum release 500 cumecs)</b></p> <ul style="list-style-type: none"> <li>• Endeavour to maintain Kholo Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 550 cumecs.</li> <li>• Water held in Wivenhoe in an attempt to maintain Kholo Bridge trafficable in accordance with Strategy W1C.</li> </ul>
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<p>Commenced Friday 07 Jan 2011 09:00</p> <p>Completed Friday 07 Jan 2011 15:00</p>	<p><b>Strategy W1E</b></p> <ul style="list-style-type: none"> <li>Transition from Strategy W1C to W1E. Based on rainfall on the ground, it becomes apparent that all bridges apart from the Mt Crosby Weir Bridge and Fernvale Bridge will be flooded by Lockyer Creek flows alone.</li> <li>All impacted Councils are notified of situation and that releases are to be commenced from Wivenhoe Dam. Releases were delayed until 15:00 to allow bridges to be closed and arrangements to be made to cater for rural community isolation. The impacted rural communities had been isolated over the Christmas period and time was needed for suitable arrangements to be made to allow these communities to be prepared for another extended period of isolation.</li> <li>Rainfall on the ground and rainfall forecasts did not suggest that the event was likely to approach the use of Strategy W4.</li> </ul>	<p>Wivenhoe Dam level rises from 67.75 to 68.03 over the 6 hour period.</p> <p>Somerset Dam level rises from 99.65 to 99.94 over the 6 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Significant inflows expected from Lockyer Creek into the Brisbane River and these will be sufficient to inundate all bridges downstream of the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge.</li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W1E</b> <b>(Lake Level greater than 68.25, maximum release 1900 cumecs)</b></p> <ul style="list-style-type: none"> <li>Endeavour to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> <li>Releases from Wivenhoe Dam managed in an attempt to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable in accordance with Strategy W1E.</li> </ul>
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<p>Commenced Friday 07 Jan 2011 15:00</p> <p>Completed Saturday 08 Jan 2011 14:00</p>	<p><b>Transition from Strategy W1E to Strategy W2</b> <b>Wivenhoe Directives #1 to #4.</b> <b>Somerset Directives #1 to #3.</b></p> <ul style="list-style-type: none"> <li>Gates opened continuously at Wivenhoe Dam for 23 hours in accordance with the standard gate opening sequence at a rate of 0.5 metres of opening per hour.</li> <li>At 14:00 on 08 January 2011, Wivenhoe discharge is 1271 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> <li>Due to rainfall on the ground, it was apparent that the Somerset Dam level would significantly exceed 100.45. Accordingly two sluice gates were opened during this period to allow dam levels to move towards the Wivenhoe/Somerset Operations Target Line in accordance with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 68.03 to 68.61 over the 23 hour period.</p> <p>Somerset Dam level rises from 99.94 to 100.44 over the 23 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Significant inflows expected from Lockyer Creek into the Brisbane River and these will be sufficient to inundate all bridges downstream of the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge.</li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W2</b> <b>(Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>Consideration initially on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> </ul>
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	<b>Strategy W2</b>			<b>Strategy W2 (Lake Level greater than 68.50, maximum release 3500 cumecs)</b>
Commenced Saturday 08 Jan 2011 14:00	<ul style="list-style-type: none"> <li>Releases maintained from both dams to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> </ul>	Wivenhoe Dam level rises very slightly from 68.61 to 68.63 over the 13 hour period.	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>With lake levels rising slightly (Wivenhoe) and falling (Somerset) consideration remains on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> </ul>
Completed Sunday 09 Jan 2011 01:00	<ul style="list-style-type: none"> <li>No change to gate settings over this period. Wivenhoe discharge is 1271 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	Somerset Dam level falls from 100.44 to 100.32 over the 13 hour period.	<ul style="list-style-type: none"> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	

<p>Commenced Sunday 09 Jan 2011 01:00</p> <p>Completed Sunday 09 Jan 2011 08:00</p>	<p><b>Strategy W2 Wivenhoe Directives #5 to #7.</b></p> <ul style="list-style-type: none"> <li>Releases increased marginally from Wivenhoe Dam to account for the passing of the Lockyer peak while maintaining Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>Wivenhoe discharge is increased from 1271 cumecs to 1367 cumecs.</li> <li>No change to Somerset Dam gate settings over this period.</li> <li>All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level falls from 68.63 to 68.57 over the 7 hour period.</p> <p>Somerset Dam level falls from 100.32 to 100.28 over the 7 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W2 (Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>With lake levels falling at both dams consideration remains on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> </ul>
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<p>Commenced Sunday 09 Jan 2011 08:00</p> <p>Completed Sunday 09 Jan 2011 14:00</p>	<p><b>Strategy W2</b> <b>Wivenhoe Directives #7.</b> <b>Somerset Directives #4 to #5.</b></p> <ul style="list-style-type: none"> <li>Releases increased marginally from Wivenhoe Dam to account for the passing of the Lockyer peak while maintaining Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>Wivenhoe discharge is increased from 1367 cumecs to 1420 cumecs.</li> <li>Somerset Dam sluice gates opened progressively over this period to allow dam levels to move towards the Wivenhoe/Somerset Operations Target Line in accordance with Strategy S2.</li> <li>All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level rises very slightly from 68.57 to 68.58 over the 6 hour period.</p> <p>Somerset Dam level rises from 100.28 to 100.47 over the 4 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W2</b> <b>(Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>With lake levels rising at both dams consideration was given to transitioning the primary consideration from minimizing disruption to downstream rural life to protecting urban areas from inundation. However during this period, consideration remained on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> <li>Model results showing rapid rises in water level in Somerset Dam provide justification to consider transitioning to Strategy W3 within the next 6 hours.</li> </ul>
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	<b>Strategy W2</b>			<b>Strategy W2 (Lake Level greater than 68.50, maximum release 3500 cumecs)</b>
Commenced Sunday 09 Jan 2011 14:00	<ul style="list-style-type: none"> <li>Releases maintained from both dams to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> </ul>	Wivenhoe Dam level rises from 68.58 to 68.97 over the 5 hour period.	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>With lake levels continuing to rise at both dams the decision was made to transition the primary consideration from minimizing disruption to downstream rural life to protecting urban areas from inundation. However during this period, consideration remained on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> </ul>
Completed Sunday 09 Jan 2011 19:00	<ul style="list-style-type: none"> <li>No change to gate settings over this period. Wivenhoe discharge is 1436 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> <li>Due to rainfall on the ground and the rapid lake level rises, a decision is made to transition to Strategy W3 at 19:00.</li> </ul>	Somerset Dam level rises from 100.47 to 101.43 over the 5 hour period.	<ul style="list-style-type: none"> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<ul style="list-style-type: none"> <li>Decision is made to transition to Strategy W3 at 19:00.</li> </ul>

	<b>Transition from Strategy W2 to Strategy W3</b>			<b>Strategy W3 (Lake Level greater than 68.50, maximum release 4000 cumecs)</b>
Commenced Sunday 09 Jan 2011 19:00	<ul style="list-style-type: none"> <li>• Council and Agency notifications commenced at 7:00pm.</li> </ul>	Wivenhoe Dam level rises from 68.97 to 69.97 over the 6 hour period.	<ul style="list-style-type: none"> <li>• Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>○ Wivenhoe ??mm;</li> <li>○ Somerset ??mm;</li> <li>○ Lockyer ??mm;</li> <li>○ Bremer ??mm.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Before releases are increased towards the limit of non-damaging floods at Moggill, Councils and other impacted agencies must be notified and the Mt Crosby Weir Bridge and Fernvale Bridge must be closed.</li> </ul>
Completed Monday 10 Jan 2011 01:00	<ul style="list-style-type: none"> <li>• Fernvale Bridge closed by police at around 01:00 on 10 January 2011 and once this was confirmed a directive was issued to increase releases from Wivenhoe Dam.</li> <li>• No change to gate settings over this period. Wivenhoe discharge is 1436 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	Somerset Dam level rises from 101.43 to 102.51 over the 6 hour period.	<ul style="list-style-type: none"> <li>• Wivenhoe Lake level forecast to peak at .</li> <li>• Somerset Lake level forecast to peak at .</li> <li>• Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>• Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>• Forecast rainfall estimated at</li> </ul>	

	Strategy W3 Wivenhoe Directives #8 to #10.			Strategy W3 (Lake Level greater than 68.50, maximum release 4000 cumecs)
Commenced Monday 10 Jan 2011 01:00	<ul style="list-style-type: none"> <li>Gates opened continuously at Wivenhoe Dam for 8 hours in accordance with the standard gate opening sequence at a rate of 0.5 metres of opening per hour.</li> </ul>	Wivenhoe Dam level rises from 69.97 to 71.56 over the 8 hour period.	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Due to advice received from the Brisbane City Council that the limit of non-damaging floods is a flow of 3500 cumecs at Moggill, an attempt is made to remain within this flow.</li> </ul>
Completed Monday 10 Jan 2011 09:00	<ul style="list-style-type: none"> <li>Wivenhoe discharge is increased from 1484 cumecs to 2030 cumecs. All rural bridges below the dam are flooded.</li> <li>Further gate openings at Wivenhoe Dam were paused at 09:00 in an attempt to allow the Lockyer and Bremer peaks to pass Brisbane and to restrict Brisbane River flows at Moggill to 3500 cumecs. This was done following advice from the Brisbane City Council that , 3500 cumecs at Moggill will submerge 322 properties and impact on 7000 properties.</li> <li>No gate movements occurred at Somerset Dam during this period, with dam levels plotting under the Wivenhoe/Somerset Operations Target Line. This meant that the only gate movements allowable at Somerset under Strategy S2 would be openings and this was not done to limit further rises in Wivenhoe.</li> </ul>	Somerset Dam level rises from 101.43 to 102.51 over the 8 hour period.	<ul style="list-style-type: none"> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<ul style="list-style-type: none"> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> </ul>

<p>Commenced Monday 10 Jan 2011 09:00</p> <p>Completed Monday 10 Jan 2011 15:00</p>	<p><b>Strategy W3</b></p> <ul style="list-style-type: none"> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 2099 cumecs. All rural bridges below the dam are flooded.</li> <li>At 15:00 the attempt to restrict Brisbane River flows at Moggill to 3500 cumecs was abandoned due to the rainfall being experienced in the dam catchments. A new target of 4000 cumecs was set in accordance with the Manual.</li> <li>No gate movements occurred at Somerset Dam during this period, with dam levels plotting under the Wivenhoe/Somerset Operations Target Line. This meant that the only gate movements allowable at Somerset under Strategy S2 would be openings and this was not done to limit further rises in Wivenhoe.</li> </ul>	<p>Wivenhoe Dam level rises from 71.56 to 72.53 over the 6 hour period.</p> <p>Somerset Dam level rises from 102.51 to 103.43 over the 6 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W3</b> <b>(Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>A decision is made at 15:00 to attempt to remain within a target flow of 4000 cumecs at Moggill.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> </ul>
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	Strategy W3 Wivenhoe Directive #11.			Strategy W3 (Lake Level greater than 68.50, maximum release 4000 cumecs)
Commenced Monday 10 Jan 2011 15:00	<ul style="list-style-type: none"> <li>Gates opened continuously at Wivenhoe Dam for 5 hours in accordance with the standard gate opening sequence at a rate of 1.0 metres of opening per hour.</li> </ul>	Wivenhoe Dam level rises from 72.53 to 73.06 over the 5 hour period.	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>A decision is made at 15:00 to attempt to remain within a target flow of 4000 cumecs at Moggill.</li> </ul>
Completed Monday 10 Jan 2011 20:00	<ul style="list-style-type: none"> <li>Wivenhoe discharge is increased from 2099 cumecs to 2707 cumecs. All rural bridges below the dam are flooded.</li> <li>Further gate openings at Wivenhoe Dam were paused at 20:00 in an attempt to allow the Lockyer and Bremer peaks to pass Brisbane and to restrict Brisbane River flows at Moggill to 4000 cumecs.</li> <li>No gate movements occurred at Somerset Dam during this period, with dam levels plotting under the Wivenhoe/Somerset Operations Target Line. This meant that the only gate movements allowable at Somerset under Strategy S2 would be openings and this was not done to limit further rises in Wivenhoe.</li> </ul>	Somerset Dam level rises from 103.43 to 103.45 over the 5 hour period.	<ul style="list-style-type: none"> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<ul style="list-style-type: none"> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> </ul>

	<b>Strategy W3</b>			<b>Strategy W3 (Lake Level greater than 68.50, maximum release 4000 cumecs)</b>
Commenced Monday 10 Jan 2011 20:00	<ul style="list-style-type: none"> <li>Forecasts indicate that areas of intense rainfall are likely to shift south and possibly miss the dam catchments.</li> </ul>	Wivenhoe Dam level rises from 73.06 to 73.40 over the 8 hour period.	<ul style="list-style-type: none"> <li>Forecasts indicate that areas of intense rainfall are likely to shift south and possibly miss the dam catchments.</li> </ul>	<ul style="list-style-type: none"> <li>The target was to maintain a flow of 4000 cumecs at Moggill.</li> </ul>
Completed Tuesday 11 Jan 2011 04:00	<ul style="list-style-type: none"> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 2752 cumecs. All rural bridges below the dam are flooded.</li> <li>Gate openings at Wivenhoe Dam were paused at 20:00 in an attempt to allow the initial Lockyer and Bremer peaks to pass Brisbane and to restrict Brisbane River flows at Moggill to 4000 cumecs.</li> <li>Initial advice on a flash flood originating in Lockyer headwaters received at 20:00 and considerations undertaken during this period to develop a strategy to manage these potential flows.</li> <li>During this period the plotted dam levels drifted just above the Wivenhoe/Somerset Operations Target Line. This lead to a decision at 04:00 to commence closing down releases from Somerset Dam to limit further rises in Wivenhoe. This decision is consistent with Strategy S2.</li> </ul>	Somerset Dam level fell from 103.45 to 103.23 over the 8 hour period.	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<ul style="list-style-type: none"> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> <li>Model results show that a peak level in the dam close to 74.0 remains possible.</li> </ul>

	<b>Transition from Strategy W3 to Strategy W4 Wivenhoe Directive #12. Somerset Directive #6.</b>			<b>Strategy W3 (Lake Level greater than 68.50, maximum release 4000 cumecs)</b>
Commenced Tuesday 11 Jan 2011 04:00	<ul style="list-style-type: none"> <li>The forecast indicating that the intense rainfall could shift south and miss the dam catchments did not eventuate.</li> </ul>	Wivenhoe Dam level rises from 73.40 to 73.70 over the 4 hour period.	<ul style="list-style-type: none"> <li>The forecast indicating that the intense rainfall could shift south and miss the dam catchments did not eventuate.</li> </ul>	<ul style="list-style-type: none"> <li>The target was to maintain a flow of 4000 cumecs at Moggill.</li> </ul>
Completed Tuesday 11 Jan 2011 08:00	<ul style="list-style-type: none"> <li>Extreme intense rainfall is experienced in relatively small areas of the Wivenhoe catchment during this period. Much more words here). If the centroid of this rainfall was located 50 kms east or south, it is likely that there would not have been a need to transition to Strategy W4.</li> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 2832 cumecs. All rural bridges below the dam are flooded.</li> <li>During this period sluice gate openings at Somerset Dam are reduced from 5 to 2 as the plotted dam levels had drifted just above the Wivenhoe/Somerset Operations Target Line. This decision is consistent with Strategy S2.</li> </ul>	Somerset Dam level rises from 103.23 to 103.46 over the 4 hour period.	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at</li> <li>Forecast rainfall estimated at</li> </ul>	<ul style="list-style-type: none"> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> <li>Model results show that restricting the peak level in the dam close to 74.0 is no longer possible due to the high intensity rainfall experienced over this period.</li> <li>At 08:00 a decision is made to transition to Strategy W4 and the Dam Safety Regulator (DERM) is advised of this decision.</li> </ul>

<p>Commenced Tuesday 11 Jan 2011 08:00</p> <p>Completed Tuesday 11 Jan 2011 13:00</p>	<p><b>Strategy W4</b> <b>Wivenhoe Directive #12 to #14.</b> <b>Somerset Directive #7.</b></p> <ul style="list-style-type: none"> <li>• Extreme intense rainfall continues in relatively small areas of the Wivenhoe catchment during this period. Much more words here) ). If the centroid of this rainfall was located 50 kms east or south, it is likely that there would not have been a need to transition to Strategy W4.</li> <li>• Gates opened continuously at Wivenhoe Dam for 5 hours in accordance with the standard gate opening sequence at an average rate of 2.0 metres of opening per hour.</li> <li>• Wivenhoe discharge is increased from 2832 cumecs to 3992 cumecs. All rural bridges below the dam are flooded.</li> <li>• During this period sluice gate openings at Somerset Dam are closed off as the plotted dam levels remain above the Wivenhoe/Somerset Operations Target Line. This decision is consistent with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 73.70 to 74.39 over the 5 hour period.</p> <p>Somerset Dam level rises from 103.46 to 103.91 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>• Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>○ Wivenhoe ??mm;</li> <li>○ Somerset ??mm;</li> <li>○ Lockyer ??mm;</li> <li>○ Bremer ??mm.</li> </ul> </li> <li>• Wivenhoe Lake level forecast to peak at .</li> <li>• Somerset Lake level forecast to peak at .</li> <li>• Once Strategy W4 is activated, the peak flows at Lowood and Moggill are no longer relevant to flood release considerations at Wivenhoe Dam.</li> <li>• Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W4</b> <b>(Lake Level predicted to exceed 74.00, no maximum release rate)</b></p> <ul style="list-style-type: none"> <li>• The target was to protect the structural safety of the dam.</li> <li>• The Manual requires actions under Strategy 4 to be that Wivenhoe gate openings are to occur at the minimum intervals and sequences until the storage level of Wivenhoe Dam begins to fall.</li> <li>• The dam level continued to rise at 01:00. A dam operator was relaying Wivenhoe Dam gauge board readings to the Flood Operations Centre every 30 minutes. All four duty engineers were present in the Flood Operations Centre and decisions were being made on a half hourly basis once the gauge board readings were received.</li> </ul>
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<p>Commenced Tuesday 11 Jan 2011 13:00</p> <p>Completed Tuesday 11 Jan 2011 19:00</p>	<p><b>Strategy W4</b> <b>Wivenhoe Directive #12 to #14.</b></p> <ul style="list-style-type: none"> <li>• Extreme lake level rises in Wivenhoe Dam continue during this period and a severe weather warning for intense rainfall remains current.</li> <li>• Gates opened continuously at Wivenhoe Dam for 6 hours in accordance with the standard gate opening sequence at an average rate of 4.5 metres of opening per hour.</li> <li>• Wivenhoe discharge is increased from 3992 cumecs to 7464 cumecs. All rural bridges below the dam are flooded. Damage to urban areas in Brisbane cannot be avoided.</li> <li>• No releases are made from Somerset Dam in accordance with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 74.39 to 74.97 over the 6 hour period.</p> <p>Somerset Dam level rises from 103.91 to 104.57 over the 6 hour period.</p>	<ul style="list-style-type: none"> <li>• Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>◦ Wivenhoe ??mm;</li> <li>◦ Somerset ??mm;</li> <li>◦ Lockyer ??mm;</li> <li>◦ Bremer ??mm.</li> </ul> </li> <li>• Wivenhoe Lake level forecast to peak at .</li> <li>• Somerset Lake level forecast to peak at .</li> <li>• Once Strategy W4 is activated, the peak flows at Lowood and Moggill are no longer relevant to flood release considerations at Wivenhoe Dam.</li> <li>• Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W4</b> <b>(Lake Level predicted to exceed 74.00, no maximum release rate)</b></p> <ul style="list-style-type: none"> <li>• The target was to protect the structural safety of the dam.</li> <li>• The Manual requires actions under Strategy 4 to be that Wivenhoe gate openings are to occur at the minimum intervals and sequences until the storage level of Wivenhoe Dam begins to fall.</li> <li>• The dam level continued to rise at during this period. A dam operator was relaying Wivenhoe Dam gauge board readings to the Flood Operations Centre every 30 minutes. All four duty engineers were present in the Flood Operations Centre and decisions were being made on a half hourly basis once the gauge board readings were received.</li> <li>• The water level in Wivenhoe Dam peaked at 18:00 on 11 January 2011.</li> </ul>
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<p>Commenced Tuesday 11 Jan 2011 19:00</p> <p>Completed Tuesday 11 Jan 2011 21:00</p>	<p><b>Strategy W4</b> <b>Wivenhoe Directive #15 to #24.</b></p> <ul style="list-style-type: none"> <li>The lake level in Wivenhoe dam stabilizes and then falls slightly at 21:00. A severe weather warning for intense rainfall remains current, but it appears from the BOM radar that the rainfall may have dissipated. On this basis a decision to commence closing down the gates to reduce urban flood impacts is taken at 21:00. This decision is potentially in contravention with the minimum gate opening settings required under Strategy W4.</li> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 7464 cumecs. All rural bridges below the dam are flooded. Damage to urban areas in Brisbane cannot be avoided.</li> <li>No releases are made from Somerset Dam in accordance with Strategy S2.</li> </ul>	<p>During this 2 hours period, the lake level in Wivenhoe Dam stabilizes at 74.97 and then falls slightly to 74.95 at 21:00.</p> <p>Somerset Dam level rises from 104.45 to 104.78 over the 2 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Once Strategy W4 is activated, the peak flows at Lowood and Moggill are no longer relevant to flood release considerations at Wivenhoe Dam.</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W4</b> <b>(Lake Level predicted to exceed 74.00, no maximum release rate)</b></p> <ul style="list-style-type: none"> <li>The target was to protect the structural safety of the dam.</li> <li>The Manual requires actions under Strategy 4 to be that Wivenhoe gate openings are to occur at the minimum intervals and sequences until the storage level of Wivenhoe Dam begins to fall.</li> <li>The dam level stabilized during this period and then fell slightly at 21:00. A dam operator was relaying Wivenhoe Dam gauge board readings to the Flood Operations Centre every 30 minutes. All four duty engineers were present in the Flood Operations Centre and decisions were being made on a half hourly basis once the gauge board readings were received.</li> <li>The water level in Wivenhoe Dam peaked at 18:00 on 11 January 2011.</li> </ul>
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<p>Commenced Tuesday 11 Jan 2011 21:00</p> <p>Completed Wednesday 12 Jan 2011 08:00</p>	<p><b>Strategy W4</b> <b>Wivenhoe Directive #25 to #34.</b></p> <ul style="list-style-type: none"> <li>During this period Wivenhoe Dam gates are closed off as quickly as possible without causing rises in lake level. These actions are taken to reduce urban flood impacts downstream. The severe weather warning for intense rainfall is cancelled at 22:00 and it appears from the BOM radar that the rainfall may have dissipated. The decision to close off the release in this way is potentially in contravention with the minimum gate opening settings required under Strategy W4.</li> <li>Gates closed continuously at Wivenhoe Dam for 11 hours in accordance with the standard gate closing sequence at an average rate of just over 3.6 metres of opening per hour.</li> <li>Wivenhoe discharge is decreased from 7464 cumecs to 2547 cumecs. All rural bridges below the dam are flooded. Damage to urban areas in Brisbane cannot be avoided.</li> <li>No releases are made from Somerset Dam in accordance with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level falls from 74.97 to 74.78 over the 11 hour period.</p> <p>Somerset Dam level rises from 104.78 to 105.11 over the 11 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Wivenhoe Lake level forecast to peak at .</li> <li>Somerset Lake level forecast to peak at .</li> <li>Once Strategy W4 is activated, the peak flows at Lowood and Moggill are no longer relevant to flood release considerations at Wivenhoe Dam.</li> <li>Forecast rainfall estimated at</li> </ul>	<p><b>Strategy W4</b> <b>(Lake Level predicted to exceed 74.00, no maximum release rate)</b></p> <ul style="list-style-type: none"> <li>The target was to protect the structural safety of the dam.</li> <li>The Manual requires actions under Strategy 4 to be that Wivenhoe gate openings are to occur at the minimum intervals and sequences until the storage level of Wivenhoe Dam begins to fall.</li> <li>During this period Wivenhoe Dam gates are closed off as quickly as possible without causing rises in lake level.</li> <li>It was calculated that reducing to a discharge of 2547 cumecs from Wivenhoe Dam will: <ul style="list-style-type: none"> <li>not increase the downstream flood peak;</li> <li>will not cause the water level in Wivenhoe Dam to rise and;</li> <li>will allow the dam to be drained back to FSL in 7 days in accordance with the Manual.</li> </ul> </li> </ul>
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	<b>Transition from Strategy W4 to the Drain Down Phase Somerset Directives #8 to #9.</b>			<b>Drain Down Phase (Stored floodwaters emptied from the dam in seven days)</b>
<p>Commenced Wednesday 12 Jan 2011 08:00</p> <p>Completed Thursday 13 Jan 2011 12:00</p>	<ul style="list-style-type: none"> <li>During this period releases from Wivenhoe Dam are kept constant. These actions are taken to reduce urban flood impacts downstream. The decision to maintain the release in this way is potentially in contravention with the minimum gate opening settings required under Strategy W4.</li> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 2546 cumecs. All rural bridges below the dam are flooded. Damage to urban areas in Brisbane has not been avoided.</li> <li>Releases commenced from Somerset Dam during this period as the plotted dam levels fell below the Wivenhoe/Somerset Operations Target Line. These actions were undertaken in accordance with Strategy S2 and to allow the D'Aguilar Highway to be opened as soon as possible. Even though plotted dam levels later rose above the Wivenhoe/Somerset Operations Target Line during this period, releases from Somerset dam continued to allow the dam to be drained back to FSL in 7 days in accordance with the Manual.</li> </ul>	<p>Wivenhoe Dam level falls from 74.78 to 74.61 over the 28 hour period.</p> <p>Somerset Dam level falls from 105.11 to 103.96 over the 28 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>During this period the strategy transitioned from Strategy W4, during which the target is to protect the structural safety of the dam, to the Drain Down Phase of the event.</li> <li>Once the Drain Down Phase commenced, the target was to release stored floodwaters from the dam within seven days of the flood peak passing through the dams, while controlling downstream impacts. Considerations impacting on the duration and timing of the Drain Down Phase in this instance included: <ul style="list-style-type: none"> <li>maintaining an adequate release rate to ensure that the temporary pumps providing water supplies to the Lowood area could continue to operate;</li> <li>Minimizing bank slumping impacts along the river, particularly in key areas such as Coronation Drive (as requested from the Brisbane City Council);</li> <li>Re-opening the Brisbane Valley highway and key rural bridges as quickly as possible;</li> <li>Achieving full supply levels in the dams at the conclusion of the event.</li> </ul> </li> </ul>

<p>Commenced Thursday 13 Jan 2011 12:00</p> <p>Completed Wednesday 19 Jan 2011 12:00</p>	<p><b>Drain Down Phase</b> <b>Wivenhoe Directives #35 to #62</b> <b>Somerset Directives #10 to #13.</b></p> <ul style="list-style-type: none"> <li>During this period releases from Wivenhoe Dam are increased to as the peaks from the Lockyer and Bremer subside. Downstream impacts are controlled and and no time during this phase do downstream water levels rise except if impacted by tidal influences.</li> <li>During this period, stored flood water in Somerset Dam is drained into Wivenhoe Dam in accordance with the drain down target of seven days. Importance is placed on opening the D'Aguilar Highway as soon as possible.</li> </ul>	<p>Wivenhoe Dam level falls from 74.61 to 66.89 over the 6 day period.</p> <p>Somerset Dam level falls from 103.96 to 99.00 over the 6 day period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> </ul>	<p><b>Drain Down Phase</b></p> <ul style="list-style-type: none"> <li>During this period the target was to release stored floodwaters from the dam within seven days of the flood peak passing through the dams, while controlling downstream impacts. Considerations impacting on the duration and timing of the Drain Down Phase in this instance included: <ul style="list-style-type: none"> <li>maintaining an adequate release rate to ensure that the temporary pumps providing water supplies to the Lowood area could continue to operate;</li> <li>Minimizing bank slumping impacts along the river, particularly in key areas such as Coronation Drive (as requested from the Brisbane City Council);</li> <li>Re-opening the Brisbane Valley highway and key rural bridges as quickly as possible;</li> <li>Achieving full supply levels in the dams at the conclusion of the event.</li> </ul> </li> </ul>
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Brooke Foxover

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**JANUARY 2011 FLOOD EVENT - PERIOD 1 OF 21**

DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Thursday 06 Jan 2011 07:42</p> <p>Completed Friday 07 Jan 2011 02:00</p>	<p><b>Strategy W1A</b></p> <ul style="list-style-type: none"> <li>Catchment average rainfalls in the 24 hours to 0800 on 6 January 2011 were: <ul style="list-style-type: none"> <li>Wivenhoe 28mm;</li> <li>Somerset 21mm;</li> <li>Lockyer 23mm;</li> <li>Bremer 23mm.</li> </ul> </li> <li>No significant rainfall occurred in the 24 hours to 0900 on 5 January 2011.</li> <li>Event Mobilisation occurred at 7:42 on Thursday 6 January 2011, using Strategies W1A and S2.</li> <li>Once mobilisation occurs, 24/7 staffing of the Flood Operations Centre and dams continues until official de-mobilisation is announced. For this event, this occurred at 12:00 on Wednesday 19 January 2011.</li> </ul>	<p>Wivenhoe Dam level rises from 67.31 to 67.52 over the 18 hour period.</p> <p>Somerset Dam level rises from 99.34 to 99.55 over the 18 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 29mm;</li> <li>Somerset 22mm;</li> <li>Lockyer 32mm;</li> <li>Bremer 32mm.</li> </ul> </li> <li>Forecast rainfall is 25mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 68.3 (excluding forecast) ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 99.8 (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> <li>Lake level not expected to reach 67.50 (Strategy W1B) until 07 January 2011.</li> <li>Peak inflows into the Brisbane River from Lockyer are estimated to be in the order of 400 cumecs, but these flows will not inundate Colleges Crossing for more than 24 hours.</li> </ul>	<p><b>Strategy W1A</b> (Lake Level greater than 67.25, maximum release 110 cumecs)</p> <ul style="list-style-type: none"> <li>Endeavour to maintain College's Crossing trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 175 cumecs.</li> <li>Water held in Wivenhoe in an attempt to maintain College's Crossing trafficable in accordance with Strategy W1A.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 2 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Friday 07 Jan 2011 02:00</p> <p>Completed Friday 07 Jan 2011 07:00</p>	<p><b>Strategy W1B</b></p> <ul style="list-style-type: none"> <li>Transition from Strategy W1A to W1B.</li> </ul>	<p>Wivenhoe Dam level rises from 67.52 to 67.68 over the 5 hour period.</p> <p>Somerset Dam level rises from 99.55 to 99.60 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 6mm;</li> <li>Somerset 10mm;</li> <li>Lockyer 2mm;</li> <li>Bremer 4mm.</li> </ul> </li> <li>Forecast rainfall is 25mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 68.3 (excluding forecast) ??.?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 99.8 (excluding forecast) ??.?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ??.?? (excluding forecast) ??.?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ??.?? (excluding forecast) ??.?? (including forecast).</li> <li>Lake level not expected to reach 67.75 (Strategy W1C) for at least 6 hours.</li> <li>Peak inflows into the Brisbane River from Lockyer are estimated to be in the order of 500 cumecs, but these flows may not be sufficient to inundate Burtons Bridge.</li> </ul>	<p><b>Strategy W1B</b> (Lake Level greater than 67.50, maximum release 110 cumecs)</p> <ul style="list-style-type: none"> <li>Endeavour to maintain Burtons Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 430 cumecs.</li> <li>Water held in Wivenhoe in an attempt to maintain Burtons Bridge trafficable in accordance with Strategy W1B.</li> </ul>



JANUARY 2011 FLOOD EVENT - PERIOD 3 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Friday 07 Jan 2011 07:00</p> <p>Completed Friday 07 Jan 2011 09:00</p>	<p><b>Strategy W1C</b></p> <ul style="list-style-type: none"> <li>Transition from Strategy W1B to W1C.</li> </ul>	<p>Wivenhoe Dam level rises from 67.68 to 67.75 over the 2 hour period.</p> <p>Somerset Dam level rises from 99.60 to 99.65 over the 2 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 6mm;</li> <li>Somerset 5mm;</li> <li>Lockyer 2mm;</li> <li>Bremer 1mm.</li> </ul> </li> <li>Forecast rainfall is 25mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 68.3 (excluding forecast) ??.?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 99.8 (excluding forecast) ??.?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ??.?? (excluding forecast) ??.?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ??.?? (excluding forecast) ??.?? (including forecast).</li> <li>Peak inflows into the Brisbane River from Lockyer are estimated to be in the order of 500 cumecs, but these flows may not be sufficient to inundate Burtons Bridge or Kholo Bridge.</li> </ul>	<p><b>Strategy W1C</b> (Lake Level greater than 67.75, maximum release 500 cumecs)</p> <ul style="list-style-type: none"> <li>Endeavour to maintain Kholo Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 550 cumecs.</li> <li>Water held in Wivenhoe in an attempt to maintain Kholo Bridge trafficable in accordance with Strategy W1C.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 4 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Friday 07 Jan 2011 09:00</p> <p>Completed Friday 07 Jan 2011 15:00</p>	<p><b>Strategy W1E</b></p> <ul style="list-style-type: none"> <li>Transition from Strategy W1C to W1E. Based on rainfall on the ground, it becomes apparent that all bridges apart from the Mt Crosby Weir Bridge and Fernvale Bridge will be flooded by Lockyer Creek flows alone.</li> <li>All impacted Councils are notified of situation and that releases are to be commenced from Wivenhoe Dam. Releases were delayed until 15:00 to allow bridges to be closed and arrangements to be made to cater for rural community isolation. The impacted rural communities had been isolated over the Christmas period and time was needed for suitable arrangements to be made to allow these communities to be prepared for another extended period of isolation.</li> <li>Rainfall on the ground and rainfall forecasts did not suggest that the event was likely to approach the use of Strategy W4.</li> </ul>	<p>Wivenhoe Dam level rises from 67.75 to 68.03 over the 6 hour period.</p> <p>Somerset Dam level rises from 99.65 to 99.94 over the 6 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 24mm;</li> <li>Somerset 30mm;</li> <li>Lockyer 14mm;</li> <li>Bremer 12mm.</li> </ul> </li> <li>Forecast rainfall is 25mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 68.3 (excluding forecast) ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 100.1 (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> <li>Due to the further rain experienced and observed stream rises, it has become apparent that inflows from Lockyer Creek into the Brisbane River will be sufficient to inundate all bridges downstream of the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge.</li> </ul>	<p><b>Strategy W1E</b> (Lake Level greater than 68.25, maximum release 1900 cumecs)</p> <ul style="list-style-type: none"> <li>Endeavour to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> <li>Releases from Wivenhoe Dam managed in an attempt to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable in accordance with Strategy W1E.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 5 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Friday 07 Jan 2011 15:00</p> <p>Completed Saturday 08 Jan 2011 14:00</p>	<p><b>Transition from Strategy W1E to Strategy W2</b> <b>Wivenhoe Directives #1 to #4.</b> <b>Somerset Directives #1 to #3.</b></p> <ul style="list-style-type: none"> <li>Gates opened continuously at Wivenhoe Dam for 23 hours in accordance with the standard gate opening sequence at a rate of 0.5 metres of opening per hour.</li> <li>At 14:00 on 08 January 2011, Wivenhoe discharge is 1271 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> <li>Due to rainfall on the ground, it was apparent that the Somerset Dam level would significantly exceed 100.45. Accordingly two sluice gates were opened during this period to allow dam levels to move towards the Wivenhoe/Somerset Operations Target Line in accordance with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 68.03 to 68.61 over the 23 hour period.</p> <p>Somerset Dam level rises from 99.94 to 100.44 over the 23 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 3mm;</li> <li>Somerset 5mm;</li> <li>Lockyer 1mm;</li> <li>Bremer 1mm.</li> </ul> </li> <li>Forecast rainfall is 40mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 68.7 (excluding forecast) ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 100.5 (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> <li>Inflows from Lockyer Creek into the Brisbane River have been sufficient to inundate all bridges downstream of the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge.</li> </ul>	<p><b>Strategy W2</b> <b>(Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>Consideration currently on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs. This may be changed if further significant rainfall is experienced.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 6 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Saturday 08 Jan 2011 14:00</p> <p>Completed Sunday 09 Jan 2011 01:00</p>	<p><b>Strategy W2</b></p> <ul style="list-style-type: none"> <li>Releases maintained from both dams to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>No change to gate settings over this period. Wivenhoe discharge is 1271 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level rises very slightly from 68.61 to 68.63 over the 13 hour period.</p> <p>Somerset Dam level falls from 100.44 to 100.32 over the 13 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 8mm;</li> <li>Somerset 16mm;</li> <li>Lockyer 3mm;</li> <li>Bremer 2mm.</li> </ul> </li> <li>Forecast rainfall is 40mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 68.8 (excluding forecast) ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 100.5 (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> </ul>	<p><b>Strategy W2</b> (Lake Level greater than 68.50, maximum release 3500 cumecs)</p> <ul style="list-style-type: none"> <li>With lake levels rising slightly (Wivenhoe) and falling (Somerset) consideration remains on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs. This may be changed if further significant rainfall is experienced.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 7 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Sunday 09 Jan 2011 01:00</p> <p>Completed Sunday 09 Jan 2011 08:00</p>	<p><b>Strategy W2</b> <b>Wivenhoe Directives #5 to #7.</b></p> <ul style="list-style-type: none"> <li>Releases increased marginally from Wivenhoe Dam to account for the passing of the Lockyer peak while maintaining Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>Wivenhoe discharge is increased from 1271 cumecs to 1367 cumecs.</li> <li>No change to Somerset Dam gate settings over this period.</li> <li>All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level falls from 68.63 to 68.57 over the 7 hour period.</p> <p>Somerset Dam level falls from 100.32 to 100.28 over the 7 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 12mm;</li> <li>Somerset 36mm;</li> <li>Lockyer 1mm;</li> <li>Bremer 0mm.</li> </ul> </li> <li>Forecast rainfall is 40mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 68.7 (excluding forecast) ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 100.5 (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> </ul>	<p><b>Strategy W2</b> <b>(Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>With lake levels falling at both dams consideration remains on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs. This may be changed if further significant rainfall is experienced.</li> </ul>

**JANUARY 2011 FLOOD EVENT - PERIOD 8 OF 21**

DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Sunday 09 Jan 2011 08:00</p> <p>Completed Sunday 09 Jan 2011 14:00</p>	<p><b>Strategy W2</b> <b>Wivenhoe Directives #7.</b> <b>Somerset Directives #4 to #5.</b></p> <ul style="list-style-type: none"> <li>Releases increased marginally from Wivenhoe Dam to account for the passing of the Lockyer peak while maintaining Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>Wivenhoe discharge is increased from 1367 cumecs to 1420 cumecs.</li> <li>Somerset Dam sluice gates opened progressively over this period to allow dam levels to move towards the Wivenhoe/Somerset Operations Target Line in accordance with Strategy S2.</li> <li>All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level rises very slightly from 68.57 to 68.58 over the 6 hour period.</p> <p>Somerset Dam level rises from 100.28 to 100.47 over the 4 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 34mm;</li> <li>Somerset 53mm;</li> <li>Lockyer 18mm;</li> <li>Bremer 15mm.</li> </ul> </li> <li>Forecast rainfall is 50mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 69.9 (excluding forecast) ??.?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 100.6 (excluding forecast) ??.?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ??.?? (excluding forecast) ??.?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ??.?? (excluding forecast) ??.?? (including forecast).</li> </ul>	<p><b>Strategy W2</b> <b>(Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>With lake levels rising at both dams consideration was given to transitioning the primary consideration from minimizing disruption to downstream rural life to protecting urban areas from inundation. However during this period, consideration remained on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> <li>Model results showing rapid rises in water level in Somerset Dam provide justification to consider transitioning to Strategy W3 within the next 6 hours.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 9 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Sunday 09 Jan 2011 14:00</p> <p>Completed Sunday 09 Jan 2011 19:00</p>	<p><b>Transition from Strategy W2 to Strategy W3</b></p> <ul style="list-style-type: none"> <li>Releases maintained from both dams to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>No change to gate settings over this period. Wivenhoe discharge is 1436 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> <li>Due to rainfall on the ground and the rapid lake level rises, a decision is made to transition to Strategy W3 at 19:00.</li> </ul>	<p>Wivenhoe Dam level rises from 68.58 to 68.97 over the 5 hour period.</p> <p>Somerset Dam level rises from 100.47 to 101.43 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 62mm;</li> <li>Somerset 106mm;</li> <li>Lockyer 22mm;</li> <li>Bremer 6mm.</li> </ul> </li> <li>Forecast rainfall is 65mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 71.7 (excluding forecast) ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 102.3 (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> </ul>	<p><b>Strategy W2 (Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>With lake levels continuing to rise at both dams the decision was made to transition the primary consideration from minimizing disruption to downstream rural life to protecting urban areas from inundation. However during this period, consideration remained on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> <li>Decision is made to transition to Strategy W3 at 19:00.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 10 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Sunday 09 Jan 2011 19:00</p> <p>Completed Monday 10 Jan 2011 01:00</p>	<p><b>Strategy W3</b></p> <ul style="list-style-type: none"> <li>Council and Agency notifications commenced at 7:00pm.</li> <li>Fernvale Bridge closed by police at around 01:00 on 10 January 2011 and once this was confirmed a directive was issued to increase releases from Wivenhoe Dam.</li> <li>No change to gate settings over this period due to the potential danger to the public associated with inundating Fernvale Bridge from Wivenhoe Dam outflows prior to the bridge being closed to traffic. Councils also required some time to prepare for the isolation of rural communities and to undertake evacuations. Wivenhoe discharge is 1436 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level rises from 68.97 to 69.97 over the 6 hour period.</p> <p>Somerset Dam level rises from 101.43 to 102.51 over the 6 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 24mm;</li> <li>Somerset 38mm;</li> <li>Lockyer 15mm;</li> <li>Bremer 6mm.</li> </ul> </li> <li>Forecast rainfall is 65mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 73.3 (excluding forecast) ?? ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 103.0 (excluding forecast) ?? ?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? ?? (excluding forecast) ?? ?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? ?? (excluding forecast) ?? ?? (including forecast).</li> </ul>	<p><b>Strategy W3</b> (Lake Level greater than 68.50, maximum release 4000 cumecs)</p> <ul style="list-style-type: none"> <li>Consideration on protecting urban areas from inundation.</li> <li>Before releases are increased towards the limit of non-damaging floods at Moggill, Councils and other impacted agencies must be notified so that appropriate actions can be taken including any necessary evacuations and the closure of both the Mt Crosby Weir Bridge and Fernvale Bridge. The increased releases will result in the isolation of significant rural communities and result in the closure of both the Brisbane Valley Highway and the D'Aguilar Highway.</li> </ul>



JANUARY 2011 FLOOD EVENT - PERIOD 11 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Monday 10 Jan 2011 01:00</p> <p>Completed Monday 10 Jan 2011 09:00</p>	<p><b>Strategy W3</b> <b>Wivenhoe Directives #8 to #10.</b></p> <ul style="list-style-type: none"> <li>Gates opened continuously at Wivenhoe Dam for 8 hours in accordance with the standard gate opening sequence at a rate of 0.5 metres of opening per hour.</li> <li>Wivenhoe discharge is increased from 1484 cumecs to 2030 cumecs. All rural bridges below the dam are flooded.</li> <li>Further gate openings at Wivenhoe Dam were paused at 09:00 in an attempt to allow the Lockyer and Bremer peaks to pass Brisbane and to restrict Brisbane River flows at Moggill to 3500 cumecs. This was done following advice from the Brisbane City Council that 3500 cumecs at Moggill will submerge 322 properties and impact on 7000 properties.</li> <li>No gate movements occurred at Somerset Dam during this period, with dam levels plotting under the Wivenhoe/Somerset Operations Target Line. This meant that the only gate movements allowable at Somerset under Strategy S2 would be openings and this was not done to limit further rises in Wivenhoe.</li> </ul>	<p>Wivenhoe Dam level rises from 69.97 to 71.56 over the 8 hour period.</p> <p>Somerset Dam level rises from 102.51 to 103.08 over the 8 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 12mm;</li> <li>Somerset 30mm;</li> <li>Lockyer 12mm;</li> <li>Bremer 18mm.</li> </ul> </li> <li>Forecast rainfall is 65mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 73.3 (excluding forecast) ??.?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 103.2 (excluding forecast) ??.?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ??.?? (excluding forecast) ??.?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ??.?? (excluding forecast) ??.?? (including forecast).</li> </ul>	<p><b>Strategy W3</b> <b>(Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>Consideration on protecting urban areas from inundation.</li> <li>Due to advice received from the Brisbane City Council that the limit of non-damaging floods is a flow of 3500 cumecs at Moggill, an attempt is made to remain within this flow.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 12 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Monday 10 Jan 2011 09:00</p> <p>Completed Monday 10 Jan 2011 15:00</p>	<p><b>Strategy W3</b></p> <ul style="list-style-type: none"> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 2099 cumecs. All rural bridges below the dam are flooded.</li> <li>At 15:00 the attempt to restrict Brisbane River flows at Moggill to 3500 cumecs was abandoned due to the rainfall being experienced in the dam catchments. A new target of 4000 cumecs was set in accordance with the Manual.</li> <li>No gate movements occurred at Somerset Dam during this period, with dam levels plotting under the Wivenhoe/Somerset Operations Target Line. This meant that the only gate movements allowable at Somerset under Strategy S2 would be openings and this was not done to limit further rises in Wivenhoe.</li> </ul>	<p>Wivenhoe Dam level rises from 71.56 to 72.53 over the 6 hour period.</p> <p>Somerset Dam level rises from 103.08 to 103.43 over the 6 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 34mm;</li> <li>Somerset 31mm;</li> <li>Lockyer 27mm;</li> <li>Bremer 30mm.</li> </ul> </li> <li>Forecast rainfall is 75mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 73.7 (excluding forecast) ?? ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 103.7 (excluding forecast) ?? ?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? ?? (excluding forecast) ?? ?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? ?? (excluding forecast) ?? ?? (including forecast).</li> </ul>	<p><b>Strategy W3</b> (Lake Level greater than 68.50, maximum release 4000 cumecs)</p> <ul style="list-style-type: none"> <li>Consideration on protecting urban areas from inundation.</li> <li>A decision is made at 15:00 to attempt to remain within a target flow of 4000 cumecs at Moggill.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 13 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Monday 10 Jan 2011 15:00</p> <p>Completed Monday 10 Jan 2011 20:00</p>	<p><b>Strategy W3</b> <b>Wivenhoe Directive #11.</b></p> <ul style="list-style-type: none"> <li>Gates opened continuously at Wivenhoe Dam for 5 hours in accordance with the standard gate opening sequence at a rate of 1.0 metres of opening per hour.</li> <li>Wivenhoe discharge is increased from 2099 cumecs to 2707 cumecs. All rural bridges below the dam are flooded.</li> <li>Further gate openings at Wivenhoe Dam were paused at 20:00 in an attempt to allow the Lockyer and Bremer peaks to pass Brisbane and to restrict Brisbane River flows at Moggill to 4000 cumecs.</li> <li>No gate movements occurred at Somerset Dam during this period, with dam levels plotting under the Wivenhoe/Somerset Operations Target Line. This meant that the only gate movements allowable at Somerset under Strategy S2 would be openings and this was not done to limit further rises in Wivenhoe.</li> </ul>	<p>Wivenhoe Dam level rises from 72.53 to 73.06 over the 5 hour period.</p> <p>Somerset Dam level rises from 103.43 to 103.45 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 4mm;</li> <li>Somerset 8mm;</li> <li>Lockyer 5mm;</li> <li>Bremer 4mm.</li> </ul> </li> <li>Forecast rainfall is 38mm in the next 24 hours, with isolated falls to 100mm.</li> <li>Wivenhoe Lake level forecast to peak at 73.8 (excluding forecast) ???.?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 103.7 (excluding forecast) ???.?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ???.?? (excluding forecast) ???.?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ???.?? (excluding forecast) ???.?? (including forecast).</li> </ul>	<p><b>Strategy W3</b> <b>(Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>Consideration on protecting urban areas from inundation.</li> <li>A decision is made at 15:00 to attempt to remain within a target flow of 4000 cumecs at Moggill.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 14 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
Commenced Monday 10 Jan 2011 20:00	<b>Strategy W3</b> <ul style="list-style-type: none"> <li>Forecasts indicate that areas of intense rainfall are likely to shift south and possibly miss the dam catchments.</li> </ul>	Wivenhoe Dam level rises from 73.06 to 73.40 over the 8 hour period.	<ul style="list-style-type: none"> <li>Forecasts indicate that areas of intense rainfall are likely to shift south and possibly miss the dam catchments.</li> </ul>	<b>Strategy W3</b> (Lake Level greater than 68.50, maximum release 4000 cumecs) <ul style="list-style-type: none"> <li>Consideration on protecting urban areas from inundation.</li> </ul>
Completed Tuesday 11 Jan 2011 04:00				
	<ul style="list-style-type: none"> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 2752 cumecs. All rural bridges below the dam are flooded.</li> <li>Gate openings at Wivenhoe Dam were paused at 20:00 in an attempt to allow the initial Lockyer and Bremer peaks to pass Brisbane and to restrict Brisbane River flows at Moggill to 4000 cumecs.</li> <li>Initial advice on a flash flood originating in Lockyer headwaters received at 20:00 and considerations undertaken during this period to develop a strategy to manage these potential flows.</li> <li>During this period the plotted dam levels drifted just above the Wivenhoe/Somerset Operations Target Line. This lead to a decision at 04:00 to commence closing down releases from Somerset Dam to limit further rises in Wivenhoe. This decision is consistent with Strategy S2.</li> </ul>	Somerset Dam level fell from 103.45 to 103.23 over the 8 hour period.	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 44mm;</li> <li>Somerset 22mm;</li> <li>Lockyer 12mm;</li> <li>Bremer 14mm.</li> </ul> </li> <li>Forecast rainfall is 38mm in the next 24 hours, with isolated falls to 100mm.</li> <li>Wivenhoe Lake level forecast to peak at 74.00 (excluding forecast) ?? ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 103.5 (excluding forecast) ?? ?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? ?? (excluding forecast) ?? ?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? ?? (excluding forecast) ?? ?? (including forecast).</li> </ul>	<ul style="list-style-type: none"> <li>The target was to maintain a flow of 4000 cumecs at Moggill.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> <li>Model results show that a peak level in the dam close to 74.0 remains possible, but is appearing increasing unlikely.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 15 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Tuesday 11 Jan 2011 04:00</p> <p>Completed Tuesday 11 Jan 2011 08:00</p>	<p><b>Transition from Strategy W3 to Strategy W4</b> <b>Wivenhoe Directive #12.</b> <b>Somerset Directive #6.</b></p> <ul style="list-style-type: none"> <li>The forecast indicating that the intense rainfall could shift south and miss the dam catchments did not eventuate.</li> <li>Extreme intense rainfall is experienced in relatively small areas of the Wivenhoe catchment during this period. Much more words here). If the centroid of this rainfall was located 50 kms east or south, it is likely that there would not have been a need to transition to Strategy W4.</li> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 2832 cumecs. All rural bridges below the dam are flooded.</li> <li>During this period sluice gate openings at Somerset Dam are reduced from 5 to 2 as the plotted dam levels had drifted just above the Wivenhoe/Somerset Operations Target Line. This decision is consistent with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 73.40 to 73.70 over the 4 hour period.</p> <p>Somerset Dam level rises from 103.23 to 103.46 over the 4 hour period.</p>	<ul style="list-style-type: none"> <li>The forecast indicating that the intense rainfall could shift south and miss the dam catchments did not eventuate.</li> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Forecast rainfall is ??mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at ?? ?? (excluding forecast) ?? ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at ?? ?? (excluding forecast) ?? ?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? ?? (excluding forecast) ?? ?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? ?? (excluding forecast) ?? ?? (including forecast).</li> </ul>	<p><b>Strategy W3</b> <b>(Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>Consideration on protecting urban areas from inundation.</li> <li>The target was to maintain a flow of 4000 cumecs at Moggill.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> <li>Model results show that restricting the peak level in the dam close to 74.0 is no longer possible due to the high intensity rainfall experienced over this period.</li> <li>At 08:00 a decision is made to transition to Strategy W4 and the Dam Safety Regulator (DERM) is advised of this decision.</li> </ul>

<p>Commenced Tuesday 11 Jan 2011 08:00</p> <p>Completed Tuesday 11 Jan 2011 13:00</p>	<p><b>Strategy W4</b> <b>Wivenhoe Directive #12 to #14.</b> <b>Somerset Directive #7.</b></p> <ul style="list-style-type: none"> <li>• Extreme intense rainfall continues in relatively small areas of the Wivenhoe catchment during this period. Much more words here) ). If the centroid of this rainfall was located 50 kms east or south, it is likely that there would not have been a need to transition to Strategy W4.</li> <li>• Gates opened continuously at Wivenhoe Dam for 5 hours in accordance with the standard gate opening sequence at an average rate of 2.0 metres of opening per hour.</li> <li>• Wivenhoe discharge is increased from 2832 cumecs to 3992 cumecs. All rural bridges below the dam are flooded.</li> <li>• During this period sluice gate openings at Somerset Dam are closed off as the plotted dam levels remain above the Wivenhoe/Somerset Operations Target Line. This decision is consistent with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 73.70 to 74.39 over the 5 hour period.</p> <p>Somerset Dam level rises from 103.46 to 103.91 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>• Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>○ Wivenhoe ??mm;</li> <li>○ Somerset ??mm;</li> <li>○ Lockyer ??mm;</li> <li>○ Bremer ??mm.</li> </ul> </li> <li>• Forecast rainfall is ??mm in the next 24 hours.</li> <li>• Wivenhoe Lake level forecast to peak at ?? ?? (excluding forecast) ?? ?? (including forecast).</li> <li>• Somerset Lake level forecast to peak at ?? ?? (excluding forecast) ?? ?? (including forecast).</li> <li>• Once Strategy W4 is activated, the peak flows at Lowood and Moggill are no longer relevant to flood release considerations at Wivenhoe Dam.</li> </ul>	<p><b>Strategy W4</b> <b>(Lake Level predicted to exceed 74.00, no maximum release rate)</b></p> <ul style="list-style-type: none"> <li>• The target was to protect the structural safety of the dam.</li> <li>• The Manual requires actions under Strategy 4 to be that Wivenhoe gate openings are to occur at the minimum intervals and sequences until the storage level of Wivenhoe Dam begins to fall.</li> <li>• The dam level continued to rise at 01:00. A dam operator was relaying Wivenhoe Dam gauge board readings to the Flood Operations Centre every 30 minutes. All four duty engineers were present in the Flood Operations Centre and decisions were being made on a half hourly basis once the gauge board readings were received.</li> </ul>
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<p>Commenced Tuesday 11 Jan 2011 13:00</p> <p>Completed Tuesday 11 Jan 2011 19:00</p>	<p><b>Strategy W4 Wivenhoe Directive #12 to #14.</b></p> <ul style="list-style-type: none"> <li>• Extreme lake level rises in Wivenhoe Dam continue during this period and a severe weather warning for intense rainfall remains current.</li> <li>• Gates opened continuously at Wivenhoe Dam for 6 hours in accordance with the standard gate opening sequence at an average rate of 4.5 metres of opening per hour.</li> <li>• Wivenhoe discharge is increased from 3992 cumecs to 7464 cumecs. All rural bridges below the dam are flooded. Damage to urban areas in Brisbane cannot be avoided.</li> <li>• No releases are made from Somerset Dam in accordance with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 74.39 to 74.97 over the 6 hour period.</p> <p>Somerset Dam level rises from 103.91 to 104.57 over the 6 hour period.</p>	<ul style="list-style-type: none"> <li>• Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>○ Wivenhoe ??mm;</li> <li>○ Somerset ??mm;</li> <li>○ Lockyer ??mm;</li> <li>○ Bremer ??mm.</li> </ul> </li> <li>• Forecast rainfall is ??mm in the next 24 hours.</li> <li>• Wivenhoe Lake level forecast to peak at ?? (excluding forecast) ?? (including forecast).</li> <li>• Somerset Lake level forecast to peak at ?? (excluding forecast) ?? (including forecast).</li> <li>• Once Strategy W4 is activated, the peak flows at Lowood and Moggill are no longer relevant to flood release considerations at Wivenhoe Dam.</li> </ul>	<p><b>Strategy W4 (Lake Level predicted to exceed 74.00, no maximum release rate)</b></p> <ul style="list-style-type: none"> <li>• The target was to protect the structural safety of the dam.</li> <li>• The Manual requires actions under Strategy 4 to be that Wivenhoe gate openings are to occur at the minimum intervals and sequences until the storage level of Wivenhoe Dam begins to fall.</li> <li>• The dam level continued to rise at during this period. A dam operator was relaying Wivenhoe Dam gauge board readings to the Flood Operations Centre every 30 minutes. All four duty engineers were present in the Flood Operations Centre and decisions were being made on a half hourly basis once the gauge board readings were received.</li> <li>• The water level in Wivenhoe Dam peaked at 18:00 on 11 January 2011.</li> </ul>
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<p>Commenced Tuesday 11 Jan 2011 19:00</p> <p>Completed Tuesday 11 Jan 2011 21:00</p>	<p><b>Strategy W4 Wivenhoe Directive #15 to #24.</b></p> <ul style="list-style-type: none"> <li>The lake level in Wivenhoe dam stabilizes and then falls slightly at 21:00. A severe weather warning for intense rainfall remains current, but it appears from the BOM radar that the rainfall may have dissipated. On this basis a decision to commence closing down the gates to reduce urban flood impacts is taken at 21:00. This decision is potentially in contravention with the minimum gate opening settings required under Strategy W4.</li> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 7464 cumecs. All rural bridges below the dam are flooded. Damage to urban areas in Brisbane cannot be avoided.</li> <li>No releases are made from Somerset Dam in accordance with Strategy S2.</li> </ul>	<p>During this 2 hours period, the lake level in Wivenhoe Dam stabilizes at 74.97 and then falls slightly to 74.95 at 21:00.</p> <p>Somerset Dam level rises from 104.45 to 104.78 over the 2 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Forecast rainfall is ??mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at ?? (excluding forecast) ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at ?? (excluding forecast) ?? (including forecast).</li> <li>Once Strategy W4 is activated, the peak flows at Lowood and Moggill are no longer relevant to flood release considerations at Wivenhoe Dam.</li> </ul>	<p><b>Strategy W4 (Lake Level predicted to exceed 74.00, no maximum release rate)</b></p> <ul style="list-style-type: none"> <li>The target was to protect the structural safety of the dam.</li> <li>The Manual requires actions under Strategy 4 to be that Wivenhoe gate openings are to occur at the minimum intervals and sequences until the storage level of Wivenhoe Dam begins to fall.</li> <li>The dam level stabilized during this period and then fell slightly at 21:00. A dam operator was relaying Wivenhoe Dam gauge board readings to the Flood Operations Centre every 30 minutes. All four duty engineers were present in the Flood Operations Centre and decisions were being made on a half hourly basis once the gauge board readings were received.</li> <li>The water level in Wivenhoe Dam peaked at 18:00 on 11 January 2011.</li> </ul>
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<p>Commenced Tuesday 11 Jan 2011 21:00</p> <p>Completed Wednesday 12 Jan 2011 08:00</p>	<p><b>Strategy W4 Wivenhoe Directive #25 to #34.</b></p> <ul style="list-style-type: none"> <li>During this period Wivenhoe Dam gates are closed off as quickly as possible without causing rises in lake level. These actions are taken to reduce urban flood impacts downstream. The severe weather warning for intense rainfall is cancelled at 22:00 and it appears from the BOM radar that the rainfall may have dissipated. The decision to close off the release in this way is potentially in contravention with the minimum gate opening settings required under Strategy W4.</li> <li>Gates closed continuously at Wivenhoe Dam for 11 hours in accordance with the standard gate closing sequence at an average rate of just over 3.6 metres of opening per hour.</li> <li>Wivenhoe discharge is decreased from 7464 cumecs to 2547 cumecs. All rural bridges below the dam are flooded. Damage to urban areas in Brisbane cannot be avoided.</li> <li>No releases are made from Somerset Dam in accordance with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level falls from 74.97 to 74.78 over the 11 hour period.</p> <p>Somerset Dam level rises from 104.78 to 105.11 over the 11 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Forecast rainfall is ??mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at ?? (excluding forecast) ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at ?? (excluding forecast) ?? (including forecast).</li> <li>Once Strategy W4 is activated, the peak flows at Lowood and Moggill are no longer relevant to flood release considerations at Wivenhoe Dam.</li> </ul>	<p><b>Strategy W4 (Lake Level predicted to exceed 74.00, no maximum release rate)</b></p> <ul style="list-style-type: none"> <li>The target was to protect the structural safety of the dam.</li> <li>The Manual requires actions under Strategy 4 to be that Wivenhoe gate openings are to occur at the minimum intervals and sequences until the storage level of Wivenhoe Dam begins to fall.</li> <li>During this period Wivenhoe Dam gates are closed off as quickly as possible without causing rises in lake level.</li> <li>It was calculated that reducing to a discharge of 2547 cumecs from Wivenhoe Dam will: <ul style="list-style-type: none"> <li>not increase the downstream flood peak;</li> <li>will not cause the water level in Wivenhoe Dam to rise and;</li> <li>will allow the dam to be drained back to FSL in 7 days in accordance with the Manual.</li> </ul> </li> </ul>
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<p>Commenced Wednesday 12 Jan 2011 08:00</p> <p>Completed Thursday 13 Jan 2011 12:00</p>	<p><b>Transition from Strategy W4 to the Drain Down Phase Somerset Directives #8 to #9.</b></p> <ul style="list-style-type: none"> <li>During this period releases from Wivenhoe Dam are kept constant. These actions are taken to reduce urban flood impacts downstream. The decision to maintain the release in this way is potentially in contravention with the minimum gate opening settings required under Strategy W4.</li> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 2546 cumecs. All rural bridges below the dam are flooded. Damage to urban areas in Brisbane has not been avoided.</li> <li>Releases commenced from Somerset Dam during this period as the plotted dam levels fell below the Wivenhoe/Somerset Operations Target Line. These actions were undertaken in accordance with Strategy S2 and to allow the D'Aguilar Highway to be opened as soon as possible. Even though plotted dam levels later rose above the Wivenhoe/Somerset Operations Target Line during this period, releases from Somerset dam continued to allow the dam to be drained back to FSL in 7 days in accordance with the Manual.</li> </ul>	<p>Wivenhoe Dam level falls from 74.78 to 74.61 over the 28 hour period.</p> <p>Somerset Dam level falls from 105.11 to 103.96 over the 28 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Forecast rainfall is ??mm in the next 24 hours.</li> </ul>	<p><b>Drain Down Phase (Stored floodwaters emptied from the dam in seven days)</b></p> <ul style="list-style-type: none"> <li>During this period the strategy transitioned from Strategy W4, during which the target is to protect the structural safety of the dam, to the Drain Down Phase of the event.</li> <li>Once the Drain Down Phase commenced, the target was to release stored floodwaters from the dam within seven days of the flood peak passing through the dams, while controlling downstream impacts. Considerations impacting on the duration and timing of the Drain Down Phase in this instance included: <ul style="list-style-type: none"> <li>maintaining an adequate release rate to ensure that the temporary pumps providing water supplies to the Lowood area could continue to operate;</li> <li>Minimizing bank slumping impacts along the river, particularly in key areas such as Coronation Drive (as requested from the Brisbane City Council);</li> <li>Re-opening the Brisbane Valley highway and key rural bridges as quickly as possible;</li> <li>Achieving full supply levels in the dams at the conclusion of the event.</li> </ul> </li> </ul>
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<p>Commenced Thursday 13 Jan 2011 12:00</p> <p>Completed Wednesday 19 Jan 2011 12:00</p>	<p><b>Drain Down Phase</b> <b>Wivenhoe Directives #35 to #62</b> <b>Somerset Directives #10 to #13.</b></p> <ul style="list-style-type: none"> <li>During this period releases from Wivenhoe Dam are increased to as the peaks from the Lockyer and Bremer subside. Downstream impacts are controlled and and no time during this phase do downstream water levels rise except if impacted by tidal influences.</li> <li>During this period, stored flood water in Somerset Dam is drained into Wivenhoe Dam in accordance with the drain down target of seven days. Importance is placed on opening the D'Aguilar Highway as soon as possible.</li> </ul>	<p>Wivenhoe Dam level falls from 74.61 to 66.89 over the 6 day period.</p> <p>Somerset Dam level falls from 103.96 to 99.00 over the 6 day period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Forecast rainfall is ??mm in the next 24 hours. <ul style="list-style-type: none"> <li></li> </ul> </li> </ul>	<p><b>Drain Down Phase</b></p> <ul style="list-style-type: none"> <li>During this period the target was to release stored floodwaters from the dam within seven days of the flood peak passing through the dams, while controlling downstream impacts. Considerations impacting on the duration and timing of the Drain Down Phase in this instance included: <ul style="list-style-type: none"> <li>maintaining an adequate release rate to ensure that the temporary pumps providing water supplies to the Lowood area could continue to operate;</li> <li>Minimizing bank slumping impacts along the river, particularly in key areas such as Coronation Drive (as requested from the Brisbane City Council);</li> <li>Re-opening the Brisbane Valley highway and key rural bridges as quickly as possible;</li> <li>Achieving full supply levels in the dams at the conclusion of the event.</li> </ul> </li> </ul>
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**Brooke Foxover**

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**From:** DutyEngineer [dutysec [REDACTED]]  
**Sent:** Thursday, 27 January 2011 8:42 AM  
**To:** John Tibaldi  
**Subject:** Decision Review -06.doc  
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(262 KB)

## **SUMMARY OF JANUARY 2011 FLOOD EVENT**

The following series of tables provides a detailed summary of the January 2011 Flood Event. Each table covers a period of the event during which one of the following occurred:

- There was a transition or change to the flood operation strategy used as defined by the Manual.
- There was a period of stability during which no gate operations from either Wivenhoe Dam or Somerset Dam were directed.
- There was a period of sustained gate operations (either opening or closing) at either Wivenhoe Dam or Somerset Dam.

Each table also provides a summary of both relevant background information and a summary of the information that was used in decision making during the period covered by the table. This information includes:

- Details of the time period covered by the table.
- Relevant background information from the period leading up to and during the time period covered by the table.
- Changes in dam levels during the period.
- Rainfall information (including forecast rainfall) and model results available during the period.
- The Strategy used and/or adopted during the period.

Further reports and appendices are available to explain in detail the derivation of the technical information presented in the tables. Much of the background detail in the reports is taken from the event log.

JANUARY 2011 FLOOD EVENT - PERIOD 1 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Thursday 06 Jan 2011 07:42</p> <p>Completed Friday 07 Jan 2011 02:00</p>	<p><b>Strategy W1A</b></p> <ul style="list-style-type: none"> <li>No significant rainfall occurred in the 24 hours to 0900 on 5 January 2011.</li> <li>Catchment average rainfalls in the 24 hours to 0800 on 6 January 2011 were: <ul style="list-style-type: none"> <li>Wivenhoe 28mm;</li> <li>Somerset 21mm;</li> <li>Lockyer 23mm;</li> <li>Bremer 23mm.</li> </ul> </li> <li>Event Mobilisation occurred at 7:42 on Thursday 6 January 2011, using Strategies W1A and S2.</li> <li>Once mobilisation occurs, 24/7 staffing of the Flood Operations Centre and dams continues until official de-mobilisation is announced. For this event, this occurred at 12:00 on Wednesday 19 January 2011.</li> <li>Duty Engineer called back early from annual Christmas holidays to assist with the management of the event.</li> </ul>	<p>Wivenhoe Dam level rises from 67.31 to 67.52 over the 18 hour period.</p> <p>Somerset Dam level rises from 99.34 to 99.55 over the 18 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 29mm;</li> <li>Somerset 22mm;</li> <li>Lockyer 32mm;</li> <li>Bremer 32mm.</li> </ul> </li> <li>Forecast rainfall is 25mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 68.3 (excluding forecast) ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 99.8 (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> <li>Lake level not expected to reach 67.50 (Strategy W1B) until 07 January 2011.</li> <li>Peak inflows into the Brisbane River from Lockyer are estimated to be in the order of 400 cumecs, but these flows will not inundate Colleges Crossing for more than 24 hours.</li> </ul>	<p><b>Strategy W1A</b> (Lake Level greater than 67.25, maximum release 110 cumecs)</p> <ul style="list-style-type: none"> <li>Endeavour to maintain College's Crossing trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 175 cumecs.</li> <li>Water held in Wivenhoe in an attempt to maintain College's Crossing trafficable in accordance with Strategy W1A.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 2 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Friday 07 Jan 2011 02:00</p> <p>Completed Friday 07 Jan 2011 07:00</p>	<p><b>Strategy W1B</b></p> <ul style="list-style-type: none"> <li>Transition from Strategy W1A to W1B.</li> </ul>	<p>Wivenhoe Dam level rises from 67.52 to 67.68 over the 5 hour period.</p> <p>Somerset Dam level rises from 99.55 to 99.60 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 6mm;</li> <li>Somerset 10mm;</li> <li>Lockyer 2mm;</li> <li>Bremer 4mm.</li> </ul> </li> <li>Forecast rainfall is 25mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 68.3 (excluding forecast) ?? ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 99.8 (excluding forecast) ?? ?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? ?? (excluding forecast) ?? ?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? ?? (excluding forecast) ?? ?? (including forecast).</li> <li>Lake level not expected to reach 67.75 (Strategy W1C) for at least 6 hours.</li> <li>Peak inflows into the Brisbane River from Lockyer are estimated to be in the order of 500 cumecs, but these flows may not be sufficient to inundate Burtons Bridge.</li> </ul>	<p><b>Strategy W1B</b> (Lake Level greater than 67.50, maximum release 110 cumecs)</p> <ul style="list-style-type: none"> <li>Endeavour to maintain Burtons Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 430 cumecs.</li> <li>Water held in Wivenhoe in an attempt to maintain Burtons Bridge trafficable in accordance with Strategy W1B.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 3 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Friday 07 Jan 2011 07:00</p> <p>Completed Friday 07 Jan 2011 09:00</p>	<p><b>Strategy W1C</b></p> <ul style="list-style-type: none"> <li>Transition from Strategy W1B to W1C.</li> </ul>	<p>Wivenhoe Dam level rises from 67.68 to 67.75 over the 2 hour period.</p> <p>Somerset Dam level rises from 99.60 to 99.65 over the 2 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 6mm;</li> <li>Somerset 5mm;</li> <li>Lockyer 2mm;</li> <li>Bremer 1mm.</li> </ul> </li> <li>Forecast rainfall is 25mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 68.3 (excluding forecast) ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 99.8 (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> <li>Peak inflows into the Brisbane River from Lockyer are estimated to be in the order of 500 cumecs, but these flows may not be sufficient to inundate Burtons Bridge or Kholo Bridge.</li> </ul>	<p><b>Strategy W1C</b> (Lake Level greater than 67.75, maximum release 500 cumecs)</p> <ul style="list-style-type: none"> <li>Endeavour to maintain Kholo Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 550 cumecs.</li> <li>Water held in Wivenhoe in an attempt to maintain Kholo Bridge trafficable in accordance with Strategy W1C.</li> </ul>



JANUARY 2011 FLOOD EVENT - PERIOD 4 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Friday 07 Jan 2011 09:00</p> <p>Completed Friday 07 Jan 2011 15:00</p>	<p><b>Strategy W1E</b></p> <ul style="list-style-type: none"> <li>Transition from Strategy W1C to W1E. Based on rainfall on the ground, it becomes apparent that all bridges apart from the Mt Crosby Weir Bridge and Fernvale Bridge will be flooded by Lockyer Creek flows alone.</li> <li>All impacted Councils are notified of situation and that releases are to be commenced from Wivenhoe Dam. Releases were delayed until 15:00 to allow bridges to be closed and arrangements to be made to cater for rural community isolation. The impacted rural communities had been isolated over the Christmas period and time was needed for suitable arrangements to be made to allow these communities to be prepared for another extended period of isolation.</li> <li>Rainfall on the ground and rainfall forecasts did not suggest that the event was likely to approach the use of Strategy W4.</li> </ul>	<p>Wivenhoe Dam level rises from 67.75 to 68.03 over the 6 hour period.</p> <p>Somerset Dam level rises from 99.65 to 99.94 over the 6 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 24mm;</li> <li>Somerset 30mm;</li> <li>Lockyer 14mm;</li> <li>Bremer 12mm.</li> </ul> </li> <li>Forecast rainfall is 25mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 68.3 (excluding forecast) ??.?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 100.1 (excluding forecast) ??.?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ??.?? (excluding forecast) ??.?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ??.?? (excluding forecast) ??.?? (including forecast).</li> <li>Due to the further rain experienced and observed stream rises, it has become apparent that inflows from Lockyer Creek into the Brisbane River will be sufficient to inundate all bridges downstream of the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge.</li> </ul>	<p><b>Strategy W1E</b> <b>(Lake Level greater than 68.25, maximum release 1900 cumecs)</b></p> <ul style="list-style-type: none"> <li>Endeavour to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> <li>Releases from Wivenhoe Dam managed in an attempt to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable in accordance with Strategy W1E.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 5 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Friday 07 Jan 2011 15:00</p> <p>Completed Saturday 08 Jan 2011 14:00</p>	<p><b>Transition from Strategy W1E to Strategy W2</b> <b>Wivenhoe Directives #1 to #4.</b> <b>Somerset Directives #1 to #3.</b></p> <ul style="list-style-type: none"> <li>Gates opened continuously at Wivenhoe Dam for 23 hours in accordance with the standard gate opening sequence at a rate of 0.5 metres of opening per hour.</li> <li>At 14:00 on 08 January 2011, Wivenhoe discharge is 1271 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> <li>Due to rainfall on the ground, it was apparent that the Somerset Dam level would significantly exceed 100.45. Accordingly two sluice gates were opened during this period to allow dam levels to move towards the Wivenhoe/Somerset Operations Target Line in accordance with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 68.03 to 68.61 over the 23 hour period.</p> <p>Somerset Dam level rises from 99.94 to 100.44 over the 23 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 3mm;</li> <li>Somerset 5mm;</li> <li>Lockyer 1mm;</li> <li>Bremer 1mm.</li> </ul> </li> <li>Forecast rainfall is 40mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 68.7 (excluding forecast) ??.?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 100.5 (excluding forecast) ??.?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ??.?? (excluding forecast) ??.?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ??.?? (excluding forecast) ??.?? (including forecast).</li> <li>Inflows from Lockyer Creek into the Brisbane River have been sufficient to inundate all bridges downstream of the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge.</li> </ul>	<p><b>Strategy W2</b> <b>(Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>Consideration currently on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs. This may be changed if further significant rainfall is experienced.</li> </ul>

**JANUARY 2011 FLOOD EVENT - PERIOD 6 OF 21**

DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Saturday 08 Jan 2011 14:00</p> <p>Completed Sunday 09 Jan 2011 01:00</p>	<p><b>Strategy W2</b></p> <ul style="list-style-type: none"> <li>Releases maintained from both dams to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>No change to gate settings over this period. Wivenhoe discharge is 1271 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level rises very slightly from 68.61 to 68.63 over the 13 hour period.</p> <p>Somerset Dam level falls from 100.44 to 100.32 over the 13 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 8mm;</li> <li>Somerset 16mm;</li> <li>Lockyer 3mm;</li> <li>Bremer 2mm.</li> </ul> </li> <li>Forecast rainfall is 40mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 68.8 (excluding forecast) ??.?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 100.5 (excluding forecast) ??.?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ??.?? (excluding forecast) ??.?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ??.?? (excluding forecast) ??.?? (including forecast).</li> </ul>	<p><b>Strategy W2</b> <b>(Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>With lake levels rising slightly (Wivenhoe) and falling (Somerset) consideration remains on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs. This may be changed if further significant rainfall is experienced.</li> </ul>

**JANUARY 2011 FLOOD EVENT - PERIOD 7 OF 21**

DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Sunday 09 Jan 2011 01:00</p> <p>Completed Sunday 09 Jan 2011 08:00</p>	<p><b>Strategy W2</b> <b>Wivenhoe Directives #5 to #7.</b></p> <ul style="list-style-type: none"> <li>Releases increased marginally from Wivenhoe Dam to account for the passing of the Lockyer peak while maintaining Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>Wivenhoe discharge is increased from 1271 cumecs to 1367 cumecs.</li> <li>No change to Somerset Dam gate settings over this period.</li> <li>All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level falls from 68.63 to 68.57 over the 7 hour period.</p> <p>Somerset Dam level falls from 100.32 to 100.28 over the 7 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 12mm;</li> <li>Somerset 36mm;</li> <li>Lockyer 1mm;</li> <li>Bremer 0mm.</li> </ul> </li> <li>Forecast rainfall is 40mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 68.7 (excluding forecast) ?? ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 100.5 (excluding forecast) ?? ?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? ?? (excluding forecast) ?? ?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? ?? (excluding forecast) ?? ?? (including forecast).</li> </ul>	<p><b>Strategy W2</b> <b>(Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>With lake levels falling at both dams consideration remains on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs. This may be changed if further significant rainfall is experienced.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 8 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Sunday 09 Jan 2011 08:00</p> <p>Completed Sunday 09 Jan 2011 14:00</p>	<p><b>Strategy W2</b> <b>Wivenhoe Directives #7.</b> <b>Somerset Directives #4 to #5.</b></p> <ul style="list-style-type: none"> <li>Releases increased marginally from Wivenhoe Dam to account for the passing of the Lockyer peak while maintaining Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>Wivenhoe discharge is increased from 1367 cumecs to 1420 cumecs.</li> <li>Somerset Dam sluice gates opened progressively over this period to allow dam levels to move towards the Wivenhoe/Somerset Operations Target Line in accordance with Strategy S2.</li> <li>All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level rises very slightly from 68.57 to 68.58 over the 6 hour period.</p> <p>Somerset Dam level rises from 100.28 to 100.47 over the 4 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 34mm;</li> <li>Somerset 53mm;</li> <li>Lockyer 18mm;</li> <li>Bremer 15mm.</li> </ul> </li> <li>Forecast rainfall is 50mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 69.9 (excluding forecast) ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 100.6 (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> </ul>	<p><b>Strategy W2</b> <b>(Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>With lake levels rising at both dams consideration was given to transitioning the primary consideration from minimizing disruption to downstream rural life to protecting urban areas from inundation. However during this period, consideration remained on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> <li>Model results showing rapid rises in water level in Somerset Dam provide justification to consider transitioning to Strategy W3 within the next 6 hours.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 9 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Sunday 09 Jan 2011 14:00</p> <p>Completed Sunday 09 Jan 2011 19:00</p>	<p><b>Transition from Strategy W2 to Strategy W3</b></p> <ul style="list-style-type: none"> <li>Releases maintained from both dams to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable.</li> <li>No change to gate settings over this period. Wivenhoe discharge is 1436 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> <li>Due to rainfall on the ground and the rapid lake level rises, a decision is made to transition to Strategy W3 at 19:00.</li> </ul>	<p>Wivenhoe Dam level rises from 68.58 to 68.97 over the 5 hour period.</p> <p>Somerset Dam level rises from 100.47 to 101.43 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 62mm;</li> <li>Somerset 106mm;</li> <li>Lockyer 22mm;</li> <li>Bremer 6mm.</li> </ul> </li> <li>Forecast rainfall is 65mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 71.7 (excluding forecast) ??.?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 102.3 (excluding forecast) ??.?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ??.?? (excluding forecast) ??.?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ??.?? (excluding forecast) ??.?? (including forecast).</li> </ul>	<p><b>Strategy W2 (Lake Level greater than 68.50, maximum release 3500 cumecs)</b></p> <ul style="list-style-type: none"> <li>With lake levels continuing to rise at both dams the decision was made to transition the primary consideration from minimizing disruption to downstream rural life to protecting urban areas from inundation. However during this period, consideration remained on minimizing disruption to downstream rural life and endeavoring to maintain Mt Crosby Weir Bridge and Fernvale Bridge trafficable by limiting combined flows from Wivenhoe Dam and Lockyer Creek to a maximum of 1900 cumecs.</li> <li>Decision is made to transition to Strategy W3 at 19:00.</li> </ul>

**JANUARY 2011 FLOOD EVENT - PERIOD 10 OF 21**

DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Sunday 09 Jan 2011 19:00</p> <p>Completed Monday 10 Jan 2011 01:00</p>	<p><b>Strategy W3</b></p> <ul style="list-style-type: none"> <li>• Council and Agency notifications commenced at 7:00pm.</li> <li>• Fernvale Bridge closed by police at around 01:00 on 10 January 2011 and once this was confirmed a directive was issued to increase releases from Wivenhoe Dam.</li> <li>• No change to gate settings over this period due to the potential danger to the public associated with inundating Fernvale Bridge from Wivenhoe Dam outflows prior to the bridge being closed to traffic. Councils also required some time to prepare for the isolation of rural communities and to undertake evacuations. Wivenhoe discharge is 1436 cumecs. All rural bridges below the dam with the exception of the Mt Crosby Weir Bridge and Fernvale Bridge are flooded.</li> </ul>	<p>Wivenhoe Dam level rises from 68.97 to 69.97 over the 6 hour period.</p> <p>Somerset Dam level rises from 101.43 to 102.51 over the 6 hour period.</p>	<ul style="list-style-type: none"> <li>• Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>◦ Wivenhoe 24mm;</li> <li>◦ Somerset 38mm;</li> <li>◦ Lockyer 15mm;</li> <li>◦ Bremer 6mm.</li> </ul> </li> <li>• Forecast rainfall is 65mm in the next 24 hours.</li> <li>• Wivenhoe Lake level forecast to peak at 73.3 (excluding forecast) ?? (including forecast).</li> <li>• Somerset Lake level forecast to peak at 103.0 (excluding forecast) ?? (including forecast).</li> <li>• Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> <li>• Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> </ul>	<p><b>Strategy W3</b> <b>(Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>• Consideration on protecting urban areas from inundation.</li> <li>• Before releases are increased towards the limit of non-damaging floods at Moggill, Councils and other impacted agencies must be notified so that appropriate actions can be taken including any necessary evacuations and the closure of both the Mt Crosby Weir Bridge and Fernvale Bridge. The increased releases will result in the isolation of significant rural communities and result in the closure of both the Brisbane Valley Highway and the D'Aguilar Highway.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 11 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Monday 10 Jan 2011 01:00</p> <p>Completed Monday 10 Jan 2011 09:00</p>	<p><b>Strategy W3</b> <b>Wivenhoe Directives #8 to #10.</b></p> <ul style="list-style-type: none"> <li>Gates opened continuously at Wivenhoe Dam for 8 hours in accordance with the standard gate opening sequence at a rate of 0.5 metres of opening per hour.</li> <li>Wivenhoe discharge is increased from 1484 cumecs to 2030 cumecs. All rural bridges below the dam are flooded.</li> <li>Further gate openings at Wivenhoe Dam were paused at 09:00 in an attempt to allow the Lockyer and Bremer peaks to pass Brisbane and to restrict Brisbane River flows at Moggill to 3500 cumecs. This was done following advice from the Brisbane City Council that 3500 cumecs at Moggill will submerge 322 properties and impact on 7000 properties.</li> <li>No gate movements occurred at Somerset Dam during this period, with dam levels plotting under the Wivenhoe/Somerset Operations Target Line. This meant that the only gate movements allowable at Somerset under Strategy S2 would be openings and this was not done to limit further rises in Wivenhoe.</li> </ul>	<p>Wivenhoe Dam level rises from 69.97 to 71.56 over the 8 hour period.</p> <p>Somerset Dam level rises from 102.51 to 103.08 over the 8 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 12mm;</li> <li>Somerset 30mm;</li> <li>Lockyer 12mm;</li> <li>Bremer 18mm.</li> </ul> </li> <li>Forecast rainfall is 65mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 73.3 (excluding forecast) ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 103.2 (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> </ul>	<p><b>Strategy W3</b> <b>(Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>Consideration on protecting urban areas from inundation.</li> <li>Due to advice received from the Brisbane City Council that the limit of non-damaging floods is a flow of 3500 cumecs at Moggill, an attempt is made to remain within this flow.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> </ul>



JANUARY 2011 FLOOD EVENT - PERIOD 12 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Monday 10 Jan 2011 09:00</p> <p>Completed Monday 10 Jan 2011 15:00</p>	<p><b>Strategy W3</b></p> <ul style="list-style-type: none"> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 2099 cumecs. All rural bridges below the dam are flooded.</li> <li>At 15:00 the attempt to restrict Brisbane River flows at Moggill to 3500 cumecs was abandoned due to the rainfall being experienced in the dam catchments. A new target of 4000 cumecs was set in accordance with the Manual.</li> <li>No gate movements occurred at Somerset Dam during this period, with dam levels plotting under the Wivenhoe/Somerset Operations Target Line. This meant that the only gate movements allowable at Somerset under Strategy S2 would be openings and this was not done to limit further rises in Wivenhoe.</li> </ul>	<p>Wivenhoe Dam level rises from 71.56 to 72.53 over the 6 hour period.</p> <p>Somerset Dam level rises from 103.08 to 103.43 over the 6 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 34mm;</li> <li>Somerset 31mm;</li> <li>Lockyer 27mm;</li> <li>Bremer 30mm.</li> </ul> </li> <li>Forecast rainfall is 75mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 73.7 (excluding forecast) ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 103.7 (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> </ul>	<p><b>Strategy W3</b> (Lake Level greater than 68.50, maximum release 4000 cumecs)</p> <ul style="list-style-type: none"> <li>Consideration on protecting urban areas from inundation.</li> <li>A decision is made at 15:00 to attempt to remain within a target flow of 4000 cumecs at Moggill.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 13 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Monday 10 Jan 2011 15:00</p> <p>Completed Monday 10 Jan 2011 20:00</p>	<p><b>Strategy W3</b> <b>Wivenhoe Directive #11.</b></p> <ul style="list-style-type: none"> <li>Gates opened continuously at Wivenhoe Dam for 5 hours in accordance with the standard gate opening sequence at a rate of 1.0 metres of opening per hour.</li> <li>Wivenhoe discharge is increased from 2099 cumecs to 2707 cumecs. All rural bridges below the dam are flooded.</li> <li>Further gate openings at Wivenhoe Dam were paused at 20:00 in an attempt to allow the Lockyer and Bremer peaks to pass Brisbane and to restrict Brisbane River flows at Moggill to 4000 cumecs.</li> <li>No gate movements occurred at Somerset Dam during this period, with dam levels plotting under the Wivenhoe/Somerset Operations Target Line. This meant that the only gate movements allowable at Somerset under Strategy S2 would be openings and this was not done to limit further rises in Wivenhoe.</li> </ul>	<p>Wivenhoe Dam level rises from 72.53 to 73.06 over the 5 hour period.</p> <p>Somerset Dam level rises from 103.43 to 103.45 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 4mm;</li> <li>Somerset 8mm;</li> <li>Lockyer 5mm;</li> <li>Bremer 4mm.</li> </ul> </li> <li>Forecast rainfall is 38mm in the next 24 hours, with isolated falls to 100mm.</li> <li>Wivenhoe Lake level forecast to peak at 73.8 (excluding forecast) ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 103.7 (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> </ul>	<p><b>Strategy W3</b> <b>(Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>Consideration on protecting urban areas from inundation.</li> <li>A decision is made at 15:00 to attempt to remain within a target flow of 4000 cumecs at Moggill.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 14 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Monday 10 Jan 2011 20:00</p> <p>Completed Tuesday 11 Jan 2011 04:00</p>	<p><b>Strategy W3</b></p> <ul style="list-style-type: none"> <li>Forecasts indicate that areas of intense rainfall are likely to shift south and possibly miss the dam catchments.</li> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 2752 cumecs. All rural bridges below the dam are flooded.</li> <li>Gate openings at Wivenhoe Dam were paused at 20:00 in an attempt to allow the initial Lockyer and Bremer peaks to pass Brisbane and to restrict Brisbane River flows at Moggill to 4000 cumecs.</li> <li>Initial advice on a flash flood originating in Lockyer headwaters received at 20:00 and considerations undertaken during this period to develop a strategy to manage these potential flows.</li> <li>During this period the plotted dam levels drifted just above the Wivenhoe/Somerset Operations Target Line. This lead to a decision at 04:00 to commence closing down releases from Somerset Dam to limit further rises in Wivenhoe. This decision is consistent with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 73.06 to 73.40 over the 8 hour period.</p> <p>Somerset Dam level fell from 103.45 to 103.23 over the 8 hour period.</p>	<ul style="list-style-type: none"> <li>Forecasts indicate that areas of intense rainfall are likely to shift south and possibly miss the dam catchments.</li> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 44mm;</li> <li>Somerset 22mm;</li> <li>Lockyer 12mm;</li> <li>Bremer 14mm.</li> </ul> </li> <li>Forecast rainfall is 38mm in the next 24 hours, with isolated falls to 100mm.</li> <li>Wivenhoe Lake level forecast to peak at 74.00 (excluding forecast) ??.?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 103.5 (excluding forecast) ??.?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ??.?? (excluding forecast) ??.?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ??.?? (excluding forecast) ??.?? (including forecast).</li> </ul>	<p><b>Strategy W3</b> (Lake Level greater than 68.50, maximum release 4000 cumecs)</p> <ul style="list-style-type: none"> <li>Consideration on protecting urban areas from inundation.</li> <li>The target was to maintain a flow of 4000 cumecs at Moggill.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> <li>Model results show that a peak level in the dam close to 74.0 remains possible, but is appearing increasing unlikely.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 15 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Tuesday 11 Jan 2011 04:00</p> <p>Completed Tuesday 11 Jan 2011 08:00</p>	<p><b>Transition from Strategy W3 to Strategy W4 Wivenhoe Directive #12. Somerset Directive #6.</b></p> <ul style="list-style-type: none"> <li>The forecast indicating that the intense rainfall could shift south and miss the dam catchments did not eventuate.</li> <li>Extreme intense rainfall is experienced in relatively small areas of the Wivenhoe catchment during this period. (Much more words here). If the centroid of this rainfall was located 50 kms east or south, it is likely that there would not have been a need to transition to Strategy W4.</li> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 2832 cumecs. All rural bridges below the dam are flooded.</li> <li>During this period sluice gate openings at Somerset Dam are reduced from 5 to 2 as the plotted dam levels had drifted just above the Wivenhoe/Somerset Operations Target Line. This decision is consistent with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 73.40 to 73.70 over the 4 hour period.</p> <p>Somerset Dam level rises from 103.23 to 103.46 over the 4 hour period.</p>	<ul style="list-style-type: none"> <li>The forecast indicating that the intense rainfall could shift south and miss the dam catchments did not eventuate.</li> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 33mm;</li> <li>Wivenhoe Local 78mm;</li> <li>Somerset 46mm;</li> <li>Lockyer 54mm;</li> <li>Bremer 16mm.</li> </ul> </li> <li>Forecast rainfall is 38mm in the next 24 hours, with isolated falls to 100mm.</li> <li>Wivenhoe Lake level forecast to peak at 74.6 (excluding forecast) ?? (including forecast).</li> <li>Somerset Lake level forecast to peak at 103.8 (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Lowood (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> <li>Peak flow at Moggill (excluding Wivenhoe releases) estimated at ?? (excluding forecast) ?? (including forecast).</li> </ul>	<p><b>Strategy W3 (Lake Level greater than 68.50, maximum release 4000 cumecs)</b></p> <ul style="list-style-type: none"> <li>Consideration on protecting urban areas from inundation.</li> <li>The target was to maintain a flow of 4000 cumecs at Moggill.</li> <li>This strategy is consistent with the Manual directive that requires the flow at Moggill to be minimized prior to the naturally occurring peak at Moggill (excluding Wivenhoe Dam releases) being experienced.</li> <li>Model results show that restricting the peak level in the dam close to 74.0 is no longer possible due to the high intensity rainfall experienced over this period.</li> <li>At 08:00 a decision is made to transition to Strategy W4 and the Dam Safety Regulator (DERM) is advised of this decision.</li> </ul>

**JANUARY 2011 FLOOD EVENT - PERIOD 16 OF 21**

DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Tuesday 11 Jan 2011 08:00</p> <p>Completed Tuesday 11 Jan 2011 13:00</p>	<p><b>Strategy W4</b> <b>Wivenhoe Directive #12 to #14.</b> <b>Somerset Directive #7.</b></p> <ul style="list-style-type: none"> <li>• Extreme intense rainfall continues in relatively small areas of the Wivenhoe catchment during this period. (Much more words here) ). If the centroid of this rainfall was located 50 kms east or south, it is likely that there would not have been a need to transition to Strategy W4.</li> <li>• Gates opened continuously at Wivenhoe Dam for 5 hours in accordance with the standard gate opening sequence at an average rate of 2.0 metres of opening per hour.</li> <li>• Wivenhoe discharge is increased from 2832 cumecs to 3992 cumecs. All rural bridges below the dam are flooded.</li> <li>• During this period sluice gate openings at Somerset Dam are closed off as the plotted dam levels remain above the Wivenhoe/Somerset Operations Target Line. This decision is consistent with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 73.70 to 74.39 over the 5 hour period.</p> <p>Somerset Dam level rises from 103.46 to 103.91 over the 5 hour period.</p>	<ul style="list-style-type: none"> <li>• Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>◦ Wivenhoe 27mm;</li> <li>◦ Wivenhoe Local 85mm;</li> <li>◦ Somerset 86mm;</li> <li>◦ Lockyer 47mm;</li> <li>◦ Bremer 55mm.</li> </ul> </li> <li>• Forecast rainfall is 100mm in the next 24 hours.</li> <li>• Wivenhoe Lake level forecast to peak at 74.9 (excluding forecast) ?? (including forecast).</li> <li>• Somerset Lake level forecast to peak at 105.0 (excluding forecast) ?? (including forecast).</li> <li>• Once Strategy W4 is activated, the peak flows at Lowood and Moggill are no longer relevant to flood release considerations at Wivenhoe Dam.</li> </ul>	<p><b>Strategy W4</b> <b>(Lake Level predicted to exceed 74.00, no maximum release rate)</b></p> <ul style="list-style-type: none"> <li>• The target was to protect the structural safety of the dam.</li> <li>• The Manual requires actions under Strategy 4 to be that Wivenhoe gate openings are to occur at the minimum intervals and sequences until the storage level of Wivenhoe Dam begins to fall.</li> <li>• The dam level continued to rise at 01:00. A dam operator was relaying Wivenhoe Dam gauge board readings to the Flood Operations Centre every 30 minutes. All four duty engineers were present in the Flood Operations Centre and decisions were being made on a half hourly basis once the gauge board readings were received.</li> </ul>

**JANUARY 2011 FLOOD EVENT - PERIOD 17 OF 21**

DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Tuesday 11 Jan 2011 13:00</p> <p>Completed Tuesday 11 Jan 2011 19:00</p>	<p><b>Strategy W4 Wivenhoe Directive #12 to #14.</b></p> <ul style="list-style-type: none"> <li>• Extreme lake level rises in Wivenhoe Dam continue during this period and a severe weather warning for intense rainfall remains current.</li> <li>• Gates opened continuously at Wivenhoe Dam for 6 hours in accordance with the standard gate opening sequence at an average rate of 4.5 metres of opening per hour.</li> <li>• Wivenhoe discharge is increased from 3992 cumecs to 7464 cumecs. All rural bridges below the dam are flooded. Damage to urban areas in Brisbane cannot be avoided.</li> <li>• No releases are made from Somerset Dam in accordance with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level rises from 74.39 to 74.97 over the 6 hour period.</p> <p>Somerset Dam level rises from 103.91 to 104.57 over the 6 hour period.</p>	<ul style="list-style-type: none"> <li>• Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>○ Wivenhoe 15mm;</li> <li>○ Wivenhoe Local 35mm;</li> <li>○ Somerset 40mm;</li> <li>○ Lockyer 38mm;</li> <li>○ Bremer 40mm.</li> </ul> </li> <li>• Forecast rainfall is 75mm in the next 24 hours (issued at 16:00; actual rain recorded after this time was minimal as shown below).</li> <li>• Catchment average rainfalls for the 24 hour period commencing at 16:00 during this period were: <ul style="list-style-type: none"> <li>○ Wivenhoe 8mm;</li> <li>○ Wivenhoe Local 13mm;</li> <li>○ Somerset 19mm;</li> <li>○ Lockyer 9mm;</li> <li>○ Bremer 8mm.</li> </ul> </li> <li>• Wivenhoe Lake level forecast to peak at ?? (excluding forecast) ?? (including forecast).</li> <li>• Somerset Lake level forecast to peak at ?? (excluding forecast) ?? (including forecast).</li> <li>• Once Strategy W4 is activated, the peak flows at Lowood and Moggill are no longer relevant to flood release considerations at Wivenhoe Dam.</li> </ul>	<p><b>Strategy W4 (Lake Level predicted to exceed 74.00, no maximum release rate)</b></p> <ul style="list-style-type: none"> <li>• The target was to protect the structural safety of the dam.</li> <li>• The Manual requires actions under Strategy 4 to be that Wivenhoe gate openings are to occur at the minimum intervals and sequences until the storage level of Wivenhoe Dam begins to fall.</li> <li>• The dam level continued to rise at during this period. A dam operator was relaying Wivenhoe Dam gauge board readings to the Flood Operations Centre every 30 minutes. All four duty engineers were present in the Flood Operations Centre and decisions were being made on a half hourly basis once the gauge board readings were received.</li> <li>• The water level in Wivenhoe Dam peaked at 18:00 on 11 January 2011.</li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 18 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Tuesday 11 Jan 2011 19:00</p> <p>Completed Tuesday 11 Jan 2011 21:00</p>	<p><b>Strategy W4</b> <b>Wivenhoe Directive #15 to #24.</b></p> <ul style="list-style-type: none"> <li>The lake level in Wivenhoe dam stabilizes and then falls slightly at 21:00. A severe weather warning for intense rainfall remains current, but it appears from the BOM radar that the rainfall may have dissipated. On this basis a decision to commence closing down the gates to reduce urban flood impacts is taken at 21:00. This decision is potentially in contravention with the minimum gate opening settings required under Strategy W4.</li> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 7464 cumecs. All rural bridges below the dam are flooded. Damage to urban areas in Brisbane cannot be avoided.</li> <li>No releases are made from Somerset Dam in accordance with Strategy S2.</li> </ul>	<p>During this 2 hours period, the lake level in Wivenhoe Dam stabilizes at 74.97 and then falls slightly to 74.95 at 21:00.</p> <p>Somerset Dam level rises from 104.45 to 104.78 over the 2 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 1mm;</li> <li>Somerset 1mm;</li> <li>Lockyer 1mm;</li> <li>Bremer 1mm.</li> </ul> </li> <li>Forecast rainfall is 75mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 74.9 (excluding forecast) 74.9 (including forecast).</li> <li>Somerset Lake level forecast to peak at 105.1 (excluding forecast) 105.1 (including forecast).</li> <li>Once Strategy W4 is activated, the peak flows at Lowood and Moggill are no longer relevant to flood release considerations at Wivenhoe Dam.</li> </ul>	<p><b>Strategy W4</b> <b>(Lake Level predicted to exceed 74.00, no maximum release rate)</b></p> <ul style="list-style-type: none"> <li>The target was to protect the structural safety of the dam.</li> <li>The Manual requires actions under Strategy 4 to be that Wivenhoe gate openings are to occur at the minimum intervals and sequences until the storage level of Wivenhoe Dam begins to fall.</li> <li>The dam level stabilized during this period and then fell slightly at 21:00. A dam operator was relaying Wivenhoe Dam gauge board readings to the Flood Operations Centre every 30 minutes. All four duty engineers were present in the Flood Operations Centre and decisions were being made on a half hourly basis once the gauge board readings were received.</li> <li>The water level in Wivenhoe Dam peaked at 18:00 on 11 January 2011.</li> </ul>

**JANUARY 2011 FLOOD EVENT - PERIOD 19 OF 21**

DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Tuesday 11 Jan 2011 21:00</p> <p>Completed Wednesday 12 Jan 2011 08:00</p>	<p><b>Strategy W4</b> <b>Wivenhoe Directive #25 to #34.</b></p> <ul style="list-style-type: none"> <li>During this period Wivenhoe Dam gates are closed off as quickly as possible without causing rises in lake level. These actions are taken to reduce urban flood impacts downstream. The severe weather warning for intense rainfall is cancelled at 22:00 and it appears from the BOM radar that the rainfall may have dissipated. The decision to close off the release in this way is potentially in contravention with the minimum gate opening settings required under Strategy W4.</li> <li>Gates closed continuously at Wivenhoe Dam for 11 hours in accordance with the standard gate closing sequence at an average rate of just over 3.6 metres of opening per hour.</li> <li>Wivenhoe discharge is decreased from 7464 cumecs to 2547 cumecs. All rural bridges below the dam are flooded. Damage to urban areas in Brisbane cannot be avoided.</li> <li>No releases are made from Somerset Dam in accordance with Strategy S2.</li> </ul>	<p>Wivenhoe Dam level falls from 74.97 to 74.78 over the 11 hour period.</p> <p>Somerset Dam level rises from 104.78 to 105.11 over the 11 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe ??mm;</li> <li>Somerset ??mm;</li> <li>Lockyer ??mm;</li> <li>Bremer ??mm.</li> </ul> </li> <li>Forecast rainfall is ??mm in the next 24 hours.</li> <li>Wivenhoe Lake level forecast to peak at 74.9 (excluding forecast) 74.9 (including forecast).</li> <li>Somerset Lake level forecast to peak at 105.1 (excluding forecast) 105.1 (including forecast).</li> <li>Once Strategy W4 is activated, the peak flows at Lowood and Moggill are no longer relevant to flood release considerations at Wivenhoe Dam.</li> </ul>	<p><b>Strategy W4</b> <b>(Lake Level predicted to exceed 74.00, no maximum release rate)</b></p> <ul style="list-style-type: none"> <li>The target was to protect the structural safety of the dam.</li> <li>The Manual requires actions under Strategy 4 to be that Wivenhoe gate openings are to occur at the minimum intervals and sequences until the storage level of Wivenhoe Dam begins to fall.</li> <li>During this period Wivenhoe Dam gates are closed off as quickly as possible without causing rises in lake level.</li> <li>It was calculated that reducing to a discharge of 2547 cumecs from Wivenhoe Dam will: <ul style="list-style-type: none"> <li>not increase the downstream flood peak;</li> <li>will not cause the water level in Wivenhoe Dam to rise and;</li> <li>will allow the dam to be drained back to FSL in 7 days in accordance with the Manual.</li> </ul> </li> </ul>



**JANUARY 2011 FLOOD EVENT - PERIOD 20 OF 21**

DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Wednesday 12 Jan 2011 08:00</p> <p>Completed Thursday 13 Jan 2011 12:00</p>	<p><b>Transition from Strategy W4 to the Drain Down Phase Somerset Directives #8 to #9.</b></p> <ul style="list-style-type: none"> <li>During this period releases from Wivenhoe Dam are kept constant. These actions are taken to reduce urban flood impacts downstream. The decision to maintain the release in this way is potentially in contravention with the minimum gate opening settings required under Strategy W4.</li> <li>No change to gate settings occurred at Wivenhoe Dam over this period. Wivenhoe discharge is 2546 cumecs. All rural bridges below the dam are flooded. Damage to urban areas in Brisbane has not been avoided.</li> <li>Releases commenced from Somerset Dam during this period as the plotted dam levels fell below the Wivenhoe/Somerset Operations Target Line. These actions were undertaken in accordance with Strategy S2 and to allow the D'Aguilar Highway to be opened as soon as possible. Even though plotted dam levels later rose above the Wivenhoe/Somerset Operations Target Line during this period, releases from Somerset dam continued to allow the dam to be drained back to FSL in 7 days in accordance with the Manual.</li> </ul>	<p>Wivenhoe Dam level falls from 74.78 to 74.61 over the 28 hour period.</p> <p>Somerset Dam level falls from 105.11 to 103.96 over the 28 hour period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this period were: <ul style="list-style-type: none"> <li>Wivenhoe 2mm;</li> <li>Somerset 6mm;</li> <li>Lockyer 6mm;</li> <li>Bremer 6mm.</li> </ul> </li> <li>Forecast rainfall is 10mm in the next 24 hours.</li> </ul>	<p><b>Drain Down Phase (Stored floodwaters emptied from the dam in seven days)</b></p> <ul style="list-style-type: none"> <li>During this period the strategy transitioned from Strategy W4, during which the target is to protect the structural safety of the dam, to the Drain Down Phase of the event.</li> <li>Once the Drain Down Phase commenced, the target was to release stored floodwaters from the dam within seven days of the flood peak passing through the dams, while controlling downstream impacts. Considerations impacting on the duration and timing of the Drain Down Phase in this instance included: <ul style="list-style-type: none"> <li>maintaining an adequate release rate to ensure that the temporary pumps providing water supplies to the Lowood area could continue to operate;</li> <li>Minimizing bank slumping impacts along the river, particularly in key areas such as Coronation Drive (as requested from the Brisbane City Council);</li> <li>Re-opening the Brisbane Valley highway and key rural bridges as quickly as possible;</li> <li>Achieving full supply levels in the dams at the conclusion of the event.</li> </ul> </li> </ul>

JANUARY 2011 FLOOD EVENT - PERIOD 21 OF 21				
DATE/TIME	BACKGROUND	DAM LEVELS	RAINFALL AND MODEL RESULTS	STRATEGY
<p>Commenced Thursday 13 Jan 2011 12:00</p> <p>Completed Wednesday 19 Jan 2011 12:00</p>	<p><b>Drain Down Phase</b> <b>Wivenhoe Directives #35 to #62</b> <b>Somerset Directives #10 to #13.</b></p> <ul style="list-style-type: none"> <li>During this period releases from Wivenhoe Dam are increased to as the peaks from the Lockyer and Bremer subside. Downstream impacts are controlled and and no time during this phase do downstream water levels rise except if impacted by tidal influences.</li> <li>During this period, stored flood water in Somerset Dam is drained into Wivenhoe Dam in accordance with the drain down target of seven days. Importance is placed on opening the D'Aguilar Highway as soon as possible.</li> </ul>	<p>Wivenhoe Dam level falls from 74.61 to 66.89 over the 6 day period.</p> <p>Somerset Dam level falls from 103.96 to 99.00 over the 6 day period.</p>	<ul style="list-style-type: none"> <li>Catchment average rainfalls over this six day period were: <ul style="list-style-type: none"> <li>Wivenhoe 14mm;</li> <li>Somerset 7mm;</li> <li>Lockyer 7mm;</li> <li>Bremer 8mm.</li> </ul> </li> </ul>	<p><b>Drain Down Phase</b></p> <ul style="list-style-type: none"> <li>During this period the target was to release stored floodwaters from the dam within seven days of the flood peak passing through the dams, while controlling downstream impacts. Considerations impacting on the duration and timing of the Drain Down Phase in this instance included: <ul style="list-style-type: none"> <li>Maintaining an adequate release rate to ensure that the temporary pumps providing water supplies to the Lowood area could continue to operate;</li> <li>Minimizing bank slumping impacts along the river, particularly in key areas such as Coronation Drive (as requested from the Brisbane City Council);</li> <li>Re-opening the Brisbane Valley highway and key rural bridges as quickly as possible;</li> <li>Achieving full supply levels in the dams at the conclusion of the event.</li> </ul> </li> </ul>

## Brooke Foxover

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**From:** DutyEngineer [dutyse@...] [redacted]  
**Sent:** Thursday, 27 January 2011 11:31 AM  
**To:** Rob Drury  
**Cc:** Terry Malone; Rob.ayre [redacted] John.Ruffini [redacted] John Tibaldi;  
Jim Pruss  
**Subject:** JANUARY 2011 FLOOD EVENT REPORT - Draft Table of contents

**This message has been archived. View the original item.**

A suggested draft "Table of Contents" for the report based on work undertaken by Rob Drury is shown below. This is likely to change as we progress with writing the report; however I believe that the basis proposed is sound.

### Executive Summary

### Introduction

### Flood Event Summary

### Flood Event Description

#### Event Mobilisation and Staffing

- Event Rainfall and Event Significance
- Dam Inflow and Flood Release Details
- Data Validity and Data Collection System Performance
- Flood Model Validity and Performance
- Flood Management Strategies and Manual Compliance
- Event Communication Processes

### Flood Event Review

- Review of data collection systems, practices and processes

- Review of Flood the Management Team Personnel and the support provided to the Flood Management Team during the event
- Review of Flood Modelling systems, practices and processes
- Review of Flood Manual Procedures and Strategies
- Review of Agency Interaction during the event

#### Flood Event Outcomes

- Conclusions
- Recommendations

#### Technical Appendices (numerous volumes)

- These will be used to allow validation of the technical data contained in the report and in some cases will be large "stand-alone" documents.

John Tibaldi

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