



Department of  
Building and Housing  
*Te Tari Kaupapa Whare*

# Review of the Dam Safety Scheme Discussion Document

July 2010



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## Introduction

The Department of Building and Housing (the Department) would like your comments on the recommendations made in the *Dam Safety Review – Report of findings of an independent review of the Dam Safety Scheme* (the Review).

The Review can be downloaded from: [www.dbh.govt.nz/dam-safety-report](http://www.dbh.govt.nz/dam-safety-report)

Before answering the questions in this discussion document, we suggest you also read:

- Building Act 2004 (the Act), in particular subpart 7 of part 2
- Building (Dam Safety) Regulations 2008, as at July 2010 (the Regulations)
- (You can access legislation online at [www.legislation.govt.nz](http://www.legislation.govt.nz) or buy print copies from a specialist bookseller, such as Vicbooks or Bennetts Government Bookshop.)
- *Dam Safety Scheme - Guidance for regional authorities and owners of large dams*. This guide can be downloaded from [www.dbh.govt.nz/dam-safety-scheme-guide](http://www.dbh.govt.nz/dam-safety-scheme-guide)

Please provide your comments on the recommendations made in the Report to us by Friday 14 August 2010:

- email: [Damsafety@dbh.govt.nz](mailto:Damsafety@dbh.govt.nz)
- post: Operational Policy and Regulatory Services  
Sector Capability Branch  
Department of Building and Housing  
PO Box 10-729  
Wellington

This consultation document is available for download at [www.dbh.govt.nz/current-consultations](http://www.dbh.govt.nz/current-consultations)

## What happens to your feedback?

The Department will analyse all submissions it receives and for Government consideration.

A summary of submissions will be made public when the Government announces its decisions.

All written responses will be public information. Responses may be subject to a request under the Official Information Act 1982 (OIA). Under the OIA, the Department must make information it holds available to a person who makes a request, unless there are sufficient grounds for withholding it. You should, therefore, understand that information you submit to the Department may be made available to requesters. The Ombudsman may review a decision to withhold information requested under the OIA.

## The Dam Safety Scheme

The Building Act 2004 (the Act) establishes the Dam Safety Scheme (the Scheme) as a risk-management regulatory system for dams in New Zealand. Once the Scheme is in force, dams will be monitored regularly by their owners to minimise risks for people, property and the environment in the event of dam failure. Regional authorities administer the Scheme, and must compile and maintain a register of dams in their region.

The Scheme is based on criteria prescribed in regulations that come into force on 1 July 2012.

Currently, the Scheme applies to dams that hold a reservoir of at least 20,000m<sup>3</sup> and of retaining three or more metres' depth of water or other fluid (about the size of eight Olympic-sized swimming pools). These large dams, as defined in the Act, include dams that only occasionally hold and retain these amounts and depths of water or other fluid. The Scheme applies to flood control dams but not stopbanks.

The Scheme requires the owners of large dams to assess whether their dams are affected by the Scheme. Owners must then:

- classify the dam as having low, medium or high potential impact on people, property and the environment in the downstream area if the dam were to fail,
- arrange for the dam classification to be certified by a Recognised Engineer, and
- register the dam with and submit its classification to the appropriate regional authority.

For dams with a medium and high potential impact classification, the dam owner must also:

- prepare and submit a Dam Safety Assurance Programme (which includes surveillance and maintenance procedures) to the regional authority. This must be submitted within one year from the date the classification of the dam is approved by the regional authority for a high potential impact dam, and two years for a medium potential impact category dam
- provide evidence that all procedures in the Dam Safety Assurance Programme have been complied with by submitting an annual Dam Compliance Certificate to the regional authority, and
- ensure the Dam Safety Assurance Programme and annual Dam Compliance Certificate are audited and certified by a Recognised Engineer.

## The Review

The Building (Dam Safety) Regulations 2008 that define the parameters of the Scheme and were promulgated in 2008, and were expected to come into force on 1 July 2010. However, as part of the Building Act Review, the Government decided in February 2010 to appoint an independent, and suitably qualified and experienced person to review the Scheme prior to its implementation.

The purpose of the Review was to provide the Department with an independent and well informed view on whether or not the Scheme was 'fit for purpose' before it took effect. This required an assessment of whether the Scheme's were appropriate for potential risk to human safety posed by dam failure.

The Review was undertaken by Bruce McLean. Mr McLean, who has a mix of engineering and public policy experience, graduated as a civil engineer in 1972 and worked on heavy civil engineering, building and defence projects in New Zealand, Canada, USA and Israel. He was an advisor in the Department of Prime Minister and Cabinet in the early 1990s, and was the establishment manager and Acting Chief Executive of Industry New Zealand.

The Review was conducted from 5 March 2010 to 15 April 2010. Mr McLean engaged with sector industry stakeholders, including rural sector groups, Institution of Professional Engineers New Zealand (IPENZ), local government, central government agencies and corporate owners of large dams. Stakeholder views and their concerns about the Scheme were identified and considered.

## **Findings of the Review**

The Review concluded that the Scheme is necessary but improvements could be made to its efficiency and effectiveness, and compliance costs minimised. The recommendations included:

- changing the statutory definition of a 'large dam'. The current capacity would be increased from at least 20,000 m<sup>3</sup> to at least 50,000 m<sup>3</sup>, and depth from three or more metres of water or other fluid, to at least eight metres. This would exclude a significant number of low potential impact dams from the Scheme and reduce compliance costs for the sector
- giving a regional authority the power to issue a notice requiring classification of any smaller dam that poses a potential downstream risk to the safety of people, property or the environment
- delaying the commencement of the Regulations to allow more preparation time for classifying dams
- the Department developing a plan to communicate with dam owners and other stakeholders. The communication plan would include publicising the requirements under the legislation and providing suitable support material to ensure the Scheme is effectively implemented.

The Review also included recommendations about the functions of regional authorities, monitoring of the Scheme, and clarifying the scope of the dams to be covered.

You can read the full Review at: [www.dbh.govt.nz/dam-safety-report](http://www.dbh.govt.nz/dam-safety-report)

## Consultation

In June 2010, Government decided to defer the start of the Scheme until 1 July 2012 by amending the Regulations. This will ensure sufficient time for the Review's recommendations to be fully considered and for legislation to be amended.

The Department now invites written comments on the Review's recommendations for the Scheme by Friday 14 August 2010.

Input is sought on the recommendations, how they will apply in practice to the management and operation of dams in New Zealand and particularly how the recommendations may affect the:

- potential risks to human life, property and the environment in the event of dam failure,
- compliance costs caused by the Scheme, and
- efficiency and effectiveness of the Scheme.

## Next steps

The timeline for consultation and legislation development is outlined below.

<b>INDICATIVE TIMELINE FOR DAMS SAFETY SCHEME LEGISLATIVE DEVELOPMENT</b>				
<b>July 2010</b>	<b>14 August 2010</b>	<b>From late 2010</b>	<b>Late 2011</b>	<b>Late 2011 / early 2012</b>
Release of discussion document	Submissions close	Parliamentary process	Act and Regulations amended	Guidance developed and released

## Input on Recommendations Sought

The Review's findings and recommendations are recorded in the document *Dam Safety Review – Report of findings of an independent review of the Dam Safety Scheme*.

The Report is structured so that each recommendation is underscored by the:

- issue
- stakeholder feedback; and
- discussion (analysis).

The Department now invites you to provide feedback on the recommendations within the Report. The following questions have been designed to help you formulate your feedback on the recommendations which are of particular interest to the Department. Your comments about the other recommendations are also welcome.

### Recommendation 3

That the definition of large dams under the Scheme be changed to dams with the capacity to hold a reservoir of 50,000m<sup>3</sup> or more and to be at least eight metres high.

1. Do dams smaller than proposed threshold (capacity of 50,000m<sup>3</sup> or more and eight metres high) pose potential risks to downstream populations?

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2. Should the size of dams covered by the Scheme be increased in line with the recommendations?

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3. Would an increase in the size of dams covered by the Scheme lower the compliance costs?

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4. Is the proposed new definition of a dam easy to interpret and comply with?

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5. If not, how could the definition be improved?

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**Recommendation 4**

That a dam requiring to be classified under the Scheme be described as an Inventory Dam, Classifiable Dam or a Referable Dam (and not a Large Dam as at present).

6. Should dams covered by the Scheme be described as 'large dams?'

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7. If not, which of the following is more appropriate?

- Inventory Dam
- Classifiable Dam
- Referable Dam
- Other

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**Recommendation 5**

That dam height is defined as the vertical distance from the top (crest) of the dam measured:

- for dams across a stream, from the natural bed of the stream at the lowest downstream outside limit of the dam, or
- for dams not across a stream, from the lowest elevation at the outside limit of the dam.

8. Is the recommended approach to measuring a dam appropriate?

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9. What difficulties would be faced in applying this recommendation?

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10. Should an alternative approach be developed to define a dam height? If so, what and why?

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**Recommendation 6**

That the body responsible for administering the Scheme has the power to issue a notice requiring classification of any dam, regardless of whether the dam meets the dam criteria. Any such notice will only be issued if there is reason to believe the dam may put people at risk.

**Background**

The Act currently requires regional authorities:

- to administer the Scheme, which means that regional authorities must:
  - (i) establish and maintain a register of large dams in their region
  - (ii) consider and approve (or not approve) dam classifications of large dams
  - (iii) consider and approve (or not approve) the Dam Safety Assurance Programmes for each medium and high potential impact category dam in their region
  - (iv) hold copies of annual Dam Compliance Certificates.
- adopt and implement a policy on dangerous dams, earthquake-prone dams and flood-prone dams. This includes setting up processes and procedures that would be triggered for medium or high potential impact category dams should they be determined to be dangerous, flood-prone or earthquake prone.
- take action if necessary, if any dam, large or small, poses an immediate danger to the safety of persons, property or the environment.

11. Should a region authority be able to issue a notice requiring classification of any dam, regardless of whether the dam meets the relevant criteria?

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12. What are the benefits and costs of this recommendation?

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**Recommendation 7**

That appurtenant structures for each dam be determined by the Recognised Engineer responsible for certifying the Dam Safety Assurance Programme.

**Background**

The Act defines an appurtenant structure, as a structure that is integral to the proper functioning of the dam.

There are two categories of Recognised Engineers: Category A and B.

Category A Recognised Engineers have specific dam engineering and safety assurance competencies. They may certify:

- dam classifications certificates
- Dam Safety Assurance Programmes
- annual Dam Compliance certificates for dams.

The Institution of Professional Engineers New Zealand (IPENZ) oversees the assessment process.

Category B Recognised Engineers have general civil engineering ability and may only certify the classification of low potential impact category dams. Unlike Category A Recognised Engineers, Category B Recognised Engineers are not required to be formally assessed to determine whether that person is able to practise competently in the area of dam safety. .

13. What are the benefits and costs of this recommendation?

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14. Should a Category A Recognised Engineer determine the appurtenant structures for each dam requiring a Dam Safety Assurance programme?

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15. If not, who should identify the appurtenant structures?

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**Recommendation 9**

That a period of 12 months be allowed after the Scheme’s start date for dam owners to have the dam classifications certified by a Recognised Engineer.

**Background**

The Act currently requires a dam owner to provide the regional authority with a dam classification certificate no later than 3 months after the Regulations come into force or 3 months after the date the dam was commissioned.

16. Should the timeframe be extended to 12 months?

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17. If not, what is an ideal time period?

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**Recommendation 13**

That the authority responsible for administering and monitoring the Dam Safety Scheme monitors the availability of Recognised Engineers during the Scheme’s implementation.

**Background**

Owners of large dams have obligations under the Act that require to use Recognised Engineers. The Act requires classifications, annual Dam Compliance Certificates and Dam Safety Assurance Programmes to be signed off and certified by a Recognised Engineer before they are submitted to the regional authority.

Currently there are 28 Category A Recognised Engineers (See [www.ipenz.org.nz/ipenz/finding/recognised-engineer/search.cfm](http://www.ipenz.org.nz/ipenz/finding/recognised-engineer/search.cfm))

18. Should the regional authority responsible for administering and monitoring the Dam Safety Scheme monitor the availability of Recognised Engineers during the Scheme’s implementation?

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19. Are there sufficient Category A Recognised Engineers to service the Scheme?

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**Recommendation 14**

That a new body responsible for administering and monitoring the Scheme on a nation-wide basis be established within central government.

**Background**

Currently the Scheme is regulated by regional authorities who:

- must be accredited and registered as building consent authorities to carry out building control functions for large dams. A building consent authority:
  - (i) issues building consents for large dams (except consents subject to a waiver or modification)
  - (ii) inspects building work for which it has granted a building consent
  - (iii) issues notices to fix
  - (iv) issues code compliance certificates
  - (v) issues compliance schedules.
- carry out other building control functions such as issuing project information memoranda and issuing certificates of acceptance (for unconsented building work on dams)
- administer and monitor the Scheme, which means regional authorities must:
  - (vi) establish and maintain a register of large dams in their region
  - (vii) consider and approve (or not approve) dam classifications of large dams
  - (viii) consider and approve (or not approve) the Dam Safety Assurance Programmes for each medium and high potential impact category dam in their region
  - (ix) consider and approve (or not approve) annual Dam Compliance Certificates
  - (x) adopt and implement a policy of dangerous dams, flood-prone dams and earthquake-prone dams. This includes setting up processes and procedures that would be triggered for medium or high potential impact category dams should they be determined to be dangerous, flood-prone or earthquake-prone
  - (xi) take action if necessary, if any dam, large or small, poses an immediate danger to the safety of persons, property or the environment.

20. Should a new body be created to administer the Scheme?

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21. Should this body also regulate building control laws (eg, building work for the construction of dams) for dams?

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22. What elements of the Scheme and building control require local input?

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**Recommendation 15**  
That consideration is given to (at least partially) funding the body with a simple low fee charge regime to all dam owners included in the Scheme.

**Background**  
Under section 242 of the Act regional authorities may impose a fee or charge and recover costs for performing their functions regarding the Scheme.

23. If a single governing body was created, how should it be funded (eg, user pays)?

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**Recommendation 16**

That the Dam Safety Assurance Programme for a medium potential impact category dam be required to be in place 12 months after the date on which the Scheme authority approves the classification for the dam.

**Background**

The Act currently requires an owner of a medium potential impact category large dam to provide the regional authority with a Dam Safety Assurance Programme within two years after the date on which it approved that classification for the dam.

24. Should a dam owner provide the regional authority with a Dam Safety Assurance Programme within 12 months of the approval of the classification by the regional authority.

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25. If not, what is an ideal time period?

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**Recommendation 17**

That Dam Safety Assurance Programme review periods be increased from 5 to every 7 years for medium potential impact category dams to align with NZSOLD Guidelines.

**Background**

Section 146 of the Act states that the owner of a high potential impact category dam must review their Dam Safety Assurance Programme:

- within 5 years of it being approved by the regional authority
- after the first review, at intervals of no more than 5 years.

The owner of a medium potential impact category dam must review their Dam Safety Assurance Programme.

- within 10 years of it being approved by the regional authority
- after the first review, at intervals of no more than 5 years.

26. Should Dam Safety Assurance Programme review periods be increased from 5 to every 7 years for medium PIC dams to align with NZSOLD Guidelines?

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27. If not, what is the ideal review period and why?

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**Recommendation 18**

That the wording of the annual Dam Compliance Certificate be changed so there is no requirement for the Dam Safety Assurance Programme to be ‘fully complied with’. Instead the Category A Engineer and dam owner (or Chief Executive) will certify that the dam owner has complied with the criteria and standards of the Dam Safety Assurance Programme as set out in regulation 8 of the Regulations and where necessary include a list of any non-compliances that warrant corrective action.

**Background**

Form 3 of Schedule 2 (annual Dam Compliance Certificate) of the Regulations requires a Recognised Engineer to verify that the dam owner has complied with the procedures in the Dam Safety Assurance Programme that the owner has followed in the previous 12 months. That is:

- requirements for and frequency of, routine visual inspections, instrument monitoring, data evaluation, and reporting to the large dam owner
- requirements for annual dam safety reviews
- requirements for comprehensive dam safety reviews
- details of an emergency identification plan
- requirements for inspection of appurtenant structures, including testing of gates and valves that contribute to reservoir safety, and
- procedures for the investigation, assessment and resolution of dam safety deficiencies.

28. Should the wording of the annual Dam Compliance Certificate be changed to: ‘the dam owner has complied with the criteria and standards of the Dam Safety Assurance Programme as set out in regulation 8 of the Regulations’?

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29. Should the form be amended to include a list of any area of non-compliance that warrant corrective action?

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30. If so, how should the corrective actions be addressed or enforced?

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**Recommendation 19**

That consideration be given to allowing a dam owner to supply bi-annual Dam Compliance Certificates provided a Category A Recognised Engineer certifies the implementation of the Dam Safety Assurance Programme warrants it.

**Background**

Section 150 of the Act states that an owner of a dam for which a Dam Safety Assurance Programme has been approved must provide the regional authority with a Dam Compliance Certificate on each anniversary of their Dam Safety Assurance Programme having been approved. The certificate must include a certificate from a Category A Recognised Engineer confirming that all procedures in the Dam Safety Assurance Programme have been complied with during the previous 12 months.

**Discussion**

During the Review public and corporate dam owners expressed strong views that submitting the annual Dam Safety Compliance Certificate is too frequent.

31. Should legislation allow dam owners to provide a bi-annual Dam Compliance Certificate if a Category A Recognised Engineer certifies the implementation of the Dam Safety Assurance Programme?

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**Recommendation 20**

That, if in the process of certifying a dam, it becomes apparent to the Recognised Engineer that a dam is dangerous then it will be notified as such to the Scheme authority.

**Background**

The Act requires regional authorities to develop a dangerous dams, earthquake-prone dams and flood-prone dams policy within their region.

The purpose of this policy is to help prevent the catastrophic failure of a potentially dangerous dam, and to ensure deficiencies in an earthquake-prone or flood-prone dam are addressed.

Each policy must state the regional authority’s approach for fulfilling and prioritising its functions around these types of dams. The policy must also state how it will be applied to heritage dams.

Section 153 of the Act states that a large dam is ‘dangerous’ for the purposes of the Act if it:

- (a) is a medium or high potential impact category dam; and
- (b) is likely to fail
  - (i) in the ordinary course of events; or
  - (ii) in a moderate earthquake (as defined in the Regulations); or
  - (iii) in a moderate flood (as defined in the Regulations).

Sections 154 to 156 of the Act outline the functions of a regional authority in relation to dangerous dams.

These functions and powers include:

- putting up a hoarding or fence to prevent people from getting too close to the dam
- attaching a notice on or near the dam that warns people not to approach the dam
- requiring work to be carried out on the dam by the owner within a specified period (which must not be less than 10 days from the date notice was given), to reduce or remove the danger.

32. If a Recognised Engineer suspects a dam is dangerous, should he or she be required to notify the regional authority?

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**Recommendation 21**

That all reference to earthquake-prone and flood-prone dams is removed from the Act.

**Background**

Section 153A of the Act states that a large dam is an earthquake-prone dam if the dam:  
(a) is a medium or high potential impact category dam; and  
(b) is likely to fail in an earthquake threshold event (as defined in the regulations).

Section 153A of the Act states that a large dam is a flood-prone dam if the dam:  
(a) is a high PIC dam or medium PIC dam; and  
(b) is likely to fail in a flood threshold event.

Under section 146 (20(b) of the Act the regional authority may request a large dam owner to review their Dam Safety Assurance Programme if the dam is an earthquake-prone or a flood-prone dam.

**Discussion**

During the review NZSOLD and various dams owners expressed the opinion that deficiencies in 'prone' dams may addressed through the Dam Safety Assurance Programme. An engineer also stated that analysing dams to see if they are prone to earthquakes is complex and costly, and subsequently that the earthquake-prone and flood-prone dams policy is of little use.

33. Should the earthquake-prone and flood-prone dams policy be removed from the Act? If so, why?

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**Recommendation 23**

That a Recognised Engineer be able to review the existing dam safety approach in place for dam owners with a portfolio of dams and certify that it meets the criteria and standards as set out in regulation 8 of the Regulations.

34. Should the Act and Regulations be amended to allow a portfolio of dams to be assessed together (ie, a Dam Safety Assurance Programme that refers to more than one dam)?

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35. Should the Act and Regulations be amended to allow a portfolio of dams to be verified by a Recognised Engineer to meet the requirements of regulation 8 of the regulations?



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36. Should this approach also be used regarding the other requirements of the Scheme?

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**Recommendation 24**  
That legislation as it applies to dams (including the Resource Management Act 1991 the Act) be reviewed to provide effective, clear legislation that reduces compliance costs and provides consistent implementation across the sector.

Large dams are regulated by dam safety and building control provisions of the Building Act. However, often the construction of a dam will also require a resource consent under the Resource Management Act 1991

37. Should all legislation regarding dams be reviewed to provide effective, clear legislation that reduces compliance costs and provides consistent implementation across the sector?

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