Queensland Conservation

Queensland Floods Commission of Inquiry
PO Box 1738
Brisbane QLD 4001

Date: 11th March 2011

Email: info@floodcommission.qld.gov.au

Re: Flood Inquiry submission

Dear Sir/Madam,

The Queensland Conservation Council (QCC) welcomes the opportunity to provide our views to the Commission about the recent flood events. This submission is made by QCC on behalf of the organisations listed directly below.

The Wilderness Society (QLD)
Australian Marine Conservation Society
Wildlife Preservation Society of Queensland
National Parks Association of Queensland
Friends of the Earth (Brisbane)
Cairns and Far North Environment Centre
Mackay Conservation Group
Capricorn Conservation Council
Wide Bay Burnett Conservation Council
Sunshine Coast Environment Council
Gold Coast and Hinterland Environment Council (Gecko)
Logan and Albert Conservation Association
Householders Options to Protect the Environment (HOPE)

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Australia is known as a land of droughts and flooding rains, but what climate change means is Australia becoming a land of more droughts and worse flooding rains" **Professor David Karoly, University of Melbourne**

1. Introduction

Alongside the tragic loss of life and extensive damage to infrastructure and homes, the recent floods and severe storms have also caused significant and potentially long lasting harm to waterways, coastal waters and marine and terrestrial ecosystems in affected areas across the state.

Government, industry, business and communities have now experienced first hand the impacts that an unstable climate can bring. Along with the impact to peoples' lives, the floods and storms have damaged essential infrastructure, towns, agriculture and our natural environment – all of which harms our economy from disrupting production and the cost of rebuilding.

As more extreme weather events are predicted, the recovery and reconstruction following the floods and storms is an opportunity to rebuild in a safer and more sustainable way. This will enable Queensland to be better prepared and more resilient to future natural disasters. To do this requires that climate change threats must be recognised in all levels of planning and that we transition away from activities that contribute towards an unstable climate. Research suggests that climate change is increasing the intensity and frequency of extreme weather. Queensland remains the state with the highest per-capita emissions in Australia – which by some measures holds the shameful title of highest per-capita emitting nation in the developed world.

Whilst the Inquiry is currently considering more immediate issues such as the operation of Wivenhoe Dam and any developments that may have contributed to the extent of the flooding, it is important that any early recommendations the Inquiry might make are provided in the context of both recovery and future resilience. Recommendations that do not take account of both aspects simply perpetuate the risks to any affected communities and environment in the longer term.

This submission outlines the actions that Queensland's key environment groups believe will best assist the recovery from the recent events and the matters and opportunities the Commission should consider to enable Queensland to become sustainable and resilient to future extreme weather events. We detail these matters and opportunities below.

2. Building resilience

The long term strategic goal of the Queensland Reconstruction Authority is to build a resilient Queensland in the aftermath of the recent severe weather events. Simply rebuilding and recovering without comprehensively planning to become resilient will just maintain Queensland's vulnerability to future events and prove to be costly.

In light of this, it is important for the Commission to consider issues brought before it are considered in context of implementing the best way that the states environment, economy and communities can become resilient to future severe weather events in the immediate and longer terms.

Resilience is a key element of sustainability – in that a system that cannot readily recover from disturbances is not resilient. Conversely, an unsustainable system cannot be considered resilient due to its inherent functioning creating increased adversity making its long-term sustainability virtually impossible.

Therefore, enabling Queensland to become resilient firstly requires the state to become sustainable, which can best be achieved by implementing the principles of Ecologically Sustainable Development. These principles are designed to ensure that development improves the total quality of life, both now and the future, in a way that maintains ecological processes upon which life depends.

The Oxford Dictionary defines resilience as 'the ability to recover readily from adversity', while the Stockholm Resilience Centre defines resilience as 'the capacity of a system to continually change and adapt yet remain within critical thresholds'.

Examples of resilience are the ability of an ecosystem to readily return to its original state after being disturbed due to its underlying health and stable condition; or the ability of a town to withstand severe weather events due to utilisation of appropriate construction, design and planning standards.

In context of preparing Queensland for future extreme weather events, we offer the following definition of resilience:

> **Resilience;** is the ability of the environment, and all that depend upon the environment; individuals, communities and businesses to withstand and readily recover from severe weather events after having implemented practices that establish a stable climate and sustainable environment to the greatest extent possible.

Key actions required to mitigate natural disasters include lowering greenhouse gas emissions, improving land management practices, revising regional and local planning schemes and updating building, development and infrastructure construction standards to meet current and future conditions.
Enabling Queensland to become resilient to future severe weather events is an opportunity to transition and transform the state into a more sustainable and just society.

Recommendation
Any recommendations the Commission of Inquiry might make should be done so in the context of both recovery and resilience to future severe weather events

3. Operation of South East Queensland's water supply storages

The recent South East Queensland floods have clearly shown the range of environmental, social and economic impacts that can arise from the way water storages are operated. Prior to this recent crisis, SEQ water storages were being operated in a way to manage rapidly lowering storage levels caused by reduced in-flows due to drought, which very nearly resulted in the region's potable water supply failing.

South East Queensland's dams going from virtually empty to then dangerously overflowing within a relatively short period of time clearly shows the regions water storages must be operated in a way that better suits prevailing weather conditions and projected climate scenarios.

While Wivenhoe Dam was constructed to serve the dual purpose of storing water for potable use and to protect Brisbane from flooding,

current legislative arrangements require the dam to be operated in a way that maintains the storage at full supply level whenever possible. Maintaining the dam at its full supply level does not compromise the ability of it to provide flood mitigation under normal SEQ weather conditions.

However, the ability of the dam to mitigate downstream flooding is significantly compromised when it is at full supply level at times when SEQ is experiencing above average and severe weather conditions such as the recent torrential rains.

As the frequency and severity of extreme weather events are projected to increase due to the effects of climate change, the adaptive management framework enabling the region's water storages to be operated in a flexible manner should be based on projected climate scenarios, such as whether the region is being affected by prevailing El Nino or La Nina climatic patterns.

For example, the regions water supply storages should be maintained at 40% of full supply level when the regions weather patterns are being affected by La Nina climate patterns.

Lowering storage levels to 40% of FSL would increase the capacity of the region's dams to mitigate any flooding that may occur as a result of severe rainfall events caused by La Nina conditions.

Any shortfall in meeting the regions urban water supply requirements that may arise from reducing storage levels to 40% can be readily met by utilising measures that were introduced during the drought, such as:

- Adding Purified Recycled Water to Wivenhoe Dam, which is allowable under current legislative arrangements
- Reducing per capita consumption – SEQ residents reduced their consumption to below 140l per person during the drought
- Operating the Tugun desalination plant at full capacity. This assumes that the facility is operating as a 'carbon neutral' facility and not adversely impacting upon the marine environment.

Under the adaptive management framework, storage levels would be allowed to return to FSL when El Nino conditions are prevailing, which can be achieved by greater retention of storage in-flows or by increasing the threshold that governs when purified recycled water can be added to Wivenhoe Dam.

Along with reduced flooding of residential areas, operating water supply storages at lower levels when La Nina conditions are prevailing would also enable adverse environmental impacts to waterways and Moreton Bay that occur from extreme flooding to be minimised.

Recommendation
An adaptive management framework is introduced to allow South East Queensland water supply storages to be operated in a flexible manner based on long-term weather forecasting. When La Nina conditions are prevailing, dams are operated at 40% FSL. Any shortfalls in urban supply are met by full utilisation of drought response infrastructure such as potable recycled water supplies.

4. Infrastructure

Flooding has caused extensive damage to private, public and industrial infrastructure across the state. In some cases, the severity of flood impacts has been exacerbated by the outdated design and inappropriate placement of certain types of infrastructure.

4.1 Road and rail

There is ample evidence that linear infrastructure such as roads and railway lines have redirected, constrained or channelised floodwaters which caused extensive environmental degradation and compounded the impacts with tragic consequences. .

For example, the rail corridor between the Lockyer Valley and Toowoomba was first constructed in 1867. While some upgrades have been made since it was first built, the construction of the rail corridor and its supporting infrastructure are largely based on 19th Century engineering standards.

As a result, the embankments, tunnels, bridges and culverts associated with the rail corridor have not been constructed to withstand the current day probability of severe weather events occurring more frequently.

Recommendation
Urgently review the standards associated with the re-construction and new construction of roads and rail corridors, particularly those located in

flood prone areas to better withstand future wet seasons. Standards should be set which take account of the current climatic conditions and projections citing the need to adapt to and mitigate these impacts.

4.2 Coal mine stormwater management infrastructure

Recent torrential rains in Central Queensland resulted in a large percentage of the regions coal mines being affected by floodwaters. This is the third time this region has experienced major flooding since 2008.

The rising number of coal mines affected by flooding is a strong indication that guidelines and standards associated with the planning and approval of mining projects does not adequately consider that severe weather events are becoming more frequent. This has resulted in levee banks and other on-site stormwater management infrastructure either failing or reaching their maximum storage capacity more frequently.

Increasing numbers of coal mining companies are seeking approval from relevant agencies to vary the conditions of their Environmental Authorities to allow greater concentrations of contaminants in the waste and floodwater they release to waterways. This has the potential to cause further environmental harm and affect human health.

Recommendation
Urgently review and update all standards, licences and permits associated with coal mine storm water management infrastructure to enable Central Queensland to better cope with future wet seasons. Existing stormwater management infrastructure on mine sites should be re- designed to prevent inundation and to avoid environmental harm. New mines should not be considered on floodplains, low-lying environments, or within flood flow paths and dynamic catchments

4.3 Sewage and water treatment plants

Queensland's floods also impacted heavily on water and sewage treatment infrastructure. Numerous sewage treatment plants were inundated with many of these facilities located close to water bodies.

At Mt Crosby the level of sediment in dam waters was so high that processing water became highly expensive and the plant ultimately failed during the flood period. To be better prepared for flood, a number of

short-term changes could arise from a proper review of the threats and operational responsibilities/constraints such facilities face.

Recommendations

Sewage treatment plants face two challenges under flooding – physical inundation and elevated levels of wastewater to be processed because of high stormwater flows entering the sewage system.

1. It is essential that the capacity of Queensland's sewage/ wastewater treatment plants to cope with these issues is reviewed. Measures must be found and implemented to better prepare these facilities. This should include a review of the appropriate location of these facilities and be considered in the context of inappropriate levels of urban settlement, particularly in vulnerable areas, such as floodplains and coastal zones.
It is likely that any other inundation events that occur in coming wet seasons will also harm water quality in our dams.

2. A review should investigate options for reliable water supply when dam water quality becomes poor. One option is the use of drought management infrastructure as outlined above to supply clean water to the water grid.

5. Built Environment

As the intensity and frequency of extreme weather events increases, the layout and management of urban areas must respond accordingly. If Queensland fails to do this, we simply set ourselves up for further tragedy and expense. , With a few changes to current development regimes, Queensland's built environment can become substantially more resilient to future extreme weather events. These changes must centre on the use of the latest flood inundation mapping, to ensure development does not continue to occur in areas of moderate to high flood risk.

Recommendations

1. Recalibrate flood inundation mapping and severe storm modelling to incorporate increased frequency and intensity of extreme weather events. In the absence of perfect evidence on future inundation levels, this mapping should still be revised to reflect a precautionary approach until reliable evidence is developed.

2 Review the recommendations of the Inland Flooding Study, published in late 2010 by DERM, in light of the future risk of more frequent and extreme weather events. QCC and the co-submitters support the intent of these recommendations. We particularly encourage the adoption of recommendations relating to State Planning Policy 1/03.

3 Introduce a moratorium to halt new floodplain development. The moratorium must cover older applications s pending assessment and apply to any areas identified as 'high risk' areas in the recalibrated flood inundation maps (as described in (1)).

4 There are clauses in the Sustainable Planning Act (2009, Chapter 9, Part 3) that allow for compensation claims by developers or landholders when a zoning or development intent status changes through a local planning instrument which may compromise their assumed interests. (This has in past been referred to as 'injurious affection). . The mechanisms for compensation must be rescinded as this clause currently makes it prohibitively expensive and legislatively problematic to place a moratorium on development in high-risk areas. It particularly constrains local government from prudently restricting or limiting development in areas identified to be vulnerable to flooding, storm surge, sea level rise and cumulative impacts.

6. Early Warning Systems

Communication is crucial in disasters. Evacuation procedures in the lead up to Cyclone Yasi exemplify the effective use of communication to prevent loss of life. Our organisations acknowledge that we are not experts in this field; we would simply recommend the introduction of any effective system that improves the safety and recovery opportunities for people and the environment.

Recommendation

1. Ensure emergency warning systems are effective, relevant, appropriate and comprehensive in the lead-up to during and after extreme weather events.

7. Public engagement

For an inquiry with very comprehensive terms of reference to be effective, it must draw on a great number of sources of evidence. One aspect of the inquiry's evidence base should be direct consultation with those affected by floods, as well as those with specialist knowledge on important aspects of the inquiry. Understanding vulnerable areas from a local perspective is crucial to adequate preparations for next season and beyond

Recommendations

1. The Commission should hold hearings in affected areas so the inquiry can hear first-hand accounts of the flood's impacts AND to enable the commission to communicate its work to the impacted parties as the work proceeds.

2. Identify and engage relevant stakeholders, including but not limited to catchment groups, experts on issues in academia and NRM groups.

8. Mitigation

In the long term, Queensland has a major opportunity to 'Build it back Green' as advocated by Green Cross Australia. While addressing preparedness for future extreme weather is an urgent priority, the importance of minimising GHG emissions cannot be underestimated and should be considered in the early stages of the recovery. At a minimum, preparations should reflect the Government's Q2 commitments and recognise that reducing emissions is a key response to escalating climate change impacts and extreme weather events. It would be regrettable if short-term flood recovery actions locked Queensland into further emissions growth, particularly given that a price on carbon is likely to be introduced in 2012.

Recommendations

1. All reconstruction activities should be considered in terms of their GHG emissions profile and mitigation actions enacted to minimise or eliminate these emissions accordingly.

2. Carbon pricing should be factored into all decision-making, including economic calculations.

9. Landscapes, ecosystems and biodiversity

People are not the only victims of extreme weather events. Entire landscapes and ecosystems have suffered widespread damage as a result of recent flooding. Many disturbed areas are now highly vulnerable to further degradation and lack resilience to other threats. This includes impacts upon coastal ecosystems and associated marine species in the coastal and marine environment receiving the flood waters.

In many cases, extreme weather impacts were more severe due to affected landscapes and ecosystems experiencing pressure from environmentally damaging land uses and practices.

Conversely, the level of landscape and ecosystem disturbance prior to the floods is partly responsible for the scale of damage experienced in Queensland. Activities such as excessive vegetation clearing, wetland filling, levee bank construction, river 'straightening' and other similar activities have significantly increased the velocity, volume and toxicity of floodwaters.

Restoring natural flood mitigation and hydrological functions is crucial to better prepare for extreme weather events, both for next season and further into the future. This will require targeted rehabilitation efforts as well as a broader program of changes to land management practices on both public and private land.

Recommendations

1. Natural flood mitigation and hydrological features must be re-established and extended to aid preparedness for next and future seasons. For example, damaged waterway banks should be stabilised by re-establishing and protecting riparian vegetation.

2. Private land management practices (e.g. on farms or mine leases) should be regulated to ensure flood resilience. For example, by avoiding primary production in riparian areas and avoiding overstocking. Where government agencies assist farmers in rebuilding, the opportunity should be taken to improve farm planning and practices as part of this process.

3. A landscape recovery program should pursue the following key tasks:

a. Identify highly vulnerable landscape areas degraded by extreme weather, such as wetlands, riparian vegetation, steep slopes and areas of habitat connectivity

b. Priority remediation of these vulnerable areas with a view to restoring ecological function as well as ensuring natural flood mitigation and hydrological functions. Remediation should include the identification and management of other threatening processes faced by vulnerable areas, such as weed incursion, sedimentation and point and diffuse sources.

4. The State Flood Risk Management Policy Discussion Paper, released by the Department of Natural Resources & Water in 2002 raised a number of issues in the management of drainage works and levees. Notably, there was particular reference to flooding (p59). The management of these features 'have the potential to impact greatly on water management, water quality and the riverine environment generally.' It noted the following issues in the management of drainage works and levees, requiring consideration:

    a. Managing the extent and effects of floods
    b. Clarifying roles for regulatory drainage and levee bank works
    c. Addressing ecological impacts of drainage activities
    d. Maintaining or improving viability of agricultural lands in floodplains
    e. Relationship of this issue with the Reef Protection Plan
    f. Relationship of this issue with coastal legislation.

    We strongly recommend these issues are reviewed in order to contribute towards the preparedness for future extreme weather events.

10. Review of Regional Plans and other associated legislation (such as the State Coastal Management Plan)

Regional Plans and other associated legislation need urgent review in light of the severe weather. Review should examine all proposed development areas' vulnerability to impacts from recent events and under revised climate change projections. For example, the State Coastal Plan has sea level and storm surge projections for coastal land; are these adequate given the storm surge experienced in events like Cyclone Yasi?

Recommendations

1. That all relevant legislation and statutory plans be reviewed and changes made to ensure community safety and environmental resilience with reference to recent events and the application of climate change projections.

2. Ideas, such as a network of coastal wetlands should be seriously considered. Such a network would be sympathetic to environmental restoration and the protection through buffering of people and property. .

3. An assessment of the vulnerability of Government agencies to future litigation as a result of not acting on climate change projections and ignoring past events.

11. Conclusion

In light of the above recommendations, it is the view of Queensland's key environment organisations that there is substantive work that can be done to prepare Queensland in the short term for future extreme weather events.

Key tasks include:

- Development of an adaptive management framework for water supply infrastructure, enabling the proper use of dams for flood mitigation when appropriate. The role of drought management infrastructure cannot be underestimated in assisting flood readiness.
- Reviews of standards for infrastructure to ensure the construction and management of roads, rail, mines and water treatment facilities do not aggravate harm from flooding events.
- Substantial changes to planning regimes and related building legislation to ensure reconstruction efforts both increase flood resilience and minimise future greenhouse emissions. Development of flood mapping to reflect modern flood risk is a crucial element of this work.
- Consultation of effected communities and local experts to build a strong, diverse knowledge base to support preparations.
- Systematic identification of degraded landscape areas, followed by an intensive and funded rehabilitation program. This will ensure natural flood mitigation and hydrological services are maximised

and vulnerable areas are not further degraded by other threatening processes.
- Reform of land management practices to ensure greater flood resilience on both public and private lands

In addition to recommending the adoption of the above, we strongly urge that the recommendations made in previous Queensland Government studies on flood mitigation are fully implemented. For example, the final report of the Inland Flooding Study (2010) offered a wide range of recommendations after thoroughly reviewing options for increasing inland flood resilience.

Furthermore, the older State Flood Risk Management Policy Discussion Paper (2002, p60) recommended that either a new Act be developed to enable proper flood risk management, or that flood risk management provisions are incorporated into an existing Act. Had these recommendations been actioned, Queensland's experience early this year would likely to have been vastly different.

We therefore strongly urge the Commission to review these documents and recommend their key recommendations be fully implemented.

Please contact our office should you require any further information or clarification regarding the matters raised throughout this submission.

Regards,

Toby Hutcheon
Executive Director
Queensland Conservation Council (QCC)

On behalf of the aforementioned organisations