



AUSTRALIAN WATER ASSOCIATION

Submission to the

**Queensland Floods Commission of Inquiry
4 April 2011**



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1 Executive Summary

The Australian Water Association (AWA) is the leading water sector body in Australia, representing over 10,000 water sector professionals across all disciplines. Formed in 1962, AWA is an independent and not for profit association, providing a voice for water professionals around Australia on a wide range of sector issues including most recently on skills shortages, climate change, water management and water policy and regulatory reform.

Notwithstanding that the primary objective of this inquiry is into matters associated with flood management, with particular reference to the January 2011 flood and the operation of Wivenhoe Dam, AWA has largely chosen not to enter into a discussion of hydrology and the question of whether or not the operation of the dam gates was optimal.

Rather, given that Wivenhoe Dam is jointly a water supply dam and a flood mitigation dam, and given that the operation of the dam to meet these dual objectives is intertwined, AWA has chosen to cover certain issues associated with the water supply aspects of the matter. Key among these is the importance of developing better community understanding of – and trusting relationships with our water authorities – as the foundation of a proper water supply and flood management strategy for the region.

We have taken some time to briefly discuss certain flood management issues including the belated decision to reduce the water supply level in Wivenhoe Dam to 75% and the degree with which this has been explained or justified in the community.

We have also contrasted the very well developed SE Qld Water Strategy for water supply with the lack of a comprehensive SE Qld flood management strategy.

We have introduced the topic of climate change and resulting weather variability. AWA submits that various management systems need to become adaptive rather than prescriptive.

AWA believes that infrastructure standards for water supply and sewerage need to be tightened in flood areas. This is discussed in section 4 below.

Our submission also recommends that development controls be strengthened in flood plains.

The Association is grateful for the opportunity to provide this input.

2 Preparation and Planning for the Floods

Terms of Reference link:

a) the preparation and planning by federal, state and local governments; emergency services and the community for the 2010/2011 floods in Queensland,

AWA does not propose to cover this in any detail as others will be better placed to advise the Commission. We will however bring forward the issue of climate change below.

However our general observation is that the lessons from the 1974 flood in SE Qld seem to be largely forgotten within the affected community. There needs to be a better system for keeping information available on relevant flood levels at a local community scale. That system need to overcome the competing commercial interests that would seek to keep flood level information from potential buyers of property. Now it is absolutely vital that the lessons from our two major floods in living memory be not lost on future generations.

2.1 Climate Change

The 'water sector' has emerged as the 'coal mine canary' in alerting us to climate change. AWA accepts that while the emerging evidence of climate change is absolutely convincing, certain aspects of the scale and timing of its likely adverse impacts remain uncertain. Climate change is predicted to make weather events more extreme and more frequent. This impacts on our water resources in the form of extended drought. It also impacts on our developed areas as flood from intense rainfall.

The reality is that the major dams are generally used both for water storage during drought times and as a flood mitigation device during floods. The Full Supply Level is chosen as a compromise between these competing needs. The community can give itself only a certain level of flood protection. This needs to be well explained to the community in terms it can readily understand and respond to.

AWA accepts that the biggest dilemma for the water industry is that we are now in circumstances where we have to plan and manage in a situation of considerable uncertainty. By contrast the traditional need of planners and designers has been for unambiguous answers.

The only way now to proceed is on an adaptive and flexible basis that learns by monitoring and is therefore resilient in the face of uncertainty. According to the Stern Review on Climate Change, 2006, 'adaptation is the only response available



for the impacts that will occur over the next several decades before mitigation measures on emissions can have an effect’.

Given the community disposition for certainty, scientists, engineers and hydrologists are unlikely to be skilled in conveying the degree of uncertainty involved in water supply and flood mitigation planning. The onus is on the SEQ water authorities to facilitate the explanation of good planning and adaptation strategies to the community.

The SEQ Water Strategy addresses this issue in the most competent of ways for water resource planning. It has been recently completed in response to the long severe drought and will serve the community well for decades to come – although there is still a need for better community understanding of the strategy.

AWA believes the flood protection strategy for South East Queensland is not as well developed or explicitly explained. It would need to cover similar issues as those contained in this commission’s terms of reference.

AWA is aware that considerable effort has gone into developing the [State Planning Policy 1/03](#) titled, “Mitigating the Adverse Impacts of Flood, Bushfire and Landslide”. This planning policy should form the basis of a comprehensive SEQ Flood Protection Strategy.

Recommendation: That a comprehensive flood protection strategy be developed for SE Qld with the objective of describing an optimal economic and social level of flood protection and readiness given the other competing needs of development and water supply.

3 The Response to the 2010/11 Flood Events

Terms of Reference link:

c) all aspects of the response to the 2010/2011 flood events, particularly measures taken to inform the community and measures to protect life and private and public property, including

- immediate management, response and recovery*
- resourcing, overall coordination and deployment of personnel and equipment*
- adequacy of equipment and communications systems; and*
- the adequacy of the community's response.*

One of the key failings of the public communication undertaken with the recent floods was the explanation of what possible flood heights meant. The community has little understanding of what a flood height at the City Gauge at Edward Street means in relation to possible flooding where they are located. Most people didn't even know where the City Gauge was located.

Recommendation: That a better system of communicating to property occupants the likely flood heights at various locations along the river and tributaries be developed and implemented.

4 Managing the Supply of Essential Services

Terms of Reference link:

d) the measures to manage the supply of essential services such as power, water and communications during the 2010/2011 flood events,

AWA believes that water supply and sewerage are essential services for the community. The extent to which these services are found to be not available soon after the flood event is unacceptable. Water supply and sewerage are needed for public health but also have benefits relating to environmental protection, economic capacity and lifestyle amenity.

Our general perception is that water and wastewater services reliability, particularly to smaller and medium sized communities is inadequate.

Some of the major SEQ water treatment capacity was disabled in the flood. It is fortunate that there have been recent large augmentations of treatment capacity due to the extended drought. These more climate resilient treatment plants were able to cover the shortfall. AWA is not in possession of sufficient detail to draw any

conclusions as to whether the degree of flood proofing of the water treatment plants was adequate.

In the Brisbane River floodplains, AWA believes that a significant proportion of the sewage treatment and sewerage pumping infrastructure was taken out of action. Much of this infrastructure remained inoperable for many weeks after the flood causing a significant amount of untreated sewage to flow into streams. A lot of this infrastructure was constructed or augmented after the '74 floods and it appears the lessons of that flood were not properly considered in the design of this infrastructure.

Naturally we understand that a gravity sewerage system is naturally located on the flood plain and will be significantly exposed to flood events.

However, we contend that the recent situation is not appropriate in this day and age and that infrastructure standards should be developed or rewritten to ensure the sewerage system is reasonably well flood proofed and able to be restored in a reasonable time.

Recommendation:

That water supply and sewerage infrastructure standards be reviewed and rewritten to ensure a reasonable level of flood protection and restoration time.

That water supply and sewerage authorities consider the need for augmentation of existing infrastructure to meet the new standards.

5 Adequacy of Forecasts and Early Warning Systems

Terms of Reference link:

e) adequacy of forecasts and early warning systems particularly as they related to the flooding events in Toowoomba, and the Lockyer and Brisbane Valleys

The weather rainfall forecasting provided by the Bureau of Meteorology was generally excellent, at least as far as the community in general was concerned. The Wivenhoe Dam operator may have a different view.

There is likely to be argument that the flood level forecasting was not adequate for the rivers but more particularly in the areas affected by flash flooding. AWA does not have sufficient data to make an informed comment on whether this can be improved significantly.

Nevertheless, it is worth observing that the community will properly seek assurances that in extreme weather situations, the attention to detail by meteorologists and dam

managers is not affected by the time of day or the day of week . It is trite to observe that the weather stops for no-one.

6 Dam Operations

Terms of Reference link:

f) implementation of the systems operation plans for dams across the state and in particular the Wivenhoe and Somerset release strategy and an assessment of compliance with, and the suitability of the operational procedures relating to flood mitigation and dam safety

AWA believes that the recent decision to deplete Wivenhoe Dam to 75% of its full water supply level was not well explained or justified to the community. It was apparently in anticipation of further inflows.

The decision was made at what normally would be the end of the wet season and this could prove to be an error of judgement. The need to undertake such a strategy as a short term operational response is not understood. Given that weather forecasting systems are now reasonably sophisticated and any weather system that is likely to produce flooding rains can be identified in good time to allow any prudent lowering of the storage below 100%. At that time and the present time no such rain producing system had been identified. The point is that Wivenhoe Dam was designed to hold 1.1 Million ML of water supply and it appears arbitrary to suddenly decide that somehow 75% of this volume should be its operating level.

If, on the other hand, the 75% level is seen as a more long term full supply level, AWA has no argument *per se*, provided that:

- It is an explicit transparent decision of government
- It is well supported by reasoned judgment based on the economic and social benefit of protecting the flood plain versus the benefit of the additional low cost water for water supply. This should be considered along with other options, such flood plain management options of restricting development below the 100 year flood line to appropriate uses only.
- The water supply capacity foregone is funded by State and Local Authority sources and removed as part of the cost base for supplying potable water.
- Alternative water supply sources, being desalination and indirect potable reuse of purified recycled water (PRW), are brought online as part of a comprehensive climate-resilient sourcing strategy to compensate the reduction of yield. AWA supports both these climate resilient water supply options and can provide extensive justification for the adoption of both – as we did in our submission on the draft South East Queensland Water Strategy. In this way PRW and Desalination become not just part of a drought mitigation strategy, they could also be a key part of a flood mitigation strategy.



- The South East Queensland Water Strategy is amended to take account of the reduced surface water resource available from Wivenhoe Dam.

Another alternative may be to allow the full supply level to have a range for example 60% to 100% depending on the prevailing weather conditions. This could be managed by reference to the Bureau's long range rainfall predictions based on such indicators as the Southern Oscillation Index.

In terms of Wivenhoe dam operations during the 2011 flood event, AWA calls for the Inquiry to undertake a balanced assessment. A robust examination of the pertinent systems, procedures and actions is both necessary and proper in the wake of the devastating outcomes of the floods. But at a time when some sections of the community seek to apportion blame, AWA seeks a considered and thoughtful assessment that identifies any weaknesses or failings, but also looks to learn from the event and implement improvements where possible.

Specifically, the actions of individuals need to be judged given their knowledge at the time and the particular operational circumstances that were presented. There is no doubt that at the time the Inquiry concludes, there will be a great body of evidence available that will not have been at the disposal of operators at the time they acted. Similarly, the inquiry will have the benefit of time to analyse and interpret, then plan alternative approaches. These are luxuries that will not have been available to those making decisions at the time.

AWA fully supports using the opportunity to learn from this tragic event and to improve systems, operating protocols or the like. It does not believe that character attacks and political jibes at institutions will assist this goal.

Recommendation:

That a review be undertaken of the appropriate future full supply level for Wivenhoe Dam taking into account the points discussed above.

That the outcome be communicated openly to the public.

That the Inquiry maintain a focus on opportunities for improvement in a constructive context and that assessments of operational decisions be undertaken on the basis of what knowledge and time individuals could reasonably be expected to have.

6.1 The role of Community Confidence and Trust

An important concern AWA wishes to raise in this submission is the impact of current political debate on SEQ's water institutions; the consequent damage to community confidence and trust in its water authorities; and the potential ramifications for this Inquiry.

For some four years now, SEQ has been undergoing a progressive review of urban water governance, regulation and institutional structures. One consequence of this has been the separation of direct management and control of urban water authorities from local government. This, amongst other factors, has resulted in a substantial and ongoing political debate. A direct casualty of this debate has been the standing of SEQ's water institutions.

It is AWA's position that structural reform of the water sector can deliver substantial benefits to the Queensland community. It is acknowledged that there are complicating factors and areas for genuine discussion: the role of Purified recycled Water, the introduction of desalination and questions associated with pricing policy and regulation are all matters on which AWA encourages discussion.

It is a matter of concern however where politicisation threatens constructive discussion; where it results in personal attack; or where it obscures the search for facts, such as is risked with discussion on the operating level of Wivenhoe Dam or in development on floodplains.

AWA also notes that whilst there are some opportunities to further rationalise the management and provision of water services in SEQ, the structural reforms which have resulted in three geographically based regional utilities which pull together several former municipal water services providers has actually assisted in the flood response and recovery. Each of the entities is larger than their predecessors and, while maintaining strong connections with other government agencies and local councils, has a strong focus on their core responsibilities, a larger workforce and the capacity to bring better dedicated systems to water management. One result of this new "critical mass" , was the ability to rapidly deploy specialist teams during and post flooding. This extended to neighbouring entities who were able to redeploy their resources to support the most affected areas. It would be unfortunate if these positive capabilities were not recognised and built upon.

Recommendation:

That the negative and unproductive consequences of politicisation of water management be acknowledged and steps be taken to maintain community trust in South East Queensland's water supply, sewerage and dam operations services.

That the positive aspects of recent water reforms be recognised to the extent relevant to ensure they are reinforced in future.

7 Land Use Planning

Terms of Reference link:

g) all aspects of land use planning through local and regional planning systems to minimise infrastructure and property impacts from floods

The Australian Water Association is of the view that any flood defence or mitigation strategy should be integrated with a floodplain management strategy, where only appropriate development occurs on the floodplain and such development has procedures for flood readiness, response and recovery.

AWA is concerned by the extent to which certain development interests have suggested that, following the January 1974 flood, Wivenhoe Dam would “flood proof” all urban development in Brisbane and Ipswich. This is not a claim made by reputable hydrologists. It is a truism amongst hydrological and civil engineering professionals that flood protection can only affordably be provided against a certain ‘design flood pattern’ and there is always a statistical probability of that ‘design flood’ being exceeded. Wivenhoe Dam is no exception in its design limitations providing only a certain level of flood protection against a flood event of a certain return probability.

Following these most recent intense rainfall events in Queensland, AWA recommends – although it is confident that this is already under way – a review of the rainfall intensity frequency duration standards in a timely manner. This may result in a review of the 1% annual exceedance probability flood that development controls should be based on.

The Queensland Government and local governments in SEQ have expended considerable effort in developing appropriate floodplain management policies. In brief the State Planning Policy SPP 1/03 states that: "... the appropriate flood event for determining a natural hazard management area (flood) is the 1% annual exceedance probability (AEP) flood". However, the SPP retains the flexibility for local governments to adopt a different Defined Flood Event (DFE) depending on the circumstances of individual localities. Local governments proposing to adopt a



lower Defined Flood Event than 1% AEP will be required to demonstrate to the satisfaction of the Departments of Emergency Services and Natural Resources & Mines (now DERM) that the proposed DFE is appropriate to the circumstances of the locality.

Yet the implementation of these policies through appropriate development controls and buy-back strategies to correct past planning errors does not appear effective.

On 23/3/11 the Courier Mail reported that the Urban Land Development Authority vowed to proceed with developing land in 13 of its 14 fast tracked development projects despite half being on lots below the one-in-100-year flood level and hundreds of lots being flood prone. It is difficult to see how residential land could be compatible with river floods so it is difficult to understand ULDA's stance on this.

A key element of an effective floodplain management strategy is that residents and industries located on land known to be flood-prone must have in place effective contingency plans and evacuation strategies for themselves and for their valuable items of equipment. It appears ridiculous to see vehicles inundated by floods. Each structure located in a floodplain should be of a design that lends itself to ready wash-down and restoration post-flooding with little need for disposal of wetted material.

Recommendation:

That Local Authorities define Natural Hazard Management Areas for flood risk and implement stronger development controls in their planning schemes and development assessment.

That these development controls require owners to have plans in place for flood readiness, contingency response and recovery.