



# Consultation Report

## Wivenhoe and Somerset Dams Optimisation Study

October 2014

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## Executive Summary

The Wivenhoe and Somerset Dams Optimisation Study (WSDOS) was released for community consultation and submission 1 April 2014. This report summarises and responds to the issues raised during community consultation meetings and through submissions.

The WSDOS was conducted to implement recommendations from the Interim and Final Reports of the Queensland Floods Commission of Inquiry. Understanding the needs of the community is crucial to presenting the Queensland Government with operational strategies for the Wivenhoe and Somerset dams and to effectively implementing the Queensland Floods Commission of Inquiry recommendations.

Community consultation was undertaken primarily through the Department of Energy and Water Supply (DEWS) website and community consultation meetings. The website provided the necessary information and publications for members of the community to acquire knowledge about the WSDOS and to make an informed submission. An online survey hosted by the government's *Get Involved* website was also an important input into the submission process. Four community consultation meetings were held where community members were able to hear about the study and discuss issues directly with experts from DEWS, Seqwater and Department of Science, Information Technology, Innovation and the Arts. DEWS also released a discussion paper and used social media and advertising in the local newspaper to promote the WSDOS consultation period.

At 92, the total number of respondents is small, comprising 54 attendees at the community consultation meetings, 8 individual submissions via email, 7 written submissions by organisations and 23 responses to the survey on the *Get Involved* web site.

A total of 447 individual issues were identified, analysed and grouped into ten themes that generally reflect chapters in the WSDOS Report:

1. Wivenhoe and Somerset dams overview (Chapter 2)
2. Flood Manual (Chapter 3)
3. Issues and challenges(Chapter 4)
4. Operational options (Chapter 5)
5. Dam operations – flood mitigation assessment (Chapter 7)
6. Dam safety (Chapter 9)
7. Bridge crossing and submergence (Chapter 10)
8. Bank slumping and erosion (Chapter 11)
9. Riparian flora and fauna (Chapter 12)
10. Other Issues

DEWS was particularly interested in receiving community feedback on the government's preferred option, known as Alternative Urban 3. The results of the community consultation suggest there is broad community acceptance of Alternative Urban 3 or, at least, a lack of community concern about the option. Of the 38 written and survey responses received, 14 supported Alternative Urban 3, 12 did not support this option (two of those supported



Alternative Urban 4) and 12 responses were inconclusive. Of the 12 responses not supporting Alternative Urban 3, all but one were from people who use the downstream crossings.

Overall, the number of responses to the community consultation on the WSDOS report was insufficient to draw clear indications of the community preferences. Respondents did highlight most of the recognised issues associated with the flood operation of Wivenhoe and Somerset dams.

The members of the community that took part in the consultation process were well informed about the nature of Wivenhoe and Somerset dams and their role in the water supply network for South East Queensland (SEQ). General conclusions based on the limited feedback provided are:

- The community now understand that Wivenhoe Dam cannot flood proof Brisbane and Ipswich.
- The community now understand that Lockyer Creek and the Bremer River flow into the Brisbane River below Wivenhoe Dam and therefore are not able to be mitigated by either Wivenhoe or Somerset dams.
- There is still some confusion as the purpose of Wivenhoe Dam. Some community members were of the view that Wivenhoe Dam was built only for flood mitigation rather than always being designed to be a dual purpose flood mitigation and water supply dam.
- There is concern that the flood operations of the dam impact bank slumping and erosion downstream of the dam.
- Those who use the low level crossings in the Brisbane valley are less likely to support the preferred option Alternative Urban 3 and the more frequent inundation of the low level rural crossings despite the fact that the overall increase duration of inundation would translates to hours rather than days or weeks.
- Views are mixed in the community on improving flood mitigation for infrequent large floods verse reducing impacts of more frequent minor floods.
- The support for a minor reduction in the protection of the dam infrastructure to increase flood mitigation protection for houses and buildings is also mixed.
- The community support investigating the use of stepped ramp-down of dam releases to provide cues to fish and other fauna of dropping flows before full dewatering of habitat occurs.
- A small number of community members support making no changes to the operation of the dams until Alternative Urban 4 can be further investigated.

Those members of the community that did not support lowering the full supply volume (FSV) were concerned about the possibility of another drought impacting water supply security, particularly in light of continued population growth in the area.



## Introduction

On 1 April 2014, the Queensland Premier and the Minister for Energy and Water released the Wivenhoe and Somerset Dams Optimisation Study (WSDOS) for community consultation and submission. This report summarises and responds to the issues raised during the community consultation.

The purpose of WSDOS was to present and assess various flood operational options to enable the government to make informed decisions on the future operation of Wivenhoe and Somerset dams during flood events.

The options were assessed against competing objectives for dam operations, in particular balancing water supply security, dam safety, and impacts of dam operations on downstream infrastructure and environments against economic pressures. The optimisation of Wivenhoe Dam is particularly challenging in that floodwater from Lockyer Creek and the Bremer River enter the Brisbane River below the dam and are unable to be mitigated or controlled by the dams operation.

Community consultation was fundamental in enabling the government to understand the needs of the community before making a final decision on the future strategies for operating Wivenhoe Dam.

## Background

The WSDOS report implements recommendations of the Queensland Floods Commission of Inquiry (QFCOI). The key purpose of the study was to identify and assess potential improvements to the operation of the existing infrastructure at Wivenhoe and Somerset dams. QFCOI recommendation 17.3 required that the government be “presented with a wide range of options which prioritise differing objectives”.

The QFCOI findings that supported the recommendations to establish the Wivenhoe and Somerset Dams Optimisation Study provided direction that extensive consultation be undertaken with the community and Councils. Furthermore the QFCOI Interim Report advised that any decision by the government about the strategies for the future operation of the dam follow this consultation, and take into account the needs of the community.

## Findings

After analysing the submissions and feedback received there are three findings that should be considered in finalising the WSDOS report:

1. The language used to describe the flood manuals could be improved along with a better explanation of how the manuals are used by the flood engineers including with the use of professional judgement/discretion. For example, the use of the term “operational procedures” may imply that there is another manual or document which can be used instead or in addition to the flood manual.
2. The community support the further investigations by the dam owner into the impacts of fuse plug initiation on the downstream channel.

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3. Consider providing greater detail in the bank slumping and erosion chapter to address the concerns raised about the appropriateness and thoroughness of the scientific investigation of bank slumping and erosion in the Brisbane River system downstream of Wivenhoe Dam.

## Our Approach

Community consultation was undertaken using the Department of Energy and Water Supply website, social media, advertising in local newspapers, an online survey, and community consultation meetings. Submissions were received both electronically and via the post. The methods used are explained below.

### Dissemination of Information:

The Department of Energy and Water Supply published material about WSDOS on the official departmental website. This included the publication of the WSDOS Report as well as the accompanying WSDOS Discussion Paper. The website included details on how to make a submission as well as details about the four community consultation meetings. Also included was a link to the *Get Involved* Online Survey.

### Community consultation meetings

The community consultation meetings were held in the Brisbane CBD on 20 May 2014, Ipswich on 21 May 2014, Fernvale on 22 May 2014 and West End on 29 May 2014 (Figure 1).

The meetings were facilitated by an independent, external consultant. Minutes were taken at the meetings and used in the formulation of this report. A total of 54 community members attended the meetings. Experts from the Department of Energy and Water Supply gave detailed presentations about the WSDOS. Following the presentations, experts from DEWS and Seqwater were made available to answer questions about the report and the preferred option proposed by the government.



**Image 1:** This is an image of the Community Consultation Meeting at Fernvale attended by the Minister for Energy and Water Supply.

## Submissions

To ensure all members of the community were able to make a submission on WSDOS the Department of Energy and Water Supply made available facilities to receive written submission both electronically and through the post.

## Online Survey

The Queensland Government's *Get Involved* website hosted an online survey that allowed the community to provide feedback and comment on the report. The *Get Involved* survey was available from early May until 30 June 2014. Questions in the survey were specifically focused on receiving community feedback about the government's preferred option and its likely impacts. A free text comments section allowed feedback and comments to be submitted outside of the eight multiple choice questions.

## Discussion paper

A discussion paper was released to assist the community in understanding the study, the preferred option and to highlight key messages contained in the full report. The discussion paper summarises WSDOS by using simplified language and diagrams to discuss the concepts of the study while still maintaining the intent of the report.



## The Community's Feedback

The community consultation period ran from 1 April 2014 to 30 June 2014.

At 92, the total number of respondents is small, comprising 54 attendees at the community consultation meetings, 8 individual submissions via email, 7 written submissions by organisations and 23 responses to the survey on the *Get Involved* web site. One individual provided a supplement to their original submission.

447 issues were identified and grouped into common themes that reflect chapters in the WSDOS Report:

1. Wivenhoe and Somerset dams overview (Chapter 2)
2. Flood Manual (Chapter 3)
3. Issues and challenges(Chapter 4)
4. Operational options (Chapter 5)
5. Dam operations – flood mitigation assessment (Chapter 7)
6. Dam safety (Chapter 9)
7. Bridge crossing and submergence (Chapter 10)
8. Bank slumping and erosion (Chapter 11)
9. Riparian flora and fauna (Chapter 12)
10. Other Issues

Each of the themes is discussed in detail below.

### Wivenhoe and Somerset Dams overview

Chapter 2 of the report describes the dams, the catchment, released water travel times, historical flood events and bridges impacted by the elevated lake levels during flood. Submitters made a number of general comments about the dams. These included questions about the fuse plugs, the catchment, the Q100 level in Ipswich, the capacity of Wivenhoe Dam, natural attenuation and whether Somerset Dam is a flood mitigation dam.

The *Get Involved* survey posed a question about the ability of Wivenhoe Dam to mitigate floodwater flowing from Lockyer Creek and the Bremer River.

All but 2 submitters were aware that floodwaters from Lockyer Creek and Bremer River enter the Brisbane River below Wivenhoe Dam and are not mitigated by either Wivenhoe or Somerset dams.

In general, submitters are well informed about the role that the dams play in mitigating floods, the size and features of the catchment and inflows below the Wivenhoe Dam wall.

The *Get Involved* survey asked if respondents “believed that Wivenhoe and Somerset dams cannot flood-proof Brisbane”. Of the 23 that answered this question, 16 answered “Yes”, 5 answered “No” and 2 were unsure. There was lesser understanding of the role of the fuse



plugs and how they fit into the operations of the dam and a few people were unsure of the purpose and capacity of Wivenhoe Dam.

Chapter 2 of the WSDOS report includes diagrams that illustrate clearly that Wivenhoe Dam is upstream of Lockyer Creek and Bremer River. The flood operations modelling results are included in section S5.2 of the report summary and Chapter 7. The modelling identifies downstream flows which cannot be mitigated by Wivenhoe Dam.

## Flood Manual

Chapter 3 of the WSDOS Report explains the flood mitigation manual used to operate the Wivenhoe and Somerset dams during flood events, the *Manual of Operational Procedures for Flood Mitigation at Wivenhoe Dam and Somerset Dam* (the Manual). The purpose of the Manual is to provide the flood engineers with the rules for releasing flood water from the dams in order to meet the objectives of the Manual for flood mitigation.

27 comments and questions were received from respondents about the strategies and operations of the dams in the Manual.

Comments from respondents were about:

- the W1 – W4 strategies,
- the use of rain forecasts,
- the length of the drain down period after a flood event has peaked,
- the length of the drawdown for implementing temporary full supply levels,
- engineer or operator discretion or judgement,
- decision making under the Manual
- training requirements and certification of those working in the flood operations centre and at the dam,
- equipment maintenance and communication,
- determining criteria that dictate when pre-release is essential, .

The term *professional judgement* is used in the Manual and in Chapter 3 of the WSDOS Report. Chapter 4.1.3 of the WSDOS Report describes the circumstances in which such discretion may be exercised. Professional judgement is an important aspect when developing a release plan and moving from one strategy to another as first-hand knowledge and previous experience cannot be prescribed in the manual for every possible scenario and flood event. The main issue is that professional judgement should be based on some reference to objective criteria or evidence leading to a conclusion. The flood manual's range of strategies is quite narrow and engineers are only able to exercise their professional judgement within this limited operational framework. They do not apply the Manual as if it were a step by step instruction book but use its fundamental principles and trigger points along with data on actual rainfall, forecast rainfall, river lake levels and model release rates to achieve the best possible outcome for each unique flood event.



In the Drain-Down Strategy the Dam Safety Objective is met with a criterion to collectively drain the dams to FSL within seven days. This criterion is based on the analysis of historical flood records (refer WSDOS Chapter 6) that show a significant probability of two or more flood producing rain systems occurring in the Brisbane River catchment close together. If there is a favourable fair weather outlook, the Flood Manual allows the drain-down time criterion to be extended up to 14 days if certain operational procedures are followed.

The Manual is based on the premise that an indefinitely large number of flood scenarios can occur, and it is not possible or appropriate to provide prescriptive procedures describing how decisions are to be made in all circumstances when managing flood events. Rather, the objectives and strategies contained in the Manual are designed to guide flood event decision making based on professional judgments by qualified engineers.

The engineers are guided in their decision making by consideration of the four strategies and development of a release plan based on incoming real time data provided by rainfall and stream flow gauges. The process is iterative, meaning that as conditions change throughout the flood event operations can move between strategies. The objectives of the four strategies are as follows:

**Strategy WR:** minimising disruption to rural life while limiting inundation of urban areas and protecting the safety of the Dam

**Strategy WU:** limiting inundation of urban areas while protecting the safety of the Dam

**Strategy WS:** protecting the structural safety of the Dam

**Strategy DD:** draining both Dams to near their FSLs within seven days, whilst minimising impacts on rural and urban areas and riparian flora and fauna

The strategies are not selected linearly but are selected based on the antecedent conditions and the flood event occurring at the time. This means that a flood engineer may go from Strategy WR to Strategy DD without ever implementing Strategies WU and WS. Each strategy identifies targets for peak flows downstream of the dam and exit criteria that determine when to move to another strategy.

## Issues and challenges

Chapter 4 of the WSDOS Report summarises the key issues and challenges that were identified as relating to:

- relevant recommendations from the QFCoI
- other matters identified relating to the operation of the dams, and
- relevant matters that may inform the future upgrade of the dams, flood studies and floodplain management.

All submitters showed a good level of understanding about the ability of Wivenhoe and Somerset dams to provide flood protection for Brisbane and Ipswich. Of the 23 responses to



the Get Involved survey question, only six did not know or were unsure of Wivenhoe and Somerset dam's inability to flood proof Brisbane and Ipswich.

A number of submitters commented on the use of forecast rainfall. The issues raised were the reliability of the forecasts and the use of rainfall in real time. While there were submitters that were both for and against the use of forecast rainfall by the engineers and hydrologists, there is support for ongoing research to improve the reliability and resolution of radar and to better understand how to apply forecast rainfall in dam operation strategies.

Correspondence received from the Bureau of Meteorology stated 'on some occasions, the 7 day rainfall forecast may provide some indication of the flood-producing potential of systems but models cannot be relied upon to capture the development of every rainfall event at that timescale.'

The risk is that a decision based on uncertain rainfall forecast information may produce a worse outcome than one based on actual rainfall observations. There may be scope in the future for the more direct use by Seqwater of BoM forecasts in the operation of the dams but this requires targeted research.

There was also a comment that a cost benefit analysis be done on the circumstances that would allow a fuse plug to be initiated.

The economic assessments included Operational Alternative Urban 4 which allows for initiation of the fuse plugs. Generally the results showed more favourable economic outcomes than Operational Alternative Urban 3 but did not include an allowance for damage to the dam infrastructure that might result from the more frequent triggering of the fuse plugs. Ultimately, Operational Alternative Urban 4 is a longer term operational option for Wivenhoe Dam as more investigation needs to be undertaken into any potential dam safety risks. Chapters 4, 9 and 16 comment on the potential costs of repairing the fuse plugs.

## Operational options

Chapter 5 of the WSDOS Report provides an overview of the operational options that were investigated as required by QFCoI Interim Report recommendation 2.13. The results of the community consultation suggest there is broad community acceptance of *Alternative Urban 3* or, at least, a lack of community concern about the option.

Of the 38 written and survey responses received, 14 supported Alternative Urban 3, 12 did not support this option (two of those supported Alternative Urban 4) and 12 responses were inconclusive. Of the 12 responses not supporting Alternative Urban 3, all but one were from people who use the downstream crossings.

The *Get Involved* survey asked two questions about the proposed operational options for Wivenhoe Dam. The first question asked if it was more important to the respondent that flood mitigation was improved for houses and buildings during infrequent large floods rather than reducing the impact of more frequent minor floods on low level crossings.

The second question asked specifically if respondents supported the government's preferred option, Alternative Urban 3. The preferred option increases flood mitigation protection for houses and buildings by removing protection of low level crossings and by a minor reduction in the space dedicated to protecting the dam itself.

Comments in written submissions about Alternative Urban 3 that were not supportive generally focussed on past decision making and previous versions of the Manual. Although



these give a picture of the issues of most concern to the community they were not directly relevant to the advantages or disadvantages of Alternative Urban 3.

WSDOS assessed the overall advantages and disadvantages of the operational options based on, the “net present costs” of each option.”. This method effectively values the impacts of each option in a dollar terms to help make comparisons. The net present costs analysis takes into account not only the impacts of floods, but also other impacts including water supply security.

The WSDOS Discussion Paper indicates that of all operational alternatives assessed; “Alternative Urban 3” provides the best result and is able to be implemented in less than a year.

Under Alternative Urban 3:

- **Water Supply:** remains unchanged at 37% of total Wivenhoe storage capacity
- **Urban Flood Mitigation:** is increased from 24 percent to 35%
- **Rural Strategy** removed
- **Dam Safety:** is marginally decreased to 28%.

The advantage of Alternative Urban 3 is that more space is available to protect houses and buildings from damage during large floods. Typically and for most large floods (over 4,000 m<sup>3</sup>), urban flooding under Alternative Urban 3 would be 5 to 10% less than under the existing way of operating the dam. There is a marginal increase in risk to the dam itself. On balance over the full range of potential floods, Alternative Urban 3 would typically produce small, but worthwhile, reductions in urban flooding without creating unacceptable risks to our water supply security or the safety of the dam.

## Dam operations – flood mitigation assessment

The WSDOS Report, in Chapter 6, summarises Seqwater’s assessment of the thirty-two operational options defined, in Chapter 5, on the basis of four starting full supply volumes (FSV) and eight operational alternatives.

The *Get Involved* survey asked whether the respondents supported permanently reducing the water supply level of Wivenhoe Dam to improve flood mitigation provided by Wivenhoe Dam. The majority of respondents did not support dropping the water supply level.

Written submissions made about the flood mitigation assessments commented on and criticised the modelling and other technical aspects undertaken to assess the dam operation options. The majority of these criticism were on perceived insufficiencies of the different types of hydrological or hydraulic modelling that was or was not completed for WSDOS.

WSDOS was undertaken using rigorous governance and review processes to ensure the best available data collection and modelling techniques were available to serve the purposes of the report. An overarching steering committee comprising state and local government representatives oversaw each of the studies.

Further technical experts were involved and invited to critique various elements of the studies as information became available:

- expert panels reviewed the hydrology undertaken by Seqwater,
- an expert was engaged to review the operational alternatives investigated to ensure that the operational alternatives addressed the matters raised in the Queensland Floods Commission of Inquiry Interim and Final Reports, and
- key stakeholders were asked for comment on the draft reports prior to their release for community comment.

## Dam safety

WSDOS recognised that the structural safety of the dams is the paramount objective of dam flood operations. Assessment of the safety of Wivenhoe (and Somerset) dam for a range of operational options and over a range of flood events was a key consideration required under QFCoI Final Report recommendation 17.3.

The analysis of operational options was on the basis that the current level of safety for the existing dams would not be reduced.

The *Get Involved* survey asked whether respondents supported a minor reduction of the protection of the dam itself so as to increase the flood mitigation protection for houses and buildings. The majority of respondents agreed to a minor reduction for the protection of the dam itself but only if the increased risk to people and buildings is very small. A small number did not support any reduction in dam safety capacity.

Submitters generally supported that the protection of the infrastructure should always be the paramount objective. Submitters also supported that any changes to the safety triggers of Wivenhoe Dam especially in relation to more frequent use of fuse plugs during flood events should follow necessary assessments.

A major constraint placed on WSDOS was maintaining the maximum standards for dam safety. During the development of operational options the impacts on dam safety were assessed and the preferred options validated against current levels of dam safety.

WSDOS did not seek to change dam safety legislative requirements or to investigate the adequacy of current infrastructure. WSDOS has highlighted that further investigation will be required by the dam owner to more fully understand the impacts of fuse plug initiation on the downstream channel.

## Bridge and Crossing Submergence

Chapter 10 of the WSDOS Report considers the impacts of the operational options on the inundation of bridges and crossings. Downstream of Wivenhoe Dam there are 8 bridges and crossings that may become fully submerged during relatively minor floods or during water releases from the dam.

The *Get Involved* survey asked two questions related to the submergence of bridges and crossings as a result of the operations of Wivenhoe Dam during flood events, specifically Alternative Urban 3 that would remove the rural component from the Wivenhoe flood storage. The first asked whether the respondent regularly used any of the low level rural crossings along the Brisbane River downstream of Wivenhoe Dam (Twin Bridges, Savages Crossing, Colleges Crossing, Burtons Bridge and Kholo Bridge). The majority of respondents used the crossings often or sometimes.



The other survey question asked whether the respondent supported removing the small share of Wivenhoe Dam dedicated to keeping low level crossings open during small floods to allow more space in the dam to be available to help protect houses and buildings from damage during large floods.

Respondents were evenly split on whether they supported this option with two stating they were unsure if they supported Alternative Urban 3. Free text comments note the inconvenience due to crossing inundation and safety issues with alternate routes.

Email respondents did not support Alternative Urban 3, given it would increase the likelihood of more frequent closing of low level crossings. Issues identified focussed on two themes: inconvenience and public safety.

Respondents impacted by the submergence of crossings during flood events feel the government should raise crossings to reduce the inconvenience they experience. The impacts included major increases to travel times and/or isolation from work, school, essential services and supplies.

Increases in the frequency and duration submergence of bridges and crossings downstream of Wivenhoe Dam was an area of concern, especially for those who live in the impacted areas. This increase in frequency and duration of inundation of bridges and crossings is very small and equates to only hours more time inundation rather than days or weeks.

Submitters raised the following issues in relation to the inundation of bridges and crossings:

- The increased use of Kholo Rd from increased frequency of inundation of rural crossings is seen as a serious safety issue as the road is very narrow. It is suggested that Kholo Rd should be widened with bicycle lanes incorporated into any upgrade.
- Public safety is seen to be compromised due to longer commuting times when using alternate routes due to larger volumes of traffic, road rage, bus routes changed and school kids missing school. The bridge at Colleges Crossing is identified as a hazard to cyclists and children.
- During even minor flood events the bridge (Colleges Crossing) is closed and the only alternative is a dirt road (Allawah Road).
- Measure to improve the flood immunity of Colleges Crossing or provide an alternate river crossing with improved flood immunity should be considered.

In Chapter 10 of the WSDOS Report, the Department of Transport and Main Roads (DTMR) investigations provide indicative costs for the various bridge upgrade options but advise that further detailed investigations would be required to develop firm costs. These investigations indicate that the costs to upgrade the Brisbane River crossings downstream of Wivenhoe to achieve significant improvements in flood immunity are likely to be substantial.

## Bank slumping and erosion

The implications to bank slumping and erosion from the operations of Wivenhoe and Somerset Dams during and after a flood event are considered in Chapter 11 of the WSDOS Report. In response to QFCoI Final Report recommendation 17.3, DSITIA (2014) addressed the question of the degree to which the presence and operation of Wivenhoe Dam may



impact the erosion processes downstream of the dam, concentrating on the Mid-Brisbane section above Mt Crosby weir.

Bank slumping and erosion as a consequence of major floods is an issue of concern for community members living immediately downstream of Wivenhoe Dam. Comments received during the community consultation demonstrate concerns about the impacts of bank slumping and erosion on the aquatic environment and on water quality for treatment. The community considers that the rate of drawdown of the dam in the aftermath of the flood event impacts bank stability, and extended drawdown of the dam caused the death of riparian vegetation and contributed to extensive bank slumping and erosion.

The DSITIA investigations drew upon a wide range of pre- and post-2011 flood event studies to identify the processes and flood events on for bank slumping and erosion as well as the impact of human activities. The investigation found that, based on the available evidence, the Mid-Brisbane River system appears to be largely insensitive to changes directly attributable to the construction and operation of the dams in the upper reaches. Gradual anthropogenic influences over time, such as land clearing and sand and gravel extraction, are likely to have had a greater impact on bank and channel stability.

The WSDOS Report recognises that release strategies that maintain a constant water level for long durations are likely to have a greater impact on downstream bank erosion causing notching or undercutting at low levels, or bank saturation at higher levels.

The DSITIA investigation recommends that real time monitoring of the pore water pressure in the banks could be used to build a release strategy based around limiting the saturation of the bank material. To help establish a better baseline reference for the future management of the river system the investigation recommends that a systematic long term data collection and analysis program be established to better inform decision making. It would be important to include the Lockyer Creek in this program of work as the sediments delivered to the mid-Brisbane from the Lockyer influence the processes occurring in the mid-Brisbane River.

## Riparian flora and fauna

The WSDOS Report, in Chapter 12, reports on the DSITIA investigation that sought to identify potential impacts of Wivenhoe and Somerset Dams flood operations on Brisbane River flora and fauna. DSITIA's study drew on monitoring and research of flow dependent aspects of the Brisbane River ecosystem conducted as part of the Environmental Flows Assessment Program (EFAP) under the *Water Resource (Moreton) Plan 2007* and Moreton Resource Operations Plan.

Three submitters commented on the impacts of flood operations on riparian flora and fauna downstream of Wivenhoe Dam. The main issue identified was the extended drawdown of the dam after the 2011 floods being seen as responsible for killing trees along the river bank.

The WSDOS Report acknowledges that significant floods are relatively rare and represent a one-off event in the long term assessment of ecological assets such as riparian flora.

The DSITIA report concludes that as significant flood events are relatively rare, alteration to the sequence of flow-related recruitment and connection opportunities provided for between flood events are the largest contributors to the risk of long term population viability. Hence, the WSDOS Report makes no recommendations for changing current dams operations in relation to impacts on flora and fauna.



## Other Issues

Of the 447 submitted issues raised during consultation, 358 were directly relevant to study while there were 67 issues that the study was not able to answer or address.

Submitters raised valid concerns and comments relating to other projects being undertaken by both state and local government entities. It is intended to pass these comments and issues on to the relevant owner of the issue. Transport infrastructure and bridge issues will be sent to the Department of Transport and Main Roads, local government issues sent to the Local Government Association of Queensland, issues relating to possible dam infrastructure options will be considered as part of the prefeasibility study into potential future flood mitigation dam sites.

## What we learnt

The results of the community consultation process for WPDOS demonstrate that community generally support the government preferred option – Alternative Urban 3. Several respondents supported the upgrade and assessment of dam infrastructure to allow implementation of Alternative Urban 4 as soon as possible. Respondents impacted by bridge and crossing submergence would like to see improvements to crossings and access roads to improve public safety during flood events.

Overall, the number of responses to the community consultation on the WSDOS report was insufficient to draw clear indications of the community preferences. Respondents did highlight most of the recognised issues associated with the flood operation of Wivenhoe and Somerset dams.

The members of the community that took part in the consultation process were well informed about the nature of Wivenhoe and Somerset dams and their role in the water supply network for South East Queensland (SEQ). General conclusions based on the limited feedback provided are:

- The community now understand that Wivenhoe Dam cannot flood proof Brisbane and Ipswich.
- The community now understand that Lockyer Creek and the Bremer River flow into the Brisbane River below Wivenhoe Dam and therefore are not able to be mitigated by either Wivenhoe or Somerset dams.
- There is still some confusion as the purpose of Wivenhoe Dam. Some community members were of the view that Wivenhoe Dam was built for flood mitigation only rather than always being designed to be a dual purpose flood mitigation and water supply dam.
- There is concern that the flood operations of the dam impact bank slumping and erosion downstream of the dam.
- Those who use the low level crossings in the Brisbane valley are less likely to support the preferred option Alternative Urban 3 and the more frequent inundation of the low level rural crossings despite the fact that the overall increase duration of inundation would translate to hours rather than days or weeks.
- Views are mixed in the community on improving flood mitigation for infrequent large floods versus reducing impacts of more frequent minor floods.

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- The support for a minor reduction in the protection of the dam infrastructure to increase flood mitigation protection for houses and buildings is also mixed.
  - The community support investigating the use of stepped ramp-down of dam releases to provide cues to fish and other fauna of dropping flows before full dewatering of habitat occurs.
  - A small number of respondents community support making no changes to the operation of the dams until Alternative Urban 4 can be further investigated.



## Telephone enquiries

**Water:** 13 QGOV (13 74 68) business hours

**Energy:** 13 43 87 business hours

**Visit:** [www.dews.qld.gov.au](http://www.dews.qld.gov.au)