



Subject: Submission to the Agriculture and Environment Committee on Flood resilience of river catchments
Date: Thursday, 27 October 2016 3:36:25 PM
Attachments: [image001.png](#)
[OQCS submission to AEC review of QAO report on flood resilience.docx](#)

Dear Glen

Firstly, I would like to thank your Committee for allowing us an extension on this submission. This has allowed us an opportunity to carry out more intense due diligence and consult with some key experts in the flood space, strengthening our final attached submission.

Regarding the QAO report, I would like to commend the authors for their treatment of this complex topic and their adoption of a systems approach to the challenge, reviewing institutional as well as more technical challenges affecting flood resilience. Our attached comments on the report are broadly supportive.

However, I would also like to raise the following concerns.

- We are of the opinion that the QAO report has not adequately considered progressive improvements in short and long term rainfall forecasting and how such can interface with flood warning and flood emergency planning. This is also an area of considerable action internationally which we could learn from and adopt in SEQ and further afield in our State.
- The importance of climate change as a factor influencing flood resilience could perhaps be more overtly recognised in the report. Climate change is only referenced twice in the document and yet it will have profound impacts on future rainfall patterns with a likely increase in extreme events. Rather than building resilience to be able to manage what has happened before, we will have to cope with a future that is not more of the same, but is likely to be more extreme. An explicit reference to this in the document could have highlighted this issue for Councils to consider.
- I would like to draw the Committee's attention to two relevant resources - which may of course already be on your radar – recently published in this space: Water for Victoria, the Victorian Government's water management framework document, released October 2016 and available at (<http://www.delwp.vic.gov.au/water/water-for-victoria>) and the Victorian Floodplain Management Strategy released in April 2016 (<http://www.delwp.vic.gov.au/water/new-victorian-floodplain-management-strategy>). Both these documents have strong relevance to the Committee's work and may assist in your deliberations.

Thank you for the opportunity to provide feedback and please let us know if we can provide any further information or clarification.

Best wishes

Geoff

Dr Geoff Garrett AO
Queensland Chief Scientist

P (07) 3215 3740 www.chiefscientist.qld.gov.au

Level 25, 111 George Street, BRISBANE QLD 4000

Customers first | Ideas into action | Unleash potential | Be courageous | Empower people

This E-Mail is intended only for the addressee. Its use is limited to that intended by the author at the time and it is not to be distributed without the author's consent. Unless otherwise stated, the State of Queensland accepts no liability for the contents of this E-Mail except where subsequently confirmed in writing. The opinions expressed in this E-Mail are those of the author and do not necessarily represent the views of the State of Queensland. This E-Mail is confidential and may be subject to a claim of legal privilege. If you have received this E-Mail in error, please notify the author and delete this message immediately.

Queensland Chief Scientist

Submission to the Agriculture and Environment Committee Review of the Queensland Audit Office (QAO) Report 16: 2015-16 Flood resilience of river catchments

This submission includes the results of consultation with key experts involved in our original Flood report, "Understanding Floods: Questions & Answers" <http://www.chiefscientist.qld.gov.au/publications/understanding-floods>. The responses are included in italics below the relevant conclusion or recommendation from the QAO's Report. Conclusions have been paraphrased so relevant page and paragraph numbers are given for each response. Recommendations are included verbatim.

Conclusions

- [*Page 1, final para – Page 2 para 4*]. Councils had better understanding of flood risks compared to 2011 and had acted to identify floods risks through the analysis of historical and recent flood information, local knowledge, and flood maps and studies. Over time, there was a risk of losing momentum to continue to strengthen flood preparation and preparedness. The current **governance arrangements** often work against integration and as such need to be reviewed and perhaps redesigned to support a strategic, catchment-focused approach minimise this risk. (*Page 1, final paragraph – Page 2 paragraph 4*)

Response - *We support the Report's findings that there has been an improvement in Councils' flood awareness and preparedness with all implementing some measures to address flood risk.*

While the report flags the risk of losing momentum as memories of the floods fade, it does not address in detail the important issue of 'corporate memory' of floods. Unfortunately, after a major flood there is often a 'flurry' of action, as has been the case for the last 5 years, and then people can lapse into a false sense of security. Smaller Councils are particularly at risk with their lower staffing numbers.

We therefore recommend that you consider the inclusion in your Committee recommendations, as occurs elsewhere in the world, of the performance of 'virtual' flood exercises to ensure that all key stakeholders are periodically reminded that we live on a floodplain and that we can never be complacent.

- [*Page 2, para 5-6*] There was no single body responsible for leading and coordinating cross-boundary activities. The absence of a recognised authority and strategic vision for managing the catchments means there is no consistent, clear and comprehensive understanding of what needs to be done, how it will be achieved and by whom. As a result, it was not possible to be sure that the flood resilience activities are the most cost-effective, or will best contribute to making Queensland the most disaster-resilient state in Australia.

Response - *We also endorse the Report's finding of a lack of a regional approach to integrate and coordinate individual and sometimes disparate activities and approaches. Having been involved in both areas, we see clear similarities between the challenges faced in coordinating activities and investment around improving water quality in the Great Barrier Reef (<http://www.gbr.qld.gov.au/documents/gbrwst-finalreport-2016.pdf>) and building flood resilience in south-east Queensland. Coordination is essential in these complex environments. In the absence of any clear strategic vision, resources will be*

wasted, duplicating work done elsewhere, while key gaps are overlooked. We would therefore strongly support the call for greater coordination to provide leadership and direction in this space.

QRA's role of policy coordination for disaster mitigation and resilience and existing strong productive links with Councils would seem to equip them well to assist in this space but not to lead at the detailed implementation level. Rather than create a new layer to coordinate across the Councils, we would recommend working with existing structures, e.g. the Council of Mayors, and aligning relevant funding programs through them, supported by expert input from QRA or organisations such as Healthy Waterways and Catchments. This alignment of an integrated strategic vision and dedicated resources should help drive implementation of the vision and improve project coordination and effectiveness.

- [Page 2, para 7] The Brisbane River Catchment Flood Studies (BRCFS) were of value in identifying and assessing flood risks across the Brisbane River catchment but were only one element needed to effectively manage the region's flood risk. Without appropriately assigned authority and strategic coordination, the full potential of the BRCFS products are unlikely to be realised.

Response – Agreed. The BRCFS provide key information to guide decision makers across the Brisbane River catchment but the expertise and resources invested in their development will be wasted if they are not actively taken up and applied by users.

- [Page 2, para 8] The lack of a coordinated strategic approach is a missed opportunity to integrate mitigating flood risk with other elements of catchment management, such as water quality, biodiversity and leisure activities.

Response - Agreed.

Managing the catchments

- [Page 2, para 9] There were multiple players in catchment management and flood resilience but the Department of Infrastructure, Local Government and Planning (DILGP) is responsible under the SDMP for coordinating, monitoring and driving the enhancement of disaster resilience throughout Queensland, including floods.

Response - We understand that the Queensland Reconstruction Authority (QRA), is also working in conjunction with the Department of Infrastructure, Local Government and Planning in this space.

- [Page 2, para 10] Councils tend to focus activities and expenditure within their boundaries, rather than at the catchment scale, and as a result did not work collectively on greatest flood risks. There was no common understanding of resilience, which acted against coordination.

Response - The report highlights that a total catchment based approach to flood management and the concept of shared responsibility may be more efficient than localised interventions. We note that this may result in either works being funded by parties outside their own 'spatial' domain or alternatively for works to be implemented in a particular location that may only benefit downstream residents (e.g. work on the Lockyer floodplain benefiting residents in Brisbane). We strongly endorse this finding and highlight the need to address some of the institutional and implementation issues associated with such.

It must be stressed that the integrated catchment approach is not at the expense of local government involvement. Mitigating the flood risk needs to be achieved both at the system level (Catchment) and at the city or town level (Council) as both levels of granularity are needed. There may be challenges in the interface between the different

government layers but these will need to be recognised and addressed for the system to work.

- [Page 2, para 11 – Page 3 para 1] The Report notes that there is greater expenditure on flood resilience but that the management and administration of state funding was not strategic, rather it is fragmented, allocated on a competitive basis, and not appropriately prioritised. The Report identified initiatives that could support better coordination: the Brisbane River Catchment Flood Study, the Resilient Rivers Initiative, and the Brisbane River Improvement Trust.

Response – *Interestingly we found similar challenges – now being fixed – during our work on the previously mentioned Great Barrier Reef Taskforce on water quality. It is critical that initiatives to promote better coordination and information sharing across regional stakeholders are adequately resourced to enable this to happen. The failure of the Council of Mayors to secure funding to implement catchment action plans suggests this is not the case. Additionally, there needs to be total clarity around respective roles and responsibilities and as well be a shared vision around what is resilience and how it can be achieved, in order to reduce organisational conflict and lift effectiveness.*

- [Page 3, para 2 - para 3] The Report found there was no strategic vision or plan for catchment management and/or flood resilience. While Councils were responsible for managing flood risk and mitigation, with support and guidance from the state government, they were not always aware of this and sometimes lacked the capability and capacity to follow it. Councils' understanding of flood risk was limited by a lack of professional capability and the high cost of procuring specific skills.

Response - *The expertise required for flood risk management and planning is quite specialised and only used infrequently. As a result, Councils often do not retain in-house capability and face high costs if they choose to engage external consultants. Rather than accepting sub-optimal capability in flood management, a lower cost alternative could be for Councils to work with the QRA to access relevant state government expertise. We would like to take this opportunity to inform the Committee of the Queensland Modelling Network which the Department of Science, Information Technology and Innovation (DSITI) is currently establishing that will build upon the government's water modelling capability through strengthening integration between modelling groups in government. Once operational this network should be the first port of call for any Council interested in tapping into the state government's capability.*

Building flood resilience

- [Page 3, para 5 - para 9] The \$5 million BRCFS was helping identify and assess flood risks across the Brisbane river catchment. The report considered current funding might be insufficient to deliver to standard required – flood study component had run over schedule due to scale and complexity. Other deliverables of BRCFS are Brisbane River Catchment Floodplain Management Study (BRCFMS) and Brisbane River Catchment Floodplain Management Plan (BRCFMP). DILGP was planning to complete BRCFMP in December 2018 – one year early and with less funding than originally estimated as needed.

Response - *The Department of Science, Information Technology and Innovation has also been heavily involved in the Brisbane River Flood Study and will host the catchment hydrologic models and two-dimensional flood models of the lower Brisbane River floodplain developed for this project. DSITWE personnel would be well placed to respond to any later queries you may have on the technical side of these models.*

- [Page 3, para 10] The absence of a completed flood map for the catchment meant it was not possible to effectively identify, assess and prioritise flood mitigation to best effect

across the region. None of the Councils or catchments have floodplain risk management plans.

Response - Agreed

- [Page 3, para 11] State, district and local disaster management plans are high level, response and recovery focused rather than resilience and cover all disasters. These are insufficiently focused to address flood risk and no flood-specific sub-plans.

Response - Agreed

[Page 3, para 12] State and local governments have strengthened flood risk identification and assessment, aiding in building resilience. While there is increased understanding of flood risk since the 2011 floods, there are few examples of specific flood management plans for pre-existing at-risk communities.

Response - Agreed

- [Page 4, para 1] All Councils had increased focus on raising community awareness for flood response, but not on other aspects, e.g. vegetation management and levee regulatory responsibilities.

Response - Agreed

- [Page 4, para 2] State and local government vegetation management initiatives were not coordinated across catchments and were often not strategic, i.e. they don't target revegetation efforts for greatest catchment benefit. The report noted a continued net loss in remnant woody vegetation due to land clearing, primarily for agriculture and settlement.

Response – Agreed. *The Report notes the impact that land use change has had on flood intensity and impact in Victoria and how suitably designed and implemented riparian/waterway revegetation can mitigate such changes (and references my involvement in the Understanding Floods publication) - with a case study being given of the highly successful application of such techniques in the Genoa River. We strongly caution against simply assuming that what works in Victoria can be transferred with similar effectiveness to a Queensland environment. Rainfall in Queensland is considerably more intense and of higher volume than in Victoria and this will significantly influence how much of an impact land use change and riparian restoration has on flood effects. Riparian vegetation will be most effective for lower intensity rainfall events by reducing the rate at which water enters the waterways, particularly in the upper catchment, and allowing greater infiltration into the soil. For the more extreme rainfall events, such as what was previously called a one in one hundred year flood, it is likely that the riparian zone will have only a minor effect.*

- [Page 4, para 3] Councils are responsible for approving and monitoring construction and modification of levee banks, but often don't have resources, capabilities or historical data needed to fulfil their regulatory obligations. This could result in unintended negative downstream effects from poorly placed, constructed or maintained levees.

Response – Agreed. *Levee banks can be used for flood management; however they don't solve the fundamental issue associated with flooding. Rather, they can protect one area (up to a certain magnitude of flood) and then actually 'transfer' the flood problem downstream. Levees also need to be adequately maintained with dedicated resources to carry such work out on a regular basis. The existence of levee banks can also potentially instil a false sense of flood security in proximate residents. As a result, other important flood resilience options may be overlooked due to ill-informed reliance upon the levee banks to solve the problem. The widespread failure and overtopping of levee banks in New Orleans in 2005 is a graphic example of what can happen when levee banks fail.*

Recommendations

We recommend that, in the absence of stand-alone catchment management authorities, the Department of Infrastructure, Local Government and Planning:

1. fulfil its obligation under the State Disaster Management Plan to drive the enhancement of flood resilience in the four catchments by:
 - coordinating flood resilience activities and funding at a state and catchment level
 - **Response - Agreed.** *A regional coordinated approach is needed to both funding and activities to deliver effective and efficient outcomes across the four catchments.*
 - developing strategies and plans, in consultation with the four Councils and relevant entities, to effectively identify, assess, prioritise and manage catchment scale flood risks using an integrated catchment management approach

Response - Agreed. *An integrated catchment approach is needed to capture and appropriately manage the flood risks that cross administrative boundaries. Councils, with their local knowledge, are key players in the broader catchment process which would overlay and inform the local Council strategies and plans.*

- assessing the capacity and capabilities of the four Councils and supporting them as necessary in building flood resilience in the catchments and in their local areas.

Response – Agreed. *As a starting point there needs to be a shared understanding of what resilience is to avoid miscommunication. The critical issue is that Councils know what expertise they require and are able to access it rather than holding all expertise in house. Engaging with networks of expertise, for example the Queensland Modelling Network currently being developed by DSITI would assist here.*

2. as a matter of priority, establish what funding is reasonably required and complete all elements of the Brisbane River Catchment Flood Studies.

Response – Agreed.

We recommend that the four councils:

3. develop floodplain management plans in accordance with Recommendation 2.12 of the Final Report of the Queensland Floods Commission of Inquiry

Response – Agreed.

We recommend that the Department of Natural Resources and Mines and the four councils:

4. work together to effectively and economically regulate levee banks

Response – Agreed, *noting as previously mentioned, that levee banks do not solve flooding, rather relocate the problem.*

Jenny Riches
Principal Project Officer
Office of the Queensland Chief Scientist

Dr Geoff Garrett AO
Queensland Chief Scientist

27 October 2016