



COVERSHEET

Minister	Hon Poto Williams	Portfolio	Building and Construction
Title of Cabinet paper	Building (Dam Safety) Regulations 2022	Date to be published	17 June 2022

List of documents that have been proactively released

Date	Title	Author
May 2022	Building (Dam Safety) Regulations 2022	Office of the Minister for Building and Construction
5 May 2022	Building (Dam Safety) Regulations 2022 LEG-22-MIN-0052 Minute	Cabinet Office

Information redacted: **NO**

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In Confidence

Office of the Minister for Building and Construction
Cabinet Legislation Committee

Building (Dam Safety) Regulations 2022

Proposal

- 1 This paper seeks authorisation for submission to the Executive Council of the Building (Dam Safety) Regulations 2022.

Executive Summary

- 2 New Zealand does not currently have an operative dam safety framework; contrasting with almost all other OECD countries. The absence of an operative post-construction dam safety regulatory framework means that the risks posed by dams may, in some cases, be poorly managed. This exposes people, property and the environment to unnecessary risk.
- 3 The Building Act 2004 provides empowering provisions for a regulatory framework for post construction dam safety management. Regulations are needed to bring this framework into full effect and provide the criteria and standards that industry need to apply. The proposed Dam Safety Regulations are intended to provide a minimum, consistent and effective risk-based regulatory framework for dam safety. Policy proposals for the scheme were agreed by Cabinet in March 2021.
- 4 MBIE consulted on an exposure draft of the draft regulations with the Technical Working Group for Dam Safety and with Engineering New Zealand. Feedback from this consultation has resulted in some minor technical and policy changes being required to enable effective implementation.
- 5 The regulations are consistent with the policy intent agreed in March 2021. However, there are two minor policy changes that require approval from Cabinet Legislation Committee to enable effective implementation:
 - 5.1 the seismic hazard factor used for determining whether a dam is dangerous, earthquake prone or flood-prone
 - 5.2 separate definitions for determining whether a dam is dangerous for medium and high potential impact dams.
- 6 The Dam Safety Regulations will come into force two years after the regulations are gazetted, on 13 May 2024. This will provide time for recognised engineers to be assessed for the relevant qualifications and competencies and so that owners can prepare before the new dam safety requirements commence.

Policy

- 7 New Zealand does not currently have an operative dam safety framework; contrasting with almost all other OECD countries. The absence of an operative post-construction dam safety regulatory framework means that the risks posed by dams may, in some cases, be poorly managed. This exposes people, property and the environment to unnecessary risk.
- 8 While there is presently no regulated dam safety management framework, some dam owners have been following industry best practice dam safety guidelines. For some dam owners, such as farmers and irrigators, these guidelines may be too complex or costly to follow and implement.
- 9 The Building Act 2004 provides empowering provisions for a regulatory framework for post construction dam safety management. Regulations are needed to bring this framework into full effect and provide the criteria and standards that industry need to apply. The proposed Dam Safety Regulations are intended to provide a minimum, consistent and effective risk-based regulatory framework for dam safety.
- 10 On 1 March 2021, Cabinet agreed to policy proposals for Dam Safety Regulations (CAB 21-MIN-0034 refers). The policy decisions provided for regulations that prescribe the following:
 - 10.1 criteria for a classifiable dam (that is, any dam that has a height of 4 or more metres and holding 20,000 or more cubic metres of water or other fluid or any dam that has a height of 1 or more metres and holding 40,000 or more cubic metres of water would be a classifiable dam): the owners of very low risk dams such as stock water drinking ponds and weirs or irrigation channels that are below the natural ground level will not be captured by the regulations
 - 10.2 criteria and standards for determining a dam's potential impact classification: any dam that is a classifiable dam will need to be classified as either a low potential impact, medium potential impact or high potential impact dam
 - 10.3 criteria and standards for dam safety assurance programmes: these ongoing safety programmes will only be required for medium and high potential impact dams
 - 10.4 qualification and competency requirements for recognised engineers: recognised engineers who are trained and assessed by Engineering New Zealand will be responsible for determining a dam classification and certifying and auditing dam safety assurance programmes
 - 10.5 new definitions for terms that are relevant to determinations of whether a dam is flood-prone, earthquake-prone or dangerous so that the hazards associated with these dams can be addressed

- 10.6 prescribed forms for dam classification certificates, dam safety assurance programmes and dam compliance certificates. These requirements outline what information owners need to provide when applying to the regional authority for a classification certificate, dam safety assurance programme or dam compliance certificate.
- 11 Cabinet also agreed that the Dam Safety Regulations will come into effect two years after the regulations are gazetted. This will provide time for recognised engineers to be assessed by Engineering New Zealand against the relevant qualifications and competencies and so that owners can prepare before the new dam safety requirements commence.
- 12 The new dam safety framework was developed to be adaptable for climate change. Knowledge on the effects of climate change in the estimation of extreme flood events is an area of rapid progress. Owners of medium and high impact dams will need to review their dams against flood performance criteria every five years as part of their comprehensive dam safety reviews. These reviews will use data that takes into consideration the impacts of climate change.
- 13 Cabinet also agreed that an exposure draft be consulted on with the Technical Working Group for Dam Safety, Engineering New Zealand and recognised technical experts. Feedback from this group has resulted in some technical and minor policy changes being required to enable effective implementation.
- 14 Cabinet authorised the Minister for Building and Construction to make minor and technical changes that are consistent with the policy intent.
- 15 The Cabinet Manual authorises the Cabinet Legislation Committee to make minor policy changes where they are consistent with the policy intent.

Minor policy changes related to the seismic hazard factor used for determining whether a dam is dangerous, earthquake prone or flood-prone

- 16 Section 153 and Section 153A of the Building Act enable regulations for defining a 'moderate earthquake', 'moderate flood', 'earthquake threshold event' and 'flood threshold event'.
- 17 These definitions use a minimum seismic hazard factor in conjunction with annual exceedance probabilities for determining whether a dam is dangerous, earthquake-prone or flood-prone.
- 18 Cabinet agreed to definitions for moderate earthquake, moderate flood, earthquake threshold event and flood threshold event that are used to determine whether a dam is dangerous, earthquake prone or flood prone.
- 19 The seismic hazard 'z factor', which measures ground shaking in these definitions, was set to a minimum of 0.13 based on expert advice and was derived from *New Zealand Standard 1170.5:2004 Structural design actions- Part 5: Earthquake actions - New Zealand*. These requirements consider the

ground shaking ratings in different parts of New Zealand based on the 2002 National Seismic Hazard Model.

- 20 During the consultation on the exposure draft, submitters raised technical feedback regarding the definitions for determining whether a dam is dangerous, earthquake prone or flood prone. Expert submitters commented that the chosen minimum z factor was likely to be too high for some parts of New Zealand. This is because modifications have been made to the verification method that relates to the relevant New Zealand Standard. Therefore, a z factor of 0.13 is likely to over-represent the severity of a 'moderate' earthquake in some parts of New Zealand.
- 21 To address these technical concerns, I recommend that the z factor is lowered to a minimum of 0.10. In practice, lowering the minimum z factor to 0.10 will mean that dams in the Northland region will be assessed against a lower level of ground shaking that is proportionate to the expected level of ground shaking in the event of a moderate earthquake in this region.
- 22 Dams in other parts of New Zealand will be assessed against a higher level of ground shaking as they have a higher z factor specified in the New Zealand Standard. These changes are supported by the technical experts that submitted on the exposure draft.
- 23 The National Seismic Hazard Model is currently being reviewed. There may be an opportunity to review these settings in a future regulatory amendment based on the results of this work, if required.

Minor policy change to provide separate definitions for determining whether a dam is dangerous for medium and high potential impact dams

- 24 Section 153 of the Building Act enables regulations for defining a moderate earthquake and moderate flood. These definitions are used to determine whether a dam is dangerous.
- 25 The moderate earthquake and moderate flood definitions agreed to by Cabinet to determine whether a dam is dangerous is set at an annual exceedance probability of a 1 in 50-year event (1:50) for both medium and high impact dams. In other words, the standard for determining what is a dangerous dam is the same even if the potential impact of a hypothetical dam failure is different. Feedback from technical experts on the exposure draft indicate that it is important to differentiate the potential impact of the dam when determining whether it is dangerous.
- 26 I recommend revising these definitions to provide different criteria for determining whether a dam is dangerous depending on whether it is a high or medium potential impact dam. The proposed split would mean that a high potential impact dam would be assessed against an annual exceedance probability of a 1 in 100-year event (1:100) and a medium potential impact dam would be assessed against an annual exceedance probability of a 1 in 50-year event (1:50).

- 27 This differentiation would be consistently applied for determining whether a dam is earthquake prone or flood prone and ensures that the probability of dangerous event occurring is proportionate to the potential impact of a dam's failure.
- 28 If a dam is deemed to be dangerous, then the relevant regional authority has powers under the Building Act to warn people about the risk of the dam and require work be carried out on the dam.

Other minor and technical policy changes

- 29 I have made a number of minor and technical changes to provide clarity and legal certainty and to enable effective implementation of the regulations. These are:
- 29.1 a new definition for historic or cultural site to remove ambiguity, which is derived from the Heritage NZ Pouhere Taonga Act 2014;
 - 29.2 revised technical definitions and technical terms in the regulations, based on expert advice, to remove ambiguity;
 - 29.3 technical changes to the dam safety assurance programme requirements, including a review of the timing of intermediate and comprehensive dam safety reviews;
 - 29.4 amendments to the qualifications and competency requirements for recognised engineers based on expert advice from practitioners;
 - 29.5 incorporating by reference *New Zealand Standard NZS 1170.5:2004. Structural design actions - Part 5: Earthquake actions - New Zealand* for determining whether a dam is earthquake prone or dangerous;
 - 29.6 amendments to the content of the forms prescribed in regulations to remove unnecessary duplication; and
 - 29.7 amendments to Schedule 2 (Dam Classification) to ensure that assessments for the initial dam safety classification can be carried out in a clear and consistent way.

Timing and 28-day rule

- 30 A waiver of the 28-day rule is not sought. The regulations will come into force on 13 May 2024, which is two years after they will be notified in the New Zealand Gazette.

Compliance

- 31 The regulations comply with:
- 31.1 the principles of the Treaty of Waitangi;

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- 31.2 the rights and freedoms contained in the New Zealand Bill of Rights Act 1990 or the Human Rights Act 1993;
- 31.3 the principles and guidelines set out in the Privacy Act 2020;
- 31.4 relevant international standards and obligations; and
- 31.5 the Legislation Guidelines (2018 edition), which are maintained by the Legislation Design and Advisory Committee.

Regulations Review Committee

- 32 I do not consider there are any grounds for the Regulations Review Committee to draw regulations to the attention of the House of Representatives under Standing Order 327.

Certification by Parliamentary Counsel

- 33 The regulations were prepared and certified by the Parliamentary Counsel Office as being in order for submission to Cabinet.

Impact Analysis

- 34 A Regulatory Impact Assessment was prepared in accordance with the necessary requirements and was submitted on 1 March 2021 when the Cabinet approval was sought for the policy relating to the regulations (CAB-21-MIN-0034).
- 35 The Regulatory Impact Assessment indicated that the costs associated with a hypothetical dam failure are far in excess of the cost of the regulations and this is a key consideration.
- 36 The analysis showed that even if the regulations only contribute a small amount (0.1 percent - 2.5 percent) to a dam failure being avoided, then the benefits of the regulations still far outweigh the costs. This includes low potential impact dams.
- 37 The Treasury's Regulatory Impact Analysis team has determined that the additional minor policy changes proposed in this paper are exempt from the requirement to provide a Regulatory Impact Statement on the grounds that substantive issues had been addressed by existing impact analysis when initial Cabinet decisions were made ["Impact Summary: Regulatory Framework for Dam Safety"; DEV-21-MIN-0008 refers]. The additional minor policy changes proposed in this paper are technical in nature and have no or only minor impacts on businesses, individuals and not-for-profit entities.

Publicity

- 38 When the regulations have been made, MBIE will issue a press release and contact stakeholders to inform them of the new requirements.

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Proactive release

- 39 I intend to release this paper proactively, subject to any redactions consistent with the Official Information Act 1982. MBIE will publish a copy of this paper on its website.

Consultation

- 40 MBIE has employed a transparent and collaborative approach with the dam sector during the development of the proposed regulatory framework.
- 41 Throughout the development of the regulations, MBIE has engaged with the Technical Working Group for Dam Safety. This group comprises technical experts from New Zealand Society for Large Dams, large dam owners such as hydro-companies and Watercare, Irrigation New Zealand, Federated Farmers of New Zealand, Canterbury, Waikato and Otago Regional Councils and the University of Canterbury Quake Centre.
- 42 MBIE has also worked closely with Engineering New Zealand on the recognised engineer requirements and with technical experts in the field of post construction dam safety to ensure that the final regulations are clear and technically sound.

Public consultation on the policy

- 43 In 2019, MBIE consulted with the public on the proposed regulatory framework for dam safety (DEV-19-MIN-0118 refers). Stakeholders were largely supportive of the proposals made in the public discussion document. However, the policy proposals were revised to reflect some issues that were raised in the feedback. These issues included the threshold for a dam's inclusion in the regulatory system, cultural values and the availability of appropriately skilled engineers.

Targeted consultation on the exposure draft

- 44 Cabinet also agreed that targeted consultation occur on the exposure draft for the Dam Safety Regulations with the Technical Working Group for Dam Safety and Engineering New Zealand.
- 45 On the advice of the Technical Working Group Auckland Council, as a dam owner, was also consulted.
- 46 MBIE also consulted with the Chair of the committee for *New Zealand Standard 1170.5 Structural Design Actions- Part 5 Earthquake Actions* as this standard was proposed to be incorporated into the regulations. MBIE also received technical advice from dam safety technical experts.
- 47 The exposure draft was released to these stakeholders, in confidence, in October 2021. I have made some minor and technical changes to the attached draft regulations to address the feedback received from submitters.

Recommendations

I recommend that the Legislation Cabinet Committee:

- 1 **note** that on 1 March 2021 Cabinet agreed to Dam Safety Regulations for the post construction safe management of dams in New Zealand (CAB-21-MIN 0034 refers);
- 2 **note** that Cabinet authorised the Minister for Building and Construction to carry out targeted consultation on an exposure draft and make decisions consistent with the dam safety proposals on any minor, technical or timing issues which arise during the drafting process;
- 3 **note** that the Minister for Building and Construction has made the following technical changes following the consultation on the exposure draft:
 - 3.1 a new definition for historic or cultural site to remove ambiguity and is derived from the Heritage NZ Pouhere Taonga Act 2014;
 - 3.2 revised technical definitions and technical terms in the regulations, based on expert advice, to remove ambiguity;
 - 3.3 the technical changes to the dam safety assurance programme requirements including a review of the timing of dam safety reviews;
 - 3.4 amendments to the qualification and competency requirements for recognised engineers based on expert advice from practitioners;
 - 3.5 incorporating by reference New Zealand Standard NZS 1170.5:2004. Structural design actions - Part 5: Earthquake actions - New Zealand for determining whether a dam is earthquake prone or dangerous.
 - 3.6 amendments to the content of the forms are prescribed in regulations to remove unnecessary duplication; and
 - 3.7 amendments to Schedule 2 (Dam Classification) to ensure that assessments can be carried out in a clear and consistent way;
- 4 **note** that the Cabinet Manual authorises the Cabinet Legislation Committee to make minor policy changes where they are consistent with the policy intent;
- 5 **agree** that the seismic hazard z factor, that measures ground shaking and, is included in the definitions to determine whether a dam is earthquake prone, flood prone or dangerous be lowered from 0.13 to 0.10;
- 6 **agree** that the annual exceedance probability for a dangerous dam is changed from 1 in 100 years in a moderate earthquake or moderate flood to 1 in 50 years for a medium impact dam and 1 in 100 years for a high impact dam;
- 7 **note** that the Building (Dam Safety) Regulations 2022 will give effect to the policy decisions referred to above;

I N C O N F I D E N C E

- 8 **authorise** the submission to the Executive Council of the Building (Dam Safety) Regulations 2022;
- 9 **note** that the Building (Dam Safety) Regulations 2022 will come into force on 13 May 2024.

Authorised for lodgement

Hon Poto Williams
Minister for Building and Construction

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