NEW ZEALAND
Society on Large Dams

Newsletter – December 2022

Contents

Contact us

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Newsletter Content

Do you have some interesting news to share with NZSOLD and its members? We welcome content from our members. Content can be provided to either Matt or Petra for inclusion.

Chair's Message

Kia ora everyone,

It's hard to believe 2022 is almost over. NZSOLD has a lot on, both organisationally and as a membership. Despite the workload pressure on our industry, we continue to progress several important initiatives.

With many thanks to our hard-working sub-committees and volunteers we're pleased to report the following quarter highlights:

- Strategic Planning sub-committee continues to make good progress toward the development and implementation of a 2-3yr NZSOLD Strategy. This includes working on NZSOLD's purpose, charter, rules review and a member survey (coming soon) that will support the development of the strategy. In the recent quarter the sub-committee interviewed 5 past NZSOLD Chairs to gain their wisdom and perspectives on NZSOLD's history and future direction.
- Continued activities of the Young Professionals Group including participation in the Strategic Planning sub-committee. A successful second Waimea Dam trip was held in September (thank you to the YP organisers and Waimea Water for hosting). Several YPs supported and connected with the ANCOLD YPs during the October ANCOLD-NZSOLD Combined Dam Conference in Sydney.
- Support of Aotearoa's Dam Safety Regulations by several NZSOLD members working with Engineering NZ to develop the Recognised Engineer assessment framework. We expect the first Recognised Engineers will be registered and ready to support dam owners to comply with new requirements by mid-2023.
- Dam Safety and Technology sub-committee has continued the scoping and costing of the Dam Safety Guidelines update project, with support from ENZ, and funding support from MBIE. We acknowledge that our industry experts are busy, impacting our ability to progress this project at the pace we hoped. The sub-committee is working on a DSG update delivery strategy that will support the implementation of both the Dam Safety Regulations and the wider scope of industry/emerging practice updates.
- Symposium and Education sub-committee supported planning and preparation for the recent combined NZSOLD/ANCOLD conference in October. 39 from NZ attended a very successful combined conference with a record 480 in attendance (from Australia, NZ, US, Canada, Singapore, and Netherlands). NZSOLD will present a short webinar to members in February 2023 summarising conference highlights.
- Continued NZ involvement in ICOLD Technical Committees (seismic design, public safety, dam safety, public awareness and education, levees, environmental). We're proud of the significant contributions that NZ makes to international practice through the work of these committees.

As a committee and on behalf of members, we're incredibly grateful for the significant time that our volunteers and their organisations contribute to our vibrant technical group. We're a highly capable team and we should all be proud that we are leading and supporting an exciting phase of our industry's growth.

We are approaching a new NZSOLD Management Committee term (3 years) commencing at the next AGM in March 2023. Stay tuned for upcoming communications on the committee nominations and election process. The committee is made up of members representing large corporates, medium to small corporates (elected), and members at large (elected). Please think about whether you or someone you know may like to contribute to the leadership and governance of NZSOLD by standing for nomination.

Ma te wa,

Dan Forster – Chair, NZSOLD

Update: Recognised Engineer

The Recognised Engineer is coming into being in conjunction with the Building (Dam Safety) Regulations 2022. There are two types of Recognised Engineers; Potential Impact Classification (PIC) and Dam Safety Assurance Programme (DSAP). A Recognised Engineer can be assessed and registered as either PIC or DSAP, or both. PIC Recognised Engineers certify PIC assessments. DSAP Recognised Engineers certify DSAPS, which are required for Medium and High PIC dams, and audit annual DSAP compliance. It is a prerequisite to be a Chartered Professional Engineer (CPEng) to become a Recognised Engineer.

It is not required that Recognised Engineers perform PICs and DSAPs. Nor are Recognised Engineers required in conjunction with new dam design or dam building consents.

NZSOLD management committee members are providing technical inputs and leadership for ENZ's implementation of the Recognised Engineer registration framework. ENZ held a Project Development Workshop in October 2022, which included five NZSOLD members. Soon ENZ will invite selected dam engineers to simultaneously become the first Recognised Engineers and ENZ Assessors for future Recognised Engineer applicants. This first group will be assessed, and learn assessing, in March 2023. A selected group of Recognised Engineer applicants will go through their assessment process via a workshop with the new assessors around May/June 2023. After that, ENZ will take applications for Recognised Engineer in the same way they do for CPEng. Application to become a Recognised Engineer can be done singly, or concurrently with CPEng initial application or renewal.

Author - Brian Benson, Damwatch Services

Update: National Seismic Hazard Model

Background

GNS Science recently released the revised National Seismic Hazard Model (NSHM). The work was led by GNS Science and funded by MBIE and EQC. The 2022 NSHM calculates the likelihood and intensity of earthquake shaking that may occur in different parts of New Zealand. The NSHM was first released in 1998, with updates in 2002 and 2012. The 2022 edition is a major change and will have a significant impact on seismic risk in many parts of New Zealand.

GNS Science, MBIE, EQC, engineers, universities, and other Crown Research Institutes worked together closely on the revision of the model and many local and international scientists and academics have been involved in its development. A 17-member Technical Advisory Group provided technical advice on the development of the NSHM. The product is considered to represent the best international state of practice for the assessment of seismic hazards.

The work was a huge undertaking and includes significant advances in the two primary components of the NHSM:

- Seismicity rate models: these model potential earthquake sources.
- Ground motion characterisation models: these model how shaking from an earthquake changes as it travels through the Earth's crust.

A rigorous scientific approach has been adopted for producing estimates of ground motion with consideration of a large range of possibilities for earthquake sources, different ground motion models with appropriate weighting, and the inclusion of epistemic uncertainties.

Approach

The NSHM provides probabilistic estimates of seismic hazard, in particular, PGA and 5% damped pseudo acceleration spectra for the orientation-independent component ground motion intensity measure (referred to as RotD50). RotD50 is a change from the large component ground intensity measure for the work which informed NZS1170.5:2004 (Structural Design Actions Part 5: Earthquake Actions – New Zealand). Results are available on the GNS Science website https://nshm.gns.cri.nz/ for any site coordinates, a range of different Vs30 values, and different probabilities of exceedance. Vs30 is the parameter that characterises site subsoil conditions. It is the time-averaged shear wave velocity in the upper 30 m of the soil column. This is now a common parameter adopted internationally for the calculation of seismic hazards. It is different from the site subsoil classification in NZS1170.5. There is no direct relationship between the two site parameters. Disaggregation of the results to provide insight into the earthquake magnitudes and site-source distances that contribute most to hazard is currently only available for 7 cities in New Zealand. Topographic amplification is also not available as part of the NSHM but might be included in the future.

The 2022 NSHM is the culmination of over two years of work. Its main purpose is to inform regulations related to meeting Building Code requirements (e.g., updating NZS1170.5) and for loss modelling needs. It will also be of use where site-specific estimates of ground motion are required for design purposes.

The new seismicity rate and ground motion models are based on much more data and scientific understanding than previously, with greater consideration of uncertainty than the previous models. The seismicity rate models include consideration of geologic, paleoseismic, geodetic, and earthquake data, as well as a scientific understanding of earthquake processes. The fault database has been expanded and includes different fault rupture scenarios, including the potential for multiple fault segments to rupture together. Separate ground motion characterisation models have been developed for crustal, interface, and in-slab earthquakes. Many reports have been produced of the various supporting studies, as well as summary reports on different topics. It would be challenging to develop a thoughtful understanding of all the materials provided in a short period of time.

Findings

The revision shows that seismic hazard has increased almost everywhere throughout New Zealand compared to the 2012 NSHM. On average, results have increased by 50 percent or more from the previous modelling, with some up to 3 times higher, depending on the return period and spectral period. This is a reflection of the improved understanding of seismotectonics and considerably greater data now available.

The reasons for the increase are a combination of:

- Increased seismicity rates because of the reduced dependence on historical earthquake events and greater weighting to geologic, paleoseismic, and geodetic strain data.
- Inclusion of more, active and capable fault sources (active faults are where there is evidence of ground-surface displacement/deformation in the past 125,000 years, and 25,000 years for faults within the Taupo Rift).
- New ground motion characterisation models for crustal and subduction earthquake events.

The difference between the 2022 NSHM and site-specific seismic hazard studies undertaken in the last 10 years is expected to be less because they typically will have used modern ground motion characterisation models and updated fault characteristics.

Application to dam engineering

Earthquake design criteria for dams in the New Zealand Dam Safety Guidelines, and many international dam

guidelines including that published by ICOLD include for deterministic and probabilistic estimates of the Safety Evaluation Earthquake (SEE) ground motion. Deterministic estimates can be obtained with knowledge of nearby active faults and ground motion models. It is not currently easy to identify and extract the Controlling Maximum Earthquake (CME) directly from the 2022 NSHM. A new fault database (New Zealand Community Fault Model) has been created as part of the 2022 NSHM that can be used to assess the CME. It contains information on the location, geometry (dip and dip direction), kinematic (sense of movement, rake, and net slip rate) and slip rate timeframes for active and potentially active faults. It does not provide estimates of earthquake magnitude. Application of magnitude scaling relations is required.

Conclusions

In summary the 2022 NSHM represents the latest scientific knowledge in earthquake ground motion hazards in New Zealand. It provides probabilistic estimates of ground motion for any site for a range of Vs30 values. The current web platform does not provide disaggregation of the hazard for any individual sites. It is not possible to directly extract deterministic estimates of seismic hazard as required by the New Zealand Dam Safety Guidelines. However, the study has developed a new fault database and ground motion characterisation models that could be used for deterministic estimates of the SEE. The probabilistic estimates of ground motion provided by the 2022 NSHM have increased from the 2012 NSHM, and in many cases significantly.

The implications of the results from the 2022 NSHM will take time to consider. There are some potential challenges, both for the design of new dams and for evaluating the safety of existing dams. For embankment dams the impacts may not be significant because they have inherent seismic resilience, if well-founded and compacted so not subject to material strength loss issues like liquefaction. For other types of dams and appurtenant works the implications may be notable.

MBIE, as the NZ building regulator, has advised that until further guidance is issued, all buildings regulated by the Building Act should continue to use NZS1170.5:2004 for design loads. Waka Kotahi also advises similarly for bridges in the interim. NZSOLD is also assessing how the 2022 NSHM will be treated when applying the NZ Dam Safety Guidelines and is consulting with MBIE to provide consistency for dam owners with the evolution of practice in the wider built environment.

Author - Trevor Matuschka, Engineering Geology Ltd

Recap: ANCOLD/NZSOLD Combined Conference, Sydney, 26 to 29 October 2022

ANCOLD NZSOLD CONFERENCE 2022

SUSTAINABLE DAMS IN A CLIMATE OF CHANGE

SYDNEY AUSTRALIA 26-28 OCTOBER

The 2022 combined NZSOLD and ANCOLD conference was held at the International Convention Centre in Sydney from

the 26 to 28 October. The theme of the conference was 'Sustainable dams in a climate of change'. Further information about the conference can be found at https://ancoldconference.com.au/.

The event was the highest-attended combined conference to date, with approximately 480 attendees from across the dams industry. This included around 40 attendees from New Zealand. It was great to see seven New Zealand papers presented at the conference in the concurrent sessions. Five members of the NZSOLD management committee had the opportunity to chair a concurrent session at the conference. Dan Forster was also invited to chair some of the plenary sessions at the conference. All of this meant great NZSOLD participation in the conference.

NZSOLD would like to take the opportunity to congratulate ANCOLD on a terrific conference. Well done to Sam Banzi and his conference organising team. Thank you also to those NZSOLD members who helped make the conference a success. This includes those involved with its organisation, in reviewing abstracts/papers, those who submitted abstracts/papers, and those who chaired conference sessions.

NZSOLD supported several members of the management committee to represent us at the conference. Watch out for further information about an upcoming online event in February 2023 where the NZSOLD-supported attendees will discuss their highlights from the conference and inform wider NZSOLD membership of some of the key takeaways from the event.

The next combined conference between NZSOLD and ANCOLD will occur in New Zealand in 2025. We have commenced early planning for this event and will be looking to confirm the date and venue for the conference in approximately Q2 2023.

Recap: UC Hydropower and Dam Career Showcase

The New Zealand Hydropower Group (NZHG) and NZSOLD joined forces to host a showcase evening at the University of Canterbury, promoting the hydropower and dams industries. The event was very well received with approximately 50 students in attendance.

The format consisted of 8 short and engaging presentations by a range of industry experts, followed by an open Q&A with a panel discussion. A similar event is being planned for early 2023 at the University of Auckland.

A special thanks to the speakers, panelists, and to Kaley Crawford-Flett and Andrew Bird for organising the event.

New Zealand Hydropower Group and NZSOLD career showcase at the University of Canterbury

Recap: Engineering NZ technical group: Hydropower Professionals – Inaugural Conference

The first New Zealand Hydropower Group Conference was held at Te Pae in Christchurch on the 21 and 22 of September, with a site visit to Coleridge and Highbank power stations on the 23. It was attended by 130 hydropower professionals from across New Zealand, Australia, Austria, and North America.

Presentations covered all phases of hydropower development and refurbishment from experts across the industry as well as other aspects of the Energy Transition to move New Zealand towards Net Zero. It was great to meet and connect with colleagues and friends from the industry and share experiences and stories, something we haven't been able to do as an industry for many years. Plans are already in place for a conference in March/April 2024.

New Zealand Hydropower Group

About NZHG

The New Zealand Hydropower Group, established in June 2021, is a forum for hydropower professionals working in this multidisciplinary field of engineering. It supports professionals in this area to share experience and knowledge across New Zealand and internationally, as well as acting as a voice for the local hydropower sector. More information about the group can be found here, including how to register as a member.

New Zealand Hydropower Group conference at Te Pae, Christchurch

Upcoming: NZSOLD 2023 Photo Competition

After a hiatus due to circumstances, NZSOLD will be looking to run our member photo competition in early 2023. At this stage, we plan to run the competition in Q2 2023, following the AGM.

NZSOLD runs the biennial photo competition as part of our ongoing promotion of dams, canals, and stopbanks. NZSOLD looking for photographs that illustrate the importance and magnificence of water-retaining structures in New Zealand and overseas. The photographs can be of any type of engineered dam (including appurtenant

structures, canals, or stopbanks; but not natural or landslide dams) and we are looking for a wide range of photographs to demonstrate the benefits of dams and reservoirs.

Entry is available to NZSOLD members. All submitted photographs must be original (not previously submitted) and the entrant must be the sole owner of the copyright and have obtained any necessary approvals for submission as required. A condition of entry is that NZSOLD can publish and exhibit the entrant's photographs on the NZSOLD website and in any media that NZSOLD develops. Further terms and conditions of the competition will be released when it opens. Judging is completed independently by a panel of NZSOLD management committee members, with individual entrants kept anonymous from the judging panel.

Great prizes will be on offer, so please start considering any photographs you may wish to submit and obtain any necessary approvals. Also, keep the competition in mind during any site visits over the next couple of months!

2020 Photo Competition winner - Pukaki Spilling, Daniel Bardsley

Upcoming: ANCOLD/NZSOLD Combined Conference 2022, Member Feedback

As mentioned earlier, NZSOLD supported several members of the management committee to represent us at the conference. Watch out for further information about an upcoming online event in February 2023 where the NZSOLD-supported attendees will discuss their highlights from the conference and inform wider NZSOLD membership of some of the key takeaways from the event.

Young Professionals Group

Recap: Waimea Dam Site Visit

22 Young Professionals attended the NZSOLD YPG field trip to Waimea Community Dam (WCD) construction site on the 30 of September. This concrete faced rockfill dam is the largest dam to be built in New Zealand since Opuha Dam in 1998. It has been under construction since 2019, with an expected reservoir filling date of early/mid-2023.

The group first met in Nelson to receive great presentations about the project - from concept to construction, and the future M&E works. After an H&S induction, the group went to the construction site to observe the construction of the toe berm and spillway bridge abutment MSE wall, slipforming of the spillway ogee weir, and witness the finished embankment, concrete face, intakes, plinth and parapet walls.

The YPG previously visited WCD almost 2 years prior, shortly after the river had been diverted and during the beginning of spillway and embankment construction. With the earthworks and structural works now largely completed, it was fantastic to have the opportunity to see the dam during two very different periods of construction. After the site visit, most of the group met for a social event at a curry house in Nelson town.

The YPG would like to thank Waimea Water and the Fulton Hogan Taylor Joint Venture for allowing the YPG to visit this impressive project. Special mention goes to James Smith (Damwatch) for organising the event, delivering presentations and leading the tour group, David Lian (Waimea Water) for presentations and tour assistance, Matthew Henden (Damwatch) for tour assistance and Shreesh Basnyat (Watercare) for organising assistance.

YPG tour group in front of the completed concrete face

YPG members observing earthworks on the downstream toe berm

View of the parapet wall from the left abutment

Poster Competition

NZSOLD would like to encourage the sharing of technical knowledge, experience, and research in fields related to our understanding of dams in New Zealand. The 2022/23 NZSOLD poster competition is open to all New Zealand-based students and Young Professionals (under 40) who wish to share their work concerning the engineering, operation, management, safety, environment, biology or geology of dams (or water-retaining embankments).

Posters will be featured on the NZSOLD website and displayed at the NZSOLD symposium in mid-2023. Winners will be acknowledged in the NZSOLD newsletter, and awards will be presented at a webinar in early 2023.

Posters must be submitted electronically to nzsoldypg@gmail.com, accompanied by the entry cover form (attached), any time prior to Monday 13 February 2023. You can read more about judging criteria, entry requirements, and fantastic prizes here: https://nzsold.org.nz/poster-competition/

Upcoming Events

Events planned by the YPG:

- The YPs are looking to host a central Otago Field Trip to several dams. The event will be open to everyone, not just YPs. Keep an eye out for more information.

Connect

If you haven't already, connect with the NZSOLD YPG on the following platforms:

LinkedIn: https://www.linkedin.com/groups/6945089/

Facebook: https://www.facebook.com/groups/1932340566784496/

Also check out our friends at Engineering NZ Young Engineers: https://www.facebook.com/YoEngNZ/

Upcoming: Event Calendar

Below is an events calendar of what is going on in the dams industry over the next few months. Some of which have already been highlighted in the newsletter. Did we miss something? If so, please get in touch and we will get it updated.

Month	NZSOLD	NZSOLD YPG 's	ICOLD	ANCOLD	Misc
Jan/Feb 2022		**13th February:** NZSOLD YPG Poster competition closes			
Mar/Apr 2022	**TBC:** Annual General Meeting **TBC:** Photo Competition **TBC:** ANCOLD/NZSOLD 2022 Conference, Member Feedback, Online				
Later			**11 to 15 June:** ICOLD Annual Meeting, Gothenburg, Sweden	**25 to 27 October:** ANCOLD 2023 Conference, Cairns, QLD	

Note: some dates subject to change.

ICOLD News

Latest Newsletter

The latest ICOLD The Dams Newsletter (edition 20) can be found here.

Main topics in this issue include:

- Editorial from Michel de Vivo
- Reflections from Mike Rogers on his term as ICOLD President
- Hydropower Europe "The Important Role of Hydropower in Energy Transition"
- Levees as a Natural Expansions of ICOLD's Focus
- Recap from the International Conference on "Hydropower and dams development for water and energy security - under changing climate"
- Former ICOLD Vice-President, Jean-Pierre Tournier receives an important award in Canada
- ICOLD celebrates the "Decade of dams" in Pakistan
- Recap from HYDRO 2022

For further news, see ICOLD newsletters http://www.icold-cigb.org/GB/news/newsletters.asp

Bulletins

NZSOLD Members are reminded that you can access and download for free ICOLD Bulletins from the ICOLD website. You need to create a user account on the ICOLD website and use the NZSOLD National Committee Code to be given access. Please contact a member of the NZSOLD management committee for the code. This is one of the useful benefits of your annual membership.

Subcommittees

The following subsections provide an update on activities of the selected subcommittees in which NZSOLD participates.

Committee B: Seismic Aspects of Dam Design - Trevor Matuschka

A workshop has been proposed for next year's ICOLD meeting on seismic aspects of safety-critical seismic electro-mechanical and hydro-mechanical equipment. This will provide an opportunity to provide information and feedback on the proposed bulletin. Trevor will help with organising this workshop and will be seeking assistance from NZSOLD members with an interest in this area, for their support to the workshop and future bulletin. Please express your interest to Trevor directly.

Committee G: Environment - Peter Amos

The key activities of the subcommittee can be summarised as:

1. Bulletin preparation is proceeding with the handover of all documents from the previous chair to Peter Amos now complete. Updated case studies are being received after reviews and for inclusion in the bulletin.

2. Presentations of the bulletin contents are taking place at Annual Meetings of several member countries in the next few months (e.g. USSD, Swedcold, etc).

3. New Terms of Reference for the next term are currently being developed. The current focus however is on finalising the above-described bulletin.

Committee H: Dam Safety - Dan Forster

Dr Zeping Xu (China) is the new Committee on Dam Safety (CODS) chair.

CODS held a successful meeting and workshop in Marseille. Dan attended both (meeting minutes available). Key highlights of the meeting are summarised below.

Progress on Bulletin on Dam Failure Flood Consequence Analysis

Des Hartford and Shane McGrath presented the main contents and latest progress of the Bulletin on Dam Failure Flood Consequence Assessment. The bulletin was proposed at the 2013 CODS meeting in Seattle. It provides suggested principles and information on the contemporary applications and methods used for consequence assessment. The objective is to support dam managers to make informed decisions about the need, purpose, and scope for consequence analysis.

The full draft of the bulletin has been finished (draft V8). Before the CODS meeting in Marseille, the working group had a virtual meeting for discussing the following arrangement. On 11th May, the draft version was disseminated by the chairman of CODS. A few members said that they hadn't received the file. The draft version has been re-distributed by the CODS chairman in early June to all committee members (Dan circulated it for NZSOLD feedback by end of July). The draft version will be updated with comments and suggestions from CODS members in two months. Many thanks to Grant Webby (NZSOLD) for his comprehensive review of the draft that was gratefully received and responded to by Shane McGrath.

New Bulletins on Dam Safety Guidelines

Robin Charlwood summarized the background of the new bulletins on dam safety guidance, which was accepted in CODS Meeting in Ottawa, in June 2019. It was recognized that there is an urgent need for Dam Safety Guidance that could be made available to countries starting to develop regulations and guidelines and as reference materials for countries with existing programs. Consequently, CODS approved the plan to develop a set of three new Bulletins:

- Bulletin 1: DAM SAFETY CONCEPTS, PRINCIPLES AND FRAMEWORK
- Bulletin 2: DAM SAFETY GOVERNANCE CONSIDERATIONS
- Bulletin 3: OWNERS DAM SAFETY MANAGEMENT

Bulletins B1 and B2 were approved in ICOLD Virtual GA in November 2021, available as Bulletin 191 Pre-Print and Bulletin 192 Pre-Print, respectively. Both Bulletins 1 and 2 are now in the process of translation. Bulletin 3 is underway as two parts - B3: Owner's Dam Safety Policy and Organization, and B4: Owner's Activities to Achieve Dam Safety Goals.

Updating Bulletin 130 Risk Assessment in Dam Safety Management

This is one of the tasks described in the new TOR of CODS (2021-2024). As a member of the Working Group that developed Bulletin 130, Des Hartford presented a discussion on updating the bulletin. It is pointed out that the original basis in 2013 for updating Bulletin 130 had been overtaken by a wide range of developments during intervening years including the publication of other new and directly relevant bulletins by the Committee.

Further discussions were held among committee members, with significant contributions by S. Lacasse, B. Becker, F. Laugier and D H Shin. S. Lacasse emphasized that there was a pressing need for ICOLD to provide guidance on the use of the full range of risk analysis methods to improve the engineering of dams and their safety. It was considered that a focus on the engineering aspects of risk assessment would mean that many of the issues raised in the presentation could be avoided. This position received strong support from members from the United States and France.

It was proposed that rather than attempting to update Bulletin 130 that it would be appropriate to prepare a new bulletin with a focus on the engineering aspects of risk assessment. This Bulletin would cover the full spectrum of approaches and applications that are available including appropriate uses of the methods as well as the strengths and limitations of the methods. The proposal received unanimous support from all participants present.

Des Hartford offered to draw up a draft Terms of Reference for this new bulletin. Representatives from Canada, Norway, and the United States offered to contribute to this new bulletin. Preparation for the new bulletin could be started in 2022. The working group, TOR, and program for the bulletin will be further discussed in the next CODS meeting.

Committee LE: Levees - David Bouma

ICOLD has confirmed that the two reports our committee are working on will be published as ICOLD Bulletins. A draft of the **Levees and Flood Defences Across the World - Characteristics, Risks and Governance Bulletin** was presented at the 2022 ICOLD Congress in Marseilles, and has been accepted to progress to publication.

A draft version of the **Comparison of Dams and Levees - Similarities, differences and recommendations Bulletin** is almost complete and will be circulated for review shortly and will be presented as a complete draft to the 2023 ICOLD meeting.

Our committee had a workshop in Marseilles on 29 May where we discussed:

- progress and remaining steps to complete the two bulletins.
- completion of a "Position Paper" that we are preparing to circulate to all ICOLD members.
- future activities and focus for the committee.

The outgoing President Michael Rogers included an article in the recent ICOLD Newsletter advocating the importance for ICOLD to be also considering Levees, see Page 12-14 of https://www.icold-cigb.org/article/GB/news/newsletters/newsletter-20-2

Committee N: Public Awareness and Education - Peter Mulvihill

The Committee on Public Awareness and Education met in Marseille on in May 2022. The meeting used a combination of online and face-to-face participation and was attended by 5 members, 3 substitutes, and one observer. During the 2022 year prior to the Congress in Marseille two further meetings were held via zoom.

The following is a summary of the meeting:

It was noted that some members and countries currently make active contributions to the work of the Committee, while others have not been active for some time. With the use of online meeting platforms, the limitations of cost and travel on participation have generally been overcome. It is planned to approach the national Committees of less active members to establish the status of these members.

Dr Hidayah Basri attended the meeting as a substitute for Mohd Azmi Ismail from Malaysia and indicated she would be happy to join the Committee representing the YEF.

Emmanuel Grenier gave an update on Central Office and ICOLD Board Activities. The Board had been following up on the World Declaration on Dam Safety and has focussed on a new topic being world challenges to dam engineering. Other work included the preparation of newsletters and organising a press conference for this coming June 2022.

Emmanuel noted a page on IEA's website, where the statistics about renewable energy are formulated in a way that hydropower contribution is not included. Renewables – Global Energy Review 2021 – Analysis - IEA. The information provided on the contribution of hydropower offsetting carbon emissions is misleading. Emmanuel is in the process of contacting the Agency to try to resolve this issue.

The various National Committees present provided an update on activities.

- The Czech Republic has introduced a Master's degree in Water and Environmental Engineering to be presented in English. Works are being carried out to communicate the benefits and impacts of dams to

the public.

- The Japanese Committee noted that the production of videos on dams by dam enthusiasts is increasing recently. This movement helps avoid misconceptions by the public. https://www.youtube.com/c/SiphonTV/videos JCOLD is also just going to initiate web delivery of videos on dams soon. Examples were shown where information is provided on dams at various locations using a map and reference QRcode.
- The Brazilian Committee has been very active over the past few years with the organization of national and international events including Symposia, Conferences, Workshops and Lectures on Technical Issues. As a result of recent incidents, there has been a significant focus on the safety of Tailings dams. In addition to the publication of a regular dams newsletter other notable publications included the book edition "Lessons Learned from Accidents and Incidents in Dams and Annexed Works in Brazil" – 2021 and Technical Bulletin - CBDB 003 - Technical Commission of Hydraulics of Spillways: "The Brazilian practice of project and operation of spillways: Critical analysis and recommendations for its improvement" – 2020.
- Work by the Malaysian Committee through large owners is focused on emergency action plans and communication with the public and relevant government agencies. Many public engagement works have been done with one of the hydropower companies in Malaysia.
- In Sri Lanka the committee remains active with public communication programs but because of the political situation, many activities are limited to on-line.
- The focus of the Paraguayan Committee was on implementing dam safety requirements that suit the governance background in Paraguay. This is an area where they need guidance and assistance. The committee committed to providing links to recently enacted dam safety regulations in New Zealand with the background information and information disseminated to the public.
- In New Zealand. new Dam Safety Regulations have recently been introduced and NZSOLD has been assisting government agencies with communication programs to publicise the requirements. The committee including the Young Proffesionals have been active with a number of online webinars and symposia. Climate change and the impacts of dry years and larger flood events is very topical.

A brief discussion was held on the Terms of Reference and members considered that some of the terms should be elaborated on and turned into specific actions and timelines. As the online communications were difficult at this meeting a dedicated discussion was reserved for the next meeting in August 2022.

In the interim several actions were required:

- Contact the Environment, Public Safety, Climate Change and Tailings Dams Committee to gauge where COPAE can assist. Earlier in the year, the Committee was requested for comments on governance roles in NZ for the proposed bulletin on Dams and Levees.
- Investigate including a specific space on the ICOLD website for public awareness and education resources including information and material such as video links to assist National Committees. The committee considered that care was required to avoid breaching copyright during this process.

The draft update to the 1999 ICOLD publication "Benefits and Concerns About Dams" was discussed with the completion of this project expected later this year. We are still struggling to get updated data and it was suggested we use the case studies on the benefits of dams produced by the Environment Committee.

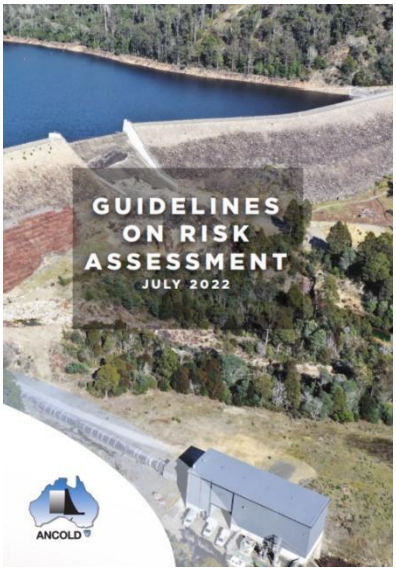
Peter Mulvihill noted that the NZSOLD Committee had recently run a virtual symposium with all delegates and presenters online. The original intention was to run a face-to-face event but the Covid Risks prevented this form of event. Several interactive apps were used as part of the process to assist with audience participation and real-time feedback. While the concept is not new what made the event distinctive was the significant audience participation and feedback through the digital feedback apps. There were many questions and comments, usually anonymous, and moderators were used to collate questions and comments into common themes. This enabled the presenters to target responses in the question-and-answer section of the presentations or later after the event. It was noted that in face-to-face presentations audiences are less inclined to ask questions as there may either be a

general lack of confidence or be limited by cultural norms and the time available is usually limited.

Members including Milan and Badra highlighted that these behaviors had also been observed when virtual public presentation and feedback systems had been used to debate contentious water resource issues. This format provides the opportunity for all sides to address questions and clarify any misconceptions. It was noted that such events required good moderation to give balanced results. An example of an app used for feedback was shown at the meeting. The committee will explore this concept further.

News and Links

Recent Publications



The ANCOLD Guidelines on Risk Assessment were published in 2003. They have served the Australian dam community very well and are referenced internationally. Risk assessment is now the principal approach to manage engineering risks at water dams and is now a developing practice for tailings dams.

These new guidelines on risk assessment replace the 2003 publication. They include updates to several sections taking account of developments in risk analysis methods and risk evaluation, from experience in applying those guidelines. As for ANCOLD (2003), these guidelines are directed to the practical application of risk assessment, as an aid to better dam safety management. Risk management is the end objective – risk assessment is a means to that end.

ANCOLD continues to believe that the use and further development of risk assessment using studies of the traditional engineering standards-based approach as an input, as proposed in these guidelines, offers the potential for significantly improved dam safety management.

Further information on the guidelines, and how to purchase them, can be found here.

In the Dam News

Local news:

New Research Hopes To Save Lives By Predicting Landslide Dams (Scoop, 17 November 2022) https://www.scoop.co.nz/stories/SC2211/S00029/new-research-hopes-to-save-lives-by-predicting-landslide-dams.htm

Cashmere Dam Construction About to Begin (CCC Newsline, 5 October 2022) https://newsline.ccc.govt.nz/news/story/cashmere-dam-construction-about-to-begin

Waimea dam more than 80% built, completion tipped for September 2023 (Stuff 27 November 2022) https://www.stuff.co.nz/business/farming/130585515/waimea-dam-more-than-80-built-completion-tipped-for-september-2023

Lake Onslow not ideal for battery lake, cost 'vastly understated' - Contact Energy (RNZ, 16 November 2022) https://www.rnz.co.nz/news/national/478854/lake-onslow-not-ideal-for-battery-lake-cost-vastly-understated-contact-energy

Waiho Flat farm inundated while flood protection scheme is stalled (Otago Daily Times, 12 November 2022) https://www.odt.co.nz/regions/west-coast/waiho-flat-farm-inundated-while-flood-protection-scheme-stalled

International Dam News:

Queensland Government endorses raising of Burdekin Falls Dam (Queensland Government, 8 December 2022) https://statements.qld.gov.au/statements/96758

Tributes paid as last surviving Dambuster Johnny Johnson dies (BBC, 8 December 2022) https://www.bbc.com/news/uk-england-bristol-63899393

The impact of the Williamson Diamond Mine tailings breach (AGU Blogosphere, 15 November 2022): **https://blogs.agu.org/landslideblog/2022/11/15/williamson-diamond-mine-tailings-breach-4/**

Work continues on Snowy 2.0 as Clough enters administration (International Water Power & Dam Construction, 8 December 2022) https://www.waterpowermagazine.com/news/newswork-continues-on-snowy-20-as-clough-enters-administration-10419801

Ukraine's Russian-held Nova Kakhovka dam damaged in shelling, Russian media report (Reuters, 7 November 2022) https://www.reuters.com/world/europe/ukraines-russian-held-nova-kakhovka-dam-damaged-shelling-russian-media-2022-11-06/

What happens if a dam fails? An inside look at one city's nightmare scenario (USA Today, 17 November 2022) https://www.usatoday.com/in-depth/news/investigations/2022/11/16/crumbling-dams-rising-rain-flood-weather-simulation-oklahoma-city/10662580002/

Watch: Massive amounts of water spill from Australian dam amid torrential rains (Fox Weather, 14 November 2022) https://www.foxweather.com/extreme-weather/water-spills-from-australia-wyangala-dam-torrential-rains

Dam safety: Probable maximum flood events will significantly increase over next 80 years, study finds (University of Melbourne, 15 November 2022) https://www.unimelb.edu.au/newsroom/news/2022/november/dam-safety-new-study-indicates-probable-maximum-flood-events-will-significantly-increase-over-next-80-years

Fears of Sydney water restrictions as only 25% of Warragamba Dam catchment deemed safe to drink (The Guardian, 21 November 2022) https://www.theguardian.com/australia-news/2022/nov/21/sydney-water-restrictions-fears-warragamba-dam-25-percent-safe-to-drink-water-quality-nsw-floods

LATEST #Update - PROGRESS ON THE PLUNGE POOL RESHAPING WORKS (4 December 2022) https://www.facebook.com/105946072886172/videos/452256600412169/?__so__=permalink

Interesting Links

The following links may be useful or interesting to members. Please let us know of any other links that you think may be useful to other members (nzsoldcommittee@gmail.com)

ICOLD	http://www.icold-cigb.net/GB/icold/icold.asp
British Dam Society	http://britishdams.org/default.asp
ANCOLD	https://www.ancold.org.au/
Canadian Dam Association	https://www.cda.ca
US Society on Dams	https://www.ussdams.org/
Hydroreview	http://www.hydroworld.com/index.html
Waterpower Magazine	http://www.waterpowermagazine.com/