

Draft position paper for consultation

February 2019

Improving Dam Management in South Australia



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1 Introduction

The draft position paper for **Improving Dam Management in South Australia** has been developed to address concerns about dam management in South Australia and in response to the failure or near failure of dams during the spring of 2016.

The draft position paper proposes a number of initiatives to improve dam management in South Australia for discussion. Some initiatives are already underway as they are considered essential and broadly supported such as education and awareness about dam safety and management in emergencies, but others, in particular those requiring legislative change and/or increasing obligations for landholders, will require your input to help refine them before they are finalised and implemented.

The draft position paper is one of three papers which are concurrently being released for feedback. The other two are:

- **Improving Levee Bank Management in South Australia**
- **Priorities for Improved Flood Management in South Australia**

Feedback on this document can be provided by responding to the questions and provide any additional input and suggestions using the following Survey Monkey link: <https://www.surveymonkey.com/r/PJ78KWW>

Alternatively, you can respond via email to Ingrid Franssen, A/Manager, Flood Management, Department for Environment and Water: Ingrid.Franssen@sa.gov.au

Any response needs to be received by **15 April 2019**.

2 Background

Management of dams in South Australia has been of concern for some time. In 2015, the University of South Australia was commissioned by the Flood Inquiries Task Force to develop an options paper on dam management. The paper identified the need for policy and explored policy options to provide for adequate dam management assurance to community (University of South Australia 2016).

In South Australia, there is no effective dam management regulation. According to the report by the University of South Australia, dam failure flood risks are significant and exist at both the individual and cumulative levels within catchments. Evidence shows that dam design and maintenance is often not adequate: many spillways (if they exist) have inadequate flood capability and there are often structural issues with dam walls.

A sudden uncontrolled dam release may endanger human life or downstream property, or damage the operation of the dam.

2.1 Scope

The dams proposed to be in scope for this paper are outlined in table 1.

In scope	Out of scope
Irrigation dams	SA Water Reservoirs
Stock and domestic dams	Tailings dams
Other storage dams requiring a permit under the <i>Natural Resources Management Act 2004</i>	Wastewater storage and evaporation lagoons regulated under the <i>Environment Protection Act 1993</i>
Detention and retention basins	
Wastewater dams not regulated under <i>Environment Protection Act 1993</i>	
Dams on public land that are not SA Water reservoirs	

Table 1: Scope of proposed dam management framework in South Australia

SA Water owns the majority of large dams and voluntarily complies with Australian National Committee on Large Dams (ANCOLD) guidelines. The SA Water reservoirs are therefore out of scope for this policy.

Wastewater storage, evaporation lagoons and tailings dam are also out of scope, as they are considered to be generally a low risk because filling occurs through pumping and the siting, construction and management of the dams are regulated by specific legislation:

- Wastewater storage and evaporation lagoons: *Environmental Protection Act 1993* (EP Act)
- Tailings dams: *Mining Act 1971*.

2.2 Current regulation of construction

The construction of dams is generally authorised under the *Natural Resources Management Act 2004* (NRM Act) with a water affecting activity permit, unless the dam is classified as development, and receives development approval under the *Development Act 1993* (Development Act) (to be replaced by the *Planning Development and Infrastructure Act 2016*). Dams with a volume greater than 5 megalitres (ML) or a dam wall height greater than 3 metres are classified as development under the Development Act. The development application for such dams will also be assessed against the water affecting activity policies in the regional Natural Resources Management (NRM) Plan or water allocation plan (prepared under the NRM Act) through a referral of the development application to the authority issuing the permits.

The water affecting activity policies focus on water resource management and watercourse management issues, but can also consider a number of flooding and erosion risks and design aspects (spillways, freeboard, and low flow devices).

There are no design standards in the building code or guidance in the South Australian Planning Policy Library that councils can refer to when assessing application for dams under the Development Act.

2.3 Current maintenance arrangements

Dam owners are considered responsible for the management of their dams and accountable for the damage these dams may cause if they fail. However, this responsibility is in the realm of public liability and there is limited awareness of this responsibility among landholders. There is no mechanism for state or local government to ensure owners of dams maintain their dams. Neither the Development Act nor the NRM Act currently provide an effective enforceable ongoing obligation to ensure all dams are properly maintained.

2.4 Outcomes sought

The draft policy position outlines proposed elements of a dam management policy for discussion, to deliver improved dam management.

The following dam management outcomes are sought:

- Roles and responsibilities for dam management are clearly articulated, agreed and understood by all relevant parties and are able to be implemented.
- Dam management risks for both existing and new dams are managed by landholders and do not significantly increase the potential impacts of floods in South Australia.

3 Proposed elements of a dam management policy

The proposed elements of a dam management policy consider the recommendations from the University of South Australia report and the approaches and experiences in managing dam management interstate. In developing the proposed elements, alignment between management of dams for water resource management and dam safety has been sought to streamline processes and reduce red tape. The proposed elements aim to create a fit for purpose approach tailored to the risk of a dam failing. The proposed elements aim to provide flexibility to increase the level of regulation over time if evidence shows that this is necessary.

There are several conceptual elements for the proposed dam management framework. The proposed elements are listed below and illustrated in Figure 1.

1. Education and awareness about dam management and maintenance.
2. A register of dams that is the authoritative source of information about the location, size, and dam failure risk rating.
3. A dam failure risk rating method and a requirement to ensure new dams do not exceed a specified risk rating.
4. Requirements for emergency action plans for existing high risk dams as determined from a dam failure risk rating.
5. A duty to maintain all existing and future dams and an ability to require rectification, reparation or modification of dams in the proposed Landscapes SA legislation.
6. Guidelines (or regulation) for the level of competency of practitioners providing advice on siting, design, construction, modification and maintenance of dams that consider both water resource management impacts and flood risks.
7. Guidelines (or regulation) relating to the siting, design, construction, modification and maintenance of dams that consider both water resource management impacts and flood risks.

8. Include dam construction requirements within new Planning and Design Code being developed for South Australia or explore consolidation of all aspects of regulation of in scope dams under the Landscapes SA legislation.

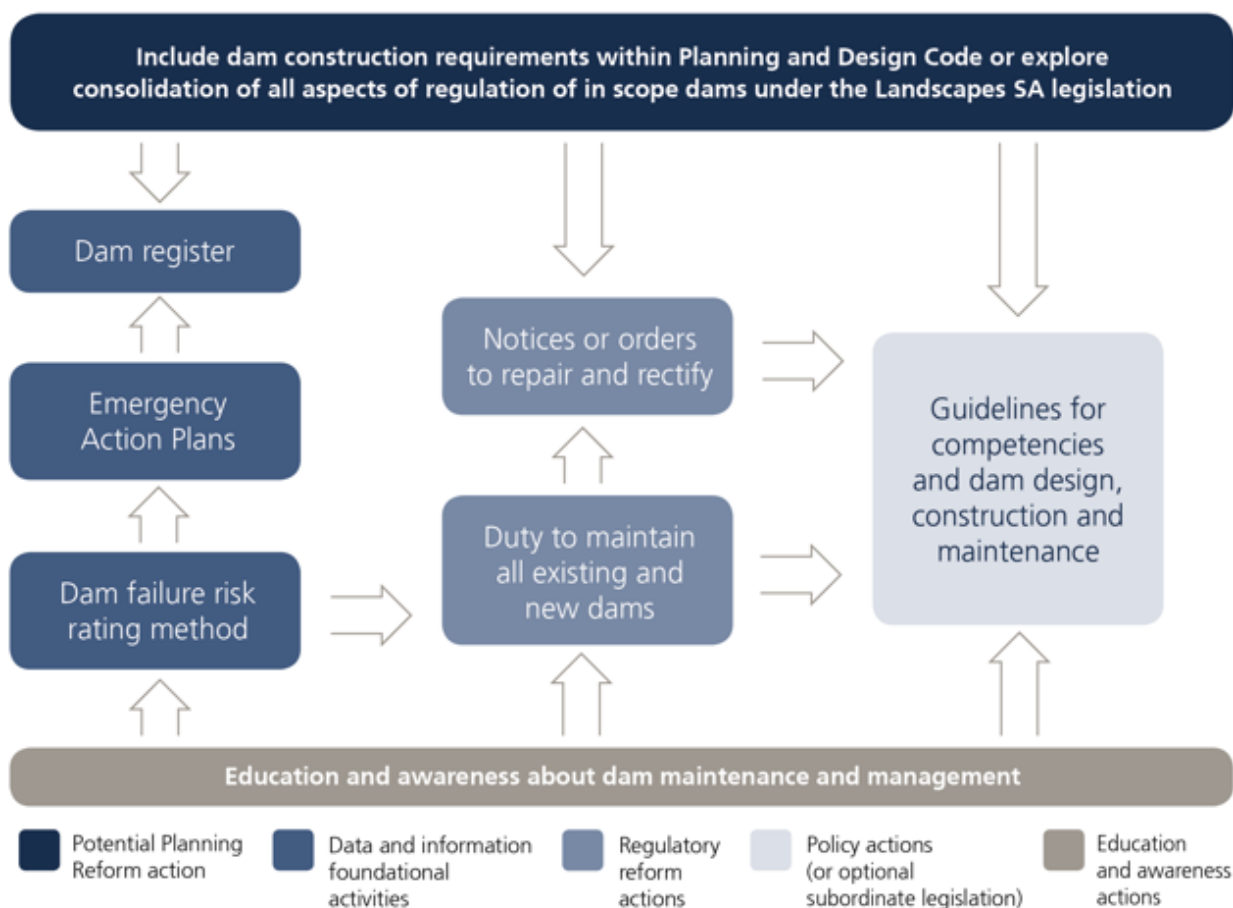


Figure 1. Proposed dam management policy elements

Each element is discussed in more detail below.

3.1 Education and awareness about dam management

Education and awareness about dams in South Australia has focused mainly on water resource management aspects of dams and the need to equitably share water. As part of this, information is provided on siting, design and construction of dams. This information can be complemented with information relating to dam management.

Landholders should be aware of their responsibilities and potential liability in case of dam failure. *Private Dam Maintenance and Management in Emergencies Guidelines* have been developed by the Department for Environment and Water (DEW) with input from the Flood Working Group. The guidelines inform landholders, the South Australian State Emergency Service (SASES) and others what needs to be done to respond to dams that are at risk of failing and what can be done to avoid this situation. These guidelines will form the basis of an annual awareness raising campaign about dam management and dam owner responsibility in South Australia, similar to campaigns to get properties ready for the bushfire season.

3.2 A dam failure risk rating method for dams

A method for assigning risk categories to dams will be scoped by DEW, and subject to funding, developed and applied to provide a basis for identifying dam management requirements for existing and proposed dams. It is proposed that a tool suitable for professional use be developed for to dams requiring development approval, which are those with a capacity greater than 5 megalitres (ML) or a dam wall height greater than 3 metres. Additionally a simpler self-assessment tool suitable for landowners could be developed for all other dams. Victoria has already developed such a tool and this can be reviewed and adapted for South Australia (see: [Victorian dam failure consequence screening tool](#)).

A dam failure risk rating method or tool will guide the requirements relating to siting, design, construction, modification and maintenance of dams ensuring effective dam management.

Risk ratings will need to be reviewed on a regular basis as changes in land use downstream of the dam may impact on the risk rating, for example if there has been a subdivision and additional dwellings have been constructed, or new dams have been constructed downstream of the current dam, creating a cumulative risk.

DISCUSSION QUESTION:

1. ***Do you support the proposed development of risk rating tools for dam failure based on reviewing and adapting the tool already developed in Victoria?***

3.3 Emergency Action Plans

Owners of dams with a higher dam failure risk rating should develop an emergency action plan that sets out actions in case a dam fails or threatens to fail. The *Private Dam Maintenance and Management in Emergencies guidelines* include a Rapid Risk Assessment and Emergency Action Plan template.

DISCUSSION QUESTION:

2. ***How can we make sure landholders prepare an emergency action plan for their dam?***

3.4 A register of dams that is the authoritative source of information about the location, size and flood risk rating of dams

A register of dams in South Australia linked to a spatial database is beneficial for both water resource management and emergency management purposes.

Such a register would build on existing work undertaken to develop the datasets, tools and arrangements to support implementation of water allocation plans and regional NRM Plans and demonstrate compliance with the Murray-Darling Basin Plan. Consolidation of these datasets is needed to deliver a state-wide dam register. The dam management elements can then be progressively built into this register.

DISCUSSION QUESTIONS:

3. ***Who should have access to what parts of a dam register?***
Eg. Landholders: limited access, local government: full access, Department for Environment and Water (DEW) full access, etc.
4. ***Is there any other information (other than location, size and flood risk rating) that needs to be stored?***

3.5 A duty to maintain all existing and future dams and an ability to require rectification, reparation or modification of dams

While it is recognised that dam owners have responsibilities and liabilities under common law in case of dam failure, more explicit requirements for dam maintenance from both a water resource management and dam management perspective are considered necessary to ensure roles and responsibilities are clear and that there are options beyond education and awareness raising to pro-actively manage dams at risk of failing during a flood.

To create alignment with other aspects of dam management, the proposed option is to introduce a general duty to maintain dams in the Landscapes SA legislation, similar to the duty to maintain a well. The actual maintenance requirements will be linked to the dam failure risk rating for dam management. Maintenance requirements may range from self-assessment to more complex reports by qualified engineers, depending on the rating of the dam.

Where existing dams are assessed to pose an unacceptable risk, rectification or modification of dams can then be required by the issue of a notice or order. A protection order can include the requirement that the dam owner appoints or engages a person with specified qualification to prepare a plan or report. A subsequent reparation order can then require the owner to undertake the actions recommended in that report. The SASES will be made aware of dams that are subject to a notice or order to repair or modify a dam.

DISCUSSION QUESTION:

- 5. *Do you support a general duty to maintain dams and an enforceable requirement to rectify, repair or modify a dam that poses an unacceptable risk?***

3.6 Provide guidelines for the level of competency of practitioners providing advice on siting, design, construction, modification and maintenance of dams

The level of competence and assurance required of practitioners providing advice on dam siting, design, construction, modification and maintenance is proposed to be set out in a guideline, with the option of defining requirements in regulation, if and when this is considered appropriate (for example for higher risk dams). Dams with a higher risk may require a certified report from a suitably qualified and experienced engineer for design, construction and maintenance status, while smaller, low risk dams may only require a self-assessment against a checklist or a report from the contractor on completion of the dam.

A checklist could be developed to assist landholders in the selection of a contractor or qualified engineer. It is not intended to assemble a list of preferred providers, but as part of the assessment of an application, evidence will be required of the qualifications and experience of practitioners, where relevant.

Care will need to be taken that the cost of meeting the requirements are in proportion to the benefit of the dam to the landholder and the potential impacts downstream and do not create unnecessary red tape.

Care will also need to be taken that any guidelines or regulations do not result in changes in liability for the relevant authority approving the siting, design, construction, modification and maintenance of a dam.

DISCUSSION QUESTIONS:

- 6. *What competencies or qualifications should be required from practitioners for dams with a higher dam failure risk rating?***

Eg. Civil Engineer, proven experience building dams, Certificate in Water Industry Operations etc.

3.7 Provide guidelines relating to the siting, design, construction, modification and maintenance of dams that consider both water resource management impacts and flood risks

There can be generic design requirements about siting, design and construction of dams but the specific requirements will depend on the dam failure risk rating of the proposed or existing dam. Certain requirements may warrant regulation, in other cases guidelines may be sufficient in combination with the competency requirements outlined above.

Assessment of applications for water resource management purposes will continue to be against criteria in the regional NRM Plan or the water allocation plan. Care will also need to be taken that any guidelines or regulations do not result in changes in liability for the relevant authority.

DISCUSSION QUESTION:

7. *Are there any other issues which should be covered in proposed guidelines?*

3.8 Include dam construction requirements within new Planning and Design Code or explore consolidation of all aspects of regulation of in scope dams under the Landscapes SA legislation

Dam **construction** requirements could be included in the planning system. Requirements under the Planning and Design Code would include dam management considerations for siting, design, construction, and modification of dams. The Landscapes SA legislation would continue to focus on dam management in terms of watercourse and water resource management and would regulate dam maintenance.

The alternative would be to remove dams from the planning system and include dam construction requirements in the Landscapes SA legislation, managing all aspects of dam construction and maintenance under one piece of legislation. This proposal would reduce complexity for landholders as all applications for dams would go to one place for assessment and authorisation.

DISCUSSION QUESTION:

8. *Do you have a comment on which of the proposals (either including dam construction requirements in the Planning and Design Code, or in the Landscapes SA legislation) has more benefit?*

FINAL DISCUSSION QUESTION

9. *Is there anything more you wish to add in regard the Draft Policy for Dam Management in South Australia?*