Regulation of Levees in Queensland:

Consultation Regulatory Impact Statement

Contents

Acronym list

DCS	Department of Community Safety
DLG	Department of Local Government
DNRM	Department of Natural Resources and Mines
DSDIP	Department of State Development, Infrastructure and Planning
DTMR	Department of Transport and Main Roads
IDAS	Integrated Development Assessment System
LGA	Local government areas
LGAQ	Local Government Association of Queensland
LWOLA	Land, Water and Other Legislative Amendment (Bill)
QCA	Queensland Competition Authority
QFF	Queensland Farmers' Federation
The Commission	Queensland Floods Commission of Inquiry
QRA	Queensland Reconstruction Authority
QTT	Queensland Treasury and Trade
RIS	Regulatory Impact Statement
SPA	Sustainable Planning Act 2009
SP Regulation	Sustainable Planning Regulations

Executive summary

Purpose of this document

The purpose of this document is to provide detail about the proposed statewide regulation of levees and to seek feedback on implementation options. The legislative framework has been established by the Land, Water and Other Legislation Amendment Bill (LWOLA Bill) and this document outlines some of the key issues involved in its implementation.

Background

The Queensland Floods Commission of Inquiry (the Commission) was established following the floods of 2010/2011. In total, the Commission made 177 recommendations, 123 of which related directly to the Queensland Government. The Queensland Government has committed to implementing all recommendations of the Inquiry that relate directly to the State. Five of these relate specifically to the regulation of levees and this proposal is intended to deliver those recommendations.

Outline of the initiatives

The proposal seeks to establish a consistent regulatory approach to the construction of new levees and the modification of existing levees in Queensland. The focus of the proposed framework is to ensure that the design and construction of levees adequately addresses the impact on neighbouring properties, the community and the catchment as a whole.

The Department of Natural Resources and Mines is leading the development of this regulatory framework in partnership with the Department of State Development, Infrastructure and Planning.

Policy issues

Levees play an important role in floodplain management. They also have the potential to increase the risk of flooding to neighbouring properties.

Currently Queensland has no consistent policy or regulation to control the construction or modification of levees. The Commission's Final Report proposed a regulated approach to address the impacts and risks associated with levee development.

Objectives

The objective of this proposal is to address the potential risk of increased flooding to landowners and the community from the location, design and construction of new levees and modification of existing levees.

Policy development

An across-government working party which included representation from the Local Government Association of Queensland (LGAQ) was convened to consider potential ways of implementing the Commission's recommendations on levees. A risk-based approach based on impact thresholds was considered appropriate.

Amendments to the *Water Act 2000* provide the legislative framework to regulate levees. These changes were included in the LWOLA Bill passed by Parliament on 2 May 2013 which provides:

- A definition of a levee.
- That levees will be made 'assessable development' under the *Sustainable Planning Act 2009* (SPA).
- The power to make regulations to state a code against which applications can be made.

The issues discussed in this document relate to the further implementation of the framework established by the LWOLA Bill.

Options considered

The options identified that could achieve the policy objective of the proposal include:

- Option 1: Status quo
- Option 2: Expansion of local laws
- Option 3: Self-regulation of levees
- Option 4: Regulation of levees with the State Government as assessment manager
- Option 5: Regulation of levees with local governments as assessment manager.

Consideration of the options by the Queensland Government resulted in two options being identified as meeting the policy objective. Both options propose a regulatory approach under the SPA.

- **Option 4**: Regulation of levees with the State Government as assessment manager for all levee applications
- **Option 5:** Regulation of levees with local governments as assessment manager for all levee applications, with the State Government acting as a referral agency (concurrence) for Category 1 (high risk) levees only.

A cost effectiveness analysis was conducted to identify the relative costs of each option on business, community and government (See Section 5 and Appendix 7). The costs relate to two main roles: that of the proponent for a levee, and that of the assessment manager or referral agency that decides the application for the levee.

The results of the analysis show that present value of **Option 4** is $33.1 million over the ten year analysis period, while **Option 5** has a present value of $32.7 million. This equates to annual values of $4.71 and $4.66 million respectively. Overall costs between the two options do not differ greatly. This is because the costs are dominated by the costs to levee proponents (about 85 per cent of total costs), and these do not vary significantly between options.

Default position

While the Queensland Government has not yet made a decision on who will be assessment manager, in order to encourage debate on the issue it is proposed that **Option 5** (Local governments as assessment manager for all levee applications, with the State Government acting as a referral agency for Category 1 levees only) be adopted as the default position. This proposal is intended to encourage the community, stakeholders and government (local and state) to fully consider the implications of the issues raised in the Regulation of Levees in Queensland: Consultation Regulatory Impact Statement (the Statement) and to provide feedback on its implications and suggest the most appropriate approach to implementing this regulatory framework.

Consultation

This Statement is now available for public review and comment for a period of 42 days. Submissions are invited from the community, stakeholders and other interested parties on the proposals contained in this Statement. Guidelines on how to comment are available in the ‘Have your say’ section of this document. Feedback will be taken into consideration when finalising the regulatory framework for levees.

Explanatory notes

Purpose of this document

The Queensland Government is committed to adopting best practice regulatory principles and to ensuring that regulation is developed in a rigorous and transparent manner. For this reason, a regulatory impact statement (RIS) is required for all regulatory proposals that may have significant impacts on business, community and government.

The purpose of a consultation RIS is to present, for public feedback, an evaluation of the likely costs and benefits (direct and indirect) to business, community and government that could flow from a regulatory proposal. These costs include economic, social, environmental impacts, compliance costs, and/or competition impacts such as time, staff, training costs, expert advice, and the cost to the government for administering and enforcing the regulation.

For subordinate legislation, a proposed initiative with an 'appreciable' cost under the *Statutory Instruments Act 1992* is deemed to have a 'significant' impact and requires a RIS.

There will be some regulatory burden placed upon an applicant wanting to build a levee, whereby the applicant may be required to provide detailed information such as plans and specifications of the proposed levee and a hydraulic report. The cost of preparing a detailed application may impose an 'appreciable' cost to the applicant as well as regulatory burden on the assessment manager or referral agency.

This Statement outlines the proposed framework to regulate levees and provides a foundation for discussion to tap into the broad knowledge and experience that exists throughout Queensland.

The purpose of the Statement is to:

- provide an overview of the current situation and inconsistencies in relation to levee regulation across the state
- outline the costs and benefits of regulating levees, including impacts on individuals/businesses, communities, and state and local governments
- identify the most appropriate and cost-effective way to regulate levees in Queensland
- seek feedback from the public on the proposed framework to regulate levees in Queensland to allow its further refinement.

Specific issues on which feedback is invited include:

- Whether local or state government should be the assessment manager for levees
- How levees will be categorised
- The assessment requirements for each category of levee
- How best to identify and regulate modifications to existing levees.

Community feedback is critical in ensuring that the development of the proposed framework to regulate levees is appropriate and able to be implemented while also adequately addressing the recommendations resulting from the Queensland Floods Commission of Inquiry.

Feedback will be taken into consideration in finalising the regulatory framework for the development of new levees and the modification of existing levees. Submissions on this Statement close on **6 September 2013.**

Have your say

The Queensland Government, through the Department of Natural Resources and Mines (DNRM), is releasing the Regulation of Levees in Queensland: Consultation Regulatory Impact Statement (the Statement) for public comment.

Public comment has already been invited as part of the LWOLA Bill process, through the Parliamentary Committee which received public submissions on all aspects of this legislative amendment.

The Statement is the next stage in the consultation process on the levee regulation policy. The Statement has been released to seek public feedback specifically on the impacts and costs to businesses, individuals, the community, the state and local governments associated with implementing the levee regulation policy. While comments are welcomed on all matters in this Statement, feedback is particularly sought on the following issues:

- Whether the assessment manager for applications to construct a levee should be State Government or local government
- How different categories of levee should be defined
- The likely costs to businesses, landholders and government of the proposed regulation.

The Queensland Government values the input of stakeholders in developing the implementation arrangements for the levee regulation policy, and dealing with the complex suite of issues relating to the implementation of a regulatory framework for levees in Queensland.

Submissions are invited from the community, stakeholders and other interested parties on the proposals contained in this Statement.

Lodging a submission

The Queensland Government welcomes all feedback on this Statement. Submissions close at **5pm, 6 September 2013.**

All submissions must be made in writing and can be sent by email, fax or post. Name and contact details must be supplied with each submission. Submission and comments can also be provided by submitting a response form to DNRM on line.

Email: levees@dnrm.qld.gov.au

Mail:
Levee Regulation in Queensland Regulatory Impact Statement
Floodplain Management Team
Department of Natural Resources and Mines
PO Box 15216, City East, Brisbane Qld 4002

Fax: (07) 3224 8359.

On-line submissions can be made on the DNRM website at www.dnrm.qld.gov.au.

Please submit your response by 5 pm, 6 September 2013. The department will consider the responses received and may consult further before developing a final position on levee regulation across the state.

The *Right to Information Act 2009* provides for access to information held by government. You should consider the possible application of this legislation to any submissions you make, which may be made public.

More information

For more information, email levees@dnrm.qld.gov.au or contact your local DNRM office.

Regulation of Levees in Queensland: Consultation Regulatory Impact Statement

1. Issues statement

1.1 Background

In late 2010 and early 2011, three-quarters of Queensland experienced unprecedented flooding. On 17 January 2011, the Queensland Government established the Queensland Floods Commission of Inquiry (the Commission) with wide-ranging powers of investigation. The Commission considered evidence from written submissions, community meetings, material sought from organisations and individuals with particular knowledge, and public hearings (see Box 1). The Commission's Final Report contained 177 recommendations covering a broad range of areas including planning, development and essential services.

On 7 June 2012, the Queensland Government committed to implement all 123 recommendations which relate directly to the State. The government also committed to work with local governments to deliver improved flood outcomes across the State.

The Commission made five recommendations directly related to levees (See Appendix 1). In summary, the Commission recommended that levees should be regulated using the most appropriate regulatory regime under the *Sustainable Planning Act 2009* (SPA) and that the regime should be developed in consultation with local governments.

An across-government working party was convened to consider alternative approaches to implementing the Commission's recommendations.

1.2 Current situation and definition of levee

Levees are constructed on many different scales and for different reasons across Queensland, throughout Australia and overseas. In Queensland they are sometimes built around entire townships by local governments (often with additional funding from the State and Federal Government) for protection from flood waters. Well known examples are in Goondiwindi and Charleville.

More commonly they are built by individual landowners, developers and/or farmers on their properties, to protect particular areas for example, crops from flooding. Sometimes a group of individuals will combine to construct a levee to protect a group of properties. Further details about the extent of levees in Queensland are provided in Appendix 3.

It was necessary to have a definition of a 'levee' for the purpose of regulation to provide consistency of decisions. The Commission recommended that the Queensland Government consult with councils to formulate a definition. Consultation with local councils and stakeholder groups resulted in the definition of a levee which was included in the Land, Water and Other Legislation Amendment Bill (LWOLA Bill) which was passed by Parliament on 2 May 2013 (see Appendix 4).

1.3 Current regulatory situation

The Commission's Final Report found that there is no consistent policy or regulation across the State for the construction of levees. The current inconsistent approach has resulted in a lack of information about the number of levees that exist across the state, their size, longevity and maintenance status and the potential risk of their cumulative impacts across catchments during flooding events.

Local governments have a suite of planning instruments available under the SPA to regulate land use at the local level, with planning schemes principally used to assess development in accordance with specific localised requirements, such as floodplain hazard management. A desktop analysis of local planning schemes in Queensland indicates that local governments have not generally incorporated levees into their primary planning considerations. However, the absence of the specific term 'levee' does not indicate that these structures are not regulated.

Some local governments have dealt with these types of structures by listing development that involves water cycle management infrastructure for flood mitigation as being exempt development. Many have planning provisions for filling and excavating which, arguably, cover the process for constructing or maintaining a levee. The only local government which currently regulates levees specifically is Goondiwindi Regional Council, which uses local laws for this purpose, and imposes fees and requirements for applications for a permit for levee construction (see Appendix 5).

1.4 Case for Government action

The Commission found that "levees may cause damage far from their location. As an adjustment to the natural watercourse, they can affect the entire catchment in which they are located. The propensity to cause damage to other property supports the argument for consistent and state-wide regulation."

The Commission determined that levees can create a number of problems:

- Flood mitigation levees designed to provide protection from water breaking out of rivers and creeks may increase flood heights elsewhere. In some places this may be significant.
- If levees fail or are overtopped, the damage caused by the water's breakout can be considerable.
- When individuals or communities protected by a levee assume that the levee will protect against all flood, this may result in development in inappropriate locations.

The Commission found that it does not assist floodplain management for landholders to have free rein to build levees on their properties[1]. It found that if it is appropriate that levees form part of a council's floodplain management plan, it is also appropriate that levees be regulated. The fact that levees affect watercourses makes them a necessary part of any consideration of flooding in a catchment.

The Commission's Final Report proposed a regulated approach to address the impacts and risks associated with the construction and maintenance of levees. The Commission's expressed primary concern was the potential for levees to increase the risk of flooding and thereby damage the built environment or cause flooding to neighbouring land.

Questions of inconsistency in the management and control of levees, and disputes as to who should impose that control sparked interest from the Commission. "The potential impact of levees on flooding means that those issues should be resolved."[2] The Commission concluded that structural measures such as levees are one of the four main threads of best practice floodplain management outlined in Floodplain Management in Australia: best practice and guidelines[3].

The Commission stated that "the patchwork of state and council approvals, and in some areas, a complete absence of regulation, is not conducive to consistent decision-making. Uniform regulation of the construction of levee banks would ensure that applications to build them are judged against the same standards".

Further details of the Commission's findings are given in Box 2.

It is acknowledged that there is a lack of comprehensive data on the impacts of levees and the costs of the present approach to regulating levees across Queensland. Notwithstanding, the Commission's findings and recommendations present a clear case for action.

The Queensland Government is committed to implementing the Commission's recommendations and has determined that levee construction and modification will be regulated. The Government has moved quickly to respond to its commitment by passing the LWOLA Bill, establishing the legislative framework for levee regulation. Feedback on this Statement will help determine the extent of this regulation, with assessment manager roles, thresholds for different categories of levees, applicable levels of assessment, and the level of detailed information required for assessment of levee impacts still yet to be determined.

[1] Page 170, Queensland Floods Commission of Inquiry—Final Report, March 2012.

[2] Page 168, Queensland Floods Commission of Inquiry—Final Report, March 2012.

[3] SCARM report 73.

.Box 1.Summary of investigations by the Queensland Floods Commission of Inquiry

Purpose of the Inquiry:
The Commission's terms of reference were to enquire into seven matters arising out of the 2010/2011 floods: "preparation and planning for the floods by governments, agencies and the community; the adequacy of the response to the floods; management of essential services; the adequacy of forecasts and early warning systems; insurers' performance of their responsibilities; the operation of dams; and land use planning to minimise flood impacts." (Final report, p30)

Methods of inquiry:
"The Commission's findings and recommendations were the result of an examination of an enormous amount of information. This information was obtained through a variety of means, including written submissions, community meetings, material sought from organisations and individuals with particular knowledge, and public hearings… The Commission also used its powers under the *Commissions of Inquiry Act 1950* to obtain statements and documents from members of the public, experts, public servants and members of non-government organisations. Some of those individuals were also called as witnesses in the Commission's public hearings." (Final report, p33-34).

The Commission engaged 14 experts in relevant disciplines (such as hydrology, engineering and town planning) to assist it with expert advice (Final Report, Appendix 5) and received advice and access to records from State Government departments.

The submissions, witness statements, hearing transcripts and other material considered by the Commission are available on the Commission's website at: http://www.floodcommission.qld.gov.au.

Issues relating to levees raised in submissions:
The Commission's final report cites evidence from 32 submissions and witness statements relating to levees, as well as a number of published reports. This included evidence about the following issues:

1. Evidence of properly maintained and monitored levees protecting townships from flooding. See for example, the transcript of Gregory Morrow, 3 May 2011, Goondiwindi also referenced in the QFCoI—Final Report page 168.

2. Concern that levees built to protect private property had caused increased flood levels on nearby properties, or caused land to flood due to diverting the original flow paths of creeks. See for example, the transcript, Kylie Kilroy, 4 May 2011, St George; the transcript, Robert Anderson, 29 September 2011, Emerald; Exhibit 676, Submission of Robert Anderson, 24 May 2011; and Exhibit 752, Statement of Neville Cayley, 31 August 2011; also referenced in the QFCoI—Final Report page 168

3. Evidence of landholders' frustrations in seeking action from governing bodies on levees that had adversely impacted neighbouring properties. See for example, the transcript Robert Anderson, 29 September 2011, Emerald also referenced in the QFCoI—Final Report page 168

4. Evidence of stakeholders' desire that levees be regulated. See for example, the transcript, Kylie Kilroy, 4 May 2011, St George, also referenced in the QFCoI—Final Report page 168.

These issues, together with others raised in over 700 submissions made to the Inquiry, led to the Commission's recommendation to regulate levees in Queensland.

Box 2. Findings of the Queensland Floods Commission of Inquiry relating to Levees

Levees are discussed in Section 7.7 of the Final Report. After sections summarizing the existing situation, the Commission made the following findings (Final Report pp 170—171):

"**Need for regulation**

"Structural measures, such as levees, are one of the four main threads of best practice floodplain management outlined in *Floodplain Management in Australia*; see section *2.1 Principles of floodplain management* above. If it is appropriate that levees form part of a council's floodplain management plan, it is also appropriate that levees be regulated. The fact that levees affect watercourses makes them a necessary part of any consideration of flooding in a catchment. It does not assist floodplain management for landholders to have, as they do in some areas of Queensland, free rein to build levees on their properties.

"Levees may cause damage far from their location. As an adjustment to the natural watercourse, they can affect the entire catchment in which they are located. That propensity to cause damage to other property supports the argument for consistent and state-wide regulation.

"The patchwork of DERM and council approvals, and in some areas, a complete absence of regulation, is not conducive to consistent decision-making. Uniform regulation of the construction of levee banks would ensure that applications to build them are judged against the same standards, no matter where they are built and for what purpose. Mining levees in Central Queensland assessed by DERM would be required to meet the same criteria as farming levees near the New South Wales border. Consistency holds advantages for landholders who wish to build a levee, or who live near a proposed one.

"Options for controlling the building of levees

"The Commission considered two options for controlling the construction of levee banks within the land use planning regime: the designation of levees as assessable development, or local laws. If the former is chosen, either councils or the Queensland Government could act, in effect, as regulator; if the latter, the regulators must be councils.

"Levees are a type of development under the *Sustainable Planning Act 2009.* They are not specifically designated, by name, as 'assessable development' in the *Sustainable Planning Regulation 2009*, although they may be assessable as 'interfering with water': see the section *Department of Environment and Resource Management* above. The regulation of levees in a planning scheme prepared under the *Sustainable Planning Act 2009* is not compulsory.

"Levees are not dealt with in regional plans, state planning regulatory provisions, any state planning policy or the Queensland Planning Provisions. The Queensland Government could, by legislation, ensure that building a levee requires a development permit by:

- designating it as assessable development in Schedule 3 of the *Sustainable Planning Regulation 2009*, or
- requiring, by way of a state planning policy or mandatory provision in the Queensland Planning Provisions, that councils nominate the construction of a levee as 'assessable development' in their planning schemes.

"If a council's current planning scheme is not made under the *Sustainable Planning Act 2009*, and does not regulate levees, the council can make a local law for that purpose. The Queensland Government could encourage councils in that position to adopt such a local law by proposing a suitable

(*Continued next page*)

Box 2 continued

model local law. But any such local law will only apply until the time that a council decides to prepare its next planning scheme under the *Sustainable Planning Act 2009*; after that, the council may only regulate levees through its planning scheme. Consequently, this option would be an interim measure at best.

"The Queensland Government should consult councils to determine the most effective way to regulate the construction of levees consistently across Queensland.

"The appropriate regulator

"The two candidates to regulate levees are the Queensland Government and councils. Many councils, and their representative body, the Local Government Association of Queensland, submitted that the Queensland Government should be responsible for regulating all levees. (In New South Wales and Victoria, floodplains are managed at a state government level.) They maintain that councils do not have the necessary technical expertise and financial means to conduct the scientific studies necessary for proper assessment of a proposal to build a levee bank, and refer to the catchment wide implications of levees and interstate issues in the border region as reasons for the Queensland Government to be in charge.

"The Queensland Government does not consider it is best placed to consider applications to build levee banks. It points to council expertise in approving development applications under planning legislation, and the importance of local knowledge of the area in which a levee is proposed. The government suggests that it could assist councils by providing expert advice as a referral agency during the assessment process.

"Both arguments have merit. The evidence is that neither councils nor the Queensland Government are immediately capable of assessing applications for permits to build levee banks: both would require the devotion of more resources to that task. Depending on the method of regulation chosen, both could be involved, in different capacities, in assessing applications. The Queensland Government and councils should reach a decision as to which will regulate the construction of levee banks. The Commission's concern is that a state-wide, consistent process be put in place for that regulation."

The Report then goes on to discuss the types of levees to be regulated and the process and criteria for approving the construction of a levee.

2. Policy objectives

2.1 Objective of levee regulation

The objective of this proposal is to address the potential risk of increased flooding to landowners and the community from the location, design and construction of new levees and modification of existing levees.

2.2 Purpose of the levee regulation

The proposed framework is designed to establish a consistent, efficient and effective statewide approach to managing levees which ensures that levees are built and modified in a way that has regard to their impacts on neighbouring properties, the community and the catchment as a whole.

The regulation is not retrospective and its purpose is not to address existing levees except when these are proposed to be modified. The Queensland Government also proposes to monitor existing high risk levees however that program is outside the scope of this Statement.

2.3 Authorising law

The SPA will be the authorising law for the regulation of levees. The proposed regulation is consistent with the policy objectives of other Queensland or Commonwealth legislation.

3. Options and alternatives

3.1 Consideration of options

The Queensland Government has considered a number of options to manage levees. These options include status quo, expansion of local laws, and self-regulatory and regulatory options. These options are summarised in Table 3.1 and evaluated below.

In identifying options for regulation, the Queensland Government has considered various existing regulatory tools used by various governments to manage levees. A description of the approaches considered, including from other jurisdictions, is shown in Appendix 2.

Table 3.1—Options for levee management

No.	Option	Content	Concerns	Comments
1	Status quo	Patchwork of state and council approvals, local laws and lack of regulation for levees across the state	Does not provide consistency in regulation and lacks accountability for managing the impacts of levees.	Has led to alleged increases in flood hazard in some areas. Led to the recommendation by the Commission to regulate levees.
2	Local laws	Individual Councils introduce local laws regulating the construction of levees.	Requires many sets of legislation; consistency across jurisdictions would be difficult to achieve. Only applies until each Council prepares its next planning scheme.	Not conducive to providing state-wide consistency; not supported by SPA which requires all development to be regulated by the IDAS framework.
3	Self-regulation	Levee proponents self-assess the impacts of their proposals against a self-assessable code	Outcomes difficult to quantify in self-assessment code. High level of technical expertise required to assess impacts of high risk levees.	Not conducive to providing state-wide consistency and not an effective means of managing catchment impacts.
4	Regulation under SPA with State Government as assessment manager	Draft new legislative provisions and assessment codes to regulate construction and modification of levees. State Government to be assessment manager for all levee applications.	Involves new regulation to be imposed state-wide.	Allows for a consistent regulatory approach across Queensland; meets the Commission's objectives. Already enabled by legislative changes (LWOLA Bill).
5	Regulation under SPA with local government as assessment manager	Draft new legislative provisions and assessment codes to regulate construction and modification of levees. Local governments to be assessment manager for all levee applications with State Government as referral agency for high risk levees.	Involves new regulation to be imposed state-wide. Lack of resources and technical skills across local governments	Allows for a consistent regulatory approach across Queensland; meets the Commission's objectives. Already enabled by legislative changes (LWOLA Bill).

3.1.1 Option 1: Status quo

The status quo option would continue the current piecemeal system for managing levees across the state. The current system consists of a patchwork of state and council approvals, local laws, and in some areas, a complete absence of regulation. This has resulted in a lack of information about the number of levees that exist across the state, their size, longevity and maintenance status and the potential risk of their cumulative impacts across catchments during flooding events. The Commission findings highlighted that the current system has resulted in a lack of clear responsibilities and an inconsistent approach for managing the impacts of levees.

For these reasons, the Queensland Government has determined that the status quo option will not be effective in achieving the policy objective for managing levees. The current system does not effectively manage the potential increased risk of flooding from levees or deliver a consistent and accountable approach across the state. This finding is consistent with the findings of the Commission, which indicated that the current situation was not conducive to consistent decision-making.

Although the status quo option has been used as the base case against which the other options have been compared, it will not be considered as a viable option for the purposes of the Statement.

3.1.2 Option 2: Local laws

In some parts of Queensland, councils use local laws to regulate development (See Appendix 2). This option would require all local councils to develop local laws to regulate levees and prepare a new planning scheme under SPA that would include provisions to regulate levees. Using local laws to regulate levees would be an interim measure at best, as this provision could only apply until each council prepared a new planning scheme under SPA that included provisions to regulate levees. After such time, the planning scheme would apply to levees.

Local laws are not part of the Integrated Development Assessment System (IDAS) under the SPA. The continued use of alternative regulation or assessment processes outside IDAS is not supported by the Department of State Development, Infrastructure and Planning, which supports that regulation of such development be integrated into planning instruments for assessment under IDAS.

Local laws was not considered a viable option for the purposes of the Statement, as it is not conducive to providing statewide consistency and would not be captured within IDAS as assessable development.

3.1.3 Option 3: Self-regulation

Self-regulation of levees is where the levee proponent assesses the potential impacts of the levee through self-assessable codes. Self-assessment is used where development outcomes can be clearly articulated and understood through acceptable outcomes in a code. A development permit is not required for self-assessable development provided it complies with applicable self-assessable codes.

This option was deemed appropriate for levees that pose little or no risk to neighbouring properties or the community. Self-regulation of low risk levees can provide a low cost solution for business and government and some level of certainty. The self-assessable option is described in section 4.3.3 and included in the analysis of the regulatory options in section 5 for low risk levees.

However, the self-regulation option for managing the construction of all new levees and modification of existing levees would not meet the policy objectives of reducing the flood risk from levees and ensuring accountability for managing the impacts of levees. Although this option may be applicable for low risk levees, it would not be a viable option for all levees due to:

- the difficulty in quantifying outcomes in a self-assessment code;
- the potential catchment-wide impacts from levees;
- the technical expertise needed to assess an application; and
- not providing a consistent statewide approach to levees.

3.1.4 Options 4 and 5: New regulation

Under a new regulation, the construction of a new levee or modification of an existing levee would require assessment and an approval. A new regulation provides the opportunity to introduce a clear and unequivocal definition of a levee and a common set of assessment criteria to apply across the state, thereby providing consistency in regulation across local government boundaries.

The *Sustainable Planning Act 2009* (SPA) is considered the most suitable legislation for this purpose. Other legislation, including the *Water Act 2000*, *River Improvement Trust Act 1940*, and *Environmental Protection Act 1994* were all examined to determine suitability and/or potential overlap with regulation under the SPA. These approaches were found to be unsuitable as they did not provide the consistency required by the Commission (see Appendix 2).

It is proposed that a development permit will be required under the SPA to construct or modify a levee that is assessable development. The SPA provides for different categories of development including exempt development, self-assessable development, development requiring compliance assessment, assessable development and prohibited development. These categories can be used to balance the regulatory burden with the impacts and risk associated with the proposed construction.

To construct a new levee or modify an existing levee an applicant will be required to lodge a development application under IDAS. Using the existing IDAS process under the SPA provides for a clear and consistent approach, giving certainty for applicants, the community, state and local governments in knowing exactly what is required to build a levee in any area of Queensland.

Each application would be assessed on the basis of its merits against consistent criteria given in a Code and guidelines. Where there are significant risks, this would include a report on its impact on flooding based on the existing catchment and floodplain conditions, including existing levees. As such, the process will consider the cumulative impact of each new or modified levee.

On the basis of the above analysis, it is concluded that a regulatory framework under SPA will be the most effective and proportional response to concerns raised by the Commission about the inconsistent regulation of levees.

The Land, Water and Other Legislative Amendment Bill (LWOLA Bill) has established a regulatory framework for levees. This Bill, passed on 2 May 2013:

- provides a definition of a levee
- outlines criteria where the levee is made assessable development, and
- allows for categories of levees to be prescribed.

It is proposed to make levees assessable development under the *Sustainable Planning Regulation 2009* (SP Regulation). The SP Regulation sets out:

- what development is assessable
- the level of assessment (e.g. code or impact)
- who will be the assessment manager
- concurrence agencies that must also assess the application, and give a response to the Assessment Manager to take into consideration when determining the application.

Two options (Options 4 and 5) have been developed for further analysis to determine the most efficient and effective way of regulating under SPA, including whether State Government or local governments should be the assessment manager. Note that other possible options for assessment manager, such as River Improvement Trusts, were discounted because of their lack of statutory powers.

3.1.5 Option 4: New regulation with State Government as assessment manager

Under Option 4, the State Government is proposed to be the assessment manager for all levee applications. Option 4 is considered to be a viable option for the regulation of levees. An analysis of the relative strengths, weaknesses and impacts of this option is provided in Section 5 of the Statement.

3.1.5 Option 5: New regulation with local government as assessment manager

This option mirrors Option 4 except that local governments are proposed to be the assessment manager for all levee applications, with the State Government acting as referral agency for the highest risk levees. Together with Option 4, this option is considered to be a viable option for the regulation of levees. An analysis of the relative strengths, weaknesses and impacts of this option is provided in Section 5 of the Statement.

4. Key issues to be determined

There are some key issues on which feedback is being sought in order to progress the framework.

4.1 Identification of the appropriate Assessment Manager

The appropriate authority to assess and administer the regulation of levee applications needs to be identified. The Commission's Final Report emphasised the need for the State and local governments to come to agreement about who is better suited to perform this task. The appropriate division of roles is needed to ensure all relevant interests are taken into account and also to reduce overlap and/or inconsistency of regulation. It is crucial that State and local governments work collaboratively to ensure a consistent approach.

The options on who should be the administrating authority are:

Option 4: The State Government is the assessment manager for all categories of levee applications.
Option 5: Local government is the assessment manager for all categories of levee applications with the State Government as a referral agency (concurrence) for high risk (Category 1) levees.

The regulatory impact section of this document explores the advantages and disadvantages of the two viable options and compares their relative costs.

4.2 Levels of assessment and levee categorisation

To construct a new levee or modify an existing levee under the proposed framework set out in LWOLA, an applicant will be required to lodge a development application under IDAS. The level of assessment applicable to the application will depend upon the impacts or risks associated with the particular levee.

A set of criteria will be used to gauge the level of impact or risk and therefore the category of levee. The number of categories, and their specifications, will be detailed in the code and guidelines to accompany the regulation. The levels of assessment, categories, assessment criteria, and requirements of each assessment level, are the subject of review and discussion by a Technical Working Group, made up of representatives of the state government departments with a technical knowledge of levee management (DNRM; DEWS; and DSDIP).

The Technical Working Group will distribute the draft assessment code for targeted consultation with key stakeholder groups and local governments following the consultation period for this Statement. Comments received on the assessment manager role and levee categorisation as part of the consultation on this Statement will be used as input to the development of the assessment code. Following targeted consultation on the code, it is expected that the code will be finalised in late 2013.

A range of levels of assessment are provided for under the SPA*;* these are summarised in the following table, and further explained below and more detail on the categories of levees can be found in Appendix 6. Note that we are seeking input as to the suitability of these levels of assessment.

Table 4.1 Levels of assessment under SPA and their potential suitability for levees

	Key conditions	Potential suitability (See S 4.3.4)	Example
Impact assessment	Developments cannot be assessed entirely against quantifiable criteria; public notification required	Category 1 levees	A levee designed to protect occupied buildings in an urban area or a large scale rural levee where impacts may extend beyond jurisdictional boundaries
Code assessment	Some discretion required by Assessment Manager; developments cannot be assessed entirely against quantifiable criteria	Category 2 levees	A levee designed to protect an individual or group's agricultural lands and where impacts are limited to within a local government jurisdiction
Self-assessment	Does not raise technical issues requiring expertise	Category 3 levees	A levee designed to protect an individual's property and poses no significant threat to neighbouring properties

4.2.1 Impact assessment

Impact assessment involves the assessment of the impacts of development against relevant state planning instruments (to the extent they are not reflected in the planning scheme) and relevant sections of the planning scheme, including the strategic framework. For impact assessable developments or works, a development permit must be issued before construction can commence. Applications for development permits are assessed by the assessment manager and any applicable referral agencies.

Impact assessable development has the potential for higher impacts or impacts that are largely unknown, requiring broad discretionary assessment. Development should be classified impact assessable development if:

- The development has higher impacts or impacts that are largely unknown and which require greater regulation that those of self and code assessment
- The impacts of development cannot be entirely regulated in a code
- The development will require public notification.

It may be appropriate to use impact assessment to assess high risk levees. This is the approach currently used for referable dams under the *Water Supply (Safety and Reliability) Act 2008*. High risk levees have the potential to cause damages to the surrounding area should they fail or overtop, and to cause serious damage to life or property. It may be difficult to articulate, with complete certainty, the full range of impacts of a high risk levee as they will vary according to their design and climatic and geographic circumstances.

Public notification is required for the construction of this type of levees, inviting public submissions, and third party appeal rights are available.

4.2.2 Code assessment

Code assessment is generally used in assessing development against applicable planning scheme codes and relevant state planning instruments (such as regional plans and state planning policies, where these are not reflected in the planning scheme).

Development should be classified as code assessable rather than impact or self-assessable if achievement of the desired outcomes will require some discretion by the assessment manager when assessing the application. Code assessment is appropriate where:

- The development has low impacts that require more regulation that those of self-assessment
- The impacts of development can be regulated in a code
- Development impacts cannot be assessed entirely against quantifiable criteria.

As with impact assessable development, code assessable developments or works require a development permit before construction can commence. No public notification is required and there are no third party appeal rights.

It may be appropriate to use code assessment to assess the moderate risk levees, as they may not necessarily be assessed against quantifiable criteria. This is the approach currently used under the *Water Act 2000* for assessing applications to take overland flow.

4.2.3 Self-assessment

Self-assessment is used where development outcomes can be clearly articulated and understood through acceptable outcomes in a code. A development permit is not required for self-assessable development provided it complies with applicable self-assessable codes. It can provide a low cost solution for business and government and provides some level of certainty. It is appropriate if:

- the development outcomes can be clearly articulated in quantifiable measures with no element of subjectivity
- the proposed development does not raise technical issues (for example building standards) which require some level of formal expertise when assessing.

Given the difficulty of quantifying outcomes, and the technical requirements to be assessed in relation to most levees, self-assessment will not be suitable in most cases, but may be appropriate for very low risk situations.

4.3 Levee categorisation

Appendix 6 shows a matrix of the categorisation proposed for levees as at the date of this Statement. At this stage, the following **three** categories are envisaged:

Category 1 levees (high risk)
A levee which would pose a threat to life or pose a significant threat to property, infrastructure or agricultural lands will be deemed to be a Category 1 levee. The impact thresholds that would determine whether a levee is a high risk levee are still being determined, but two options are provided in Appendix 6. It may be appropriate for high-risk impact assessable levees to be designated as Category 1 levees.

Category 2 levees
A levee that has no threat to population but a potential to impact on neighbouring properties, but the potential economic impact is lower than a Category 1 levee. It may be appropriate for the moderate-risk code assessable levees to be designated as Category 2.

Category 3 levees
A levee that has no threat to population or potential economic impact on neighbouring properties. It may be appropriate for the low risk self-assessable levees to be designated as Category 3.

The Working Group is exploring ways in which the economic costs can be estimated in a practical and relevant way. Feedback on options for estimating costs, and on the proposed risk categories, are being sought through this Statement.

For the purposes of the Statement, the levels of assessment and the corresponding categories of levees as identified in Table 4.1 will be used interchangeably.

5. Regulatory impact—benefits and costs

This section examines the influence of the proposed regulation across all stakeholder sectors. This includes the key benefits of the regulation overall, as well as specific impacts on each of the stakeholder groups. The stakeholders impacted by the proposed regulation include landholders and businesses, the community, local governments and the State Government.

This section also includes a cost effectiveness analysis.

The analysis of the regulatory impact is limited to Options 4 and 5 as indicated in section 3.1.6. The other options were not deemed suitable in meeting the policy objectives and therefore will not be analysed further. It should be noted for the purposes of consultation that other regulatory options, other than Options 4 and 5, may be considered, such as a sharing of the assessment manager role between State and local governments depending on the category of levee.

5.1 Key benefits of regulating levees

The key benefits associated with the consistent regulation of levees in Queensland are:

- certainty for all levels of government, the community, and the construction industry around what is expected when constructing or modifying a levee
- better information about levees
- improved information and coordination to promote a cohesive approach to floodplain management, including links between land use planning and emergency management procedures
- that levees will be constructed or modified to known and consistent standards.

These benefits will contribute towards addressing the potential risk of increased flooding to landowners and the community from the location, design and construction of new levees and modification of existing levees.

These benefits will be independent of the regulatory option finally selected. They are qualitative in nature, and no attempt has been made to attach monetary values to them.

The cost effectiveness analysis compares the relative costs of the two regulatory options.

5.2 Comparing the regulatory options

As previously outlined, the viable options are:

Option 4—the State Government is the assessment manager for all categories of levee applications.

Option 5—Local government is the assessment manager for all categories of levee applications with the State Government as a referral agency (concurrence) for Category 1 (high risk) levees.

Table 5.1 presents a detailed comparison of the strengths and weaknesses of State and local government capacity and skills.

To summarise the comparison in Table 5.1, the State Government strengths as assessment manager, would include:

- The State Government may provide a more consistent statewide approach to the assessment of levees and a central point of contact and recordkeeping
- The State Government may be able to maintain a group of appropriately skilled and experienced assessors and inspectors
- There may be less reliance on the use of consultants to assess levees in the State Government than in local governments, which may allow for a more efficient system of assessment.

Further, the LGAQ has submitted that the Queensland Government should be responsible for regulating all levees for the following arguments:

- Some local governments do not have the necessary technical expertise or financial means to conduct the scientific studies necessary for proper assessment

- Levees can have catchment-wide implications which extend across local government areas, as well as interstate implications when a council is located near a border with another state
- Other issues of statewide importance such as strategic cropping land and mining developments can impact on levee considerations.

Conversely, the local governments' strengths as assessment manager would include:

- The empowerment of local governments to coordinate the assessment of levees as part of their existing responsibilities for flood management and mitigation
- Local governments may provide one readily accessible locally-based point of contact for all applicants in the council area. It may be less challenging for proponents to contact their local government than to contact the appropriate State Government representative
- The potential increase in the efficiency of the assessment due to the primary role of local governments in development assessment and their local expertise and knowledge of the local government area.

Table 5.1 A comparison of the relative strengths of State and local government capacity and skills

State government	**Local government**
Floodplain management	
Where the impacts of levees cross state and local jurisdictional boundaries, the State Government may be better placed to assess these types of applications.	Levees will likely be a component of a larger development application for which the local government is already assessment manager. If levees are a component of a bigger development it is inappropriate for it to be dealt with by the State Government in isolation of that larger development.
	Levees are a component of a flood management strategy that is usually coordinated by council and therefore approval of levee construction should remain the responsibility of those who are responsible for making and implementing flood management plans.
	Levees are a solution to deal with a conflict between existing/proposed land use regime and natural flooding. As such, they are one component of flood mitigation which is the generally the responsibility of local council, through works programs and through preparation of local planning instruments for Natural hazards. As local councils are responsible for land use planning it is logical that they are responsible for all land protection issues (in the case of floods: local planning instruments for Natural Hazards, disaster management procedures, and approval of construction of flood mitigation works i.e. levees etc.
Applications/decision making/record keeping	
State Government can provide a centralised application, decision making and record keeping system with one point of contact for all applicants. This avoids the greater difficulty and cost of local governments each maintaining their own records which would need to be transferred to the State, standardised and compiled.	Levee proponents may already know who to approach in local councils, can more easily visit the local office, are more likely to deal with staff who understand their situation. There may be less travel time and costs to visit the local office.
A centralised State Government group assessing all applications could potentially deliver greater consistency in the assessment process and application of guidelines.	It is State Government policy to empower local councils to deliver services closer to the community.

While State Government may have less local knowledge, it is possible that a system could be set up to facilitate the transfer of relevant local information to the State Government for assessments and it could be expected that the State Government would develop knowledge of local information and models over time.	Local governments may have better understanding of the local situation and flood behaviour (through local knowledge), making it easier to assess applications without requiring additional information from the proponent. This should reduce assessment times and reduce the costs of the regulation.
If a local council was to be the proponent for a levee it is not ideal if they were required to assess their own application. Making State Government responsible for assessing applications for larger levees avoids the potential conflict of interest that could arise if a local government were assessing its own application.	The potential conflict of interest that could arise if a local council is required to approve its own application for construction of a levee could be managed, for example, State Government could have a concurrence role for larger levees if local council is the assessment manager.
	Local governments are the assessment manager for the large majority of development applications and this, together with their smaller size and flatter structures, should be reflected in more streamlined processes and shorter assessment times.
Staffing/skills/training	
The State Government is able to maintain a group of appropriately skilled and experienced assessors and inspectors.	Depending on respective levels of resources, each council may employ or contract the services of skilled engineers to assess applications and inspect levees that may not justify a full time person.
The State Government has better access to consultants as it already deals with them and many are based in the larger centres.	There is potential for councils to collaborate or engage consultants to undertake assessments, although councils in remote areas may have less capacity to engage a range of consultants.
State Government has expertise in hydrological and hydraulic flood modelling and in dam safety.	Local councils have expertise in floodplain management issues.
Ability to access and gather information and skills from various departments.	
While both State and local governments would need to train staff, if State Government is assessment manager a smaller number of staff would need training as assessments could be centralised.	

For either option, some capacity building would be required as well as the allocation of appropriate resources, as this is a new regulatory regime. If Option 5 is adopted, the State will support local government in their role as assessment manager by providing appropriate guidance and input through technical expertise in its role as referral agency for high risk levees, and will provide local governments with appropriate tools and training to undertake assessment of levee applications through the development of codes, checklists and guidelines. Also, the state will develop the applicable codes under IDAS that are required for the assessment of levee applications, regardless of which option is adopted.

5.3 Impacts of Option 4: State Government as assessment manager

This section explores the regulatory impact for the option where the State Government is assessment manager for all levees.

5.3.1 Impacts on business/individuals

Having a consistent application and assessment process will provide clarity and legal certainty for proponents of levees, particularly when the impact of the levee crosses local council boundaries. It is expected that the impacts on business/individuals will be the same under either regulatory option, that is, whether the State Government (Option 4) or local government (Option 5) is the assessment manager. Comment is sought through this Statement on whether these impacts could be assumed to be the same under each option.

Category 1 levees:
Applicants will most likely not face any greater costs than at present, as most impact assessable Category 1 levees would already involve the preparation of application and design documents, including hydraulic or hydrologic studies.

Category 2 levees:
The regulation may make the process of applying to construct a levee more complex and expensive for most applicants than at present. They will need to submit an application and supporting information to meet the code requirements, which has generally not been required in the past. While the impact will vary depending on local councils' current planning or local law requirements, it is expected that it will range from negligible additional costs to considerable additional cost. The range of costs is due to a number of reasons, including the varying availability of data across the state, the cost of undertaking the modelling which is dependent on the size and location of the proposed levee, and the availability of qualified engineers to undertake or verify the modelling. In some situations, it is expected that new catchment studies will need to be undertaken which also adds to the potential cost.

Category 3 levees:
The regulation will require levee proponents to self-assess low risk levees against a self-assessment code. This may make the process of compiling the relevant information more time consuming due to the need to complete the assessment. Additional costs are expected to remain low due to no modelling requirement for self-assessable levees.

5.3.2 Impacts on Community

The benefits to the community from the regulation of levees include an increased certainty around levee location and construction, improved community safety outcomes due to the need for levees to meet certain structural standards, improved information on what levees are proposed, and the inherent risks that levees pose. It is expected that the impacts on the community will be the same under either regulatory option, i.e. whether the State Government (Option 4) or local government (Option 5) is the assessment manager.

Category 1 levees:
The regulation will require that the community is given notice of any proposal to construct a high risk levee through the impact assessment process, including an opportunity to have their say through a submission on the development application. Submitters to high risk applications would have third party appeal rights.

Costs to the community could arise if the costs incurred by business were passed onto the community in the form of increased charges for goods. Cost may also arise if local government proponents pass on costs through increased taxes, application fees, or by reducing other services. However in some cases local government costs may be relatively low if the flood modelling studies were already required, for example to prepare local planning instruments for natural hazards.

Category 2 levees:
Costs to the community could arise if the costs incurred by business were passed onto the community in the form of increased charges for goods. Cost may also arise if local government proponents pass on costs through increased taxes, application fees to cover the cost of assessing applications, or by reducing other services.

Category 3 levees:
Costs to the community could arise if the costs incurred by business were passed onto the community in the form of increased charges for goods. Cost may also arise if local government proponents pass on costs through increased taxes, application fees to cover the cost of assessing applications, or by reducing other services.

5.3.3 Impact on Local governments

The primary impact for local government under this option is for those cases where the local government is the levee applicant, in which case the local government would have to follow the assessment process. Local governments would also need to provide information and support to the State Government in its role as assessment manager.

Category 1 levees:
Local governments are frequently responsible for the construction of levees for protection of towns, however it is feasible that other proponents may apply to construct or modify high risk (Category 1) levees. The cost of constructing this type of levee is generally significant, and hydrologic studies are usually undertaken as part of the process, owing to the extensive impacts anticipated. Any additional costs arising from their regulation under IDAS are likely to be only a minor component of the total project cost.

The regulation is expected to have minimal impact unless local government is the applicant. Where local government is the applicant, it would need to submit an application to the state and pay the applicable fee; this would involve some additional time and cost in managing the application through the assessment process, including public notification for an impact assessable application.

Category 2 levees:
Local governments will incur some costs through liaising with the State Government and providing information about local conditions and hydrology.

Category 3 levees:
No costs are expected to be incurred by local governments for self-assessable levees.

5.3.4 Impact on State Government

Regardless of the categories determined, and who undertakes the Assessment Manager role, the State Government will incur set-up and ongoing costs associated with:

- documenting codes, guidelines and all supporting documentation (assessment tools)
- training/recruiting staff (either internal or local government) in administering the codes and guidelines.

This will be done in consultation with local governments, who will therefore also bear some costs throughout the process.

Category 1 levees:
There will be significant set-up as well as ongoing costs. The State Government will incur costs associated with processing, assessing and determining applications. The State Government will need to correspond with applicant/s, conduct site inspections and request and review the technical reports as part of the application. The State Government will also depend on the local governments providing relevant information and support.

Category 2 levees:
The set-up costs for Category 2 levees will be similar to Category 1. Assessment costs per levee application is expected to be less than for Category 1 levees.

Category 3 levees:
The State Government will incur the set-up costs and costs of processing and reviewing the applications for self-assessable levees. Impacts are expected to be less per levee than Category 2 due to no fieldwork being required.

5.4 Impacts of Option 5: Local governments as assessment manager

This section explores the regulatory impact for the option where the local governments are appointed as assessment manager for all levees. As stated in section 4.1, this is the default position for this Statement. This position was put forward to encourage debate on the implications of this regulation, particularly on local councils and levee proponents.

5.4.1 Impact on business/individuals

It is expected that the impacts on business/individuals will be the same under both regulatory options. The impacts are described in section 5.3.1.

5.4.2 Impact on the community

It is expected that the impacts on the community will be the same under both regulatory options. The impacts are described in section 5.3.2.

5.4.3 Impact on Local government

Local governments would typically have better access to and knowledge of local information and conditions that the State Government. For this reason, some councils may be more effective in assessing levee applications than the State Government; however, many other councils do not have the appropriate resources or skills in place. Under this option, there will be significant resourcing impacts for local governments, as all local governments with the exception of one do not currently regulate levees. Goondiwindi Regional Council is the only local government which currently regulates levees using local laws (see Appendix 5). Resources may be required to ensure that the local government has the necessary skills to process, assess and determine applications in accordance with IDAS processes. It is assumed that in many councils, additional staff will need to be hired or contracted to enforce the regulation.

Key concerns will be:

- access to appropriately skilled resources/ personnel
- the cost of acquiring the necessary resources, including technical, administrative, accommodation and associated costs.

To offset some of these costs, the Queensland Government will provide supporting documentation to all levels of government involved with the regulation, assist in developing the assessment tools and provide advice and training to local governments in administering the codes and guidelines. In addition, Councils may set their application and renewal fees (if applicable) at cost recovery level.

Category 1 levees:

Where local government is the applicant, they will be required to prepare the application and supporting material in accordance with regulatory requirements for referral to the state for assessment.

Where applications are submitted from private landowners, local government will need to process, assess and determine applications, including consideration of the response from the State Government as the referral agency. Local governments will also need to correspond with applicant/s and request, review technical reports (if required) and conduct site inspections.

Category 2 levees:

Councils that do not currently regulate levees (that is, all councils except Goondiwindi) will incur additional costs associated with processing applications, assessing proposals, and deciding applications. Councils that do currently regulate levees will also incur additional costs in adjusting to the new regulatory requirements. Councils will need to correspond with applicant/s, request and review technical reports and conduct site inspections. It is accepted that these will be significant for many councils.

Category 3 levees:

Local governments will incur the costs of processing and reviewing the applications for self-assessable levees. Impacts are expected to be less per levee as Category 2 due to no fieldwork being required.

5.4.4 Impact on State Government

There will be some administrative costs, especially at the set-up stage. A range of supporting documentation (e.g. codes, checklists and guides) will be developed by the State Government to assist applicants in preparing the development application and local governments in assessing and determining these applications. There will also be costs associated with staff training in the use of the supporting documentation. The State Government will provide training and support to local government staff in the application of the regulation.

Category 1 levees:
As concurrence agency, the State Government will liaise with the relevant local council, review applications and associated documentation against the set criteria, conduct site inspections when necessary, make a determination and provide a referral response back to the council, including refusal of the application.

Category 2 levees:
The State Government will provide advice, training and support where needed to local governments in administering the codes and guidelines.

Category 3 levees:
The State Government will provide advice, training and support where needed to local governments in administering the codes and guidelines.

5.5 Cost effectiveness analysis

A cost effectiveness analysis has been carried out to identify and quantify the potential costs of each of regulatory options 4 and 5. The full cost effectiveness analysis is included as Appendix 7, and key findings are described here and summarised in Table 5.2.

The costs relate to two main roles: that of the proponent for a levee, and that of the assessment manager or referral agency that decides the application for the levee. The proponent could be a rural landholder (likely for smaller levees), local governments or the State Government. The assessment manager is the State Government for Option 4, and local government for Option 5, with the State Government as a referral agency for Category 1 levees.

The present value of Option 4 is $33.1 million over the ten year analysis period,[4] while Option 5 has a present value of $32.7 million. This equates to annual values of $4.71 and $4.66 million respectively.

[4] Present value is the total value of the future benefit stream (ten years) in present day terms—this allows costs and benefits to be compared at the point where decisions are made. This can also be presented as an 'equivalent annual value', which is an annual value for each of the ten years of the analysis.

Table 5.2 Summary of findings of the cost effectiveness analysis

	Option 4	Option 5
Present value[4] over ten years	$33.1 million	$32.7 million
Annual value	$4.71 million	$4.66 million
Share of total costs (based on present value):		
• State Government	$4,269,01 (12.9% of total)	$434,454 (1.3% of total)
• Local government	$526,308 (1.6% of total)	$4,175,321 (12.8% of total)
• Proponents	$28,291,853 (85.5% of total)	$28,095,126 (85.9% of total)

Overall costs between the two options do not differ greatly. This is because the costs are dominated by the costs to levee proponents (almost 85 per cent of total costs), and these do not vary significantly between options. There are some differences in assessment costs between the State and local governments, but these tend to balance each other out. It is recognized that due to greater access to local information, local councils may incur lower costs associated with assessing applications and completing compliance reports, but this is compensated by the assumption that they will rely more on the use of consultants to undertake assessments or provide analysis due to skill and resource limitations when compared to the state government.

A sensitivity analysis was undertaken on the cost effectiveness analysis which showed a near linear relationship between the number of levees assumed to be constructed or modified and the cost to proponents and government. This is understandable as the majority of the costs relate to the application to construct a levee by a proponent and the assessment of that application by government. The assumptions used in this analysis are detailed in Section 1.3 of Appendix 7 and community feedback is sought on their validity in order to further refine the cost estimates.

A real discount rate has been applied to the figures in the cost effectiveness analysis to calculate the present value of costs. Changing the discount rate to three per cent and 10 per cent had only a relatively small impact on the overall cost, indicating that this is not a key variable in the analysis.

A survey was sent to councils seeking their input on the number of existing levees, likely future growth and costs associated with assessments. The results have been used to guide the cost effectiveness analysis.

In summary, the results of the survey, in which 40 of the 73 councils responded, showed:

- 44 existing urban or town levees across the state in councils represented in the survey
- 43 locations where an interest has been flagged or a plan in place to build levees in urban or town areas in the future, but a level of uncertainty existed as to if and when these levees would be built;
- Difficulty in estimating the number of rural or agricultural levees, as many councils could only estimate that the number was in excess of 100 or 1000 levees, or no information was available at all
- 15 councils indicated an increasing number of levees being proposed or constructed in their area, with the most common reason being the recent floods between 2010 and 2013.

Further information and estimates of levees are welcome to be submitted through the consultation phase for this Statement.

5.6 Conclusion

The Queensland Government has determined that the preferred options for the levee regulation policy are options 4 and 5. The status quo, expansion of local laws and self-regulatory options were deemed not suitable to achieve the objectives of this proposal. This Statement focuses on assessing the

impacts and costs to businesses, individuals, the community, the state and local governments associated with implementing Options 4 and 5.

There are strengths and weaknesses in making either State Government the assessment manager (Option 4) or in making local government the assessment manager (Option 5). The State Government may provide a more consistent state-wide approach to the assessment of levees and a central point of contact and recordkeeping, and may be able to maintain a group of appropriately skilled and experienced assessors and inspectors, allowing more efficient assessment. Local governments may provide more readily accessible points of contact for applicants, may provide more efficient development assessment processes, and can integrate levee assessment into their existing responsibilities for flood management and mitigation.

The costs of these two options are similar, with Option 5 being marginally more cost effective.

While the Queensland Government has not yet made a decision on who will be assessment manager, in order to encourage debate on the issue it is proposed that Option 5 (local governments as assessment manager for all levee applications, with the State Government acting as a referral agency for Category 1 levees only) be adopted as the default position.

It is recognised that there are advantages and disadvantages (such as access to local knowledge, and the cost implications of undertaking assessments) of the two options. In order to encourage debate on the implications of this important issue, particularly on local councils and levee proponents, it was decided to identify a default position.

It is recognised that there may be alternative regulatory options other than options 4 and 5 and feedback is welcome on possible alternatives, such as some type of sharing of the assessment manager role between State and local governments depending on the category of levee.

This proposal is intended to encourage the community, stakeholders and government (local and state) to fully consider the implications of the issues raised in this Statement and to provide feedback on its implications and suggest the most appropriate approach to implementing this regulatory framework.

6. Consultation

6.1 Background

To develop initial proposals a whole of state government working party was convened to identify options on the most appropriate mechanism for the regulation of levees. The working party consisted of representatives from the following Queensland Government departments—Department of Local Government; Department of Agriculture, Fisheries and Forestry; Queensland Reconstruction Authority; Department of Community Safety; Department Transport and Main Roads; Department of Energy and Water Supply; Local Government Association of Queensland; Department of Environment and Heritage Protection. Representation from the LGAQ also attended meetings to provide advice.

Representatives from the working group and other State Government departments were consulted on the draft Statement. The working party also provides project oversight, discusses implications of the regulation from the perspective of State Government departments and local governments, and makes recommendations on issues related to levee categorisation and the assessment code.

6.2 Preliminary consultation

A discussion paper on the definition of a levee was released for preliminary targeted consultation in late July 2012, to the Queensland Farmers' Federation (QFF), AgForce and the LGAQ. The majority of the submissions supported the proposed exclusions and inclusions of the definition, in particular the exclusion of irrigation infrastructure other than 'levee related infrastructure', prescribed farming activities and structures regulated under other Acts.

Further targeted consultation was undertaken with the QFF, AgForce, Canegrowers and the LGAQ in September 2012 in relation to the proposed amendments to the *Water Act 2000*. The proposed amendments were noted by the group and no objections were raised.

It should be noted that LGAQ expressed concern with the decision to proceed with the inclusion of amendments related to levees without proper resolution of a number of aspects. For example, LGAQ pointed to the lack of adequate details on the nature and scale of the impacts that regulation will seek to avoid or mitigate and thereby no understanding of the level of assessment that will be required by the assessment manager. LGAQ and other key stakeholder groups will have the opportunity to raise these concerns during the consultation phase for this Statement. In addition, these groups will have the opportunity to provide feedback on the supporting codes and guidelines.

6.3 Committee process

In line with normal practice, a Parliamentary Committee (the Agriculture, Resources and Environment Committee) invited public comment on the provisions of the LWOLA Bill. The Committee's views were taken into consideration prior to the passing of the LWOLA Bill on 2 May 2013.

Seven submissions relating levees were received and are shown in Table 6.1.

Table 6.1 Submissions to the Parliamentary Committee on levees

Submitter	Issue raised
Queensland Conservation Council	Levee assessments should take environmental effects into consideration
SEQ Catchments	
Healthy Waterways	
Queensland Resources Council	Wish to confirm that mining earthworks will be excluded from provisions of the legislation
Queensland Farmers Federation	Generally support the legislation, provided irrigation works are not captured Some concerns about possible retrospectivity
AgForce	
Herbert River Improvement Trust	Concern that the legislation will 'lock-in' existing inequities whereby some landowners have levees at the expense of others

The issues raised in the consultation by Queensland Conservation Council, SEQ Catchments, Healthy Waterways and the Herbert River Improvement Trust will be taken into consideration in the development of the supporting codes and guidelines. The submissions and DNRM's response to the submissions can be found on the Queensland Parliamentary website at www.parliament.qld.gov.au/documents/work-of-committees/publications.

In passing the LWOLA Bill, Parliament recommended that DNRM monitor the effects of existing levees. As part of the implementation of the regulatory framework for levees, DNRM will establish a monitoring system for the approval of new levee construction or modification of existing levees. That monitoring system will also include the ability for the government to identify any existing levees that may currently, or as a consequence of their failure, pose a threat to population or potentially have a significant economic impact. No decision has been made other than for the monitoring system to identify existing levees, as this regulation does not apply to existing levees unless they are modified.

6.4 Public consultation

Public comment is invited on the issues raised in this Statement, particularly on proposed options four and five, the proposed categorisation of levees, and the role of assessment manager. It is expected that most local governments, as well as landholders and community members in flood-prone areas, will have a particular interest in providing feedback.

The Statement will be available for a period of 42 days from the date of its release. During this period, the Statement will remain available on the DNRM website, and printed copies will be available on request.

The department has developed a consultation plan for the Statement. It is expected that the Statement will be publicised on the Get Involved website, the DNRM website, advertisements placed in two statewide newspapers and in regional newspapers, and via social media. Councils and interested bodies will be contacted by letters and emails. In addition, DNRM will provide speakers to public meetings organised by councils and interested bodies on request subject to numbers. Comments can be submitted via email, fax, post or on-line (refer to the 'Have your say' section in this document for further details).

As part of the consultation process, DNRM will also consult directly with key stakeholder groups, such as AgForce, Queensland Farmers Federation and the Local Government Association of Queensland, on the implications for the options and the estimates and assumptions behind the cost effectiveness analysis. A Local Council Testing Group is being formed to allow councils that have indicated an interest in the regulation to provide detailed input on the two options from the local council perspective. The group will be specifically targeted as part of the consultation phase to provide feedback on the assumptions and cost estimates included in this Statement. The group will likely be composed of councils from the southwest, northern coastal and southeast regions. Targeted consultation is proposed for areas where a high interest in levees has been identified through the survey of local governments.

Stakeholder feedback is critical to ensuring that the regulatory framework reflects the extensive knowledge, skills and experience of key interested parties throughout Queensland. The Queensland Government will continue to work with the other state agencies, local councils and stakeholder groups and consider public feedback on the Statement as the policy is further developed and implemented.

7. Consistency with other policies and regulation

National Competition Policy

The guiding principle of the Competition Principles Agreement, under the National Competition Policy, is that legislation should not restrict competition unless it can be demonstrated that the:

- benefits of the restriction to the community as a whole outweigh the costs
  or
- the objectives of the legislation can only be achieved by restricting competition.

The proposed regulatory framework will not restrict competition and is consistent with the Competition Principles.

Fundamental Legislative Principles

The proposed regulatory framework is consistent with the Fundamental Legislative Principles under the *Legislative Standards Act 1992.* These Principles were considered during the development of the proposed regulatory framework. It is not intended to create inconsistencies with maintenance of 'the rights and liberties of individuals, and the institution of Parliament' as laid out in the Fundamental Legislative Principles.

8. Implementation, evaluation and compliance support strategy

The Queensland Government tabled its response to the Commission's Final Report in June 2012. It identified key areas of work and allocated responsibility for these to Implementation Groups. Implementation groups were established along five key streams—Planning, Building, Environment and Mines, Emergency Management and Dams. These groups are driving action in delivering the Commission's recommendations. The Planning Implementation Group has responsibility for establishing a framework for levee regulation.

A Working Party to address the regulation of levees was formed in 2012, and includes representatives from the Department of Natural Resources and Mines, Department of State Development, Infrastructure and Planning; the Department of Local Government; Department of Energy and Water Supply, Department of Agriculture, Fisheries and Forestry, and the Local Government Association of Queensland.

The Working Party will develop:

- a common set of considerations to assess a development application to construct a levee
- the technical information required for an application under IDAS
- avenues for resolving and agreeing on referral triggers, risk assessments and impact thresholds
- options for incorporating issues relating to levee modification, maintenance and decommissioning.

The Working Party will also develop supporting documentation to support all levels of government involved with levee regulation. The State Government will develop assessment tools such as codes and guidelines, as well as training and education workshops.

Details of how the framework will be implemented will be available later in 2013 and will include timing for putting the new provisions into operation so that levee applications can be processed using the new framework. The implementation of the framework will comprise the development of codes and guidelines, amendments to subordinate legislation and training and capacity building. Targeted consultation will be held with key stakeholder groups and local governments to ensure that the assessment requirements outlined in the codes and guidelines are practical and proportionate to the level of risk posed by the proposed categories of levees.

Review and evaluation strategy

As required, a major post-implementation review will be conducted within 10 years of the regulations' commencement date to assess the impact, effectiveness and continued relevance of these regulations. The first review will occur four years after commencement, unless an earlier review is indicated.

The review will consider:

- Number of levee applications received, in total and by region
- Effectiveness of assessment criteria
- Number approved on first submission and in total
- Number refused and the reasons for refusal
- Number of appeals lodged/ resolved
- Number of complaints made to local and state governments
- Known instances of non-compliance.

The review will also include qualitative feedback about the impacts of undertaking the assessment manager and concurrence agency role, including:

- Ability to recruit and retain suitably qualified staff
- Degree of difficulty in reaching satisfactory outcomes for applicants and government
- Extent of hydrologic information now available to assist with floodplain management
- Suggestions for improving aspects of the legislation.

Appendix 1 Queensland Floods Commission of Inquiry: Recommendations relating to Levees

Recommendation No.	Recommendation
7.19	Levees should be regulated.
7.20	The Queensland Government should consult with councils to determine an effective method for the regulation of the construction of levees in Queensland. In particular, the Queensland Government should consider: • requiring a development permit for the construction of a levee by designating levees as assessable development in the Sustainable Planning Regulation 2009 or • requiring, by way of a state planning policy or mandatory provision in the Queensland Planning Provisions, that councils nominate the construction of a levee as assessable development in their planning schemes.
7.21	The Queensland Government should consult with councils to formulate a definition of 'levee' to identify what should be regulated.
7.22	There should be a consistent process for the determination of applications to build levees. That process should include: • consulting landholders who may be affected by the proposed levee • obtaining or commissioning appropriate hydrological and hydraulic studies to assess the impacts of the proposed levee.
7.23	There should be a common set of considerations in the decision whether to approve an application to build a levee, including: • the impacts of the proposed levee on the catchment as a whole • the benefits of the proposed levee to the individual or entity applying to build the levee and to any nearby community as a whole • any adverse impacts on other landholders, including the risk of levee failure • the implications of the proposed levee for land planning and emergency management procedures • whether any structural, land planning or emergency management measures can be taken to mitigate the adverse impacts of the proposed levee.

Appendix 2 Approaches to levee regulation

The following examples demonstrate existing regulatory tools used by various governments to manage levees, and their suitability for the current proposal.

1. Queensland Government

i) Drainage and embankment areas

Historically, the Department of Natural Resources and Mines (DNRM) regulated levees under the *Water Resources Act 1989* (WR Act) by granting waterworks licences. These licences permitted drainage and levee bank activities in designated areas of Queensland, and in areas where local governments did not provide for the regulation of those activities. These licences were transitioned to become development permits under the *Sustainable Planning Act* (SPA) when the WR Act was repealed and the *Water Act 2000* (Water Act) came into effect.

Drainage and embankment areas are characterised by consistent flooding on agricultural land which necessitates the construction of levees ('embankments'). There are only three declared drainage and embankment areas; these are located in the North Queensland catchments of the Haughton River, Major Creek, and the Tully and Murray rivers. There are no plans in the immediate future to expand the use of drainage and embankment areas in Queensland.

The object of the Water Act is to provide for, amongst other things, the sustainable management of water and the establishment and operation of water authorities. Including the regulation of levees under the Water Act would not be appropriate, as levees are often built some distance away from a watercourse and merely redirect overland flow.

Further, drainage and embankment areas were first created before the enactment of the *Integrated Planning Act 1997*, which created the Integrated Development Assessment System (IDAS). IDAS is now contained in the SPA. The theory behind IDAS is that all development should be assessed under the one system. Since levees constitute a form of development, it would be inconsistent with the IDAS system to assess them under the Water Act. However, it is important that the new framework takes into account Water Act links.

ii) River Improvement Trusts

A River Improvement Trust (RIT) is a statutory authority constituted under the *River Improvement Trust Act 1940* (RIT Act*).* Their objective is to protect and improve rivers, repair and prevent damage to rivers and prevent or mitigate flooding of land by riverine flood.

The primary role of a RIT is to plan, design, finance, undertake and maintain stream improvement works for the benefit of the community within its river improvement area. The RIT Act provides a trust with the powers to undertake these functions including the ability to raise funds, enter land, occupy land, enter into contracts and carry out works. A RIT can also apply for funding to undertake levee works in its annual works program under the Natural Disaster Resilience Program.

River Improvement Trusts have been created to undertake works. They are not created as regulatory bodies to assess other people's development, and the RIT Act does not contain any mechanisms by which they could do so. As discussed above in relation to drainage and embankment areas, it would be inconsistent with IDAS to create another mechanism for the assessment of development. **Therefore, it is not considered appropriate to regulate levees under the RIT Act**.

iii) Environmentally relevant activities

The guideline entitled *Structures which are dams or levees constructed as part of environmentally relevant activities*[5] provides information about the procedures for authorising structures which are dams or levees constructed as part of an activity under an environmentally relevant activity pursuant to the *Environmental Protection Act 1994.*

Environmentally relevant activities (ERAs) are industrial activities with the potential to release contaminants, such as:

- chemical manufacturing
- waste treatment
- spray painting
- some agricultural activities such as piggeries, prawn farms and cattle feedlots
- mining activities.

For dams or levees constructed as part of ERAs, protecting human life and the environment requires that the standards used for the design, construction, operation, modification and decommissioning of regulated structures mitigate the hazards arising from potential failure or collapse of those structures.

The administering authority requires that any regulated structure be designed, constructed, operated and maintained to an engineering standard appropriate to the nature of the contents of the dam, the purpose for which it is to be used, and the environment in which it is located and will discharge. The administering authority also requires that the condition of regulated structures and their operations will be monitored on a regular basis, and that timely action will be taken to prevent or minimise any actual or potential environmental harm.

Where a levee is constructed as part of an ERA, the Queensland Government has made the decision that no further regulation is required because all necessary aspects of construction will have been considered as part of the process.

Environmentally relevant activities cannot be used to regulate **all** levees because the process only applies to a small subset of all levee construction. The proposed levee regulation framework will focus on regulating new levees that are **not** associated with an ERA.

iv) State Planning Policy 1/03—Mitigating the Adverse Impacts of Flood, Bushfire and Landslide

SPP 1/03 is a statutory instrument expressing the State's interest in ensuring that the natural hazards of flood, bushfire, and landslide are adequately considered when making decisions about development. It contains development outcomes for local governments to achieve when preparing local planning schemes, assessing development applications and designating land for community infrastructure.

In preparing a planning scheme, SPP1/03 requires the local government to identify a natural hazard management area (NHMA), based on an adopted flood event (a Defined Flood Event) for mitigating risk and managing development.

The identification of a NHMA enables the development of local planning scheme measures including codes designed to achieve the state interest. To date, codes that reflect the state interest have been used to assess some aspects of operational works but not the regulation of levees.

SPP1/03 is not currently used to regulate levees and is not considered to be a suitable means to regulate new levees.

[5] See following link for copy of the guideline: http://www.ehp.qld.gov.au/land/mining/pdf/guide-structures-dams-levees-mining-em634.pdf

SPP1/03 is currently under review to take account of the Commission's recommendations (as relevant) and the Queensland Government's planning reform agenda which includes a move to a single State Planning Policy.

The single State Planning Policy will include all of the state interests that local governments must take into account in preparing or amending local planning instruments, and that the state may consider in preparing and amending regional plans in the one document.

The single State Planning Policy is expected to be in effect in late 2013.

The performance based approach to the single State Planning Policy does not have the appropriate head of power or an appropriate mechanism to regulate levees, for example through a code.

2. Local governments

There is inconsistency of approach towards levee construction across the state. In some regions (for example, Lockyer Valley) there is no requirement to advise council of an intention to construct a levee. In other regions, councils may rely on planning schemes or local laws to impose some controls.

i) Planning schemes

Local government planning schemes provide an integrated planning policy for the future strategic direction of a particular local government area. They describe a council's plan for future direction and can span 20 years or more. They deal with land use, development, infrastructure and valuable features of the area, and provide measures, such as codes, to facilitate the required strategic outcomes.

Applications for development made assessable by the planning scheme follows the IDAS process under the SPA, which sets out the assessment and decision rules for development applications.

Some local governments deal with levees by listing development that involves water cycle management infrastructure for flood mitigation as being **exempt development**. Other local governments have planning provisions for filling and excavating which, arguably, covers the process for constructing or maintaining a levee. The applicable level of assessment for excavation and fill is generally based on the specifications for size, quantity and location of the works.

For example, the Burdekin Shire IPA Planning Scheme 2011 provides that operational work for excavation and filling is:

- self-assessable for excavation to less than a specified depth
- code-assessable for filling which involves net filling exceeding a specified volume or depth
- exempt in the Rural Zone and for filling to a depth of 100mm or less or involving less than 50 cubic metres and for excavation to a depth of 1 metre or less.

ii) Local laws

Some local governments use alternative assessment processes outside of IDAS, such as local laws, to regulate development.

Former local laws for levees existed in the following pre-amalgamated local government areas—Peak Downs and Emerald (Central Highlands), Gatton Shire (Lockyer Valley Regional Shire), Murgon Shire (South Burnett), Millmerran Shire (Toowoomba) and Chinchilla Shire (Western Downs).

Currently only one local government has a local law to regulate levees—Goondiwindi Regional Council. Under the Goondiwindi Regional Council Levee Banks (Application of Continuing Local Law) Local Law 2011[6], the local government regulates levees with a view to ensuring any potential adverse effects are considered and penalties can be incurred if a person constructs a levee without a permit.

The specific objective of Goondiwindi's local law is to:

a) prohibit construction of levee banks without the local government's permission
b) regulate the construction and maintenance of levee banks

[6] This local law adopts the previous Waggamba Shire Council Local Law No.26 (levee banks) 2004).

c) provide for requiring changes to levee banks constructed before (retrospective) and after the commencement of the local law that are considered likely to cause damage
d) ensure that levee banks do not alter the overland flow of water in a way which injuriously affects land.

A council officer has advised that the purpose is not to prevent levees from being constructed, but rather to ensure any adverse effects are taken into consideration.

Under the local law, applications must outline specific information such as the total length, maximum height, width at top and base of levee, materials of which the levee will be constructed, and information regarding whether the levee is one side of a stream, etc. This information must be accompanied by a hydraulic report which demonstrates the likely hydraulic impacts of the proposed works as certified by an approved engineer or suitably qualified surveyor.

Following the lodgement of an application with the associated fee[7], the application is advertised as a public notice in the local newspaper at the beginning of a 21 day submission period. The shire engineer may undertake a site inspection as part of the assessment process which includes assessing whether the proposed levee bank complies with a set of specified performance criteria. The local government may also impose conditions as outlined in the local law.

When deciding the application, the local government must consider:

- the application and accompanying material
- the hydraulic report
- every submission properly made to it
- the report of the shire engineer
- any other information the local government considers relevant.

Following a decision being made on the permit, the local government must provide a decision notice to the applicant and to each person who made a submission on the application.

Most of the estimated 100 levees in the region are earth banks, used predominantly by irrigation famers, especially cotton growers. The floodplains in the area are very wide, so levees do not necessarily significantly affect water flows. Goondiwindi Regional Council charges application and renewal fees as well as penalty fees for not complying with a compliance notice, or the conditions of a permit.

Permits are provided for a five year period. If a landowner wants to continue to have the levee, they must apply to renew their permit. Council undertakes a site inspection to determine whether the levee has been maintained and not modified and then provides a new permit (with or without conditions), for another five year period.

Fees are charged for initial applications and renewals. A Council officer has advised that 'in general' Council would recover their costs on application processes, noting that some applications will require more detailed consideration than others. It is reported that the fees charged are not considered to be controversial, and are an accepted part of the levee construction process.

This system of regulating levees is not considered ideal in the longer term. Section 37 of the *Local Government Act 2009* prohibits a local government from making a new local law which regulates development, such as the construction of a levee. However, this section allows a local government to retain an existing local law dealing with such matters, and to amend or repeal that local law until a new planning scheme comes into effect.

The continued use of alternative regulation or assessment processes outside of IDAS, such as local laws, is not supported by the *Sustainable Planning Act 2009* framework, which requires that regulation of such development be integrated into planning instruments for assessment under IDAS processes.

3. Other jurisdictions

Levees are regulated in some other Australian states, notably Victoria and New South Wales.

[7] See fee schedule for Goondiwindi Regional Council in section 4.2.3.

The regulatory environment in Victoria is similar to that in Queensland, with a patchwork of levee regulations at the discretion of local governments and Catchment Management Authorities (CMAs). The construction of new levees is managed through local government planning schemes. Common provisions in all planning schemes provide that, in most circumstances, the construction of new levees requires an application for a planning permit. In most situations such applications are referred to the relevant CMA. In circumstances where flood mitigation works are carried out by the municipality or floodplain management authority, there are exemptions from the need for a planning permit.

Victoria is currently undertaking a review of its levee regulations in response to an inquiry into flood mitigation infrastructure.

In New South Wales, local governments have lead responsibility for controlling the development of flood prone land, but the Department of Environment, Climate Change and Water (DECCW) of the NSW Government plays a key role in helping councils manage flood threats.

Provisions in the *Water Act 1912* (NSW) (Water Act) provide for the preparation of floodplain management plans by local governments and DECCW (for rural areas) in accordance with the gazetted Floodplain Development Manual 2005. The construction of levees is a component of those floodplain management plans. The floodplain management plans then form the basis for updating local government planning instruments and determining flood control works under the Water Act. The Floodplain Development Manual is also called up under section 733 of the *Local Government Act 1993* (NSW) and gives local governments exemption from liability for any advice furnished, thing done or omitted to be done that is substantially in accordance with the principles contained in the manual.

The NSW Government's Flood Prone Land Policy is directed at providing solutions to existing flooding problems in developed areas and ensuring that future developments will not create flooding problems in other areas. The State Government subsidises flood mitigation works to alleviate existing problems and provides specialist technical advice to assist councils with their floodplain management responsibilities.

The NSW Government provides technical and financial support to local councils to develop Floodplain Risk Management Plans which include the following stages:

1. Flood Study
2. Floodplain Risk Management Study
3. Floodplain Risk Management Plan
4. Implementation of the Plan.

Appendix 3 Current extent of levees in Queensland

As noted by the Commission, the current inconsistent legislation of levees has led to a lack of information about the number of levees that exist across the state, their size, longevity and maintenance status. A questionnaire was circulated to all local governments in March-April 2013 to gather more information on the prevalence and likely future construction of levees in local government areas. A total of 40 local governments out of the 73 which received the survey responded.

Existing levees

A total of 44 levees have been constructed in urban or town areas across the council areas represented in the survey. Examples of levees constructed for town protection include (local government area in brackets): Bedourie (Diamantina), Charleville (Murweh), Dirranbandi (Balonne), Goondiwindi (Goondiwindi), Mackay (Mackay), Proserpine (Whitsunday), Emerald (Central Highlands), Gatton (Lockyer Valley), Murgon (South Burnett), Millmerran (Toowoomba) and Chinchilla (Western Downs).

The extent of private levee construction across the state is largely unknown. In Goondiwindi where some information is available, there are an estimated 100 levees in the region. These are earth banks, predominantly constructed on irrigated cotton farms. In the Lockyer Valley, levees have been used for some decades to protect cropping land from flooding from the numerous local creeks, and there have been further levees built following the 2011 floods. The survey results showed that four councils indicated that there were in excess of 100 levees in their council area and one council indicated more than 1000 levees. Five councils stated that the number of levees within their areas was unknown.

Privately constructed levees are also known to exist in the following local government areas, as councils in these areas have enacted local laws for levees in the past:

- Central Highlands
- Maranoa
- South Burnett
- Toowoomba
- Western Downs
- Whitsunday
- Hinchinbrook
- Cassowary Coast
- Burdekin
- Mackay.

New levees

On 25 November 2012 the State Government announced $13.4 million of projects to help local governments deliver the Commission's recommendations. This is the first instalment of a $40 million fund to be rolled out over the next three years.

Levees included in this package include:

- $2.3 million for Lockyer Valley Regional Council for a 3 kilometre levee around Forest Hill and a 7 kilometre levee around Laidley
- $3.5 million for Maranoa Regional Council for a 6.5 kilometre levee in Roma.

In addition, a $14 million project to protect Charleville from future flooding was undertaken in late 2012. Levee banks were constructed to divert water from Bradley's Gully into the Warrego River before it flows through the main part of town. A secondary diversion bank was built to cope with the overflow of water from the gully. Murweh Shire Council has already put in a third levee bank to contain an area of the Warrego River that breaks out in big floods.

The Murweh Shire contributed $1 million to the project, with the rest funded equally by the federal and state governments. Approximately $2.8 million was spent on a new bridge that is made necessary

when the diversion channel and levee banks cut across an existing access road. It has been noted that although flooding cannot be totally prevented, the likelihood can be reduced.[8]

The survey of local councils showed that fifteen councils indicated an increasing number of levees being proposed or constructed in their respective areas. The most reason provided for the increasing trend was the recent floods from 2010-2013. Other reasons included increasing insurance costs, changing land use patterns and renewed interested in protecting agricultural lands.

[8] As stated by the project engineer David Murray (CDM Smith) for the recent Charleville levee—David Murray Queensland Country Life, 26 November 2012.

Appendix 4 Definition of a levee

The Land, Water and Other Legislation Amendment Bill 2013 defines a levee as follows:

1 A **levee** is an artificial embankment or structure which prevents or reduces the flow of overland flow water onto or from land.

2 A levee includes levee-related infrastructure.

3 However, the following are not levees—

a. prescribed farming activities;

b. fill that is—

i. deposited at a place for gardens or landscaping, including, for example, landscaping for the purposes of visual amenity or acoustic screening; and

ii. less than the volume of material prescribed under a regulation;

c. infrastructure used to safeguard life and property from the threat of coastal hazards;

d. a structure regulated under another Act including, for example, the following—

iii. a levee constructed as emergency work under the Planning Act, section 584 or 585;

iv. a structure constructed under an approved plan under the Soil Conservation Act 1986;

v. a structure whose design takes into account the impacts of flooding or flood mitigation but which is not primarily designed for flood mitigation;

Example—

a public road within the meaning of the *Transport Infrastructure Act 1994*

vi. a structure constructed within the bed, or across a bank, of a watercourse, including, for example, a weir or barrage, the construction of which was carried out under this Act and for which a development permit under the Planning Act was given;

vii. an embankment or other structure constructed for long-term storage of water under the Water Supply Act;

Examples—

a ring tank or dam

e. irrigation infrastructure that is not levee-related infrastructure.

irrigation infrastructure means water infrastructure or other infrastructure constructed, erected or installed for the supply of water or the storage and distribution of water for the irrigation of crops or pastures.

Examples of irrigation infrastructure—

a supply channel, head ditch or tailwater drain

levee-related infrastructure*,* for a levee, means infrastructure, including irrigation infrastructure, that is—

a. connected with the construction or modification of the levee; or

b. used in the operation of the levee to prevent or reduce the flow of overland water onto or from land.

Examples of infrastructure for paragraph (b)—

a channel, drain, outfall or pipe

prescribed farming activities means—

a. cultivating soil; or

Examples—

clearing, replanting and broadacre ploughing

b. disturbing soil to establish non-indigenous grasses, legumes or forage cultivars; or

c. using land for horticulture or viticulture; or

d. laser levelling or contouring soil.

Appendix 5 Local government fees and charges for levees—Goondiwindi Regional Council

In accordance with Section 97 of the *Local Government Act 2009*, local governments may set cost recovery fees and charges for the provision of various activities. The fees shown below have been sourced from the Goondiwindi Regional Council, which still has a local law on levees. Table 1 shows some of the possible costs incurred by the proponent and/or assessment manager for a Category 2 levee.

Table 1. Example of local government fees and charges for levees

Example—General fees	Final fee (GST incl)[9]
Pre-lodgement meetings with Council officers	First hour $150.00 (p/hr thereafter $100.00
Submission of Information required by a Notice of a Not Properly Made Application	$50% of original fee for each submission
Amendment to Application	50% of original application fee
Permit to erect levee banks and drains—for each 5km or part thereof	$1310.00
Renewal fee—for each 5kms of part thereof	$420.00
Hydraulic and/or Hydrology report (if required)	(each) $5,000 - $30,000
Preparation of application Including: - lot plan descriptions - construction materials/type - length, height, width of levee - position of watercourses, roads or other existing works	variable
Assessment fees (by local council) (e.g. travel time, inspection costs)	Cost recovery
Enforcement—some examples under the local law: - If a person contravenes a provision of the local law or condition of a permit and does not comply with a compliance notice - A person must not construct a levee bank without a permit. - A holder of a permit must ensure the conditions of a permit are complied with.	 100 penalty units 100 x $75 per penalty unit = 7500 200 penalty units 200 x $75 per penalty unit = 15,000 As above

Source: Goondiwindi Regional Council—Schedule of fees and Charges 2012-13

[9] Goondiwindi Regional Council Schedule of Fees and Charges 2012/2013

Appendix 6 Draft categorisation of levees: comparison of requirements according to category

	Category 1	Category 2	Category 3
Assessment type	Impact assessable	Code assessable	Self-assessable
Levee risk	High—Levees that pose a threat to life or pose a significant threat to property, infrastructure or agricultural lands	Moderate—Levees that may have a moderate impact on property and infrastructure	Low—Levees that may have a negligible impact on other properties
Threshold option 1: economic example	Population at risk or estimated economic impact to offsite property or assets greater than $5m	Estimated economic impact to offsite property or assets less than $5m	No economic impact on offsite property or assets
Threshold option 2: physical example	Population at risk or incremental flood level 300mm or greater above offsite occupied building floorboards	Incremental flood level less than 300mm above offsite occupied building floorboards	No incremental flood level to offsite occupied buildings
Assessment manager option 1	Local government with State Government as referral agency	Local government	Applicant
Assessment manager option 2	State Government	State Government	Applicant
Examples	A levee designed to protect occupied buildings in an urban area or a large scale rural levee where impacts may extend beyond jurisdictional boundaries	A levee designed to protect an individual or group's agricultural lands and where impacts are limited to within a local government jurisdiction	A levee designed to protect an individual's property and poses no significant threat to neighbouring properties
Conditions on assessment type (impact, code, self)	• development cannot be assessed entirely against quantifiable criteria; • requires broad discretionary assessment against principles of the *Water Act 2000*; • difficult to articulate the full range of impacts; • requires public notification; • third party appeal rights.	• development cannot be assessed against quantifiable criteria; • impacts can be regulated sufficiently by a code; • allows discretion by assessment manager; • no public notification and no third party appeal rights; • more regulation than self-assessable due to nature of impacts.	• development outcomes are clearly articulated in quantifiable measures; • development does not raise technical issues which require some level of expertise to assess

* In line with the Floods Commission of Inquiry, impact assessments for category 1 and 2 levees must include at least:

- Demonstration of impacts of levee on the catchment as a whole
- Demonstration of impacts of the levee on life, critical infrastructure and other assets
- Description of the benefits of the levee to the community
- Implications of the levee for land planning and emergency management procedures.

Appendix 7 Cost effectiveness analysis

Executive summary

This analysis relates to a proposal to establish a consistent regulatory approach to the construction of new levees and the modification of existing levees in Queensland. The focus of the proposed framework is to ensure that levee proponents adequately assess the levee's impact on neighbouring properties, the community and the catchment as a whole.

As identified in the Regulation of Levees in Queensland: Consultation: Regulatory Impact Statement (the Statement), two viable options for an assessment manager/concurrence agency to implement the levee regulatory framework under the tools provided by the *Sustainable Planning Act 2009* (SP Act) have been identified:

Option 4: The State Government acts as assessment manager for all levee applications

Option 5: Local governments act as assessment manager for all levee applications, with the State Government acting as a referral agency (concurrence) for high risk levees only.

A cost-effectiveness analysis has been carried out to help illuminate the potential costs of each of these options.

The types of costs that have been considered relate to two main roles: that of the proponent for a levee, and that of the manager that regulates the levees. The proponent could be a rural landholder (likely for smaller levees), local governments or the State Government. The manager of the regulations is the State Government for Option 4, and local governments for Option 5.

The present value of Option 4 is $33.1 million over the ten year analysis period. [1] This has an equivalent annual value of $4.7 million a year. Option 5 has a present value of $32.7 million, and an equivalent annual value of $4.7 million a year.

The majority of costs—around 85% of total costs—are borne by the proponents of levees.

This high proportion of costs for proponents does not change significantly between options, which leads to the result that there is only a small difference between Options One and Two.

It is assumed local governments can undertake assessments in half the time of the State Government, so despite the assumed additional use of consultants, Option 5 is slightly cheaper than Option 4.

Neither option is clearly the most cost-effective. This could change depending on new information from consultation. In the interim, the relative costs of different elements of the options could help with the design of the proposed regulations.

[1] Present value is the total value of the future benefit stream (ten years) in present day terms - this allows costs and benefits to be compared at the point where decisions are made. This can also be presented as an "equivalent annual value", which is an annual value for each of the ten years of the analysis.

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1.0 Introduction

1.1 Background

The State government proposes to establish a consistent regulatory approach to the construction of new levees and the modification of existing levees in Queensland. The focus of the proposed regulatory framework is to ensure that levee proponents adequately assess the impact on neighbouring properties, the community and the catchment as a whole.

The Queensland Floods Commission of Inquiry (the Commission) was established following the floods of 2010/2011. In total, the Commission made 177 recommendations, 123 of which related directly to the Queensland Government. The Queensland Government has committed to implementing all recommendations that relate directly to the State. Five of these relate specifically to the regulation of levees and this proposal is intended to deliver on those recommendations.

As identified in the Statement, two viable options for assessment manager/concurrence agency to implement the levee regulatory framework under the tools provided by the SP Act have been identified:

Option 4: The State Government acts as assessment manager for all levee applications

Option 5: Local governments act as assessment manager for all levee applications, with the State Government acting as a referral agency (concurrence) for Category 1 (high risk) levees only.

Levees will be categorised according to the level of risk they represent. At this stage, the following **three** categories of levees are envisaged, although more categories may be considered.

Category 1 levees (high risk)

A levee which would pose a significant threat to life or property or community infrastructure, or have a total economic impact greater than a specified amount (suggested to be $5 million) will be deemed to be a Category 1 levee.

Category 2 levees

A levee with the potential to impact on neighbouring properties, but with a potential economic cost lower than a Category 1 levee, and which poses no significant threat to life.

Category 3 levees

Levees which have no offsite impacts (i.e. impacts on neighbouring properties).

It is proposed that an appropriate level of assessment will apply to each category. A range of levels of assessment are provided for under the *Sustainable Planning Act 2009;* these are summarised in the following table.

Table 1—Levels of assessment and their potential suitability for levees

	Key conditions	Potential suitability for levees
Impact assessment	Developments cannot be assessed entirely against quantifiable criteria; public notification required	Category 1 levees
Code assessment	Some discretion required by assessment manager; developments cannot be assessed entirely against quantifiable criteria	Category 2 levees
Self assessment	Does not raise technical issues requiring expertise	Category 3 levees

Applicants for new levees will be impacted by the new regulatory framework. Applicants may be individual landowners or groups thereof, or in the case of urban levees, the applicant may be a local government or local/ State Government combined.

There will be new management responsibilities for the new application process. The manager of the levee application process is either the State Government (Option 4) or local government (Option 5). For Option 5, the State Government still plays a role in management of category one levees as a referral agency.

The types of costs, and estimates of the total costs, associated with these roles is explored in sections 2 and 3 of this analysis.

1.2 Proposed outcome of the new regulation

The shared outcome of both regulatory options is the statewide regulation of the construction and modification of levees and the implementation of Recommendations 7.19 to 7.23 of the Queensland Floods Commission of Inquiry. Both options are expected to deliver a range of benefits including:

Organisational

Satisfies the State Government's commitment to implement the outcomes of the Queensland Floods Commission of Inquiry

Consistency of approach: applicants will know what requirements apply in their area; the process will be transparent

Information and planning

Local and State governments will be aware of levees being constructed and their likely effects

This will enable better floodplain management over time (better resource management including water)

Community

Landholders and residents will be advised of proposed levees which may impact on their properties; allowing the opportunity to comment or object

Better information about likely effects of levees will enable better flood disaster planning, evacuation plans and other government plans—also increased confidence and security in the event of floods

Possible increased ability to insure properties against flooding because of the improved information

Environmental

Total floodplain management should be improved so that environmental flows can be better assessed and managed

Levees that are approved will be designed and constructed in a way to minimise the potential for channel erosion and impacts on freshwater and riparian ecosystems.

The Statement guidelines require that the impacts of the proposed regulation on stakeholder groups be investigated. This usually involves the development of a cost benefit analysis (CBA). A CBA is used to assess the net present value of a proposal to determine whether or not it should proceed.

For this regulatory proposal, it has been decided that a CBA is not suitable as the decision to regulate has already been made. The benefits of the proposed regulation, as outlined above, were considered by the Commission to be sufficiently great as to necessitate the introduction of the regulation.

In this case it is more appropriate to examine the relative costs of the two viable regulatory options. For this reason a cost effectiveness analysis has been conducted. A cost effectiveness analysis compares the costs of a range of different ways of meeting the same outcome. The relative costs of each stakeholder group are also compared. This information helps the policy maker choose the most appropriate option.

It should however be noted that some specific benefits may vary between the two options. For example, Option 4 offers the strength of having one point of contact and consistency of process across Queensland, as well as establishing a centralised source of specialist advice. Option 5 offers advantages of greater ease of access to local knowledge and conducting inspections.

However, for the purposes of this cost effectiveness analysis, the overall outcome that both options achieve is to meet the recommendations of the Queensland Floods Commission of Inquiry.

1.3 Assumptions used in the analysis

Data has been sourced through discussions with Government, the Queensland Reconstruction Authority, stakeholders and guided by a survey issued to all local councils on 26th March 2013. As only one local government currently regulates levees, there is insufficient information on the costs of regulating levees the analysis is based on broad

assumptions. It is hoped that input from local governments and other stakeholders will help improve this analysis and this input will be sought thorough the release of the Statement for public review.

This section outlines some of the main assumptions for the analysis. Assumptions for individual costs in different options are described in sections 2 and 3.

The options are compared to a base case of the status quo; i.e. the current situation without any policy interventions. Category one levees are major structures. As a result significant assessment would happen regardless of the introduction of the regulation. These 'business as usual' costs have not been quantified, and are not included in calculations for the development of category one levees. These costs are not readily available, and have no bearing on this cost effectiveness analysis.

The jurisdiction covered by the analysis is Queensland—i.e. the costs and benefits to Queensland are primarily considered. The perspective is for all of Queensland society.

The time frame of the analysis is ten years, in line with the default time frame suggested by Queensland Regulatory Impact Statement Guidelines (Queensland Government 2013).

A real discount rate of 7% is applied to the figures to calculate the present value of costs (following Australian Government 2010). This is sensitivity tested at 3% and 10%.

Table 2 notes key assumptions behind the analysis. These assumptions, including their sources, are discussed in more depth below.

Table 2—Key assumptions for both options

Assumption	Figure used in main analysis
Cost of individual/business time ($/hour)	$54.70
Cost of time—councils ($/hour)	$54.18
Cost of time—State Government ($/hr)	Varies depending on officer involved– ranges from $39-$58
Number of councils impacted across Queensland	40
Number of new category one levees per year throughout Queensland	2
Number of new category two levees per year throughout Queensland	20
Number of new category three levees per year throughout Queensland	100
Proportion of category one levees requiring technical analysis	100% (ie 2)
Proportion of category two levees requiring technical analysis	50% (ie 10)
Proportion of category three levees requiring technical analysis	25% (ie 25)
Proportion of levees that withdraw their applications	20%
Number of category one levees needing modification per year (including existing levees) throughout Queensland	2
Number of category two levees needing modification per year (including existing levees) throughout Queensland	20
Number of category three levees needing modification per year (including existing levees) throughout Queensland	100
Recruitment costs	15%
Positions needing recruitment	One-third of positions each year
Premium for using consultants	300%
Local government time saving for assessments	50% of time it takes State Government

The average cost of an individual's time is a default figure for Queensland as there is no recent estimate of the cost of time for rural landholders (who are the most likely to be affected by the regulations). This is based on ABS data (2012) using the methodology in DERM (2011) that includes an estimate of on-costs. The cost of time for councils is based on the average earnings for 'public administration' from the ABS (2012), also including on-costs. For the assessments of the applications, it is assumed more technical staff will be used, and the rates for these are the same as State Government staff. State Government staffing costs are modelled depending on the type and level of position required (such as administrative, technical or policy officer). These costs are based on the current salary scales for public sector employees and include on-costs such as superannuation and payroll tax.

There is currently no capacity within State Government to carry out assessments of levees. Similarly, local governments have reported concerns with capacity. As a result, a 15% recruitment fee has been added to staff costs to reflect direct recruitment costs (ANAO 2008). As recruitment is unlikely to be need every year, only a third of the staff assessment positions attract this premium.

As there are only a very small number of levees expected per year in any one council, it is unlikely there will be widespread recruitment of new staff in most councils. It is assumed that 50% of required positions will be met through hiring consultants. This attracts a premium of 300% (including contract management time for the councils), which takes the average hourly cost to $230-260 depending on the role required.

Local governments have the primary role of assessment manager under the SPA, with high growth councils handling about 94% of applications made in their areas. It is therefore assumed that assessments would take local councils half the time of the state government due to their greater local knowledge and their greater involvement and experience in handling development assessment, which is likely to be reflected in more efficient processes. Similarly, local governments are assumed to take half the time to prepare compliance reports. State Government is undergoing regulatory reforms to improve efficiency, so that this difference may ameliorate over time; however this assumption contributes only a small amount to the overall results.

It is not known exactly how many councils are likely to be impacted by the changes. For this analysis it has been assumed that 40 of Queensland's 73 Councils are impacted. This number is based on Department of Natural Resources and Mines (DNRM) and Local Government Association of Queensland (LGAQ) awareness of local government areas where levees are either already in existence, or where they have been discussed as a potential flood mitigation measure.

There is limited available data on how many levees of different categories have been built in Queensland in the past or how many are likely to occur in the next decade. Similarly, the number of current and future levees that might require modification over the next ten years, or the proportion of applications that will need technical analysis, are unknown. The numbers used here are estimates made for the purposes of this analysis through consultation with DNRM regional officers and the survey of local councils. The number of levees in any one year or council is likely to fluctuate but for simplicity it is assumed that a flat rate are built and modified across Queensland each year.

It is also assumed that 20% of applications for new levees are withdrawn before they are built, and that 50% of assessment costs (for both proponents and assessors) are incurred by these applications.

2.0 Costs of Option 4

2.1 Overview

Option 4 has the **State Government** as the regulatory manager that processes the applications.

A summary of costs for Option 4 by stakeholder group is:

State Government

- Develop training materials
- Internal training of DNRM staff (time for staff to deliver and staff to receive)
- Training for councils
- Assess applications (administration and technical review) for category one and two levees
- Assess annual compliance reports
- Assess modification of levee applications
- Extension—talking to landholders and the public

Local governments

- Attend training delivered by DNRM
- Provision of local information, available flood models and data and time for answering queries from the State government (i.e. there is a role in providing assistance in assessing applications)

Proponent of levee (could be State Government, local government, or landholder)

- Attend information session on requirements for building a levee
- Apply for new levees
- Apply for modifications to levees
- Prepare annual compliance report (category two and three levee)
- The assumptions for costing all of these activities are provided in the text and tables within Section 2.2. Most assumptions are based on the best knowledge available to the Queensland Government. It is hoped that input from stakeholders around these assumptions will help improve the final cost effectiveness analysis.

2.2 Costs

State Government

Training and information provision

The State Government will provide training to internal staff (DNRM) and local councils. Although the format and extent of this training has not yet been determined, for the purposes of this analysis it is assumed that there will be:

- 2 AO7 staff members delivering training to 11 NRM staff members—5 in the head office, and the other 6 in 3 regional offices.
- 2 AO7 staff members delivering training to local councils in the form of 1 day seminars in each of five locations. Council staff from other Councils would travel to these 5 regional centres to attend the training.

The local government training would aim to familiarise councils with the new legislation, as well as with the process for applying for the levees that they manage.

The assumptions for the amount of time this takes are shown in Table 3. These assumptions are based on estimates made for the purpose of this assessment through consultation with State Government officers with relevant expertise and experience in developing and delivering training programs.

Table 3—Assumptions for State Government training

Activity	How assessed	Frequency	Total cost
Develop training materials	2 AO7 for 10 days	One-off	$9,442
Deliver internal training—time	2 days, 2 AO7 delivering + half day travel per regional workshop (three)	One-off	$3,308
Deliver internal training—travel	3 workshops for 2 people at $1000 each	One-off	$6,000
Receive internal training	11 people (5 in head office, 2 each in three regional offices)	One-off	$9,278
Deliver training to councils—time	5 one-day seminars + day travel per seminar, 2 AO7 delivering	One-off	$9,442
Deliver training to councils—travel	5 workshops for 2 people at $1000 each	One-off	$10,000
Total cost		One-off	$47,471

Refresher training to councils will be run every two years.

The State Government will also communicate the regulatory changes to landholders interested in building new levees, as well as to the general public. As with the training component, it is not yet clear what form this communication will take. For the purposes of this analysis, it is assumed that it will include:

- Setup of a website for the general public explaining the changes to flood levee regulation in Queensland; and some press releases
- Setup of a website with information for interested landholders wanting to build levees. A minimal amount of time to answer queries from landholders is also included. Here it is assumed that 1000 landholders will be interested when the legislation is introduced, based on an initial assumption of 100 new category three levees to be built, and 100 to be modified.
- Ongoing communication with stakeholders who want to build levees
- Provision of a point of contact and ongoing communication with the general public or interested stakeholders (e.g. neighbours) regarding levees

The assumptions for the amount of time this work will take are shown in Table 4.

Table 4—Assumptions for State Government communication costs

Activity	How assessed	Frequency	Total cost
Communicate change to general public	Development of material and press releases 10 days AO7; 8 hours for AO5 and 3 hours for AO7	One-off	$5,329
Communicate change to potential proponents of levees - information provision via website & phone line	8 hours for AO5 and 3 hours for AO7; 30 minutes for an AO6 for each enquiry (assuming 500 interested across Queensland at introduction of legislation)	One-off	$29,693
Ongoing communication with proponents	One day per levee, AO5	Ongoing	$57,249
Ongoing public enquiries	Half a day per levee, AO5	Ongoing	$27,875
Total cost			$35,023 (one-off) $85,125 (ongoing)

Record keeping system

The State Government will need to develop a record keeping system to capture information on the regulation of levees, such as details about new levees around Queensland. An estimate of the cost of the system is shown below.

Table 5—Record keeping cost, Option 4

Activity	How assessed (cost)	Frequency
Develop record keeping system	$50,000	Once-off
Maintain record keeping system	$10,000/year	Ongoing

Assess applications (administration and technical review) for category one and two levees

Assessing applications for levees is a major part of the new regulatory role for State Government in Option 4. For all levee categories, the role includes administration associated with processing forms, as well as carrying out a technical assessment. It is assumed all category one levees, 50% of category two and 25% of category three (to check that they are category three and thus suitable for self-assessment) require a technical assessment. There is fieldwork associated with all category one levees and half of category two levees. Estimates of the time required are shown in **Table 6**, **Table 7** and **Table 8**.

Category one levees

Table 6—Assumptions for processing category one levees (Option 4)

Activity	Time per levee	Frequency	Cost per levee	Total cost per year
Process forms (administrative time and wages)	2 hours, AO3	Ongoing	$78	$156
Assess applications – review application (including making an information request) -	5 days, PO4 and 5 days, PO5 (technical advice)	Ongoing	$4,670	$9,341
Assess application—fieldwork—labour	3 days, PO5	Ongoing	$1,480	$2,960
Assess application—fieldwork—travel	$1000 per trip (one person)	Ongoing	$2,000	$4,000
Record keeping	3 hours, AO3	Ongoing	$117	$233
Total cost per year			$8,345	$16,690

Category two levees

Table 7—Assumptions for processing category two levees (Option 4)

Activity	How assessed	Frequency	Cost per levee	Total cost per year
Process forms (administrative time and wages)	2 hours, AO3	Ongoing	$78	$1,555
Assess applications –review application (including making an information request) -	5 days PO4 and 1 day, PO5 (technical advice—only for 50% of levees ie 10 levees)	Ongoing	$2,450	$49,005
Assess application—fieldwork—travel	$1000 per trip per person (50% of levees ie 10 levees)	Ongoing	$2,000	$20,000
Assess application—fieldwork—labour	3 days PO5 (50% of levees ie 10 levees)	Ongoing	$1,480	$14,801
Record keeping	3 hours, AO3	Ongoing	$117	$2,333
Total cost (per year)			$4,385	$87,694

Category three levees

The costs of assessing category three levees are the same per levee as category two, except that there is no fieldwork involved.

Table 8—Assumptions for processing category three levees (Option 4)

Activity	How assessed	Frequency	Cost per levee	Total cost per year
Process forms (administrative time and wages)	2 hours, AO3	Ongoing	$78	$7,777
Assess applications – review application (including making an information request) -	1 day PO4 and 1 days, PO5 (technical advice, only for 25% of levees ie 25 levees)	Ongoing	$642 (based on total number of levees)	$64,182
Record keeping	3 hours, AO3	Ongoing	$117	$11,665
Total cost per year			$758	$75,847

Assessment of annual compliance reports

It is expected that all new category two and three applicants will need to also submit annual compliance reports to DNRM. The number of assessments required will increase cumulatively each year.

The time required for the assessment of these reports is shown in Table 9.

Table 9—Assumptions for assessing compliance reports

Activity	How assessed	Frequency	Cost per levee	Total cost
Assess annual compliance report (category one)	2 days, PO4 1 day PO5	Annual (overall numbers cumulative)	$1,375	$2,750 (increases each year after year one)
Assess annual compliance report (category two)	1 day, PO4 1 day PO5 (technical advice for 25% of reports ie 5 reports)	Annual (overall numbers cumulative)	$564 (based on full number of levees)	$11,281 (increases each year after year one)
Total cost in first year				$14,031

Modification of levees

Proposals to modify existing levees, as well as to construct new levees, will need to submit reports. Each application for modification of a levee will need to be assessed on its merits so the cost of application will be the same whether or not it is a new levee or a modification. It is unlikely proponents will want to modify a levee soon after it is approved so the time between initial construction and first modification will be sufficiently long that the conditions (eg changes to the floodplain or catchment affecting the flood flows, or new development that increases the property at risk being protected by the levee) have changed and a new technical assessment would need to be conducted to assess the impact of these changed conditions. As a result, the costs below are the same assessment costs are reported earlier.

Table 10—Assumptions for assessing modifications (Option 4)

Activity	How assessed	Frequency	Cost per levee	Total cost per year
Assessing category one modification	As per Table 6	Ongoing	$8,345	$16,690
Assessing category two modification	As per Table 7	Ongoing	$4,385	$87,694
Assessing category three modification	As per Table 8	Ongoing	$758	$75,847
Total cost per year				$180,231

Local governments

Training and information provision

Interested local governments will likely attend one of the five training workshops organised by DNRM.

Unless specified otherwise, as per Table 2 it is assumed 40 councils are affected by the regulatory changes and will require training.

Table 11—Assumptions for local governments and information provision

Activity	How assessed	Frequency	Total cost
Attend training workshop - time	1 day for 2 staff members + half day travel for all but five of the councils (as 5 regional workshops held). This is 35 councils under the current assumptions.	One-off	$47,245
Attend training workshop - travel	Two per council (35 councils—five do not need to travel) at $1000 each	One-off	$70,000
Provide local information to State Government (category one)	2 days/levee	Ongoing	$1,571
Provide local information to State Government (category two)	1 day/levee	Ongoing	$7,856

Levee proponents

Training and information provision

For the purposes of this analysis, it is assumed interested landholders peruse departmental information including a website, and ring DNRM for more information.

Table 12—Assumptions for levee proponents accessing information

Activity	How assessed	Frequency	Total cost
Accessing information	500 proponents -4 hours looking at website and documents; half hour conversation with DNRM	Once-off	$246,150
Discussing proposal with Government	1 day per levee	Ongoing	$48,375

Applying for category one levee

Levee proponents will be required to consult more broadly on category one levees than is presently required. For the purposes of costing this requirement, it is assumed the proponent is a local government who prepares and delivers a town meeting. This, and other costs associated with applying for a category one levee, is shown in Table 13.

Table 13—Assumptions for costs of applying for category one levee

Activity	How assessed	Frequency	Cost per levee	Total cost per year
Carry out public consultation (additional to what is already required)	1 day of preparation, ½ a day of meeting	Once-off	$591	$1,181
Prepare and submit application for category one levee	2 days	Ongoing	$786	$1,571
Respond to State Government information request	1 day	Ongoing	$393	$786
Undertake catchment studies (additional to what is already required)	$200,000 per levee	Ongoing	$200,000	$400,000
Total cost per year			$591 (once-off) $202,162 (ongoing)	$1,181 (once-off) $404,324 (ongoing)

As noted earlier, there are already significant costs with developing category one levees that are not taken into account in this analysis (as they are part of the status quo). However, this analysis has assumed current catchment models and assessment tools are not detailed enough to fully analyse the impact of new levees, and thus new tool development and additional assessment will be required.

Applying for a category two levee

Levee proponents will need to apply for permission to build category two levees. The costs here are dominated by the assumption that a quarter of levees will require new catchment studies to be undertaken. The cost of the model, and the hydrological modelling, will vary depending on the size of the levees and availability of existing information/models either through previous construction or supplied by council.

Table 14—Assumptions for costs of applying for category two levees

Activity	How assessed	Frequency	Cost per levee	Total cost per year
Prepare and submit application	5 days	Ongoing	$1,983	$39,658
Hydrology report	$20,000 per levee	Ongoing	$20,000	$400,000
Undertake catchment studies	$150,000 per levee (25% of all levees ie 5 levees)	Ongoing	$150,000	$750,000
Total cost per year			$59,879	$1,197,589

Applying for a category three levee

Levee proponents will also need to apply for category three levees. Although these are numerous, the costs per levee are low as there is no requirement for model development.

Table 15—Assumptions for costs of applying for category three levees

Activity	How assessed	Frequency	Cost per levee	Total cost per year
Prepare and submit application	3 days	Ongoing	$1,190	$118,973

Preparation of compliance reports

Managers of new category one and two levees will probably have to submit annual compliance reports to DNRM. It is estimated this will take two days per levee.

Table 16—Assumptions for preparing annual reports

Activity	How assessed	Frequency	Cost per levee	Total cost
Prepare annual compliance report—category one	2 days	Annual (cumulative)	$786	$1,571
Prepare annual compliance report—category two	2 days	Annual (cumulative)	$793	$15,863

Preparation of modification reports

As discussed earlier levee managers who want to modify existing or new levees will be required to submit a modification report. These will incur similar expenses to new levee applications.

Table 17—Assumptions for costs of preparing modification reports

Activity	How assessed	Frequency	Cost per levee	Total cost
Prepare modification report—category one	As per Table 13	Ongoing	$101,179 (based on full number of levees)	$202,357
Prepare modification report—category two	Table 14	Ongoing	$40,733	$814,658
Prepare modification report—category three	Table 15	Ongoing	$1,190 (based on full number of levees)	$118,973

3.0 Costs of Option 5

3.1 Overview

Option 5 requires local governments to regulate and assess levees. The State Government will act as a referral agency for category one levees, and provide some limited support to local governments in their assessments.

As with Option 4, proponents of levees can be landholders, local governments or the State Government.

A summary of costs for Option 5 by stakeholder group is:

State Government

- Develop training materials
- Internal training of DNRM staff (time for staff to deliver and staff to receive)
- Training for councils
- Review category one levee applications as referral agency (administrative and technical review)
- Provide simple ongoing advice to local governments on assessing category two levees

Local governments

- Attend State Government training
- Assess applications (administration and technical review)
- Assess annual compliance reports
- Assess modification of levee applications
- Extension—talking to landholders and the public

Proponents of levees

- Attend information session on requirements for building a levee
- Apply for new levees
- Apply for modifications to levees
- Prepare annual compliance report category two levee

Local government knowledge of local communities and catchments is assumed to be much higher than that of the State Government. This is reflected by the assumption that assessment costs are half those of the State Government. Extension with levee proponents is also assumed to require less time when conducted by local governments, saving time for both councils and proponents. The assumptions for costing all of these activities are

provided in the text and tables within Section 3.2. Most assumptions are based on the best knowledge available to the Queensland Government. It is hoped that input from stakeholders around these assumptions will help improve the final Cost-Effectiveness Analysis.

3.2 Costs

State Government

Training and information provision

Training for DNRM staff is lower compared to Option 4 as there a smaller role for State Government.

Although the format and extent of this training has not yet been determined, for the purposes of this analysis it is assumed that there will be:

- 2 AO7 staff members delivering training to 5 DNRM staff in the head office
- 2 AO7 staff members delivering training to local councils in the form of a 1 day seminar in each of five locations. Council staff from other councils would travel to these regional centres to attend the training.

Extension will be confined to:

- A website for the general public explaining the changes to flood levee regulation in Queensland; and some press releases.

The resources required for these activities are shown in

Table 18. These assumptions are based on estimates made for the purpose of this assessment through consultation with State Government officers with relevant expertise and experience in developing and delivering training programs.

Table 18—Assumptions State Government training and communication costs

Activity	How assessed	Frequency	Total cost
Develop training materials	10 days, 2 x AO7	One-off	$9,442
Deliver internal training—time	2 days, 2 AO7 delivering	One-off	$1,888
Receive internal training	5 staff (AO7) in head office	One-off	$4,721
Deliver training to councils—time	5 one-day workshops, 2 AO7 staff (+half day travel for each workshop)	One-off	$9,442
Deliver training to councils—travel	5 workshops, 2 staff at $1000 each	One-off	$10,000
Communicate change to general public	Development of material and press releases 10 days AO7; website development 8 hours for AO5 and 3 hours for AO7	One-off	$5,831
Total cost			$41,326

A refresher course for local councils is held each two years.

Record keeping system

The State Government will need to develop a record keeping system to capture information on the regulation of levees, such as details about new levees around Queensland. The costs of this system are shown below. This is higher than Option 4 because the information will need to be gathered from about 40 different local governments, each collecting data from the assessments they undertake, and then reconciled into one system. .

Table 19—Record keeping cost, Option 5

Activity	How assessed	Frequency
Develop record keeping system	$100,000	Once-off
Maintain record keeping system	$20,000/year	Ongoing

Acting as referral agency for category one levees

The State Government will be a referral agency, which means that there will be some oversight functions related to category one levees. The assumptions are outlined in Table 20.

Table 20—Assumptions for acting as a referral agency for category one levees

Activity	How assessed	Frequency	Cost per levee	Total cost per year
Review applications (administrative e.g. does it meet legislative requirements)	3 hours, AO3	Ongoing	$122	$244
Review applications—checking technical details, asking for more information	3 days, PO5	Ongoing	$1,480	$2,960
Review applications—travel for site visit	One person at $1000 per levee	Ongoing	$2,000	$1,000
Provide ongoing advice to local governments	1 day, PO4	Ongoing	$881	$441
Total cost per year			$3,043	$6,085

Supporting category two and three levees

The State Government will offer some limited advice to local governments on assessing category two and three levees, as seen in Table 21.

Table 21—Assumptions for supporting category two levees

Activity	How assessed	Frequency	Cost per levee	Total cost per year
Provide ongoing advice to local governments - category two	1/2 day per levee, PO4	Ongoing	$220	$4,407

Local governments

Training and information provision

As in Option 4, interested local governments are likely to attend one of five regional training workshops run by DNRM. These workshops are longer for Option 5 to reflect the greater responsibility that local governments face in Option 5.

Local governments will also be responsible for public engagement in this option. For the purposes of this analysis it is assumed this takes the form of:

- A one-off information session for landholders interested in building levees in each council
- Ongoing extension with landholders
- Ongoing extension with the public

The time involved in these tasks is outlined in Table 22.

There is no travel time included for councils in consultation as it is assumed they are local to concerned landholders.

Unless specified otherwise, as per Table 2 it is assumed 40 councils are affected by the regulatory changes and will require training.

Table 22—Assumptions for local government training and extension

Activity	How assessed	Frequency	Total cost
Attend training workshop—time	1 days for 2 staff member + half day travel for all but five of the councils (as 5 regional workshops held)). This is 35 councils under current assumptions.	Once-off	$47,245
Attend training workshop—travel	2 staff per council (**35 councils—5 do not need to travel**) at $1000 each	Once-off	$70,000
Initial information session for interested landholders	One day preparation + 2 hour meeting per council	Once-off	$20,047
Extension—talking to landholders	1/2 day per levee AO5	Ongoing	$30,089
Extension—answering public queries	Half a day per levee AO5	Ongoing	$16,578
TOTAL			$137,292 (once-off) $46,666 (ongoing)

Assess applications (administration and technical review) for all levees

In addition to preparing applications for category one levees, local governments will need to assess the applications for all categories of levees. Some councils are more likely to have capacity than others.

Category one levees

Table 23—Assumptions for processing category one levees (local government)

Activity	How assessed	Frequency	Cost per levee	Total cost per year
Process forms (administrative time and wages)	2 hours, AO3	Ongoing	$78	$156
Assess applications—review application (including making an information request)	2.5 days, PO4 and 2.5 days, PO5	Ongoing	$5,629	$11,258
Assess application—fieldwork—labour	1.5 days, PO5	Ongoing	$1,787	$3,574
Assess application—fieldwork—travel	$1000 per trip (1 person, only for consultants)	Ongoing	$250	$2,000
Record keeping	3 hours, AO3	Ongoing	$117	$233
Total cost per year			$8,611	$17,221

50% of these costs attract a 300% surcharge for the use of consultants

Category two levees

Table 24—Assumptions for processing category two levees (local government)

Activity	How assessed	Frequency	Cost per levee	Total cost per year
Process forms (administrative time and wages)	2 hours, AO3	Ongoing	$78	$1,555
Assess applications—review application (including making an information request) -	2.5 days PO4 0.5 days, PO5 technical advice (50% of levees ie 10 levees require this)	Ongoing	$2,954 (based on full number of levees)	$59,073
Assess application—fieldwork—labour	$1000 per trip (one person)	Ongoing	$1,787	$17,872
Assess application—fieldwork—travel *(applies to consultants only—other staff assumed to be local)*	1.5 days P05 (50% of levees i.e. 10 levees require this level of assessment)	Ongoing	$2,000	$10,000
Record keeping	3 hours, AO3	Ongoing	$117	$2,333
TOTAL Cost per year			$4,542	$90,833

50% of these costs attract a 300% surcharge for the use of consultants

Category three levees

Table 25—Assumptions for processing category three levees (local government)

Activity	How assessed	Frequency	Cost per levee	Total cost per year
Process forms (administrative time and wages)	2 hours, AO3	Ongoing	$78	$7,777
Assess applications—review application (including making an information request) -	0.5 day PO4 0.5 PO5 (technical advice—required for 25% of levees ie 25 levees)	Ongoing	$682 (based on total number of levees)	$68,172
Record keeping	3 hours, AO3	Ongoing	$117	$11,665
Total cost per year			$876	$87,614

Assessment of compliance reports

Table 26—Assumptions for assessing reports (local government)

Activity	How assessed	Frequency	Total cost
Assess annual compliance report (category one)	1 days, PO4 0.5 day PO5 (technical advice)	Annual (overall numbers cumulative)	$1,375 (increases each year)
Assess annual compliance report (category two)	0.5 day, PO4 0.5 day PO5 (technical advice, 25% of levees ie 5 levees)	Annual (overall numbers cumulative)	$5,648 (increases each year)

Assessment of modification reports

Table 27—Assumptions for assessing modifications to levees

Activity	How assessed	Frequency	*Cost per levee*	*Total cost*
Assess modification of a levee (category one)	As per Table 23	Ongoing	$8,611	$17,221
Assess modification of a levee (category two)	As per Table 24	Ongoing	$4,542 (based on full number of levees)	$90,833
Assess modification of a levee (category three)	As per Table 25	Ongoing	$876 (based on full number of levees)	$87,614
Total cost (first year)				$195,668

Levee proponents

The costs to levee proponents are mostly the same as Option 4. This is because the application forms and guidance will be developed centrally by the Queensland Government. However, it is assumed that contact with the council will only need to be half that of contacting the State Government in Option 4.

Training and information provision

For the purposes of this analysis, it is assumed interested landholders peruse departmental information including a website, and ring DNRM for more information.

Table 28—Assumptions for levee proponents accessing information

Activity	How assessed	Frequency	Total cost
Accessing information	500 proponents -4 hours looking at website and documents; half hour conversation with DNRM	Once-off	$246,150
Discussing proposal with Government	Half a day per levee	Ongoing	$24,221

Applying for category one levee

Levee proponents will be required to consult more broadly on category one levees than is presently required. For the purposes of costing this requirement, it is assumed the proponent is a local government who prepares and delivers a town meeting. This, and other costs associated with applying for a category one levee, is shown in Table 13.

Table 29—Assumptions for costs of applying for category one levee

Activity	How assessed	Frequency	Cost per levee	Total cost per year
Carry out public consultation (additional to what is already required)	1 day of preparation, ½ a day of meeting	Once-off	$591	$1,181
Prepare and submit application for category one levee	2 days	Ongoing	$786	$1,571
Respond to State Government information request	1 day	Ongoing	$393	$786
Undertake catchment studies (additional to what is already required)	$200,000 per levee	Ongoing	$200,000	$400,000
Total cost per year			$591 (once-off) $202,162 (ongoing)	$1,181 (once-off) $404,324 (ongoing)

As noted earlier, there are already significant costs with developing category one levees that are not taken into account in this analysis (as they are part of the status quo). However, this analysis has assumed current catchment models and assessment tools are not detailed enough to fully analyse the impact of new levees, and thus new tool development and additional assessment will be required.

Applying for a category two levee

Levee proponents will need to apply for permission to build category two levees. The costs here are dominated by the assumption that a quarter of levees will require new catchment studies to be undertaken. The cost of the model, and the hydrological modelling, will vary depending on the size of the levees and availability of existing information/models either through previous construction or supplied by council.

Table 30—Assumptions for costs of applying for category two levees

Activity	How assessed	Frequency	Cost per levee	Total cost per year
Prepare and submit application	5 days	Ongoing	$1,983	$39,658
Hydrology report	$20,000 per levee	Ongoing	$20,000	$400,000
Undertake catchment studies	$150,000 per levee (25% of all levees i.e. 5 levees)	Ongoing	$150,000	$750,000
Total cost per year			$59,879	$1,197,589

Applying for a category three levee

Levee proponents will also need to apply for category three levees. Although these are numerous, the costs per levee are low as there is no requirement for model development.

Table 31—Assumptions for costs of applying for category three levees

Activity	How assessed	Frequency	Cost per levee	Total cost per year
Prepare and submit application	3 days	Ongoing	$1,190	$118,973

Preparation of compliance reports

Managers of new category one and two levees will probably have to submit annual compliance reports to DNRM. It is estimated this will take two days per levee.

Table 32—Assumptions for preparing annual reports

Activity	How assessed	Frequency	Cost per levee	Total cost
Prepare annual compliance report—category one	2 days	Annual (cumulative)	$786	$1,571
Prepare annual compliance report—category two	2 days	Annual (cumulative)	$793	$15,863

Preparation of modification reports

As discussed earlier levee managers who want to modify existing or new levees will be required to submit a modification report. These will incur similar expenses to new levee applications.

Table 33—Assumptions for costs of preparing modification reports

Activity	How assessed	Frequency	Cost per levee	Total cost
Prepare modification report—category one	As per Table 13	Ongoing	$101,178.42 (based on full number of levees)	$202,357
Prepare modification report—category two	Table 14	Ongoing	$40,733	$814,658
Prepare modification report—category three	Table 15	Ongoing	$1,190 (based on full number of levees)	$118,973

4.0 Results

The present value of Option 4 is $33.1 million over the ten year analysis period. This has an equivalent annual value of $4.7 million a year. Option 5 has a present value of $32.7 million, and an equivalent annual value of $4.7 million a year.

Table 34—Overall results for options one and two

	Option 4	Option 5
Present value of total costs ($)	$33,087,562	$32,704,902
Equivalent annual value of total costs ($/year)	$4,710,924	$4,656,442

Included in these overall costs are once-off costs (associated with training and information provision) and ongoing costs. Once-off costs for Option 4 are $495,889 and for Option 5 are $524,767.

Table 35 and Table 36 show the break-down of these costs for both assessing and applying for different category levees Options. These represent the bulk of the ongoing costs.

Table 35—Assessment costs by levee category

Levee type	Total assessment costs—Option 4	Total assessment costs—Option 5	Cost per levee—Option 4	Cost per levee—Option 5
Category one	$18,359	$18,943	$8,345	$8,611
Category Two	$96,464	$99,916	$4,385	$4,542
Category Three	$83,432	$96,375	$758	$876

Includes costs of withdrawn applications

Not surprisingly, assessment costs increase with the complexity of the levee category. Despite the higher cost of consultants in Option 5, the greater efficiency (assumed to be twice as fast as State Government) of local councils means that Option 5 costs are lower overall.

Table 36—Application costs by levee category

Levee type	Total application costs—Option 4	Total application costs—Option 5	Cost per levee—Option 4	Cost per levee—Option 5
Category one	$224,756	$444,324	$102,162	$201,966
Category two	$1,317,348	$1,312,992	$59,879	$59,681
Category three	$174,493	$152,711	$1,586	$1,388

Includes costs of withdrawn applications

Application costs are very different between categories of levees, with the more complex levees costing more than the simpler ones. The application costs are very similar between Options, as forms will be designed centrally and incur the same costs from levee proponents. Public consultation costs are lower for Option 5 as it is assumed that applicants will not need to spend as long in discussions with their local council as they would with the State Government.

Sensitivity testing

Changing the discount rate to 3% and 10% had only relatively small impacts on the overall cost, indicating that this is not a key variable in the analysis.

The impact of changing the assumptions around the number of levees in each category can be assessed using the "per levee" cost presented in Table 35 and Table 36.

Catchment modelling costs represent a large proportion of overall costs. If only half the catchment models had to be developed, the present value costs of Option 4 would fall to $27.1million (NPV) or $3.9 million (EAV) a year, while Option 5 would cost $23.6 million (NPV) or $3.4 million a year (EAV). If the costs of carrying out modelling are underestimates, then the overall costs will change significantly upwards.

Given the difference in the results depending on the estimates of model costs, it might be worth clarifying how many areas are likely to need new hydrological models or catchment studies. At present the assumption is all category one levees will need catchment studies and 25% of category two levees, and hydrological studies for all catchment two levees. Likewise it might be worth investigating the likely costs in more depth.

Distribution of costs

Table 37—Distribution of costs between stakeholders

	Option 4 Present value $	Option 5 Present value $
State Government	$4,269,401 (12.9%of total)	$434,454 (1.3% of total)
Local governments	$526,308 (1.6% of total)	$4,175,321 (12.8% of total)
Proponents of levees	$28,291,853 (85.5% of total)	$28,095,126 (85.9% of total)

For both options levee proponents, likely rural landholders, bear nearly all of the costs of the new flood levee regulations (85% of total costs). This is due to application costs for new levees existing where no cost existed at all previously. Most of this cost to levee proponents (85%) is due to the need to carry out new hydrological or catchment studies in some instances.

Despite the similarities in overall cost between options one and two, there are differences in the distribution of the costs between State Government and local government. In Option 4 12.9% of the total costs are borne by the State Government and 1.6% by local governments. Option 5 has a much lower cost burden for State Government at 1.3%, with local governments bearing 12.8% of the total cost.

No fees have been modelled in this analysis. It is likely these fees would be set on a cost-recovery basis. If this is the case, the overall costs for each option will not change, but the proportion of costs borne by the State Government would fall, and the costs to levee proponents would increase.

Discussion

Option 4 is more expensive overall. However, the differences between the two Options are not substantive. This is because the costs are dominated by the costs to proponents of levees, and these are not expected to change significantly between options.

Additionally, some of the differences in costs counter-balance each other: although in Option 5 some costs such as staffing are assumed to be higher for local governments (due to the greater use of consultants) there are large savings in assessment and travel times.

Combined with uncertainty over some of the costs, particularly for local governments, it is not immediately apparent which option is more cost-effective. This outcome could change depending on new information from consultation. In the interim, the relative costs of different elements of the options could help with the design of the proposed regulations.

5.0 References

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