



Department of
Building and Housing
Te Tari Kaupapa Whare

Dam Safety Scheme

An overview for rural owners
of large dams

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Introduction

There are about 1150 large dams around New Zealand. With recent changes in the law, these dams will now be subject to a new safety scheme.

Risk-managed dams are in everyone's best interests, especially given New Zealand's seismic instability and the increased flooding likely with climate change.

The Building (Dam Safety) Regulations 2008 (the Regulations) are part of the reforms of the Building Act 2004. The Dam Safety Scheme aims to ensure that the safety of existing and new dams is checked regularly and that new dams are built and maintained to stay safe.

The Regulations take effect on 1 July 2010. After that, dam owners will have three months to comply with them. This brochure gives you details about how to do this.

The greater the potential impact of a dam's failure on people, property and the environment, the more comprehensive the safety scheme has to be.

The new dam safety requirements are in line with international best practice.

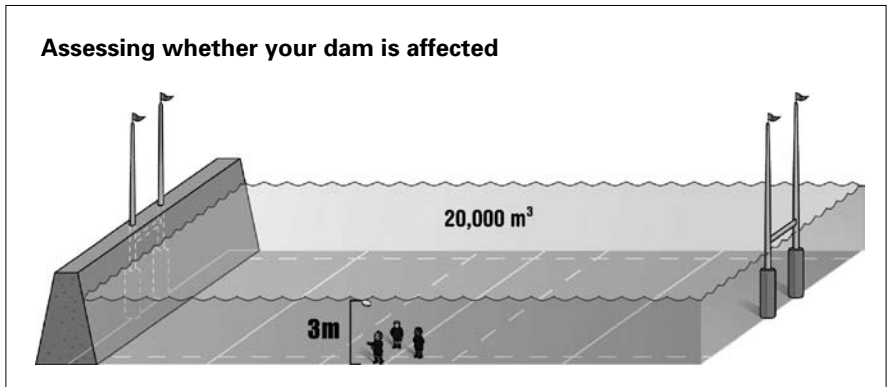
Guidelines explaining the fine detail of the Regulations have been developed and are available from <http://www.dbh.govt.nz/bofficials-dam-safety>

Dam size

What size of dam is affected by the Dam Safety Scheme?

Any dam capable of holding 20,000m³ or more of water or other fluids, such as mine tailings, is affected.

This is about the capacity of eight Olympic-sized swimming pools, or a rugby field with water 3m deep, ie, up to the crossbars of the goalposts. Dams smaller than this do not have to comply with the Dam Safety Scheme.

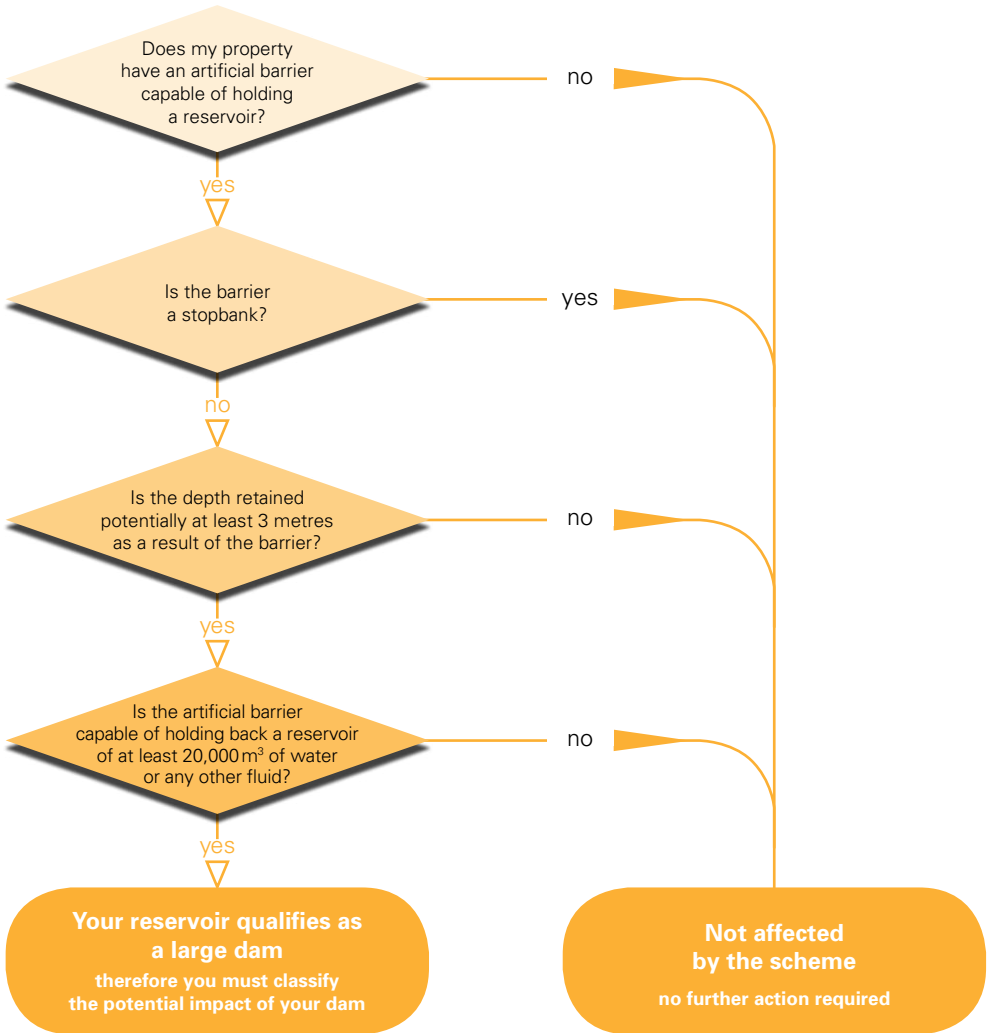


What you need to do if your dam is affected

Action	Low Potential Impact	Medium Potential Impact	High Potential Impact
Classify potential impact and submit certificate every five years	Yes	Yes	Yes
Re-classify the potential impact category when building work requiring a building consent is carried out on the large dam, or when other building work could change the potential impact category of the large dam.	Yes	Yes	Yes
Put in place Dam Safety Assurance Programme	No	Yes within 2 years of first classification	Yes within 1 year of first classification
Review Dam Safety Assurance Programme when undertaking building work	No	Yes	Yes
Review Dam Safety Assurance Programme	No	Yes within 10 years, then every 5 years	Yes every 5 years

Assessing whether your dam is affected

This diagram will enable you to work out whether you have a dam that is affected by the Dam Safety Scheme.



How many dams are big enough to be covered by the Dam Safety Scheme?

About 1150 dams nationwide are large dams. About 700 of these are water supply reservoirs or power generation dams owned by local authorities. About 50 are privately owned power generation dams. The remaining 400 or so are on rural properties, such as farm dams, irrigation dams, reservoirs and effluent/fire-fighting dams.

The many thousands of smaller rural dams are not covered by the regulations and the Dam Safety Scheme. They do, however, still need to meet the minimum building standards in the Building Act 2004.

How do I assess the size of my dam?

You can use the following formula to calculate the approximate volume of the reservoir behind a dam. You can also ask a suitably qualified professional engineer to check the size.

Using the following formula, calculate the volume in cubic metres (m³)
Volume (m³) = 0.4 x Surface Area x Depth (0.4 is a conversion factor that takes into account the slope of the sides of dams)

Note: its size is based on its maximum reservoir capacity, even if it rarely reaches that capacity.

Classifying potential impact

If your dam is large enough to be affected by the Dam Safety Scheme, the next step is to assess its 'potential impact'. This determines whether a Dam Safety Assurance Programme is also required.

Is the potential impact for all dams the same?

No. There are three possible classifications for dams: low, medium or high potential impact. Factors considered in assessing the impact include the human population downstream, and likely property, infrastructure and/or environmental damage if the dam fails.

Dam size does not dictate the level of potential impact. For example, a dam may be close to schools and houses, and therefore present a higher potential impact than a dam that is much bigger but in a remote location.

Are historic dams also affected?

Yes. The age of the dam is irrelevant. If a dam meets the volume threshold, it must be classified for its potential impact.

Do the same rules apply nationwide, even though potential impact may vary?

Yes, but the more isolated the dam, the lower its potential impact may be.

Who decides the potential impact classification?

Initially you decide, but that decision has to be supported by a 'Recognised Engineer', who will give you a certificate stating the dam's potential impact classification. The Regulations define the competencies and experience a person needs to have in order to be considered either a 'Category A' or a 'Category B' Recognised Engineer.

All Chartered Professional Engineers with general civil engineering ability and experience are considered 'Category B' Recognised Engineers and can certify dams of low potential impact. However dams of medium or high potential impact can only be certified by 'Category A' Recognised Engineers who must have specialist dam safety engineering experience.

How do I find a recognised engineer?

The Institution of Professional Engineers New Zealand (IPENZ) is responsible for assessing 'Category A' Recognised Engineers. IPENZ will maintain a list on its website of the contact details for all 'Category A' Recognised Engineers.

National Office

Email: ipenz@ipenz.org.nz
www.ipenz.org.nz

158 The Terrace, Wellington.

PO Box 12241
Wellington
New Zealand

Ph: +64 4 473 9444

Fax: +64 4 474 8933

After your dam has been classified

What do I do with my dam classification certificate?

You must give a copy of the certificate to your regional authority.

If your regional authority disagrees with the classification – and it can only do so if it believes that the engineer who signed your certificate is not a Recognised Engineer – it must tell you. You will have 15 working days to provide a new certificate, signed by a Recognised Engineer, though the regional authority may allow you more time in some circumstances.

What else is needed?

If your dam has a medium or high potential impact classification, you must also give your regional

authority a Dam Safety Assurance Programme. This has to be certified by a Category A Recognised Engineer. A Dam Safety Assurance Programme is basically a document that sets out your procedures for checking the safety of your dam. It includes an emergency action plan and a plan for repairing any non-urgent deficiencies with your dam.

You need to get a Dam Safety Assurance Programme certified within one year for high potential impact dams and within two years for medium potential impact dams.

Neither regional authorities or engineers can require any safety measures beyond the scope of the Building Act 2004 and the Regulations.

Timeframe

How long do I have to get my dam certified?

You have until 1 October 2010 (three months after the Building (Dam Safety) Regulations 2008 take effect on 1 July 2010) to tell your regional authority what your dam's classification is. You also have to give it a copy of your engineer's certificate that approves your dam's classification certificate.

If your dam is built after 1 July 2010, you must provide the information within three months of commissioning the dam.

Why do the regulations not take effect until 2010?

The timeframe is to give dam owners, the engineering profession and regional authorities plenty of time to prepare for the implementation of the scheme.

What happens if I don't do anything?

Because of the potential consequences of a dam failure, you will be liable for a fine of up to \$20,000 for failing to classify your dam and register it with your regional authority. This is because a dam failure has the potential to significantly affect people, infrastructure and the environment.

You could also be fined:

- up to \$5000 for not giving your regional authority a recognised engineer's certificate if the first certificate was rejected
- up to \$20,000 for failing to submit a Dam Safety Assurance Programme
- up to \$5000 for failing to review your Dam Safety Assurance Programme.

What else do I need to do, and how often?

The owners of medium and high potential impact dams will have to provide an annual compliance certificate with their Dam Safety Assurance Programme. This certificate confirms that you are following your written safety procedures in practice.

If you do any building work on the dam that requires a building consent and if the work could change the dam's potential impact classification, you must review the classification and any Dam Safety Assurance Programme.

Regional authorities have to keep a record of large dams in their region and have the right to take action if a large dam is considered dangerous.

Benefits to dam owners

What's in it for dam owners?

The Dam Safety Scheme reduces your risk in terms of Health and Safety in Employment Act requirements for maintaining a safe working environment. It gives you peace of mind, knowing it could help to save your family and neighbours, private property and the wider environment if your dam fails for any reason, such as an unexpected flood or earthquake. It may also help you to satisfy Resource Management Act conditions for building a large dam.

Dam owners in other countries like Australia are already being asked to comply with similar schemes.

Guidance for owners of large dams

Guidance is available from:

www.dbh.govt.nz/bofficials-dam-safety

You can also contact the Department to order a free copy.

Department of Building and Housing
0800 242 243
PO Box 10-729
Wellington
info@dbh.govt.nz
www.dbh.govt.nz

New Zealand Government

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Disclaimer: While we have tried to make this educational information as accurate as possible, it does not cover every situation and should not be regarded as legal advice.

This document is also available on the Department's website: www.dbh.govt.nz

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