

7 March 2019

Hon Jenny Salesa

Minister for Building and Construction  
Minister for Ethnic Communities  
Parliament Offices  
Private Bag 18041  
Parliament Buildings, Wellington 6160

Dear Minister Salesa

It was a pleasure to meet you on 6 September, in my capacity as a Member of the Chartered Professional Engineers Council. At the time, you indicated your willingness to hear from me as Chair of the New Zealand Society on Large Dams (NZSOLD). Recently I have handed the Chair role to Trevor Matuschka, and this letter comes to you from both of us. We appreciate your openness to engaging with our Technical Group.

### ***Support for Progressing Dam Safety Regulations***

We welcome the government's willingness to not only address engineering and safety issues of recent past (for example Christchurch earthquake building collapses, Pike River Mine tragedy) but to act to prevent future tragedies.

NZSOLD has engaged with successive governments for 30 plus years regarding dam safety regulatory proposals. We want to see dam safety regulations finally put into effect before the next election, to reduce the ongoing exposure of our people, country and assets to risks posed by poorly managed dams.

### ***NZSOLD***

NZSOLD is a Technical Interest Group (TIG) of Engineering NZ and member of the International Commission on Large Dams (ICOLD). Our Mission:

*"We aim to protect people, property and the environment, present and future, from the harmful effects of a dam failure or an uncontrolled release of the reservoir contents.*

*We promote cooperation between stakeholders with an interest in dams. This includes technical, regulatory and owner representatives as well as the general public. NZSOLD develops and provides information to members and represents the industry at government level. We actively review and share information on an international stage to best represent dam practice in New Zealand."*

### ***Influences on Dam Safety in NZ***

Dams are an essential part of our infrastructure - for water supply, power generation, irrigation, mining and more. Interest in Dam Safety regulation tends to be sparked by dam failures or incidents. However, as time passes since the last dam safety incident, impetus to prioritise dam safety fades. The number of significant dam failures or incidents in NZ is unknown, but the attached Table 1 gives an overview of influences on dam safety in NZ.

Dams are most likely to fail on first filling, when they are first exposed to reservoir loads. International studies show that there is then an equal likelihood of failure at any stage in a dam's life due to slow developing defects, natural hazard events or human factors.

Dam safety management systems aim to detect any developing failures in time to intervene before a catastrophic release of the reservoir contents occurs. The greatest risks occur when dam owners:

- a) are unaware of the risk their structure(s) pose; and/or
- b) do not have appropriate dam safety management practices to ensure ongoing safe performance, maintenance and intervention if required.

Recent research by the University of Canterbury (to support MfE's attempts to establish an NES for dam safety) indicate that there are medium and high potential impact dams in NZ (where failure would result in loss of life, significant damage to property and/or environment) that suffer from one or both of the above.

The regulations proposed over many years aim to ensure that owners of such dams are doing the basics in terms of managing the risks their structures pose.

### ***International trends in dam safety regulation***

Preliminary findings released from a current study by the World Bank, "*Legal and Institutional Frameworks for Dam Safety: A Comparative Global Assessment*" (paper to be released later this year), indicate that most high-income countries have an independent dam safety authority (New Zealand is in the World Bank high income category). While NZSOLD has provided technical guidance through the NZ Dam Safety Guidelines, for a high-income country, we are an outlier. The study noted that:

"Self-regulation in the absence of any enabling legislation, technical guidance or monitoring and reporting requirements highlights significant gaps and poses substantial risks".

### ***NZSOLD Position on Dam Safety Regulation***

Our membership is frustrated that dam safety regulations have not been implemented despite many years of discussions. Recently we have re-engaged with MBIE to assist in preparation of a proposed draft discussion document, with the aim of progressing dam safety regulations under the Building Act.

NZSOLD remain concerned about the risk of a dam failure that could potentially result in loss of life or significant damages before our Government implements regulations.

NZSOLD would support the Minister in moving dam safety regulations into effect before the next election, to avoid any further delays and disillusionment, and to reduce the ongoing exposure of our people, country and assets to risks posed by poorly managed dams.

### ***Request for meeting***

We appreciate the work you are doing and would very much like to meet with you to elaborate on the above and to answer any questions you may have for us. We look forward to hearing from you.

Yours sincerely

Rebecca Knott



Immediate Past Chair

Trevor Matuschka



Chair

Table 1: Influences on Dam Safety in New Zealand

Period	Event or action	Fatalities	Comment	Gov. Dept.	Legislation
1967	NZ Matahina Dam	0	Core cracking and erosion on first filling in 1967 and had to undergo repair		
1972	USA Buffalo Creek flood	125			
1972	USA Canyon Lake Dam	238			
5 <sup>th</sup> June 1976	USA Teton dam - earthen dam on the Teton River in Idaho, suffered a catastrophic failure as it was filling for the first time.	11 people, 13,000 cattle	It was not until the string of significant dam failures in the 1970s that awareness was raised to a new level among the states and the federal government – and internationally		
1977	USA Laurel Run Dam (Johnstown)	40			
1977	USA Kelly Barnes Dam	39			
1980	USBR SEED manual published		Safety Evaluation of Existing Dams manual – spread internationally		
20 <sup>th</sup> Sept 1981	NZ Ruahihi power station canal failure	0	One day after its official opening by then Prime Minister Robert Muldoon		
1981	<b>NZSOLD formed</b>			Ministry of Commerce	Standalone legislation
30 <sup>th</sup> Dec 1982	NZ Wheao canal failure	0	Low probability high impact		
1983	USBR SEED manual revised				
2 March 1987 & 25 Dec 1987	NZ Matahina dam earthquake and later discovery of further voids	0	ECNZ		
Dec 1988	First New Zealand Dam inventory published		Ministry of Works		
Dec 1994	NZ dam inventory published		MOC		
1995	NZ Coeur Gold tailings dam	0	Land on which dam and stored tailings are located moved. No release of tailings occurred.		
1990s	Failure of two irrigation dams in Northland; Failure of three dams in Marlborough	0	Northland dams – deep seated failure through foundations before water was impounded; Marlborough dams - one dam embankment erosion, one spillway washout, one dam stability failure		
1995	NZSOLD Dam Safety Guidelines (DSG) version1		Result of a lack of faith in governments to provide guidance and legislation in the foreseeable future		

Period	Event or action	Fatalities	Comment	Gov. Dept.	Legislation
Apr 1996	NZ Poihipi Reservoir	0			
11 <sup>th</sup> Apr 1996	NZ Poolburn farm irrigation dam	0			
1 <sup>st</sup> May 1996	MOC discussion paper on proposed statutory requirements and procedures				
6 <sup>th</sup> Feb 1997	NZ Opuha irrigation dam	0	Failed during construction, fatalities narrowly avoided		
2000	NZSOLD DSG version 2				
Aug 2004	Building Act includes specific Dam Safety Assurance clauses			BIA	Building Act
2008	Dam Safety assurance Regulations		Approved for later implementation		
Aug 2013	NZ Haldon Farm dam, Seddon	0	Dam was damaged in Seddon earthquake. A controlled breach of the dam was undertaken to reduce stored water volume to reduce risk of uncontrolled breach		
30 <sup>th</sup> June 2015	Regulations revoked			MBIE	
Aug 2015	NZSOLD DSG version 3		Authored to align with regulations in specific areas. Serving as default Regulations		
Sep 2015	NZ Waihi Dam gate failure	0	Severe silting downstream		
2016	MfE develops TWG for a National Environmental Standard		Minister advises that the content of the NES is to be leaner and less costly than the previous Regulations.	MfE	RMAct (NES)
2017	MfE developed draft discussion document		Document was not released prior to the 2017 election		
November 2018	MBIE indicate intention to return to Building Act			MBIE	BAct