dam safety guidelines

Introduction

Why do we need a guideline for dam safety?

The Auckland region has a large number of dams for water supply, irrigation, farm waste treatment, stormwater treatment, sediment control, storing contaminated sediments and sewage treatment.

The Auckland Regional Council has the function of controlling the damming of water under the Resource Management Act, 1991. Section 104(l)(a) of the Act also requires the Auckland Regional Council to consider any actual or potential effects on the environment of allowing the above activities. Section 3 of the Act defines the meaning of 'effect' so as to include 'Any potential effect of low probability which has a high potential impact'.

In order to avoid potential adverse effects on the environment, the Council impose conditions on resource consents for dams so that all reasonable measures are taken to prevent dam failure. Monitoring and reporting of structural information is also required.

This guideline applies to permanent dams and also to temporary structures including sediment retention ponds.

The information contained in this document is intended as a guideline for Regional Council staff when assessing levels of design and specialist input into dam construction and operation. Every dam project is unique and this document should not be used as a design manual or for dictating dam design standards.

The Regional Council will not take on the role of specialist reviewer or designer through the use of the guideline. Council staff will ascertain whether the dam being considered has had the necessary design, construction and monitoring input. Where uncertainty exists more details will be requested or an external review commissioned. It is emphasised that the builder of the dam has complete responsibility for its safety, and that neither Regional Council staff, nor these guidelines, can supplant the need for appropriate expert advice.

What is the aim of the guideline?

This guideline aims to provide a consistent framework in which:

- the potential risks and environmental effects of dams are understood
- dams are designed, built, operated, maintained and monitored to safety standards that minimise risk to people and the environment
- applications for dams are evaluated on the basis of a consistent and defensible methodology, and appropriate conditions are set on consents which are granted
- improved environmental outcomes can result
- consistency with other requirements for dams is promoted

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Guidelines for construction, maintenance and monitoring

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Who will find this guideline useful?

People who will find this guideline helpful include:

- owners of existing dams
- people wanting to build new dams
- engineers
- contractors
- Auckland Regional Council staff
- staff of territorial authorities
- people affected by an existing or proposed dam-
- groups and the general public with an interest in dam safety

Owners of existing dams can use this guideline to:

- understand the responsibilities of owning and operating dams
- a find out their responsibilities for ongoing maintenance and safety
- find out 'How will this affect my existing dam?' (overleaf).

People wanting to build new dams can use this guideline to:

- understand the responsibilities of owning, operating and maintaining dams
- make sure they engage professionals who can give them good advice.

Engineers can use this guideline to:

- design and develop structural monitoring and surveillance programmes for dams
- assess dam hazard category or environmental risk
- regularly reassess dam risk - for example as the dam ages, after a storm or because of downstream land use changes
- scope the information required for resource consent applications
- prepare assessments of environmental effects which adequately cover all the relevant issues
- determine monitoring requirements and allocate ongoing responsibilities.

Contractors can use this guideline to:

- build and maintain dams to the safety performance standards for which they are designed and approved.

Auckland Regional Council staff can use this guideline to:

- assess applications to make sure that good consideration has been given to design, structural performance standards, risk assessment, assessments of environmental effects, monitoring and surveillance
- process resource consent applications efficiently and consistently to a high standard
- make sure that conditions appropriate to dam hazard are attached to consents granted.

Staff of territorial authorities can use this guideline to:

- assess applications to make sure that good consideration has been given to design, structural performance standards, risk assessment, assessments of environmental effects, monitoring and surveillance
- process resource consent applications efficiently and consistently to a high standard
- make sure that appropriate conditions are attached to granted consents, including monitoring.

People who may be affected by an existing or proposed dam can use this guideline to:

- determine if they are affected, and if so, in what way
- what safety and environmental standards should apply to the dam in question.

Groups and the general public with an interest in dam safety can use this guideline to:

- what safety and environmental standards should apply to dams.

How to use this guideline

The guideline falls into 5 parts for different people to work with. Although many or all parties listed above may have an interest in all the parts, only people with a significant interest in each part have been listed there.

Part	Key users
1. Assessing dam hazard category	• owners of existing dams • people wanting to build new dams • engineers • people affected by an existing or proposed dam
2. Guideline for building of minimal hazard dams	• owners of existing minimal hazard dams • people wanting to build new minimal hazard dams • engineers and contractors building new minimal hazard dams • people affected by an existing or proposed dam
3. Performance standards for low, significant and high hazard dams	• owners of existing dams • people wanting to build new dams • engineers and contractors building new dams • people affected by an existing or proposed dam
4. Monitoring and surveillance	• owners • engineers • council staff • affected people or parties
5. Dam safety audits	• owners • potential buyers • insurance companies • engineers • council staff • affected people or parties

How will this affect my existing dam?

This guideline applies to existing dams as well as proposed ones.

You must assess the hazard category of all dams on your property using the flow chart in Part 1 (Figure 1.4).

You must also inspect and maintain it as summarised in Sections 6 and 7 of Part 2 of this guideline.

Dams and dam designs that differ from this guideline do not necessarily fail to comply with it, but any differences must be approved by the Auckland Regional Council.

The Auckland Regional Council will be reviewing its records and periodically visiting all existing dams to check that owners have assessed the hazard category of all dams on their property.

To find out more, call the Auckland Regional Council.

How does this guideline relate to other requirements?

This guideline often refers to the New Zealand Society of Large Dams (NZSOLD) Dam Safety Guidelines. Good familiarisation with this document is strongly advised for those designing, building and consenting dams.

People designing, building and consenting dams should also be familiar with the Building Act 1991.

Future modifications to the Building Act, the NZSOLD Dam Safety Guidelines and legislation will undoubtedly result in modifications to this document.

What future changes are likely?

As engineering practice changes and feedback is received about this guideline, periodic changes may become necessary.

All holders of this guideline will be notified of any changes as they occur.

Optional Response Form

We will be regularly reviewing this guideline. Please help us keep it accurate and practical - let us know about any changes we need to make by using this form.

Please photocopy this form before you fill it out to keep a record for future use.

1. **Errors**

   Are there any errors in the text or diagrams? If so, please tell us:

   which page and/or figure number it is on, what the error is and how you would correct it

   _____

   _____

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2. **Omissions**

   Have we left out any information which you might find useful? If so, please note your suggestions below:

   _____

   _____

   _____

   _____

3. Effectiveness

   Is this guideline helpful for designing, building, operating and maintaining dams, or for applying for resource consents for dams? If not, please tell us how we can improve it:

   _____

   _____

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4. **Other Comments**

   Do you have any other comments or questions? If so, please note them below:

   _____

   _____

   _____

   _____

   (Optional) Please note your name and phone number below in case we need to discuss your suggestions in more detail:

   Name: _____ Phone: _____

   Organisation: _____ Email: _____

   Address: _____

Thank you for taking the time to improve our guideline. Freepost a copy of this response form to:

The WaterResources Manager, Auckland Regional Council, Private Bag 92012, Newton, Auckland. Freepost No. 4103, or email to water@arc.govt.nz