

August 4, 2019

Ministry of Business, Innovation and Employment

Email to: damsafety@mbie.govt.nz

Attention: Dam Safety Consultation 2019 – Building System Performance

Dear Sir/Madam

Hawke's Bay Regional Council Submission on the Dam Safety Consultation 2019

Thank you for the opportunity to provide feedback on the Dam Safety regulations review of 2019. Please find attached Hawkes Bay Regional Council's (HBRC's) submission regarding these documents. This is a technical staff submission not formally endorsed by the Council.

Yours sincerely



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Submission on the *Proposed Regulatory Framework for Dam Safety* discussion paper

Your name, Email address, phone number and organisation

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Responses to discussion paper questions

Proposed definitions of key dam safety terms

1

Do you think the proposed definitions of key dam safety terms are appropriate?

Classifiable Dam – yes
Recognised Engineer – Partially, see Q4-7
Moderate Earthquake – yes
Moderate Flood – partially, see Q19/20
EQ threshold event – yes
Flood threshold event – partially, see Q24/25

Possible Additions to Definitions:

Dangerous Dams

The term Dangerous Dam has been introduced in the text on page 40 of the discussion document. MBIE have stated a criteria to be classified as 'dangerous' as follows:

Dangerous dams

Dams that are classified as 'dangerous' present a more immediate threat to people, property and the environment. A dangerous dam is likely to fail in the ordinary course of events or in a moderate earthquake or flood.

MBIE considers that if a dam is likely to fail within a 50-year period, it should be classed as a dangerous dam. Earthquakes and floods with an AEP of 1 in 50 are events that are likely to occur within this 50-year period and are therefore proposed as the definitions of 'moderate earthquake' and 'moderate flood'.

We consider that a dam labelled as 'Dangerous' has the potential to cause significant anguish and possible fear for any affected people, generally considering those living downstream. Consideration should be given to include a definition of 'Dangerous Dam' in the key safety terms.

However, the above definition is slightly ambiguous, with terms 'likely to fail', and 'likely to occur'. What is the definition of 'likely'. Is it simply just more than a 50% chance?

'Likely to fail within a 50 year period' is subjective. A dam may be built to hold a 1 in 40 year flood. In a 50 year period, the probability of getting a moderate flood (1 in 50 years as per definition) is approximately 72%. If this happens, will the dam fail? Is it likely to fail? These are questions which if not answered correctly, could result in labelling a dam as 'dangerous', and carry the burden of being misrepresented to those concerned.

The consequence of failure is also important to consider in such circumstances. A dam which is labelled as 'dangerous' but has very little consequence of failure is of much less concern than a dangerous dam with severe consequences (e.g. high population at risk).

Dam Owner

Dam ownership may be not be clear. Regional Council may have constructed a dam on private property. Perhaps a definition that helps decide who has the obligation to follow guidelines should be included.

2

If you do not think any of the proposed definitions are appropriate, can you make suggestions on how any of them can be improved?

See Q19/20, 24/25

3

Do you have any comments on how these proposed terms will work in practice?

Could be variations in assessments due to variations in skill levels of Recognised Engineer.

Proposed 'Recognised Engineer' requirements

4

Do you agree with the proposed qualification requirements for a ‘Recognised Engineer’?

Proposed prescribed qualifications

It is proposed that the qualification requirement is met by the existing requirement (under the Chartered Professional Engineers of New Zealand Act 2002 or any future statutory equivalent) to be a registered engineer. This legislation requires an engineering qualification from an accredited programme recognised under the Washington Accord⁸.

Yes

5

Do you agree with the proposed competencies for a ‘Recognised Engineer’?

Recognised Engineer	<p>A ‘Recognised Engineer’ is an engineer described in section 149 of the Building Act, and has some or all of the following competencies:</p> <ul style="list-style-type: none"> • geotechnical principles • design principles including structural, geotechnical, seismic, hydrologic and hydraulic principles • dam construction techniques • operation and maintenance of dams • surveillance processes • response to dam safety issues • emergency planning and emergency response • resolution of potential dam safety deficiencies • dam safety critical plant systems.
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Who is recognised engineer

149 Who is recognised engineer

- (1) A recognised engineer is an engineer who—
- (a) has no financial interest in the dam concerned; and
 - (b) is registered under the [Chartered Professional Engineers of New Zealand Act 2002](#); and
 - (c) has—
 - (i) the prescribed qualifications; and
 - (ii) the prescribed competencies.
- (2) In subsection (1)(a), **financial interest** does not include—
- (a) involvement in the construction of the dam as a fully paid engineer; or
 - (b) entitlement to a fee for undertaking an audit; or
 - (c) employment or engagement as an engineer by the owner of the dam concerned.

6

Yes, but the public need confidence that the scheme is working and has integrity. For that reason the work of Recognised Engineers under the proposed scheme needs to be subject to an audit programme developed and undertaken by Engineering New Zealand. Regional authorities should not be relied upon to undertake audits as the Act and proposed regulations do not allow them to do so. It is not a cost that should be transferred to ratepayers. Given the scheme is a form of self-regulation then the responsibility for auditing lies with Engineering New Zealand.

We also consider the statement that the “Recognised Engineer has ‘some or all’ of the following competencies...” is too vague. ‘Some’ could be interpreted as only 2 items in the list of 9 competencies. Perhaps this should be specified similar to Section 149 Building Act 1.c.ii, which states the recognised Engineer is one who has the prescribed competencies.

We understand one problem with this approach may be that there may be very few engineers who can claim all competencies. Auditing of these competencies may also be problematic.

If you do not agree with the proposed qualifications and competencies, please comment on what they should be.

	<i>Please see answer to Q5.</i>
7	What evidence should be attached to the certificate provided by the engineer (for example a CPEng registration number) to show the engineer is a 'Recognised Engineer'?
	<i>Sufficient information to enable quick and reliable cross-checking with the register.</i>

Implementing the proposed dam safety regulations

8	The proposed timeframe for regulations to come into force is 12 months after they are gazetted. Do you think this timeframe is adequate?
	<i>Yes, in part, see below.</i>
9	If you do not think the timeframe is adequate, please tell us how much time you would prefer.
	<i>Please see answer to Q8. Could extend 3 month notification period for dam owners to 6 months. Could be a shortage of appropriately qualified Engineers.</i>

Core elements: step 1 of the dam safety regulations

10	Do you agree with the proposed classification threshold to determine if a dam is a classifiable dam?
	<i>Yes, strongly agree. This matter has been thoroughly traversed over the past 15 years. It would of real concern if it is to be re-investigated again by the Government.</i>
11	If you do not agree, what other measure could be used?
12	Do you agree that it is unnecessary to have a separate category for referable dams (considering the proposed classification threshold and regional authorities' powers under section 157 of the Building Act)?
	<i>Yes, we agree this is unnecessary, based on the reasons given in the consultation document. The document presents an accurate summary of the history to do with "referable dams". The "referable dams" concept was not practical as enforceable thresholds could not be defined.</i>

Core elements: step 2 of the dam safety regulations

13	Do you agree with the proposed Potential Impact Classification system in step 2?
	<i>Yes. It is a reliable and cost-effective screening system. It ensures that only the dams that pose significant risk are subject to ongoing management. Please also see answers to Q10 and Q31.</i>
14	If you do not agree with the proposed Potential Impact Classification system, what alternative system, or changes, do you suggest for classifying the potential impact of a dam's failure?

Core elements: steps 3 and 4 of the dam safety regulations

15	Do you agree with the proposed content of a Dam Safety Assurance Programme?
	<i>Yes. It is noted that Emergency Action Planning (EAP) has been integrated into the DSAP process and that it includes exercising and review of the EAP.</i>
16	Do you think there are any elements in the Dam Safety Assurance Programme that are missing or are too onerous?
	<i>There is nothing onerous – it is all good practice.</i>
	<i>The footnote to Table 5 states that the definition of appurtenant structure differs from that in the Act but does not give a reason. The difference will cause confusion and seems to be unnecessary.</i>
17	Do you agree that there is no need for an accreditation regime at present?
	<i>Yes. This is an obsolete legacy issue arising from a time when it was thought that some owners of large portfolios might wish to self-regulate.</i>

Dangerous, earthquake-prone and flood-prone dams

18	Do you agree with the proposed definition of ‘moderate earthquake’?		
	Yes		
19	<p>Do you agree with the proposed definition of ‘moderate flood’?</p> <table border="1" data-bbox="328 439 1505 555"> <tr> <td data-bbox="328 439 507 555">Moderate flood</td> <td data-bbox="507 439 1505 555">Moderate flood means, in the context of dams, a flood of water or other fluid flowing into the reservoir that has a 1 in 50 annual exceedance probability.</td> </tr> </table>	Moderate flood	Moderate flood means, in the context of dams, a flood of water or other fluid flowing into the reservoir that has a 1 in 50 annual exceedance probability.
Moderate flood	Moderate flood means, in the context of dams, a flood of water or other fluid flowing into the reservoir that has a 1 in 50 annual exceedance probability.		
	Partially, see Q20		
20	<p>If you do not agree with the proposed definitions of ‘moderate earthquake’ and ‘moderate flood’, what definitions do you consider more appropriate, and why?</p> <p><i>It is not clear if the calculation is in consideration of peak discharge (m³/s), volume (m³), or water level (m). We assume it is in m³/s (or other units of flow), however it would be good practice to make this clear.</i></p> <p><i>It is possible to use different methods of calculation to results in different values. Perhaps using advice similar to NES forestry, i.e. choose 1 of 3 methods, shown here:</i></p> <p>45 Permitted activity condition: flow calculations</p> <p>(1) Flood flow estimations must be calculated for all river crossings, except fords, using 1 or more of the following:</p> <ul style="list-style-type: none"> (a) the document referred to in item 3 of Schedule 2 (Flood Estimation – A Revised Design Procedure); (b) the document referred to in item 4 of Schedule 2 (Technical Memorandum Number 61); (c) the document referred to in item 5 of Schedule 2 (Comparison of a regional method for estimating design floods with two rainfall-based methods). 		
21	<p>For owners of dams:</p> <p>What impacts (if any) would the proposed definitions of ‘moderate earthquake’ and ‘moderate flood’ have on the management of your dams?</p> <p><i>Proposed definition of moderate flood is ambiguous, however, if amended as suggested, it may provide greater clarity on calculating flood magnitude.</i></p>		
22	<p>For regional authorities:</p> <p>What (if any) potential issues do you see in applying the definitions of ‘moderate earthquake’ and ‘moderate flood’?</p> <p><i>Please see answer to Q21.</i></p>		

23	Do you agree with the proposed definition of ‘earthquake threshold event’?		
	Yes		
24	<p>Do you agree with the proposed definition of ‘flood threshold event’?</p> <table border="1" data-bbox="352 405 1506 577"> <tr> <td data-bbox="352 405 528 577">Flood threshold event</td> <td data-bbox="528 405 1506 577"> <p>Flood threshold event means, in relation to a:</p> <p>(a) High potential impact dam, a flood of water or other fluid flowing into the reservoir that has a 1 in 500 annual exceedance probability</p> <p>(b) Medium potential impact dam, a flood of water or other fluid flowing into the reservoir that has a 1 in 250 annual exceedance probability.</p> </td> </tr> </table> <p>*Annual exceedance probability refers to the probability of an event of a given size or larger occurring in any one year. For example, a one per cent AEP event has a 1 in 100 chance of occurring in any one year.</p> <p>**The z factor (or seismic hazard factor) is a measure of ground shaking.</p>	Flood threshold event	<p>Flood threshold event means, in relation to a:</p> <p>(a) High potential impact dam, a flood of water or other fluid flowing into the reservoir that has a 1 in 500 annual exceedance probability</p> <p>(b) Medium potential impact dam, a flood of water or other fluid flowing into the reservoir that has a 1 in 250 annual exceedance probability.</p>
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	Partially		
25	<p>If you do not agree with the proposed definitions of ‘earthquake threshold event’ or ‘flood threshold event’, what definitions do you consider more appropriate and why?</p> <p><i>Similar comments as Q20</i></p>		
26	<p>For owners of dams:</p> <p>What impacts would the proposed definitions of ‘earthquake threshold event’ and ‘flood threshold event’ have on the management of your dams?</p> <p><i>Would likely require investigating options for upgrades, reviewing functionality, public consultation on level of service provided and expectations of public. Would require review of insurance and liability (from the perspective of dams owned by RC).</i></p>		
27	<p>For regional authorities:</p> <p>What (if any) potential issues do you see in applying the definitions of ‘earthquake threshold event’ and ‘flood threshold event’?</p> <p><i>It is necessary for the DSAP to provide assessment of these events. Regional authorities must receive sufficient information in the DSAPs so as to know whether the DSAP is adequate for assessment.</i></p>		

Guidance and forms for compliance

28	For regional authorities: What information would you need to ensure the regulations are implemented effectively?
	<i>See answer to Q27. Regional authorities need sufficient information to populate the registers. They also require the <u>owner's</u> assessment of whether the dam is flood prone or earthquake prone – it is not for regional authorities to make that assessment. Costs must be borne by the owner and not transferred to ratepayers. Guidance/workshops would be required in order to ensure RC have the appropriate skills to assess the DSAP and associated documents. Consistency across the country would also be of concern.</i>
29	For owners of dams: What information would you need to ensure the regulations are implemented effectively?
	<i>Confidence that Recognised Engineers are adequately skilled to provide the correct guidance. Adequate numbers of Recognised Engineers to provide the service would also be of concern. MBIE develop a communication strategy to provide clear guidance to dam owners.</i>
30	Do you have any comments on the proposed content of the forms for a Dam Classification Certificate, Dam Safety Assurance Programme or Annual Dam Compliance Certificate?
	<i>The DCC and DSAP must clearly list and describe the appurtenant structures. The ADCC must include details of the exercising of the EAP (Element 6 of Table 5) and verification that this exercising has occurred. This is vital as EAPs are only of use if they are tested and shown to be effective.</i>

Regulatory impacts

31	Can you describe any other costs and benefits not discussed in Table 6?
	<i>We agree with items in Table 6. Possibly do not include the cost table 7 in final document, as there can be significant variabilities.</i>
32	For regional authorities: In your experience what will be the likely cost of administering the proposed dam safety regulations e.g. additional resource requirements?
	<i>There will be additional resource requirements in data management, initial contact with dam owners, reviewing applications. Additional consenting requirements for new or existing dams is unclear. Potential enforcement costs for non-compliance may be an issue.</i>
33	For owners of dams: Are you following the NZSOLD dam safety guidelines?
	<i>Further investigation required to ensure full compliance.</i>

34

If you are following the NZSOLD dam safety guidelines, please tell us about any additional costs you may incur from implementing a Dam Safety Assurance Programme?

Requires further investigation.

35

If you are not following the NZSOLD dam safety guidelines, please tell us about any additional costs you may incur from implementing a Dam Safety Assurance Programme?

Requires further investigation.