



September 2013

SEQ CATCHMENTS LTD.

Submission on: *Regulation of Levees in Queensland: Consultation Regulatory Impact Statement*

Report by SEQ Catchments Chief Executive Officer, Simon Warner
183 North Quay Brisbane

swarner@seqcatchments.com.au

07 3211 4404



Introduction

SEQ Catchments is a community-based, not-for-profit organisation helping to build a sustainable community that cares for and values the natural resources and biodiversity of South East Queensland.

SEQ Catchments supports the Government's initiative in reforming levee regulation in Queensland. We agree that keeping the status quo is not acceptable and that local laws and self-regulation options are unlikely to deliver a coordinated state-wide regulatory framework.

Decisions regarding the construction of new rural levees and/or the modification of existing levees are typically made from a 'landowner perspective' or, at best, a small number of landowners' perspectives. Invariably levees have a landscape affect when constructed, impacting other landowners in the catchment as well as, potentially, up- and down-stream communities. Moreover, rural levees can, and do fail, often affecting downstream landowners and communities. SEQ Catchments strongly believes that increasing the rigour around approval, design and modification of levees will greatly enhance productivity and community and environmental outcomes in rural landscapes.

Preliminary Consideration

The definition of a levee used in the *Land, Water and Other Legislation Amendment Bill 2013* is "A levee is an artificial embankment or structure which prevents or reduces the flow of overland flow water onto or from land."

SEQ Catchments supports this definition providing the term 'overland flow' is interpreted consistently with the Department of Natural Resource & Mines' definition of overland flow, viz – "Overland flow is water that runs across the land after rainfall, either before it enters a watercourse, after it leaves a watercourse as floodwater, or after it rises to the surface naturally from underground."¹

The concept of run-off water 'after it leaves a watercourse' is critical for the proper regulation of rural levees as many, if not most rural levees are intended to limit overland flow leaving a watercourse.

The Department of Natural Resource & Mines' definition of overland flow is however different to the definition extant in the literature and in normal soil conservation practice. For example, the McGraw-Hill Science & Technology Dictionary provides a more traditional definition, viz overland flow is– "water flowing over the ground surface toward a channel; upon reaching the channel, it is called surface runoff"². This traditional definition may exclude the concept of runoff water leaving a watercourse.

In this context, SEQ Catchments notes that the definition of 'overland flow' in the *Water Act 2000* does not provide the clarity required for the effective regulation of rural levees.

Schedule 4 of the Act states "Overland flow water means water, including floodwater, that is urban stormwater or is other water flowing over land, otherwise than in a watercourse or lake—

- (a) after having fallen as rain or in any other way; or
- (b) after rising to the surface naturally from underground."

1 (see http://www.nrm.qld.gov.au/water/management/overland_flow/index.html)

2 (see <http://www.answers.com/topic/overland-flow#ixzz2bSGB3oSh>).

At the least, the *Water Act* definition does not make it clear that overland flow can comprise runoff water leaving a watercourse: Indeed, it could well be construed to exclude runoff water leaving a watercourse.

SEQ Catchments is of the view that the regulatory framework should remove the potential for ambiguity and import the Department of Natural Resource & Mines' definition of overland flow.

The main questions posed by the Statement are:

Whether the assessment manager for applications to construct a levee should be State Government or local government

How different categories of levees should be designed

The likely costs to businesses, landholders and government of the proposed regulation

How best to identify and regulate modifications to existing levees

Who should be assessment manager?

As with all aspects of assessment, the key challenge is to develop a regulatory framework that is efficient both for users and the 73 local governments across Queensland. If the capacity of all Councils is not carefully considered in the assessment of 'efficiency' and Councils are required to undertake services for which they lack capacity, policy implementation may be flawed and/or costs may increase as users and Councils use consultants in an attempt to fill capacity gaps.

In this context, SEQ Catchments believes that the Statement makes a number of weak arguments in support of the preferred case of having local governments as assessment managers. These include:

The cost assumption that local government is twice as efficient at development assessment as the State Government is likely to be flawed. The State Government (Department of Natural Resources and Mines) has a number of very skilled planners and assessors for a variety of *Sustainable Planning Act 2009* related activities located in the major centres across Queensland. These officers have handled very complex and high risk development applications under a number of jurisdictions for over a decade. In addition, specialist assessors are likely to provide superior decision making, which does not appear to have been factored into the Statement.

The cost assumptions for State Government and local government personnel are based on salary costs only. Under the normal activity based costing models used for contestability of services, salary costs are only one of a number of components which make up the total costs of delivering the activity. The pre-lodgement costs as stated in the Goondiwindi Regional Council local law example (Appendix 5) demonstrates this concern given they charge \$100-\$150 per hour on a cost recovery basis, not the estimate of \$54.18 in the Statement.

While some levee applications on the Queensland coast may form part of larger development applications, most of the inland ones are only likely to accompany *Vegetation Management Act 1999* applications for the two new agriculture purposes, or as part of an application for a *Strategic Cropping Land Act 2011* application. In both cases, the Department of Natural Resources and Mines has adequately skilled operatives which are totally relied upon by local governments for these types of applications.

The Statement does not seem to consider the variability of capacity to deliver effective levee regulations across Councils or of the considerable local knowledge held by the State Government across Queensland. Highly skilled assessment and water management people are located in most major regional centres, and since the beginning of Queensland, have

delivered services which have been highly regarded and valued by local governments, community and industry.

In SEQ Catchments' view, it is likely that if these flaws were corrected and the assumptions highlighted above are properly considered, the very small net present value advantage stated for local Government assessment would be significantly reversed, meaning that the State Government would be the most efficient assessment manager option.

That said, it is also SEQ Catchments' view that while the State Government is the most efficient assessment manager, this does not mean that the State needs to undertake the assessments. The total assessment function (not individual assessments) could be made contestable. In this context, SEQ Catchments believes that the Victorian model for levee regulation is worthy of consideration.

Around 70% of the local governments in Queensland (assuming only 40 of the 72 Councils will deal with levee applications) are likely to need consultants involved in the assessment processes for category 2 and 3 levees under the current preferred proposal. This places a cost burden on local governments which will have to be met by rate payers or by proponents.

Another assessment delivery option could be to invest in training regional NRM groups (the Queensland equivalent of the Catchment Management Authorities in Victoria) to maintain the technical assessment capacity for local governments where it is not already in place. Instead of the \$230-\$260 per hour for consultants, these costs would be in the order of \$120-\$150 per hour for the not for profit regional groups. A number of these groups already have personnel with these skill sets and knowledge and the all-important on-the-ground experience of a number of recent major events.

The most desirable long term approach to deal with levees should be by implementing a place based approach using local government planning schemes. To do this comprehensively, each local government which will deal with levees will need extensive knowledge of catchments and catchment hydrology. Again, this is an expensive pursuit which lies beyond many of the local governments involved. In the mean-time, a case by case development assessment approach seems the only viable option for most local governments.

How different categories of levees should be designed

SEQ Catchments agrees with the risk based approach to categorising levees. The three level development assessment framework is a proven methodology. However, in SEQ Catchments' view, the appropriate delineation between impact, code and self-assessment will be critical in ensuring the success of the regulation. In the future, the law – both common and statute, will depend on this aspect of the regulation should it need to assign liability resulting from extreme rainfall events. As recent events in Queensland show, this liability can be very onerous.

We also note the outcomes sought by the regulation include economic and community safety aspects as well as the impacts of levees on the catchment as a whole (Queensland Flood Commission of Inquiry recommendations). The Statement does not seem to deal with impacts of levees on the catchment as a whole apart from some generic statements.

Delineation of the category of levee should account for this aspect (cumulative impacts) as well as risk to life and the economy. For example, it is conceivable that a number of landholders in a single sub-catchment could develop levees under a self-assessable code legitimately; however, when taken together, may create catchment dynamics which are potentially catastrophic downstream of the system of levees. While flooding is one costly consequence, creating levees and cleaning out stream channels creates flow velocities which

can be much more destructive and costly. Neither threshold option in the paper will account for this instance as the potentially damaging factor can be speed of flow rather than bank overtopping.

We also note that the Commission's recommendations have been interpreted very narrowly into the objective of levee regulation which "is to address the potential risk of increased flooding to landholders and community from the location, design and construction of new levees and modification of existing levees". We suggest this might better reflect the Commission's intent by adding "and optimising floodplain management" after the word community. This then will better include the impacts of the proposed levee on the catchment as a whole as stated in Appendix 1. While there is a general statement that environmental considerations will be taken into account through the drafting of the supporting codes and guidelines, we believe the overall performance of the levees in relations to flood plain management including cumulative impacts needs to be specifically addressed in the application of the regulation.

Lastly, some levees can create social implications by their nature and performance requirements. In the drafting of supporting guidelines and codes, we suggest consideration be given to addressing potential social implications of the design, construction and maintenance of a levee, particularly category one and some category two levees.

For all of these reasons, SEQ Catchments does not believe that Appendix 6 of the Statement provides appropriate and/or sufficient guidance to categorise rural levees. We have considered this issue at length and, while much thought development would still be required to operationalise a policy, we are of a view that a landscape scale based categorisation of rural levees might be the best option. Example of rural levee by assessment type might include:

- Self Assessable
 - Private levees, often referred to as donut levees, designed to protect private infrastructure such as houses and farm sheds, which do not trigger one of the functional categories below
- Code Assessable
 - Private cross floodplain levees that holdback floodflow from >15% of the floodplain width, that redistribute stream and floodflow from one watercourse to another or that concentrate floodflow into a channel
 - Public and private 'unintended' levees such as roads, sports fields, causeways and rail lines whose construction requires elevation in the floodplain and which have the effect of holding back and redirecting floodwaters
 - Private levees aimed at raising the height of one or both high banks along streams for which a Rapid Appraisal of Riparian Condition³ assessment indicates that the Stream riparian condition is good or better
- Impact Assessable

³ Professor Jon Olley from Griffith University Australian Rivers Institute has adapted a Rapid Appraisal of Riparian Condition tool for modelling and assessing bank erosion risk. Levees built on the top of high banks (also known as Berms) have a similar risk of failure as the banks upon which they are constructed. SEQ Catchments would suggest that Berms constructed in high risk systems be impact assessable, while those constructed on lower risk systems be code assessable.

- Public levees – e.g. for the protection of towns and public infrastructure and public safety
- Private infrastructure development in a floodplain requiring the construction of intended or unintended rural levees which affects >30% of the flood plain width
- Private levees aimed at raising the height of one or both high banks along streams for which a Rapid Appraisal of Riparian Condition assessment indicates that the Stream riparian condition is moderate or poorer

While we believe that a landscape scale categorisation of rural levees based on a wider definition of the risk approach suggested in the Statement may provide users and local Governments with the highest degree of certainty, we also note that our assumptions are based on a levee functioning as intended. In this context, we note that levees can –

- Surcharge. This is an intended, ‘controlled’ outcome and should be considered during design, regardless of assessability categorisation;
- Fail. When levees fail, they can have very serious local, local Government area and downstream consequences. This case was demonstrated with rural levees that failed in the Lockyer during the January 2011 and 2013 floods, causing significant floodplain erosion and serious consequences for Brisbane’s bulk water supply and in places, severely compromising public safety.

We note that the concept of failure is not dealt with in detail in the Statement. We note too that many rural levees are constructed in high risk areas of the landscape – for example along the high banks of highly degraded streams – and are at a heightened risk of failure. Our suggestions for a landscape scale definition of levee accessibility accommodate the potential for failure. That said, it is SEQ Catchments’ view that rural levees should be both constructed in accordance with planning provisions and maintained and managed in accordance with planning approvals.

Regardless of which assessment approach is adopted, the technical panel which will guide the code development and advise the State, needs to ensure the codes consider the risk of failure as an important set of criteria to be added to the other assessment criteria. Recent experience in the United States of America confirms the importance of this approach as a result of Hurricane Katrina and other catastrophic failures in their levee system over the past decade⁴.

The likely costs to businesses, landholders and government of the proposed regulation

As outlined in the section on which development assessment option is best, we believe there are a number of flaws in the costing approach; however, understand the difficulties and variables involved. Region NRM groups may offer a lower cost hybrid alternative to the high costs of involving consultants in assessments, and perhaps in other stages of the design, construction and maintenance processes.

Many regional NRM groups have built significant capacity around catchment management and GIS and information management. It may also be sensible to consider for example, using the enQuire reporting system to capture and keep information about levees across

⁴ National Research Council of the National Academies (2013), Levees and the National Flood Insurance Program: improving policies and practices, National Academies Press, Washington D.C.

Queensland, depending on the nature and detail of the information to be required. This would save much of the costs associated with designing a new recording system. Again, the recent experiences in the United States of America demonstrated the importance of such a system of recording

The Statement deals superficially with compliance monitoring and costs in an implied manner only in Appendix 7. This analysis seems to be based on the premise that it is up to the proponents of Category 2 and 3 levees to submit compliance reports which will be assessed by the assessment manager.

There is no mention or analysis of overall compliance costs associated with the potential for landholders to make their own levees regardless of regulation. Some sort of program to detect these illegal structures would seem in order as per experience in New South Wales. While initially, the program might focus on education and awareness (some indications of costing Appendix 7), at some stage it needs to be oriented toward regulatory performance regardless of whether the State or local government is the assessment manager. Either way, such a program would hold significant costs. These costs would need to be offset against the potential cost of an illegal levee creating damage during a flood event.

Conclusion

SEQ Catchments congratulates the Queensland Government on its initiative to regulate levees. We believe organisations such as ours have a major contribution to make to ensure the success of the regulation. We are happy to discuss and assist with solutions which ensure the regulation is implemented efficiently and effectively as we have seen the results of ill-advised levee infrastructure in our catchments and the hardship this has caused.

We thank the government for the opportunity to comment on the Statement and look forward to the outcomes.

Yours sincerely

Simon Warner

Chief Executive Officer