



STATE DEVELOPMENT, NATURAL RESOURCES AND AGRICULTURAL INDUSTRY DEVELOPMENT COMMITTEE

Members present:

Mr CG Whiting MP (Chair)
Mr DJ Batt MP
Mr JE Madden MP
Mr BA Mickelberg MP
Ms JC Pugh MP
Mr PT Weir MP

Staff present:

Dr J Dewar (Committee Secretary)
Ms N Mitchenson (Assistant Committee Secretary)
Mr M Binns (Inquiry Secretary)

PUBLIC BRIEFING—AUDITOR-GENERAL REPORT NO. 16: 2015-16—FLOOD RESILIENCE OF RIVER CATCHMENTS

TRANSCRIPT OF PROCEEDINGS

MONDAY, 11 JUNE 2018

Brisbane

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The committee met at 11.30 am.

CHAIR: I declare open the public briefing on Auditor-General's report No. 16 of 2015-16 titled *Flood resilience of river catchments*. The Committee of the Legislative Assembly referred this report to the State Development, Natural Resources and Agricultural Industry Development Committee for our consideration. Thank you for your attendance here today. I note that public briefings on this report were previously held in the 55th Parliament, so the committee appreciates your attendance again.

I am Chris Whiting, the member for Bancroft and chair of the committee. The other committee members with us today are: Mr Pat Weir, the deputy chair and member for Condamine; Mr David Batt, the member for Bundaberg; Mr Jim Madden, the member for Ipswich West; Mr Brent Mickelberg, the member for Buderim; and Ms Jess Pugh, the member for Mount Ommaney. The committee's proceedings are proceedings of the Queensland parliament and are subject to the standing rules and orders of the parliament. Witnesses should be guided by schedules 3 and 8 of the standing orders and note that their responsibility is to provide factual and technical background to government legislation and administration. Those here today should note that these proceedings are being broadcast to the web and transcribed by Hansard. Media may be present, so you may be either filmed or photographed. Before we commence could you please switch off your mobile devices or put them on silent. I now welcome the Queensland Audit Office to this briefing.

BIRD, Ms Daniele, Deputy Auditor-General, Queensland Audit Office

BROWN, Mr Darren, Director, Performance Audit, Queensland Audit Office

WORRALL, Mr Brendan, Auditor-General, Queensland Audit Office

Mr Worrall: Thank you, Chair, for the opportunity to brief the committee on report 16 of 2015-16, *Flood resilience of river catchments*, which was tabled in parliament in April 2016. This audit was on our strategic audit plan for a number of years before we conducted it. It was included in our strategic audit plan as it was suggested as a topic of interest for parliament through the parliament's finance and administration committee at that time. The finance and administration committee wrote, 'The condition of river catchments has a critical bearing on the magnitude and speed of downstream flooding during extreme weather events,' and proposed that QAO examine whether best-practice approaches were being followed in the management of catchments for the upper reaches of the Brisbane and Bremer rivers.

The objective of the audit was to determine the effectiveness of flood resilience activities in the Bremer, Lockyer and mid and upper Brisbane River catchments. Our focus was at the catchment scale, specifically on the coordination, funding, resourcing and capability, identification, assessment and prioritisation of flood risk and whether flood risks are effectively managed. We audited the Department of the Premier and Cabinet, the former department of infrastructure, local government and planning, the department of natural resources and mines, and four councils: Ipswich City Council and the Lockyer, Scenic Rim and Somerset regional councils.

In general, we found a positive increased effort and spending on flood resilience by the four councils within their own council areas. There remained, however, an overall lack of accountability and shared responsibility. We concluded that the integrated catchment was missing and was needed to achieve greater resilience. Integrated catchment management recognises and balances the relationship and factors impacting on the complex ecosystems within a catchment. It acknowledges that it is often not possible to adjust one factor without affecting another. It promotes the need for a coordinated approach at all levels of government and promotes community and private enterprise engagement, recognising that the inclusion of private landholders and the community is critical to the achievement of outcomes.

We concluded that the state government and councils better understand their flood risks and are better prepared than they were in 2011. This is because they acted to identify flood risks, primarily through the analysis of historical and recent flood information, local knowledge and flood maps and studies. However, in the four catchments no one entity was responsible for leading and coordinating

cross-boundary risks, priorities and activities. This meant that neither the contributing entities nor the broader public had a consistent, clear and comprehensive understanding of what needed to be done and how it would be achieved and by whom. The concept of shared responsibility had not been realised, with funding and resources not effectively allocated or prioritised across the catchments. As a result, they were not necessarily directed to the greatest catchment risks. It also presented a missed opportunity to integrate flood risk management with other elements of catchment management such as water quality, biodiversity and leisure activities.

We made four recommendations overall. We recommended that, in the absence of stand-alone catchment management authorities, the Department of Infrastructure, Local Government and Planning coordinate flood resilience activities and funding in the four catchments and, as a matter of priority, establish what funding is reasonably required and complete all elements of the Brisbane River catchment flood studies. We recommended that the four councils develop flood plain management plans in accordance with recommendation 2.12 of the final report of the Queensland Floods Commission of Inquiry, and we recommended that the department of natural resources and mines and the four councils work together to effectively and economically regulate levee banks. We are happy to take questions.

CHAIR: Can you go into more detail about the actions that have happened and your analysis of the actions that have happened in the time since this report was initially done?

Mr Brown: This audit is probably a little bit more progressed than the previous audit in terms of our follow-up process. Having said that, we have not conducted a follow-up audit at this time. Being a little bit further in the process, we have written to the agencies to ask them to provide their self-assessments, which they provided to us earlier this year. The self-assessments varied between the agencies in terms of where they reported their progress at, but across-the-board it was generally that they had partially implemented the recommendations that we had made and they were still working to progress the recommendations. Obviously, as part of our strategic audit planning process we also monitor what is occurring publicly in this space, and we have noted that the Brisbane River Catchment Flood Study has been completed. There are three elements to the overall studies, which is the flood plain management plan and the flood plain management study, and both of those elements are still being worked through to our knowledge at this point.

Mr WEIR: I am curious about how the funding model will work. For the catchment that you are talking about, the water starts in the Lockyer. I know that 2011 was an extreme exception and there was heavy flooding in the Lockyer, but predominantly that water finishes up at the river mouth and that is where you usually get your severe flooding. How do you work that model as you work back up the watercourse? I can imagine some councils would not be as enthusiastic about their contribution as others down at the bottom end that are going to suffer the heaviest impacts.

Mr Brown: We talk about that to some extent in the report. We comment in the report about the need for more integrated management of the catchments. In other states that operates in terms of catchment management authorities, but that is not necessarily the only model that could apply an integrated catchment management approach. Essentially, what that means is looking at the risks on a catchment scale, identifying where the greatest risks are and what potential impacts they are having throughout the catchment and further down the systems, and then being able to identify where the greatest outcomes are likely to be achieved for the expenditure of money. That enables a discussion to occur between the entities around how that funding is going to be achieved and who is going to contribute what. The Brisbane River Catchment Flood Study is an example of where multiple entities were contributing funding to that study. Part of the funding was contributed by the state—I think about 60 per cent of the funding—and the other 40 per cent was contributed by several councils. That catchment management approach allows those conversations and discussions and assessment of the priorities, the potential impacts of addressing or not addressing those risks, and then how best to attack those risks in terms of funding and resources and a whole range of other aspects.

Mr MADDEN: Can you advise the committee how the Queensland Reconstruction Authority monitors the recommendations that you make?

Mr Brown: We have not had an update from the Queensland Reconstruction Authority, and that would probably be a question that would be best addressed to them.

Mr BATT: Recommendation 3 talks about the four councils developing flood plain management plans, whereas recommendation 4 talks about the department, DNRM, working with the four councils to do what they have to do. Has there been any consideration given to the department working with the four councils, as in recommendation 3? My background to flood plain management plans is that if each one of those councils does their own plan all on the one catchment, including flood modelling,

those models are different depending on who you get. My idea would be that the department should be doing all of that modelling and background work so those councils can do those plans considered right down through the catchments.

Mr Brown: Although they stand alone, the primary recommendation we made was around an integrated catchment management approach, and that is reflected in recommendations 1 and 2. That obviously provides the greater outcome, as we talked about in the report. Our view is that if that is done then the flood plain management plans will naturally be wrapped up in that process.

Ms PUGH: Touching on future plans in terms of follow-up audits, you have said that you are a little further down the path but obviously this is a very important issue. My electorate of Mount Ommaney was very badly affected in 2011. What would the future plans be for follow-up audits?

Mr Worrall: We recently published our updated strategic audit plan. We have to publish that every 12 months. It is a three-year plan. As we heard previously, we would hope to do 10-year reviews, 10-year audits, on an annual basis, and we would seek to follow up one or two of those each year as well two to three years after the original audit. Again, our latest report flags which reports we are going to follow up in 2018-19 and it also flags which ones we are going to follow up in 2020. Obviously, when we come to formulate the plan next year we will have to take all the previous audits that we have done and work out where the priorities lie in relation to future follow-up. In terms of coming here today and hearing the committee's questioning on this report, the previous report is quite helpful for us to formulate those views on which ones we actually follow up. In terms of whether we choose this one, it is probably premature to answer that definitively.

Mr MICKELBERG: Does the Audit Office have any specific concerns with respect to the response to any of the recommendations articulated or a view with regard to the response to your recommendations in the report?

Ms Bird: At the time of the audit? Obviously they respond at the time of the audit to agree or disagree with our audits.

Mr MICKELBERG: Subsequent to their response—between when this report was handed down and now.

Ms Bird: When we wrote out to them for the strategic audit planning.

Mr Brown: The information we get in the self-assessments can vary in terms of depth of information. We ask agencies to, at a minimum, provide us with an assessment of whether they have fully or partially implemented the recommendations. As I said, they had all pretty much indicated partially. I think one council on one of the recommendations—and I cannot be certain which one it was off the top of my head—had said that they had been fully implemented. That may be the case. We would need to make an assessment through an audit to be able to determine whether the self-assessments are in accordance with our view on whether the recommendations have been fully implemented or not.

We are happy with the basic information that we have received at this point in time. We have not made any determination on whether we will go ahead and follow up with an audit at this stage. We are still monitoring what is occurring through the ongoing progress with the flood studies, what other issues might come out in terms of the opinion in the public domain as well as what we understand from our assessment of audit committee updates and those sorts of things.

Mr MICKELBERG: You indicated in your previous submissions to the last hearing that an entity had proactively come back to you with a response post the handing down of your audit. Is there any form of proactive contact short of a follow-up audit in the period from when you hand down your report just to monitor, at least superficially, the implementation or otherwise of the recommendations?

Ms Bird: No. As I said, our process is not that we would proactively follow up and ask each of the entities. Our portfolio is 500 public sector entities. To be following up all of those on every report that we do is cost prohibitive at the moment. We touch those entities, as I said, through financial audits and audit committees. The entities are the ones that are responsible for implementing and are accountable for implementing our recommendations. Most entities will charge that responsibility for monitoring those with their audit committees, and we attend them as well. That is where we would hear along the way information about the recommendations and then, as I said, through our other processes each year through following up, but that is not every single one we follow up every year—audits that we would have done a couple of years ago. We follow up only those 10 to 12 that we would have done in that year at that time.

CHAIR: Member for Buderim, remember that as a committee we made some suggestions to the Economics and Governance Committee as to where the Audit Office could make further queries. That could be an appropriate place to raise this.

Mr MICKELBERG: My question is more around an understanding of the process. I understand your constraints with respect to the breadth of your responsibilities and resourcing, but if you make a recommendation that something should be implemented and there is a considerable cost associated with preparing this report then perhaps it would be wise that we consider an entity that is subject to a recommendation being required to subsequently respond as to whether it has been implemented post the report being handed down, as opposed to responding to your audit comments at the time. That is more a comment than a question.

CHAIR: Just to clarify that—and this is something that we touched on previously—this is the process of the Audit Office, how often they return to the—

Mr MICKELBERG: The distinction is between you guys doing a subsequent follow-up audit as opposed to the entity that is subject to the audit proactively coming to you and saying, 'We have or have not done X, Y and Z post the audit report being handed down.' It is not really a question; it is a general concern. I am new to this process, but it concerns me that an entity gets audited and some have partially complied or fully complied. That is all good, but to what extent? Is that the best use of resources to have you proactively deciding who you are going to follow up?

CHAIR: I think the Audit Office can note in their comments the concerns you have raised.

Mr Brown: Can I clarify that where we say 'partially' it does not necessarily mean that they have not or are not intending to fully comply. Some of the recommendations are quite significant recommendations and they take some time. They may be a way down the track and progressing, but that does not necessarily mean that they are not intending to fully comply.

CHAIR: Absolutely. Member for Buderim, it might be appropriate to raise some of these questions in our next briefing as well. The time has expired. There are no questions on notice. Thank you very much.

DOWNES, Ms Amanda, Executive Director, Operations Support, Natural Resources, Department of Natural Resources, Mines and Energy

JOSEPH, Mr Saji, Director, Water Programs, Water Policy, Policy Division, Department of Natural Resources, Mines and Energy

MILLIGAN, Mr Graeme, Executive Director, Risk Management Reduction and Mitigation, Queensland Reconstruction Authority

MOON, Mr Brendan, Chief Executive Officer, Queensland Reconstruction Authority

WISKAR, Mr David, Executive Director, Water Policy, Policy Division, Department of Natural Resources, Mines and Energy

CHAIR: Could we have the Department of Natural Resources, Mines and Energy start with an opening statement?

Mr Wiskar: Good morning, Mr Chair and committee members. I thank you for this opportunity to provide a briefing to the committee on the implementation of recommendation No. 4 of the QAO report *Flood resilience of river catchments*. I will focus on the aspects that involve the Department of Natural Resources, Mines and Energy. As part of my opening statement I will provide some background to the levees regulatory framework and I will update on progress towards the implementation of QAO report recommendation No. 4. I will also give an update on the department's support for improved governance arrangements and catchment management initiatives in South-East Queensland catchments.

On 16 March 2012 the Queensland Floods Commission of Inquiry delivered its final report into the 2010-11 floods. A number of recommendations directly related to levees were made—specifically, that levees should be regulated in a consistent manner across the state and, secondly, that the most appropriate regulatory framework regime under the Sustainable Planning Regulation should be used and that the preparation of the regulation consultation should be undertaken with local governments.

The Queensland government delivered on these recommendations with the commencement in May 2014 of a new levees regulatory framework to manage the construction or modification of levees. Under the framework, local councils are responsible for assessing levee applications, with certain issues being referred to the Queensland government for assessment where the levee has the potential to cause significant risk to life and property.

I will now address the implementation of recommendation 4 of the QAO report *Flood resilience of river catchments*—that is, the report you are inquiring into. In 2016 the QAO undertook an examination of the effectiveness of flood resilience activities in Queensland since 2011. It focused specifically on the Bremer, Lockyer and mid and upper Brisbane River catchments. These areas fall under the Ipswich City Council and the Lockyer, Scenic Rim and Somerset regional councils. The final report *Flood resilience of river catchments* was tabled in parliament in April 2016 and contained four recommendations. Recommendation 4 states—

We recommend that the Department of Natural Resources and Mines—
subsequently replaced with the new name—

and the four councils ... work together to effectively and economically regulate levee banks.

In response to that recommendation, the then DNRM gave a commitment that the DNRM would engage with the four councils in relation to the implementation of the framework. That would include identification of training needs and delivery, compliance matters, data collection requirements and the identification of concerns in relation to the implementation of the levees framework. This would also include identification of state and local government follow-up actions. DNRM committed to undertaking a review of the implementation of the levee framework.

During 2016-17 the department consulted with four councils, the Local Government Association of Queensland, the South East Queensland Council of Mayors as well as other relevant state agencies on improvements that can be made in relation to the implementation of the framework. This consultation identified key issues, the first being the lack of data on present land form and levees already existing in May 2014 when the regulation commenced and that these things are needed to support compliance assessment and flood planning. The second thing that the consultation identified was the high cost of the necessary hydraulic assessments. The third thing was the capacity and capabilities of local governments to meet their responsibilities for assessment and compliance. The

fourth thing was low community awareness of the regulations. The fifth thing was that a council may become liable for impacts caused by approved levees, illegal levees or existing levees if they become unsafe. The final thing was the need to make codes and guidelines easier to use and more contemporary.

To address these issues as well as other related issues identified in the QAO report, the department reviewed, identified and further consulted on a number of measures. Some delivery was delayed as work was put on hold while regional councils responded to Cyclone Debbie's extreme rainfall event in April 2017, further illustrating the need for and the importance of this work. The department presented the review report to the Queensland Audit Office in March 2018. The report recommended the following actions to enhance the effectiveness of the levee's regulation: completion of a scoping study to identify data needed to support levee assessment planning and compliance; update of the existing levee codes and guidelines; develop and maintain a basic levees recording system—a database; develop communication materials to raise community awareness; and provide appropriate technical support on an as-needs basis.

The department is now progressing these actions. The terms of reference has been drawn up for consultancy and a specialist consultant, BMT Pty Ltd, has been commissioned to deliver a program of works including the following components: the data gaps, identification to support levee assessment, planning and compliance, communication materials and the development of the database. BMT commenced these works in May 2018 and the project is due to be completed in the third quarter of 2018. DNRME will be responsible for maintaining the database once it is developed, with councils expected to provide data on levee applications that they receive and assess.

Updating the existing codes and guidelines is ongoing. We have a constant improvement process for all of our codes and guidelines, so they have been updated and that will continue. The provision of technical support for councils is occurring as the need arises. Since the levee framework was implemented in 2014 there have been four category 4 levee applications for which technical advice was provided to relevant councils as necessary.

I will now speak about catchment management. The Department of Natural Resources, Mines and Energy recognises that the management and governance of rivers, water bodies and their catchment are integral to the sustainable economic growth of our region. As highlighted in the audit report, strategic planning for the investment and prioritisation of catchment management activities and oversight of on-the-ground implementation activities in South-East Queensland were areas for improvement. The Department of Natural Resources, Mines and Energy supports the current catchment management approach through the Resilient Rivers Taskforce, which was established by the council of mayors in SEQ. The Resilient Rivers Initiative regional strategy 2015-2025 is the driving document. The task force comprises the mayors of South-East Queensland and ministerial representatives from the Queensland government. This forum provides strong leadership to promote partnerships and prepare regional strategies, including an agreed investment prioritisation framework. This also recognises the collaborative cross-jurisdictional approach necessary to managing the catchments of South-East Queensland.

Through the Resilient Rivers Taskforce, a project team has recently been formed consisting of representatives from the council of mayors SEQ and a number of government departments, including DNRME, to oversee the development of an options paper to investigate and cost possible governance arrangements for catchments and the waterways of South-East Queensland. This project is currently being tendered and, when developed, the options will be considered by the task force to determine possible approaches for longer term catchment management coordination and governance. Additionally, the Department of Natural Resources, Mines and Energy along with other government agencies, other levels of government and the private sector are contributing to the Griffith University proposal Building Catchment Resilience: Enabling Community Collaboration to Reduce the Impacts of Extreme Weather Events. This project aims to develop tools and methods for local engagement and multidisciplinary prioritisation across agriculture, conservation and other land uses as well as on-the-ground responses.

In addition to these initiatives, the Department of Natural Resources, Mines and Energy has also invested in catchment management activities through Healthy Land & Water to deliver projects and initiatives to address key pressures impacting waterways in South-East Queensland. We will continue to work with Healthy Land & Water to deliver catchment management activities that protect our natural resources.

CHAIR: Thank you. We will go now to the Queensland Reconstruction Authority for an opening statement.

Mr Moon: Thank you, Chair and committee members. I would like to update the committee on the implementation of recommendations contained within Queensland Audit Office report No. 16. Since our last update to the QAO in February 2018 through the department of local government, significant work has been delivered by the Queensland Reconstruction Authority to further coordinate flood resilience activities and funding at a catchment level across the state. This work spans the review of the flood warning gauge network across Queensland and our continued work in the Brisbane River Catchment Flood Study as well as development of new regional resilience models to be implemented across Queensland as part of Queensland's strategy for disaster resilience.

Firstly, let me address the recommendations of the QAO report titled *Flood resilience of river catchments* handed down in 2015-16. The first recommendation was to fulfil the obligations of the State Disaster Management Plan to drive enhancement of flood resilience by coordinating flood resilience activities and funding at a state and catchment level. I would report that in 2017 the QRA published the *Strategic policy framework for riverine flood risk management and community resilience*, which sets the framework for delivering flood resilience activities and clarifies the roles and responsibilities of all those who work and manage within those particular catchments.

The QRA also is now responsible for administering the 2017-18 Natural Disaster Resilience Program, which is jointly funded by the Commonwealth and Queensland governments. We are currently assessing Natural Disaster Resilience Program funding applications from councils across all catchments in Queensland that will be delivered through the 2018 and 2019 financial years. These programs will reduce Queensland's vulnerability to natural disasters and will also build on community resilience in the many catchments upon which our settlements and our economy are built in Queensland. We have also established a director-general level committee that will oversee resilience activities throughout the state, and the first meeting of this is scheduled to be held in the coming months.

In relation to recommendation 1 at dot point 2—that is, developing strategies and plans in consultation with the four councils contained within the audit report and relevant entities to effectively identify, assess, prioritise and manage catchment scale flood risks using an integrated catchment management approach—the Brisbane River flood study was released publicly in May 2017. It is being used to inform the development of a Brisbane River strategic flood management plan. This strategic flood management plan is taking an integrated catchment planning approach to flooding within the Brisbane catchment and is currently due to be completed in late 2018, with public release in early 2019.

Recommendation 1 at dot point 3 specifically deals with assessing the capacity and capabilities of the four councils and supporting them as necessary in building flood resilience in the catchments and within their own local areas. The Strategic Floodplain Management Plan has been developed in close consultation with the four local governments and also other agencies working and operating within that catchment. The recommendations, which are currently in development, will support local capacity and also capabilities. Local flood plain management plans will be delivered by the four local governments of the Brisbane River catchments as the fourth and final phase of the Brisbane River flood study. The Scenic Rim Regional Council, which was also mentioned in the QAO report, will be included in broader statewide implementation activities.

In relation to recommendation 2—as a matter of priority establish what funding is reasonably required to complete all elements of the Brisbane River Catchment Flood Study—QRA has scoped the funding requirements of the Strategic Floodplain Management Plan and secured funding for the delivery of that through the National Disaster Resilience Program. An original \$5 million budget was set to deliver the Brisbane River flood study and also the Strategic Floodplain Management Plan. This was a shared budget between the Queensland government and local councils within the catchment. The total flood study was approximately \$3.5 million, leaving \$1.5 million to deliver the actual Strategic Floodplain Management Plan and technical evidence report. QRA has secured an additional \$750,000 through the National Disaster Resilience Program to deliver on that piece of work. With current expenditure and commitments, the current phase 3 project, which is to deliver the strategic flood management plan, will be delivered for \$2.3 million. This is approximately a five per cent overrun on our budget. The state will continue to support the delivery of that program.

I would also like to advise the committee that the four councils have applied for funding to support the successful delivery of their own local flood plain management plans and they have sought this funding also through the National Disaster Resilience Program. I am happy to leave my comments there, if I may, and we can have a more broad-ranging conversation with the committee about catchment management arrangements.

CHAIR: Thank you very much. My question is to the CEO of the QRA and revolves around the definition of resilience. We have noted here that resilience is ‘prepare, respond and manage’, essentially, but it is more than just preparation; it means an acceptance that there will be a level of inundation and preparing for that, and this brings me to the question regarding the resilience program that you have. My concern is that councils’ solution is just levees at this point, and obviously resilience is much broader than that—preparing your infrastructure or creating infrastructure that can be resurrected or is literally more resilient to floods that pass through it. In these applications are you looking for more than just applications to build physical works? Are we looking at, for example, applications that want to put on qualified staff, because I know that councils need people with PhDs in this area but I am not sure if they are employing them? With regard to furthering those flood studies, putting on capable staff and preparing infrastructure that is resilient to floods and can be resurrected quickly, are we seeing that more? Is that more important than simply building more levees to prevent something?

Mr Moon: I might start off and then I will pass to my colleague Mr Milligan. We certainly are seeing that reflected throughout Queensland councils and other groups in that there is now increasingly a coordinated approach to support resilience activities within catchments. It is not only investment in understanding the risks that council face and it is not only investment in structural options; it is also investment in other options which bring capability to councils so that they are more able to understand the risks they face and take action that makes their communities more resilient. We are seeing councils apply, through a range of funding programs, to put on resilience officers who are skilled in this particular space. We are seeing councils also applying for funding so that they can conduct more technically complicated assessments of flood risk and climate risk into the future. There is an understanding that the solutions are not all structural in nature; they can be a range of capability options and other options as well.

Mr Milligan: To add to what Mr Moon has said, what we are seeing and what we are driving as part of the Brisbane River flood study work is a coordinated, multidisciplinary approach. We have a number of work packages. Structural options are one of those work packages. We also have a strong focus on land use planning. Land use planning is our best capability for dealing with future risk. We also need to deal with improved disaster management with the new information that we have. Improved community information, education and awareness are also very important, as is understanding some of the benefits that improved landscape management can provide to low levels of flooding, but certainly that is part of the broader mix. It certainly is broader than just levees; it is a coordinated, multidisciplinary approach. We know that the councils we are dealing with are well and truly aware of that.

Mr WEIR: My question goes to levees. I grew up out on the flood plains, so levees were always a very hot topic out there, and they still are. I was interested in what you were saying about reviewing the application process for levees for both existing levees and proposed levees. Does that also include roads or railway lines? Where does QRA come in, because if a levee is constructed it obviously comes into your field as well if it is going to have an impact in another area? What is the approval process?

Mr Wiskar: With your permission, member for Condamine, I will refer to Saji Joseph. Saji has led the work for the department, so he has the level of detail that you will require for that answer.

Mr Joseph: Thank you, David. The levee framework came into provision in May 2014. The Water Act basically defines the levee framework which encompasses new levees or modification of existing levees, so that is the definition. In relation to your question regarding whether roads or rail lines are part of it, those structures that are managed under other regulations are exempted from the definition of ‘levee’ under the levee regulatory framework.

Mr WEIR: There would necessarily be a standard, though, that they would not have a serious impact on a surrounding landscape, I would think.

Mr Joseph: Yes, and that is being taken into account as part of the assessment under those legislative frameworks.

Mr WEIR: In terms of local government and the department through the approval process for new levees, how is that proposed to work?

Mr Joseph: The levee regulatory framework identifies that local governments are the assessment manager. The levees have been categorised based on the risks they pose on properties or people. There are three categories of levees. Category 1 is acceptable development, so we do have a self-assessable code, whereas category 2 would have off-property impacts and impacts on people less than three—that is, the affected population of less than three. For category 2, local

governments are the assessment manager. We do provide codes and guidelines and support in terms of how those codes and guidelines could be implemented, but responsibility for assessing a category 2 application remains with the council.

Mr WEIR: If it was deemed to be self-assessable, does there still need to be a notification period for surrounding landowners and any levee goes through that notification period?

Mr Joseph: Yes, the self-assessable code requires that the landholder should notify the council within 10 business days. There is a notification form as part of the self-assessable code.

Mr WEIR: QRA, do you have anything to add on the issue of levees?

Mr Moon: In relation to levees we have no regulatory role. Our role in this space is to coordinate all those who own assets and manage assets and operate within the catchment. Our approach would be that it is essential that all of those who operate within the catchment understand the risks that particular pieces of infrastructure and other actions within the catchment have and that plans to enhance people's resilience take into account those risks.

Mr MADDEN: The issue of the lack of coordination of flood resilience activities not just between the four councils but also other organisations, like Seqwater, is of great concern to me. Can you outline why it is so difficult to get coordination between the four councils and organisations like Seqwater?

Mr Milligan: I will answer the question in terms of the Brisbane River work but also more broadly from a statewide perspective, because it is the same issue statewide. We have been working with Seqwater and the councils in our Brisbane River flood study work. We are continuing to work with them. For the first time, really, we have had regionally consistent information on flood hazard. That has driven the need to get councils and players like Seqwater and other agencies to sit around the table and work together. That has provided a really good mechanism for making it happen. We are seeing that evolve in the Brisbane River situation. When you look at this more broadly across the state you find that for the Brisbane River we have spent nearly, if you count in-kind contributions, \$10 million. We have some well-resourced councils and some that are not so well resourced. If we look across the state it is a similar situation.

In summary, in 2016 we did a bit of a review across the state in terms of how councils were going implementing the floods commission of inquiry recommendations as well as the things coming out of the Queensland Audit Office report. We deliberately interviewed 20 councils across the state, we sent out a survey and we scraped their websites for information as well. Ipswich and Somerset responded to our survey, as did about 70 per cent of other councils across the state. We actually visited the Scenic Rim and Lockyer councils to get a good understanding of what was going on. We also visited 18 other councils across the state.

Summary feedback was that 75 per cent of councils recognised they needed further support to deliver flood risk management. Some 25 per cent of rural and remote councils said that they would benefit from collaboration with other councils in their area to learn and to mix more. That gave us the basis for developing up a number of bodies of work. The Queensland Strategy for Disaster Resilience was emerging at that time. This could be an opportune time, with your leave, to hand over copies of the Burnett catchment flood study report.

CHAIR: I am sure you are familiar with that one, member for Bundaberg. You can table that.

Mr Milligan: I table that. That was a deliberate strategy that we embarked upon to co-design and work very carefully with councils from the ground up to improve collaboration and coordination. We started that about nine months ago. It has been endorsed and approved by the Wide Bay Burnett Regional Organisation of Councils and our minister, Mr Dick, released it last week. We delivered it through the Floodplain Management Australia conference on the Gold Coast last week. It has come out. It is supported by—and dare I say another document that you may be familiar with—Resilient Queensland. With your leave, I table that document as well.

CHAIR: Is that a public document?

Mr Milligan: It is a public document.

CHAIR: We do not need you to table it, but we will take a copy of it.

Mr Milligan: This provides our broader approach, having learned from the Burnett work. We worked with the Bundaberg, North Burnett and South Burnett councils and the Cherbourg Aboriginal council. The basic strategy was that we sat down and worked with them to come up with pathways for them to be more effective in their flood resilience activities across the catchment. We developed up 95 actions under the 15 strategies that are there. It is fair to say that the councils are giving us a glowing endorsement through the Wide Bay Burnett Regional Organisation of Councils.

That has then given us the confidence to produce the Resilient Queensland document. We go now from floods to broader hazards. We are looking at a broader cross-section of hazards. We are now working with three areas that we have identified—the Mary, the Fitzroy and Central Western Queensland—and they will do some more pilots. There are a couple further north in Queensland that are yet to be finalised.

We will be testing the various elements of getting councils to come together with agencies and key water supply providers—it will be SunWater in a lot of the regional parts of Queensland. We just facilitate some collaboration and come up with shared solutions to their common problems and come up with pathways for councils to work more effectively at a local level with their non-government organisations and other agencies to get broader not only flood resilience but also resilience in terms of other natural hazards. That is a longwinded way of describing it. We have done a lot of work that you may not be aware of.

Mr MADDEN: Would it be fair to say that the Queensland Reconstruction Authority is the lead agency with regard to the coordination between councils and agencies such as Seqwater?

Mr Moon: Under the State Disaster Management Plan that is our role.

Mr BATT: My question is in relation to the state planning provisions. I mentioned flood plain management earlier. Queensland historically did not have overall flood plain management in the state planning provisions in terms of what can be built and how it can be built in those areas. Is that now being looked at as part of any of this work or is that an area that still needs to be brought forward?

Mr Milligan: It has been the focus through our Brisbane River work. I am talking on behalf of our colleagues from the Department of State Development, Manufacturing, Infrastructure and Planning now, but they do have a State Planning Policy for natural hazards with supporting guidelines. That sets a very contemporary framework for consideration by councils of amendments to their planning schemes in terms of taking into account flood hazard and flood risk along with a number of other considerations such as economic, environmental and social issues. Compared to where we were back in 2010-11, we have come a long way.

Mr Wiskar: There is another thing that is perhaps worthy of mention, and it is a slightly different question to one the member asked. I think what you have seen through the influence that Graeme and Brendan have had is that we have a number of professional engineering bodies that are making changes to what engineers need to consider as they do all sorts of work. I think some of the case studies that Brendan and Graeme have been talking about have led to a situation whereby when the Institution of Engineers sits at a national level and the local government engineering folk get together they talk about how we build infrastructure that is resilient and how we build infrastructure that is able to be recovered. It is even stepped up to the level of what it means to be a good engineer. A lot of this has come out of these guys' work. What does it mean to be a good engineer? Part of being a good engineer is building things that are resilient and building things that can be recovered quickly. These guys have played a pretty strong role in that overarching change as well.

Mr BATT: On the planning scheme side of it, is it only when they do amendments to the scheme that they have to bring it in?

Mr Milligan: It is a state interest check that the state government does when councils bring forward their amendments to planning schemes. I forget the actual date and year of the SPP but it is certainly the last couple of years.

Ms PUGH: We have just touched on the Burnett program, which sounds like it is quite an innovative pilot program. Were there learnings from other jurisdictions, either in Australia or internationally, around how to create a program like this? Queensland is really large, very diverse and quite prone to natural disaster. Were there other jurisdictions that you were able to take best practice learnings from when you were working on innovative programs like this one?

Mr Moon: Yes, we have. We have looked at a range of implementation models not only nationally but also internationally. Queensland is the most disaster exposed state in Australia, though. It has a lot of experience and lot of expertise developed in this space.

Without getting into the technical detail, probably one of the key learnings that we have garnered from our study of the approach taken all over the world has been that fit-for-purpose solutions are key here. I know that some of the conversations have been about the establishment of catchment management authorities. The clear lesson that we are getting from councils and communities throughout Queensland is that there are a range of models for delivery here.

There is certainly some great work being done in terms of understanding risk, but it is in the communication of that risk and dealing with the risk that we are looking at a range of implementation models. For example, our conversations with people in Western Queensland and Central Queensland

are that there are alternative delivery structures for that. North Queensland is giving us a clear message that a particular model that may work somewhere else is not necessarily the most appropriate model for delivery.

Our approach is to listen to the local community, listen to local councils, listen to local mayors and listen to state agencies to really get an understanding of what is really important for that particular community. The Brisbane River flood study approach is slightly different to that which was being conducted in Burnett and will be different to the approach that we take in the Fitzroy and then around what I would call the RAPAD councils of Western Queensland—Longreach, Winton, Barcoo. They are different approaches. It is a fit-for-purpose approach.

Mr Milligan: We looked internationally and at other jurisdictions. We looked at Victoria, which has catchment management authorities. We looked at the work that a catchment management authority would do down there. They do what our Department of State Development, Manufacturing, Infrastructure and Planning does for shaping SEQ regional plans. They do that sort of work. They get flood plain management strategies done too. That is the sort of work that we are doing.

While we do not have the same institutional arrangements as Victoria, we are still getting the same outcomes. We believe, because of the fit-for-purpose approach that Mr Moon has set out, that it is more effective. We work with Queenslanders to help them solve their problems. Interestingly, we looked at the catchment management authority situation in New South Wales. They have been disbanded more recently because they have been found to be ineffectual. That is a point to note.

Mr MICKELBERG: Has any work been done with respect to communication in terms of warnings when a time-critical event is imminent? In particular, I am interested in the dissemination of that information to the community as opposed to the council.

Mr Moon: After every event there is usually a review of warnings and how warnings were disseminated. We have undertaken a lot of work with the Commonwealth Bureau of Meteorology, local councils and the state agencies to get an understanding of that. We have invested quite heavily. We are regularly reviewing our own flood warning network. We are working with the councils and have delivered almost 65 investment plans for councils so that they can invest in their own flood warning network.

I think it is worthwhile noting that the technology and our understanding of the hazards are certainly improving over time. Through our engagement with the Brisbane River flood study, for example, we started to test community attitudes to those warnings coming out. Some really interesting results came out of that. Probably one of the most surprising things to come out of our survey of the community was that a significant number, approximately 30 per cent of people—I think that is correct, but I am happy to confirm that with the committee at a later point—would not act on a warning to evacuate a residence. I am sure the member for Bundaberg would relate his experience when Tropical Cyclone Oswald came through Bundaberg. There is work to be done in both areas still, but certainly as part of our ongoing focus we will be looking at some of those community attitudes as well.

Mr MICKELBERG: My question comes through the lens of my experience in Grantham, where I was involved with a search and where individuals in houses 50 metres from the train line sadly passed away. We have text messages and various different mechanisms. We can look at alternative strategies such as in the tornado belt in Iowa, where towns have warning sirens and typically people do comply with those. I take your point around people not complying with or noting the warning, but it does concern me that the increasing reliance on technology sometimes can mean it is difficult to push information quickly. That was where I was coming from with that question.

Mr Milligan: Just to go back to your base question, for clarification the QRA is not responsible for the issuing of alert messages. That is to do with the response agencies. We support them and we will work with the response agencies to look for improvements in the response times. In terms of the messaging, that is not with us; that comes out of the State Disaster Coordination Centre.

Mr MICKELBERG: Earlier you mentioned that you feed into the State Disaster Coordination Centre; is that correct?

Mr Moon: We have responsibilities under the State Disaster Management Plan, particularly around resilience and recovery as well. I would also point out, in terms of the point that Mr Milligan made, that warnings are not our responsibility, but certainly we are actively involved in the discussion, the policy and working in the investment work in terms of the infrastructure to support that warning system. As an example—I think we have used this when meeting with this committee previously—a high proportion of the warning network throughout Queensland is manually read gauges. We are

finding that as communities in Western Queensland and remote areas change we are getting a change in the ability to read those gauges and also changes in technology to deal with that. We are trying to take that coordinated approach to deal with the gaps that we see appearing.

CHAIR: Certainly with my experience in the Moreton Bay Regional Council, in 2011, the day after Grantham, a text message went out saying, 'Evacuate now to higher ground,' which was precipitous. Certainly the risk was not at the same level, but it was a human decision. Everyone got the text message, but the human decision-making process behind that was flawed. My further question also comes back to my experience in local government and here. In my local community I have experienced two events that must be close to one-in-1,000-year rain events, resulting in localised flooding. That has convinced me that climate change is a reality and that we need to prepare for it. However, I have often seen that convincing local governments that it is a physical and not just a scientific reality is, shall we say, a bit more difficult. Are we seeing that same change in councils? Is there an acceptance that climate change is a reality, and obviously within your departments as well? To me, that informs a lot of the work that we do, because the acceptance that things are changing allows us to plan for that change. Do we have that acceptance of climate change as a reality amongst a lot of our bodies?

Mr Milligan: In terms of specific examples, we can talk about the Brisbane River work. This is another public document that I can leave copies of. With the Brisbane River work, some sensitivity analysis was done in conjunction with the councils, so they are well and truly aware of the potential impacts of what different scenarios might mean into the future. The strategic policy planning work that the Department of State Development, Manufacturing, Infrastructure and Planning does with the oversight of planning schemes certainly has a climate change element that councils are required to take into account when they are amending their planning schemes. That is another part of the mechanism. Statewide, I am aware of work that has been done through the Department of Environment and Science with the Local Government Association of Queensland on climate change adaptation strategies, where projects have been rolled out along the coast. I can only assume that if councils are accepting the funding to do that work they are accepting of the climate change impacts.

CHAIR: That is what I always thought.

Mr Milligan: That is my assumption. I am not involved in that work, but that is just an example of some of the things that are going on.

Mr Wiskar: Members of the committee would also recall that, in the process through the MOLA Bill that this committee considered earlier in the year, climate change is embedded as a part of water planning. I guess where that flows down into this process is that it really drives all of the planning that happens and the type of practical work that local governments will do. I think a number of those settings are being changed to address it. Again, if you look at the standards that engineering professional organisations are applying, the focus on resilience and also the changes that are happening to climate are things that professional bodies are asking more questions about. To continue to be a professional engineer, whether you are an infrastructure engineer or a stormwater engineer, there is a lot more focus in terms of education and standards that your professional bodies are undertaking in those topics that we are considering today, and also the topic of climate change.

Mr Joseph: Just to add to what David has said, as part of our engagement with the four councils as it relates to the review of the levee implementation framework, feedback had been received on the importance of considering climate change in levee design. It is our intention that, as we update the guidelines and the codes, the need to consider climate change effects will be brought in as part of recommendations through those guidelines and codes. Essentially, it will be done through undertaking some level of sensitivity analysis to see what the potential impacts of climate change could be as it relates to implementing or coming up with a levee design.

CHAIR: I appreciate that. Certainly I hope that faith in the climate science is reflected in your partners in council as well.

Mr BATT: We have been talking about the riverine flood risk management and community resilience policies and strategies that are coming in. How is performance measured against those by local governments? Is there an evaluation framework that happens with and in connection to funding? Do they need to be doing these things to get funding or is that a model that could be looked at going forward?

Mr Moon: Certainly in relation to the approach to funding, as part of our engagement strategy when we are working with local councils—and you will see it through the Burnett River catchment study as well—our approach is to develop a resilience strategy for those councils within a particular geographic footprint. Within the Burnett it is a catchment approach and it takes into account all those

communities that live within that catchment. They have identified priority projects for which they can apply for a range of funding outcomes and they will address their high-priority risks. This is our view on how it should be rolled out through the rest of Queensland.

If I can continue on that theme, the conversation nationally is changing quite considerably as well. On Friday evening we were given by the Commonwealth new national disaster relief and recovery arrangements. Within that set of arrangements, the Commonwealth and the states have agreed where savings in recovery programs can now be applied to recovery and resilience outcomes. It is our intention, at a statewide level, to start to develop a prioritised action plan to start to apply savings through those recovery programs. We have had it in part through our betterment programs, but this will be a more holistic approach. That is what is driving our engagement at a community level. We have also had the establishment of the national resilience task force. The conversation now is about how we understand our risks, what we do to manage those risks, both past and future, and how we start to develop an investment framework to deliver on those.

CHAIR: That is good news, thank you.

Mr MADDEN: Could you advise the committee of the current status of the delivery of the Brisbane River Catchment Floodplain Management Study and the Brisbane River Catchment Floodplain Management Plan? Are you happy with the progress of that work?

Mr Milligan: I will trump them off, one at a time. The flood studies work, the actual modelling work to identify the flood hazard, was published in May last year. That has given us the basis and tells us where all the issues are. Then you say, 'What are we going to do about it?' That is where we have a number of work packages, as I mentioned before—the land use plan; looking at structures; looking at disaster management, community information and education. That is all proceeding relatively well. We said before that we are going to be about five per cent over budget. I am happy enough with that; that is not too bad. We are looking to have the technical work completed this year.

Because we are dealing with the state agencies and four councils, we need to allow for the approval processes to happen. You are dealing with the likes of larger councils such as Brisbane and Ipswich, where there is a bit of a process that they need to go through, and then Lockyer and Somerset, where there is a process that they need to go through. We will need to go through our own government departmental approval processes as well. That may happen before Christmas this year. Hopefully it will.

We will see the public release of the work, being a technical evidence report. It will have more than 1,000 pages of detail. The Strategic Floodplain Management Plan, which is more like the look and feel or the size of the Burnett work, although with different content, will be released early next year. While there have been delays, it is a once-in-a-lifetime opportunity to do this work. Rather than cut corners and make suboptimal outcomes, we are happy to continue it through and keep working with the councils to make sure there are some outputs that everybody is happy with and we are able to deliver.

CHAIR: Mr Milligan, was the document that you held up the study or the plan?

Mr Milligan: That is for the study itself. That is effectively the computer modelling work that shows depth, extent, velocity and what the hazard is across the landscape. Then we need to ask how we are going to deal with current and future risks, thinking of climate change as well.

Mr WEIR: That would be an evolving process, because as we continue to develop and build, and as we build more hard surfaces, the water flow will increase, which means that more water is going to go down that watercourse. There will be more water going down those rivers than ever did before. That is only going to continue; is it not?

Mr Milligan: Yes. To give you confidence, one of the actions that is likely to come out of the Strategic Floodplain Management Plan is a regular five-year review of the model work to keep up to date with the development work that is happening.

Ms PUGH: Obviously, many state departments and agencies are responsible for building infrastructure that may either have the potential to be flooded or alter the flooding risk of different areas. I am interested to know what your engagement or process might be with, for example, the department of main roads as they work on preliminary planning for the Centenary Motorway, for example?

Mr Moon: When they are going through detailed design there will be requirements to take into account, obviously, risk to a whole range of natural hazards. That would be incorporated in the design. Also, we are seeing now that in funding guidelines, for example, agencies are required to get an

appreciation of, or certainly take into account, the influence of natural hazards. The conversation is also switching to taking into account future climate risk in the design and location of pieces of infrastructure.

There is also a range of funding programs available where not only are we actually looking at increasing the resilience of infrastructure in well-developed regions such as the south-east corner, but certainly our focus has been on a lot of those rural and remote councils that find it very difficult from a maintenance perspective to keep up with the budgetary requirements of their network. There is a range of programs available such as the Natural Disaster Resilience Program whereby they can invest in more resilient infrastructure.

Mr BATT: Just on the modelling—and the horse has probably bolted because it has been five years and most councils are now doing this. In relation to riverine modelling, some do it and some do not; there are four or five councils on the Burnett that have all done it differently. Is there anything that the government or the department is putting together so there is one lot of modelling for all riverine catchments and all storm surges on the coastline rather than different councils doing it and then finding they do not match up because one agency has done it one way and another has done it another way? On the same river system there can be two different lots of measurements and then you have to try to do your planning with that.

Mr Milligan: Yes. That is a good summary of the issues we are facing. In the Burnett there is some action about doing some baseline modelling to a bit finer detail than we have to date to identify those exact issues so we have a common and consistent basis for councils to look at their flood hazard and to deliver that. At the moment it is set up for the Wide Bay Burnett Regional Organisation of Councils. They are delivering all those action plans. As Mr Moon was saying, there are a number of funding streams to which they can make application to do that work. Where it is necessary and can add value it is important to do that baseline level modelling, yes.

Mr Moon: Certainly our approach is not to be too prescriptive. I think the science and the technical capabilities of our models are increasing rapidly, and our understanding of climate risk is also increasing quite quickly. Our approach, though, takes into account a range of methodologies so that, when we have everyone around the table, people get an understanding of what a range of datasets is telling us so that our planning takes into account different approaches. Our approach is certainly not to be too prescriptive in that space, but it is an open approach so we get a full understanding of different considerations of different risks.

Mr BATT: It is still up to an area—and I do not have to pick on Wide Bay-Burnett—to apply for that funding and do that. Whoever does that for that catchment could be different to the next catchment though, so we are not getting a statewide evenness across it. Then there are councils that have a river system as a border. If we are talking about Bundaberg to Gladstone it will be Baffle Creek. A lot of councils have those. If one council or region does one and then another one does the same system, there will be different outcomes that you will be using in planning schemes. It just does not add up. I thought it would be better if someone in a state agency took it on to do it right across Queensland rather than each system doing it separately.

CHAIR: I think the point has been made. Do you want to respond to that?

Mr Moon: We certainly understand the limitations of that particular approach; yes, I agree with you. Certainly our approach now through that pilot study in the Burnett, for example, is to get that understanding on a catchment-wide basis, and it is the same in Brisbane. There have been many studies completed over the years by individual councils, but our approach is to get that catchment-wide understanding of those.

Mr Wiskar: The other thing that is worth deliberating on is that one of the tricks always is to be able to gather all of the work that has been done and for it to link. One of the things we are seeing in water planning is an increased capability in modern systems to take information from diverse sources and actually start to make sense of it. Some of what you are talking about, I suspect, if we sort of look into the future over the coming years—some of the smart II type technology is actually going to make that happen without needing to redo all of the modelling.

Mr BATT: That would be good.

Mr Wiskar: That is what we are starting to see in that space. It is moving quite quickly. One of the problems we have at the moment, with lots of sources of data, is that much data gets developed when somebody does a proposal for something. For instance, they have to do a proposal to prove that they are going to build a road, a new shopping centre or whatever. At the moment that material

gets lost because it is done for a specific purpose. A lot of money gets spent on that as a community. One of the great things that I hope we see in the next five to 10 years is that information can be used as well as the normal monitoring modelling that we are doing.

CHAIR: That is a good point. I appreciate that. The time allocated for the briefing has now expired. We have one question on notice. That is to the QRA. That is about the percentage of people not acting on disaster warnings. We would appreciate if the answer to that question could be provided by 10 am on Monday, 18 June. Thank you for your attendance at today's briefing on the Auditor-General's report No. 16 of 2015-16 titled *Flood resilience of river catchments*. Thank you to our Hansard reporters and thank you to our secretariat as well. A transcript of these proceedings will be available on the committee's parliamentary web page in due course. I declare the briefing closed.

The committee adjourned at 12.51 pm.