

[REDACTED]

From: Bradley John
Sent: Wednesday, 20 October 2010 1:09 PM
To: spiller daniel @ SEQWGM
Cc: Robson Chris; Reilly Bob
Subject: Re: Cabinet deliverables

Thanks Dan

Can you pls doe me a favour

1) MTN needed cob tomorrow

2) Re Letter from Min....

Bob can you coordinate this liaising with Dan, Seqwater, Sunwater before sending up by Monday COB?

Two letters for Min to sign - 1 would be to

A) DG DERM asking OWSR to coordinate Flood Risk management strategy update for Queensland storages

B) Letter from Min to Dam Owners operators asking them to provide every support to OWSR as they undertake the review

C) This will need to be followed by letter from OWSR to say review to cover

* current approach in flood ops manual to managing full or overflowing storages, ie ensuring they HAVE a plan and framework

* confirming dam operators have clear rules around communication with community about flood risk from operational releases.

* asking operators that if there is any concern about ability to manage downstream flood risk - ask operators to assess if manuel is sufficiently conservative. Specifically, would additional flood risk mitigation benefits merit operating storage at lower levels to create freeboard given current outlook for wet season

* Ask operators to advise of any proposed changes or confirming current procedures will be retained

3) Yes pls to press release

Thanks
John B

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

From: Dan Spiller [REDACTED]
To: Bradley John
Sent: Wed Oct 20 12:34:33 2010
Subject: Cabinet deliverables

John,

Further to our conversation:

I will draft a Matter to Note for lodgement by 10am Friday. I will consult with Treasury about it (they have major concerns about avoiding any risk of asset impairment). I will get a draft to you tomorrow. (Timing will depend upon input from WaterSecure, due tomorrow.)

I will draft a letter to Seqwater. Are you happy for me to consult Seqwater

in advance to ensure that the letter covers what they would want to look at? For example, I think they asked to drop the level in Leslie Harrison Dam last year. Alternatively, or as well, could I speak to John Ruffini and Bob Reilly?

Do you want us to draft an indicative media release for next week? If so, are you happy for Michael Lyons to be involved, or should we limit it to Barry and I?

Thanks,

Dan

Daniel Spiller

Director, Operations

SEQ Water Grid Manager

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

Email: [REDACTED]

Visit: Level 15, 53 Albert Street Brisbane

Post: PO Box 16205, City East QLD 4002

ABN: 14783 317 630

Please consider the environment before printing this email. It takes 10 litres of water to make one sheet of A4 paper.

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[REDACTED]

From: Reilly Bob
Sent: Thursday, 21 October 2010 6:03 AM
To: Bradley John
Subject: RE: Cabinet deliverables

Hi Dan

Further to our conversation yesterday, my dam safety measure will be dealt with through the DERM process (apparently).

Regards

Bob

Bob Reilly
General Manager, Office of the Water Supply Regulator
Telephone: [REDACTED] Mobile: [REDACTED] Facsimile: [REDACTED]
Email: [REDACTED]
www.derm.qld.gov.au

Department of Environment and Resource Management Lvl 3 41 George Street, Brisbane Q 4000 GPO Box 2454, Brisbane Q 4001 -----Original Message-----

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[REDACTED]

From: Bradley John
Sent: Saturday, 15 January 2011 10:34 AM
To: [REDACTED] spiller daniel @ SEQWGM
Cc: [REDACTED] Dennien Barry @ SEQWGM
Subject: Re: Urgent - Cabinet in confidence

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

Regards
John B

From: Lance McCallum [mailto:[REDACTED]]
Sent: Saturday, January 15, 2011 10:30 AM
To: spiller daniel @ SEQWGM; Bradley John
Cc: Tim Watts <[REDACTED]>
Subject: Urgent - Cabinet in confidence

John/Dan

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

I understand that in further to the recent independent review of the Wivenhoe operations manual the WGM is also undertaking further work by compiling a list of the operational experts who authored the manual.

Happy to discuss further.

Thanks, Lance.

[REDACTED]

From: Elaina Smouha ([REDACTED])
Sent: Saturday, 15 January 2011 1:42 PM
To: Bradley John
Cc: Dennien Barry @ SEQWGM; spiller daniel @ SEQWGM; [REDACTED] Reilly Bob
Subject: Cabinet in confidence - discussion points
Attachments: Public inquiry strategy - brief.docx

John

Attached are some discussion points for our 2pm teleconference about Monday's Emergency Cabinet meeting.

Regards

Elaina

Discussion points for teleconference

What is the objective?

- a) Ensuring public transparency
- b) To answer the State's questions on the performance of Wivenhoe Dam operations
- c) Preparation for a public inquiry
- d) Normal and logical course of conduct after the occurrence of a major flood event – Review requirement under the Flood Mitigation Manual

Background

- 1) Design of Dam – Storages/Spillway upgrade (Responsible: Seqwater)
- 2) How does Wivenhoe Dam work as a flood mitigator? Stats on how much did Wivenhoe Dam knock off the flood peak? **[Priority to get out to the public]** (Responsible: Seqwater)
- 3) Development of Flood Mitigation Manual (Responsible: Seqwater/DERM)
 - a. Four strategies
 - b. History of Flood Mitigation Manual updates and peer review
- 4) Responsibility under the *Water Supply (Safety and Reliability) Act 2008* (Responsible: DERM)
 - a. What is the formal reporting process following a major flood event?
- 5) "The Event" – operation of Wivenhoe Dam (Responsible: Seqwater)
 - a. Event report under the Flood Mitigation Manual
- 6) "The Event" – management of the Water Grid emergency under the SEQ Water Grid Emergency Response Plan (Responsible: SEQ Water Grid Manager)
- 7) What next?
 - a. SWOT
 - i. Community feedback
 - ii. A significant (from a national perspective)

Seqwater report

Flood Mitigation Manual requires a report to the Chief Executive after a significant flood event, on the effectiveness of the operational procedures:

- Get more comprehensive report from Brian Cooper? – review appropriateness of trigger levels – take into account the accuracy of rainfall forecasts provided by BOM at the time – reliability of weather forecasts.
- Set up expert panel for Flood Mitigation Manual review
- Communication Protocol and incorporation into the Flood Mitigation Manual (revisit in the next fortnight)

Seqwater to procure review.

Urgent accelerated review due to anticipated further rainfall.

[REDACTED]

From: Bradley John
Sent: Sunday, 16 January 2011 7:41 PM
To: [REDACTED] spiller daniel @ SEQWGM
Cc: [REDACTED] Dennien Barry @ SEQWGM
Subject: Re: Urgent - Cabinet in confidence

Lance

I am sorry for the delay on the brief requested for tonight for Minister - Barry and his team have been working hard all day on this among their other issues - but have had challenges with input from seqwater.

Seqwater has struggled to provide their input in a congenit form and so Barry, Dan and others are still there awaiting for some stuff and finalising it at the end of a very long week.

We think we are about 60 to 90 minutes away at this point. I will forward it to you and Minister as soon asap and we will talk through at 9 am.

John B

From: Bradley John
Sent: Saturday, January 15, 2011 10:33 AM
To: [REDACTED] spiller daniel @ SEQWGM
Cc: [REDACTED] Dennien Barry @ SEQWGM
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Happy to discuss further.

Thanks, Lance.

1/04/2011

[REDACTED]

From: Bradley John
Sent: Sunday, 16 January 2011 10:33 PM
To: Robertson Stephen @ Ministerial
Cc: [REDACTED] 'Tim Watts'
Subject: FW: Cabinet in confidence - Ministerial brief - Flood event and Wivenhoe Dam
Attachments: Letter_from_Stephen_Robertson_MP_RE_Release_of_Water_from_Key_Storages[1].pdf; Letter_to_Minister_-_flood_management[1].docx; BrianCooperCV09122010.pdf; Brian Cooper - final report.docx; Brian Cooper - final report attachment.xlsx; Seqwater Ministerial Briefing Note January 17 2011 Final Draft for distribution[1].docx; Seqwater Jan 2011 Flood Event Ver 1 draft for distribution[1].docx; FINAL Ministerial Brief - Wivenhoe Operations[3].docx; Talking points_Wivenhoe Dam releases.docx

Minister and Lance

Apologies for the late hour at which this arrives. SEQWGM will bring hard copies of the assembled folders including all attachments to the 9 am Meeting.

If you DID have time to peruse anything before the meeting I recommend the document "Seqwater Ministerial Briefing Note" which contains some new information of interest.

We will see you at 9 am in your offices at 61 Mary Street,

thanks
John B

From: Elaina Smouha [mailto:[REDACTED]]
Sent: Sunday, 16 January 2011 10:14 PM
To: Bradley John
Cc: Dennien Barry @ SEQWGM; spiller daniel @ SEQWGM; WaterGridMedia; Best Debbie; pborrows
Subject: Cabinet in confidence - Ministerial brief - Flood event and Wivenhoe Dam

John

Attached is the Ministerial Brief and accompanying attachments for the Emergency Cabinet meeting scheduled on 17 January 2011.

Regards

Elaina

Elaina Smouha
Director, Governance and Regulatory Compliance
SEQ Water Grid Manager

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

Email: [REDACTED]

Visit: Level 15, 53 Albert Street Brisbane

Post: PO Box 16205, City East QLD 4002

ABN: 14783 317 630

[REDACTED]

From: Dan Spiller [REDACTED]
Sent: Monday, 17 January 2011 8:31 AM
To: 'Geoff Stead'
Cc: Bradley John
Subject: Talking points_Wivenhoe Dam releases
Attachments: Talking points_Wivenhoe Dam releases.docx

Geoff,

Updated version including notes about review.

Dan

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TRIM reference: D/11/

Enquiry received:

Purpose: Wivenhoe Dam release

Impacts of Wivenhoe and Somerset dams

- Wivenhoe and Somerset dams reduced the flood peak by 2.5 metres in the City and 5.5 metres at Moggill.
- Without the dams, up to 13,000 more houses would have been flooded. They prevented up to \$1.6 billion of damages.
- Without the dams, major flooding would have lasted for three days.
- Wivenhoe and Somerset dams controlled 2.6 million megalitres of floodwater. This is 1.1 million megalitres more than in 1974.
- The dams controlled these floodwaters, providing time for peak flows from the Lockyer and Bremer to pass.
- Total flow in the Brisbane River in 1974 was 9,500 cubic metres per second. The estimated flow from this event would have been 13,000 cubic metres per second if Wivenhoe did not exist.

Operation of Wivenhoe and Somerset dams

- The dams were operated strictly in accordance with the approved Operational Procedures.
- The Operational Procedures were developed by Australia's best hydrologists, including:
 - Professor Colin Apelt, Head of Department, Department of Civil Engineering, University of Queensland
 - Mr Eric Lesleighter, Principal Hydraulic Engineer and Chief Engineer Water Resources, Snowy Mountains Engineering Corporation.
- Professor Apelt is Chair of the Brisbane City Council flood taskforce.

Flood report

- There is a regulatory requirement that Seqwater prepare a flood report.
- By regulation. the report will be submitted within six weeks of the gates closing.

- The report will be a comprehensive summary of all procedures, actions, outcomes and processes during the event. It will consider factors impacting on the protection of urban areas.
- The report will be reviewed by the Dam Safety Regulator and independent experts.
- The report and its review will be submitted to the Government and inform a review of the Operational Procedures.
- The review of Operational Procedures will utilise an expert panel o, including representatives of the Bureau of Meteorology and Councils.

Rainfall forecasts

- Dam operations were based on forecasts provided by the Bureau of Meteorology.
- The rainfall during the event exceeded all forecasts.
- Rainfall was local and intense, as demonstrated by the tragic events in Toowoomba.
- It is unreasonable to expect that dam operators could foresee these events.

Pre-emptive releases

- The dam has been designed for both water supply and flood mitigation.
- Detailed Operational Procedures have been developed by leading hydrologists over many years, with a review as recently as 2009. The procedures are based on the current full supply level.
- Water was released from the dam on 20 of the 25 days leading up to this event.
- A total of 1,450 million megalitres was released between October 2010 and this event.
- These releases isolated some residents and inconvenienced many more.
- The clear decision making process in the Manual was set down since 1992 and was reviewed in 2009 to reflect the installation of the Wivenhoe Spillway upgrade. That review included independent experts from the Bureau of Meteorology, Sunwater, Brisbane City Council and the Department of Environment and Resource Management.
- It is a manual which reflects safe operating practices based on detailed hydrological analysis and technical assessments of dam safety.

Peak releases

- Outflows from Wivenhoe Dam peaked on Tuesday 11 January 2011 at 397,000 ML.
- The impact of these releases was minimised by closing down releases quickly once inflows into the dam had peaked.
- The release rate was higher for three hours, but not sustained.
- These releases accounted for only part of the increase in river levels. The Bureau of Meteorology has stated that, even at their peak, outflows from Wivenhoe Dam contributed slightly more than half the flood arriving in Brisbane (Courier Mail, 14 January).

Large releases earlier

- Releasing large volumes of water over the weekend would have had major impacts on the rural communities of the Brisbane Valley. Bridges would have been cut and communities would have been isolated with little notice.
- Over the weekend, neither rainfall forecasts nor the rain on the ground indicated with certainty that urban areas would be impacted.

Increases to above 200% (level of fuse plugs)

- Wivenhoe Dam is not designed to overtop. If it did, the dam would fail and the resulting damage and loss of life would be at least 100 to 1,000 times greater than that currently being experienced.
- To ensure that this never occurs, the dam has been designed with plugs that automatically open when it reaches more than 200% of full supply volume.
- Once opened, the rate of release through these plugs cannot be varied.
- The plugs continue to release water at this rate until the dam reaches full supply level.
- The plugs would take four to six months of dry weather to repair, rendering the flood storage compartment useless.

Changes to dam operations

- The dam spillway was upgraded in 2007, increasing its release capacity in extreme floods. This upgrade is designed to ensure the structural integrity of the dam during floods significantly worse than the current event.

- A further upgrade of the spillway is scheduled to occur by 2035, in order to comply with ANCOLD upgrade. This upgrade is for even more extreme floods. It would have had no impact on the management of the current flood.
- Options to increase the full supply level have been investigated. Had they been implemented, these options would have reduced the flood compartment, resulting in higher releases earlier.

[REDACTED]

From: Bradley John
Sent: Monday, 24 January 2011 8:21 AM
To: Matthews Helen; Claydon Greg
Cc: Watson Doug; Anderson Danielle
Subject: RE: Attachments for Urgent Cab Sub

Helen

Min Robertson is ok with the Submission

John Bradley

Director-General
Department of Environment and Resource Management
Telephone: [REDACTED]
Email: [REDACTED]
www.derm.qld.gov.au

Department of Environment and Resource Management
400 George Street, Brisbane Q 4000
GPO Box 2454, Brisbane Q 4001

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Hi John,

I am just reading and printing up the submission now. I will run it down to Minister Robertson's office when they open.

Greg – pls get in touch with me when you have attachment 1 available.

Kind regards
Helen Matthews
Cabinet and Parliamentary Services
Department of Environment and Resource Management
Level 3, 400 George Street BRISBANE QLD 4001
Ph: 3330 5134 (Please dial full number if calling from outside 400 George St)

[REDACTED]

From: Bradley John
Sent: Monday, 24 January 2011 7:17 AM
To: Bradley John; Claydon Greg; Matthews Helen
Cc: Watson Doug; Anderson Danielle
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Helen, Greg

Thanks for assisting with this.

As per my email below last night, we will need

A) An Execution Copy of the Submission prepared by the CLLO and delivered to Min Robertson's office ASAP this morning including Attachments.

B) 25 copies of the signed Submission and three (3) attachments to the Submission (as listed in the Attachments at end) being

1. Rockhampton Flood Management Study undertaken by Camp Scott Furphy Pty Ltd (1992);

GREG C IS ARRANGING FOR THIS - EXEC SUMMARY ONLY NEEDS TO BE ATTACHED TO SUB

2. Report by Seqwater titled Provision of Contingency Storage in Wivenhoe and Somerset Dams prepared in March 2007

PLEASE PRINT THE EXEC SUMMARY AND CONTENTS PAGES (ie up to page xi) from the attached weblink.

<http://www.qwc.qld.gov.au/planning/pdf/support-docs/provision-of-contingency-storage-in-wivenhoe-and-somerset-da.pdf>

3. Seqwater's Manual of operational procedures for flood mitigations at Wivenhoe Dam and Somerset Dam

SEE ATTACHED PDF - THERE IS NO EXEC SUMMARY - SO WE WILL NEED TO ATTACH THE FULL DOCUMENT, 2-SIDED COLOUR COPIED

<< File: WD-SD-Rev 7 -FINAL_Uncontrolled Copy.pdf >>

Greg - we will also need a referral letter from the Premier to the Commission, but I will send you a separate email on that.

John Bradley
Director-General
Department of Environment and Resource Management
Telephone: [REDACTED]
Email: [REDACTED]
www.derm.qld.gov.au

Department of Environment and Resource Management
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From: Bradley John
Sent: Sunday, 23 January 2011 7:50 PM
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Subject: Urgent - Sorry for Rush - for Cabinet

-- Cabinet in Confidence --

Don, Greg

As discussed tonight with Greg and as per text to Don - thnaks for your help

Greg - could you pls arrange the Exec Summary of the Rocky Flood Study and for copies of this exec summs of other 2 documents for CLLO - they will need about 25 copies I think

Don - can you pls format -may be some tweaks from Min R in the morning - but otherwise we will get signing copy to Stephen ASAP

Any queries please give me a buzz.

Thanks
John B

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

From: Bradley John

Sent: Sunday, 23 January 2011 7:47 PM

To: 'Ken Smith'; Bronwen Griffiths

Cc: [REDACTED]

Subject: FW: Cabinet on Monday

Ken, Anthony, Bron

Current version as it is yet to be considered by Stephen - fyi

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Min R

CLLO is leaving now to hand-deliver execution copy to your office

John Bradley

Director-General
Department of Environment and Resource Management
Telephone: [REDACTED]
Email: [REDACTED]
www.derm.qld.gov.au

Department of Environment and Resource Management 400 George Street, Brisbane Q 4000
GPO Box 2454, Brisbane Q 4001

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

From: Stephen Robertson [mailto:[REDACTED]]
Sent: Monday, 24 January 2011 8:20 AM
To: Lance McCallum
Cc: Bradley John
Subject: RE: Cabinet on Monday

I'm ok with the sub

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

From: Lance McCallum
Sent: Sunday, 23 January 2011 7:44 PM
To: [REDACTED] Stephen Robertson
Cc: Tim Watts; Geoff Stead
Subject: Re: Cabinet on Monday

Thanks John

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

From: Bradley John [REDACTED]
To: Bradley John [REDACTED] Stephen Robertson
Cc: Lance McCallum; Tim Watts; Geoff Stead
Sent: Sun Jan 23 19:43:43 2011
Subject: RE: Cabinet on Monday

Min R

As requested - pls find attached a copy of the draft Cab Sub for tomorrow. I got later advice from Cab Sec to do it in a Coversheet format rather than Oral Submission format so you will see this reflected here.

I will get our CLLO team to prepare a signature copy and our teams to copy Exec Summaries as you requested.

Pls advise if any concerns thanks

John B

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

From: Bradley John
Sent: Saturday, 22 January 2011 4:30 PM
To: [REDACTED]
Cc: [REDACTED]

Subject: Re: Cabinet on Monday

Min R,

Will do. Submission will be in Cab Sec's Oral Sub Format - have alerted Cab Sec.

Thanks
John B

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

From: Stephen Robertson

Sent: Saturday, January 22, 2011 02:54 PM

To: Bradley John

Cc: Lance McCallum <[REDACTED]> Tim Watts

<[REDACTED]> Geoff Stead <[REDACTED]>

Subject: Cabinet on Monday

Gents

I met with the Premier today to discuss the 2007 report on the possible raising of wivenhoe and somerset dams for additional drinking water. She agrees that we should get on the front foot. Accordingly I would like a walk-in submission prepared for Monday that attaches both the executive summaries wivenhoe/somerset report and the 1992 rockhampton flood study recommending they be sent to both the commission of inquiry and the reconstruction task force.

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Geoff can u also start organizing a media release on the the forwarding of these documents -remember cabinet is sitting much later than usual so you have time up your sleeve.

Thanks

Stephen Robertson

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

[REDACTED]

From: Bradley John
Sent: Monday, 24 January 2011 7:49 AM
To: Bradley John; [REDACTED]
Cc: [REDACTED]
Subject: Draft Letter of Referral to Justice Cate Holmes
Attachments: Draft Referral Letter to Justice Cate Holmes.doc



Draft Referral
Letter to Justl...

Min R

Please find attached a draft letter of Referral to Justice Holmes, not intended to be attached to the Submission itself (unless you have a different view)

Pls note it has been drafted for the Premier's signature based on your email on Saturday and we are just confirming address details. Any changes from you or your office would be welcome.

Regards

John Bradley
Director-General
Department of Environment and Resource Management
Telephone: [REDACTED]
Email: [REDACTED]
www.derm.qld.gov.au

Department of Environment and Resource Management 400 George Street, Brisbane Q 4000
GPO Box 2454, Brisbane Q 4001

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Sent: Saturday, January 22, 2011 02:54 PM
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Cc: Lance McCallum [REDACTED] Tim Watts
[REDACTED]

Subject: Cabinet on Monday

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Thanks

Stephen Robertson

Bradley John

From: Bradley John
Sent: Sunday, 30 January 2011 2:20 PM
To: Lance McCallum; Tim Watts
Cc: Best Debbie
Subject: FW: Ministerial Brief - Water Grid Operational Status
Attachments: Ministerial Brief - Water Grid operational status.pdf
FYI – as requested by Minister I understand.

John Bradley
Director-General
Department of Environment and Resource Management
Telephone: [REDACTED]
Email: [REDACTED]
www.derm.qld.gov.au

Department of Environment and Resource Management
400 George Street, Brisbane Q 4000
GPO Box 2454, Brisbane Q 4001

From: Best Debbie
Sent: Sunday, 30 January 2011 11:22 AM
To: Bradley John
Subject: FW: Ministerial Brief - Water Grid Operational Status

John
I have just seen this brief which is for the Minister's information prior to Cabinet. I would assume you have not seen it yet. If you are okay with the brief I could forward to Lance and Tim.
Debbie

From: Jade Simmons [mailto:[REDACTED]]
Sent: Friday, 28 January 2011 5:45 PM
To: Best Debbie; Claydon Greg
Cc: spiller daniel @ SEQWGM
Subject: Ministerial Brief - Water Grid Operational Status

Dear Debbie and Greg,

Please find attached a Briefing Note for the Minister in relation to the Water Grid's operational status post flood. This brief was requested late yesterday.

While this item (CTS 01190/11) has been forwarded through MECS late this afternoon as per standard processes, we would like to ensure the Minister receives it before Cabinet on Monday 31 January 2011.

If you would please assist us to get this to the Ministers Office before this point, we would be grateful.

Kindest regards
Jade Simmons
Senior Correspondence Officer
SEQ Water Grid Communications Unit
SEQ Water Grid Manager
Phone: [REDACTED] | **Fax:** [REDACTED]
Email: [REDACTED]
Visit: Level 15, 53 Albert Street Brisbane
Post: PO Box 16205, City East QLD 4002

This email, together with any attachments, is intended for the named recipient(s) only; and may contain privileged and confidential information. You understand that any privilege or confidentiality attached to this message is not waived, lost or destroyed because you have received this message in error. If received in error, you are asked to inform the sender as quickly as possible and delete this email and any copies of this from your computer system network.

If not an intended recipient of this email, you must not copy, distribute or take any action(s) that relies on it; any form of disclosure, modification, distribution and/or publication of this email is also prohibited.

While all care has been taken, the SEQ Water Grid Manager disclaims all liability for loss or damage to person or property arising from this message being infected by a computer virus or other contamination. Unless stated otherwise, this email represents only the views of the sender and not the views of the SEQ Water Grid Manager and/or the Queensland Government.

Bradley John

From: Bradley John
Sent: Monday, 24 January 2011 7:21 AM
To: Matthews Helen
Subject: RE: Attachments for Urgent Cab Sub

Thanks a lot

John Bradley

Director-General
Department of Environment and Resource Management
Telephone: [REDACTED]
Email: [REDACTED]
www.derm.qld.gov.au

Department of Environment and Resource Management
400 George Street, Brisbane Q 4000
GPO Box 2454, Brisbane Q 4001

From: Matthews Helen
Sent: Monday, 24 January 2011 7:20 AM
To: Bradley John; Claydon Greg
Cc: Watson Doug; Anderson Danielle
Subject: RE: Attachments for Urgent Cab Sub

Hi John,

I am just reading and printing up the submission now. I will run it down to Minister Robertson's office when they open.

Greg – pls get in touch with me when you have attachment 1 available.

Kind regards
Helen Matthews
Cabinet and Parliamentary Services
Department of Environment and Resource Management
Level 3, 400 George Street BRISBANE QLD 4001
Ph: [REDACTED] (Please dial full number if calling from outside 400 George St)

[REDACTED]

From: Bradley John
Sent: Monday, 24 January 2011 7:17 AM
To: Bradley John; Claydon Greg; Matthews Helen
Cc: Watson Doug; Anderson Danielle
Subject: Attachments for Urgent Cab Sub

Helen, Greg

Thanks for assisting with this.

As per my email below last night, we will need

A) An Execution Copy of the Submission prepared by the CLLO and delivered to Min Robertson's office ASAP this morning including Attachments.

B) 25 copies of the signed Submission and three (3) attachments to the Submission (as listed in the Attachments at end) being

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Greg - we will also need a referral letter from the Premier to the Commission, but I will send you a separate email on that.

John Bradley
Director-General
Department of Environment and Resource Management
Telephone: [REDACTED]
Email: [REDACTED]
www.derm.qld.gov.au

Department of Environment and Resource Management
400 George Street, Brisbane Q 4000
GPO Box 2454, Brisbane Q 4001

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From: Bradley John
Sent: Sunday, 23 January 2011 7:50 PM
To: Sfiligoj Don; Claydon Greg
Subject: Urgent - Sorry for Rush - for Cabinet

-- Cabinet in Confidence --

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Don - can you pls format -may be some tweaks from Min R in the morning - but otherwise we will get signing copy to Stephen ASAP

Any queries please give me a buzz.

Thanks
John B

-----Original Message-----
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Sent: Sunday, 23 January 2011 7:47 PM
To: 'Ken Smith'; Bronwen Griffiths
Cc: [REDACTED]
Subject: FW: Cabinet on Monday

Ken, Anthony, Bron

Current version as it is yet to be considered by Stephen - fyi

Will try to get it to you asap tomorrow

John B

Bradley John

From: Bradley John
Sent: Thursday, 27 January 2011 10:54 PM
To: [REDACTED]
Cc: [REDACTED]
Subject: Re: That letter from Lm to Prem on flooding
Thanks Paul, Wil

JB

From: Paul Low [REDACTED]
Sent: Thursday, January 27, 2011 10:50 PM
To: Bradley John
Cc: Wil Brown [REDACTED]
Subject: Fw: That letter from Lm to Prem on flooding

Hi John - I noted in earlier email exchange with Nicole that you hadn't seen inwards from LM either.

Wil got hold of it for me - pls see attached.

Will call tomorrow re:background to Premiers draft response sent to you, I and Graeme and the rationale for nominating DIP as first contact point

Regards

Paul

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

From: Wil Brown
To: Paul Low
Sent: Thu Jan 27 13:35:26 2011
Subject: That letter from Lm to Prem on flooding

Paul

Gen just brought me out that letter you were looking for. I only have the incoming not the outgoing (so there is no response from the premier about you and your role as CEO GMQ)

I know you said you didn't want this for BOM but if you change your mind I can bring it over anytime.

Kind regards

Wil

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

From: [REDACTED]
Sent: Thursday, 27 January 2011 1:16 PM
To: Wil Brown
Subject: Scan Data from p502431

Number of Images: 1
Attachment File Type: PDF

Device Name: ApeosPort-II C4300
Device Location: Dept. of Local Govt Planning Sport

Unless stated otherwise, this email, together with any attachments, is intended

If not an intended recipient of this email, you must not copy, distribute or t

Unless stated otherwise, this email represents only the views of the sender an

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Thanks a lot

John Bradley

Director-General
Department of Environment and Resource Management
Telephone: [REDACTED]
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Department of Environment and Resource Management
400 George Street, Brisbane Q 4000
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Greg – pls get in touch with me when you have attachment 1 available.

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Level 3, 400 George Street BRISBANE QLD 4001
Ph: [REDACTED] Please dial full number if calling from outside 400 George St)

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Greg - we will also need a referral letter from the Premier to the Commission, but I will send you a separate email on that.

John Bradley
Director-General
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Telephone: [REDACTED]
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Cc: [REDACTED]
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Attachments: Flood Documents Cab Sub.doc



Flood Documents
Cab Sub.doc (1...

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Thanks

Stephen Robertson

Bradley John

From: Bradley John
Sent: Saturday, 22 January 2011 8:40 PM
To: [REDACTED]
Subject: Re: Cabinet on Monday

Ken
Will do thanks
John B

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

From: Ken Smith [mailto:[REDACTED]]
Sent: Saturday, January 22, 2011 08:33 PM
To: Bradley John; Anthony Crack <[REDACTED]> Bronwen Griffiths
[REDACTED]
Subject: Re: Cabinet on Monday

Dear John

As Anthony has outlined, please progress subs for for circulation Monday morning, given Cabinet meeting at 2.30pm. These can be Class A, but better than orals to ensure Cabinet is aware of issues and can refer to papers to inform their discussion.

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

From: Bradley John <[REDACTED]>
To: Ken Smith
Cc: Bronwen Griffiths; Anthony Crack
Sent: Sat Jan 22 16:18:03 2011
Subject: Fw: Cabinet on Monday

Ken
Cc Bron, Anthony

For info in relation to cabinet agenda for Monday.

We will use an oral submission format - copies for min, cab sec and premier? - and also provide cab sec with copies of exec summaries referred to for distribution to full cabinet.

Can you, Bron or Anthony pls let me know if I have any process stuff wrong?

Thanks
John B

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

From: Stephen Robertson [mailto:[REDACTED]]
Sent: Saturday, January 22, 2011 02:54 PM
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Cc: Lance McCallum <[REDACTED]> Tim Watts
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3 sheets of A4 paper = 1 litre of water
+-----+

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Bradley John

From: Bradley John
Sent: Saturday, 22 January 2011 4:30 PM
To: [REDACTED]
Cc: [REDACTED]
Subject: Re: Cabinet on Monday

Min R,

Will do. Submission will be in Cab Sec's Oral Sub Format - have alerted Cab Sec.

Thanks
John B

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

From: Stephen Robertson [mailto:[REDACTED]]
Sent: Saturday, January 22, 2011 02:54 PM
To: Bradley John
Cc: Lance McCallum <[REDACTED]> Tim Watts
[REDACTED] Geoff Stead [REDACTED]
Subject: Cabinet on Monday

Gents

I met with the Premier today to discuss the 2007 report on the possible raising of wivenhoe and somerset dams for additional drinking water. She agrees that we should get on the front foot. Accordingly I would like a walk-in submission prepared for Monday that attaches both the executive summaries wivenhoe/somerset report and the 1992 rockhampton flood study recommending they be sent to both the commission of inquiry and the reconstruction task force.

John, can you also prepare covering letters to be signed by the Premier on Monday and can u also check the TOR for the task force that they should be considering such reports and if amendment is necessary plse recommend changes

Geoff can u also start organizing a media release on the the forwarding of these documents -remember cabinet is sitting much later than usual so you have time up your sleeve.

Thanks

Stephen Robertson

Bradley John

From: Bradley John
Sent: Saturday, 22 January 2011 4:18 PM
To: [REDACTED]
Cc: [REDACTED]
Subject: Fw: Cabinet on Monday

Ken
Cc Bron, Anthony

For info in relation to cabinet agenda for Monday.

We will use an oral submission format - copies for min, cab sec and premier? - and also provide cab sec with copies of exec summaries referred to for distribution to full cabinet.

Can you, Bron or Anthony pls let me know if I have any process stuff wrong?

Thanks
John B

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

From: Stephen Robertson [mailto:[REDACTED]]
Sent: Saturday, January 22, 2011 02:54 PM
To: Bradley John
Cc: Lance McCallum [REDACTED] Tim Watts
[REDACTED] Geoff Stead <[REDACTED]>
Subject: Cabinet on Monday

Gents

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Geoff can u also start organizing a media release on the the forwarding of these documents -remember cabinet is sitting much later than usual so you have time up your sleeve.

Thanks

Stephen Robertson

**SEQ Water Grid Manager and Seqwater
MINISTERIAL BRIEFING NOTE**

**TO: Minister for Natural Resources, Mines
and Energy and Minister for Trade**

**SUBJECT: January 2011 flood event and Wivenhoe Dam
operations**

Advisor	<input type="checkbox"/> Ok
Dated / /	
<input type="checkbox"/> Approved	<input type="checkbox"/> Not Approved
<input type="checkbox"/> Further information required	<input type="checkbox"/> Noted
Minister.....	
Dated / /	

REQUESTED BY

- The Ministers Office requested this brief by 16 January 2011.

TIMEFRAME

- Noting of this brief is required prior to the Emergency Cabinet meeting to be held on 17 January 2011.

RECOMMENDATION

It is recommended that the Minister:

- note** Seqwater's Ministerial briefing note setting out background information on Wivenhoe Dam, the January 2011 flood event and Seqwater's Flood Mitigation Manual.
- note** the advice on the benefits of pre-emptive releases from Wivenhoe Dam in response to the Minister's request.
- note** Mr Brian Cooper's independent compliance review of the operation of Wivenhoe Dam against the Flood Mitigation Manual for the January 2011 flood event.
- approve** key media responses on the flood event and Wivenhoe Dam.
- approve** that Mr Barry Dennien, Chief Executive Officer, SEQ Water Grid Manager, speak to the media in accordance with the key media responses.

BACKGROUND

- From 13 December 2010 to 11 January 2011, South East Queensland experienced unprecedented rainfall, which resulted in the January 2011 flood event. Wivenhoe Dam played a significant role in mitigating the downstream flood peak.
- Attachment A** contains Seqwater's Ministerial briefing note setting out background information on Wivenhoe Dam, Wivenhoe Dam's flood mitigation and operations, Seqwater's Flood Mitigation Manual, the regulatory context of the Flood Mitigation Manual and Seqwater's proposed procedure for the preparation of its comprehensive Flood Mitigation Manual report to the Chief Executive, Department of Environment and Resource Management, on Wivenhoe Dam operations for the January 2011 flood event.
- After the Wivenhoe Dam release in October 2010, by way of a letter dated 25 October 2010 at **Attachment B**, the Minister requested the SEQ Water Grid Manager to procure urgent advice as to whether South East Queensland's water security situation would provide "an opportunity to reduce the volume stored in key dams as a means of reducing the severity, frequency and duration of flooding in downstream areas."
- The Minister also sought the SEQ Water Grid Manager's "confirmation that these options would not significantly impact upon our current water security, measured as the probability of needing to reintroduce Medium Level Restrictions over the next five to ten years."
- As a result, the SEQ Water Grid Manager requested that Seqwater provide a report assessing the options requested by the Minister.

Author Name: Barry Dennien Position: Chief Executive Officer, SEQ Water Grid Manager Tel No: [REDACTED] Date: 16 January 2011	Cleared by Name: Position: Tel No:	Cleared by Name: Position: Tel No:	Recommended: Name: John Bradley Director-General, DERM Tel No: [REDACTED] Date: [REDACTED]
	Name: Position: Tel No:	Name: Position: Tel No:	

- **Attachment C** contains the SEQ Water Grid Manager's letter to the Minister dated 24 December 2010, in response to the pre-emptive Wivenhoe Dam release advice sought, based on Seqwater's advice. This letter stated that *"Seqwater has advised that releasing water to below Full Supply Level may provide some benefits in terms of reduced community and operational impacts during minor inflow events, such as has occurred over the past month. For medium and major flood events, it considers that pre-emptive releases will provide negligible benefits...Informed by this advice, the SEQ Water Grid Manager has advised Seqwater that, from a water security perspective, it has no in-principle objection to minor releases from Wivenhoe, Somerset and North Pine dams to minimise the operational and community impacts of gate releases."*
- It should be noted that while seeking advice from Seqwater on pre-emptive dam releases, the SEQ Water Grid Manager continued to provide the Department of Environment and Resource Management with progress reports.
- On 11 January 2011, the Minister requested the SEQ Water Grid Manager to procure an urgent independent review of Seqwater's operation of Somerset and Wivenhoe Dams in accordance with the Flood Mitigation Manual, for the period 13 December 2010 to 11 January 2011.
- Mr Brian Cooper was engaged to conduct the independent review and his report and curriculum vitae are contained in **Attachment D**.
- Mr Brian Cooper concludes that the *"strategies as set out in the Flood Mitigation Manual have been followed, allowing for the discretion given to making variations in order to maximise flood mitigation effects. The actions taken and decisions made during the Flood Event appear to have been prudent and appropriate in the context of the available knowledge available to those responsible for flood operations and the way events unfolded."*

CURRENT ISSUES

- The purpose of this Ministerial brief is to provide the Minister with background information on the January 2011 flood event and the operation of Wivenhoe Dam, in preparation for an Emergency Cabinet meeting scheduled on 17 January 2011.
- This Ministerial brief provides information that may assist in responding to questions raised, or anticipated to be raised, by the public and media.
- **Attachment E** contains key media responses based on factual information from Seqwater's Ministerial briefing note.

RESOURCE/IMPLEMENTATION IMPLICATIONS

- Any recommendations regarding the Flood Mitigation Manual, improvements to the structure or operation of Wivenhoe Dam, resourcing etc. will arise after any relevant flood event debriefs and Seqwater's Flood Mitigation Manual report to the Chief Executive, Department of Environment and Resource Management.

PROPOSED ACTION

- In accordance with the Flood Mitigation Manual, Seqwater will submit a comprehensive report to the Chief Executive, Department of Environment and Resource Management, containing details of the procedures used, the reasons for such and other pertinent information for the operation of Wivenhoe Dam during the January 2011 flood event.
- This report is required to be submitted within six weeks of completion of the flood event.

Author Name: Barry Dennien Position: Chief Executive Officer, SEQ Water Grid Manager Tel No: [REDACTED] Date: 16 January 2011	Cleared by Name: Position: Tel No: Name: Position: Tel No:	Cleared by Name: Position: Tel No: Name: Position: Tel No:	Recommended: Name: John Bradley Director-General, DERM Tel No: [REDACTED] Date:
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OTHER INFORMATION

- **Consultation:** In preparing the Ministerial briefing note at **Attachment A**, Seqwater consulted with Mr Peter Allen and Mr Bob Reilly from the Office of the Water Supply Regulator, Department of Environment and Resource Management. The SEQ Water Grid Manager provided information on the Minister's request for advice on pre-emptive releases from Wivenhoe Dam and the independent compliance review from Mr Brian Cooper.
- **Legislation:** The Flood Mitigation Manual is a requirement of, and approved by the Chief Executive, Department of Environment and Resource Management, under the *Water Supply (Safety and Reliability) Act 2008*.
- **Key Communication Messages:** The information contained in this Ministerial brief may be used to formulate public messaging regarding the flood event and the operation of Wivenhoe Dam. Communicating the benefits of Wivenhoe Dam for flood mitigation may present positive communication opportunities.

MINISTER'S COMMENTS

ATTACHMENTS

- **Attachment A:** Seqwater Ministerial briefing note
- **Attachment B:** Letter from Minister Robertson to the SEQ Water Grid Manager dated 25 October 2010
- **Attachment C:** Letter from the SEQ Water Grid Manager to Minister Robertson dated 24 December 2010
- **Attachment D:** Flood Mitigation Manual compliance review report by Mr Brian Cooper and curriculum vitae of Mr Brian Cooper
- **Attachment E:** Key media responses

Author Name: Barry Dennien Position: Chief Executive Officer, SEQ Water Grid Manager Tel No: [REDACTED] Date: 16 January 2011	Cleared by Name: Position: Tel No:	Cleared by Name: Position: Tel No:	Recommended: Name: John Bradley Director-General, DERM Tel No: [REDACTED] Date:
	Name: Position: Tel No:	Name: Position: Tel No:	

Ministerial Briefing Note

17 January 2010

Flood Event January 2011

1. BACKGROUND INFORMATION ON WIVENHOE DAM

2. WIVENHOE DAM FLOOD MITIGATION AND FLOOD OPERATIONS

- 2.1 What were the benefits provided by Wivenhoe Dam during the current event?
- 2.2 Why was Wivenhoe Dam only allowed to rise up to 191% and not 230%?
- 2.3 What is the role of the erodible fuse plug embankments?
- 2.4 Why weren't pre-emptive releases undertaken prior to the start of the flood event?
- 2.5 Is there a detailed record of the events associated with the current flood?

3. THE MANUAL OF OPERATIONAL PROCEDURES FOR FLOOD MITIGATION AT WIVENHOE DAM AND SOMERSET DAM

- 3.1 What is the Manual of Flood Mitigation and how was it developed?
- 3.2 What is contained in the Manual?

4. REGULATORY CONTEXT

5. SEQWATER REPORT

1 BACKGROUND INFORMATION ON WIVENHOE DAM

Wivenhoe Dam was completed in 1984 and has two main functions;

- A 1,165,000 ML storage providing an urban water supply for Brisbane;
- Flood mitigation in the Brisbane River by providing a dedicated flood storage volume of 1,450,000 ML (this flood storage was increased in 2005 to 1,966,000 ML with the dam at the point of failure).

In accordance with the Queensland Regulatory program for dam spillway upgrades, a further upgrade of Wivenhoe Dam is scheduled to occur prior to 2035 but only for dam safety reasons in the event of a probable maximum flood and has no impact on the current event.

Wivenhoe Dam is in excellent condition with four Comprehensive Dam Safety reviews undertaken in the last 14 years, the latest in 2010.

2 WIVENHOE DAM FLOOD MITIGATION AND FLOOD OPERATIONS

2.1 What were the benefits provided by Wivenhoe Dam during the current event?

The following graphs demonstrate the significant benefits of Wivenhoe Dam in mitigating the current flood event, with reductions in flood peak from Wivenhoe Dam not existing of up to 2.5 metres in the City area and up to 5.5 metres in the Moggill area further upstream.

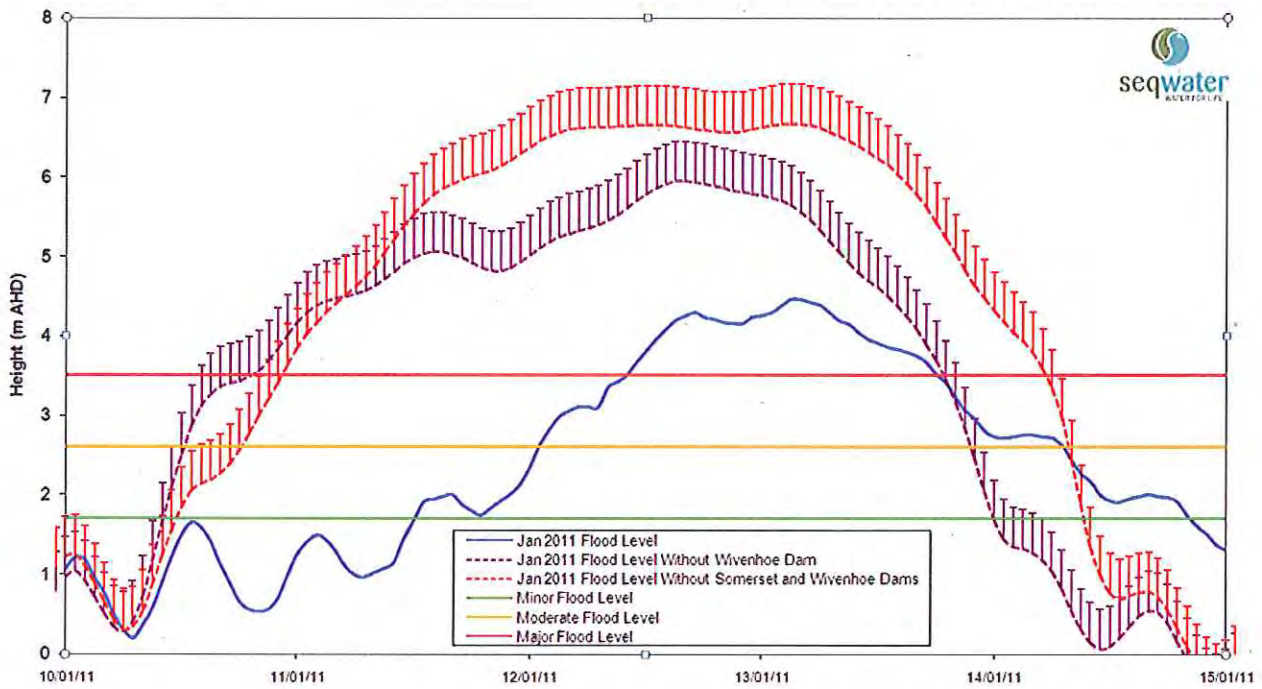
This equates to significant reduction in the potential for loss of life as well as saving in damages in the order of up to \$1.6 billion based on current damage curves. Up to 13,000 more properties would have been impacted by the event without the Dam. (Source: Flood Damage Tables provided to Seqwater by the Brisbane City Council).

The time at which flood levels remained elevated above major levels has also been reduced by up to 3 days by the dam. This has significant benefits to impact on the population of the city, property damage and the recovery operation.

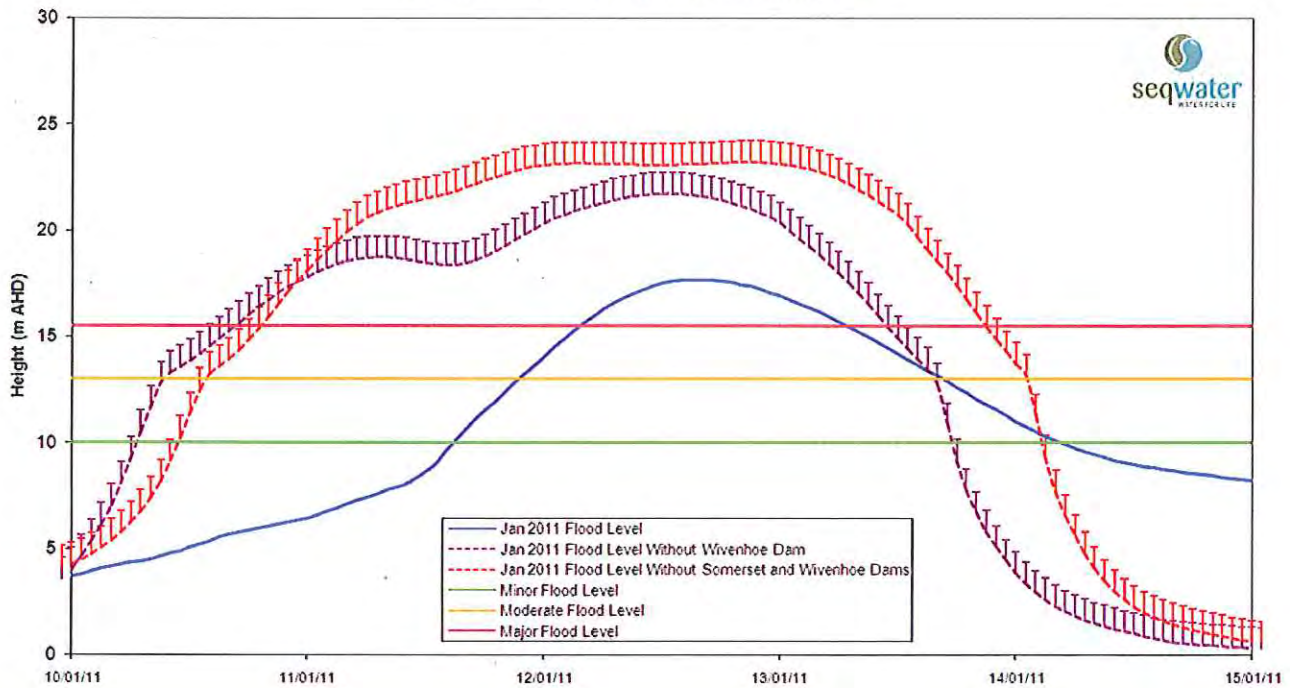
Depending on the nature of the event, the presence of Wivenhoe Dam could also potentially increase flood warning times to impacted areas. How these times may have been increased during the current event is presently difficult to quantify, but discussions will be held with BOM on this issue at a later date.

In addition, the strategy adopted to quickly close off releases once the peak in the dam had been reached and rain stopped falling certainly reduced the predicted flood peak by at least one metre in the lower Brisbane River area. This was carried out because the releases had stopped the dam from rising and careful monitoring allowed rapid reduction of releases while ensuring fuse plug initiation did not occur.

JANUARY 2011 BRISBANE FLOOD Assessment of Flood Levels at Brisbane City



JANUARY 2011 BRISBANE FLOOD Assessment of Flood Levels at Moggill



2.2 Why was Wivenhoe Dam only allowed to rise up to 191% and not 230%?

Wivenhoe Dam mitigates downstream flooding by storing incoming flood water during a rainfall event and releasing these waters at a reduced flow rate downstream to reduce flood impacts. The timing of the releases is also manipulated so that the aim is for outflows from the dams to impact on downstream areas only after the peak inflows from the downstream major tributaries have passed. However this aim cannot always be achieved in practice. This is because some large floods, such as the one currently being experienced, have the potential to overflow the dam's flood storage compartment. **Should this occur, the dam would fail and the resulting damage and loss of life would be at least 100 to 1000 times greater than that currently being experienced.**

Therefore the basis of all flood operation decision making is to ensure the dam never fails. This is the reason that the dam's flood storage compartment would never be intentionally fully filled as any additional inflows after this point would result in a dam failure. At any one time, there will always be uncertainty about what rain is going to occur. Hence, we cannot use all of the flood capacity as we would not be able to release sufficient water to cater for large inflows.

2.3 What is the role of the erodible fuse plug embankments?

Another factor that impacts on flood release decision making in large events are the levels at which the erodible fuse plugs are triggered. The fuse plugs act as a safety valve to rapidly increase dam outflows if the structural safety of the dam is in danger. Loss of one or more fuse plugs severely limits the ability of the dam to mitigate the effects of future flood events that may occur prior to the fuse plug or plugs being reinstated. Reinstatement of a fuse plug following an event would take a minimum of 4 to 6 months and would require an extended period of relatively dry weather.

2.4 Why weren't pre-emptive releases undertaken prior to the start of the flood event?

In the 25 days leading up to the current event, three flood events impacting on Wivenhoe Dam were experienced, with gate releases being made on all but five of those days. The total outflow from these events was around 700,000ML.

During these events, requests were received from Councils and residents impacted by bridge closures downstream of the dam to curtail releases as soon and as quickly as possible. Additionally the 2 January end date of the flood event prior to the current event meant that significant drain down of the dam prior to the onset of the current event that commenced on 6 January 2011, was not possible without major bridge inundation downstream of the dam and without exceeding minor flood levels in the lower Brisbane River.

Additionally, a flood event was also experienced in October 2010 that resulted in a release of 750,000ML from the dam. Accordingly drain down below the dam full supply level prior to the start of the first December event would not have been possible without significant bridge inundation and without exceeding minor flood levels (as defined by BOM and BCC) in the lower Brisbane River.

Regardless, significant drain down prior to the current event would have had little impact on the peak level in Wivenhoe Dam as shown in the table below. The reason for this is that this total event inflow volume of 2,600,000 ML is well in excess of the useable flood storage combined with the available water supply storages shown in the table.

The specific impact on the Lower Brisbane River of these reduced dam levels requires the use of a complex hydraulic model. The results of this modelling would still contain a degree of uncertainty as illustrated by the difficulties in estimating the final flood peak in Brisbane during the event. This is because the rapid closure of the gates after peak inflow was achieved resulted in significant water level reductions downstream and this is difficult to model accurately.

JANUARY 2011 FLOOD			
Starting Level		Peak Height	Capacity
%	m AHD	m AHD	%
100	67.0	74.97	191
95	66.5	74.93	191
90	65.8	74.88	190
75	64.0	74.63	187
50	60.0	74.11	180

It should be noted that the possible reductions shown above are based up a unique dual peaked flood hydrograph with a volume of about 2,600,000 ML which occurred during this event. A hydrograph with the same volume but a different distribution could result in a significantly lower reduction in peak water levels.

Flood operations at the dam are also highly dependent upon the flood inflow volume and a slight variation in the flood volume could significantly reduce the benefits associated with draining down the dam prior to a flood event.

2.5 Is there a detailed record of the events associated with the current flood?

A preliminary report has been prepared and is attached to this briefing.

3 THE MANUAL OF FLOOD MITIGATION AT WIVENHOE DAM AND SOMERSET DAM

3.1 What is the Manual of Flood Mitigation and how was it developed?

The Manual of Flood Mitigation for Wivenhoe and Somerset dams in its current form was developed in 1992 during an extensive hydrological study of the Brisbane and Pine Rivers catchments by DPI, Water Resources. The final reports were subject to extensive internal review by the Water Resources Group before being reviewed by an independent review panel comprising Professor Colin Apelt, Head of Department, Department of Civil Engineering, University of Queensland and Mr Eric Lesleighter, Principal Hydraulic Engineer and Chief Engineer Water Resources, Snowy Mountains Engineering Corporation. Subsequently, the Manual was extensively reviewed during the Brisbane Valley Flood Damages Minimisation Study in 2006, with the latest comprehensive review of the Manual undertaken in 2009. Both of these reviews have included expert review panels comprising key stakeholders, with the most recent review involving representatives from DERM, BOM, BCC and SunWater.

The Manual of Flood Mitigation is prepared by Seqwater as the owner of the dam and approved and gazetted by the Chief Executive of DERM in accordance with the Water Supply Act 2008. The manual defines flood objectives procedures; roles and responsibilities; and staffing and operational requirements for flood events impacting on Wivenhoe and Somerset dams.

3.2 What is contained in the Manual?

The primary objectives of the procedures contained in the Manual are, in order of importance:

- Ensure the structural safety of the dams;
- Provide optimum protection of urbanised areas from inundation;
- Minimise disruption to rural life in the valleys of the Brisbane and Stanley Rivers primarily, this involves minimising inundation of the seven bridges below the dam upstream of Moggill);
- Retain the storage at Full Supply Level at the conclusion of the Flood Event.

- Minimise impacts to riparian flora and fauna during the drain down phase of the Flood Event.

During an event, the operation of the dam transitions between the following four operating strategies depending of the circumstances at the time. These procedures associated with these strategies are explained in detail in the Manual.

- **Strategy W1** – Primary consideration is given to Minimising Disruption to Downstream Rural Life.
- **Strategy W2** – Transition Phase moving from Minimising Disruption to Protecting Downstream Urban Areas.
- **Strategy W3** – Primary consideration is to Protect of Urban Areas from Inundation.
- **Strategy W4** – Primary consideration is to protecting the structural safety of the Dam.

In addition to these strategies, historical records show that there is a significant probability of two or more flood producing storms occurring in the Brisbane River system within a short time of each other. Accordingly for each flood event, the aim is always to empty stored floodwaters within seven days after the flood peak has passed through the dams.

4 REGULATORY CONTEXT

Operational procedures for flood mitigation for a dam are contained in the Flood Mitigation Manual approved under sections 370 to 374 of the *Water Supply (Safety and Reliability) Act 2008* (Water Supply Act). Under section 370 of the Water Supply Act, Seqwater as the owner and operator of Wivenhoe and Somerset Dams is required to prepare a Flood Mitigation Manual. The Chief Executive (CE) of DERM (or his delegate) approves the Flood Mitigation Manual, and the approval is notified in the Queensland Government Gazette. Approval can be for a period of up to five years, after which the approval needs to be renewed. There are no decision-making criteria specified in the Water Supply Act for the CE to take into account when approving the Flood Mitigation Manual.

The Flood Mitigation Manual requires, amongst other matters:

1. Flood operations to be conducted in accordance with manual's provisions, unless Seqwater considers that it is necessary to depart from the procedures of the Flood Mitigation Manual to meet the flood mitigation objectives of the Flood Mitigation Manual. The Flood Mitigation Manual sets out a consultation and approval process through Seqwater's Chair and the CE for departures from the Flood Mitigation Manual. This discretion was not exercised in the January 2011 flood event.
2. Flood operations to be under the control of CE-approved engineers (who are highly qualified and experienced)
3. Annual reporting on the preparedness and status of the flood control system for flood operations, and the training of the personnel who manage the flood events.
4. Reporting on the flood operations during flood events.
5. Reviews after flood events such as the January 2011 event, and a Seqwater report containing details of the procedures used, the reasons for such and other pertinent information. Seqwater must forward this report to the CE within six weeks of the completion of a flood event.

Section 374 of the Water Supply Act protects the CE and Seqwater from liability for complying with the Flood Mitigation Manual. It states:

- (1) *The chief executive or a member of the council does not incur civil liability for an act done, or omission made, honestly and without negligence under this part.*
- (2) *An owner of a dam who observes the operational procedures in a flood mitigation manual, approved by the chief executive, for the dam does not incur civil liability for an act done, or omission made, honestly and without negligence in observing the procedures.*

During November 2010, Commonwealth, State and local government agencies developed a *Protocol for Communication of Flooding Information for the Brisbane River Catchment – including Floodwater Releases from Wivenhoe and Somerset Dams* to “ensure the provision of consistent and robust information to the community”. This is separate from the Flood Mitigation Manual, is not legally binding and is not subject to regulatory approval/review.

Some DERM staff, because of their specialist skills, work in the Flood Operations Centre that Seqwater activates to manage such events in accordance with the Flood Mitigation Manual. The Flood Operations Centre is not involved in any of the regulatory decisions concerning the dams or are members of the Office of the Water Supply Regulator,

Department of Environment and Resource Management, which undertakes the CE's regulatory functions.

5 SEQWATER REPORT

It is recommended that the process and content for reports required for this event be:

- In the short term, utilise this report attached to this briefing note as the basis for communications and discussion.
- Prepare any Interim Reports as agreed to provide information and input as required.
- Seqwater prepare a Comprehensive Report as per the existing regulatory requirements of the Act and the gazetted manual and any requirements of the Dam Safety Regulator. This would be done within 6 weeks of the closure of the current event as per the manual. This timeframe is subject to any new mobilisation of the Flood Operations Centre. The Table of Contents would include:
 - Introduction
 - Flood Event Summary
 - Mobilisation and Staffing
 - Event Rainfall
 - Inflow and Release Details
 - Data Collection System Performance
 - Data Analysis Performance
 - Communication
 - Flood Management Strategies and Manual Compliance
 - Improvements in data collection systems, practices and processes.
 - improvements by interacting agencies
 - Review of factors impacting on the protection of urban areas
 - Recommendations & Conclusions
- The report would then be reviewed by the Dam Safety Regulator in conjunction with any peer review they require. The review should cover:
 - Were the provisions of the manual complied with?
 - What improvements to either facilities e.g. stream gauges, or work practices, are desirable to improve Seqwater's ability to predict inflows into the dams.
 - Are improvements to either Seqwater's facilities or work practices desirable to improve Seqwater's ability to manage events? For example, investigations to raise the dam to improve its flood storage capacity, If so, what are they and their implications

- Are changes to the facilities or work practices of other organisations desirable to improve Seqwater's abilities to manage these events?
 - whether it is worth investigating increasing the flood capacity of Wivenhoe
 - whether the Brisbane River crossings which act, under some situations as a constraint on the releases from Wivenhoe, should be replaced by bridges. For example if the smallest could pass , for example, 2,500 cumecs, then this could enable higher releases under some circumstances.
 - Whether the policy of draining the flood compartment within 7 days should be modified.
 - Given the manual's order of priorities i.e. protection of the dam etc, are any changes in the flood release strategies for either dam desirable? If so, what are they, and their implications
- Based on this review, a review of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam would occur utilising an expert panel of review including representatives of DERM, Seqwater, BoM, affected Local Governments and other stakeholders as necessary.



seqwater
WATER FOR LIFE

**JANUARY 2011 FLOOD
EVENT**

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1 INTRODUCTION

Wivenhoe Dam was constructed by the Queensland Government between 1977 and 1984. The dam is a 56 m AHD high and 2.3 kilometre long earth and rock embankment separated into two parts by a concrete gravity spillway. The spillway is controlled by 5 radial gates, each 12.0 metres wide by 16.0 m AHD high. Two saddle dam embankments are located on the left side of the reservoir.

The dam spillway capacity was upgraded in 2005. This was done primarily through the construction of a 164 metre wide secondary spillway through the right abutment of the existing dam. This spillway contains three erodible earth fill fuse plug embankments that are initiated at different dam levels in excess of EL 75.6.

The dam has two main functions by providing:

- A 1,165,000 ML storage at full supply level (FSL EL 67.0) providing an urban water supply for Brisbane and surrounding areas;
- Flood mitigation in the Brisbane River by providing a dedicated flood storage volume of 1,450,000 ML up to EL77 (this flood level was increased as part the 2005 upgrade to allow a water level of EL80m and a temporary flood storage volume of 1,966,000 ML with all fuse plugs initiated and the dam at the point of failure).

The dam has an EXTREME hazard classification under ANCOLD guidelines because of the significant development downstream in the Brisbane and Ipswich metropolitan areas, with the population at risk in the event of a dam failure numbering in the hundreds of thousands.

In accordance with the Queensland Regulatory program for dam spillway upgrades, a further upgrade of Wivenhoe Dam for dam safety reasons only is scheduled to occur prior to 2035 to enable the dam to safely pass the Probable Maximum Flood. This work will involve the reconstruction of Saddle Dam 2 as a fuse plug spillway.

Wivenhoe Dam is in excellent condition. Comprehensive Dam Safety reviews undertaken in accordance with ANCOLD guidelines have been undertaken in 1997 (Gutteridge, Haskins & Davey Pty Ltd), 2003 (Wivenhoe Alliance), 2006 (NSW Department of Commerce), 2009 (GHD) and September 2010 (Seqwater). The reports concluded that the design of the dam is in accordance with modern day standards and that there are no significant outstanding design or construction issues that require investigation.

2 WIVENHOE DAM FLOOD MITIGATION AND FLOOD OPERATIONS

2.1 Flood Mitigation

The Brisbane River catchment covers an area of approximately 14,000 square kilometres of which about half is below Wivenhoe Dam. Maximum overall flood mitigation effect is achieved by operating Wivenhoe Dam in conjunction with Somerset Dam. Although Somerset and Wivenhoe Dam reduce flooding in Brisbane City, major flooding can still occur. The Lockyer-Laidley Valley drains into the Brisbane River through Lockyer Creek that enters the Brisbane River just downstream of Wivenhoe Dam near Lowood. Another major tributary, the Bremer River, flows into the Brisbane River at Moggill. Wivenhoe Dam has no control over inflows into the Brisbane River from both these major tributaries.

Wivenhoe Dam mitigates downstream flooding by storing incoming flood water during a rainfall event and releasing these waters at a reduced flow rate downstream to minimise flood impacts. The timing of the releases is also manipulated so that the aim is for outflows from the dams to impact on downstream areas only after the peak inflows from the downstream major tributaries have passed. However, this aim cannot always be achieved in practice. This is because some large floods, such as the one currently being experienced, have the potential to overflow the dam's flood storage compartment. **Should this occur, the dam would fail and the resulting damage and loss of life would be at least 100 to 1000 times greater than that currently being experienced.**

Therefore the basis of all flood operation decision making is to ensure the dam never fails. This is the reason that the dam's flood storage compartment would never be intentionally fully filled as additional inflows after this point would result in a dam failure. Similarly, there will be uncertainty on future rainfall that could occur which could not be releases if there was insufficient flood storage which could not be stored or released.

Another factor that impacts on flood release decision making in large events are the levels at which the erodible fuse plugs are triggered. Loss of one or more fuse plugs severely limits the ability of the dam to mitigate the effects of future flood events that may occur prior to the fuse plug or plugs being reinstated. Reinstatement of a fuse plug following an event would take a minimum of 4 to 6 months and would require an extended period of relatively dry weather.

2.2 Flood Operations

A real time flood monitoring and forecasting system has been established in the Wivenhoe and Somerset Dam catchments. This system employs radio telemetry to collect, transmit and receive rainfall and stream flow information. The system consists of around 230 field stations that automatically record rainfall and/or river heights at selected locations in the dam catchments. Most of these field stations are owned by Seqwater with the remainder belonging to other agencies.

The rainfall and river height data is transmitted to Seqwater's Flood Operations Centre in real time. Once received in the Flood Operations Centre, the data is processed using a Real Time Flood Model (RTFM) to estimate likely dam inflows and evaluate a range of possible inflow scenarios based on forecast and recorded rainfall in the dam catchments. The RTFM is a suite of hydrologic computer programs that utilise the real time data to assist in the operation of the dams during flood events.

Seqwater engineers use the RTFM for flood monitoring and forecasting during flood events to operate the dams in accordance with a Manual of Flood Mitigation (the origin of and objectives and procedures contained in the Manual of Flood Mitigation are explained in the following section of this document). Releases of water from the dams are optimised to minimise the impacts of flooding in accordance with the objectives and procedures contained in a Manual of Flood Mitigation.

The RTFM and data collection network performed well During the January 2011 event, with no failures experienced that compromised the ability of Seqwater to operate the dam.

3 MANUAL OF FLOOD MITIGATION FOR WIVENHOE AND SOMERSET DAMS

The Manual of Flood Mitigation for Wivenhoe and Somerset Dams, in its current form, was developed in 1992 during an extensive hydrological study of the Brisbane and Pine Rivers catchments by DPI, Water Resources. The final reports were subject to extensive internal review by the Water Resources Group before being reviewed by an independent review panel comprising Professor Colin Apelt, Head of Department, Department of Civil Engineering, University of Queensland and Mr Eric Lesleighter, Principal Hydraulic Engineer and Chief Engineer Water Resources, Snowy Mountains Engineering Corporation.

Subsequently, the Manual was extensively reviewed during the Brisbane Valley Flood Damages Minimisation Study in 2006, with the latest comprehensive review of the Manual undertaken in 2009. Both of these reviews have included expert review panels comprising key stakeholders, with the most recent review involving representatives from DERM, BOM, BCC and SunWater.

The Manual of Flood Mitigation is prepared by Seqwater as the owner of the dam and approved and gazetted by the Chief Executive of DERM in accordance with the Water Supply Act 2008. The manual defines flood objectives procedures; roles and responsibilities; and staffing and operational requirements for flood events impacting on Wivenhoe and Somerset dams.

The primary objectives of the procedures contained in the flood manual are, in order of importance:

- Ensure the structural safety of the dams;
- Provide optimum protection of urbanised areas from inundation;
- Minimise disruption to rural life in the valleys of the Brisbane and Stanley Rivers primarily, this involves minimising inundation of the seven bridges below the dam upstream of Moggill);
- Retain the storage at Full Supply Level at the conclusion of the Flood Event.
- Minimise impacts to riparian flora and fauna during the drain down phase of the Flood Event.

During an event, the operation of the dam transitions between the following four operating strategies depending of the circumstances at the time. These procedures associated with these strategies are explained in detail in the Manual.

- **Strategy W1** – Primary consideration is given to Minimising Disruption to Downstream Rural Life. Under this strategy, the predicted water level is below 68.50 m AHD and the maximum release is 1,900m³/s.
- **Strategy W2** – Transition Phase moving from Minimising Disruption to Protecting Downstream Urban Areas. Under this strategy, the water level is predicted to be between 68.5 and 74.0 m AHD and the maximum release is less than 3,500m³/s.
- **Strategy W3** – Primary consideration is to Protect of Urban Areas from Inundation. Under this strategy, the water level is predicted to be between 68.5 and 74.0 m AHD but the maximum release is less than 4,000m³/s.
- **Strategy W4** – Primary consideration is to protecting the structural safety of the Dam. Under this strategy, the water level is predicted to exceed 74.0 m AHD and there is no limit to the maximum release. Consideration is given to managing flood releases to avoid fuse plug initiation if at all possible as this would compromise flood mitigation capacity in the short to medium term.

In addition to these strategies, historical records show that there is a significant probability of two or more flood producing storms occurring in the Brisbane River system within a short time of each other. Accordingly for each flood event, the aim is always to empty stored floodwaters within seven days after the flood peak has passed through the dams.

4 JANUARY 2011 FLOOD EVENT

4.1 Background

In the 25 days leading up to the current event, three flood events impacting on Wivenhoe Dam were experienced, with gate releases being made on all but five of those days. The total outflow from these events was around 700,000ML. The details of these events are as follows:

EVENT	EVENT START DATE	EVENT END DATE	VOLUME RELEASED (ML)
1	13/12/2010	16/12/2010	70,000
2	17/12/2010	24/12/2010	150,000
3	26/12/2010	02/01/2011	470,000

During these events, requests were received from Councils and residents impacted by bridge closures downstream of the dam to curtail releases as soon and as quickly as possible.

Additionally the 2 January end date of the flood event prior to the current event meant that significant drain down of the dam prior to the onset of the current event that commenced on 6 January 2011, was not possible without major bridge inundation downstream of the dam and without exceeding minor flood levels in the lower Brisbane River.

Additionally, a flood event was also experienced in October 2010 that resulted in a release of 750,000ML from the dam. Accordingly drain down below the dam full supply level prior to the start of the first December event would not have been possible without significant bridge inundation and without exceeding minor flood levels (as defined by BOM and BCC) in the lower Brisbane River.

Regardless, significant drain down prior to the current event would have had little impact on the peak level in Wivenhoe Dam as shown in the table below. The reason for this is that this total event inflow volume of 2,600,000 ML is well in excess of the useable flood storage combined with the available water supply storages shown in the table.

The specific impact on the Lower Brisbane River of these reduced dam levels requires the use of a complex hydraulic model. The results of this modelling would still contain a degree of uncertainty as illustrated by the difficulties in estimating the final flood peak in Brisbane during the event. This

is because the rapid closure of the gates after peak inflow was achieved resulted in significant water level reductions downstream and this is difficult to model accurately.

JANUARY 2011 FLOOD			
Starting Level		Peak Height	Capacity
%	m AHD	m AHD	%
100	67.0	74.97	191
95	66.5	74.93	191
90	65.8	74.88	190
75	64.0	74.63	187
50	60.0	74.11	180

It should be noted that the possible reductions shown above are based on a dual peaked flood hydrograph with a volume of about 2,600,000 ML which occurred during this event. A hydrograph with the same volume but a different distribution could result in a significantly lower reduction in peak water levels.

Flood operations at the dam are also highly dependent upon the flood inflow volume and a slight variation in the flood volume could significantly reduce the benefits associated with draining down the dam prior to a flood event.

4.2 Event Decision Making

The following table contains a summary of the key decisions points associated with the current event. As at 16 January 2011, the event remains in progress.

DATE AND TIME	FLOOD EVENT MILESTONE
07:00 06/01/2011 (Thursday)	Rainfall is experienced in the dam catchments that will result in flood releases, however Wivenhoe releases are delayed for 24 hours to allow Lockyer Creek flood flows to pass downstream and prevent the isolation of the community dependent of Burtons Bridge. The forecast is for 150mm over the next 24 hours.
15:00 07/01/2011 (Friday)	Wivenhoe releases commence, with operational strategy W1 in use. Rainfall for the next four days is estimated to be between 140mm and 300mm, with a forecast for rain easing on Tuesday 11 January 2011. All bridges downstream of the dam with the exception of Fernvale Bridge and Mt Crosby Weir Bridge are expected to be inundated for a number of days.

06:00 09/01/2011 (Sunday)	Moderate to heavy rain periods forecast until Tuesday, but both Wivenhoe and Somerset dam levels were falling slowly, with Somerset at 1.27 m AHD above FSL and Wivenhoe 1.58 m AHD above FSL.
15:30 09/01/2011 (Sunday)	Following significant rain during the day a meeting of Duty Engineers is held. The QPF issued at 16:00 indicates 50mm to 80mm over the next 24 hours. Based on this forecast, it is anticipated that dam levels can be held to a maximum of 3.50 m AHD above FSL in Somerset and 5.5 m AHD above FSL in Wivenhoe. However, by 19:00 it was apparent that both Fernvale Bridge and Mt Crosby Weir Bridge would be inundated by the combined dam releases and Lockyer Creek flows and that the operational strategy had progressed to W2.
06:30 10/01/2011 (Monday)	Rainfall continued during the night and based on rainfall on the ground it was apparent the operational strategy had progressed to W3.
06:30 10/01/2011 (Monday)	Rainfall continued during the day but based on rainfall on the ground, operational strategy W3 remained in use. However it was apparent that any further heavy rain would result in progression of the operational strategy to W4.
08:00 11/01/2011 (Tuesday)	Rainfall continued during the night with isolated heavy falls in the Wivenhoe Dam catchment area and based on rainfall on the ground it was apparent the operational strategy would soon progress to W4 with Wivenhoe Dam exceeding 8.00 m AHD above FSL. The objective now was to limit outflows and subsequent flood damage to urban areas, while ensuring the structural safety of the dam.
11:00 11/01/2011 (Tuesday)	Rapid inflows were experienced in Wivenhoe Dam, with the dam rising almost a metre in eight hours. Releases were increased until the dam level stabilised in accordance with Strategy W4. Computer models were not reflecting actual dam inflows due to intense point rainfalls in the immediate catchment around the dam. Falls are estimated to be similar to those experienced at both Toowoomba and Upper Lockyer the previous day and are falling outside and between existing rain gauges.
21:00 11/01/2011 (Tuesday)	Wivenhoe Dam peaked. Peak release of 7450 cumecs with a level of 0.7 metres below fuse plug trigger.

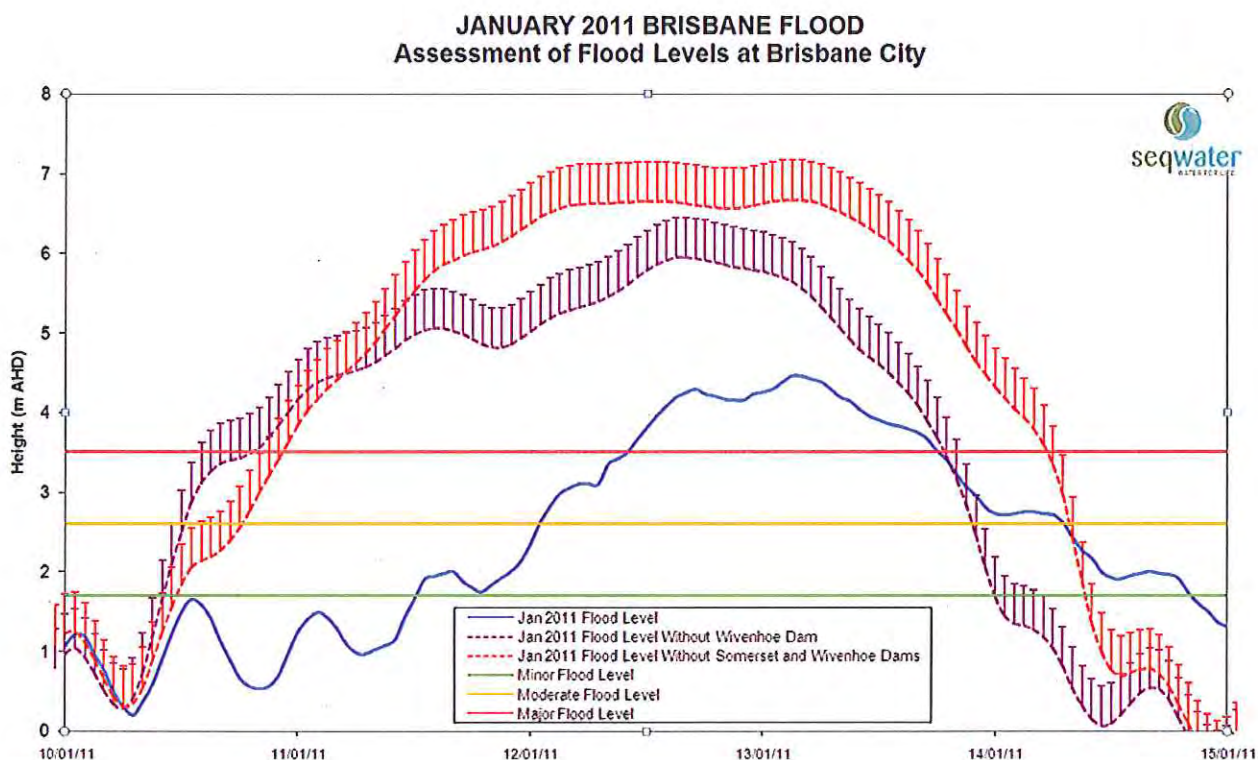
22:00 11/01/2011 (Tuesday)	Wivenhoe Dam releases were closed off as quickly as possible over the next 11 hours, while ensuring water levels in the dam did not rise further and initiate a fuse plug embankment.
08:00 12/01/2011 (Wednesday)	Minimum possible release level reached, with inflows matching outflows. Further reductions in release rate would likely cause the dam level to rise.
21:00 13/01/2011 (Thursday)	The 7 day dam drain down is commenced as Lockyer Creek and Bremer River peaks pass the Lower Brisbane area. Maximum release target is the limit of damaging floods in Brisbane being 3500 cumecs.
09:00 17/01/2011 (Monday)	Drain down continues, with released expected to cease on Wednesday 19 January 2011 unless further rainfall is experienced.

4.3 Flood Mitigation Benefits of Wivenhoe Dam

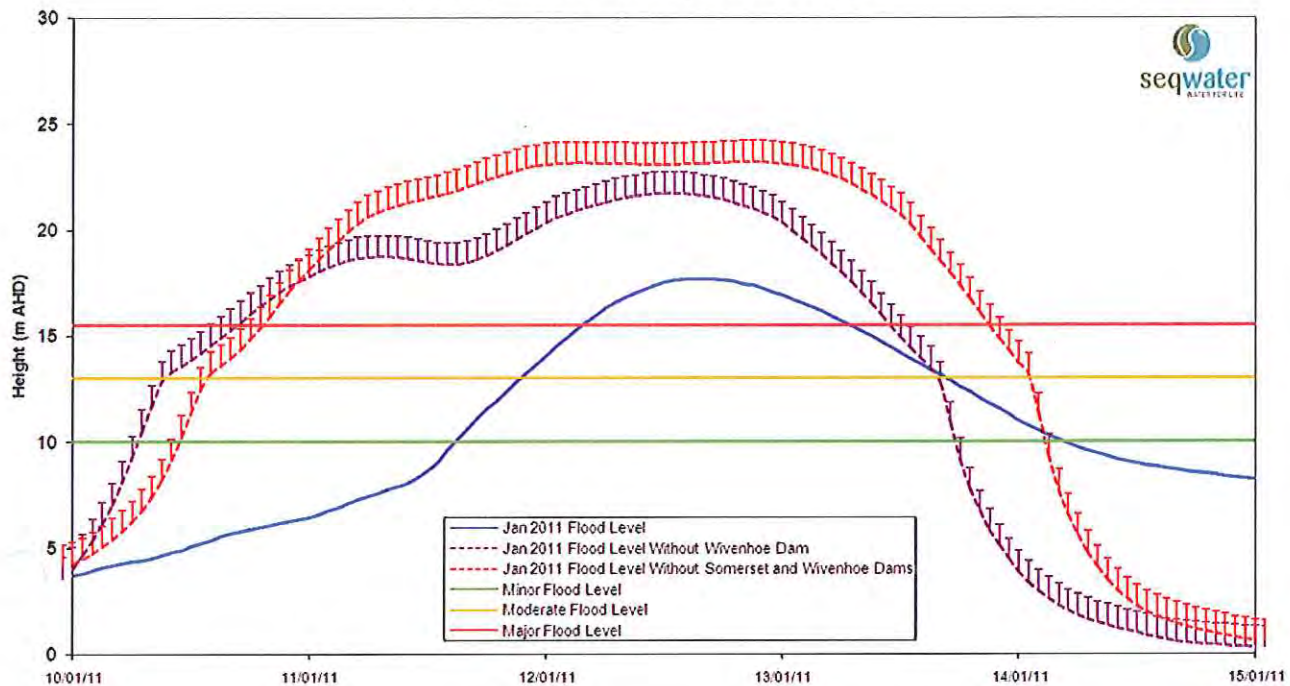
The following graphs demonstrate the significant benefits of Wivenhoe Dam in mitigating the current flood event, with reductions in flood peak of up to 2.5 metres in the City area and up to 5.5 metres in the Moggill area further upstream.

This equates to significant reduction in the potential for loss of life as well as saving in damages in the order of up to \$1.6 billion based on current damage curves. Up to 13,000 more properties would have been impacted by the event without the Dam.

The time at which flood levels remained elevated above major levels has also been reduced by up to 3 days by the dam. This has significant benefits to impact on the population of the city, property damage and the recovery operation.



JANUARY 2011 BRISBANE FLOOD Assessment of Flood Levels at Moggill



The strategy adopted to quickly close off releases once the peak in the dam had been reached and rain stopped falling certainly reduced the predicted flood peak by at least one metre in the lower Brisbane River area. This was carried out because the releases had stopped the dam from rising and careful monitoring allowed rapid reduction of releases while ensuring fuse plug initiation did not occur.

This notion is supported by BOM.

5 EVENT REVIEW

Under the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam that are approved and gazetted by the Department of Environment and Resource Management, there is a regulatory requirement that a report must be prepared as per the below wording:

"Seqwater must prepare a report after each Flood Event. The report must contain details of the procedures used, the reasons therefore and other pertinent information. Seqwater must forward the report to the Chief Executive within six weeks of the completion of the Flood Event."

Such a report was prepared for the flood events of February and March 2010 and copies are available. A copy of the Table of Contents of that report is included as Appendix 1. For this event, the report would be a comprehensive summary of all procedures, actions, outcomes and processes during the event.

It is recommended that the process and content for reports required for this event be:

- In the short term, utilise this report attached to this briefing note as the basis for communications and discussion.
- Prepare any Interim Reports as agreed to provide information and input as required.
- Seqwater prepare a Comprehensive Report as per the existing regulatory requirements of the Act and the gazetted manual and any requirements of the Dam Safety Regulator. This would be done within 6 weeks of the closure of the current event as per the manual. This timeframe is subject to any new mobilisation of the Flood Operations Centre. The Table of Contents would include:
 - Introduction
 - Flood Event Summary
 - Mobilisation and Staffing
 - Event Rainfall
 - Inflow and Release Details
 - Data Collection System Performance
 - Data Analysis Performance
 - Communication
 - Flood Management Strategies and Manual Compliance

- Improvements in data collection systems, practices and processes.
 - improvements by interacting agencies
 - Review of factors impacting on the protection of urban areas
 - Recommendations & Conclusions
- The report would then be reviewed by the Dam Safety Regulator in conjunction with any peer review they require. The review should cover:
 - Were the provisions of the manual complied with?
 - What improvements to either facilities e.g. stream gauges, or work practices, are desirable to improve Seqwater's ability to predict inflows into the dams.
 - Are improvements to either Seqwater's facilities or work practices desirable to improve Seqwater's ability to manage events? For example, investigations to raise the dam to improve its flood storage capacity, If so, what are they and their implications.
 - Are changes to the facilities or work practices of other organisations desirable to improve Seqwater's abilities to manage these events?
 - whether it is worth investigating increasing the flood capacity of Wivenhoe
 - whether the Brisbane River crossings which act, under some situations as a constraint on the releases from Wivenhoe, should be replaced by bridges. For example if the smallest could pass , for example, 2,500 cumecs, then this could enable higher releases under some circumstances.
 - Whether the policy of draining the flood compartment within 7 days should be modified.
 - Given the manual's order of priorities i.e. protection of the dam etc, are any changes in the flood release strategies for either dam desirable? If so, what are they, and their implications
 - Based on this review, a review of the Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam would occur utilising an expert panel of review including representatives of DERM, Seqwater, BoM, affected Local Governments and other stakeholders as necessary.

Appendix A

FINAL REPORT – FLOOD EVENTS AT WIVENHOE, SOMERSET AND NORTH PINE DAMS FOR FEBRUARY AND MARCH 2010

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