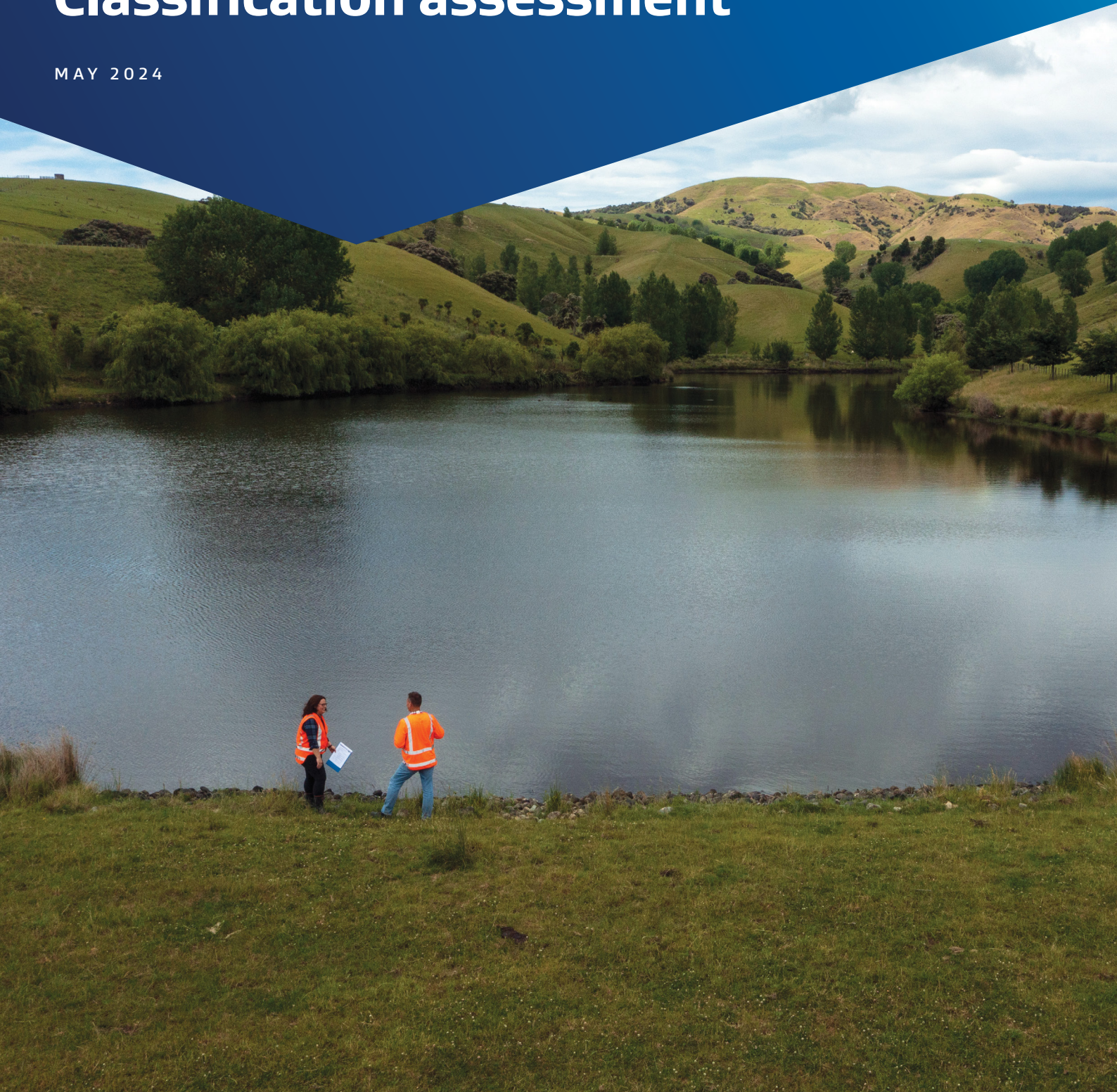


**BUILDING
PERFORMANCE**

Checklist for Dam Owners: To support the development of a Potential Impact Classification assessment

MAY 2024



**MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT**
HĪKINA WHAKATUTUKI

Te Kāwanatanga o Aotearoa
New Zealand Government



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More information

Information, examples and answers to your questions about the topics covered here can be found on our website www.building.govt.nz or by calling us free on **0800 24 22 43**.

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Purpose of this resource

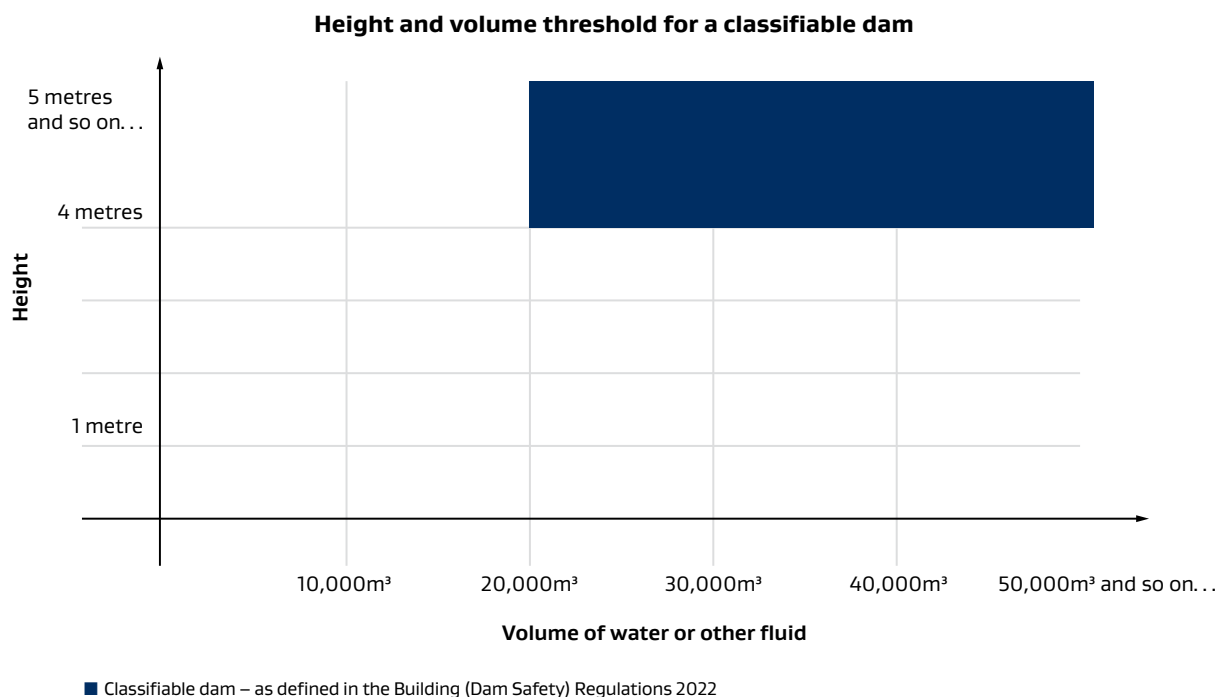
Dam owners play a pivotal role in ensuring the safety and integrity of their dams and the safety of their communities.

The purpose of this resource is to help the owners of typical agricultural dams identify and collate information which would assist with the completion of a *Potential Impact Classification* assessment (PIC).

A PIC assessment is a requirement for all dams impacted by the [Building \(Dam Safety\) Regulations 2022](#) (the Regulations).

What dams need to be classified?

Under the Regulations, if a dam is 4 or more metres in height **and** stores 20,000 or more cubic metres volume of water, or other fluid, it is a *classifiable dam*, and is impacted by the Regulations.



Hazard identification and the Potential Impact Classification assessment

The Regulations place an obligation on owners of classifiable dams to have their dams classified (PIC) and issued with a dam classification certificate (form 1 of the Regulations).

The PIC assessment process involves identifying and assessing the potential hazard posed by a hypothetical dam breach to the downstream community, cultural and heritage features, items of critical or major infrastructure, and the natural environment.

A dam's PIC assessment has nothing to do with the likelihood of failure of the dam nor is it intended to reflect adversely on the condition and integrity of the dam.

The dam's *classification certificate* must be audited and certified by a [Recognised Engineer](#), and submitted to the relevant regional authority no later than three months after Regulations commence, or no later than three months after the dam is commissioned, whichever is later.

The dam classification certificate form can be found on [MBIE's Building Performance website](#), or on the relevant Regional Authorities website.

How can this resource help?

This resource is designed to assist owners of typical agricultural dams gather information which will assist in determining their dam's PIC. The resource serves as a starting point for the dam owner to engage with a technical practitioner and/or complete a PIC assessment themselves.

Interpretation will be required to complete a dam's PIC assessment before engaging a Recognised Engineer to audit and certify it.

The resource is in the form of a checklist of information. Some of this information is required to be included on the dam classification certificate. Other information is required to understand the context of a dam and assess the potential consequence posed by the dam.

While much of the required information may already be on hand, some aspects will require dam owners to conduct additional research. By proactively filling in as much information as possible on the checklist, any subsequent conversations with a technical practitioner and/or a Recognised Engineer will be streamlined, making the dam classification process more efficient and productive.

Limitations of this resource

The focus of this resource is primarily to support the completion of a straightforward PIC assessment for typical agricultural dams in a rural environment. Larger dams, which fall outside the scope of this resource, may need to adopt a more detailed approach, involving the engagement of a technical practitioner for a detailed information gathering and assessment.

The collation of information to develop a dam safety assurance programme is outside the scope of this resource.

Further information

- › Visit the [Building Performance website](#).
- › MBIE's [Guide to complying with the Dam Safety Regulations](#) provides more detailed information for dam owners.

Acknowledgements

This resource has been prepared by MBIE's Building System Performance branch, with support from a technical working group of Recognised Engineers and an irrigation sector professional.

The commitment of dam owners to the dam classification process will contribute significantly to the overall resilience of Aotearoa/New Zealand's water infrastructure and the protection of surrounding communities and environments.

Checklist

Maps

A map (or aerial photograph) showing the dam site, the extent of the upstream catchment and the area downstream of the dam over about 5 km would enable the dam location and context to be established.

The map or aerial photograph should be marked up to clearly show the dam site, the catchment boundaries and other specific items of interest referred to in the checklist below.

Any marked-up maps or aerial photographs should be appended to this checklist.

Where to find this information:

- › [NZ Topo Map](#)¹
- › [Google Earth](#)²
- › building/resource consent drawings.



¹ NZ Topo Map is an interactive topographic map of Aotearoa/New Zealand using the official LINZ's 1:50,000 / Topo50 and 1:250,000 / Topo250 maps.
² Google Earth is a mapping service that allows users to access detailed satellite images of most locations on Earth.

If you are unable to provide a map, alternatively, the following information **within 5 km downstream of the dam** will be useful:

Information to gather:

Description of downstream valley / plain

Eg narrow confined valley, wider valley, natural floodplain, other.

Please provide a description.

Name of natural watercourse where the spillway overflow drains to

Are there any other dams on the same watercourse upstream or downstream?

If yes, please state or mark on a map where these are located.

Basic dam info – useful for dam classification certificate (form 1 of the Regulations)

Information to gather:

Dam name

Dam location

Eg physical address / description, LINZ Topo50 map grid reference)

Note map grid references can be sourced from www.topomap.co.nz with the grid coordinates obtained using the "More Coordinates" drop-down menu from this site.

Date of construction (if known)

If the year is unknown, please provide the approximate decade from anecdotal sources. Otherwise mark as unknown.

Building consent number or identification

If applicable or known.

Purpose of dam

If the dam has multiple uses, please indicate all uses that apply.

Agricultural/pastoral/irrigation Water supply Treatment Detention Recreation/amenity

Tailings Hydropower Other:

Type of dam

Earth Concrete Mixed Rockfill Unknown Other:

Height of dam (in metres)

Please describe how this height has been determined (eg from construction drawings, precise survey, or approximate measurement on site) and by whom.

Refer to MBIE's resource - [Measuring and calculating the height and volume of agricultural dams](#) for guidance on measuring dam height.

In the case of an irrigation canal / race, the canal can be split up into discrete sections between drop structures or other control structures. The 'dam' height in each discrete section is the maximum height of the canal embankments above outside ground level between the drop / control structure at each end.

Dam storage volume (in cubic metres)

As per Regulation 7 of the Dam Safety Regulations.

Please describe how this storage volume has been determined (from design documentation, calculation from as-built drawings, precise survey and calculation, or estimation using a surface area measured off a geo-referenced aerial photograph and an estimated maximum depth) and by whom.

Please indicate whether this volume is:

- › the total storage level from the lowest point on the bottom of the upstream reservoir to the reservoir full supply level, or
- › the storage volume above the lowest ground level on the outside of the dam to the reservoir full supply level, or
- › obtained using an alternative method (provide a brief description).

Refer to MBIE’s resource - Measuring and calculating the height and volume of agricultural dams for guidance on measuring dam stored volume.

In the case of an irrigation canal / race, the canal can be split up into discrete sections between drop structures or other control structures. The total ‘dam’ storage volume in each discrete section is the volume contained between the drop / control structure at each end.

Relevant regional authority

List of regional authorities:

Auckland Council, Bay of Plenty Regional Council, Environment Canterbury, Southland Regional Council, Gisborne District Council, Greater Wellington Regional Council, Hawkes Bay Regional Council, Horizons Regional Council, Marlborough District Council, Nelson City Council, Northland Regional Council, Otago Regional Council, Taranaki Regional Council, Tasman District Council, Waikato Regional Council, West Coast Regional Council.

Name of dam owner

For the purpose of the Building Act 2004 and Regulations, the ‘dam owner’ is the person who legally owns the physical dam itself.

Refer to the glossary in MBIE’s ‘Guide to complying with the Dam Safety Regulations’ for a fuller definition and explanation of who the dam owner is under the Building Act.

Chief executive of dam owner or equivalent

This is only needed if the owner is a body corporate.

If the owner is a body corporate but there is no chief executive, specify a person with an equivalent position in the body corporate.

Contact details for dam owner

Eg business address, postal address, phone numbers, email address.

Name of landowner(s) (if different from dam owner)

Please indicate whether the dam straddles the boundaries of more than one property with different property owners.

Contact details for landowner

Eg business address, postal address, phone numbers, email address.

Additional details about the dam and surrounding area

The following information will assist in providing an understanding of the dam.

Is there more than one 'classifiable' dam impounding a single reservoir?

If yes, note each dam will need to have a separate PIC assessment.

A dam is 'classifiable' if it is 4 or more metres in height and stores 20,000 or more cubic metres volume of water, or other fluid.

How is the dam formed?

Eg across a gully, across a natural watercourse, as a ring dam, other type of configuration?

How does the reservoir fill with water?

Eg natural catchment inflows, pumped inflows, irrigation canal inflows.

Are there design and construction records available for the dam?

If yes, please state what records are available.

Eg building consent number (date).

Does the dam have a primary or an auxiliary spillway?

If yes, refer to any design documentation which shows the primary and auxiliary spillways, or describe where it is located on the dam or reservoir.

A spillway is a weir, channel, conduit, tunnel, gate, or other structure designed to permit discharges from the reservoir. An auxiliary spillway is any secondary spillway that is designed to be operated infrequently, possibly in anticipation of some degree of structural damage or erosion to the spillway that would occur during operation.

Description of upstream catchment

Approximate size if known, nature of catchment, vegetation cover, highest point.

Alternatively, mark the approximate catchment boundaries on an appended map or Google Earth image.

Does the reservoir impounded by the dam contain any contaminated material?

Eg microorganisms, effluent waste, chemicals, industrial byproducts.

Downstream community

Please mark on an appended map of the valley / floodplain **downstream of the dam over about 5 km** key features of the local community (houses, commercial / industrial premises, community facilities, recreational facilities etc).

Alternatively, the following information **within 5 km downstream of the dam** will be useful:

What is the land used for downstream of the dam?

Eg agricultural / pastoral / horticultural, residential housing, commercial / industrial, recreational, multiple uses.

If the land has multiple uses, please indicate all uses.

Who is located within the downstream area?

Eg permanent residents, commercial / industrial workers, itinerant farm workers, people engaged in recreation,

people in vehicles, other.

How many permanent residents are likely be present within the downstream area on weekdays and at weekends?

What residential buildings are located downstream of the dam?

What community facilities are located downstream of the dam?

Eg schools, childcare facilities, sports clubs, churches, community halls.

What industrial / commercial or retail facilities are located downstream of the dam?

Are there any emergency services facilities located downstream of the dam?

Are there any camping grounds, recreational areas / facilities, sports facilities downstream of the dam?

Historical and cultural sites

Please mark on an appended map of the valley / floodplain **downstream of the dam over about 5 km** any known historical and cultural sites of significance (eg historic building or site listed by Heritage New Zealand, local marae).

Alternatively, the following information **within 5 km downstream of the dam** will be useful:

Known historical and cultural sites of significance.

Heritage New Zealand has a [list of Aotearoa/New Zealand’s significant heritage places](#), including National Historic Landmarks.

The Department of Conservation manages a range of historic sites around Aotearoa/New Zealand.

A register of these sites can be found on their website.

Infrastructure

Please mark on an appended map of the valley / floodplain **downstream of the dam over about 5 km** any critical or major items of infrastructure (bridges, culverts, electricity substations, gas pipeline stations, major fibre optic cables etc).

For the purposes of PIC assessment, technical practitioners can use their interpretation and judgment to decide on the critical or major status of the infrastructures. Critical or major infrastructure associated with lifeline utilities are typically related to network mains and nodes rather than local connections. For example, State Highways and other roads which are critical for connection of communities would be considered to be critical or major infrastructure, whereas local roads would not normally be considered to be critical or major infrastructure. However, specific consideration may be required for cases where local infrastructure connections provide the only outside links for a community.

The following information **within 5 km downstream of the dam** will be useful to gather:

What roads are present downstream of the dam?

Are any of these roads a state highway or major regional route?

If yes, please add the state highway number or local road name.

Do any of these roads provide the sole access to an area of population?

If yes, please state the name of the area of population.

Are there any bridges / culverts crossing natural watercourses located downstream of the dam?

If yes, please state the type of structure and the name of the watercourse.

Are there any electricity substations or gas pipeline stations located downstream of the dam?

If yes, please state where they are located.

Natural environment

Please mark on an appended map of the valley / floodplain **downstream of the dam over about 5 km** any known natural environmental features of national or regional significance.

Alternatively, the following information **within 5 km downstream of the dam** will be useful:

Known environmental features of national or regional significance within 5 km downstream of the dam.

Eg nationally significant wetland, rivers or lakes.

Other attachments

In addition to any appended marked-up maps or Google Earth images, some other attachments would help understand the context of a dam and assist with dam classification if these are available:

- > photographs of the dam, spillway and impounded reservoir
- > design drawings for the dam
- > design and construction reports for the dam.



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